Obssessive-Compulsive Disorder: An Overview for Pharmacists

By Jennifer P. Askew, BS, PharmD, CPP and Emily L. Heil

Upon successful completion of this article, the pharmacist should be able to:
1. Describe the symptoms of OCD based on DSM IV diagnostic criteria.
2. Differentiate the symptoms of OCD from other psychiatric disorders.
3. Analyze the pharmacologic and non-pharmacologic treatment options for OCD.
4. Understand how to implement pharmacotherapy and manage medication side effects.
5. Recognize possible confounders to the treatment plan.

**OBSESSIVE-COMPULSIVE DISORDER**

Obsessive-Compulsive Disorder (OCD) is an anxiety disorder marked by recurrent obsessions or compulsions. The American Psychiatric Association’s: *Diagnostic and Statistical Manual of Mental Disorders, 4th ed, revised (DSM IV TR)* identifies the essential features of OCD as “recurrent obsessions or compulsions (Criterion A) that are severe enough to be time consuming (they take more than one hour a day) or cause marked distress or significant impairment (Criterion C)”. Obsessions are defined as intrusive and inappropriate ideas, thoughts, impulses or images that cause marked anxiety and distress. Compulsions are physical or mental acts a patient believes driven to perform to reduce anxiety, not to provide pleasure. Compulsions are usually performed in response to obsessions. (See Table 1, below.)

The most common obsessions involve thoughts about contamination, repeated doubts, a need to have things in a particular order, aggressive or horrific impulses, and sexual imagery. Individuals with obsessions tend to ignore or suppress the thoughts or attempt to neutralize them through an action (compulsion). Individuals feel driven to perform the compulsion to reduce the distress that accompanies an obsession. The most common compulsions involve washing, cleaning, counting, checking, repeating actions, and ordering. For example, a person obsessed with contamination fears may wash their hands repeatedly and bathe multiple times a day. Patients with repeated doubts worry about causing harm to themselves or others and may compulsively check to make sure they’ve turned the stove off or they have not injured someone with their car. Patients with “bad thoughts” such as sexual obsessions, often a fear of being a homosexual or a pedophile, will use compulsions to “cancel out” the bad thoughts with good thoughts.

Patients with OCD can also be obsessed with numbers or symmetry. For example, the person might be obsessed with odd numbers but even

<table>
<thead>
<tr>
<th>Table 1: Types of Obsessions and Examples of Compulsions</th>
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<tbody>
<tr>
<td><strong>Obsession</strong></td>
</tr>
<tr>
<td>Fear of contamination</td>
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<tr>
<td>Repeated Doubts</td>
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<tr>
<td>Need to have things in a particular order</td>
</tr>
<tr>
<td>Aggressive or horrific impulses</td>
</tr>
<tr>
<td>Fear of needing something that they throw away</td>
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</tbody>
</table>
numbers make them anxious and angry. Patients obsessed with body evenness might step on a crack on the sidewalk with their left foot, and then feel compelled to step on the crack with their right foot.

Patients with OCD realize that their thoughts and behaviors are irrational but continue to repeat the compulsive behaviors to help with the anxiety and distress the obsessions cause. Unlike compulsive gamblers or other “addictive behaviors”, OCD sufferers do not want to perform the compulsions and do not derive any pleasure from these compulsive acts. OCD can be a debilitating disease depending on the severity. It can take some patients hours just to prepare to leave their houses due to all the rituals they have to perform. Many OCD patients spend hours of their day performing compulsive acts which can severely interfere with their abilities to maintain employment. Patients often avoid certain places and situations to avoid obsession triggers. Some patients with untreated, extreme OCD are unable to even leave their houses.

Table 2: DSM IV TR Diagnostic Criteria for 300.3 Obsessive Compulsive Disorder

A. Either obsessions or compulsions:

**Obsessions as defined by (1), (2), (3), and (4):**

- (1) 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
- (2) the thoughts, impulses, or images are not simply excessive worries about real life problems
- (3) the person attempts to ignore or suppress such thoughts, impulses, or images, or to neutralize them with some other thought or action
- (4) 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 as defined by (1) and (2):**

- (1) repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., 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
- (2) 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 more than one hour a day), 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 (e.g., 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 (e.g., a drug of abuse, a medication) or a general medical condition. Specify if: with poor insight: if, for most of the time during the current episode, the person does not recognize that the obsessions and compulsions are excessive or unreasonable


Table 3: Example Screening Questions From American Psychiatric Association (APA) Practice Guidelines

- Do you have unpleasant thoughts you can’t get rid of?
- Do you worry that you might impulsively harm someone?
- Do you have to count things, or wash your hands, or check things over and over?
- Do you worry a lot about whether you performed religious rituals correctly or have been immoral?
- Do you have troubling thoughts about sexual matters?
- Do you need things arranged symmetrically or in a very exact order?
- Do you have trouble discarding things, so that your house is quite cluttered?
- Do these worries and behaviors interfere with your functioning at work, with your family or social activities?
Figure 1. Algorithm for the Treatment of Obsessive-Compulsive Disorder (OCD)

First-line treatments

CBT (ERP)  SSRI  SSRI + CBT (ERP)

Is the response adequate after 13–20 weekly sessions of CBT?

NO

Is the response adequate after 8–12 total weeks of SSRI (4–6 weeks at maximal tolerable dose) or 13–20 weekly sessions of CBT or weekday daily CBT for 3 weeks?

YES

NO

For medication: continue for 1–2 years, then consider gradual taper over several months or more.

For CBT: provide periodic booster sessions for 3–6 months after acute treatment.

Strategies for Moderate Response

- Augment with a second-generation antipsychotic or with CBT (ERP) if not already provided.
- Add cognitive therapy to ERP.*

Strategies for Little or No Response

- Switch to a different SSRI (may try more than one trial).
- Switch to clomipramine.
- Augment with a second-generation antipsychotic.
- Switch to venlafaxine.
- Switch to mirtazapine.*

Strategies for Moderate and for Little or No Response

- Switch to a different augmenting second-generation antipsychotic.
- Switch to a different SRI.
- Augment with clomipramine.*
- Augment with buspirone,* pindolol,* morphine sulfate,* inositol,* or a glutamate antagonist (e.g., riluzole, topiramate).*

Strategies Only for Little or No Response

- Switch to D-amphetamine monotherapy.*
- Switch to tramadol monotherapy.*
- Switch to ondansetron monotherapy.*
- Switch to an MAOI.*

After first- and second-line strategies have been exhausted, other options that may be considered include transcranial magnetic stimulation,* deep brain stimulation,* and ablative neurosurgery.


