



A Special Health Report from Harvard Medical School

Coping with **ANXIETY AND PHOBIAS**

In this report

- *Recognizing and treating common anxiety disorders*
- *The most effective medications and therapies*
- *Managing panic attacks*
- *Advice for worriers*
- *Anxiety and sleep: Tips for overcoming insomnia*



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Price: \$24.00

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COPING WITH ANXIETY AND PHOBIAS

Everyone worries sometimes. Everyone gets scared. These are normal, even healthy, responses to threatening situations. But if you feel extremely worried or afraid much of the time, or if you repeatedly feel panicky, consider seeking medical advice. Anxiety takes many forms. It can make you so uneasy around people that you isolate yourself, skirting social gatherings and passing up potential friendships. It can fill you with such obsessive thoughts or inexplicable dread of ordinary activities that you cannot work. Anxiety disorders can be mild, moderate, or severe, but overcoming anxiety generally takes more than just “facing your fears.” Many people need help in dealing with these problems.

But getting help has always been easier said than done. As with many mental health issues, there has long been a stigma surrounding anxiety. People are ashamed to admit to phobias and persistent worries, which seem like signs of weakness. The shame, combined with the tendency of people with anxiety to avoid others, is perhaps the biggest obstacle to relief and recovery. Without treatment, many individuals become more fearful and isolated. In extreme cases, they are so imprisoned by their anxiety that they are unable to leave home.

Sigmund Freud regarded anxiety as the result of inner emotional conflict or external danger. While these factors often contribute to anxiety, scientists now know that anxiety disorders are biologically based illnesses. Indeed, the last 30 years have transformed our understanding of anxiety. Sophisticated *brain imaging* equipment has made it possible to trace the neural pathways of fear and anxiety. In the process, scientists have discovered certain abnormalities in the brains of anxiety sufferers. Research also suggests that genes may contribute to these abnormalities. While there are still more questions than answers, our growing knowledge about anxiety has already led to safer, more effective treatments.

Anxiety disorders, which include panic attacks and phobias, are among the most common mental illnesses, affecting about 19 million American adults and millions of children. For every individual with an anxiety disorder, many more are affected by it, including spouses, children, other relatives, friends, and employers.

Many ordinary situations, such as driving through a tunnel, can trigger the symptoms of anxiety.



On the other hand, never before have there been so many therapies to help control anxiety and preserve the relationships that can be undone by it. Medications can, in many cases, reduce or eliminate anxiety symptoms. Several types of therapy, especially *cognitive-behavioral therapy*, also help control anxiety by teaching people to adopt more positive thought and behavior patterns. Some medications now being developed may even help prevent anxiety disorders in people who are genetically predisposed to them.

This report will provide up-to-date information about the causes and treatments of anxiety disorders. But we hope that it will give you something more: an incentive to seek help and feel better.

What Are Anxiety Disorders?

It's likely that if you ask any two people with an anxiety disorder to describe it, they'll paint different pictures. One person might dread speaking in public, while another is gripped by intense fear at the mere thought of getting on an airplane. Someone else might describe herself as a "chronic worrier," because she regularly frets about all sorts of things. Another experiences unpredictable episodes of panic, with shortness of breath, sweating, and chest pains. Many people would undoubtedly mention that they have trouble sleeping.

Why the broad array of symptoms? It's because anxiety disorders aren't actually a single condition, but rather a spectrum of related disorders, including panic attacks, panic disorder, phobias, obsessive-compulsive disorder, post-traumatic stress disorder, generalized anxiety disorder, anxiety due to a medical condition, and

substance-induced anxiety. (See "Anxiety Disorders at a Glance," below.) However, some of the same imbalances in brain chemistry are thought to underlie many different anxiety disorders, which helps explain why more than half of all people with one anxiety disorder also have another. While each anxiety disorder has its own set of symptoms, they also have some symptoms in common. (See "Common Symptoms," page 4.)

It's not that people with anxiety disorders have these symptoms and other people don't. At some time, most people feel afraid, tense, or even anxious enough to become short of breath. The difference is that individuals who don't have anxiety disorders experience these reactions in response to genuine threats. For example, a fire is raging in the house next door, or your car breaks down, leaving you stranded on a deserted

Table 1 Anxiety Disorders at a Glance

Type	Main Symptoms	See Page
Panic Attack	A sudden wave of intense apprehension, fearfulness, or terror, with physical symptoms such as shortness of breath, palpitations, and chest pains.	16
Panic Disorder	Recurrent panic attacks that occur suddenly and without warning, and cause persistent concern. Attacks often occur for no apparent reason.	17
Specific Phobia (Simple Phobia)	Substantial anxiety caused by exposure to a particular feared object or situation.	18
Social Phobia	Substantial anxiety caused by certain social situations or performing in front of a group.	19
Obsessive-Compulsive Disorder	Recurrent distressing thoughts and uncontrollable repetitive behaviors intended to reduce anxiety provoked by those thoughts. Symptoms last more than 1 hour a day and cause significant distress or interfere with normal functioning.	21
Acute Stress Disorder	Anxiety symptoms that last for up to 1 month following a traumatic experience.	24
Post-Traumatic Stress Disorder	Distressing thoughts, anger, and other anxiety symptoms that occur for more than 1 month following a life-threatening or severe traumatic experience.	22
Generalized Anxiety Disorder	Excessive anxiety and worry about a variety of things on most days for at least 6 months. Physical symptoms, such as muscle tension, increased heart rate, and dizziness, may also occur.	25
Anxiety Disorder Due to a General Medical Condition	Pronounced anxiety, panic attacks, obsessions, or compulsions caused by a medical condition.	26
Substance-Induced Anxiety	Pronounced anxiety, panic attacks, obsessions, or compulsions caused by a medication, drug abuse, or exposure to a toxin.	27

! Common Symptoms

The following symptoms are characteristic of all anxiety disorders:

- Irrational feelings of fear, dread, or danger
- Tension
- Worry
- Physical symptoms such as agitation, trembling, nausea, hot or cold flashes, dizziness, shortness of breath, or frequent urination

highway at 3 a.m. In such situations, anxiety can be a lifesaver, spurring you to flee the area near the burning building or to call the police for help. But people with anxiety disorders face worry and fear in ordinary, relatively harmless situations. For example, while tapping the keyboard of a computer, they may fear contracting a life-threatening virus (a sign of obsessive-compulsive disorder). They may be gripped by worry nearly every day about getting into a car accident, losing their jobs, having their children do poorly in school, or other possible but unlikely prospects (a sign of generalized anxiety disorder). People with anxiety disorders are hypersensitive to the possibility of danger, but their extreme vigilance serves no purpose. They are spinning their neurological wheels, so to speak.

It's possible to live with mild anxiety disorders. But when the anxiety is severe enough to interfere with everyday life, treatment is usually the only way to control the disorder. Treatment options include medication, psychotherapy, or both. Without treatment, it's likely that the disorder will worsen or that another anxiety disorder will develop. Treatment is also important for conditions such as depression and alcohol or drug dependence that often accompany anxiety.

Links to Depression

About 20%–30% of people with anxiety disorders also suffer from depression. Some have the two conditions simultaneously, while others have one first, recover from it, and then develop the other. Anxiety can also be a symptom of depressive disorders, and depression can be a symptom of anxiety disorders.

The two are much more closely linked than was once thought. Scientists have found that the same kind of abnormalities in *neurotransmitters* (chemical messengers) that promote depression can also trigger anxiety. For example, the brain structures that react to perceived threats are hypersensitive in some people with depression, as well as in some with anxiety disorders. Given the similarity of the two conditions, it's no surprise that most of the medications used to treat anxiety are antidepressants. ■

What If You Are Just Plain Worried?

Not everyone who suffers from frequent worry has an anxiety disorder. Perhaps you are one of the many "worried well." If you don't have an anxiety disorder, but think you worry too much, the following advice may help you lighten up.

- **Practice relaxation techniques.** Listen to music or to relaxation recordings to take your mind off whatever is worrying you. Progressive muscle relaxation, a technique in which you relax one set of muscles at a time, can also relieve tension.
- **Exercise regularly.** Studies have found that exercise improves

mood and modestly decreases anxiety symptoms. Particular exercises are less important than frequency. Exercise regularly. Aim for at least 30 minute of moderate activity on all, or most, days. (See "Exercise for Anxiety," page 37.)

- **Consider biofeedback.** If the techniques mentioned above don't do the trick, biofeedback may help.

Biofeedback helps you become more aware of your body's responses to stress and teaches you to control them using relaxation and cognitive techniques. A clinician who is experienced in biofeedback can help you do so by measuring specific body functions, such as heartbeat, and feeding them back to you in the forms of sounds or lights. (See "Biofeedback," page 37.)

Many people assume that anxiety arises from a traumatic event or overwhelming stress. While it's true that experiences such as the death of a parent during childhood or another early trauma can play a significant role, these kinds of events aren't always at the root of the problem. Not everyone who has lived through a tragedy or terrifying occurrence develops an anxiety disorder, and not everyone who develops an anxiety disorder has endured these ordeals. New research suggests that anxiety is partly genetic. Certain genetic variations may cause imbalances in brain chemistry that can predispose someone to anxiety. The biological tendency toward anxiety may be latent for years until an exceptionally stressful event triggers its expression.

Genetic Underpinnings

People with a parent or sibling who has had an anxiety disorder are at greater risk of developing one. For many years, experts debated whether this link was due to nature (a genetic predisposition that's passed from one generation to the next) or nurture (anxiety-provoking behaviors that are learned in families or are caused by stressful experiences growing up). It's now clear that these factors often interact.

Still, much is unknown, and the genetics are hardly straightforward. Researchers studying families with a history of anxiety disorders have scrutinized their genetic makeup in hope of finding certain common features. Several candidates have been identified. Some are variants of genes, while others are regions on chromosomes that seem similar. But none of these genetic traits appear uniformly in people with anxiety disorders. Therefore it's unlikely that there's any single "anxiety gene." Many genes probably work together to induce the disorder.

One Anxiety Gene Uncovered

So far, one anxiety-related gene has been identified in humans: 5-HTT. It regulates *serotonin*, a neurotransmitter that affects mood. A variation of this gene speeds the *neurons'* metabolism of serotonin, leaving less of the chemical available in the brain. Low levels of serotonin seem to be characteristic of anxiety disorders, depression, and other mental health disor-

ders. One study found that this genetic variation was more than three times more common in people with generalized anxiety disorder than in a control group. It was also more prevalent in people with obsessive-compulsive disorder.

In a 2000 study in the *Journal of Abnormal Psychology*, researchers took blood samples from 72 people to see who had the 5-HTT gene variation. The participants then breathed a carbon dioxide-oxygen mix that causes shortness of breath, a sensation that sometimes provokes fearfulness and anxiety. The test only provoked fear among those with the genetic variation. It's

important to note that none of the participants—even those with the gene variant—had symptoms of anxiety disorders before the experiment. Thus, the finding suggests that the 5-HTT gene variation doesn't cause anxiety by itself, but sets the stage for anxiety to develop in response to a sufficiently stressful situation.

More Genes Suspected

Researchers are currently investigating several other genes that may help trigger anxiety. A duplication on a region of chromosome 15 is especially common in families with high rates of panic disorder and phobia, according to a 2001 study in *Cell*. Potential genetic markers for panic disorder have also been found on chromosomes 1 and 11, and a possible marker for *agoraphobia* (see page 19) was found on chromosome 3.

Taken together, these findings amount to early evidence of a genetic basis for anxiety disorders. But because the study of genes related to anxiety is in its infancy, the particular genes involved and how their variations induce anxiety have yet to be uncovered. Thus far, no genetic tests are available to determine whether an individual is at higher risk for anxiety.

The Brain

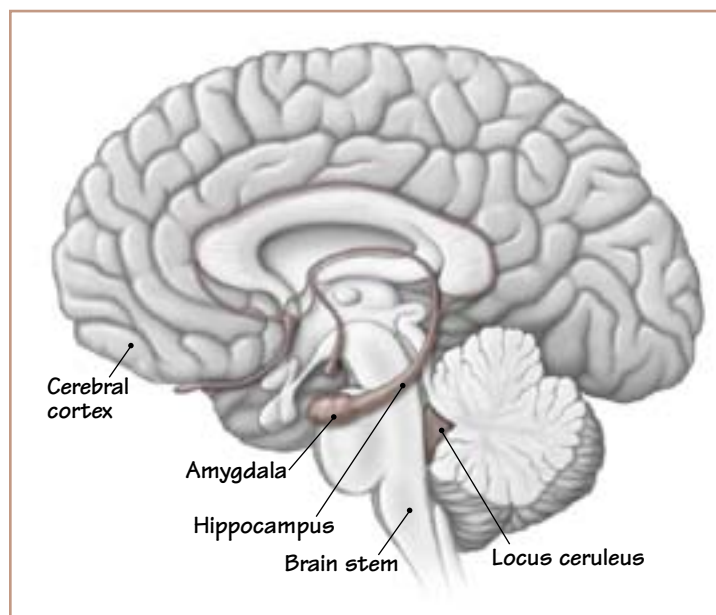
For decades, scientists have believed that anxiety results from abnormalities in brain chemistry. They based this conviction on the effects of drugs that reduce anxiety by increasing the availability of certain neurotransmitters in the brain. The first antianxiety drugs were *benzodiazepines*, which raise levels of the neurotransmitter

It's unlikely that there's any single anxiety gene. Many genes probably work together to induce the disorder.

gamma-aminobutyric acid (GABA). Later, drugs that increase serotonin levels and affect *norepinephrine* and other neurotransmitters associated with mood also proved effective. But these findings have raised even more questions. For example, what brain structures are involved? What malfunctions in the brain induce anxiety? And what role do neurotransmitters play?

Regions That Influence Anxiety

New brain imaging technologies have begun to answer some of these questions. Positron emission tomography (PET), functional magnetic resonance imaging (fMRI), and other tools have allowed scientists to observe brain activity even while an anxiety attack is occurring. These images have helped identify the structures and circuits that are active when an anxiety attack strikes. The use of this technology to study mental illnesses is new, but here's a summary of what has been discovered:



The Brain and Anxiety

Several regions of the brain influence anxiety. The amygdala is associated with emotions and coordinates the body's response to fear. The cerebral cortex evaluates data about a perceived threat and forms judgments about it, shaping the response to fear. The hippocampus processes emotions and long-term memories. The locus ceruleus helps determine which stimuli deserve attention.

Figure 1.

Amygdala. The *amygdala*, a small structure deep in the brain (see Figure 1, below), coordinates the body's fear response. The amygdala is part of the *limbic system*, a complex group of structures associated with emotions. In the face of danger, two brain circuits are activated. One circuit feeds sensory information about the danger—the sight of the burning building, the smell of the fire, and so on—to the cerebral cortex, which is the thinking part of the brain. The cerebral cortex evaluates this information and makes a rational judgment about it. For example, that judgment may determine that the fire is small, but tell you to get out of the house anyway and call the fire department.

The other circuit relays the sensory information to the amygdala, which sends impulses to the *autonomic nervous system*. This system triggers the “fight-or-flight” response even before the cerebral cortex has made sense of the information. Once activated, it increases heart rate, routes blood to muscles, releases stress hormones and glucose into the bloodstream, and spurs other responses to help you fight off or flee danger.

The amygdala stores memories of frightening and other emotional experiences. In people with anxiety disorders, the amygdala may be so sensitive that it overreacts in situations that aren't threatening. Research on animals suggests that different parts of the amygdala are activated for different anxiety disorders.

Hippocampus. Another brain structure in the limbic system, the *hippocampus* has a central role in processing emotions and long-term memories. Research has found that the hippocampus is smaller than normal in some people with post-traumatic stress disorder (see page 22). It's also smaller in some women who were abused as children, an experience that increases the risk for post-traumatic stress disorder and other anxiety disorders. But it's unclear whether the response to the trauma makes the hippocampus smaller or whether it was already small in certain individuals and its size predisposes them to anxiety disorders.

Locus ceruleus. The *locus ceruleus* is an area of the brainstem that helps determine which brain stimuli are worth paying attention to. In experiments with animals, when the lo-

cus ceruleus was electronically stimulated, the animals displayed anxiety-like symptoms. Some researchers speculate the same may be true in humans.

Brain Cell Communication

Understanding the intricate workings of neurons and neurotransmitters can help identify the sources of anxiety disorders and may lead to the development of treatments.

How Neurotransmitters Work

If you trained a high-powered microscope on a slice of brain tissue, you might be able to see a loosely braided network of neurons, or nerve cells, that send and receive messages. Stretching from each neuron are short, branch-like fibers called *dendrites* and one longer, more substantial fiber called the *axon*. At the end of the axon is the axon terminal.

Communication within and between neurons is conveyed by a combination of electrical and chemical signals. (See Figure 2, below.) When a nerve cell becomes activated, it passes an electrical signal called an action potential down the axon to the axon terminal, where chemical messengers known as neurotransmitters are stored. The electrical signal releases neurotransmitters into the space between the first neuron and the dendrite of a neighboring one, which

is called the *synapse*. As the concentration of a neurotransmitter rises in the synapse, neurotransmitter molecules begin to bind with receptors embedded in the membranes of the two nerve cells.

