Personality disorders: A measured response

Improving your understanding of these disorders will help you identify specific diagnoses, ensure appropriate treatment, and reduce frustration during office visits.

Personality disorders (PDs) are common, affecting up to 15% of US adults, and are associated with comorbid medical and psychiatric conditions and increased utilization of health care resources.\textsuperscript{1,2} Having a basic understanding of these patterns of thinking and behaving can help family physicians (FPs) identify specific PD diagnoses, ensure appropriate treatment, and reduce the frustration that arises when an individual is viewed as a “difficult patient.”

Here we describe the diagnostic features of the disorders in the 3 major clusters of PDs and review an effective approach to the management of the most common disorder in each cluster, using a case study patient.

Defense mechanisms offer clues that your patient may have a PD

Personality is an enduring pattern of inner experience and behaviors that is relatively stable across time and in different situations. Such traits comprise an individual’s inherent makeup.\textsuperscript{1} PDs are diagnosed when an individual’s personality traits create significant distress or impairment in daily functioning.\textsuperscript{1}

One of the ways people alleviate distress is by using defense mechanisms. Defense mechanisms are unconscious mental processes that individuals use to resolve conflicts, and thereby reduce anxiety and depression on a conscious level. Taken alone, defense mechanisms are not pathologic, but they may become maladaptive in certain stressful circumstances, such as when receiving medical treatment. Recognizing patterns of chronic use of certain defense mechanisms may be a clue that your patient has a PD. \textbf{TABLE 1}\textsuperscript{3,4} and \textbf{TABLE 2}\textsuperscript{3,4} provide an overview of common defense mechanisms used by patients with PDs.

The American Psychiatric Association’s \textit{Diagnostic and
Statistical Manual of Mental Disorders, 5th edition (DSM-5) organizes PDs into 3 clusters based on similar and often overlapping symptoms.1 TABLE 3 provides a brief summary of the characteristic features of each disorder in these clusters.

Cluster A: Odd, eccentric
Patients with one of these disorders are odd, eccentric, or bizarre in their behavior and thinking. There appears to be a genetic link between cluster A PDs (especially schizotypal) and schizophrenia.5 These patients rarely seek treatment for their disorder because they have limited insight into their maladaptive traits.5,6

CASE 1 Daniel A, age 57, has hypertension and hyperlipidemia and comes in to see his FP for a 6-month follow-up appointment. He never misses appointments, but has a history of poor adherence with prescribed medications. He enjoys his discussions with you in the office, although he often perseverates on conspiracy theories. He lives alone and has never been married. He believes that some of the previously prescribed medications, including a statin and a thiazide diuretic, were interfering with the absorption of “positive nutrients” in his diet. He also refuses to take the generic form of a statin, which he believes was adulterated by the government to be sold at lower cost.

Mr. A demonstrates the odd and eccentric beliefs that characterize schizotypal personality disorder. How can his FP best help him adhere to his medication regimen? (For the answer, go to page 96.)

Schizotypal personality disorder shares certain disturbances of thought with schizophrenia, and is believed to exist on a spectrum with other primary psychotic disorders. Support for this theory comes from the higher rates of schizotypal PD among family members of patients with schizophrenia. There is a genetic component to the disorder.3,5,6

Clinically, these patients appear odd and eccentric with unusual beliefs. They may have a fascination with magic, clairvoyance, telepathy, or other such notions.1,5 Although the perceptual disturbances are unusual and often bizarre, they are not frank delusions: patients with schizotypal PD are willing to consider alternative explanations for their beliefs and can engage in rational discussion. Cognitive deficits, particularly of memory and attention, are common and distressing to patients. Frequently, the presenting complaint is depression and anxiety due to the emotional discord and isolation from others.1,3,5,6