Note. *Moderate response* means clinically significant but inadequate response.

*Treatment with little supporting evidence (e.g., one or few small trials or case reports or uncontrolled case series).

CBT = cognitive-behavioral therapy; ERP = exposure and response prevention; MAOI = monoamine oxidase inhibitor; SRI = serotonin reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor.
DSM-IV estimates a one-year prevalence of between 0.5 percent and 2.1 percent in adults. The World Health Organization (WHO) places OCD among the top 10 most disabling medical conditions worldwide. OCD usually presents in adolescence between ages 6 and 15 for males and 20 and 29 years for females. In general, onset is gradual and most individuals experience a chronic course with waxing and waning of symptoms. There is no proven cause of OCD and genetic linkage studies have produced mixed results.

**PATIENT ASSESSMENT AND DIAGNOSIS**

Assessment of a patient includes the DSM IV TR criteria for diagnosis as seen in Table 2 (page 37). Screening questions, such as the examples in Table 3 (page 37), help to detect commonly unrecognized symptoms. Finally, the patient’s symptoms must be differentiated from symptoms

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Symptom</th>
<th>How the Symptom Differs from OCD</th>
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</thead>
<tbody>
<tr>
<td>Bipolar Disorder</td>
<td>Manic delusions</td>
<td>The content of the delusions is usually related to grandiosity.</td>
</tr>
<tr>
<td>Body Dysmorphic Disorder</td>
<td>Recurrent and intrusive preoccupation with a perceived bodily defect</td>
<td>The preoccupation is limited to the body.</td>
</tr>
<tr>
<td>Depressive Disorders</td>
<td>Depressive ruminations</td>
<td>Depressive ruminations are consistent with one’s self-image or values and usually concern self-criticism, failures, guilt, regret, or pessimism regarding the future. Depressive ruminations do not usually lead to compulsive rituals.</td>
</tr>
<tr>
<td>Eating Disorders</td>
<td>Intrusive thoughts and unhealthy behaviors regarding weight and eating.</td>
<td>Thoughts and behaviors limited to weight and eating.</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder</td>
<td>Worry</td>
<td>Worries focus on real life problems and usually do not lead to compulsive rituals. The content of obsessions does not typically involve real life problems.</td>
</tr>
<tr>
<td>Hypochondriasis</td>
<td>Fear or belief regarding serious disease</td>
<td>Hypochondriacal fears arise from misinterpretation of ordinary bodily symptoms while in OCD the fears arise from external stimuli and are typically accompanied by a ritual such as excessive hand washing.</td>
</tr>
<tr>
<td>Obsessive Compulsive Personality Disorder (OCPD)</td>
<td>Preoccupation with orderliness, perfectionism, and control</td>
<td>The focus of OCPD is the need for control, not obsessions and compulsions focused on specific feared events. OCD and OCPD may co-occur.</td>
</tr>
<tr>
<td>Paraphilias</td>
<td>Intrusive sexual thoughts, urges and behaviors</td>
<td>Not considered obsessions or compulsions because the person usually derives pleasure from the activity while OCD obsessions are morally repulsive to the individual and are avoided.</td>
</tr>
<tr>
<td>Postpartum Depression</td>
<td>Urges to harm an infant</td>
<td>OCD urges are not accompanied by depressed mood and they are resisted.</td>
</tr>
<tr>
<td>Post Traumatic Stress Disorder</td>
<td>Intrusive thoughts and images</td>
<td>Thoughts replay actual events instead of anticipating future events as in OCD.</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>Delusional thoughts</td>
<td>Content is usually bizarre and related to persecution, grandiosity or ideas of reference.</td>
</tr>
<tr>
<td>Tourette’s Disorder</td>
<td>Vocal or motor tics</td>
<td>Unlike compulsions, tics are not preceded by thoughts or aimed at relieving anxiety.</td>
</tr>
</tbody>
</table>
found in other disorders as displayed in Table 4 (page 39).

Rating scales such as the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) are helpful to record a patient’s baseline severity and provide a way to measure response to treatment. The Y-BOCS scale evaluates obsessions and compulsions separately. A rating of 32–40 is considered extreme OCD, while 24–31 is severe, and 16–23 is moderate. Y-BOCS can be found at http://healthnet.umassmed.edu/mhealth/Y-BOCRatingScale.pdf. The NIMH Clinical Global Obsessive Compulsive Scale (NIMH-OC) is another tool used to assess patients. The Obsessive Compulsive Inventory is a self-rated scale, similar to a visual analog pain scale, that can help the patient become a better self-observer and help him or her to identify factors that aggravate or relieve symptoms. As with all psychiatric illness, the patient should be assessed for risk of suicide, self-injury, and risk of harm to others. The patient should also be assessed for common co-occurring conditions such as anxiety disorders, mood disorders, personality disorders and substance abuse or dependence.

Clinical improvement does not occur rapidly and full remission may never occur. Goals of treatment include decreasing symptom frequency and severity, improving the patient’s functioning and improving the patient’s quality of life. Treatment outcomes include less than one hour per day spent obsessing and performing compulsive behaviors, little to no interference of OCD with the tasks of daily living and no more than mild OCD related anxiety. Despite best efforts, some patients will never be able to reach these goals.

### TREATMENT OPTIONS FOR OCD: PHARMACOLOGIC & MEDICAL

First line treatments for OCD are cognitive-behavioral therapy (CBT) and serotonin reuptake inhibitors (SRIs). Choosing a patient’s initial treatment is individualized and depends on the severity of the patient’s symptoms, any co-morbid medical conditions, the availability of CBT, and the patient’s past treatment history, current medications, and preferences. CBT alone is only recommended for patients who are not very depressed or anxious or who prefer to not take medications. An SRI alone is recommended for a patient who has previously responded well to a given drug or for patients that cannot access CBT or cooperate with the demands of CBT. A combination treatment of CBT and an SRI is more effective than monotherapy but is not necessary for all patients.