The release of a neurotransmitter from one neuron can activate or inhibit a second neuron. If the signal is activating, or excitatory, the message continues to pass further along that particular neural pathway. If it's inhibitory, the signal will be suppressed. The neurotransmitter also affects the neuron that released it. Once a certain amount of the chemical has been released, a feedback mechanism instructs the neuron to stop pumping it out and to start bringing it back into the cell. This process is known as reabsorption or reuptake. Enzymes break down the remaining neurotransmitter into smaller molecules.

When the System Fails

At optimal levels, the neurotransmitters of the central nervous system enable people to feel, learn, and move—in general, to function properly. But these complex systems can go awry. For example, receptors may be oversensitive or insensitive to a specific neurotransmitter. The response to its release, therefore, could be excessive or inadequate. The supply of a neurotransmitter may be inadequate because a cell pumped out too little or an overly efficient reuptake mopped up too much before the chemical had a chance to bind to the receptors on

How Neurons Communicate

- ① Electrical signal travels down neuron
- ② Chemical neurotransmitter is released
- ③ Neurotransmitter binds to receptor site
- ④ Signal continues into new neuron
- ⑤ Reuptake occurs; neurotransmitter is transported back into the cell that released it

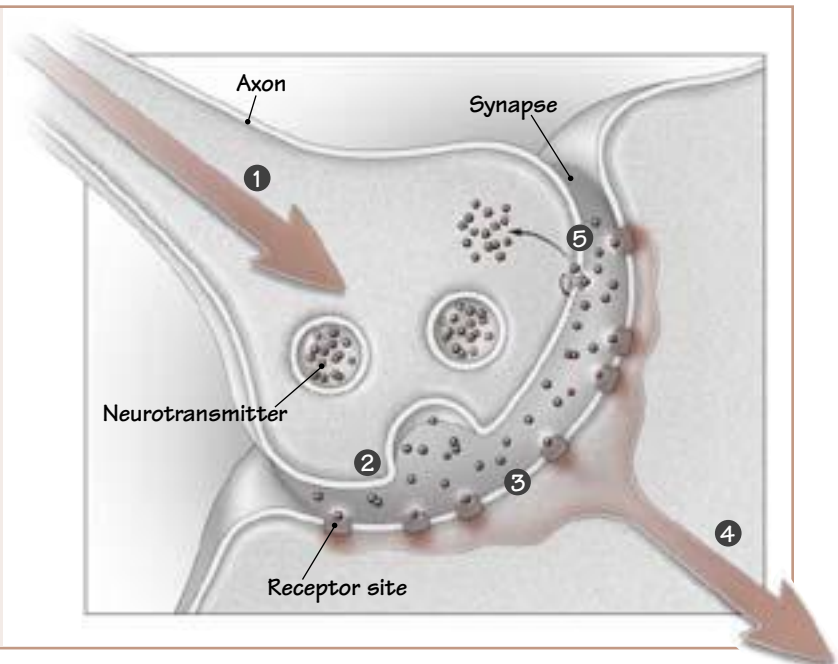


Figure 2.

other neurons. (See Figure 3, below.) Any of these system failures can significantly affect mood and anxiety.

Neurotransmitters and Anxiety

The following neurotransmitters are known to play a role in anxiety:

Gamma-aminobutyric acid (GABA): an amino acid known as an inhibitory neurotransmitter because it's thought to hinder the activity of other neurotransmitters; it may help quell anxiety.

Serotonin: helps regulate mood, sleep, and appetite, and inhibits pain; people with anxiety are believed to have low levels of serotonin in the brain. Low levels of serotonin are also linked to depression.

Norepinephrine: constricts blood vessels and raises blood pressure; it plays a role in sensitization,

fear conditioning, and stress response. Excess norepinephrine may trigger anxiety. Most neurons that release norepinephrine are located in the locus ceruleus, a part of the brain that may induce anxiety when it malfunctions.

Dopamine: perhaps best known for being essential to movement. Dopamine, when not available in sufficient quantities, leads to the movement difficulties characteristic of Parkinson's disease. Dopamine also seems to influence motivation and reward.

Although there's little evidence linking dopamine to anxiety in people, some research suggests a connection to social phobia. For one thing, people who take medications that block dopamine sometimes develop social phobia. In addition, dopamine-enhancing antidepressants, such as monoamine oxidase (MAO) inhibitors, are more effective in treating social phobia than tricyclic antidepressants, which have little effect on dopamine.

On the other hand, too much dopamine may contribute to obsessive-compulsive disorder in some patients. The antidepressant bupropion (BuPar), which blocks dopamine slightly, has been helpful for some people with obsessive-compulsive disorder.

Hormones and the HPA Axis

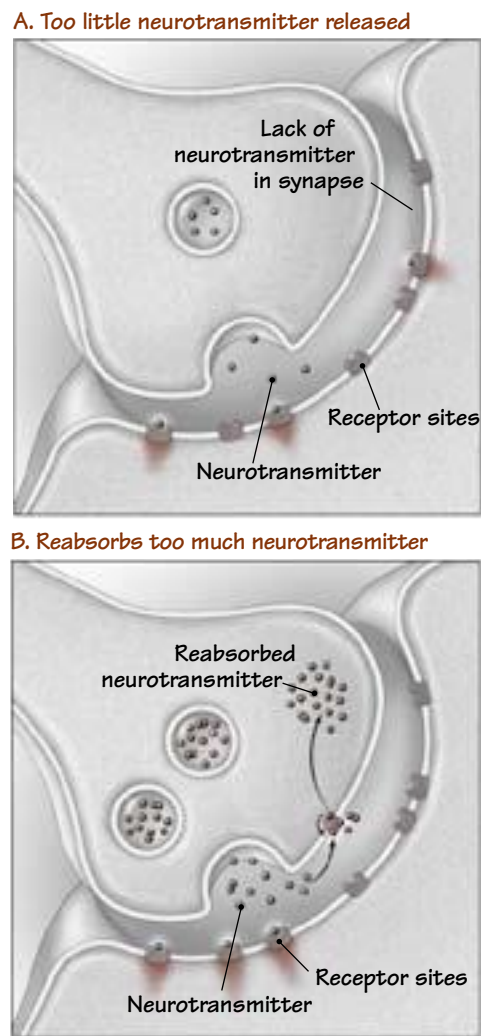
While neurotransmitters help transmit signals along nerve pathways, other chemicals, called hormones, carry messages to organs or groups of cells throughout the body. Imbalances of certain hormones increase the risk for anxiety and induce anxiety symptoms.

These hormones circulate in a pathway called the *hypothalamic-pituitary-adrenal (HPA) axis*, which influences mood. The *hypothalamus* is a part of the brain above your brainstem, the *pituitary gland* sits below your brain, and the *adrenal glands* are located atop

Failures in Neuron Communication

Failures in the way neurons communicate can affect mood and anxiety. There are several causes of such failures, including the two shown here. As the first illustration reveals, sometimes the cell that is releasing the signal doesn't release enough of the neurotransmitter. Or, as the second illustration shows, the neuron releases enough of the neurotransmitter, but reabsorbs too much of it too quickly, so it doesn't bind adequately to the receptor sites of the neighboring cell.

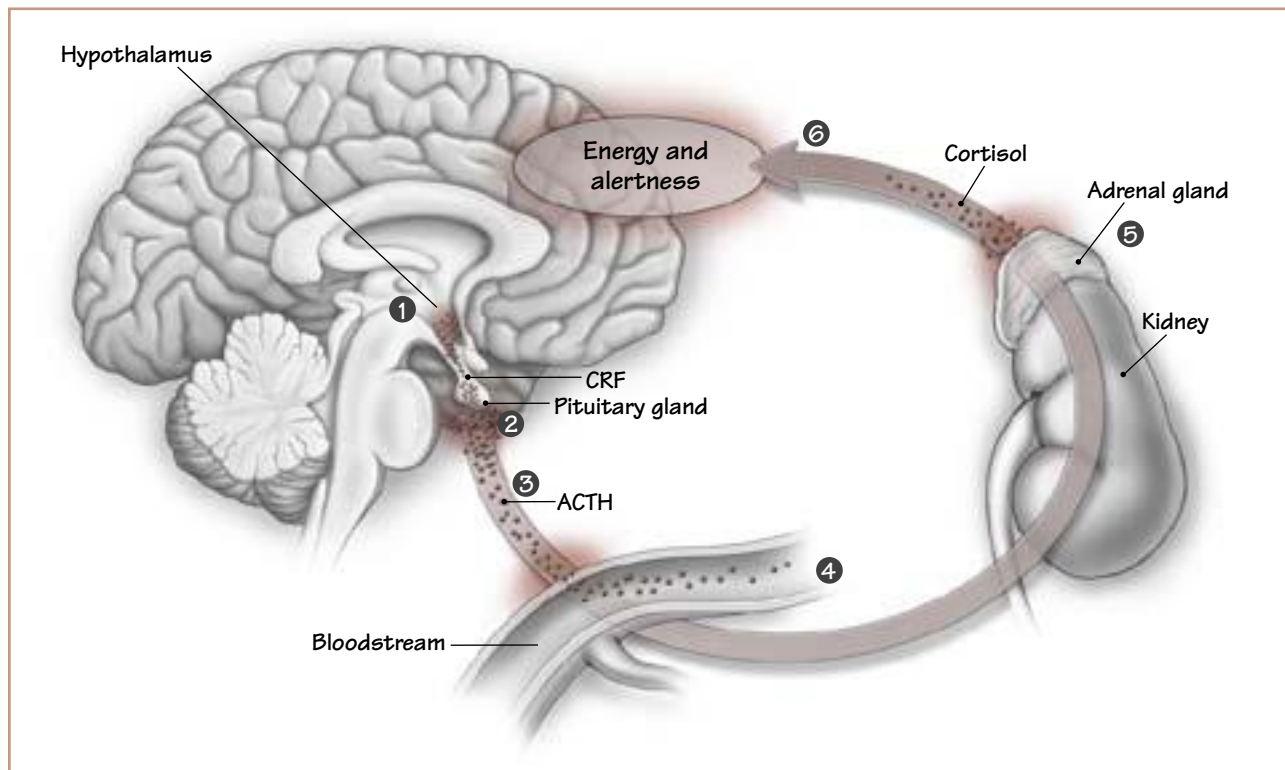
Figure 3.



your kidneys. Together these bodies govern a multitude of hormonal activities in the body and may play a role in anxiety disorders. The autonomic nervous system, which triggers the fight-or-flight response and directs functions throughout the body, starts in the hypothalamus. (See Figure 4, below.)

The hypothalamus secretes *corticotropin-releasing factor (CRF)*, a hormone vital to rousing your body when a physical or emotional threat looms. This hormone follows a passageway to your pituitary gland, where it stimulates the secretion of adrenocortico-

tropic hormone (ACTH), which pulses into your bloodstream. When ACTH reaches the adrenal glands, it triggers the release of *cortisol*, which is a glucocorticoid, or steroid, hormone. The rise in cortisol prompts a cascade of reactions in your body, including a rush of energy and alertness. This enables you to respond quickly to a threat. Normally, a feedback loop allows the body to disable these defenses when the threat passes. But in some cases, the floodgates never close properly and cortisol levels rise too often or simply stay high.



Understanding the HPA Axis

When you're faced with a threat, the hypothalamic-pituitary-adrenal (HPA) axis allows you to respond quickly. However, in some people with anxiety disorders, this system remains in overdrive.

- ① The hypothalamus secretes the hormone corticotropin-releasing factor (CRF), which rouses the body.
- ② CRF travels to the pituitary gland.
- ③ The pituitary gland secretes adrenocorticotropic hormone (ACTH).
- ④ ACTH circulates in the bloodstream, traveling to the adrenal gland.
- ⑤ The adrenal gland releases cortisol, another hormone.
- ⑥ Cortisol stimulates many reactions in your body, including a rush of energy and alertness.

Figure 4.

Research suggests that having the HPA axis in persistent overdrive may lay the groundwork for depression as well as anxiety. Evidence points to excess CRF as the main culprit. Some studies have found that people with anxiety disorders have increased levels of CRF in the cerebrospinal fluid, a clear liquid surrounding the brain and spinal cord. Research sponsored by the National Institute of Mental Health found that individuals with post-traumatic stress disorder have above average levels of CRF. A recent study also found higher than normal levels of pituitary and adrenal stress hormones, such as cortisol and ACTH, in the bloodstreams of women who had been physically or mentally abused as children. The levels were especially high in women who were experiencing symptoms of anxiety and depression at the time of the study.

This research suggests a biological explanation for why early stress or trauma increases the risk of devel-

oping an anxiety disorder in adulthood. Early trauma may cause a lasting increase in CRF and other stress hormones, and the pumped-up levels of these hormones may keep the HPA axis and the autonomic system in a state of alert. These findings also point to a possible treatment: drugs that block CRF receptors may help relieve or even prevent anxiety disorders related to early stress. No such drugs are available now, but some are under development.

Life Experiences

People who are extremely anxious may think that a trying experience has given them reason to feel that way. And to a large degree, they're right.

Lingering Effects

As mentioned earlier, a traumatic event is often a trigger for acute stress disorder, post-traumatic stress disorder, and specific phobias. Either of the two stress disorders usually begins within days of a terrifying experience. While phobias may not develop immediately after a traumatic event, they can often be traced back to one. For example, many adults who fear dogs were attacked by dogs as youngsters.

There is growing evidence that highly stressful experiences, especially those that occur early in life, increase the risk for anxiety by impairing a person's ability to negotiate emotional bumps in the road later on. Such experiences include abuse or neglect, emotional deprivation, and enduring the loss of or separation from one's mother. Studies show that rat pups separated from their mothers for just several minutes early in life have a much greater startle response than other pups when faced with stress several months later.

Traumas seem to alter the brain in a way that makes it more susceptible to anxiety. In addition to making the HPA axis hypersensitive (see "Hormones and the HPA Axis," page 8), they may also change the structure of the brain. The hippocampus, which works closely with the amygdala (the brain's "fear" center), is smaller in people with post-traumatic stress disorder, as well as those who have endured extreme, prolonged stress. (See "Hippocampus," page 6.)

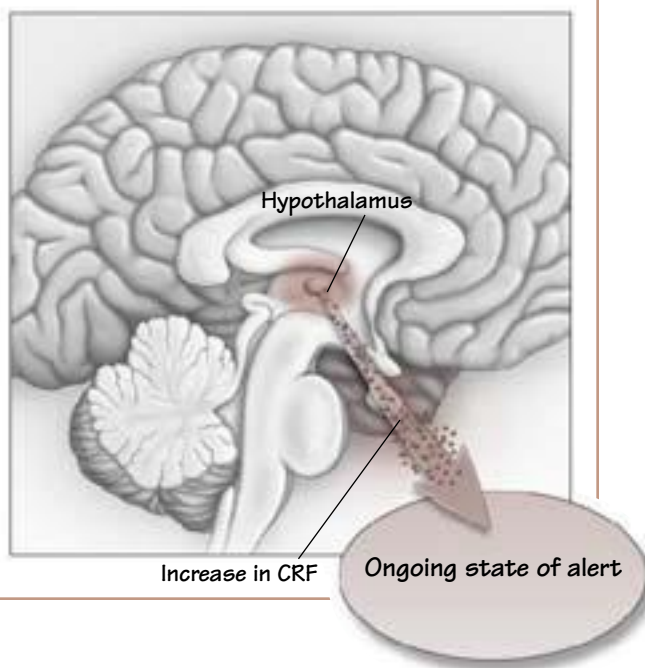
Acting in Concert

As mentioned earlier, not everyone who has survived a traumatic event develops an anxiety disorder.

Early Emotional Trauma May Alter Hormone Levels

Some research has found that individuals with anxiety disorders have increased corticotropin-releasing factor (CRF) levels. Scientists believe that an emotional trauma during childhood can cause a lasting increase in CRF, which may keep the body in a heightened state of alert.

Figure 5.



That's where an individual's genes and brain chemistry come in. One theory is that some people are genetically or biologically more susceptible to anxiety, but that it often takes a traumatic life event to serve as the catalyst. In the study of the 5-HTT gene (see "One Anxiety Gene Uncovered," page 5), people with a particular gene variation all developed anxiety symptoms only *after* being faced with a fear-inducing situation.

In some cases, the trauma or stress is not apparent. Some people seem to develop an anxiety disorder "out of the blue." But when they seek help, a mental health professional discovers clues suggesting an undiagnosed anxiety disorder experienced in childhood. For example, a 20-year-old with generalized anxiety disorder (see page 25) may have been a 3-year-old who had hard time being away from her parents when they left for work (separation anxiety). However, trauma is not always a trigger. Some people who develop an anxiety disorder have not endured particularly stressful events.

Personality

Personality is also important. Some personality traits, such as shyness, are inherited. Both shyness and a characteristic known as anxiety sensitivity increase the risk of developing certain anxiety disorders. Avoidant personality, which is a personality disorder, also seems to be a risk factor.

