ORE PATIENTS are asking their physicians about social anxiety disorder, their interest piqued by popular reports of treatment breakthroughs and by direct-to-consumer advertising about medications. However, the nature of social anxiety disorder often prevents people from seeking help. Identifying social anxiety disorder is important because pharmacologic, psychosocial, and even surgical treatments are successful in reducing the personal and social burden of this common condition. Unfortunately, like many other psychiatric disorders, social anxiety disorder remains under-recognized by clinicians.

The National Comorbidity Survey reported the lifetime prevalence of social anxiety disorder to be 13.3%, making it the most common anxiety disorder and the third most common psychiatric disorder in the United States, after major depression and alcohol dependence (FIGURE 1).

SYMPTOMS AND SUBTYPES OF SOCIAL ANXIETY DISORDER

It is normal to experience occasional mild discomfort and anxiety in a new social situation or public engagement. However, when this emotion becomes a marked and persistent fear causing distress or leading to avoidance of certain situations, the physician should consider a diagnosis of social anxiety disorder, a condition previously termed social phobia.

Excessive and unreasonable fear of being scrutinized by others or doing something embarrassing in front of strangers is the hallmark of social anxiety disorder. Patients with the disorder may go to great lengths to avoid a
situation that requires them to interact or perform in a social setting, or they may endure such situations with anxiety and dismay.8,9

**TABLE 1** lists the diagnostic criteria from the fourth edition of the American Psychiatric Association’s Diagnostic and Statistical Manual for Mental Disorders (DSM-IV).

Two subtypes of social anxiety disorder are recognized. When the fear is confined to a particular type of social or performance situation—the most common is speaking in front of an audience—the disorder is called specific (or discrete) social anxiety disorder or performance anxiety. The second and more disabling type is generalized social anxiety disorder, in which the patient experiences pervasive fears in most social interactions and situations.10,11

Typically, social anxiety disorder develops before age 20, with a mean age of onset between 14 and 16 years,1,12 though some individuals report an onset in early childhood. The onset may be insidious or may follow a stressful or humiliating experience.7

Patients with social anxiety disorder experience cognitive distortions, including unrealistic false beliefs about social situations and negative perceptions of others’ reactions to their performance. They may fear that a social situation will induce “thought blocking,” causing them to become speechless or incoherent. Patients may also have an overwhelming fear that they will appear unwell by trembling, blushing, or sweating, or they may worry that they will do or say something stupid or “crazy.”7,13 Activities feared by many patients with social anxiety disorder include being in public while eating, ordering food, or writing; asking questions or introducing themselves in a group; meeting strangers or people in authority; or using public facilities such as restrooms or telephones.11,14,15

In addition, patients with social anxiety disorder experience many physical symptoms.5 These include sweating, trembling, palpitations, shortness of breath, nausea, diarrhea, and blushing.11,16 The last is very common, reported in approximately 50% of patients. As Charles Darwin noted, blushing occurs in response to “thinking of what others think of us,”17 a problem central to social anxiety disorder. **FIGURE 2** schematically demonstrates the feedback loop between the physical and psychological symptoms.

### USE OF SCREENING QUESTIONS FOR SOCIAL ANXIETY DISORDER

Often, the topic of social anxiety disorder arises during an appointment with a physician when a patient refers to having problems from being “too shy.”

The physician can use several screening questions to identify patients requiring further investigation. Patients who respond affirmatively to several of these questions and who are experiencing distress, negative consequences, or both may have significant social anxieties and may benefit from treatment or psychiatric consultation.

Standardized scales such as the Social Phobia and Anxiety Inventory (SPAI)18 or the Liebowitz Social Anxiety Scale19 are also available and may allow patients the comfort of rating their own symptoms privately without feeling intimidated by direct questioning from their physician.

The diagnosis is confirmed when the patient’s history meets the DSM-IV criteria (**TABLE 1**).
DIFFERENTIAL DIAGNOSIS

The differential diagnosis of social anxiety disorder includes a wide array of psychiatric and medical disorders that can cause the patient to develop a pattern of avoiding social situations. The most common conditions to be excluded are major depressive disorder, panic disorder with agoraphobia, avoidant personality disorder, medical conditions with physical manifestations that cause social withdrawal, and general shyness (Table 5).

Depression
In some patients, major depressive disorder may be characterized by severe anxiety and social isolation. However, depression is also associated with neurovegetative signs and symptoms that are not typical of social anxiety disorder: sleep and appetite changes, anhedonia or lack of ability to feel pleasure, and suicidal thinking. Fortunately, antidepressant medications are helpful for both depression and social anxiety disorder, whether they occur independently or as comorbidities.