CONTINUED
Cluster B: Dramatic, erratic

Patients with cluster B PDs are dramatic, excessively emotional, confrontational, erratic, and impulsive in their behaviors.1 They often have comorbid mood and anxiety disorders, as well as a disproportionately high co-occurrence of functional disorders.3,7 Their rates of health care utilization can be substantial. Because individuals with one of these PDs sometimes exhibit reckless and impulsive behavior, physicians should be aware these patients have a high risk of physical injuries (fights, accidents, self-injurious behavior), suicide attempts, risky sexual behaviors, and unplanned pregnancy.8,9

<table>
<thead>
<tr>
<th>Defense mechanism</th>
<th>Definition</th>
<th>Example</th>
<th>Management strategies</th>
<th>Sample statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acting out</td>
<td>Patient is unable to contain an impulse, which can manifest in yelling, agitation, or even violence.</td>
<td>A patient screams at the physician and threatens to sue because the patient did not receive a prescription for opioid pain medication for chronic back pain.</td>
<td>The main goal is to quickly, and safely, de-escalate the situation. Removing oneself from the situation may be needed if safety is a concern.</td>
<td>“It is difficult for me to help you when you are screaming. Can we address your concerns calmly?”</td>
</tr>
<tr>
<td>Splitting</td>
<td>Patient has polarized views of others as “all good” or “all bad.” These extreme views of idealization and devaluation can apply to different individuals or can be used to describe one individual on separate occasions.</td>
<td>“My nurse understands exactly what I am going through, but my doctors don’t listen to me or understand me at all—not like at the other hospital.”</td>
<td>Anticipate distinct views of staff and meet with the patient as a group to present a unified front. Recognize that patients’ views of their physicians will change over time. With this in mind, do not react strongly to criticism one week and extreme praise the next. Use splitting to your advantage by having a well-liked team member lead discussions with the patient.</td>
<td>“I can see that you are upset. Let’s talk about how the team and I can help you.”</td>
</tr>
<tr>
<td>Passive aggression</td>
<td>Patient expresses anger in the form of failure, procrastination, provocative behavior, self-demeaning statements, or self-sabotage.</td>
<td>A patient may stop taking medications or intentionally arrive late to appointments because the physician is perceived to have wronged the patient in some way.</td>
<td>Recognize that the patient has anger or hostility and help him to “vent” his anger.</td>
<td>“What can I do to ensure that you get the best possible care?”</td>
</tr>
<tr>
<td>Somatization</td>
<td>Patient expresses psychological distress via physical symptoms or complaints.</td>
<td>A patient presents with pain that is out of proportion to what is found on examination and studies. Somatization may take on a delusional quality.</td>
<td>This is very challenging to manage. Use empathic statements (“This must be awful to deal with”), which may disarm the patient and improve rapport. Provide evidence-based care and don’t order unnecessary testing at the patient’s insistence. Provide frequent follow-up and reassurance.</td>
<td>“It may be that we don’t arrive at a definitive explanation for your pain or completely eliminate it, but in the meantime, let’s focus on ways to help you manage it in your daily routine.”</td>
</tr>
</tbody>
</table>