SRIs include clomipramine and all of the selective serotonin reuptake inhibitors (SSRIs). Clomipramine, fluoxetine, fluvoxamine, paroxetine, and sertraline are all FDA approved for treatment of OCD. Due to the preferable side-effect profiles of the SSRIs, they are often the first agents tried. Selection of an SSRI is individualized based on medication side effects, potential drug-drug interactions, past treatment response, and co-existing medical conditions. One or more SSRIs are generally tried before initiating clomipramine therapy.

Pharmacotherapy should be initiated at the

<table>
<thead>
<tr>
<th>SRI</th>
<th>Starting and Incremental Dose (mg/day)*</th>
<th>Usual Target Dose (mg/day)</th>
<th>Usual Maximum Dose (mg/day)</th>
<th>Occasionally prescribed maximum dose (mg/day)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citalopram</td>
<td>20</td>
<td>40–60</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Clomipramine</td>
<td>25</td>
<td>100–250</td>
<td>250</td>
<td>---</td>
</tr>
<tr>
<td>Escitalopram</td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>20</td>
<td>40–60</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Fluvoxamine</td>
<td>50</td>
<td>200</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>Paroxetine</td>
<td>20</td>
<td>40–60</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Sertraline</td>
<td>50</td>
<td>200</td>
<td>200</td>
<td>400</td>
</tr>
</tbody>
</table>

* Some patients may need to start at half this dose or less to minimize undesired side effects such as nausea or to accommodate anxiety about taking medications

* These doses are sometimes used in patients with inadequate therapeutic response after 8 weeks or more at the usual maximum dose
dose recommended by the manufacturer and titrated to a maximally tolerated dose over a one to two month period. Lower doses and slower titration is recommended for patients who are elderly or have co-existing anxiety disorders. Most patients will not experience substantial improvement until four to six weeks after starting the medication, and some will experience little improvement for 10–12 weeks. Table 5 (page 40) includes typical dosing of SRIs in OCD.

CLOMIPRAMINE
Clomipramine is a tricyclic antidepressant (TCA) that is a mixed serotonin and norepinephrine reuptake inhibitor approved in 1989 by the Food and Drug Administration for treating OCD. Its effectiveness was demonstrated in two 10 week studies in adults and one eight week study in children and adolescents ages 10 to 17. The studies were multicenter, placebo-controlled, parallel group studies. Patients in all of the studies had moderate to severe OCD with ratings on the Y-BOCS ranging from 26 to 28 and a mean baseline of 10 on the NIMH-OC. Patients taking clomipramine experienced a mean reduction of 10 on the Y-BOCS, representing an improvement of 35 percent to 42 percent in adults, and 37 percent among children and adolescents. Patients on clomipramine also experienced a 3.5 unit drop on the NIMH-OC. Patients on placebo showed no clinical response on the scale. The maximum dose used was 250 mg/day in adults and 3 mg/kg/day in children.

At least five meta analyses have evaluated double-blind controlled studies comparing clomipramine with SRIs. (For a list of FDA approved SSRI for treating OCD, see Table 6, above.) When the difference in side-effect profiles between clomipramine and placebo was statistically adjusted to zero, there was no superiority of clomipramine to the SRIs. Double blind trials directly comparing clomipramine with fluvoxamine, fluoxetine, and paroxetine showed no difference in effect, and a double blind comparison with sertraline found sertraline to be more effective. However, in the trial with sertraline, an inappropriately high starting dose of clomipramine (50 mg/day) led to a high drop out rate.

Clomipramine must be used in caution in patients with cardiovascular disease, renal impairment, hepatic impairment, seizure disorders, and thyroid disease. In addition, clomipramine may cause some anticholinergic

Table 6: FDA-Approved SSRIs for Treatment of OCD

<table>
<thead>
<tr>
<th>Drug</th>
<th>Active Metabolites</th>
<th>Half-life (hr)</th>
<th>Substrate</th>
<th>CYP inhibition</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| Fluoxetine | Yes               | 24 to 72 (parent) 168-336 (metabolite) | 2C9, 2D6 (major) | 1A2, 2C19 (moderate) 2D6 (strong) | • Benefit in non-compliant patients due to long half life  
• Most activating SSRI, good for patients with fatigue | • Cannot use drug holidays if sexual side effects  
• Strong 2D6 inhibition can lead to drug-drug interactions (DDI) |
| Fluvoxamine | No                | 13.6–15.6 | 1A2, 2D6 (major) | 1A2, 2C19 (strong) 3A4 (weak) | • Less activating, good for patients with insomnia | • Twice daily dosing  
• DDIs  
• Most nauseating, constipating and sedating of the SSRIs |
| Paroxetine  | No                | 22           | 2D6 (major) | 2D6 (strong) | • Weight gain and sexual dysfunction  
• Anticholinergic properties  
• 2D6 inhibition can lead to DDIs  
• Greater chance of withdrawal syndrome | • Less activating, good for patients with insomnia |
| Sertraline   | Yes               | 24 (parent) 48–104 (metabolite) | 2C19, 2D6 (major) | 2C19, 2D6, 3A4 (moderate) | • Few drug interactions  
• Higher incidence of diarrhea | • Few drug interactions  
• Higher incidence of diarrhea |
side effects and should be used in caution in patients with BPH, decreased GI motility, urinary retention, visual problems and xerostomia. Side effects of clomipramine include dizziness, drowsiness, constipation, libido changes, and impotence.

**FLUOXETINE**

Fluoxetine is an SSRI approved by the FDA for treatment of OCD in adults and children. The effectiveness of fluoxetine for the treatment of OCD was established in two 13-week, multicenter, parallel group studies of adult outpatients with moderate to severe OCD and mean baseline ratings on the Y-BOCS of 22 to 26.

In both studies patients received fixed fluoxetine doses of 20, 40, or 60 mg once daily in the morning or placebo. In the first study patients receiving fluoxetine experienced mean reductions of approximately four to six units on the Y-BOCS total score compared with a one unit reduction for placebo. In the second study, patients receiving fluoxetine experienced mean reductions of about four to nine units on the Y-BOCS total score, compared with a one unit reduction for placebo patients. There was no dose-response relationship indicated in study one, and a dose response relationship in study two showed better responses in the two higher dose groups of 40 and 60 mg. Fluoxetine was studied in children in a 13-week clinical trial in patients aged 7 to 18. Patients received 10 mg/day for two weeks followed by 20 mg/day for two weeks. The dose was subsequently adjusted between 20 to 60 mg/day based on response and tolerability. Patients on fluoxetine had a significantly greater change on the Children’s Y-BOCS than placebo.