Panic disorder
The panic attacks associated with panic disorder may be triggered by social situations. However, in contrast to patients with social anxiety, those with panic disorder do not fear the social exposure but rather are concerned by the panic attack itself. In fact, patients with severe panic disorder complicated by agoraphobia often dread being alone and prefer being around people in case they need help during a panic attack.

Avoidant personality
Personality can confound the diagnosis of social anxiety. Avoidant personality disorder may cause significant social anxiety and inhibition. Patients with this condition experience feelings of inadequacy and have a marked hypersensitivity to negative evaluation. Like patients with social anxiety, they avoid activities that involve significant social or interpersonal contact. However, unlike most social anxiety disorder patients, they often view themselves as inferior to others or personally unappealing.

Medical disorders
Medical conditions such as Parkinson disease that produce obvious physical symptoms such as stuttering can lead to socially avoidant behavior. For example, stutterers may avoid speaking in new social settings for fear that they will embarrass themselves. However, these individuals have fears that are rationally grounded in their symptoms. In contrast, patients with social anxiety disorder have ungrounded social fears.

A patient with such a medical condition should be diagnosed with social anxiety only if the social fear is unrelated to the physical symptoms. For example, social anxiety may be identified in a Parkinson patient who avoids social interactions, not for fear of being seen trembling, but rather because of a fear of acting in a way that is humiliating.

Shyness
General, nonpathologic shyness may be similar to social anxiety, and the two can be difficult to distinguish in some cases. A guiding principle should be that shyness does not usu-
Early in life, social anxiety disorder can have a significant impact on personal and social development. It can lead to lower educational achievement, unstable employment history, and increased absenteeism or tardiness at work. It is also associated with avoiding work duties like making presentations and being assertive or expressing disagreement.

One-third of these patients have reduced productivity, leading to dependence on the family and the state. In one sample of patients with social anxiety disorder, more than 20% were on welfare.

An interesting finding is that patients appear to have a higher rate of concomitant physical illnesses and to use medical outpatient services more often than subjects without a psychiatric disorder.

Psychiatric comorbidities are common in social anxiety disorder, affecting up to 70% to 80% of cases. In the primary care setting, patients with social anxiety disorder have a 40% to 50% lifetime prevalence of comorbid major depressive disorder, which usually develops after the onset of the social anxiety. Comorbidity increases the risk of disability and suicide. The suicide attempt rate in uncomplicated social anxiety disorder is 1%, rising to 16% when the disorder is complicated by a comorbid psychiatric disorder.

TABLE 2

<table>
<thead>
<tr>
<th>Some common fears in social anxiety disorder</th>
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<tbody>
<tr>
<td>Speaking in public</td>
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<tr>
<td>Writing or eating in front of others</td>
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<tr>
<td>Making small talk</td>
</tr>
<tr>
<td>Asking questions or giving reports in groups</td>
</tr>
<tr>
<td>Being introduced</td>
</tr>
<tr>
<td>Meeting or talking to strangers</td>
</tr>
<tr>
<td>Attending social gatherings</td>
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<tr>
<td>Meeting or talking to people in authority</td>
</tr>
<tr>
<td>Entering a party group</td>
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<tr>
<td>Being assertive or expressing disagreement</td>
</tr>
<tr>
<td>Being watched ordering food</td>
</tr>
<tr>
<td>Being tested</td>
</tr>
<tr>
<td>Acting or playing a musical instrument in public</td>
</tr>
<tr>
<td>Initiating conversation with a member of the opposite sex</td>
</tr>
<tr>
<td>Dating</td>
</tr>
<tr>
<td>Seeking medical help</td>
</tr>
<tr>
<td>Walking into a room when people are already seated</td>
</tr>
<tr>
<td>Returning items to the store</td>
</tr>
<tr>
<td>Speaking in class</td>
</tr>
</tbody>
</table>

TABLE 3

<table>
<thead>
<tr>
<th>Physical signs and symptoms of social anxiety disorder</th>
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</thead>
<tbody>
<tr>
<td>Tachycardia</td>
</tr>
<tr>
<td>Increased blood pressure</td>
</tr>
<tr>
<td>Trembling</td>
</tr>
<tr>
<td>Shaking voice</td>
</tr>
<tr>
<td>Shortness of breath</td>
</tr>
<tr>
<td>Blushing</td>
</tr>
<tr>
<td>Nausea</td>
</tr>
<tr>
<td>Diarrhea</td>
</tr>
<tr>
<td>Cold clammy hands</td>
</tr>
<tr>
<td>Muscle tension</td>
</tr>
<tr>
<td>Gastrointestinal discomfort</td>
</tr>
<tr>
<td>Sweating</td>
</tr>
<tr>
<td>Poor eye contact</td>
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</tbody>
</table>

Experience attenuates common shyness but not social anxiety disorder.
Alcohol and drug abuse are common, though inappropriate, coping mechanisms. Alcohol may be used by many patients in an attempt to “self-medicate” or reduce anxiety in social situations. Alcohol abuse is reported in 17% of social anxiety disorder patients, and other drug abuse in 13%. Alcohol abuse usually evolves over many years after the onset of social anxiety disorder. In theory, detecting social anxiety disorder early may assist in the prevention of alcohol or drug dependence in these susceptible patients.

