

# Childhood Obsessive–Compulsive Disorder

Barry Sarvet, MD

**Author Disclosure**  
Dr Sarvet has disclosed no financial relationships relevant to this article. This commentary does contain a discussion of an unapproved/investigative use of a commercial product/device.

## Practice Gap

Obsessive–compulsive disorder (OCD) affects up to 3% of children and adolescents, with nearly 75% of these experiencing comorbid diagnoses. Physicians need to familiarize themselves with the diagnostic criteria and basic screening tests, including the Pediatric Symptom Checklist and the Screen for Anxiety Related Emotional Disorders, as well as the principles of effective treatment, including Cognitive Behavioral Therapy and pharmacologic agents.

## Objectives

After completing this article, readers should be able to:

1. Know the definition of obsessive–compulsive disorder (OCD) and be familiar with its signs and symptoms.
2. Understand the biological and environmental contributions to the development of OCD.
3. Be aware of the comorbidities associated with OCD.
4. Know the therapies available for treating OCD, both cognitive and pharmacologic.
5. Understand the role of the primary care physician in the management of OCD.

## Case Example

Joseph is an 11-year-old boy whose mother has brought him to the pediatrician for a concern about his hands. The skin is dry, cracked, and erythematous. Joseph is wearing gloves in the office and is unhappy about being there. He does not want to show his hands to the doctor. No other area of skin is affected. The condition has worsened gradually over several months. Joseph's mother has noticed that he washes his hands often and consumes large quantities of hand sanitizer gel throughout the day. Joseph vehemently denies this behavior. In addition, there is a several-year history of frequent hand-washing, increasing in severity over the past several months, and avoidance of touching door knobs, handles, playing cards, books, and toys that are not his own. He wears gloves everywhere he goes outside of his house.

Joseph worries about germs and getting sick, and he avoids going to other kids' houses or eating food that has not been prepared by his mother. He also has elaborate routines when he uses the bathroom that take more than an hour before he goes to school, and he has tantrums when his mother tries to rush him when he is running late for school. He needs to use several clean towels every time he washes his hands, and his mother has had difficulty keeping up with all the laundry. Joseph disputes the history his mother provides at every turn, insisting that he is fine. Despite all of the reported concern about germs and cleanliness, his teeth are unbrushed and he is observed to be somewhat slovenly and careless about his overall personal hygiene.

## Clinical Description

In children, adolescents, and adults, obsessive-compulsive disorder (OCD) is a mental illness characterized by intensely driven, seemingly pointless repetitive behaviors or mental

## Abbreviations

<b>CBT:</b>	cognitive behavioral therapy
<b>DSM-IV-TR:</b>	<i>Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision</i>
<b>ERP:</b>	exposure and response prevention
<b>GABHS:</b>	group A $\beta$ -hemolytic <i>Streptococcus</i>
<b>OCD:</b>	obsessive-compulsive disorder
<b>PANDAS:</b>	pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection
<b>PCP:</b>	primary care provider
<b>SCARED:</b>	Screen for Anxiety Related Emotional Disorders
<b>SSRI:</b>	selective serotonin reuptake inhibitor

acts (compulsions), along with recurrent disturbing irrational thoughts, urges, images, and worries (obsessions). Patients who have these patterns of behavior and mental activity usually recognize them to be irrational; however, children tend to be less insightful. Whether or not there is insight, the compulsive behavior and obsessive thoughts seem irresistible and necessary.

There is a wide spectrum of severity and disability associated with childhood OCD, including patients who are completely unable to function appropriately and are experiencing a profound degree of suffering with anxiety and frustration. Although defined by the presence of obsessions and compulsions, OCD is classified as an anxiety disorder. Obsessions are associated commonly with feelings of anxiety or other disturbing emotional experiences such as guilt, worry, or dread related to expectations of catastrophic, disgraceful, or tragic outcomes. Compulsions usually are linked to obsessions in that the individual considers them necessary to neutralize the obsessive thoughts and to prevent a feared outcome.

Compulsive behaviors or mental acts may be repetitive and rule-bound, needing to be performed an exact number of times, or repeated until it feels perfect or “just right.” Whatever relief or satisfaction is provided by the compulsive behavior is short-lived. The obsession soon returns, renewing another cycle of compulsive behavior. Patients who have OCD often become imprisoned within these cycles and devote increasing proportions of their time and attention to them. Paradoxically, patients such as Joseph, who have obsessions and compulsions related to concerns about cleanliness, often neglect other aspects of their personal hygiene and functioning, such as schoolwork and peer relationships.

The diagnosis of OCD is made through the application of clinical criteria (Table 1). The diagnostic criteria (1) include the presence of obsessions or compulsions that cause significant distress, consume substantial amounts of time, or result in impairment in functioning. The diagnosis is excluded if the obsessive or compulsive symptoms are limited to preoccupations associated with other disorders such as anorexia nervosa, body dysmorphic disorder, and substance abuse disorders. The disorder is excluded also if the obsessive and compulsive symptoms are considered to be the direct result of intoxication or a medical condition.