Two studies compared fluoxetine to clomipramine in the treatment of OCD. The first study was a crossover design with 10 weeks of treatment and showed fluoxetine up to 80 mg/day was as effective as clomipramine 250 mg/day, although clomipramine was associated with more adverse events. The second study was an eight-week double-blind randomized study comparing fluoxetine 40 mg/day with clomipramine 150 mg/day. The study showed that fluoxetine and clomipramine appeared to be equally effective over the short treatment period. The drop out rates for adverse events were 3 percent for fluoxetine and 4 percent for clomipramine. A 24-week randomized, double-blind trial comparing fluoxetine and sertraline found equivalent and significant improvements in Y-BOCS and NIMH-OC scores. Patients treated with sertraline showed an earlier improvement on some, but not all of the efficacy measures. Rates of discontinuation due to adverse events were 14 percent for fluoxetine and 19 percent for sertraline.

Fluoxetine should be used in caution in patients with cardiovascular disease, renal impairment, hepatic impairment, diabetes, and seizure disorders. Fluoxetine is also a strong inhibitor of CYP2D6 and a moderate inhibitor of

<table>
<thead>
<tr>
<th>Table 7: Management of SSRI Induced Side Effects</th>
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<tbody>
<tr>
<td><strong>Side Effect</strong></td>
</tr>
</tbody>
</table>
| Gastrointestinal Distress | • Start with lower doses and titrate slowly  
• Take with meals  
• Advise that mild nausea will subside within 1–2 weeks at a constant dose |
| Sedation/Fatigue | • Start with lower doses and titrate slowly  
• Give dose in the evening  
• Modafinil 100 mg to 200 mg in the morning  
• Stimulants |
| Insomnia | • Give dose in the morning  
• Add a sleep promoting agent  
• Proper sleep hygiene |
| Sweating | • Low doses of anticholinergic agents such as benztropine  
• Add clonidine, cyproheptadine, or mirtazapine |
| Sexual Dysfunction | • Once weekly, one daily drug holiday before engaging in sexual activity (not effective for fluoxetine)  
• Try another SSRI  
• Bupropion at least 300 mg  
• Buspirone 20 to 60 mg  
• Sildenafil, tadalafil or vardenafil |
CYP1A2 and 2C19, so caution must be taken to avoid drug drug interactions.

**FLUOXAMINE**

Fluoxamine is an SSRI approved by the FDA in 1994 for treatment of OCD in adults and children. The effectiveness of fluoxamine for the treatment of OCD was established in two 10–week, multicenter, parallel group studies of adult outpatients. Patients in the studies had moderate to severe OCD with mean baseline ratings on the Y-BOCS of 23. The patients were titrated to a total daily dose of 150 mg/day over the first two weeks of the trial. The doses were then adjusted to 100 to 300 mg/day on a twice daily schedule depending on response and tolerance. The patients receiving fluoxamine experienced mean reductions of four to five units on the Y-BOCS total score, compared to a two unit reduction for placebo patients.

Fluoxamine was also studied in a pediatric outpatient population in a 10–week multicenter, parallel group study. Patients in the study were ages 8 to 17 and had moderate to severe OCD with mean baseline ratings on the Children’s Y-BOCS of 24. The patients were titrated to a total daily dose of 100 mg/day over the first two weeks of the trial, and then maintained on 50 to 200 mg/day on a twice daily schedule depending on response and tolerance. The patients receiving fluoxamine experienced a mean reduction of about six units on the Children’s Y-BOCS total score, compared to a three unit reduction for placebo patients.

In studies comparing fluoxamine to clomipramine, both groups experienced marked improvement in their OCD symptoms based on Y-BOCS and NiMH-OC scores. However, fluoxamine was better tolerated than clomipramine because of the anticholinergic side effects caused by clomipramine.

Fluoxamine should be used in caution in patients with hepatic impairment, renal impairment, cardiovascular disease and seizure disorders. In addition, fluoxamine is a strong inhibitor of CYP1A2 and 2C19 and a weak inhibitor of 2B6, 2C9, 2D6 and 3A4. Therefore, fluoxamine should be used with caution in patients taking multiple medications due to the potential for many significant drug drug interactions. Compared to SSRIs as a class, fluoxamine has the greatest incidence of gastrointestinal side effects with 40 percent of patients in studies reporting nausea.

**PAROXETINE**

Paroxetine is a selective serotonin reuptake inhibitor approved by the FDA for the treatment of OCD in adults. Paroxetine’s efficacy in OCD was demonstrated in two 12-week, multicenter, placebo controlled studies of adult outpatients. Patients in both studies had moderate to severe OCD with mean baseline ratings on the Y-BOCS of 23 to 36. The first study found that patients on daily doses of immediate release paroxetine 40 to 60 mg experienced a mean reduction of approximately six to seven points on the Y-BOCS total score, which was significantly higher than the approximate four point reduction for patients on a 20 mg dose and a three point reduction for patients on placebo. The second study compared paroxetine 20 to 60 mg/day with clomipramine 25 to 250 mg/day and placebo. Patients receiving paroxetine experienced a mean reduction of approximately seven points on the Y-BOCS total score, which was the same response as clomipramine but significantly higher than the reduction of approximately four points in placebo treated patients.

The long term maintenance effects of paroxetine were demonstrated in an extension to the first study. Patients who responded to paroxetine in the 12 week double blind phase were entered into a six month open label flexible dose extension face and were randomly assigned to receive six months of double-blind paroxetine or placebo. Patients randomized to paroxetine had significantly lower relapse rates than the placebo group. The mean time to relapse was 29 days in the placebo group and 63 days in the paroxetine group.

Paroxetine should be used in caution in patients with cardiovascular disease, renal impairment, hepatic impairment, seizure disorders and narrow-angle glaucoma. Paroxetine is more likely to be associated with weight gain and anticholinergic side effects compared with other SSRIs. Additionally, paroxetine is associated with a greater risk of serotonin withdrawal symptoms.