Jerome Kagan, a Harvard University psychologist, has found that children who are inhibited are more likely to develop anxiety. By adolescence, 61% of youngsters who had been inhibited as toddlers had social anxiety, or social phobia, compared with just 27% of those who had been uninhibited. The research points to a possible explanation. Shy people have certain physiological traits, such as a heightened excitability of the amygdala (see page 6). In people with certain anxiety disorders, the amygdala also tends to be overly reactive. It could be that a hypersensitive amygdala makes people susceptible to anxiety.

Anxiety Sensitivity

Anxiety sensitivity is another personality trait that increases the risk for anxiety disorders, particularly

panic disorder. People with anxiety sensitivity believe that the physical sensations associated with anxiety are dangerous. For example, they think that heart palpitations might cause a heart attack. Anxiety sensitivity can show up in children as young as age 6. It can be innate or learned though observation or misinformation. For example, anxiety sensitivity could arise from a parent telling a child that too fast a heartbeat could be fatal.

Research shows that cognitive-behavioral therapy can help people with anxiety sensitivity temper their anxious personalities and possibly prevent panic disorder. Cognitive-behavioral therapy aims to teach people that their anxiety-related sensations are harmless. For example, a patient may be asked to hyperventilate for a few minutes and then observe that the ensuing dizziness and palpitations don't

have catastrophic results. Anyone with a high level of anxiety sensitivity (as measured, for example, by the Anxiety Sensitivity Index, a brief questionnaire) may benefit from psychotherapy directed specifically at that sensitivity.

Avoidant Personality Disorder

Avoidant personality disorder also increases the risk of developing anxiety. People with personality disorders see the world differently and therefore behave differently from what is expected in their culture. They are often inflexible and cope with the world in ways that are counterproductive.

Those with avoidant personality disorder are hesitant, tense, fearful, self-deprecating, and exceedingly sensitive to social rejection. They see criticism and mockery everywhere. Their low threshold for fear is coupled with a heightened arousal of the autonomic nervous system, which induces the fight-or-flight response. To prevent the rejection that they anticipate, people with avoidant personalities narrow their interests and range of activities. These defenses set the stage for social phobia.

Therapy can help people with avoidant personality disorder reduce their extreme behaviors and possibly their tendency to develop anxiety. Various therapeutic approaches, including cognitive-behavioral therapy, can help them be more aware of how their habits affect their lives and can aid in modifying those habits. ■

Cognitive-behavioral therapy can help people temper their anxious personalities and possibly prevent panic disorder.

Gender Differences in Anxiety

According to the National Institute of Mental Health, anxiety disorders generally affect women far more often than men. For example, over the course of a lifetime, the prevalence of generalized anxiety disorder is 6.6% in women, but just 3.6% in men. Women are also more prone to panic disorder, specific phobia, social phobia, and post-traumatic stress disorder. Depression and mood disorders, which often occur with anxiety, are likewise more prevalent among women.

Potential Factors

The nature and causes of such gender-based differences are the subject of considerable research. Scientists are examining hormonal and biological factors, as well as differences in experiences.

Anxiety in Men

Although anxiety affects women in greater numbers than men, it's by no means strictly a female problem. At some point, 1 in 5 men will develop an anxiety disorder.

For the most part, the symptoms of anxiety disorders are the same for men and women, but a recent study reported by National Institute of Mental Health found some intriguing differences in social phobia. Men with severe social phobia were more likely to avoid calling someone they didn't know very well, whereas women were more likely to feel self-conscious. Women also had a greater tendency to report fear of authority figures and fear of being observed. Although social phobia is more common in women, men are more likely to seek treatment for it.

Anxiety can cause impotence in men. About 15% of cases of impotence have a psychological basis, such as anxiety, stress, or problems in the relationship. Medications such as sildenafil (Viagra) and sex therapy can often help men overcome anxiety-related sexual difficulties.

The role of abuse. Girls and women are more likely to be victims of physical or mental abuse, and this experience is a known risk factor for post-traumatic stress disorder. Childhood abuse also seems to cause long-term changes in brain chemistry and structure. These changes may predispose such individuals to anxiety disorders. (See "Hormones and the HPA Axis," page 8.) One study found that sexually abused women also have abnormal blood flow in the hippocampus, which processes memories and emotions. (See "Hippocampus," page 6.) Animal studies reveal that stress can actually harm cells in the hippocampus.

Hormones. Gender differences in the prevalence of anxiety disorders may also have something to do with differences in sex hormones. Scientists know that estrogen interacts with serotonin, but they're just beginning to tease out the relationship.

A study using rats found that stressful events induced different hormonal responses in females and males. Among the female rats, there was a rise in estradiol, a form of estrogen. The increased estradiol appeared to impair the rats' ability to learn. In male rats, stressful events stimulated an increase in adrenal steroids, which actually enhanced the rats' ability to learn. Thus, when subjected to stress, male rats seemed to cope better than females. However, this study didn't determine whether female rats are more easily stressed than males, and its results don't necessarily apply to humans. ■

Anxiety in Children and Teenagers

Childhood is, by its very nature, marked by certain fears—of monsters, of the dark, of being left with a new babysitter, of starting school, and so on. As children get older they outgrow these fears and may develop new ones, like the fear of failing a test or of being embarrassed when called on in class. But apart from these normal developmental fears, many children also suffer from anxiety disorders.

The prevalence of anxiety disorders in children is greater than was previously thought. Until the 1994 publication of the Diagnostic and Statistical Manual-IV (DSM-IV), a handbook of psychiatric conditions, children with persistent and significant fear of social situations were said to have either avoidant disorder of childhood or adolescence, which is a kind of personality disorder, or overanxious disorder of childhood. But the DSM-IV eliminated these two categories when it became clear that the symptoms of avoidant disorder of childhood or adolescence were actually those of social phobia and the symptoms of overanxious disorder were the same as those of generalized anxiety disorder.

Separation Anxiety Disorder

Some anxiety disorders start in childhood or affect only children. The prime example is separation anxiety,

an extreme difficulty being away from home or loved ones. It's the most common anxiety disorder in preadolescent and younger children, affecting 2%–4% of them. Many infants and toddlers cry when their parents leave for work or go out for the evening, but children with separation anxiety disorder fear that their parents will be harmed if they go out. They also have nightmares about separation and become extremely agitated at the thought of being away from home. (See "Symptoms of Separation Anxiety Disorder," below.) Although children may eventually "outgrow" separation anxiety disorder, they have a greater risk of developing a significant anxiety disorder as teenagers and adults.

Children Affected by Anxiety Disorder



According to the Surgeon General's report on mental health, 13% of children suffer from an anxiety disorder.

Full Range of Anxiety Disorders

All the anxiety disorders that affect adults can also affect children. Some disorders begin in childhood. For example, obsessive-compulsive disorder usually starts around ages 6–15 in boys, although for females, it usually begins in early adulthood. Social phobia also tends to start early.

Children often differ from adults in the particular focus of their anxieties. Adults with generalized anxiety disorder, for example, usually worry about a variety of ordinary things, such as household finances, family members' health, and responsibilities at home or at



Symptoms of Separation Anxiety Disorder

Many children become anxious when they must be away from home or from their parents, but those with separation anxiety do so regularly and excessively. The worry lasts for at least 4 weeks and causes significant distress or even impairs the child's ability to function normally. Separation anxiety starts before age 18. It consists of at least three of the following symptoms:

- Excessive distress when the child is away from home, separated from his or her parents or other significant loved ones, or anticipates such a separation
- Excessive fear or reluctance to be alone, without loved ones at home, or without important adults in other places
- Extreme worry about losing loved ones, or having them come to harm
- Reluctance or refusal to go to sleep without being near a loved one or to sleep away from home
- Persistent, excessive worry that a terrible event will lead to a separation from loved ones, for example, getting lost or being kidnapped
- Recurring nightmares about separation
- Reluctance or refusal to go to school or elsewhere because of fear of separation
- Complaints of physical symptoms (such as headaches, stomachaches, nausea, or vomiting) when separation occurs or is anticipated

work. Children with the disorder worry mainly about their performance in school or sports, even when their competence isn't being evaluated.

Differences in maturity also play a role. For example, adults with obsessive-compulsive disorder are usually aware that their symptoms are irrational and strange, even though they can't stop them. But children lack this perspective and don't question the validity of their fears or the compulsive rituals they follow to cope with these thoughts.

Because experts have only recently recognized that children are susceptible to the full range of anxiety disorders, they have undertaken few studies that assess how children respond to various treatments. The mainstays of treatment for adults, such as cognitive-behavioral therapy (*see page 34*) and antidepressants, are also used for children. But controlled trials of these therapies are just beginning to look at their long-term benefits for children and teens, as well as how they might be made more effective for youngsters. ■

Anxiety and Aging

Anxiety disorders are the most common mental health disorders among older adults. Approximately 11% of people age 55 or over suffer from an anxiety disorder, while less than 4% experience major depression. Although most anxiety disorders start in early adulthood, they tend to last well into the later years. In addition to enduring anxiety disorders from their youth, older adults become increasingly susceptible to anxiety that's caused by illness or a medication. That's because illness and the need for medication become more common with age. (See "Anxiety Disorder Due to a General Medical Condition," page 26, and "Substance-Induced Anxiety Disorder," page 27.)

Anxiety in older adults has received relatively little scientific attention. Most of what's known comes from studies of young and middle-aged adults, but the findings on anxiety medications don't all hold true for older people. Age-related changes in the absorption and metabolism of drugs tend to make drugs linger longer in the body, increasing the risk for harmful effects even at doses considered safe for younger people. In addition, older adults are more likely to use medications for a variety of conditions, and some of these drugs can interact with anxiety medications.

Because of the greater risk of side effects, doctors often prescribe antianxiety drugs in lower doses or recommend different therapies. Benzodiazepines (see page 33) are avoided whenever possible because they cause more side effects, such as sedation and impaired cognition, than some newer drugs, such as

bupirone (BuSpar) (see page 34). If benzodiazepines are used, the best choices are the short-acting versions, such as lorazepam (Ativan), oxazepam (Serax), or temazepam (Restoril), which don't linger in the body as long as long-acting ones, for example, diazepam (Valium), clonazepam (Klonopin), or chlor-diazepoxide (Librium).

Bupirone is thought to be safer than the benzodiazepines, but its effectiveness hasn't been studied as thoroughly. It relieves anxiety symptoms as well as the benzodiazepines in older adults, but doesn't cause sedation or cognitive impairment. Equally important, it doesn't lead to adverse interactions when taken with a variety of drugs commonly used by older adults, including certain heart medications and drugs to control blood pressure.

Preliminary studies have found that cognitive-behavioral therapy (see page 34) is effective for older individuals with panic disorder and social phobia. When used along with medication, it may reduce the amount of time the drug is needed. For older people who can't tolerate antianxiety medications, this form of therapy can be used by itself. ■

Anxiety Disorders in Older Adults



Approximately 11% of adults age 55 or over have an anxiety disorder.

As the need for medication grows more common with age, so too does the risk for medication-induced anxiety.



Types of Anxiety Disorders

Consider this hypothetical college student. When she sees two people whispering to one another, she immediately assumes that they're saying bad things about her. Her hypersensitivity to criticism is so great that she's terrified of speaking in public. When she has to give a class presentation, her heart beats rapidly, and she breaks into a sweat. She's so afraid of missing deadlines that she often lies awake worrying how she's going to get everything done. In addition, she's afraid of getting into an accident when she drives in the rain.

The diversity of these symptoms suggests a variety of anxiety disorders. It also underscores the need for careful detective work by an experienced professional as the surest way to an accurate diagnosis. Excessive sensitivity to criticism is a sign of social phobia. Fear of a particular, nonsocial thing (like driving in the rain) usually signals a specific phobia. But this person fears and dreads a lot of things, which would seem to indicate generalized anxiety disorder.

The distinctions among the many anxiety disorders are subtle, so it can be a challenge for even experienced clinicians to diagnose them. To further complicate matters, as many as half of those with anxiety disorders have at least two disorders. They may co-exist, or one disorder may emerge many years after another has gone into remission. Yet making an accurate diagnosis is essential because each disorder requires a different therapeutic approach.

What follows is a detailed overview of each type of anxiety disorder: what it feels like; its symptoms, prevalence, and possible causes; and methods of treatment. This discussion is not a substitute for a professional diagnosis. It's simply designed to help you understand the main features of each disorder and current treatments. General categories of treatments are mentioned here, but specific medications and psychological therapies are discussed in depth later (see "Treating Anxiety," page 29).

Panic Attack

The experience: A woman, age 65, is driving over a bridge when she's gripped with fear. She gets palpitations and chest pains and begins to sweat. She feels as though she's about to suffocate, and is certain she's

going to die. She screams, and the friend sitting next to her in the car reaches over and grabs the steering wheel. The passenger manages to pull the car over safely. The attack passes after about 10 minutes, but is so frightening that the woman calls her doctor. After performing a physical exam and finding her otherwise healthy, the doctor tells her that she had a panic attack and recommends a psychiatric consultation.

! Symptoms of a Panic Attack

- Sudden fear or terror and a sense that a catastrophe is imminent
- Shortness of breath, sweating, palpitations, chest pain, and a smothering sensation
- Fear of going crazy or being out of control
- Often triggered by a particular situation, such as riding in an elevator, but may also occur spontaneously

Symptoms: Sudden, extreme apprehension, fear, or terror, often associated with feelings that a catastrophe is imminent. Physical symptoms include shortness of breath, palpitations, chest pain, sweating, a sensation of smothering, and fear of going crazy or losing control. During panic attacks, individuals may feel so dissociated from the world, and even from themselves, that they may think they're losing their minds and are out of touch with reality. But panic attacks, in and of themselves, are not a sign of psychosis—once the panic attack passes, the person no longer feels "crazy" or out of control.

A panic attack usually lasts 5–30 minutes, but it can continue for as long as several hours. Though panic attacks typically occur during the day, they can also rouse someone from deep sleep. Because they cause symptoms throughout the body, panic attacks can be mistaken for neurological, gastrointestinal, cardiac, or pulmonary illnesses.

A panic attack can be an isolated event, or may occur repeatedly. When people have more than one panic attack, they are often triggered by a particular situation. Some people develop anticipatory anxiety.



ety when they are in situations that have induced panic attacks before, such as driving or riding over a bridge, shopping in a crowded store, or waiting in line. The common denominator for such panic-inducing situations is that they make the individual feel as though he or she is in danger and unable to escape. A panic attack can also be a symptom of another anxiety disorder, such as panic disorder, specific phobia, post-traumatic stress disorder, or generalized anxiety disorder. In these cases, however, a panic attack is one of many symptoms.

Not everyone who has panic attacks has, or will go on to develop, panic disorder (*below*). For panic disorder to be present, you must have repeated, unexpected panic attacks, and these attacks must cause persistent worry about having further attacks or significant changes in behavior.

Cause: The underlying biological cause of panic attacks is not known. However, researchers theorize that it involves abnormalities in the areas of the brain responsible for interpreting potential threats, such as the amygdala, locus ceruleus, and hippocampus. Imbalances of the neurotransmitters norepinephrine and serotonin may also play a role.

Prevalence: At least 7% of people will have a panic attack at some point in their lives.

Who's at risk: People with a current or past anxiety or mood disorder are at greater risk for panic attacks. Use of stimulant medications, such as methylphenidate (Ritalin), as well as caffeine and cocaine can also promote panic attacks.

Effective treatments: For a single attack, the best treatment is cognitive-behavioral therapy with benzodiazepines (*see page 33*) used as needed.

Panic Disorder

The experience: A woman, age 52, is walking down the street on her way to work when she's suddenly stricken with terror. She trembles, becomes hot and sweaty, has chest pains, and feels like she can't breathe. The attack passes after about 10 minutes, but the woman has had four similar spells in the past 6 months. Sometimes the attacks occur in stressful situations, but often they begin for no apparent reason. One even wakes her in the middle of the night. She's increasingly worried that she'll have another attack, so she avoids situations that she fears might trigger them. Eventually, she seeks help from a psychiatrist, who diagnoses panic disorder.

About one-third of those with panic disorder develop agoraphobia, an extreme form of public avoidance.

Symptoms: Panic attacks (*see page 16*) that strike suddenly and repeatedly without warning. These attacks often occur for no apparent reason. In addition, they are followed by at least 1 month of intense worry about having another attack or about the consequences of the attack (for example, losing control or having a heart attack). Often those affected will become anxious about having panic attacks in certain public places or situations where they have had them before. This causes them to

deliberately avoid those situations or places. About one-third of those with panic disorder develop agoraphobia, an extreme form of public avoidance. Many people with agoraphobia grow so afraid of being out in public that they become housebound.

Two-thirds of those with panic disorder also have other psychiatric disorders. About half experience an episode of major depression, which may come either before or after

the first panic attack. Recent studies suggest that having panic disorder along with a mood disorder, personality disorder, or alcoholism may increase the risk of suicide.

Cause: Panic disorder has both biological and psychological causes. Because the disorder runs in families, researchers are examining several genes that might contribute to its development.