This last criterion is difficult to apply in the context of recent evidence implicating streptococcal infection in the etiology of some cases of OCD. Although the putative syndrome pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS), could be interpreted to fall under these exclusion criteria,

these patients currently are eligible for the diagnosis of OCD if they meet the criteria otherwise. Proposed changes in the forthcoming fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* include the specification of an expanded range of degrees of insight, as well as the addition of a subtype of tic-related OCD. (2)

Although early-onset OCD is not recognized as a distinct subtype of OCD in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR), nor proposed as such for the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, there are several notable differences in clinical characteristics and patterns of heritability in comparison with adult onset cases. (3) Childhood-onset OCD is more likely to be associated with tic disorders and disruptive behavior disorders such as attention-deficit/hyperactivity disorder. (4) Individuals who have childhood-onset OCD are more likely to have first-degree relatives who have OCD. Although there is a male:female predominance in childhood-onset OCD, the opposite is true for adult-onset OCD. (5) Finally, patients who have childhood-onset OCD appear to have a more favorable prognosis; a recent study showed that 44% of a sample of patients who had childhood-onset OCD had subclinical levels of symptom severity (considered to be in remission) by early adulthood. (6) This incidence is in contrast to data indicating adult-onset OCD to have a prolonged chronic course. (7)

There is a great deal of heterogeneity in OCD symptom patterns for individual patients. For example, one child who has OCD may have compulsive hand-washing and recurrent fears that his body is contaminated with germs, whereas another child who has OCD may walk in and out of every doorway a precise number of times and repeatedly tap things with both hands to make sure that they have done so evenly on both sides. Yet another child who has OCD may spend hours throughout the day worrying that he might kill his parents, confess to this thought repeatedly, and recite elaborate prayers asking God to protect his parents every night. Despite this heterogeneity, OCD symptoms tend to fall into one or more of the following groups: symmetry, hoarding, forbidden thoughts, and cleaning (Table 2). (8)(9)

### Epidemiology: Prevalence, Comorbidity

Childhood OCD appears to occur in 1% to 3% of children and adolescents, a rate similar to that of adults. (10) The modal age of onset in the pediatric population is ~10 years. Because children often are secretive about their

Table 1. **Diagnostic Criteria for Obsessive Compulsive Disorder****A. Presence of either obsessions or compulsions**

Obsessions are defined by:

- Recurrent and persistent thoughts, impulses, or images that are experienced at some time during the disturbance as intrusive and inappropriate and that cause marked anxiety or distress
- The thoughts, impulses, or images are not simply excessive worries about real-life problems
- The person attempts to ignore or suppress such thoughts, impulses, or images, or to neutralize them with some other thought or action
- The person recognizes that the obsessional thoughts, impulses, or images are a product of his or her own mind (not imposed from without as in thought insertion)

Compulsions are defined by:

- Repetitive behaviors (eg, hand-washing, ordering, checking) or mental acts (eg, praying, counting, repeating words silently) that the person feels driven to perform in response to an obsession, or according to rules that must be applied rigidly
  - The behaviors or mental acts are aimed at preventing or reducing distress or preventing some dreaded event or situation; however, these behaviors or mental acts either are not connected in a realistic way with what they are designed to neutralize or prevent or are clearly excessive
- B.** At some point during the course of the disorder, the person has recognized that the obsessions or compulsions are excessive or unreasonable. Note: This does not apply to children.
- C.** The obsessions or compulsions cause marked distress, are time consuming (take > 1 h/d), or significantly interfere with the person's normal routine, occupational (or academic) functioning, or usual social activities or relationships.
- D.** If another Axis I disorder is present, the content of the obsessions or compulsions is not restricted to it (eg, preoccupation with food in the presence of an Eating Disorder; hair pulling in the presence of Trichotillomania; concern with appearance in the presence of Body Dysmorphic Disorder; preoccupation with drugs in the presence of a Substance Use Disorder; preoccupation with having a serious illness in the presence of Hypochondriasis; preoccupation with sexual urges or fantasies in the presence of a Paraphilia; or guilty ruminations in the presence of Major Depressive Disorder).
- E.** The disturbance is not due to the direct physiological effects of a substance (eg, a drug of abuse, a medication) or a general medical condition.

Reprinted from *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR). Washington, DC: American Psychiatric Association; 2000.

symptoms, childhood OCD frequently goes unrecognized for a long period of time. (11) Children and adolescents who have OCD frequently have additional psychiatric disorders. Only 26% of a sample of children who have OCD studied at the National Institutes of Health were free of comorbid psychiatric diagnoses. (12) Patterns of comorbidity include high rates of tic disorders, other anxiety disorders such as generalized anxiety disorder and specific phobias, depression, attention-deficit/hyperactivity disorder, and oppositional defiant disorder.

### Etiology and Pathophysiology

Evidence for neurobiologic factors in the etiology of OCD has been accumulating during the past several decades. Structural and functional brain-imaging studies in both adults and children point consistently to dysregulation of frontal corticostriatal-thalamic circuits in the pathophysiology of OCD. (13)(14) These circuits are modulated

by serotonergic, dopaminergic, and glutamatergic neurons. It is assumed that any factor affecting the functioning of these circuits could contribute to the pathogenesis of OCD. Accordingly, symptoms of OCD have been shown to be associated with brain lesions affecting these circuits. (15) Similarly, obsessive-compulsive symptoms have been observed to be associated with other diseases of the basal ganglia such as Tourette's syndrome, Huntington chorea, Sydenham chorea, and postencephalitic Parkinson disease. These latter two conditions, along with the proposed syndrome PANDAS, have led to the suggestion of an immunoreactive cause for some cases of OCD. (16)

Genetic factors in the etiology of OCD have been implicated by studies of familial patterns of inheritance, twin studies, and genetic segregation and linkage analyses. (17) Twin studies estimate heritability to be in the range of 45% to 65% on the basis of genetic factors. (18) No specific genes have been conclusively identified yet; however, studies implicating two candidate genes involving