**SERTRALINE**

Sertraline is an SSRI approved by the FDA for OCD in children and adults. The effectiveness of sertraline in the treatment of OCD was established in three multicenter, pla-
cebo controlled studies of adult outpatients with moderate to severe OCD and mean baseline ratings on the Y-BOCS of 23 to 25. The first study was an eight week study with flexible sertraline doses ranging from 50 to 200 mg/day. The mean dose of sertraline for completers of the study was 186 mg/day, and patients receiving sertraline experienced a mean reduction of approximately four points on the Y-BOCS total score, compared to a mean reduction of 2 points in placebo treated patients. Study 2 was a 12-week fixed dose study with sertraline doses of 50, 100, and 200 mg/day. Patients receiving sertraline 50 and 200 mg/day had mean reductions of about six points on the Y-BOCS score compared to the three point reduction in placebo patients. The 100 mg/day sertraline group was only superior to placebo in terms of the NIMH-OC scale, which was likely due to a high drop out rate of 33 percent in that group. The third study was a 12-week study with flexible dosing of sertraline ranging from 50 to 200 mg/day. Patients receiving sertraline experienced a mean reduction of seven points on the Y-BOCS total score, which was significantly greater than the four point reduction in placebo treated patients. A 12-week multicenter, placebo controlled parallel group study of pediatric patients, ages 6 to 17, with moderate to severe OCD, showed significantly greater reductions on the Children’s Y-BOCS scale than placebo. In addition, a longer term study has shown that sertraline responders rarely relapsed over 28 weeks.

Sertraline should be used in caution in patients with hepatic impairment, renal impairment, seizure disorders, and uric acid nephropathy. Compared to SSRIs as a class, sertraline has the highest incidence of diarrhea.

CITALOPRAM

Although not FDA approved for OCD, citalopram has been shown to be more effective than placebo in a double-blind, placebo controlled randomized trial. The 12-week trial featured fixed dose citalopram treatment at 20, 40, or 60 mg/day. The patients on citalopram had significantly higher Y-BOCS response rates than did placebo, and higher doses appeared to be associated with a more rapid response.

OTHER POTENTIAL TREATMENT OPTIONS

Venlafaxine

A small, double-blind placebo controlled trial with venlafaxine showed no statistically significant differences in response, but several open-label trials have shown significant responses in OCD at doses of at least 225 mg/day and double-blind active comparator studies suggest venlafaxine is comparable in efficacy to clomipramine and potentially to paroxetine.

Monoamine Oxidase Inhibitors (MAOIs)

There is very weak support for using MAOIs in OCD. Due to the side-effect profiles of MAOIs, potentially severe drug drug interactions, dietary restrictions and relative lack of evidence for efficacy, MAOI use is not recommended except in severely ill OCD patients who have failed all first line and most second line treatments.

Tricyclic Antidepressants

Clomipramine is currently the only TCA with evidence to be effective in OCD.

Trazodone

Case reports suggest that trazodone at doses of at least 250 mg/day can be tried in patients that have not responded to first or second line treatments.

Antipsychotics

Few studies have looked at the efficacy of antipsychotics as monotherapy for OCD; but in many OCD patients who have had no response or only partial response to SRI treatment, antipsychotics have been studied and used to augment treatment with an SRI. There are randomized, placebo-controlled augmentation trials of both first generation and second generation antipsychotic medications which have yielded response rates in the range of 40 percent to 55 percent within four to six weeks.

In a double blind placebo controlled study, patients who were resistant to eight weeks of fluvoxamine were randomly assigned to receive four weeks of adjunctive haloperidol or placebo. Eleven of the 17 haloperidol patients responded, versus none of the placebo patients. However, akathisia requiring propranolol treatment was common.

Three small, double blind, placebo con-
trolled studies and several open label studies support the safety and efficacy of risperidone as an augmentation of SRI treatment of OCD.

Two randomized, placebo controlled trials and several open label trials have looked into the safety and efficacy of adjunctive olanzapine. The first randomly assigned 26 OCD patients who had not improved after at least two 12-week SRI trials and at least one ERP trial to six weeks of adjunctive olanzapine. The adjunctive olanzapine was significantly superior with Y-BOCS reductions of 17 percent in the olanzapine group versus 2 percent with placebo. Six of the 13 olanzapine patients were responders, compared with none in the placebo group (defined as Y-BOCS 25 percent). The second randomly assigned non-responders and partial responders after eight weeks of fluoxetine to six weeks of adjunctive olanzapine or placebo. Both the treatment and placebo groups improved significantly with no significant difference between the two. However, patients may not have attained the full benefit from fluoxetine before the olanzapine trial began possibly obscuring olanzapine effect.

Forty OCD patients who were unresponsive after at least two SRI trials were given adjunctive quetiapine or placebo for eight weeks. Adjunctive quetiapine was significantly superior to placebo with 32 percent Y-BOCS reduction in quetiapine patients, versus 7 percent in placebo. Eight quetiapine patients were responders versus two placebo patients (defined as Y-BOCS-35 percent). The most common side effects of quetiapine were somnolence (95 percent), dry mouth (55 percent), weight gain (30 percent) and dizziness (30 percent). Two other randomized placebo-controlled trials produced mixed results due to possible confounding variables.

Pindolol
Small studies have produced mixed results in using pindolol as an augmentation agent. One study using pindolol 2.5 mg three times daily as an augmentation agent showed a significant decrease in the Y-BOCS score, especially in the ability to reduce compulsions. One open label study found that one in eight patients with treatment-resistant OCD responded to pindolol augmentation.

Benzodiazepines
Modest doses of benzodiazepines may relieve anxiety and distress in OCD but they do not directly diminish the duration or frequency of obsessions or compulsions.

Buspirone
There are small studies that provide inconsistent results regarding the possible effectiveness of buspirone 60 mg/day as monotherapy, and there is no significant evidence of its use as an augmenting agent.

Lithium
Lithium has a clear role in OCD patients with co-occurring bipolar disorder. However, the studies looking at lithium as monotherapy or as an augmenting agent in OCD did not produce positive results, though the studies used only a
four-week treatment period, which may have been too short to effectively evaluate lithium’s potential.

**Mirtazapine**

A small study with an open label first phase and a double blind discontinuation phase suggests that mirtazapine may be effective for OCD in patients who have not received SRI treatment or who have not responded to one adequate SRI trial. However, the sample size of 30 patients was small, and significant weight gain was observed in more than 30 percent of the patients.

**Somatic Therapies**

There is limited evidence in the use of somatic therapies for the treatment of OCD, including deep brain stimulation, transcranial magnetic stimulation, neurosurgical stereotactic lesion procedures, and electroconvulsive therapy.