**TABLE 1**
How to respond when patients use these common immature defense mechanisms3,4

<table>
<thead>
<tr>
<th>Defense mechanism</th>
<th>Definition</th>
<th>Example</th>
<th>Management strategies</th>
<th>Sample statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acting out</td>
<td>Patient is unable to contain an impulse, which can manifest in yelling, agitation, or even violence.</td>
<td>A patient screams at the physician and threatens to sue because the patient did not receive a prescription for opioid pain medication for chronic back pain.</td>
<td>The main goal is to quickly, and safely, de-escalate the situation. Removing oneself from the situation may be needed if safety is a concern.</td>
<td>“It is difficult for me to help you when you are screaming. Can we address your concerns calmly?”</td>
</tr>
<tr>
<td>Splitting</td>
<td>Patient has polarized views of others as “all good” or “all bad.” These extreme views of idealization and devaluation can apply to different individuals or can be used to describe one individual on separate occasions.</td>
<td>“My nurse understands exactly what I am going through, but my doctors don’t listen to me or understand me at all—not like at the other hospital.”</td>
<td>Anticipate distinct views of staff and meet with the patient as a group to present a unified front. Recognize that patients’ views of their physicians will change over time. With this in mind, do not react strongly to criticism one week and extreme praise the next. Use splitting to your advantage by having a well-liked team member lead discussions with the patient.</td>
<td>“I can see that you are upset. Let’s talk about how the team and I can help you.”</td>
</tr>
<tr>
<td>Passive aggression</td>
<td>Patient expresses anger in the form of failure, procrastination, provocative behavior, self-demeaning statements, or self-sabotage.</td>
<td>A patient may stop taking medications or intentionally arrive late to appointments because the physician is perceived to have wronged the patient in some way.</td>
<td>Recognize that the patient has anger or hostility and help him to “vent” his anger.</td>
<td>“What can I do to ensure that you get the best possible care?”</td>
</tr>
<tr>
<td>Somatization</td>
<td>Patient expresses psychological distress via physical symptoms or complaints.</td>
<td>A patient presents with pain that is out of proportion to what is found on examination and studies. Somatization may take on a delusional quality.</td>
<td>This is very challenging to manage. Use empathic statements (“This must be awful to deal with”), which may disarm the patient and improve rapport. Provide evidence-based care and don’t order unnecessary testing at the patient’s insistence. Provide frequent follow-up and reassurance.</td>
<td>“It may be that we don’t arrive at a definitive explanation for your pain or completely eliminate it, but in the meantime, let’s focus on ways to help you manage it in your daily routine.”</td>
</tr>
</tbody>
</table>
**CASE 2** Sheryl B is a 34-year-old new patient with a history of irritable bowel syndrome, fibromyalgia, depression, and anxiety who shows up for her appointment an hour late. She is upset and blames the office scheduler for not reminding her of the appointment. She brings a list of medications from her previous physician that includes sertraline, clonazepam, gabapentin, oxycodone, and as-needed alprazolam. She insists that her physician increase the dose of the benzodiazepines.

A review of her medical history reveals diagnoses of anxiety, bipolar disorder, and posttraumatic stress disorder. Ms. B has also engaged in superficial cutting since adolescence, often triggered by arguments with her boyfriend. Currently, she attributes her anxiety and pain to not receiving the “correct medications” because of her transition from a previous physician who “knew her better than any other doctor.” After the FP explains to Ms. B that he would have to carefully review her case before continuing to prescribe benzodiazepines, she becomes tearful and argumentative, proclaiming, “You won’t give me the only thing that will help me because you want me to be miserable!”

Ms. B exhibits many cluster B personality traits consistent with borderline PD. How should the FP respond to her claims? (For the answer, go to page 96.)

**Borderline PD** is the most studied of the PDs. It can be a stigmatizing diagnosis, and even experienced psychiatrists may hesitate to inform patients of this diagnosis.

Patients with borderline PD may be erroneously diagnosed with bipolar disorder, treatment-resistant depression, or posttraumatic stress disorder because of a complicated clinical presentation, physician unfamiliarity with diagnostic criteria, or the presence of genuine neurotic defense mechanisms. These mechanisms can be categorized as isolation of affect, rationalization, and intellectualization.

**Isolation of affect**: Patient separates the emotional response to an event from the thoughts about that event.

**Example**: A patient may speak about witnessing the death of a loved one in a calm, matter-of-fact way.

**Management strategies**: Provide empathy and support, and encourage patients to feel comfortable sharing their emotions.

**Sample statements**: “Many people may feel upset in your situation, and I hope you would feel comfortable sharing any concerns you have if they arise.”

**Rationalization**: Patient justifies attitudes, behavior, or emotions by attributing them to an incorrect reason.

**Example**: A patient might state that a 30-lb weight gain in the first trimester of pregnancy is healthy to ensure that the developing fetus will be well-nourished.

**Management strategies**: Engage in a factual discussion with the patient in an empathic tone. These patients may be likely to recognize that their behavior is not ideal and may be willing or motivated to make changes.