## CAUSES OF SOCIAL ANXIETY DISORDER

Although the pathophysiology of social anxiety disorder is not fully understood, it likely involves interplay between genetics, family modeling, neurobiology, and cognitive behavioral factors.

### Genetic and familial factors

Evidence for a genetic contribution comes from twin studies, which report concordance rates of 24% in monozygotic twins and 15% in dizygotic twins. First-degree relatives of patients are more than three times as likely to develop social anxiety disorder than are unrelated individuals. Children of parents with social anxiety disorder are more likely to develop the condition than children of parents without it.

Also, parental overprotection or rejection is associated with increased rates of the disorder. Children may learn fears from observing fear reactions from their parents, consequently modeling or developing avoidance behavior. Overprotection may prevent children from being exposed to challenging or stressful situations, which are normal factors in human development, thereby teaching children abnormal social fears and behaviors.

### The cognitive behavioral model

Patients with social anxiety disorder tend to view the world as a negative, defeating place, a mindset that is known as having negative cognitions. They frequently judge themselves harshly and perceive others’ reactions to their performance to be negative. They learn to avoid the stress-inducing situations; if they must experience the situation, they feel high levels of anxiety. A vicious cycle develops, in which the heightened anxiety reinforces their belief that the world is a bad place or that others are judging them.

### Neurobiological factors

#### Serotonergic function

A role for serotonin is suggested by the clinical efficacy of psychotropic medications such as monoamine oxidase inhibitors (MAOIs), reversible monoamine oxidase inhibitors (RIMAs), and selective serotonin reuptake inhibitors (SSRIs). Increased serum cortisol levels and anxiety in response to fenfluramine challenge provide limited evidence to support postsynaptic hypersensitivity in at least a subgroup of serotonin receptors. However, another study that measured peripheral serotonergic

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**FIGURE 2.** A model illustrating the basic concept of social anxiety disorder. In this model, the patient perceives interactions with strangers as threatening as a result of negative cognitions. This leads to activation of the autonomic system and avoidance of the situation, which in turn reinforces the negative perception and sense of failure, again leading to avoidance.
Dopaminergic function. Dopamine involvement has been suggested by two lines of evidence. First, social anxiety disorder develops in some patients treated with antidopaminergic agents such as haloperidol (Haldol) and in some patients with Parkinson disease, which is associated with dopaminergic changes. Second, social anxiety symptoms respond to MAOIs and bupropion (Wellbutrin), both of which enhance dopaminergic function. The clinical studies are, however, contradictory. One study showed no difference between social anxiety patients and controls in levodopa levels, prolactin levels, and eye blink response.24 However, another small study found that patients had markedly lower striatal dopamine reuptake site densities than did controls.25,26

Adrenergic function. Patients with specific performance social anxiety disorder experience larger increases in heart rate than do patients with the generalized disorder. The difference may explain why beta-blockers are effective in specific social anxiety but not in generalized social anxiety disorder. No consistent abnormalities have been found in plasma norepinephrine levels.5,24

Central chemoreceptor sensitivity can be assessed by having patients inhale 35% carbon dioxide, an anxiogenic or panic-inducer. When subjected to this test, patients with social anxiety disorder have central chemoreceptor sensitivity levels somewhere between those of normal controls and those of panic disorder patients.24

Growth hormone deficiency may be associated with increased risk of developing an anxiety disorder, but further studies are needed.24

Abnormal patterns of brain activation. Neuroimaging studies in social anxiety disorder patients have shown that the right dorsolateral prefrontal cortex and the left parietal cortex are uniquely activated while the patient experiences anxiety. Interestingly, these areas may be related to planning effective behavioral responses and awareness of body position, which is a central concept in the psychopathology of social anxiety disorder.24 (As mentioned previously, patients with social anxiety disorder are concerned by potential

### Table 4

**Screening questions for social anxiety disorder***

- Are you uncomfortable or embarrassed when you are the center of attention, or when you are asked to do things in public like speaking, eating, or signing a check?
- Do you find it hard to interact with people?
- Is being embarrassed or looking “stupid” among your worst fears?
- Does fear of doing something embarrassing or humiliating cause you to avoid doing things or speaking to people?
- Do you avoid activities that put you at the center of attention?