**TREATMENT ADHERENCE**

Medication side effects are a major factor influencing patient adherence. (See Table 7, page 42). The most common side effects of SSRIs include gastrointestinal distress, agitation, insomnia or somnolence, increased tendency to sweat, and sexual side effects including diminished libido and difficulty with erection and orgasm. The first step is to consider if lowering the dose will alleviate the side effect without losing therapeutic effect. Otherwise specific management strategies can be implemented.

Gastrointestinal distress can be minimized by starting with lower doses. Mild nausea will usually disappear after one to two weeks at a constant dose. If the patient is experiencing insomnia, recommend taking the medication in the morning or adding a sleep promoting agent. If the patient is experiencing fatigue, APA guidelines suggest adding modest doses of modafinil. Sweating can be treated with low doses of anticholinergic agents such as benztropine, and with clonidine, cyproheptadine, or mirtazapine.

Sexual side effects may affect one third or more patients. In about 10 percent of patients the symptoms will remit within two months. Management options include lowering the dose to the minimum effective dose, trying a “drug-holiday,” switching to another SSRI or adding a counteracting pharmacological agent. Taking a once weekly, one day drug holiday may relieve problems with erection or orgasm but will not help with libido. Drug holidays are not an option for fluoxetine due to its long half life and withdrawal may be induced with paroxetine or venlafaxine due to their short half lives.

Concerns have been raised about the potential for increases in suicidal thoughts or behaviors in patients treated with antidepressant medications including SSRIs. While it is vital to monitor patients closely for self-harming thoughts or behaviors, especially early in treatment and after dose increases, it is also important to remember that the majority of studies involved depressed subjects and not subjects with OCD.

**CHANGING TREATMENT**

OCD patients are considered “responders” to treatment if their Y-BOCS scores decrease by 25 percent to 35 percent from baseline, or who are rated as improved or very much improved on the Clinical Global Impressions-Improvement scale (CGI-I). These degrees of response still leave significant room for additional improvement, so decisions must be made when, whether and how to alter a patient’s treatment plan. An SRI should be tried for at least eight to 12 weeks with at least four to six of those weeks at the highest tolerated dose before considering another agent.

When changing between SRIs there are two basic options. The first is to cross taper, by slowly reducing the current SRI while titrating up the new agent. Cross tapers are advantageous in that they lessen discontinuation symptoms and take less time, but cross tapering can increase the risk of drug-drug interactions and compounding side effects. The other option is to wash out the original drug before initiating the new one gradually. The wash out option takes more time and decreases the risk for drug interactions.

Due to its long half life, fluoxetine tends to be associated with an increased risk for serotonin syndrome if patients are abruptly switched to another SSRI without a sufficient washout period. Symptoms of serotonin syndrome include alterations in cognition such as disorientation and confusion, akathisia, muscle twitches or tremor, insomnia, fever, shivering, sweating, and coma and seizures in extreme cases. Pyrexia, neuromuscular symptoms and changes in mental status
must be present to confirm a diagnosis of serotonin syndrome as some of the symptoms may be confused with adverse effects to SSRIs alone.

Patients switching from an SSRI with a short half life that do not have a new agent initiated when the old one is discontinued are at risk for withdrawal symptoms. Withdrawal symptoms include gastrointestinal disturbances, flu-like symptoms, paresthesia, insomnia, disequilibrium, and vivid dreams. Withdrawal symptoms typically occur within one to three days of discontinuing the SSRI and resolve within a few weeks. Symptoms are rapidly reversed when the original SSRI or another SSRI is reintroduced. When switching from an SSRI with a shorter half life such as paroxetine and fluvoxamine, the new agent can be initiated within one to two days after the first agent is stopped.

DISCONTINUING TREATMENT
Relapse appears to be a common problem in OCD, so some form of treatment is recommended for most patients at all times. However, if a patient has been successfully treated with medication for one to two years, a gradual taper may be considered. The medication would be tapered by decrements of 10 percent to 25 percent every one to two months while closely observing for the return of symptoms.

POTENTIAL CONFOUNDERS TO THE TREATMENT PLAN
There are many potential demographic factors and psychiatric features of a patient that may influence their treatment plan. (See Table 8, page 45.) Gender and ethnicity do not appear to influence treatment response in OCD but may lead to differences in the metabolism of treatment medication. For example, 13 percent to 23 percent of Asians are CYP2C19 poor metabolizers compared to 2 percent to 5 percent of Caucasians, and should receive lower doses of clomipramine. Pregnant or breast-feeding patients should be considered for CBT alone.

There is limited data regarding long term effects of exposure throughout pregnancy to SSRIs. Paroxetine is pregnancy category D as exposure in the first trimester may increase the risk of cardiac malformations. Citalopram, escitalopram, fluoxetine, and sertraline are all pregnancy category C and should be used with caution. Treatment in children and adolescents should begin with CBT. Sertraline, fluvoxamine, fluoxetine, and clomipramine are FDA approved for OCD in children, but should be used with caution due to the possibility of an increase in suicidal thoughts or behaviors. While no specific studies of treating OCD in the elderly have been published, experience with pharmacotherapy in the elderly points towards a “start low, go slow” mentality. Older patients may also be more susceptible to adverse drug effects.

Patients with co occurring motor tics in the absence of Tourette’s whose OCD has not responded to treatment with an SRI may benefit from the addition of an antipsychotic. Patients with Tourette’s disorder and OCD can be treated with SRIs, which usually have little effect on tic symptoms. If the patient does not respond after one or two trials of an SRI, an antipsychotic can be added. Co-occurring major depression does not adversely affect the response of OCD to SRIs, but can interfere with CBT and should therefore be treated before or during a trial of CBT. Patients with both OCD and bipolar disorder should be stabilized with lithium, anticonvulsants, and second generation antipsychotic drugs before treatment with SRIs that could exacerbate or induce hypomania or mania. If a patient has co-occurring panic disorder, the SRI treatment should be started at low doses and titrated slowly over a period of weeks to avoid exacerbating panic attacks, or the SRI can be started at a normal dose and given with a benzodiazepine.