Table 2. **Obsessive–Compulsive Symptom Groups: Clinical Examples**

Group	Obsessions	Compulsions
Symmetry	Worrying about alignment of bilateral objects in environment	Lining up rows of objects Straightening position of objects Repetitive touching of objects same number of times with both hands Counting in repetitive patterns
Hoarding	Worry about losing objects that could be needed in future Urges to save things	Accumulating objects in home or work environment by retaining objects that are ordinarily discarded or by acquiring excessive quantities of objects As a result, spaces become nonfunctional or unsanitary
Forbidden thoughts	Images of violent behavior Images of sexual behavior that the individual considers to be deviant Worries about having inadvertently neglected to perform a vital safety procedure Worries about having inadvertently hurt a loved one	Confessions of violent or sexual impulses Repetitive checking and securing doors and windows Prayers and rituals for purification and absolution Checking to ensure the safety of a loved one
Cleaning	Excessive worry about becoming contaminated or infected with germs Fear of contact with surfaces thought to have germs Worries about transmission of infectious disease through casual contact with people	Repetitive hand-washing, showering, rinsing, wiping with clean towels Wearing gloves Avoidance of touching surfaces such as door handles Elaborate rules related to eating and preparing food

glutamate neurotransmission (GRIN2B, SLC1A1) have been replicated recently. (19)

Given the lack of 100% concordance rates for OCD in monozygotic twins, the interaction of nongenetic factors with constitutional genetic variables also must play a significant role in the causation of OCD. Cognitive behavioral models of the role of family interactions in the reinforcement of obsessive-compulsive symptoms have generated fruitful avenues for treatment. (20) Evidence that cognitive behavioral therapy (CBT) brings about correction of functional magnetic resonance imaging abnormalities associated with OCD points to a complex interaction of psychosocial and biological factors in the pathophysiology of OCD. (21)

### Differential Diagnosis

Many of the symptoms of OCD in children overlap with those of other conditions. The nature and context of symptoms must always be considered carefully in order for correct application of DSM-IV criteria. For example, patients who have depression often have repetitive negative ruminations. These thoughts could be confused with

obsessive thoughts in OCD. If the repetitive thoughts are occurring primarily in the context of a depressed mood and are not associated with compensatory behaviors such as repetitive reassurance seeking and rituals, they are likely to be signs of a depressive disorder rather than OCD.

Patients who have bipolar disorder may have symptoms of hyperreligiosity in the context of a manic episode. Similarly, children who have OCD may be preoccupied with spirituality and exhibit compulsive praying and religious rituals. If the hyperreligiosity is associated primarily with elevated or mixed mood states and does not represent a compensatory behavior in response to intrusive forbidden thoughts, it is likely a sign of a manic state rather than OCD.

At times, children who have OCD experience intrusive forbidden thoughts and confess them to their parents or other responsible adults to relieve feelings of guilt. These thoughts may include suicidal, homicidal, and sexually inappropriate or aggressive ideation, and could be misunderstood to indicate actual risk of these dangerous behaviors. In these circumstances, clinicians should screen patients carefully for other disorders that may manifest this type of ideation, such as mood disorders,

conduct disorder, posttraumatic stress disorder, or paraphilias (atypical sexual arousal).

If there is no evidence of these other disorders, and if the expression of these urges is understood to serve a confessional function to relieve guilt and is associated with repetitive safety checking rituals, it is likely that these symptoms are indicative of OCD. Unless there are other risk factors and comorbid conditions associated with high-risk behavior in addition to the OCD, the risk of these patients acting upon these thoughts is minimal.

Eating disorders overlap significantly with OCD, having extremely rigid adherence to rules about eating, repetitive and ritualistic exercise behavior, and obsessions related to body image. According to current classification standards, if patients who have eating disorders have obsessive-compulsive symptoms limited to the issues of body image and eating, they would not be considered to have the additional diagnosis of OCD. (1)

Other disorders, such as the newly proposed hoarding disorder and body dysmorphic disorder, are syndromes defined by specific types of obsessive and compulsive symptoms. Patients who have the proposed hoarding disorder have compulsive tendencies to accumulate items that they do not objectively need and experience intense distress and fears associated with letting go of these items. (22) Body dysmorphic disorder is associated with obsessive thoughts related to perceived imperfections in appearance, leading to compulsive efforts to change their appearance. Although these conditions have been identified to be on a spectrum with OCD, substantial evidence of their distinct difference from OCD on the basis of clinical characteristics, neurobiologic correlates, and treatment response supports their being separated from OCD at this time.

### Pediatric Autoimmune Neuropsychiatric Disorders Associated With Streptococcal Infection

In 1998, Swedo and colleagues reported on a group of children who had OCD and tic disorders whose illnesses appeared to be temporally related to infections with group A  $\beta$ -hemolytic *Streptococcus* (GABHS). (16) The proposed syndrome PANDAS is theorized to be caused by anti-GABHS antibodies cross-reacting with neurons in the basal ganglia. The following clinical characteristics are proposed to be indicative of PANDAS: (1) onset of OCD or tic disorder before puberty, (2) sudden onset with episodic course characterized by abrupt relapse and remission of symptoms, (3) abnormal neurologic symptoms and signs during symptom exacerbations,

and (4) apparent temporal correlation of relapses with GABHS infections.

Although large-scale studies have supported the theorized etiologic role of GABHS in cases of OCD and tic disorders, (23) the validity of the PANDAS as a syndrome continues to be the subject of ongoing controversy. Immunomodulatory treatments, such as intravenous immune globulin G and plasma exchange therapy, have not been proven to be beneficial and are associated with significant medical risk. (24) Furthermore, there is insufficient evidence to support the use of prophylactic antibiotics to prevent symptom exacerbation in patients meeting criteria for PANDAS. (25) Current approaches to the management of patients believed to have PANDAS include usual treatments for the underlying neuropsychiatric symptoms along with timely antibiotic treatment for known streptococcal infections.