*An affirmative answer to two or more of these questions should cause one to suspect the diagnosis and warrants further investigation

### Table 5

**Differential diagnosis of social anxiety disorder**

All of the following lead to avoidance of social situations:

**Social anxiety disorder**
- Problem performing
- Dread being with people

**Medical condition with physical manifestation**
- Parkinson disease
- Stuttering
- Bell’s palsy

**Panic with agoraphobia**
- Worried about having a panic attack
- Fear that escape or help is not available
- Dread being alone and prefer being around people

**Depression**
- Differentiated by clear anhedonia (lack of all pleasure)
- Suicidal ideation
- Sleep and appetite changes

**Shyness**
- Unpleasant feeling in social situation
- Not very distressing or disabling

**Avoidant personality disorder**
- Pervasive feelings of inadequacy
- More anxiety and problems relating
- May be a more severe form of social anxiety disorder

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In one study, functional magnetic resonance imaging showed that the amygdala and hippocampus were activated more intensely in patients with social anxiety disorder than in controls presented with similar stimuli.27

**TABLE 6**

<table>
<thead>
<tr>
<th>THERAPY</th>
<th>STARTING DOSE</th>
<th>TARGET DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SSRIs (first-line therapies for generalized social anxiety disorder)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citalopram (Celexa)</td>
<td>10–20 mg daily</td>
<td>20–40 mg daily</td>
</tr>
<tr>
<td>Fluoxetine (Prozac)</td>
<td>5–10 mg every morning</td>
<td>20–80 mg every morning</td>
</tr>
<tr>
<td>Fluvoxamine (Luvox)</td>
<td>25–50 mg at bedtime</td>
<td>100–300 mg at bedtime</td>
</tr>
<tr>
<td>Paroxetine (Paxil)</td>
<td>5–10 mg at bedtime</td>
<td>20–50 mg daily</td>
</tr>
<tr>
<td>Sertraline (Zoloft)</td>
<td>12.5–25 mg every morning</td>
<td>50–200 mg daily</td>
</tr>
<tr>
<td><strong>Alternative therapies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gabapentin (Neurontin)</td>
<td>100 mg three times daily</td>
<td>300–1200 mg three times daily</td>
</tr>
<tr>
<td>Nefazodone (Serzone)</td>
<td>25 mg twice a day</td>
<td>300–600 mg daily</td>
</tr>
<tr>
<td>Phенelzine (Nardil)</td>
<td>15 mg twice a day</td>
<td>30–90 mg daily</td>
</tr>
<tr>
<td>Venlafaxine (Effexor)</td>
<td>37.5–75 mg each morning</td>
<td>75–375 mg daily</td>
</tr>
<tr>
<td><strong>Therapies for specific performance anxieties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propranolol (Inderal, others)</td>
<td>10–80 mg 1 hour before a stress-inducing performance</td>
<td></td>
</tr>
<tr>
<td>Atenolol (Tenormin, others)</td>
<td>25–100 mg 1 hour before a stress-inducing performance</td>
<td></td>
</tr>
<tr>
<td>Clonazepam (Klonopin)</td>
<td>0.5–2.0 mg before performance</td>
<td></td>
</tr>
<tr>
<td>Alprazolam (Xanax)</td>
<td>0.25–1.0 mg before performance</td>
<td></td>
</tr>
</tbody>
</table>

**Selective serotonin reuptake inhibitors (SSRIs)**

This group of medications is considered the first line of pharmacologic treatment for social anxiety disorder. The first multicenter, randomized, double-blind study of an SSRI found that paroxetine (Paxil) was effective and well-tolerated in reducing the symptoms and avoidance that are characteristic of social anxiety disorder. The trial lasted 12 weeks; the dosage of paroxetine ranged from 20 to 50 mg/day.5,28

Other small studies demonstrated the efficacy of fluvoxamine (Luvox) at 100 to 300 mg daily and of sertraline (Zoloft) at 50 to 200 mg daily. Citalopram (Celexa) and fluoxetine (Prozac) have also been shown to be effective in open-label trials.4,29

Generally well tolerated, SSRIs have produced acute improvement in 50% to 75% of patients.14

Starting dosages for social anxiety disorder should be lower than those used for depressive disorders to reduce chances of an acute activating or energizing effect (TABLE 6). Starting the dose too high or increasing the dosage too quickly may actually worsen anxiety in these already anxious patients.