Some experiments suggest that panic disorder is the result of a hypersensitivity to brain changes that transmit warning messages. In these experiments, panic attacks were induced in susceptible people with high doses of a stimulant like caffeine, which activates the sympathetic nervous system (a part of the autonomic nervous system). The sympathetic nervous system transmits signals to all parts of the body to prepare it for physical action,

Symptoms of Panic Disorder

- Persistent worry about having another panic attack or altering behavior to avoid having more attacks
- Panic attacks not tied to a particular situation; can occur unexpectedly
- Sudden fear or terror and a sense that a catastrophe is imminent
- Chest pains, shortness of breath, sweating, palpitations, and a smothering sensation
- Fear of going crazy or getting out of control

known as the “fight-or-flight” response. It speeds heart rate, narrows blood vessels, and raises blood pressure.

In most people, large amounts of caffeine produce some of the physical symptoms of panic, such as increased heart rate. But among individuals with panic disorder, too much caffeine can trigger a full-blown panic attack. In similar experiments, deep breathing caused by strenuous exercise or inhaling air with a high concentration of carbon dioxide provoked attacks in people with panic disorder. The brain seemingly misinterprets deep, rapid breathing as a sign that the body is in trouble and triggers a stress response.

Researchers have found specific abnormalities in the brain that might cause panic. One theory is that faulty brain receptors don’t respond to the body’s anxiety-reducing chemicals, naturally occurring benzodiazepines. Some research suggests that panic disorder may involve an abnormality in the limbic system. Brain images of people having a panic attack show abnormal activity around the hippocampus, a key element in the limbic system. (See “Hippocampus,” page 6.)

Psychological factors are also important because a major symptom is the fear of having more panic attacks. Individuals become conditioned to anticipate the attacks. This anticipation produces anxious thoughts, which may induce panic attacks. Researchers think the amygdala (see page 6) may play a role in anticipatory anxiety and are studying this part of the brain, where fear conditioning and other forms of unconscious emotional learning occur.

Prevalence: Panic disorder affects about 3% of the population.

Who’s at risk: Women are twice as likely to suffer from panic disorder as men, and they are three times as likely to have agoraphobia. Someone who has a close relative with panic disorder has a 10%–20% chance of developing the condition, while someone whose identical twin has panic disorder has a risk of 30%. The disorder usually begins during late adolescence or early adulthood.

Other factors predispose people to panic disorder. One is anxiety sensitivity, a personality trait that can be identified in children as young as age 6. People with anxiety sensitivity (see page 11) believe that the physical sensations associated with anxiety, such as dizziness and shortness of breath, are life threatening. There also seems to be a link be-

tween high blood pressure and panic disorder. In a study published in the *American Journal of Medicine*, more than a third of people with high blood pressure also had panic disorder, a rate that’s far higher than that of the general population. The reason for the association isn’t known. It may be that adrenaline surges during panic attacks might raise a person’s blood pressure or that the two conditions have the same underlying cause.

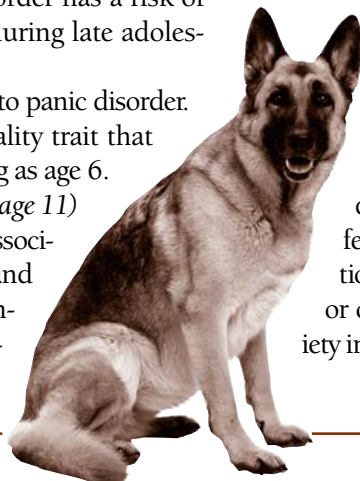
Effective treatments: *Selective serotonin reuptake inhibitors (SSRIs)* are first-line treatments. All SSRIs are comparable in effectiveness. Because these antidepressants can take 3–8 weeks to work, they are often combined with a short-course of one of the benzodiazepines, which are anti-anxiety drugs that work quickly to relieve panic disorder. SSRIs are the first choice because for many people they have fewer and less severe side effects than other medications. Tricyclic antidepressants or monoamine oxidase (MAO) inhibitors are used when SSRIs don’t work. (See “Medications for Anxiety Disorders,” page 31.)

Cognitive-behavioral therapy can be helpful for those who fear future panic attacks or who avoid situations or places that they think may trigger an attack. The specific combination of treatments will depend, to a large degree, on the individual’s other mental health conditions, if any. Studies show that medication, cognitive-behavioral therapy, or a combination of both help 70%–90% of people with panic disorder.

Specific Phobia (Simple Phobia)

The experience: A man, age 31, was bitten by a dog at age 5 and had to be hospitalized. The experience was so terrifying that even now, he is frightened when he sees or hears a dog. He crosses the street to avoid someone walking a dog and, whenever possible, steers clear of homes with dogs. But now that he’s dating a woman with a dog, his fear has become a significant problem. A therapist diagnoses specific phobia.

Symptoms: Extreme fear of situations that pose little or no danger or that are no more dangerous than other situations that don’t induce fear. Common phobias include fear of flying, heights, animals, insects, injections, and the sight of blood. Facing the situation or object that induces the phobia produces anxiety immediately, sometimes in the form of a panic



! Symptoms of Specific Phobia

- Extreme fear of animals, objects, or situations that pose no significant threat
- Encountering the particular animal, object, or situation produces anxiety immediately
- Exposure may also trigger a panic attack, which is marked by shortness of breath, sweating, palpitations, chest pain, or a smothering sensation
- Altering behavior to avoid the fear-provoking object or situation

attack. Children may cry, have tantrums, freeze, or cling to an adult. Although adults with phobias realize that their fears are excessive or unreasonable, they try to avoid the situations that provoke them. They may refuse to fly in an airplane or visit the home of a friend who has a dog. But this avoidance may interfere with their ability to function normally at work, at school, or in social situations. Many people with this condition also have social phobia, a fear of social situations. (See “Social Phobia,” at right.)

Cause: Traumatic events often lead to specific phobias. Genes are also believed to play a role because the tendency to develop specific phobias runs in families.

Prevalence: More than 10% of people have specific phobias.

Who’s at risk: Women face a slightly higher risk than men. Individuals who have a close relative with a specific phobia are at higher risk. A terrifying or deeply troubling experience, as well as a genetic predisposition, increases the likelihood of developing specific phobia.

Effective treatments: The main treatment is a form of behavioral therapy called desensitization, also known as exposure therapy, in which people are gradually exposed to the source of their phobia until it no longer scares them. Relaxation and breathing exercises can also reduce symptoms. No medication has proved effective in controlling specific phobias, but antianxiety drugs may help. For example, if you’re afraid of flying, an antianxiety medication can control your fear enough so that you can get on the plane.

Social Phobia (Social Anxiety Disorder)

The experience: A girl, age 17, is invited to a dinner party at the home of her brother’s future in-laws, but the prospect fills her with such intense dread that she doesn’t think she can bear it. Although she knows it’s

Phobias from A to Z

You’ve probably heard of arachnophobia, thanks in part to the movie with the same name, and claustrophobia, but what about gamophobia or phobophobia? Here’s a brief introduction to phobias, from the familiar to the more obscure.

Acrophobia: Fear of heights

Agoraphobia: Fear of being in a public place

Ailurophobia: Fear of cats

Androphobia: Fear of men

Anthropophobia: Fear of human companionship



Arachnophobia: Fear of spiders

Bathophobia: Fear of deep places

Claustrophobia: Fear of enclosed spaces

Cynophobia: Fear of dogs

Entomophobia: Fear of insects

Ereuthophobia: Fear of blushing

Gamophobia: Fear of marriage



Gephyrophobia: Fear of crossing a bridge

Gymnophobia: Fear of seeing a naked person

Gynophobia: Fear of women

Hedonophobia: Fear of pleasure

Hypengyophobia: Fear of responsibility

Hypnophobia: Fear of sleep

Ichthyophobia: Fear of fish

Mysophobia: Fear of dirt

Nostophobia: Fear of returning home

Nyctophobia: Fear of night or darkness

Ophidiophobia: Fear of snakes

Pathophobia: Fear of disease

Pediophobia: Fear of children or dolls

Phobophobia: Fear of phobias

Psychrophobia: Fear of the cold

Scopophobia: Fear of being stared at

Spectrophobia: Fear of mirrors

Tocophobia: Fear of childbirth

Theophobia: Fear of God

Triskaidekaphobia: Fear of the number thirteen

Zoophobia: Fear of animals



irrational, she can't stand socializing with people she doesn't know. She's afraid they'll think she's stupid or incompetent. She tells her parents and brother that she can't attend the party, but they become angry with her. They want to know why she often tries to wriggle out of attending social gatherings. Her parents insist that she have a consultation with a psychologist, and the therapist diagnoses social phobia.



Symptoms of Social Phobia

- Extreme uneasiness, self-consciousness, and fear of embarrassment in ordinary social situations
- Avoidance of parties and social gatherings
- Attending social gatherings may trigger a panic attack, which causes shortness of breath, sweating, palpitations, chest pain, or a smothering sensation

Symptoms: A persistent and powerful uneasiness, self-consciousness, and fear of humiliation in ordinary social situations with unfamiliar people or where scrutiny by others is possible. These situations usually cause anxiety and sometimes a panic attack. This phobia often leads people to avoid parties and other gatherings. Adults with social phobia realize that their fear is excessive or unreasonable, but most children do not.

The symptoms and diagnostic criteria differ somewhat for children and adults. In children, common symptoms are crying, throwing tantrums, and withdrawing when in the company of unfamiliar peers or adults. But children with social phobia are capable of appropriate social relationships with familiar people. Their symptoms must last at least 6 months, whereas in adults the symptoms can come and go with the waxing and waning of stress. For example, a person who has social phobia when single may find that it nearly disappears after marriage, but it flares up again after divorce or the spouse's death. In both children and adults, the symptoms tend to be ongoing and severe. More than half of those with a social phobia also have a specific phobia.

Because social phobia shares some of its symptoms with panic dis-

order and generalized anxiety disorder, it can be difficult to distinguish them. But there are important differences. Though social avoidance is sometimes a symptom of panic disorder, it's not the main symptom. People with panic disorder may withdraw from social situations, but they also avoid other situations, such as driving through tunnels. And though fear of embarrassment or humiliation can be a symptom of generalized anxiety disorder, it's not the main source of anxiety. (See "Do You Have Social Phobia?" below.)

Cause: Preliminary animal research suggests that reduced brain levels of serotonin and dopamine, two neurotransmitters that affect mood and anxiety, may be a cause. Researchers are also studying the amygdala.

Prevalence: About 4% of Americans have social phobia.

Who's at risk: Social phobia is twice as common among women as it is among men. It rarely starts after age 25, and children, adolescents, and young adults are at the highest risk.

Effective treatments: SSRIs are usually used first, often with benzodiazepines. Some newer antidepressants—including venlafaxine (Effexor)—are also effective. MAO inhibitors are sometimes prescribed for people who don't respond to SSRIs. (See "Medications for Anxiety Disorders," page 31.)

Cognitive-behavioral therapy is usually combined with medication in treating social phobia. Two forms of cognitive-behavioral therapy are especially beneficial: anxiety management training and cognitive restruc-

Do You Have Social Phobia?

If you answer yes to three or more of these questions, you may have a social phobia. If so, talk with your doctor or a therapist about your concerns. Social phobia can be mild, moderate, or severe.

- 1 Are you afraid you'll embarrass yourself if you have to give a talk or attend a social gathering with people you don't know well?
- 2 Do you sometimes panic in unfamiliar social situations?
- 3 Do you know that your fear of social situations is unreasonable or excessive?
- 4 Do you avoid social situations whenever possible?
- 5 When you can't avoid social situations, do they cause significant distress or anxiety?
- 6 Does your distress or fear of social gatherings interfere significantly with your work, relationships with friends and family, or normal routines?

turing. Anxiety management focuses on teaching relaxation techniques such as deep breathing to help control anxiety. Cognitive restructuring teaches people how to recognize the thought processes that lead to the phobia and replace them with new assessments and expectations. Group cognitive-behavioral therapy and advice on improving social skills can also help build confidence in social situations.

Obsessive-Compulsive Disorder

The experience: An executive, age 58, has thoughts every day that he can't get out of his head. He worries that he'll get sick from germs on his computer keyboard at work. He washes his hands repeatedly and keeps rearranging objects on his desk and in the bathroom in an attempt to relieve the anxiety he feels about contamination. He has experienced tension with his wife because of this problem. He realizes that his fears are far-fetched and that he spends too much time washing his hands and rearranging things, but if he tries to stop, he becomes tense and anxious. At his wife's insistence, he sees a psychiatrist, who diagnoses obsessive-compulsive disorder.



Symptoms: Characterized by obsessions (distressing thoughts, worries, or urges that are involuntary and occur repeatedly) and compulsions (ritualized behaviors that the individual uses in an attempt to feel safe). The most common obsessions involve persistent thoughts of becoming contaminated, having neglected to do something (such as turn off the oven), having done something terrible (such as harm someone), or needing to have objects in a particular order. Aggressive impulses and pornographic thoughts are also common. Compulsions can include hand-washing, repeatedly checking something (for example, that the door is locked or that the stove is off), or mental acts such as praying, counting, or repeating words.

Obsessive thoughts or compulsive behaviors do not necessarily mean you have obsessive-compulsive disorder. Such thoughts are normal when you are under stress or worried about changes in your life. Many people are obsessed

with forgetting something, which drives them to compulsively make lists of things to buy or do. Obsessive organization can be useful to lawyers, doctors, and others with demanding occupations. Many sports fans are obsessed with the standings of their favorite teams and feel compelled to check the newspaper or Internet frequently for the latest scores. What sets these symptoms apart from obsessive-compulsive disorder is their frequency and the level of distress they cause.

People with obsessive-compulsive disorder have obsessions, compulsions, or both for more than 1 hour a day. These thoughts or actions often cause significant distress and can interfere with the individual's ability to

function at work, in relationships, or in any normal routine. Unlike children, many adults with obsessive-compulsive disorder eventually realize that their obsessions or compulsions are unreasonable. But their attempts to eliminate the compulsive behavior usually fail because doing so causes unbearable anxiety. Obsessions and compulsions can be so distracting that an individual can't concentrate on normal tasks. Although the symptoms are driven by a desire to do something

perfectly, this force often derails the person's ability to even complete a task.

Cause: Brain imaging scans of people with obsessive-compulsive disorder show abnormal nerve cell activity in the basal ganglia, an area of the brain that controls motor function. One theory is that damage to this region during childhood or even before birth increases the risk for obsessive-compulsive disorder. This disorder is also common among individuals with conditions linked to dysfunction in the basal ganglia, such as Tourette's syndrome. About 45%–90% of people with Tourette's syndrome also have obsessions and



Symptoms of Obsessive-Compulsive Disorder

- Persistent, involuntary thoughts, worries, or urges
- Frequent repetition of specific rituals, such as organizing items, washing hands, or checking to make sure the oven is off
- Significant distress due to such thoughts or actions, possibly impairing the ability to concentrate or function normally

compulsions. However, experts don't fully understand how abnormalities of the basal ganglia might promote the repetitive thoughts and rituals of obsessive-compulsive disorder.

Low levels of serotonin and high levels of dopamine also seem to play a role in some cases. About 60% of people with this disorder respond to SSRIs, antidepressants that increase serotonin levels in the brain. Those who don't respond to SSRIs alone tend to improve when given a second agent, such as a tricyclic antidepressant. Finally, some patients improve when given buspirone or another medication that increases serotonin and blocks dopamine. However, it's unlikely that the serotonin and dopamine systems are solely responsible for obsessive-compulsive disorder because many patients don't respond favorably to any of the drugs that affect these neurotransmitters. In fact, some become worse.

In some people, obsessive-compulsive disorder is a complication of a brain infection, such as encephalitis, or a head trauma. In such cases, the disorder can be temporary or permanent. It's also common among adults with other anxiety disorders, major depression, and eating disorders. In children, it may be linked to learning disorders. In all likelihood, these disorders share many of the same brain abnormalities.

Prevalence: About 1% of the population has obsessive-compulsive disorder. It affects an estimated 1 in 50 adults and 1 in 200 children.

Who's at risk: Some studies show that obsessive-compulsive disorder affects equal numbers of men and women; other studies indicate a slight predominance among men. It's clear, however, that the disorder is most common among adolescents and young adults, though it sometimes begins in childhood. In males, the disorder usually starts about age 6–15; in females, about age 20–29. People who've had an injury or infection of the brain are at greater risk for obsessive-compulsive disorder.

Effective treatments: SSRIs (see page 31) are a first-line treatment for this condition. While some patients respond better to one SSRI than to another, their symptoms usually don't disappear completely. Often, they're cut by less than 50%. Therefore, many people need to combine an SSRI with another drug, such as a tricyclic antidepressant (see page 32) or benzodiazepine (see page 33), or with cognitive-behavioral therapy (see page 34).

The combination of SSRIs and therapy is often more effective than either used alone.

In very rare cases and as a last resort, neurosurgery can be performed on individuals who don't respond to medications or to behavioral therapy. There are several such procedures, but all aim to sever some of the brain circuitry from the basal ganglia, which is thought to influence repetitive, ritualistic behavior.