### Treatment Psychotherapy

The most rigorously studied and efficacious treatment to date for childhood OCD is CBT, notably CBT protocols applying the principle of exposure and response prevention (ERP). (26) ERP is based upon the principle that compulsive symptoms occur as a response to feelings of anxiety and distress associated with obsessive thoughts. The compulsive symptoms, supported by irrational beliefs, are intended to neutralize this anxiety and distress. The compulsive symptoms provide immediate relief and thereby become strongly reinforced, ultimately becoming repetitive and habitual. When the individual attempts to resist the performance of the compulsive symptom, the anxiety and distress return, along with associated obsessive thoughts, thereby perpetuating a cycle of obsessive and compulsive symptoms.

The general approach of ERP is for children to be taught to identify triggers of obsessive thoughts, to voluntarily practice exposing themselves to these triggers, and subsequently to refrain from performing the compulsive behaviors. (27) The treatment relies upon the principle of desensitization, in which the anxiety and distress associated with the obsessive thoughts is diminished gradually through repetitive exposure. In order for the exposure and desensitization to occur, patients must resist performing their compulsive rituals and tolerate the resulting distress.

The most challenging and important aspect of this therapy with children involves helping the child to develop insight and to come to see the obsessive-compulsive symptoms as oppressive and separate from their own motives and interests. Otherwise, the child may be extremely

resistant and view the therapist as an adversary. The therapist also works with the child to reduce irrational beliefs and cognitive distortions associated with the obsessive and compulsive symptoms. The CBT helps build metacognitive skills, or the ability to think about thought, and thereby to develop a sense of empowerment over his or her thoughts rather than feeling oppressed by them. Children also learn how to manage anxiety without avoidance through cognitive and behavioral relaxation techniques.

So far, there have been two major randomized controlled trials of CBT for childhood OCD. Barrett and colleagues studied a sample of 77 patients age 7 to 17 years assigned randomly to individual CBT, group CBT, or a wait list control. (28) Both active treatments included a protocol to involve parents and siblings in the treatment. Patients in active treatment arms of the study showed very high rates of remission (88% for individual CBT and 76% for group CBT), whereas none of the patients in the wait list control achieved remission. These effects were quite durable at 12- and 18-month follow-up. (29)

The multicenter Pediatric OCD Treatment Study conducted by March et al studied 112 patients assigned randomly to one of four treatment conditions, two of which included a standardized CBT protocol. (30) Both CBT alone and CBT in combination with sertraline therapy resulted in a significantly higher rate of remission (39% and 53.6%, respectively) than either sertraline therapy alone or placebo. In both studies, higher symptom severity and family dysfunction predicted a less favorable response to treatment. In the Pediatric OCD Treatment Study, a family history of OCD was associated with a six-fold decrease in the effectiveness of the psychotherapy. (31) These results suggest the need for the development of effective therapeutic approaches to support families and to help parents become effective allies in the treatment.

### Medication

The effectiveness of serotonergic medication for treating childhood OCD has been replicated in numerous randomized controlled trials. In these studies, rates of remission defined by 25% or greater improvement in symptom severity typically range from 40% to 50%. The efficacy of these medications, including sertraline, fluoxetine, fluvoxamine, paroxetine, and clomipramine, is statistically significant and consistently demonstrated. (30)(32)(33)(34)(35)

A recent meta-analysis of randomized controlled trials of medication treatment for childhood OCD representing a combined sample of 1,016 patients revealed a medium pooled effect size of 0.48. (36) There was no

evidence to support the superiority of any one selective serotonin reuptake inhibitor (SSRI) over another. On the other hand, a larger effect size was noted for clomipramine, a non-SSRI. This advantage is offset by other significant advantages of SSRIs, including improved tolerability and safety. Clomipramine is a tricyclic antidepressant and requires blood level monitoring because of a relatively low therapeutic index and potential arrhythmogenic effects. Adverse effects include dizziness, tremors, dry mouth, and sweating. Although not recommended for first-line treatment, clomipramine may be a useful alternative for treatment-refractory patients.

In prescribing SSRI medication for children who have OCD, clinicians should be cautious, monitoring patients carefully for adverse reactions, including suicidal ideation and other adverse behavioral effects. Mood disturbance after initial exposure to SSRI medication ranges from mild behavioral activation to frank mania. Children who have nonbipolar mood disorder or anxiety disorders appear to be at elevated risk for the development of mania when they are treated with antidepressant medication. (37) Despite recent publicity regarding the risk of suicidal ideation in children treated with antidepressant medication, a recent meta-analysis failed to show an increased risk of suicidal ideation in children who have OCD treated with antidepressant medication. (38)

Although it is advisable for dosage to begin at the lowest levels and to be titrated slowly while the patient is being monitored for adverse reactions, studies suggest that relatively high doses may be necessary to obtain the optimal benefit of the medications: for example, 60 to 80 mg per day of fluoxetine or 200 mg per day of sertraline. It is notable also that the effectiveness of medication may take more than 8 weeks to become established. (39)

Patients whose symptoms remain clinically significant despite combined treatment with CBT and SSRI medication of adequate dose and duration or a trial of clomipramine may be considered for augmentation of SSRI therapy with an additional medication. Unfortunately, the evidence for these treatments is limited to uncontrolled case reports and series in children as well as studies with adults. One of these strategies is the addition of a benzodiazepine anxiolytic medication (ie, clonazepam, lorazepam, alprazolam). The risk of adverse behavioral effects, such as disinhibition and paradoxical overarousal, from these medications must be considered. Another augmentation strategy is the addition of an atypical or conventional antipsychotic medication. This approach is especially appropriate for patients for whom this medication would otherwise be indicated, such as those with comorbid tic disorders

or autism spectrum disorders. Antipsychotic medication also may be considered for those patients whose obsessions and cognitive distortions are associated with impairment in reality testing.