**Monoamine oxidase inhibitors (MAOIs)**

Before the advent of SSRIs, MAOIs were considered the first-line drug treatment for social anxiety disorder. However, problems with tolerability, including drug interactions, limit...
their use. A tyramine-restricted diet is required to reduce the chances of hypertensive crises.4

The most extensively studied MAOI for treating social anxiety disorder is phenelzine (Nardil), which is effective in doses between 30 to 90 mg per day. However, psychiatric and nutritional consultation are recommended before initiating therapy with MAOIs.

Benzodiazepines
Limited data support the efficacy of high-potency benzodiazepines, specifically clonazepam (Klonopin) and alprazolam (Xanax). The rapid anxiolytic effect of these medications may be advantageous for some patients with a specific performance anxiety, such as fear of giving a speech, who could take the medication just before the performance. Unfortunately, some patients experience unwanted side effects such as sedation and dulled thinking.

Caution is warranted in prescribing benzodiazepines because long-term use may lead to physical dependence, including withdrawal symptoms when the drug is discontinued. In addition, benzodiazepines interact strongly with alcohol, and comorbid alcohol dependence is known to be common in patients with social anxiety.4,30

Beta-blockers
Although beta-blockers may be used to treat specific performance-related anxiety, controlled studies have not supported their efficacy in generalized social anxiety disorder.5,30 Their efficacy in performance anxiety may be attributable to their ability to decrease the peripheral physical symptoms of anxiety, such as tachycardia and tremor, thus minimizing the perception of anxiety. Beta-blockers are less likely to cause sedation and cognitive side effects than are benzodiazepines. Propranolol (Inderal, others; 10 to 80 mg) and atenolol (Tenormin, others; 25 to 100 mg) are equally effective and may be used as needed 1 hour before the triggering event in patients with specific performance-related anxiety.5,30

Other medications
Some medications showing early promise include venlafaxine (Effexor), nefazodone (Serzone), and gabapentin (Neurontin).31–33

TABLE 6 lists starting and target doses for medications for the treatment of generalized social anxiety disorder. However, SSRIs remain the first-line agents, and MAOIs or newer agents should generally be reserved for treatment-refractory patients or used in consultation with a psychiatrist.

PSYCHOLOGICAL TREATMENT

The cornerstone of psychosocial treatment for anxiety is exposure to the feared situation, either in real life or in role-play. Of the psychosocial interventions for social anxiety disorder, cognitive-behavioral therapy is supported by the most evidence.34 In cognitive-behavioral therapy, the therapist uses exposure to help induce cognitive restructuring, that is, to change the patient’s interpretation of the feared situation and the belief that the outcome is a failure. The patient also undergoes social skill training, including modeling appropriate behavior, receiving feedback, and practicing the skills as “homework.” Cognitive-behavioral therapy appears to be particularly effective for treating social anxiety disorder in group settings.34

In other psychological disorders, combining medication with cognitive-behavioral therapy is more effective than either modality alone. For example, cognitive-behavioral therapy with nefazodone is an effective combination for treatment of chronic depression, and cognitive-behavioral therapy plus imipramine is effective for panic disorder.32,35 Such combinations have not been studied in social anxiety disorder, but the effectiveness of each modality alone suggests that combinations may deserve study.4

Specific anxieties, such as the fear of public speaking, can be addressed in a group setting that educates and desensitizes the affected individual. For example, Toastmasters International is an organization that gives members the opportunity to speak to groups and work with others in a supportive environment. A typical Toastmasters club is made up of 20 to 30 people who meet once a week for about an hour. Local meetings can be found by contacting Toastmasters at 949-858-8255 or by accessing the organization’s website at www.toastmasters.org.
SURGICAL INTERVENTIONS

One prospective study suggests that endoscopic thoracic sympathectomy may be effective in patients who do not respond to medication or psychological therapy. Ablating the upper thoracic sympathetic nerve segments relieves physical signs and symptoms of sympathetic arousal (such as sweating) that precipitate or reinforce negative cognitions and avoidance.\(^{36}\)

A study expert neurosurgeons make advances in deep brain stimulation, it is also possible that this procedure may offer hope to patients with severe, treatment-resistant social anxiety disorder.

FOLLOWING UP WITH PATIENTS

Patients will probably benefit in the short term from medication management by their general practitioner. In addition, most should also be considered for referral to a psychiatrist for a complete medical, psychiatric, and psychological evaluation and formulation of a comprehensive treatment plan to optimize recovery.

REFERENCES


ADDRESS: David J. Muzina, MD, Department of Psychiatry and Psychology, P57, The Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, OH 44195; e-mail muzinad@ccf.org.