Post-Traumatic Stress Disorder (Stress Response Syndrome)

The experience: In the weeks following the terrorist attack that destroyed the World Trade Center, a 43-year-old firefighter who helped in the rescue effort is in a state of shock. He can't sleep at night, and during the day, he is preoccupied with horrific images. As time passes, he's reassigned to another part of the city, and his distress abates somewhat. His memory of that event fades. When he tries to remember certain details, they are vague or seemingly forgotten. But even after several months, he still has trouble falling asleep and is often awakened by nightmares about the attack. At home, he's withdrawn from his wife and children. He goes to his primary care physician because he just doesn't feel well. The doctor tells him that he has symptoms of post-traumatic stress disorder (PTSD) and refers him to a psychiatrist.

Symptoms: Symptoms fall into the following categories: reliving the event, avoidance, and hyperarousal. An individual may relive the event through flashbacks, dreams, or intrusive thoughts. Avoidance often comes in the form of withdrawing from people or certain situations, or having difficulty remembering important aspects of the trauma. Common symptoms of hyperarousal include having trouble sleeping, being unusually vigilant, and startling easily. The symptoms must last more than 1 month to be considered signs of PTSD. Symptoms that fade within a month of a



Symptoms of Post-Traumatic Stress Disorder

- Recurring flashbacks, dreams, or intrusive thoughts about a traumatic event
- Avoiding reminders of the event
- Withdrawal from people and certain situations
- Difficulty sleeping
- Being easily startled

traumatic event are signs of acute stress disorder. (See page 24.)

PTSD itself has three forms (including its own acute version). They are:

- acute, in which symptoms last 1–3 months after the trauma,
- chronic, in which the symptoms last 3 months or more, and
- delayed onset, in which at least 6 months pass between the traumatic event and the start of symptoms.

Experts differ in their views on the nature and severity of events that produce PTSD. Some argue that the event responsible must be extreme, such as being

raped or witnessing a murder, while others say that a more ordinary frightening event, such as a car accident, may also cause PTSD if it induces intense fear, helplessness, and horror. (See “Traumas Most Likely to Produce PTSD,” below.)

Cause: Because not everyone who lives through a traumatic event develops PTSD, it’s likely that biological factors increase the risk. Because the disorder tends to affect certain families more than others, there may be a genetic predisposition. Someone who has had depression or who has a first-degree relative (such as a parent, sister, brother, or child) who’s had depression is more likely to develop PTSD. One theory is that people with PTSD have an abnormally strong response to stress, and that excess emotional stress reduces the size of the hippocampus, the part of the

Traumata Most Likely to Produce PTSD

Anyone who witnessed the terrorist attacks on Sept. 11, 2001, or who saw the coverage in the media, knows the horror, fear, and sense of helplessness that can accompany a traumatic event. While not everyone affected by trauma goes on to develop post-traumatic stress disorder (PTSD), thousands of people affected by the terrorist attacks will probably battle this condition.

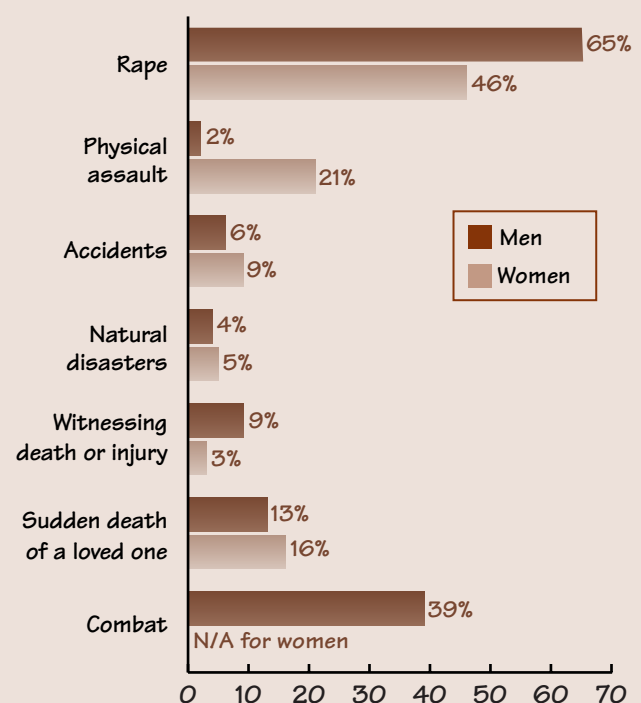
A recent article in the *New England Journal of Medicine* estimates that 35% of those who experienced the attacks firsthand, including people who fled the World Trade Center and rescue workers who rushed to the scene, will develop PTSD.

While PTSD is much more likely to affect people who have firsthand, rather than indirect, involvement in a trauma, witnessing such events can reawaken symptoms in people previously traumatized. Even those with no prior experience of PTSD can develop it by witnessing a violent injury or death, or by finding out that a loved one has been involved in such an event.

Some kinds of trauma are especially likely to trigger PTSD. For example, violent acts such as rape lead to PTSD more often than car accidents, fires, and earthquakes. And the same kind of experience may affect men and women differently. As the graph at right illustrates, women are more likely to develop PTSD after being physically assaulted, while men are more apt to struggle with it after witnessing a death or injury.

Traumata, by their nature, send shock waves through the lives of those affected. While it can be difficult to recover, most people do. Various treatments are available to help individuals overcome the aftereffects of devastating personal tragedies. (See “Effective Treatments,” page 24.)

Traumatic Event/Rate of PTSD in Survivors, by Gender



brain that oversees memories. (See “Hippocampus,” page 6.) Preliminary research has shown that the hippocampus is smaller than normal in people with PTSD. This might be why people with PTSD have memory problems.

Prevalence: PTSD is the fourth-ranking psychiatric disorder in the United States, striking approximately 10%–14% of women and 5%–6% of men at some point in their lives. Among people who experience traumatic events, its incidence varies according to the event. The highest rates—between one-third and half—are found among survivors of rape, military combat and captivity, and ethnically or politically motivated imprisonment or genocide.

Who’s at risk: Among people who experience a traumatic event, the risk for PTSD is especially high among those with a family history of depression. (See “Do You Have Post-Traumatic Stress Disorder?” below.)

Effective treatments: SSRIs (see page 31), cognitive-behavioral therapy (see page 34), and exposure therapy (see page 36) are usually helpful. Group therapy can be helpful if the trauma affected several people or more. For example, survivors of an earthquake or a terrorist attack may benefit from discussing the event in a group setting. Benzodiazepines are not recommended. Some studies have found that they are not effective. People with PTSD are also at greater risk for substance abuse (to get relief from the acute, intense anxiety), and these drugs can cause physical dependence.

Acute Stress Disorder

The experience: For days after being in a car accident in which a friend nearly died, the driver, 70, is extremely jumpy and anxious. He jumps when he hears a siren or a honking horn. He feels as if he’s sleepwalking through conversations with family members. He feels guilty that he wasn’t harmed and is able to be with his family and friends, resuming his “normal” life. He dreams of the events leading up to the collision, but in these dreams he swerves, narrowly avoiding the other car. After about 3 weeks, as his friend’s condition improves, the driver also begins to feel better. He slowly comes to terms with what happened. Images of the accident, while still present, become less disturbing and intrusive. He isn’t as easily startled, he’s sleeping better, and he feels a renewed connection to the people around him.

Months later, when he describes the experience to his family doctor during a routine exam, the doctor says that he probably had acute stress disorder.

Symptoms: Similar to those of post-traumatic stress disorder (see “Symptoms,” page 22), but of shorter duration, lasting at least 2 days but less than a month after a traumatic event.

Do You Have Post-Traumatic Stress Disorder?

Many people who’ve survived a life-threatening or extraordinarily stressful event experience aftershocks. But in many cases, these symptoms aren’t sufficiently intense, pervasive, or long-lasting to constitute post-traumatic stress disorder (PTSD).

If you answer yes to four or more of the questions in the following quiz, you may have this disorder. Although it’s often difficult for people with PTSD to discuss their experiences, it’s worthwhile to see a psychiatrist or psychotherapist because treatment can offer tremendous relief. Even if your symptoms don’t meet the criteria for PTSD, you may not have escaped a traumatic event unscathed. If you have troubling symptoms related to the event, you may benefit from making an appointment with a mental health professional.

- 1 Have you witnessed or experienced a traumatic, life-threatening event in the last several months?
- 2 Did this experience make you feel intensely afraid, horrified, or helpless?
- 3 Do you have trouble getting the event out of your mind? Do you keep thinking about it during the day, dreaming about it, having flashbacks, or experiencing intense psychological distress when you’re reminded of it?
- 4 Do you go out of your way to avoid activities, people, or thoughts that remind you of the event?
- 5 Do you have more trouble falling asleep or concentrating than you did before the event?
- 6 Do you startle more easily and feel more irritable or angry than you did before the event?
- 7 Have your symptoms lasted for more than 1 month?
- 8 Is your distress making it hard for you to work or function normally?

! Symptoms of Acute Stress Disorder

- Being easily startled
- Flashbacks or dreams about a traumatic event
- Withdrawing from people and certain situations
- Difficulty sleeping
- Effects last for at least 2 days, but less than 1 month

Cause: Experiencing a traumatic or stressful event.

Prevalence: Studies show that 14%–33% of people who have been exposed to a severe trauma experience acute stress disorder.

Who's at risk: While the condition can develop in anyone who has had an extremely stressful experience, other factors heighten the risk, including a mental disorder, lack of supportive friendships, and emotional deprivation during childhood.

Effective treatments: Psychotherapy that involves discussing the experience can help decrease the symptoms. Medication is sometimes prescribed for people who have trouble sleeping, severe anxiety, or both. But because acute stress disorder, by its very nature, is short-lived, many people either do not need psychotherapy or find that their symptoms diminish before they seek help. (Also, see “*Tips for a Better Night's Sleep*,” below.)

Generalized Anxiety Disorder

The experience: A woman, 47, knows that she's a worrier. It's not that she worries about anything in particular, but rather she finds something to worry about in any number of situations. She's anxious about driving in the rain, a job review, her children's grades at school, and so on. She wishes she could stop “sweating the small stuff,” but she can't help it. She often has trouble sleeping because her muscles are tense, and her mind can't relax. Her psychologist believes that she has generalized anxiety disorder and suggests continuing her therapy while she consults with a psychiatrist about taking a prescription medication.

Symptoms: For this disorder to be present, there must be at least 6 months of excessive worrying or feeling anxious about several events or activities on most days of the week. People with generalized anxiety disorder have at least three of the following symptoms: fatigue, difficulty concentrating or holding a thought, irritability, muscle tension, sleep disturbance, restlessness, or feeling keyed up or on edge. In the case of other anxiety disorders, the focus of the worry is something specific, such as the fear of certain animals (specific phobia) or a persistent, debilitating fear of germs (obsessive-compulsive disorder). With this disorder, the source of the worry changes, but the worry itself is present most of the time and is significant enough to

Tips for a Better Night's Sleep

Most people with anxiety disorders also have trouble sleeping. Treating the disorder usually improves sleep, but in the meantime, there are other things you can do:

- Go to bed and wake up at the same time every day, even on weekends.
- Use the bed only for sleeping and sex.
- Forgo naps, especially close to bedtime.
- Limit the time you spend in bed. Turn in only when you're sleepy. If you don't fall asleep within 15 minutes or if you wake up and can't fall back to sleep within that amount of time, get out of bed and do something relaxing until you feel sleepy.
- Avoid caffeine (found in coffee, many teas, chocolate, and cola) after 2 p.m., or noon if you are caffeine-sensitive. You may need to avoid caffeine entirely if you have panic attacks.
- Avoid eating foods that contribute to heartburn.
- Don't drink alcohol for at least 2 hours before bedtime.
- Limit fluids before bedtime to minimize nighttime trips to the bathroom.
- Stop smoking, or at least do not smoke for 1–2 hours before turning in for the night.
- Exercise regularly, but not too close to bedtime. An afternoon workout is ideal.
- Keep the bedroom cool, dark, and as quiet as possible.
- Replace a worn-out or uncomfortable mattress.
- Take a hot bath before bedtime.
- Use relaxation techniques before bedtime.

For more on sleep, see the Harvard Medical School Special Health Report *Improving Sleep*. To order, see the form at the back of this report.

Do You Have Generalized Anxiety Disorder?

It's one thing to be a worrier. Many people are. But how can you tell if the frequency and magnitude of your worries might qualify as generalized anxiety disorder? This quiz can help you make the distinction.

If you answer yes to more than three of these questions, you may have generalized anxiety disorder. A mental health professional can help. Your primary care physician can provide a referral or you can consult the resources section on page 43 for organizations that may be able to provide the names of qualified practitioners in your area.

- 1 Do you worry a lot about all sorts of events or activities (as opposed to specific things like flying, becoming sick, or being embarrassed in public)?
- 2 Have you been worrying nearly every day for at least 6 months?
- 3 Do you usually have at least three of these symptoms: restlessness, fatigue, difficulty concentrating, irritability, muscle tension, trouble sleeping?
- 4 Do you have trouble controlling your worries?
- 5 Do your symptoms cause you considerable distress?
- 6 Are you sure your symptoms can't be explained by the following factors: an illness, a medication or other substance you're taking (including caffeine), or a traumatic experience?

interfere with the individual's ability to function normally. Generalized anxiety disorder is often accompanied by depression, substance abuse, or another anxiety disorder. (See "Do You Have Generalized Anxiety Disorder?" above, and "What If You Are Just Plain Worried?" page 4.)

Cause: As with other anxiety disorders, certain abnormalities in the brain seem to predispose a person to generalized anxiety disorder. One is a low level of gamma-aminobutyric acid, or GABA, a neurotransmitter that blocks the release of other neurotransmitters, thus modulating nerve impulses. Another is a low level of serotonin, a neurotransmitter that affects mood and sleep. Just how these chemical messengers influence anxiety is unknown, but antianxiety drugs and antidepressants that increase their levels relieve symptoms of generalized anxiety disorder.

Symptoms of Generalized Anxiety Disorder

- Persistent, excessive worry about several different things for at least 6 months
- Fatigue, difficulty sleeping, or restlessness
- Trouble concentrating
- Irritability
- Muscle tension
- Feeling tense or on edge

Brain imaging studies of people with generalized anxiety disorder reveal other abnormalities: increased activity in the cortex and decreased activity in the basal ganglia. Although the precise implications are not clear, in general, such abnormalities indicate a problem with brain function that may prime the pump for an overreaction to stress. Because generalized anxiety disorder tends to run in families, experts believe that genes are at least partly responsible. Symptoms also surface or worsen under stress.

Prevalence: About 5% of people develop generalized anxiety disorder at some point in their lives.

Who's at risk: People with a family history of generalized anxiety disorder or other mood disorders such as depression, as well as those who have another mood disorder themselves. Half of the adults who seek

treatment had symptoms of anxiety as children or adolescents. Generalized anxiety disorder affects twice as many women as men. It usually appears between childhood and middle age.

Effective treatments: Various antianxiety drugs and antidepressants, as well as cognitive-behavioral therapy (see page 34) and some other forms of therapy.

Anxiety Disorder Due to a General Medical Condition

The experience: A woman, age 56, has recently become jittery, tense, anxious, and irritable. She's also losing weight. Seeing the marked change in her behavior, her husband and children ask what's bothering her, but she doesn't know. She isn't under any unusual stress at work or at home. Desperate for an explanation, as well as relief, she goes to her doctor for a checkup. The doctor diagnoses an overactive thyroid. The woman begins taking thyroid medicine, and the symptoms disappear in days.

Symptoms: Anxiety, panic attacks, obsessions, or compulsions that are caused by a medical condition. These symptoms cause sig-

nificant distress or interfere with functioning at work, at home, and in ordinary social situations.

Prevalence: The incidence varies with the medical condition as well as the anxiety disorder. One study found that the incidence of panic disorder is 20% among asthmatics and 50% among people with chest pain. Among diabetics, the rate of phobia is about 19% while the rate of generalized anxiety disorder is 17%.

Who's at risk: People with dozens of medical conditions are at risk because these illnesses can cause chemical changes in the brain that induce anxiety symptoms. Here are the most common illnesses or categories of illnesses that can cause anxiety symptoms:

- **Cardiovascular conditions.** These conditions include angina pectoris, arrhythmias, congestive heart failure, and valvular disease. A heart attack can also cause anxiety symptoms.

- **Endocrine disorders.** These illnesses are caused by hormonal imbalances. They include hyperthyroidism (overactive thyroid), hypothyroidism (underactive thyroid), and pheochromocytoma, a tumor of the adrenal gland that secretes excess amounts of adrenaline. They also include diabetes, hyperglycemia (high blood sugar), and hypoglycemia (low blood sugar).

- **Neurologic conditions.** Such conditions include vertigo and seizure disorders.

- **Peptic ulcer.** Peptic ulcers are sores in the lining of the stomach and duodenum (the first part of the small intestine).

- **Respiratory conditions.** These include asthma and hyperventilation syndrome, the tendency to breathe so quickly and deeply that you become dizzy.

Effective treatments: Treating the underlying medical condition usually relieves the anxiety symptoms.

Substance-Induced Anxiety Disorder

The experience: A college student, age 20, goes to the university health center after suddenly developing anxiety symptoms. He has no family history of anxiety disorders or depression, and his grades are consistently good. Still, his anxiety symptoms are becoming intolerable.