Patients treated with antipsychotic medication should be monitored for symptoms of the metabolic syndrome, such as weight gain, impaired glucose tolerance, and hyperlipidemia. A more recent discovery of the role of the glutamate in the pathophysiology of OCD has led to the consideration of glutamatergic medications such as *N*-acetyl cysteine, riluzole, and memantine as augmenting medications. Although there is preliminary evidence that these agents may be beneficial, their use in children is considered experimental at this time.

### Overall Treatment Recommendations

Planning treatment for OCD can be relatively complex, given the high prevalence of comorbid psychiatric disorders and the likelihood of a chronic course. A comprehensive treatment plan addressing both OCD and comorbid disorders will be necessary, and a strong treatment alliance will be needed to maintain engagement over the long-term course of the illness.

Most effective treatments in psychiatry begin with thorough education about the nature of the condition and the rationale for the various treatments. This education process is especially important for children who have OCD, who are less likely to have insight into their symptoms. Without patients having an understanding of the nature of obsessions and compulsions, the idea that treatment is going to help them to stop performing their rituals may seem threatening and provoke an adversarial relationship. Similarly, parents especially need help understanding OCD, because they will be asked to resist deeply rooted protective instincts as they help the child follow through with anxiety-provoking exposure practices.

Although CBT alone, combined CBT plus SSRI medication, and SSRI medication alone all are considered acceptable initial treatments for children who have OCD, (40) CBT alone is an appropriate initial treatment for children who have conditions of mild-to-moderate severity. (41) In comparison with medication, CBT is notable for having a more robust and longer-lasting symptom reduction effect. For children who have more severe symptoms, less insight, and resistance to psychotherapy, combined treatment with medication and CBT may be most effective. Similarly, for patients who have comorbid depression or other anxiety disorders, it is appropriate to provide combined treatment if possible. Although medication alone generally has a more modest and less durable effect on OCD symptom severity, it is also an acceptable

initial treatment, especially when psychotherapy is not available or impractical. (40)

### OCD in the Primary Care Setting

Given that OCD has a relatively high prevalence in children, and that the majority of children afflicted with OCD are unrecognized and untreated, primary care providers (PCPs) have a challenge and opportunity before them to help children who may be experiencing this disorder in silence. Children who have OCD often are secretive about their symptoms; the only external signs may be nonspecific functional impairment, such as a decrease in school performance, loss of interest in activities and peer relationships, and the emergence of unusual habits. To find out about OCD symptoms, direct questioning of the parent and child usually is necessary.

An excellent method for identifying children who have mental health needs in the primary care setting is to administer a general mental health screening instrument, such as the Pediatric Symptom Checklist. (42) Although not capturing specific symptoms of OCD, general mental health screening can detect signs of distress and functional impairment in children that are likely to indicate the presence of psychiatric illnesses such as OCD. All children who have positive results from general mental health screening should receive further assessment by the PCP to identify areas of concern and to decide if a more detailed mental health assessment is needed.

If areas of concern include anxiety, worries, or avoidant, repetitive, or ritualized behavior, PCPs may wish to use an anxiety assessment tool, such as the Screen for Anxiety Related Emotional Disorders (SCARED). (43) This tool is very helpful for identifying and sorting out the symptoms of a variety of childhood anxiety disorders, including OCD. For children who have positive scores on the OCD subscale of the SCARED, pediatricians, if so inclined, may establish the diagnosis of OCD by applying the DSM-IV-TR criteria. Both the Pediatric Symptom Checklist and the SCARED are relatively easy to administer and score and are freely available in parent-report and self-report versions.

A more comprehensive instrument for the assessment and monitoring of OCD in children is the Children's Yale-Brown Obsessive Compulsive Scale, (44) but, in general, this instrument is used in the context of specialty mental health care rather than in the primary care setting.

Although it is likely that patients presumed to have OCD will be referred to a mental health provider for further assessment and treatment, with appropriate access to consultation, the PCP may be the provider of the psychiatric

medication treatment, in particular, if the case is relatively uncomplicated. Whether or not involved in prescribing, PCPs practicing within a patient-centered medical home model have an important role in coordinating and monitoring treatment for children who have OCD. Children and parents may have fluctuating levels of motivation for treatment, resulting in premature discontinuation. Furthermore, barriers in the delivery of mental health services may make it difficult for referrals to lead successfully to effective treatment. As a result, it is extremely useful for the PCP who has identified a child suspected of having OCD to be aware of contemporary treatment approaches to OCD, to track the child's progress in treatment, and to assist the child and family in maintaining adherence in treatment.