**Sample statements**: “I can see how you might view it that way, but I’m wondering if you can see any “downsides” to those thoughts.”

**Intellectualization**: Patient attempts to control affect and emotions about an experience by thinking about them instead of experiencing them.

**Example**: A patient without a medical background might extensively review all of the literature on cardiac-bypass procedures before having surgery.

**Management strategies**: Provide the patient with as much information as is relevant and provide resources for further study. In this case, more knowledge may help alleviate fears and ensure ongoing adherence with treatment.

**Sample statements**: “I applaud you for being so invested in your medical care. I’m also wondering how you are coping with this diagnosis and treatment.”

**TABLE 2**

<table>
<thead>
<tr>
<th>Defense mechanism</th>
<th>Definition</th>
<th>Example</th>
<th>Management strategies</th>
<th>Sample statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation of affect</td>
<td>Patient separates the emotional response to an event from the thoughts about that event.</td>
<td>A patient may speak about witnessing the death of a loved one in a calm, matter-of-fact way.</td>
<td>Provide empathy and support, and encourage patients to feel comfortable sharing their emotions.</td>
<td>“Many people may feel upset in your situation, and I hope you would feel comfortable sharing any concerns you have if they arise.”</td>
</tr>
<tr>
<td>Rationalization</td>
<td>Patient justifies attitudes, behavior, or emotions by attributing them to an incorrect reason.</td>
<td>A patient might state that a 30-lb weight gain in the first trimester of pregnancy is healthy to ensure that the developing fetus will be well-nourished.</td>
<td>Engage in a factual discussion with the patient in an empathic tone. These patients may be likely to recognize that their behavior is not ideal and may be willing or motivated to make changes.</td>
<td>“I can see how you might view it that way, but I’m wondering if you can see any “downsides” to those thoughts.”</td>
</tr>
<tr>
<td>Intellectualization</td>
<td>Patient attempts to control affect and emotions about an experience by thinking about them instead of experiencing them.</td>
<td>A patient without a medical background might extensively review all of the literature on cardiac-bypass procedures before having surgery.</td>
<td>Provide the patient with as much information as is relevant and provide resources for further study. In this case, more knowledge may help alleviate fears and ensure ongoing adherence with treatment.</td>
<td>“I applaud you for being so invested in your medical care. I’m also wondering how you are coping with this diagnosis and treatment.”</td>
</tr>
</tbody>
</table>

* Neurotic defense mechanisms can, at times, be adaptive or socially acceptable.
comorbid conditions.\textsuperscript{3,11}

The etiology of this disorder appears to be multifactorial, and includes genetic predisposition, disruptive parent-child relationships (especially separation), and, often, past sexual or physical trauma.\textsuperscript{9,12}

Predominant clinical features include emotional lability, efforts to avoid abandonment, extremes of idealization and devaluation, unstable and intense interpersonal relationships, and impulsivity.\textsuperscript{1} Characteristically, these patients also engage in self-injurious behaviors.\textsuperscript{13,14} Common defense mechanisms used by patients with borderline PD include splitting (viewing others as either all good or all bad), acting out (yelling, agitation, or violence), and passive aggression (\textit{TABLE 1} \textsuperscript{3,4}).

\textbf{Cluster C: Anxious, fearful}

Individuals with cluster C PDs appear anxious, fearful, and worried. They have features that overlap with anxiety disorders.\textsuperscript{15}

\textbf{CASE 3} Judy C is a 40-year-old lawyer with a history of gastroesophageal reflux disorder, hypertension, and anxiety who presents for a 3-week follow-up visit after starting sertraline. The patient describes herself as a perfectionist who has increased work-related stress recently because she has to “do extra work for my colleagues who don’t know how to get things done right.” She recently fired her assistant for “not understanding my filing system.” She appears formal and serious, often looking at her watch during the evaluation.