OCD symptoms can be precipitated or exacerbated by second generation antipsychotic medication. If a second generation antipsychotic induces obsessive compulsive symptoms that do not disappear within a few weeks, treatment options include adding an SRI, switching to another second generation antipsychotic or CBT. Patients with co-occurring substance or alcohol abuse or dependence should be treated before treating the patients, OCD due to the risk of treatment interference and drug interactions. Patients with co occurring personality disorder should be tried on CBT and/or SRIs but should also be considered for additional treatment that targets the personality disorder. Patients with autism or Asperger’s syndrome tend to have repetitive thoughts and behaviors and SRIs have been effective treatment.
Various neurological conditions including brain trauma, stroke, encephalitis, temporal lobe epilepsy, Prader-Willi syndrome, Sydenham’s chorea, carbon monoxide poisoning, and neurodegenerative diseases such as Parkinson’s disease can cause obsessive compulsive symptoms not meeting DSM IV TR diagnostic criteria. If possible, the underlying neurological disorder should be treated and then treatment with an SRI and or CBT may be beneficial.

TREATMENT OPTIONS FOR OCD: BEHAVIORAL Psychotherapy
Cognitive behavioral therapy (CBT) is the only form of psychotherapy that is supported by clinical trials for OCD. CBT can be individual, group or family therapy sessions. The necessary frequency, length, and duration of treatment sessions have not been established but an expert consensus recommends 13 to 20 weekly sessions with daily homework for most patients. Patients may require booster sessions, especially if they are severely ill or have relapsed in the past.

Exposure and response prevention (ERP) is a part of CBT where patients are taught to face feared situations and objects, and to refrain from performing rituals. Patients are exposed to moderate fears first and then moved as quickly as possible up to fears that cause the most anxiety. For example, a patient with contamination fears would be exposed to germy objects and will not be able to wash his or her hands, which will cause anxiety and distress. However, after a period of 30 minutes or so, the patient will also see that no catastrophic events followed the exposure, and a decrease in anxiety will occur. The procedure has to be repeated multiple times with increasing levels of fear. The goal of ERP is to rid of the connections between the fear and anxiety and between rituals and relief from the anxiety.

CBT also has a cognitive therapy aspect where the patient’s faulty beliefs are identified, challenged, and modified. The basis of CBT revolves around the concept that our thoughts drive our feelings and behaviors, as opposed to external stimuli such as people, situations, and events. Through CBT, patients becomes aware of their distorted thoughts that are causing psychological distress and the behavioral patterns that are reinforcing these thoughts, and learn to correct them. CBT is a structured therapy and daily homework is an essential feature.

TREATMENT ALGORITHMS
The treatment algorithm below displays a logical treatment course for OCD patients. First-line treatment of OCD patients includes CBT, an SRI or a combination of both. If the first-line treatment fails, the algorithm can assist in making treatment changes.

LOOKING FORWARD
Despite current therapies that can alleviate the symptoms of OCD, there is still much room for advancement in the realm of OCD treatments. Further investigations of current therapies, development of new treatment modalities, and new augmentation strategies for patients who have failed current treatments are all important considerations for future research. In addition, there is a need for OCD screening in the primary care setting to close the gap between onset of OCD and initiation of treatment. As one of the most accessible health professionals, it is important for pharmacists to be informed of the symptoms and medication management strategies of a patient with OCD.

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Editor’s Note: To obtain the complete list of references used in the article, contact Chris Linville at NCPA (703-838-2680), or at chris.linville@ncpanet.org.
Suzy Q. is an 8-year-old child who presents to her pediatrician after some abnormal behaviors began appearing over the last few months. On a recent trip to the mall with her mother, Suzy refused to touch the railings on the escalator or try on any clothing in the store that she thought someone else might have already tried.

Every time Suzy passed by a restroom she wanted to stop and wash her hands. According to Suzy’s mother, she began washing her hands frequently and showing fears of contamination about three months ago. Recently though, her hand washing has become very ritualistic. She counts to 10 forward and backward while washing each finger. If she is interrupted she gets distressed and has to start the ritual over. She uses scalding hot water to wash her hands, and her hands appear raw and red. Suzy has also begun taking baths at least twice daily. Within the last few weeks Suzy’s contamination fears have escalated to include food. She fears that much of the food she consumes may be contaminated, and Suzy’s mother states that Suzy will only eat what she considers to be “safe” foods.

Suzy’s fears began so gradually that her mother at first accommodated the frequent restroom visits for hand washing and would serve Suzy the “safe” foods she requested, however with the increasing severity of Suzy’s rituals, her mother decided to bring her in.

The pediatrician makes a referral for Suzy to see a child psychologist for CBT, but comes to you for a recommendation on initiating pharmacotherapy.

CONTINUING EDUCATION QUIZ
Select the correct answer.

1. What would be your recommendation for a first-line agent for Suzy Q?  
a. Clomipramine  
b. Sertraline  
c. Paroxetine  
d. Haloperidol

2. Suzy is prescribed an SSRI for her OCD. Her mother would like to know how long it will take for the medicine to start working.  
a. Suzy’s mom should notice an improvement in Suzy’s OCD in within 24 hours of starting her medication.  
b. It will take about a week before Suzy’s mom will see any improvement.  
c. It will take anywhere from four to six weeks for Suzy’s mom to see improvement in Suzy’s condition and up to eight to 12 weeks before seeing maximal improvement.  
d. It will take upwards of six months before any improvement is seen, which is why CBT is essential for Suzy in addition to medication.

3. Suzy is experiencing some unpleasant gastrointestinal side effects from her medication. What are some management options you could suggest to Suzy?  
a. Take the medication with food.  
b. Wait it out, as some GI side effects will subside after one to two weeks of treatment at a consistent dose.  
c. Discuss the possibility of trying a lower dose and titrating more slowly with Suzy’s physician.  
d. All of the above are options

4. Which of the following medications would be considered the most appropriate first-line agent for the treatment of OCD? (I. Clomipramine; II. Buspirone; III. Paroxetine; IV. Imipramine)  
a. I only  
b. III only  
c. I and IV only  
d. I and III only  
e. I, II, III, IV

5. Which of the following is an appropriate starting dose in OCD for the following medications?  
a. Paroxetine 40 mg  
b. Fluoxetine 40 mg  
c. Clomipramine 25 mg  
d. Sertraline 25 mg  
e. Fluvoxamine 100 mg

6. Which of the following CYP P450 enzyme systems are responsible for the drug-drug interaction between risperidone and paroxetine? (I. CYP3A4; II. CYP2D6; III. CYP2C19; IV. CYP1A2)  
a. I only  
b. II only  
c. I and II only  
d. I, II, IV only  
e. I, II, III, IV
7. Which of the following counseling points should NOT be part of your discussion with a patient who presents to the pharmacy with a new prescription for sertraline for their OCD?
   a. Sertraline has been shown to be an effective medication and is Food and Drug Administration approved for OCD.
   b. The most common side effect of sertraline is diarrhea.
   c. It may take up to 10–12 weeks for the sertraline to work.
   d. Of all of the SSRIs, sertraline is the most likely to cause weight gain.
   e. All of the above are appropriate counseling points.