## Summary

- Strong research evidence indicates that children and adolescents who have OCD have recurrent experiences of disturbing intrusive thoughts and intensely driven repetitive behaviors associated with high levels of distress and significant functional impairment. (4)(8)(12)
- Although OCD, in general, is associated with a high rate of co-occurring psychiatric illnesses, such as other anxiety disorders and mood disorders, research evidence has shown that the childhood-onset form of OCD is more likely to be associated with co-occurring tic disorders and disruptive behavior disorders, in comparison with the adult-onset form. (4)
- A neurobiologic model for the pathophysiology of OCD is supported by a substantial body of research evidence of dysregulation of frontal corticostriatal-thalamic circuits associated with OCD symptoms. (13)(14)(15)
- Although there is some research evidence of the existence of a poststreptococcal, autoimmune etiology for some patients who have OCD, (16)(23) currently there is a lack of expert consensus regarding the validity of this syndrome (PANDAS) and the use of immunomodulatory or antibiotic treatment currently is not supported by research evidence. (24)(25)
- Numerous clinical trials have demonstrated the effectiveness of CBT in the treatment of childhood OCD, (26) and the use of this psychotherapy alone (without psychiatric medication) is considered an acceptable initial treatment approach for patients who have OCD of mild-to-moderate severity. (41)
- According to expert consensus, psychopharmacologic medication often is necessary in the treatment of children who have OCD. (40) The efficacy of serotonergic medications, including SSRIs and clomipramine, has been demonstrated and replicated in randomized controlled trials. (30)(32)(33)(34)(35)(36)

## References

1. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR). Washington, DC: American Psychiatric Association; 2000
2. American Psychiatric Association. DSM-5 development. F 00 obsessive-compulsive disorder: proposed revision. Available at: <http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=164>. Accessed March 1, 2012
3. Leckman JF, Denys D, Simpson HB, et al. Obsessive-compulsive disorder: a review of the diagnostic criteria and possible subtypes and dimensional specifiers for DSM-V. *Depress Anxiety*. 2010;27(6):507–527
4. Hanna GL. Demographic and clinical features of obsessive-compulsive disorder in children and adolescents. *J Am Acad Child Adolesc Psychiatry*. 1995;34(1):19–27
5. Geller DA, Biederman J, Faraone S, et al. Developmental aspects of obsessive compulsive disorder: findings in children, adolescents, and adults. *J Nerv Ment Dis*. 2001;189(7):471–477
6. Bloch MH, Craiglow BG, Landeros-Weisenberger A, et al. Predictors of early adult outcomes in pediatric-onset obsessive-compulsive disorder. *Pediatrics*. 2009;124(4):1085–1093
7. Skoog G, Skoog I. A 40-year follow-up of patients with obsessive-compulsive disorder [see comments]. *Arch Gen Psychiatry*. 1999;56(2):121–127
8. Leckman JF, Grice DE, Boardman J, et al. Symptoms of obsessive-compulsive disorder. *Am J Psychiatry*. 1997;154(7):911–917
9. Bloch MH, Landeros-Weisenberger A, Rosario MC, Pittenger C, Leckman JF. Meta-analysis of the symptom structure of obsessive-compulsive disorder. *Am J Psychiatry*. 2008;165(12):1532–1542
10. Zohar AH. The epidemiology of obsessive-compulsive disorder in children and adolescents. *Child Adolesc Psychiatr Clin N Am*. 1999;8(3):445–460
11. Flament MF, Whitaker A, Rapoport JL, et al. Obsessive compulsive disorder in adolescence: an epidemiological study. *J Am Acad Child Adolesc Psychiatry*. 1988;27(6):764–771
12. Swedo SE, Rapoport JL, Leonard HL, Lenane M, Cheslow D. Obsessive-compulsive disorder in children and adolescents. Clinical phenomenology of 70 consecutive cases. *Arch Gen Psychiatry*. 1989;46(4):335–341
13. Harrison BJ, Soriano-Mas C, Pujol J, et al. Altered corticostriatal functional connectivity in obsessive-compulsive disorder. *Arch Gen Psychiatry*. 2009;66(11):1189–1200
14. Rosenberg DR, Keshavan MS. A.E. Bennett Research Award. Toward a neurodevelopmental model of obsessive-compulsive disorder. *Biol Psychiatry*. 1998;43(9):623–640
15. Berthier ML, Kulisevsky J, Gironell A, Heras JA. Obsessive-compulsive disorder associated with brain lesions: clinical phenomenology, cognitive function, and anatomic correlates. *Neurology*. 1996;47(2):353–361
16. Swedo SE, Leonard HL, Garvey M, et al. Pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections: clinical description of the first 50 cases. *Am J Psychiatry*. 1998;155(2):264–271
17. Pauls DL. The genetics of obsessive compulsive disorder: a review of the evidence. *Am J Med Genet C Semin Med Genet*. 2008;148C(2):133–139
18. van Grootheest DS, Cath DC, Beekman AT, Boomsma DI. Twin studies on obsessive-compulsive disorder: a review. *Twin Res Hum Genet*. 2005;8(5):450–458