The physician at the health center notices that the symptoms began just before finals. She asks if the young man has been taking any medication or illicit drugs. He admits that he took some of his friend's Ritalin, a prescription medication used for attention-deficit disorder, to help him concentrate and stay awake. He also drank lots of coffee to keep him awake during all-night study sessions. The doctor recognizes that the medication and the caffeine, both stimulants, are causing his anxiety. She tells the student to avoid coffee and to stop taking his friend's, or anyone else's, medication. The young man's symptoms disappear in 2 days.

Symptoms: Panic, nervousness, restlessness, and elevated heart rate and blood pressure caused by a medication, an illegal drug, a toxic chemical, or other substances. Alcohol, caffeine, nicotine, cocaine, and over-the-counter diet aids and decongestants can provoke anxiety symptoms. So can many prescription drugs, including Ritalin, other stimulants such as amphetamines, and, less frequently, cardiovascular medications, corticosteroids, and anticonvulsants. Benzodiazepines, which are used to treat anxiety, can actually cause it when they are overused or when they are stopped abruptly. Withdrawal from drugs, such as heroin, can also cause anxiety. Occasionally, taking tricyclic antidepressants and SSRIs can precipitate anxiety symptoms. In rare cases, heavy metals and other toxins can also cause an anxiety disorder; these include gasoline, paint, certain pesticides, and carbon monoxide.

Prevalence: There are few studies, but the incidence varies according the substance used.

Who's at risk: People taking drugs or who have been exposed to the other substances known to induce anxiety symptoms.

Effective treatments: Stopping the use of these medications or avoiding exposure to these substances eliminates symptoms within a few days. ■



Symptoms of Substance-Induced Anxiety Disorder

- Agitation or nervousness
- Increased heart rate and blood pressure
- Panic

How Anxiety Is Diagnosed

If you think you suffer from an anxiety disorder, see your primary care physician for a physical exam. This exam can rule out physical disorders with symptoms similar to anxiety, such as an ulcer, asthma, or an overactive thyroid, as well as the overuse of substances that can cause anxiety symptoms, especially caffeine, diet pills, or decongestants.

Medical History and General Physical Exam

Your doctor will probably begin by asking you to describe exactly what you mean when you say that you feel anxious. Are you worried much of the time? Do you become frightened in particular circumstances? Do you have physical sensations, such as sweating or palpitations, along with emotional symptoms? The answers to these questions will help your doctor determine whether you have an anxiety disorder and, if so, which one.

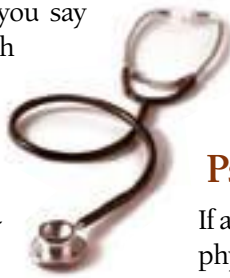
Your doctor will also ask about your personal and family medical history. Have you or an immediate family member ever had an anxiety disorder? Have you been ill recently? Expect other questions about your personal habits. Which over-the-counter or prescription drugs do you take regularly? Do you smoke? Do you drink coffee, and if so, how many cups a day?

These questions are important because certain medical conditions, medications, and substances (such as nicotine and caffeine) can cause anxiety symptoms.

Then the doctor will proceed with a general checkup to look for signs of medical illnesses, especially those with symptoms that mimic anxiety disorders.

Screening Tests

As part of the checkup, the doctor may perform either or both of the following: a test to determine whether thyroid function is normal and a urine test to assess the functioning of your adrenal glands and to check for traces of illegal drugs. Abnormal thyroid or adrenal function can cause hormone imbalances that contribute to anxiety. Use of illicit drugs can also cause or exacerbate anxiety symptoms. (See “*Substance-Induced Anxiety Disorder*,” page 27.)



Psychiatric Evaluation

If a medical cause has been ruled out, your primary care physician may refer you to a psychiatrist or psychologist. There is no laboratory test or paper-and-pencil questionnaire to aid in diagnosing anxiety disorders. Instead, the mental health clinician makes the diagnosis after observing and talking with you. He or she will ask you to describe your experiences in detail, noting your main symptoms. He or she may also ask some of the following questions: do you worry all the time, even about little things? Do you break out in a cold sweat when you have to meet new people? Is it hard for you to work up the courage to call someone you don't know well? Do you stutter and become visibly agitated when discussing certain memories? Each of these feelings or behaviors is a sign of a different anxiety disorder. ■

Treating Anxiety

When anxiety is related to a medical condition or to substance use, treatment focuses on the underlying causes. For the other anxiety disorders, there are three primary modes of treatment: medication, cognitive-behavioral therapy, and exposure therapy.

The choice of treatment depends on the type of anxiety disorder, its severity, which symptoms are predominant, and whether you have certain other conditions, such as depression, alcohol dependence, or another anxiety disorder. Other factors influence the choice of treatment, including your age (for example, older people are more apt to have side effects when taking benzodiazepines) and your personal preferences. You and your doctor should discuss the benefits and side effects of each treatment before deciding which one, or which combination, to use.

It's important to understand what anxiety treatment can and can't do. An accurate diagnosis and proper treatment increases the odds that your symptoms will lessen significantly or disappear altogether. Once symptoms are under control, treatment can keep them from flaring up again and can help prevent a second anxiety disorder from developing. Treatment often improves or controls the problems caused by anxiety. For example, if anxiety is impairing your ability to work or creating friction between you and your family and friends, treatment can help you function better and improve your relationships.

Getting these benefits often requires some trial and error. While several types of medications may be appropriate for your anxiety disorder, the first one you try may not work well for you, or it may cause a side effect that you can't tolerate. Responses to medications can vary greatly from person to person. You may need to try two or more drugs before you find the one that offers you the most relief. Also, keep in mind that for many people with anxiety, two treatments are usually better than one. In particular, many doctors recommend both medication and cognitive-behavioral therapy. Finally, although treatment can dramatically reduce your symptoms or even, for a time, eliminate them, there's no cure for most anxiety disorders. In many cases, symptoms don't subside completely or they eventually return.

What You Should Know About Medications

As research identifies specific chemical imbalances in the brain that may promote anxiety, medication has become an increasingly important part of treatment. Indeed, much of what we know about these abnormal-

ities comes from studies showing the effects of particular drugs on brain chemistry and anxiety symptoms. Research has found that many different kinds of medications relieve anxiety, and the number of anxiety medications has multiplied.

Which Medications Are Effective?

Several decades ago, anxiety was treated mainly with benzodiazepines, drugs that slow the central nervous system. The rationale was that slowing the nervous system would get overanxious people to relax. But in the 1970s and 1980s, it became clear

that certain antidepressants were also effective in treating anxiety disorders. Some of the tricyclic antidepressants and monoamine oxidase (MAO) inhibitors relieved panic disorder, and the tricyclic clomipramine (Anafranil) benefited people with obsessive-compulsive disorder.

In the 1990s, when selective serotonin reuptake inhibitors (SSRIs) became the drugs of choice for depression, researchers found that they were also effective for certain anxiety disorders. Indeed, they're now the first choice for treating obsessive-compulsive disorder, panic disorder, social phobia, and post-traumatic stress disorder. Other drugs—including beta blockers, which are commonly used to treat angina and high blood pressure—may be used for social phobia and other anxiety disorders.

It's common for more than one drug to be used, either simultaneously or at different times during treatment. Surveys show that 25%–33% of drug therapy for anxiety involves combinations of medications. Combining two drugs, particularly pairing a benzodiazepine and an antidepressant, often yields better results than using either one alone. This is especially true for people who have more than one anxiety disorder or who are both anxious and depressed.

During the first 2–6 weeks of treatment, individuals often take both a fast-acting benzodiazepine and a

Recovery Rates for Generalized Anxiety Disorder

Half of people with generalized anxiety disorder who receive proper treatment improve within 3 weeks, and more than three-quarters show improvement within 9 months.

slower-acting drug such as an SSRI. The idea is to stay on the benzodiazepine just long enough for the SSRI to start working, then to taper off the benzodiazepine. This approach takes advantage of the drugs' respective strengths while minimizing their weaknesses. Benzodiazepines begin working immediately and are very effective, but when used for extended periods, they can cause significant withdrawal symptoms. On the other hand, SSRIs have fewer and less severe side effects, but they may take several weeks to start working.

The use of a drug for “maintenance” therapy, which involves staying on the medication even after symptoms fade, has gained favor now that it's apparent that anxiety usually isn't an acute problem that can be solved in a few weeks or months. Rather, it's an ongoing condition that requires long-term therapy. One study found that the average duration of generalized anxiety disorder is 6–10 years and that more than 40% of patients had symptoms lasting more than 5 years. In addition, 31% of those who'd had generalized anxiety disorder as children or adolescents experienced a recurrence at some point. Therefore, it's best to monitor individuals for a year or more to prevent or treat recurrences.

How Long Is Medication Needed?

Understandably, most people don't relish taking medication indefinitely. And many start with the misconception that therapy will only last a short time. It's true that some anxiety disorders can be controlled with sporadic or short-term therapy. Sometimes, a person does feel much better after just a few weeks or even days on an antianxiety medication. Specific phobias (*see page 18*) can be treated as needed, for example, just before getting on an airplane or giving a speech. Because it is by nature a self-limited illness, acute stress disorder (*see page 24*) also responds to short-term therapy.

But other anxiety disorders—for example, generalized anxiety disorder, panic disorder, and obsessive-compulsive disorder—commonly require ongoing treat-

ment. Experience shows that when drug therapy is stopped, anxiety symptoms often recur. Only 25% of patients who stop taking antidepressants have relief for 2 years or longer. Two studies found that 1 in 4 people with generalized anxiety disorder relapse within 4 weeks of going off their medications. Similarly, most people with obsessive-compulsive disorder relapse within a month unless they either continue drug treatment indefinitely or undergo behavior therapy.

There are no controlled studies showing how long drug therapy should last. But experience has led to this general guideline: for most anxiety disorders, medication should be taken initially for 6–12 months. If the symptoms vanish or diminish to the point that the individual is satisfied, he or she can take a “holiday” during which the drugs are stopped. If anxiety symptoms return, the individual should take the medication again. If you have two or more anxiety disorders, it's likely that your treatment will carry on for more than a year. The more complex the condition, the more difficult it is to treat.

Even if symptoms don't recur, anyone who has had an anxiety disorder should have regular checkups with a mental health professional, preferably every 3–4 months. Those who are still taking medication should check in with a psychiatrist every 3–4 months to evaluate its effectiveness. Regular checkups can ensure prompt treatment should the symptoms recur or new ones develop.

Also, don't stop taking a medication without first talking with your doctor. Discontinuing medication too early or abruptly can trigger side effects. For example, stopping benzodiazepines too quickly increases the risk for withdrawal symptoms and can even result in a flare-up of anxiety, panic, or depression. Many patients stop taking their medicine because they develop side effects. If you're having trouble tolerating a drug, talk to your doctor. Side effects are more common with some medications than others. Your doctor may be able to suggest a different drug or offer advice on how to prevent side effects.

A Note on Side Effects

Any medical treatment has advantages and disadvantages, and it's difficult for doctors to predict your response to a given medication. While newer, first-line treatments for anxiety have fewer and less severe side effects than older drugs, there's still a possibility that you may experience some adverse effects. When



you're about to start treatment, it's important to weigh the potential benefits against the risks of each medication. Fortunately, most side effects can be managed or reversed.

Medications for Anxiety Disorders

Medications prescribed to treat anxiety disorders fall into two main categories: antidepressants and anti-anxiety drugs. The latter term is a misnomer because they are no longer the only kinds of drugs that have anti-anxiety properties. In fact, antidepressants have become the first choice for many anxiety disorders. Other types of medications, such as beta blockers and sedatives, are also used for anxiety.

This section describes how each class of drug works and which medications within the class are effective for particular anxiety disorders. Side effects are also discussed. In general, newer drugs with fewer or milder side effects are replacing those with more, or more severe, side effects.

Selective Serotonin Reuptake Inhibitors (SSRIs)

This class of antidepressants became a first-line treatment for many anxiety disorders during the 1990s. The serotonin system is active in many regions of the brain, affecting anxiety, mood, arousal, impulses, and aggression. SSRIs work by slowing the reuptake of serotonin, which means they prevent this neurotransmitter from being quickly reabsorbed by the neurons that released

Table 2 Medications for Anxiety Disorders

Class	Generic Name (Brand Name)	Prescribed for	Side Effects
Selective Serotonin Reuptake Inhibitors (SSRIs)	citalopram (Celexa) fluoxetine (Prozac) paroxetine (Paxil) sertraline (Zoloft)	Generalized anxiety disorder (mainly sertraline or paroxetine), social phobia, obsessive-compulsive disorder, panic disorder, post-traumatic stress disorder	Nausea, diarrhea or constipation, sexual dysfunction, insomnia, headache, weight gain, dry mouth, sweating
Dual Reuptake Inhibitor (acting on both serotonin and norepinephrine)	venlafaxine (Effexor)	Generalized anxiety disorder, post-traumatic stress disorder	Nausea, headache, insomnia, dizziness, constipation, dry mouth, loss of appetite and, at higher doses, a rise in blood pressure
Tricyclic Antidepressants (TCAs)	amitriptyline (Elavil) clomipramine (Anafranil) imipramine (Tofranil)	Generalized anxiety disorder, panic disorder, obsessive-compulsive disorder (clomipramine), post-traumatic stress disorder	Dizziness, drowsiness, dry mouth, weight gain, blurred vision, disturbance of heart rhythm
Monoamine Oxidase (MAO) Inhibitors	isocarboxazid (Marplan) phenelzine (Nardil) tranylcypromine (Parnate)	Social phobia, panic disorder	Dizziness, headache, dry mouth, insomnia, constipation, weight gain. Rarely: dangerously high blood pressure if foods containing tyramine are eaten. Because of their serious side effects, MAO inhibitors are generally used only when other approaches fail.
Benzodiazepines	alprazolam (Xanax) clonazepam (Klonopin) lorazepam (Ativan)	Generalized anxiety disorder, panic disorder, specific phobias	Clumsiness or unsteadiness, drowsiness, cognitive impairment, dizziness, headache. Tolerance may develop.
Azapirone Derivative	bupirone (BuSpar)	Generalized anxiety disorder	Chest pain, dizziness, headache, nausea
Beta Blocker	propranolol (Inderal)	Performance anxiety (a social phobia)	Dizziness, slight drowsiness, erectile dysfunction

it. This prolongs the time that the serotonin can work at receptor sites. (See Figure 6, below.) SSRIs also appear to change the number and sensitivity of receptors and may indirectly influence other neurotransmitters that play a role in anxiety, including norepinephrine and dopamine. (See “How Neurotransmitters Work,” page 7.)

The main reason for the popularity of SSRIs is that they have fewer and less severe side effects than do older medications for anxiety. SSRIs are prescribed for generalized anxiety disorder, obsessive-compulsive disorder, social phobia, panic disorder, and post-traumatic stress disorder. There are several kinds of SSRIs, each having a slightly different mode of action.

Though they are usually well-tolerated, SSRIs can have troublesome effects in some people. They can cause sexual dysfunction, weight gain, and insomnia. Sometimes they even temporarily heighten anxiety symptoms. Your doctor should monitor you closely for this reaction and, if necessary, switch your medication. SSRIs can also interact with certain antihistamines, anticonvulsants, or other antidepressants. Reactions to SSRIs vary. What induces side effects in one person may not cause any problems in another. Therefore, it may take some trial and error to determine which medication is right for you.

Venlafaxine

Venlafaxine (Effexor) blocks the reuptake of both serotonin and norepinephrine, another neurotransmitter that plays a role in anxiety. To a lesser degree, the drug also blocks the reabsorption of a third neurotransmitter involved in mood, dopamine. Venlafaxine is prescribed

for generalized anxiety disorder and post-traumatic stress disorder, either initially or when SSRIs aren’t effective or cause intolerable side effects. Like SSRIs, however, venlafaxine can exacerbate sleep problems and cause nausea and headache. Effexor XR, the extended-release form of the drug, has fewer side effects than the shorter-acting version. For example, it doesn’t cause nausea. And it is taken just once a day.

Tricyclic Antidepressants (TCAs)

Tricyclic antidepressants (TCAs) have been used since the 1970s to treat panic disorder and obsessive-compulsive disorder. Their name derives from their three-ring molecular structure. Medications of this class are thought to relieve anxiety and depression mainly by increasing the availability of norepinephrine and serotonin. TCAs do so by slowing the reabsorption of these neurotransmitters into the neurons that released them and by changing the sensitivity of the receptors.