8. A patient who obsesses about money and is a compulsive gambler meets the criteria for a diagnosis of OCD.
   a. True
   b. False

9. A physician calls you for a recommendation for a pharmacological agent for which to start his newly diagnosed OCD patient. The patient takes no other medications at this time, but has had trouble with compliance in the past. In addition, the patient has been complaining of fatigue lately. You would recommend starting the patient on
   a. Fluoxetine
   b. Fluvoxamine
   c. Paroxetine
   d. Sertraline
   e. Clomipramine

10. Which of the following is NOT an option for managing the sexual side effects a male patient who has been taking fluoxetine for one month is experiencing?
    a. Lower the dose to a minimum effective dose.
    b. Add a counteracting agent such as sildenafil, tadalafil, or vardenafil.
    c. Wait another month to see if the side effects subside.
    d. Take a once weekly, one day drug holiday.

11. Which of the following is NOT a logical step for a patient who is experiencing little to no response on their current SSRI that he or she has been taking for three months?
    a. Switch to another SSRI
    b. Switch to clomipramine
    c. Switch to an MAOI
    d. Augment with a second generation antipsychotic

12. In which of the following co-occurring disease states would you consider initiating an OCD patient’s SSRI treatment at a lower dose and with a slower taper than normal?
    a. Major depression
    b. Substance use disorder
    c. Tourette’s disorder
    d. Panic disorder
    e. B and D

13. Pharmacotherapy is an essential component in the treatment plan of all OCD patients.
    a. True
    b. False

14. Quality of life issues that tend to arise in OCD patients include
    a. Social isolation
    b. Trouble holding a job
    c. Hospitalizations
    d. A and B
    e. All of the above

15. Which of the following has an active metabolite with a half-life of two to four days?
    a. Paroxetine
    b. Fluoxetine
    c. Sertraline
    d. Fluvoxamine

16. How does OCD in children differ from OCD in adults?
    a. Children with OCD do not usually perform compulsive rituals.
    b. Children with OCD do not realize that their obsessions or compulsions are excessive or unreasonable.
    c. Children with OCD tend to obsess about real-life problems.
    d. Children with OCD cannot be treated with SSRIs.
17. Which of the following is true regarding paroxetine in the treatment of OCD?
a. Paroxetine has a long half life so a washout period is needed before changing to another SSRI.
b. Of the SSRIs, paroxetine is the least likely to be associated with withdrawal symptoms.
c. Paroxetine is not very activating and would not be a good choice in patients with fatigue.
d. Paroxetine is the SSRI with the most GI related side effects.

18. A patient taking fluoxetine for 12 weeks, six of which were at the maximal tolerated dose, is only experiencing moderate response. What is the next logical treatment step?
a. Augment treatment with CBT/ERP  
b. Switch patient to an MAOI  
c. Augment treatment with clomipramine  
d. Switch to a third generation antipsychotic

19. A patient presents to the pharmacy with a prescription for sertraline 400 mg daily. You know the patient has been struggling with controlling his OCD for the last few months, and his last prescription for sertraline was 200 mg daily. Is this an acceptable dose?
a. No, the maximum dose of sertraline is 200 mg/day  
b. Yes, if patients have not experienced adequate therapeutic response after at least eight weeks on the maximum dose, this is an acceptable dose to try  
c. Yes, sertraline 400 mg/day is the target dose in adult patients with OCD  
d. No, fluvoxamine is the only SSRI where the dose can be that high

20. Why is the Obsessive Compulsive Scale a useful tool for patients?
a. Patients can use the scale to self-diagnose OCD  
b. The scale can help patients become better self-observers and can help them to identify factors that aggravate or relieve their OCD symptoms  
c. It is a simple to use, visual analog scale  
d. B and C

21. Is this program used to meet your mandatory C.E. requirements?
a. yes  
b. no
22. Type of pharmacist:  
a. owner  
b. manager  
c. employee
23. Age group:  
a. 21–30  
b. 31–40  
c. 41–50  
d. 51–60  
e. Over 60
24. Did this article achieve its stated objectives?  
a. yes  
b. no
25. How much of this program can you apply in practice?  
a. all  
b. some  
c. very little  
d. none
How long did it take you to complete both the reading and the quiz? ______ minutes

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Last 4 digits of SSN MM-DD of birth
Name
Pharmacy name
Address
City State ZIP
Phone number (store or home)
Store e-mail (if avail.) Date quiz taken

Quiz: Shade in your choice
1. ☐ ☐ ☐ ☐ ☐ ☐ ☐ 6. ☐ ☐ ☐ ☐ ☐ ☐ ☐
2. ☐ ☐ ☐ ☐ ☐ ☐ ☐ 7. ☐ ☐ ☐ ☐ ☐ ☐ ☐
3. ☐ ☐ ☐ ☐ ☐ ☐ ☐ 8. ☐ ☐ ☐ ☐ ☐ ☐ ☐
4. ☐ ☐ ☐ ☐ ☐ ☐ ☐ 9. ☐ ☐ ☐ ☐ ☐ ☐ ☐
5. ☐ ☐ ☐ ☐ ☐ ☐ ☐ 10. ☐ ☐ ☐ ☐ ☐ ☐ ☐

Quiz: Circle your choice
1. Is this program used to meet your mandatory C.E. requirements?
a. yes  
b. no
22. Type of pharmacist:  
a. owner  
b. manager  
c. employee
23. Age group:  
a. 21–30  
b. 31–40  
c. 41–50  
d. 51–60  
e. Over 60
24. Did this article achieve its stated objectives?  
a. yes  
b. no
25. How much of this program can you apply in practice?  
a. all  
b. some  
c. very little  
d. none
How long did it take you to complete both the reading and the quiz? ______ minutes

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