19. Arnold PD, Macmaster FP, Richter MA, et al. Glutamate receptor gene (GRIN2B) associated with reduced anterior cingulate glutamatergic concentration in pediatric obsessive-compulsive disorder. *Psychiatry Res.* 2009;172(2):136–139
20. Piacentini J, Bergman RL, Chang S, et al. Controlled comparison of family cognitive behavioral therapy and psychoeducation/relaxation training for child obsessive-compulsive disorder. *J Am Acad Child Adolesc Psychiatry.* 2011;50(11):1149–1161
21. Saxena S, Gorbis E, O'Neill J, et al. Rapid effects of brief intensive cognitive-behavioral therapy on brain glucose metabolism in obsessive-compulsive disorder. *Mol Psychiatry.* 2009;14(2):197–205
22. American Psychiatric Association DSM-5 development. F 02 hoarding disorder: proposed revision. Available at: <http://www.dsm5.org/ProposedRevisions/Pages/proposedrevision.aspx?rid=398>. Accessed March 1, 2012
23. Leslie DL, Kozma L, Martin A, et al. Neuropsychiatric disorders associated with streptococcal infection: a case-control study among privately insured children. *J Am Acad Child Adolesc Psychiatry.* 2008;47(10):1166–1172
24. Perlmutter SJ, Leitman SF, Garvey MA, et al. Therapeutic plasma exchange and intravenous immunoglobulin for obsessive-compulsive disorder and tic disorders in childhood. *Lancet.* 1999;354(9185):1153–1158
25. Snider LA, Lougee L, Slattery M, Grant P, Swedo SE. Antibiotic prophylaxis with azithromycin or penicillin for childhood-onset neuropsychiatric disorders. *Biol Psychiatry.* 2005;57(7):788–792
26. Barrett PM, Farrell L, Pina AA, Peris TS, Piacentini J. Evidence-based psychosocial treatments for child and adolescent obsessive-compulsive disorder. *J Clin Child Adolesc Psychol.* 2008;37(1):131–155
27. March JS, Muelle K. *OCD in Children and Adolescents: A Cognitive-Behavioral Treatment Manual.* New York, NY: Guilford Press; 1998
28. Barrett PM, Healy-Farrell LJ, March JS. Cognitive-behavioral family treatment of childhood obsessive-compulsive disorder: a controlled trial. *J Am Acad Child Adolesc Psychiatry.* 2004;43(1):46–62
29. Barrett PM, Farrell LJ, Dadds M, Boulter N. Cognitive-behavioral family treatment of childhood obsessive-compulsive disorder: long-term follow-up and predictors of outcome. *J Am Acad Child Adolesc Psychiatry.* 2005;44(10):1005–1014
30. Pediatric OCD Treatment Study (POTS) Team. Cognitive-behavior therapy, sertraline, and their combination for children and adolescents with obsessive-compulsive disorder: the Pediatric OCD Treatment Study (POTS) randomized controlled trial. *JAMA.* 2004;292(16):1969–1976
31. Garcia AM, Sapyta JJ, Moore PS, et al. Predictors and moderators of treatment outcome in the Pediatric Obsessive Compulsive Treatment Study (POTS I). *J Am Acad Child Adolesc Psychiatry.* 2010;49(10):1024–1033, quiz 1086
32. Riddle MA, Scahill L, King RA, et al. Double-blind, crossover trial of fluoxetine and placebo in children and adolescents with obsessive-compulsive disorder. *J Am Acad Child Adolesc Psychiatry.* 1992;31(6):1062–1069
33. Geller DA, Wagner KD, Emslie G, et al. Paroxetine treatment in children and adolescents with obsessive-compulsive disorder: a randomized, multicenter, double-blind, placebo-controlled trial. *J Am Acad Child Adolesc Psychiatry.* 2004;43(11):1387–1396
34. Flament MF, Rapoport JL, Berg CJ, et al. Clomipramine treatment of childhood obsessive-compulsive disorder. A double-blind controlled study. *Arch Gen Psychiatry.* 1985;42(10):977–983
35. Riddle MA, Reeve EA, Yaryura-Tobias JA, et al. Fluvoxamine for children and adolescents with obsessive-compulsive disorder: a randomized, controlled, multicenter trial. *J Am Acad Child Adolesc Psychiatry.* 2001;40(2):222–229
36. Watson HJ, Rees CS. Meta-analysis of randomized, controlled treatment trials for pediatric obsessive-compulsive disorder. *J Child Psychol Psychiatry.* 2008;49(5):489–498
37. Martin A, Young C, Leckman JF, Mukonoweshuro C, Rosenheck R, Leslie D. Age effects on antidepressant-induced manic conversion. *Arch Pediatr Adolesc Med.* 2004;158(8):773–780
38. Bridge JA, Iyengar S, Salary CB, et al. Clinical response and risk for reported suicidal ideation and suicide attempts in pediatric antidepressant treatment: a meta-analysis of randomized controlled trials. *JAMA.* 2007;297(15):1683–1696
39. Geller DA, Hoog SL, Heiligenstein JH, et al; Fluoxetine Pediatric OCD Study Team. Fluoxetine treatment for obsessive-compulsive disorder in children and adolescents: a placebo-controlled clinical trial. *J Am Acad Child Adolesc Psychiatry.* 2001;40(7):773–779
40. American Academy of Child and Adolescent Psychiatry. Practice parameters for the assessment and treatment of children and adolescents with obsessive-compulsive disorder. *J Am Acad Child Adolesc Psychiatry.* 1998;37(suppl 10):27S–45S
41. March JS, Frances A, Carpenter D, Kahn DA. The expert consensus guidelines: treatment of obsessive-compulsive disorder. *J Clin Psychiatry.* 1997;58(suppl 4):3–72
42. Jellinek MS, Murphy JM, Robinson J, Feins A, Lamb S, Fenton T. Pediatric Symptom Checklist: screening school-age children for psychosocial dysfunction. *J Pediatr.* 1988;112(2):201–209
43. Birmaher B, Khetarpal S, Brent D, et al. The Screen for Child Anxiety Related Emotional Disorders (SCARED): scale construction and psychometric characteristics. *J Am Acad Child Adolesc Psychiatry.* 1997;36(4):545–553
44. Scahill L, Riddle MA, McSwiggan-Hardin MT, et al. Children's Yale-Brown Obsessive Compulsive Scale: reliability and validity. *J Am Acad Child Adolesc Psychiatry.* 1997;36(6):844–852

## PIR Quiz

This quiz is available online at <http://www.pedsinreview.aappublications.org>. NOTE: Learners can take *Pediatrics in Review* quizzes and claim credit online *only*. No paper answer form will be printed in the journal.