But compared to venlafaxine or the SSRIs, TCAs can cause side effects that are more numerous and more severe, including dizziness, constipation, blurred vision, and trouble urinating. TCAs can also cause weight gain and disturbances in heart rhythm. Thus, people with heart disease should usually avoid these drugs unless they’ve tried other medications without a good response. Because of their side effects, TCAs are considered second-line treatments for generalized anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, and panic disorder. They’re sometimes paired with an SSRI when such a drug doesn’t work

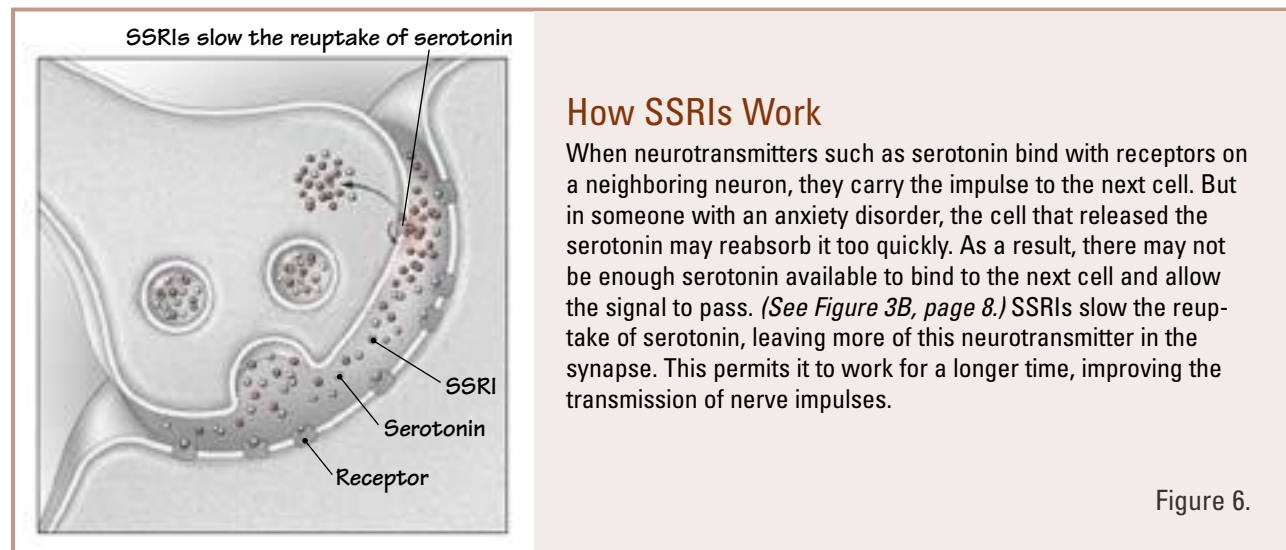


Figure 6.

well enough alone. TCAs are often prescribed as an alternative for people who can't use or tolerate SSRIs. For some people, TCAs actually work better and cause fewer troublesome side effects than SSRIs. A period of trial and error can help determine which drug will work best.

Monoamine Oxidase (MAO) Inhibitors

The neurotransmitters norepinephrine and serotonin are members of a class of compounds called monoamines, which are normally broken down in the body by the enzyme monoamine oxidase. By blocking monoamine oxidase, these drugs raise the levels of norepinephrine and serotonin in the brain, thus decreasing anxiety and improving mood.

If SSRIs aren't helpful, MAO inhibitors are used for social phobia and panic disorder. Among MAO inhibitors, phenelzine (Nardil) is most commonly prescribed for these disorders, but tranylcypromine (Parnate) and isocarboxazid (Marplan) are also used. Although MAO inhibitors don't have many of the side effects of TCAs, they can cause dizziness and other serious side effects.

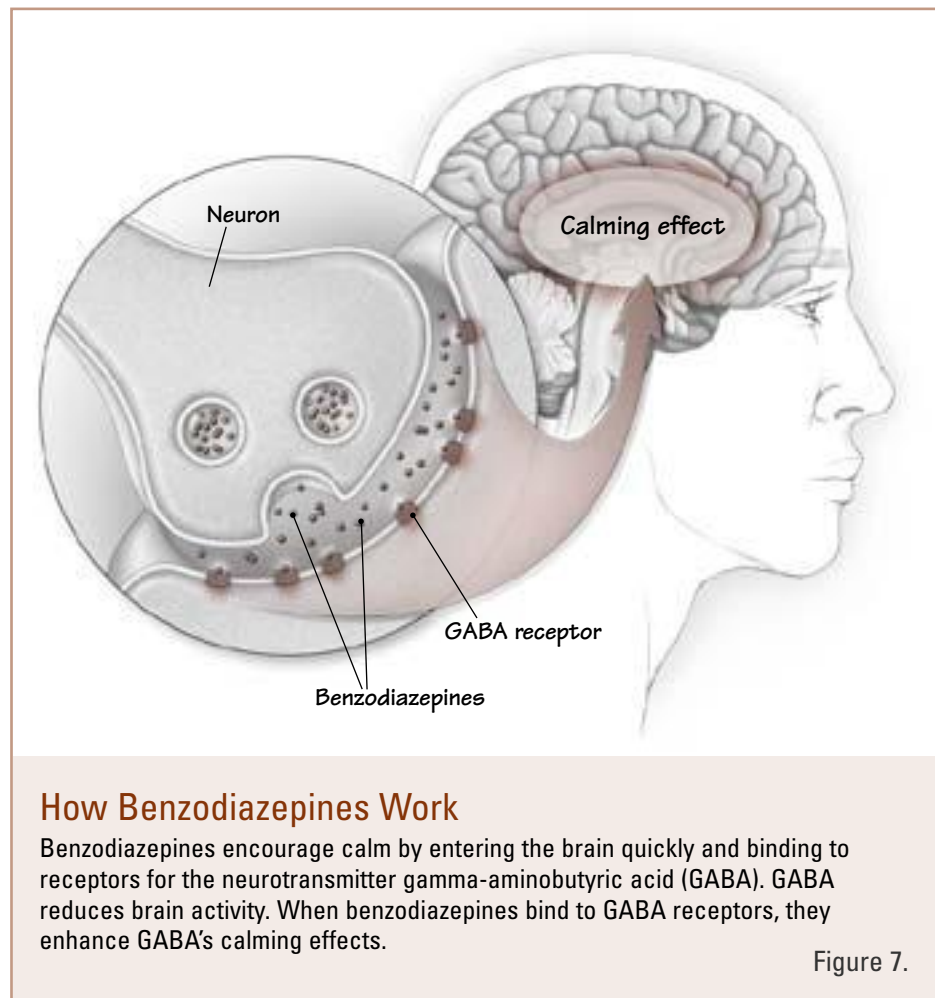
People who take MAO inhibitors must avoid certain foods and beverages, including yogurt, aged cheese, pickles, beer or red wine, and other foods containing tyramine. Combining tyramine, an amino acid, with MAO inhibitors can raise blood pressure to dangerously high levels, possibly resulting in stroke.

Benzodiazepines

These tranquilizers were the first class of medications used specifically for anxiety. They induce mental and physical relaxation. They enter the brain quickly and bind to receptors for the neurotransmitter gamma-aminobutyric acid (GABA), which reduces brain activity.

When they bind to GABA receptors, benzodiazepines enhance GABA's calming effects. (See Figure 7, below.)

The many benzodiazepines include diazepam (Valium), lorazepam (Ativan), and alprazolam (Xanax). These medications are used for generalized anxiety disorder, panic disorder, and specific phobias. They're often paired with a longer-acting drug such as an SSRI, and the dose is gradually reduced once the SSRI starts working. Doctors try to limit the use of benzodiazepines because they can cause tolerance, that is, a need for greater amounts of the drug to produce the same effects. But because these medications are so helpful for generalized anxiety disorder, they're sometimes used alone for extended periods. In such cases, patients should be monitored carefully for signs of tolerance. Benzodiazepines are also prescribed alone, as needed, to treat specific phobias. Someone with a fear of flying, for example, may take a benzodiazepine before getting



How Benzodiazepines Work

Benzodiazepines encourage calm by entering the brain quickly and binding to receptors for the neurotransmitter gamma-aminobutyric acid (GABA). GABA reduces brain activity. When benzodiazepines bind to GABA receptors, they enhance GABA's calming effects.

Figure 7.

on a plane to control anxiety immediately before and during the flight.

In addition to tolerance, benzodiazepines can cause drowsiness and cognitive impairment. Older adults, as well as people with a history of substance abuse, should avoid them whenever possible because such individuals may be particularly sensitive to their side effects.

Bupirone (BuSpar)

One of the newest drugs for anxiety, bupirone (BuSpar) binds to receptors for serotonin and dopamine. The effect is to increase serotonin activity and decrease dopamine activity in the brain. Like the SSRIs, bupirone is used for the long-term treatment of generalized anxiety disorder. But it begins to work faster, after about 2 weeks. Because it has few side effects and no serious drug interactions, it's a good alternative to benzodiazepines in the treatment of generalized anxiety disorder in older individuals or those with a history of substance abuse. However, this medication isn't effective for most other anxiety disorders.

Beta Blockers

Though they're mainly used to treat high blood pressure, beta blockers can also relieve performance anxiety, a specific social phobia that usually occurs when an individual needs to give a speech or perform in front of an audience. Because beta blockers slow the heart rate, they also help with the physical symptoms of social phobias and panic attacks, such as pounding of the heart and shaking of the hands.

Sedatives

These drugs are prescribed for insomnia, a common symptom in anxiety disorders. Benzodiazepines are sedatives used for short-term treatment of insomnia. Newer medications such as zaleplon (Sonata) and zol-

pidem (Ambien) have begun replacing the benzodiazepines because they are just as effective, but shorter-acting. This means that they're less likely to cause side effects, such as tolerance or withdrawal symptoms. Some sedating antidepressants, such as tricyclic antidepressants and trazodone (Desyrel), are also used to improve sleep.

Warning on Kava

Kava, an extract of a species of pepper plant (*Piper methysticum*), is widely touted as a natural alternative to antianxiety medications. Though some clinical trials have found that it works, possibly by a mechanism similar to that of benzodiazepines, there are concerns here and abroad about its safety.

The Food and Drug Administration is investigating reports that it may cause serious liver toxicity, including cirrhosis and liver failure. About 25 people in Germany and Switzerland developed liver toxicity after using products containing kava.

The FDA has also received several reports of toxic reactions in this country. In one case, a previously healthy young woman required a liver transplant after taking a dietary supplement containing kava. In addition, there was a report several years ago of a patient falling into a coma after using kava with the benzodiazepine alprazolam (Xanax).

Following these reports, Germany and Switzerland banned the sale of kava. It's still available in the United States, but in light of the potential danger, you should avoid this herb.

Psychological Therapy for Anxiety

Certain types of psychotherapy, particularly cognitive-behavioral therapy and exposure therapy, are beneficial in treating anxiety disorders. Both approaches involve working with a mental health professional, such as a psychiatrist, psychologist, or social worker, to understand the sources of anxiety and to learn how to control symptoms. Another technique known as eye movement desensitization and reprocessing (EMDR) is frequently used to treat anxiety. However, this technique is controversial, and recent studies suggest that it's not particularly effective.

Cognitive-behavioral therapy is the leading form of therapy for anxiety, and it's often combined with medication. Most research suggests that this dual approach offers longer-lasting results than either medication or therapy alone.

Cognitive-Behavioral Therapy

Cognitive-behavioral therapy (CBT) aims to correct ingrained patterns

of negative thoughts and behaviors. As the name suggests, it has two parts. Cognitive therapy helps people change patterns of thinking that prevent them from overcoming their fears. Behavioral therapy works to change their reactions in situations that trigger anxiety. People with social phobia, for example, may assume that others will inevitably regard what they say as stupid. This is negative thinking. As a result, these people may avoid being with or talking to others.

This is an example of negative behavior. The role of CBT is to break this chain of thoughts and reactions.

Because negative thoughts and behaviors tend to come to the fore when people are under stress, the first step in CBT is to help you recognize when you're stressed. It's important to have an inner "thermostat" that can tell you just how stressed you really are and how to dial it down.

Behavioral therapists say there are three components to a stress reaction. These are commonly called the ABCs: affect, behavior, and cognition. Affect is how you feel; it refers to your emotional response to a particular situation. Behavior is what you do; for example, it can include tensing your jaw, tapping your foot, pacing, or overeating. Cognition is the thoughts you have when you are stressed, for example, thinking, "I'm going to miss my work deadline and get fired."

Research has shown that cognitive-behavioral therapy is effective for panic disorder, generalized anxiety

disorder, post-traumatic stress disorder, specific phobia, and social phobia. Cognitive-behavioral therapy can be done individually or in a group. If the anxiety is the result of a traumatic event that affected more than one person, group therapy may be most effective.

Cognitive-behavioral therapy usually takes place weekly for several weeks. The therapist begins by asking the patient to record his or her thoughts and level of anxiety in certain situations. Then, the therapist and patient discuss these thoughts, evaluate how realistic they are, and work together to substitute more productive thoughts. The therapist might also challenge the patient to consider what would happen if the fears came true, and whether that outcome would actually be so bad.

The behavioral component of cognitive-behavioral therapy incorporates two main strategies. One, called exposure or desensitization, involves having patients face their fears directly. This can be done in several ways. One is through role-playing. Another is by having

How to Choose a Therapist

To find a mental health professional who treats anxiety, start by checking with your health insurer to see if your plan leaves the choice of therapists up to you or limits you to the ones enrolled in its network. Then ask for recommendations from your primary care physician, a local clinic or hospital, family members, or friends. Finding out about your therapist's background and training can help you feel comfortable with your choice. Here are some questions to ask before settling on a therapist:

- What's your training (for example, what certification or degrees do you hold)?
- Do you have a state license?
- How long have you worked in this field?
- What are the advantages and disadvantages of different approaches to treatment?
- What kinds of treatment or therapy do you think might help me?
- How does the treatment work?
- What are the chances that the treatment will work?
- If you prescribe a medication, what would its potential benefits and risks be?
- How soon should I start feeling better?
- How will we assess my progress?
- What should I do if I don't feel better?
- How much will treatment cost?
- If I'm already seeing a therapist for cognitive-behavioral or exposure therapy and you prescribe medications, will you work with my therapist?

It's rarely easy for a therapist to give precise answers to these questions because no single therapist or type of treatment works for everyone. But there are some general responses you should look for. The therapist should have a degree in psychiatry, psychology, or social work. Also check to see if the therapist is licensed by the state. Mental health professionals tend to offer the particular type of therapy that they do best, but it's better if a therapist can talk with you in general about the merits and drawbacks of different types of treatment.

The therapist should also let you know how he or she will follow your progress. What are the signs of improvement? How will decisions be made about treatment? If you don't feel you've improved after several months, consider getting a second opinion.

an individual imagine frightening situations and describe them. Yet another strategy is to give patients “homework” in which they put themselves in real-life situations that spark anxiety. The reasoning is that avoiding anxiety-causing thoughts and situations reinforces the individual’s fears or false beliefs. In real-life situations, patients can practice recognizing negative thoughts and substituting more realistic ones. With repeated exposure, people eventually become desensitized to fear-provoking situations.

The other main strategy is teaching patients practical skills to help them feel more in control in difficult situations. For people who become extremely anxious when they have a lot to do, this may mean offering tips on time-management and goal-setting. Those who are uneasy in social situations can be coached on engaging in conversations and developing other social skills.

Research has found that people with generalized anxiety disorder and panic disorder who choose both cognitive-behavioral therapy and medication have fewer symptoms and a lower chance of relapse than those who use medication alone. Studies also show that in the long run these patients are able to stop taking medication or reduce their dose.

However, one recent study in the *Journal of the American Medical Association* found that people with panic disorder who received only cognitive-behavioral therapy maintained their improvement longer once treatment was stopped than did those who received imipramine as well as therapy. It’s possible that the medication may have undermined the cognitive-behavioral therapy by reducing the intensity of people’s fears. Thus, the process of facing their fears during the desensitization may have become less meaningful than it would have been otherwise. More research is needed to clarify which patients are better off with cognitive-behavioral therapy alone and which ones might benefit from medication, too.

Exposure Therapy

Sometimes exposure therapy is used alone. For example, a method called exposure and response prevention is effective for treating obsessive-compulsive disorder. Under the guidance of a therapist, the patient imagines or actually confronts his or her fears. Thus, individuals who fear contamination might be encouraged

to touch some object that they imagine to be covered with germs. Then they must refrain from washing their hands for several hours. The goal is to lessen the anxieties that accompany obsessive thoughts about contamination and, in particular, to do so without the patient needing to compulsively wash his or her hands.

Exposure therapy is also effective for treating post-traumatic stress disorder. During therapy, a patient is asked to talk or write about the trauma that he or she experienced. At first, the process

can induce tremendous fear and even terror, but as patients learn that they can “relieve” the experience without being harmed, they are less affected by it, and their anxiety gradually diminishes.

Studies show that exposure therapy yields significant, long-lasting results: 60%–80% of patients improve, and the benefits last 2–6 years.

Eye Movement Desensitization and Reprocessing (EMDR)

Eye movement desensitization and reprocessing (EMDR) is a popular but controversial variation on exposure therapy for post-traumatic stress disorder. Practitioners use somewhat different methods, but in general, a patient recalls and describes a traumatic memory while the therapist moves a finger back and forth in front of the individual’s face. The patient is to keep his or her eyes on the finger and concentrate on any changes in thoughts and feelings. Next, the patient takes a deep breath, imagines the event, and repeats a comforting thought, such as “I’m safe,” while still following the moving finger. This process continues until the memory isn’t frightening anymore.

Proponents of EMDR say that it can shorten the time needed for exposure therapy. But carefully controlled studies have not been encouraging. For example, EMDR has been found no better than a placebo for panic disorder. A 2001 analysis of studies of this method, in the *Journal of Consulting and Clinical Psychology*, found that EMDR does relieve post-traumatic stress disorder, but that it’s no more effective than conventional exposure therapy. This study and another analysis, published in 2000 in *Psychological Medicine*, found that the eye movements were unnecessary; EMDR was just as effective with fixed eyes. If so, that suggests that what’s useful in the therapy is the be-

With exposure therapy, 60%–80% of patients improve, and the benefits last 2–6 years.

havioral desensitization and that the eye movements may be superfluous.

Other Treatments

A variety of relaxation techniques, such as biofeedback and hypnosis, may help you change your body's response to stress and might relieve anxiety. But there are few studies showing how effective these techniques are and none comparing them to medication and therapy. Still, you may want to try them as supplements to proven treatments.

Biofeedback

Biofeedback involves taking measures of specific body functions, such as heartbeat or breathing, and feeding them back to an individual in the forms of sounds or lights. The idea is to become aware of the body's responses and learn to control them using relaxation and cognitive techniques. While biofeedback is often used to treat panic disorder, there's little research showing how effective it is or how long it should be used.

Hypnosis

Hypnosis is sometimes used in conjunction with cognitive-behavioral therapy (see page 35) to treat anxiety and other psychological disorders. It can help individuals focus their attention, rethink problems, relax, and respond to helpful suggestions. There's no magic in hypnosis. It relies mainly on your ability to concentrate and on the trust you have in the therapist. The benefit of hypnosis for treating anxiety is unclear. In some people, it may help relieve certain phobias and sleep problems. But there has been little research, and some of the studies reporting a benefit from hypnosis have had methodological flaws. A highly controversial approach to treating post-traumatic stress disorder uses hypnosis to recover memories, with the intent of confronting them directly. However, whether such memories are factually correct or represent subconscious fears or even posthypnotic suggestions is difficult to ascertain.

If you are interested in hypnosis, discuss it first with your psychiatrist or psychologist. The American Society of Clinical Hypnosis is an association for health professionals who are skilled in this method. (See "Resources," page 42.)

Exercise for Anxiety

If you exercise regularly, you know that a good workout can help you feel less stressed and better able to cope with problems. But can exercise help relieve anxiety disorders?

Some research shows that physical activity can modestly decrease anxiety symptoms. Exercise also boosts self-esteem slightly and improves social interaction skills, both of which can help reduce anxiety. Just how exercise helps isn't known, but researchers believe a combination of factors probably come into play. Exercise increases endorphins, natural chemicals that act like painkillers. And when done with a friend or in a class, it can promote social interaction.

While it's fair to say that exercise is beneficial for both mind and body, studies reporting that it reduces anxiety should be viewed with caution. For one thing, few of these studies used subjects diagnosed with anxiety disorders. Instead, they relied on participants' self-reports of anxiety symptoms. It's unclear whether the reported benefits would hold true for people with anxiety disorders. Furthermore, the studies didn't differenti-

ate among types of exercise, intensity, or duration, so it's impossible to recommend a specific regimen. Despite the unknowns, the authors of a recent review article in *Physician and Sportsmedicine* recommended that clinicians strongly encourage people with anxiety to exercise regularly in addition to adhering to proven treatment programs.

Besides boosting your mood, regular exercise offers a host of other benefits, such as lowering blood pressure, protecting against heart disease and cancer, and helping prevent diabetes. ■



In addition to possibly reducing anxiety, exercise offers a host of other health benefits.

Making Treatment Work for You

Mental health disorders don't lend themselves to quick fixes, and anxiety is no exception. Although some treatments, especially the fast-acting benzodiazepines, can make you feel better almost overnight, this improvement shouldn't be mistaken for a cure. Anxiety is a chronic condition, which means that symptoms tend to wax and wane. Often, when people seem to have recovered from an anxiety disorder, the symptoms recur or another anxiety disorder develops. This doesn't mean that treatment or the individual has failed. It simply means that you need to resume treatment (if you've stopped the one you were on) or try a different one (if your current treatment has stopped working). The nature of anxiety disorders can be frustrating, but there are several things you can do to get the most from your treatment and reduce the chances of a relapse. (*For advice on helping a family member or friend with anxiety, see "When a Loved One Has Anxiety," below.*)

Persist With Treatment

The most important thing you can do is to stay with your treatment for as long as your doctor recommends. People often stop taking medication or attending therapy sessions too soon. Some halt treatment because they start to feel better and think they no longer need it. When symptoms return, they assume that the treatment was ineffective. Others stop taking medication when they develop side effects.

Whatever the reason, stopping medication or therapy too early reduces its effectiveness and increases the chances of a recurrence. Ask beforehand how long your treatment will last. If you experience unpleasant side effects, tell your doctor at once. He or she can often minimize the side effects by prescribing a different medication or offering other advice.

Learn to Cope With Stress

Reducing stress can help control symptoms of anxiety. The National Institute of Mental Health reports that stress-management techniques may even boost

the effectiveness of therapy. There are many ways to reduce stress, including meditation, massage, and muscle relaxation. Listening to music and exercising are also effective stress-busters. Different methods work well for different people. What's important is that you find the method or combination of methods that works for you—and that you use it regularly.

When anxiety is related to a traumatic event in the news, one of the most important things you can do is tune it out. In the weeks following the terrorist attacks on September 11, 2001, the media was saturated with replays and updates of the tragedies. While the events naturally caused feelings of anxiety in many people, dwelling on the news made some people feel helpless and extremely fearful about the future. If an event dominates your thoughts or causes extreme upset or panic, it's time to turn off the TV and put down the newspaper. Limiting exposure to traumatic news is especially important for children, who have less experience with putting problems into perspective.

Don't Drink Coffee or Smoke

Smoking and caffeine can promote anxiety. Research suggests that heavy cigarette smoking during adolescence increases the risk for generalized anxiety disorder and panic disorder in early adulthood. The mecha-

When a Loved One Has Anxiety

It's difficult to see a loved one distressed. But if someone you love has an anxiety disorder, there are several things you can do to help:

- **Encourage a loved one to get treatment and stick with it.** Remind the person about taking medication and keeping therapy appointments.
- **Care for yourself.** Being a caretaker is a difficult job. You may want to get counseling or therapy for yourself. The support of a group of people who are also caring for someone with anxiety can be invaluable. Several mental health organizations sponsor such groups (*see "Resources," page 42*) and provide information on anxiety disorders and the latest treatments.
- **Offer emotional support.** Your patience and love can make a huge difference. Ask questions and listen carefully to answers. Try not to judge or minimize the other person's feelings, but offer hope. Suggest activities that you can do together, such as seeing a movie or going for a walk. Keep in mind that it takes time to get better.

nism may have less to do with nicotine's effect on the nervous system than with the damage done to the respiratory system. Smoking causes breathing problems, which research suggests may play a role in anxiety. The theory is that the brain misinterprets the smoker's labored breathing and resulting lack of oxygen as a threat of suffocation. The automatic physiological response is heavier breathing and faster pumping by the heart. In people who are susceptible to anxiety, the brain mistakes these responses as signs of panic.

With caffeine, on the other hand, it's the stimulant effect that promotes anxiety. Caffeine can set off a panic attack in someone prone to anxiety by activating the sympathetic nervous system, which launches the body's response to stress or danger. Many psychiatrists recommend that their anxiety patients eliminate, or at least minimize, their consumption of coffee and other caffeinated beverages

and foods. Also be aware that many over-the-counter medications, including weight-loss aids and "day-time" cold medications, contain caffeine.

In someone prone to anxiety, caffeine can set off a panic attack by activating the sympathetic nervous system, which launches the body's response to stress or danger.

Seek Social Support

Support from family members and from others with anxiety disorders can improve the results of treatment. The National Institute of Mental Health reports that many people with anxiety benefit from sharing their problems and triumphs with others. Joining a support group can help by giving you a regular

opportunity to talk with people who understand. Talking with trusted relatives, friends, and members of the clergy can be helpful, too. Chat groups on the Internet also provide a forum in which to share concerns and decrease the feelings of isolation that are common among people with anxiety. Just be skeptical about the information you find on the Internet, unless it comes from an established mental health organization. Also, use caution and common sense in deciding how much personal information to reveal when chatting online. Remember that chat rooms aren't a substitute for therapy. If you're looking for group therapy, join a group run by a mental health professional. ■

Building Friendships: An Antidote to Anxiety

Loneliness or inactivity can promote anxiety. Getting involved in activities and developing new friendships can help.

The treatment of anxiety disorders has never been safer or more successful, but there's plenty of room for improvement. As researchers gain a greater understanding of the brain circuitry and chemistry that underlie anxiety, the door will be opened to even better therapies. In addition to searching for better medications, scientists are trying to learn how to use existing therapies more effectively.

Comparing Medication and Psychosocial Therapies

Many different medications and therapies are used to control anxiety disorders. Most anxiety disorders improve dramatically with a combination of medication and cognitive-behavioral therapy. But little is known about the relative effectiveness of medical and psychological approaches. Research sponsored by the National Institute of Mental Health is comparing how well drug and behavioral therapies work separately and together to treat obsessive-compulsive disorder. Studies such as this will help determine whether combination therapy reduces the high relapse rate of people with obsessive-compulsive disorder.

New Benzodiazepines and Antidepressants

The goal of new drug development is to find agents that are at least as effective those available today, with fewer adverse effects. These medications would be especially welcome for older adults and others who have trouble tolerating the side effects of existing drugs.

Safer benzodiazepines are of particular interest because these medications work quickly and are quite effective. (See page 33.) One strategy has been to create partial agonists, drugs that affect only those parts of the benzodiazepine-GABA receptors that bring about therapeutic benefit. Several partial benzodiazepine receptor agonists have been tested in clinical trials. One in particular, alpidem, has proved effective in treating generalized anxiety and is now available in Europe.

Other investigators are developing new and more selective SSRIs. Like the partial benzodiazepine receptor agonists, these agents would bind to some but not all serotonin receptors. At least 14 different serotonin

receptors have been identified, and studies show that four of them play a role in controlling anxiety.

New Types of Drugs

Other kinds of drugs are being developed to act on the many other receptors and neurotransmitters that help promote or relieve anxiety. In early clinical studies, four targets look promising:

Neuropeptide Y agonists. Neuropeptide Y is an amino acid found throughout the nervous system. Human studies suggest that it has powerful antianxiety properties. Drugs that mimic its natural activity in the amygdala and other areas of the brain could help control anxiety symptoms.

Substance P antagonists. Researchers believe that substance P, a brain chemical present in the amygdala, plays a role in anxiety. New drugs that block substance P are being studied in clinical trials sponsored by the National Institute of Mental Health.

Corticotropin-releasing factor antagonists. CRF is a hormone that activates the HPA axis (see page 9) to launch the stress response. Elevated amounts of this chemical have been found in people with post-traumatic stress disorder (PTSD). Therefore, drugs that block its action might be useful in treating PTSD.

Cholecystokinin antagonists. Cholecystokinin, another neurotransmitter found throughout the brain, is believed to prompt anxiety and panic attacks. In preliminary studies, agents that block cholecystokinin were given to healthy volunteers, as well as to people with panic disorder. Afterward, researchers tried to induce panic attacks experimentally, but none of the participants who had taken the cholecystokinin antagonist had panic attacks.

Surgery for Obsessive-Compulsive Disorder

Some people with obsessive-compulsive disorder who don't respond to drug or behavioral therapy have been helped by surgery that cuts the neuronal loop that connects the cortex with the basal ganglia. Only a few medical centers have used the procedure, and it's too early to know the long-term outcomes. But for people who are disabled by severe anxiety disorder, surgery could offer an avenue of hope and relief. ■

agoraphobia: Fear and avoidance of open spaces and public spaces.

amygdala: A region of the brain that processes emotionally charged memories, including fear.

adrenal glands: Two glands on top of the kidneys that secrete the hormones cortisol and norepinephrine.

autonomic nervous system: The nerve pathways, starting with the hypothalamus in the brain, that control vital functions like heart rate, body temperature, and blood pressure. It includes two nerve pathways: the sympathetic and parasympathetic.

axon: The part of a neuron that carries impulses and stores neurotransmitters that convey signals to other neurons.

benzodiazepines: Medications that work by attaching to benzodiazepine-GABA receptors, helping to maintain levels of the neurotransmitter GABA in the brain.

brain imaging: A variety of technologies, such as magnetic resonance imaging (MRI), functional MRI (fMRI), and positron emission tomography (PET), used to examine the structure or function of the brain.

cognitive-behavioral therapy: A form of therapy to correct ingrained patterns of negative thoughts or behaviors.

corticotropin-releasing factor (CRF): A hormone secreted by the hypothalamus that helps rouse the body to defend against a physical or emotional threat.

cortisol: A glucocorticoid, or steroid hormone, released by the adrenal glands. It helps trigger the “fight-or-flight” response and similar responses.

dendrites: The parts of a neuron that receive signals sent via neurotransmitters from other neurons.

gamma-aminobutyric acid (GABA): Chief inhibitory neurotransmitter in the brain. As an inhibitory neurotransmitter, it instructs the next neuron not to fire. May help quell anxiety.

hippocampus: Part of the brain that plays a central role in processing long-term memories. It may be smaller than normal in people with post-traumatic stress disorder.

hypothalamic-pituitary-adrenal (HPA) axis: A system that governs a multitude of hormonal activities, including the body’s response to stress.

hypothalamus: Part of the brain that regulates vital body functions (such as blood pressure and temperature). It receives signals from the body and secretes hormones that influence the production of other hormones.

limbic system: Brain structures associated with emotions, such as anger, pleasure, sorrow, fear, and sexual arousal.

locus ceruleus: An area of the brainstem that helps determine which stimuli are worth paying attention to. A malfunction of the locus ceruleus may contribute to anxiety.

neuron: A nerve cell.

neurotransmitters: Chemicals such as serotonin or norepinephrine that convey messages across the gap, or synapse, between adjoining neurons.

norepinephrine: A neurotransmitter that plays a role in the regulation of anxiety, mood, and responses to stress. Sometimes called noradrenaline.

pituitary gland: An endocrine gland tucked into a bony space beneath the brain. It receives input and influence from the hypothalamus. It produces adrenocorticotropic hormone (ACTH), which controls the secretion of cortisol by the adrenal glands. This helps trigger the “fight-or-flight” response.

selective serotonin reuptake inhibitors (SSRIs): Antidepressants that block the reabsorption of serotonin by the neurons that release it, leaving more serotonin available to nerve cell receptors.

serotonin: A neurotransmitter involved in regulating moods, sleep, and appetite, and inhibiting pain.

synapse: A tiny gap between neurons that neurotransmitters cross in conveying nerve impulses.

Resources

American Psychiatric Association

1400 K St., N.W.
Washington, DC 20005
(202) 682-6220
www.psych.org

The American Psychiatric Association is a professional organization of physicians who treat mental illnesses. It provides news and research information about anxiety and other mental disorders, as well as updates on legal and insurance issues that pertain to patients.

American Psychological Association

750 First St., N.E.
Washington, DC 20002-4242
(202) 336-5500
www.apa.org

The American Psychological Association Web site has information and helpful publications on mental illness and many other topics for psychologists, parents, teens, and others. It also carries news on psychology and offers referrals to psychologists in the United States and Canada.

American Society of Clinical Hypnosis

130 E. Elm Court, Suite 201
Roselle, IL 60172-2000
(630) 980-4740
www.asch.net

The American Society of Clinical Hypnosis is an association of professionals who use hypnosis. It has a voluntary certification program and provides referrals to certified professionals who are trained to use hypnosis.

Anxiety Disorders Association of America

11900 Parklawn Drive, Suite 100
Rockville, MD 20852-2624
(301) 231-9350
www.adaa.org

This national nonprofit organization provides information on treatment options and referrals to professionals who treat anxiety. The Web site also has information about clinical trials.

National Center for PTSD

215 N. Main St.
White River Junction, VT 05009
(802) 296-5132
www.ncptsd.org

This research and education organization is dedicated to preventing and decreasing post-traumatic stress disorder. The Web site offers information for anyone interested in understanding PTSD, some of which is particularly intended for survivors of traumatic experiences and their families.

National Institute of Mental Health

Office of Communications and Public Liaison
6001 Executive Blvd., Room 8184, MSC 9663
Bethesda, MD 20892-9663
(301) 443-4513
www.nimh.nih.gov

The National Institute of Mental Health is a government agency that sponsors research on causes of and cures for mental illnesses. It offers a wide array of free publications. The Web site has educational segments on anxiety and depression, news on studies, and information about clinical trials.

Obsessive-Compulsive Foundation

337 Notch Hill Road
North Branford, CT 06471
(203) 315-2190
www.ocfoundation.org

This nonprofit public education organization provides a listing of support groups for people with obsessive-compulsive disorder and lists professionals who treat it.

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 Headaches
 Hearing Loss
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 High Cholesterol

Hypertension
 Improving Memory
 Improving Sleep
 Living Better, Living Longer
 Low Back Pain
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