## New Minimum Performance Level Requirements

Per the 2010 revision of the American Medical Association (AMA) Physician's Recognition Award (PRA) and credit system, a minimum performance level must be established on enduring material and journal-based CME activities that are certified for *AMA PRA Category 1 Credit™*. To successfully complete 2013 *Pediatrics in Review* articles for *AMA PRA Category 1 Credit™*, learners must demonstrate a minimum performance level of 60% or higher on this assessment, which measures achievement of the educational purpose and/or objectives of this activity.

In *Pediatrics in Review*, *AMA PRA Category 1 Credit™* may be claimed only if 60% or more of the questions are answered correctly. If you score less than 60% on the assessment, you will be given additional opportunities to answer questions until an overall 60% or greater score is achieved.

1. Eight-year-old Johnny Smith is brought to your office because, although he has always eaten his food in a given order, he now insists that no food type touch another type on his plate. He has checked under his bed and in his closet before going to bed because of "monsters" for at least a year. His teacher says that Johnny's insistence on never touching the spaces between floor tiles is causing difficulty when the class needs to be in line to leave the classroom. You suspect obsessive-compulsive disorder (OCD). As a primary care pediatrician, the screening test that you are most likely to use to confirm your suspicion is the
  - A. Children's Yale-Brown Obsessive Compulsive Scale.
  - B. Connors Rating Scales.
  - C. Pediatric Symptom Checklist.
  - D. Personality Questionnaire for Kids.
  - E. Screen for Anxiety Related Emotional Disorders.
2. Mr. Smith tells you that an aunt of his was diagnosed with OCD when she was 45 years old. He asks you how Johnny's illness compares with that of his aunt. You tell him that early-onset OCD is
  - A. Less likely to be associated with attention-deficit/hyperactivity disorder.
  - B. Less likely to be present in first-degree relatives.
  - C. More common in females than in males.
  - D. More likely to go into remission.
  - E. More likely to have a prolonged course.
3. Mrs. Smith tells you that she had miscarriages 4 and 5 years ago, but they are considering another pregnancy. They ask about the likelihood that another child will have OCD. You tell them that the relative influence of genetic factors in the development of OCD is closest to
  - A. 5%.
  - B. 10%.
  - C. 50%.
  - D. 90%.
  - E. 95%.
4. The parents note that Johnny has seemed sad or even depressed and wonder if this could be associated with his OCD. You tell them that the percentage of children who have comorbid conditions is approximately
  - A. 10%.
  - B. 25%.
  - C. 50%.
  - D. 75%.
  - E. 90%.
5. The parents ask what you would recommend as the safest and most effective treatment. Because you feel that Johnny has moderately severe symptoms, as well as depression, you recommend
  - A. Cognitive Behavioral Therapy alone.
  - B. Cognitive Behavioral Therapy and clomipramine.
  - C. Cognitive Behavioral Therapy and sertraline.
  - D. Cognitive Behavioral Therapy and sertraline and clonazepam.
  - E. Sertraline alone.

## Childhood Obsessive-Compulsive Disorder

Barry Sarvet

*Pediatrics in Review* 2013;34:19

DOI: 10.1542/pir.34-1-19

<b>Updated Information &amp; Services</b>	including high resolution figures, can be found at: <a href="http://pedsinreview.aappublications.org/content/34/1/19">http://pedsinreview.aappublications.org/content/34/1/19</a>
<b>References</b>	This article cites 40 articles, 2 of which you can access for free at: <a href="http://pedsinreview.aappublications.org/content/34/1/19#BIBL">http://pedsinreview.aappublications.org/content/34/1/19#BIBL</a>
<b>Subspecialty Collections</b>	This article, along with others on similar topics, appears in the following collection(s): <b>Journal CME</b> <a href="http://classic.pedsinreview.aappublications.org/cgi/collection/journal_cme">http://classic.pedsinreview.aappublications.org/cgi/collection/journal_cme</a> <b>Developmental/Behavioral Pediatrics</b> <a href="http://classic.pedsinreview.aappublications.org/cgi/collection/development:behavioral_issues_sub">http://classic.pedsinreview.aappublications.org/cgi/collection/development:behavioral_issues_sub</a> <b>Psychiatry/Psychology</b> <a href="http://classic.pedsinreview.aappublications.org/cgi/collection/psychiatry_psychology_sub">http://classic.pedsinreview.aappublications.org/cgi/collection/psychiatry_psychology_sub</a>
<b>Permissions &amp; Licensing</b>	Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at: <a href="http://classic.pedsinreview.aappublications.org/site/misc/Permissions.xhtml">http://classic.pedsinreview.aappublications.org/site/misc/Permissions.xhtml</a>
<b>Reprints</b>	Information about ordering reprints can be found online: <a href="http://classic.pedsinreview.aappublications.org/site/misc/reprints.xhtml">http://classic.pedsinreview.aappublications.org/site/misc/reprints.xhtml</a>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™





# Pediatrics in Review

An Official Journal of the American Academy of Pediatrics

## Childhood Obsessive-Compulsive Disorder

Barry Sarvet

*Pediatrics in Review* 2013;34;19

DOI: 10.1542/pir.34-1-19

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pedsinreview.aappublications.org/content/34/1/19>

Pediatrics in Review is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1979. Pediatrics in Review is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2013 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0191-9601.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