Ms. C demonstrates a pattern of perfectionism, formality, and rigidity in thought and behavior characteristic of obsessive-compulsive PD. What treatment should her physician recommend? (For the answer, go to page 97.)

\textbf{Obsessive-compulsive PD.} Although this disorder is associated with significant anxi-

\begin{table}
\centering
\caption{Clusters of personality disorders and characteristic features\textsuperscript{1}}
\begin{tabular}{|l|p{0.7\textwidth}|}
\hline
\textbf{Cluster/disorder} & \textbf{Features} \\
\hline
\textbf{Cluster A} & \\
Paranoid & Excessive distrust and suspiciousness of others; pathologically jealous; interprets actions as demeaning, malevolent, threatening, or exploitative; ideas of reference (believes coincidences or innocuous events have strong personal significance) \\
Schizoid & Detachment from social interactions without a desire for close interpersonal relationships; restricted affect \\
Schizotypal & Eccentric beliefs without frank delusions; cognitive and perceptual disturbances; impaired social interactions \\
\hline
\textbf{Cluster B} & \\
Antisocial & Lack of empathy, with disregard for rights of others; deceitfulness, impulsivity, irresponsibility \\
Borderline & Unstable self-image; chronic feelings of emptiness; instability of interpersonal relationships; affective instability; self-harm behavior; hypersensitivity to rejection and fear of abandonment \\
Histrionic & Excessive attention-seeking behavior and emotionality; often excessively impressionistic and shallow \\
Narcissistic & Need for admiration; grandiosity in speech and behavior; lack of empathy for others, interpersonally exploitative; arrogant and haughty \\
\hline
\textbf{Cluster C} & \\
Dependent & Inability or extreme difficulty making own decisions; overly reliant on others; submissiveness; feelings of inadequacy; avoidance of confrontation \\
Avoidant & Feelings of inadequacy; hypersensitivity to rejection; social inhibition despite a desire to form close interpersonal relationships \\
Obsessive-compulsive & Preoccupation with details and rules; excessive organization; perfectionism, orderliness, miserliness; rigidity and stubbornness \\
\hline
\end{tabular}
\end{table}
Unlike patients with frank delusions, patients with schizotypal personality disorder are willing to consider alternative explanations for their odd beliefs.1,11,15

Although some overlap exists between obsessive-compulsive disorder (OCD) and obsessive-compulsive PD, patients with OCD exhibit distinct obsessions and associated compulsive behavior, whereas those with obsessive-compulsive PD do not.1

In terms of treatment, it is generally appropriate to recognize the 2 conditions as distinct entities.15 OCD responds well to cognitive behavioral therapies and high-dose selective serotonin reuptake inhibitors (SSRIs).16 In contrast, there is little data that suggests antidepressants are effective for obsessive-compulsive PD, and treatment is aimed at addressing comorbid anxiety with psychotherapy and pharmacotherapy, if needed.1,15

**Psychotherapy for PD is the first-line treatment**

Psychotherapy is the most effective treatment for PDs.11,17,18 Several psychotherapies are used to treat these disorders, including dialectical behavioral therapy, schema therapy, and cognitive behavioral therapy (CBT). A recent study demonstrated the superiority of several evidence-based psychotherapies for PD compared to treatment-as-usual.11 Even more promising is that certain benefits have been demonstrated when psychotherapy is provided by clinicians without advanced mental health training.19-21 However, the benefits of therapies for specific disorders are often limited by lack of available data, patient preference, and accessibility of resources.

**Limited evidence supports pharmacotherapy**

The use of pharmacotherapy for treating PDs is common, although there’s limited evidence to support the practice.11,22 Certain circumstances may allow for the judicious use of medication, although prescribing strategies are based largely on clinical experience and expert opinion.

Prescribers should emphasize a realistic perspective on treatment response, because research suggests at best a mild-moderate response of some personality traits to pharmacotherapy.31,22-25 There is no evidence for polypharmacy in treating PDs, and FPs should allow for sufficient treatment duration, switch medications rather than augment ineffective treatments, and resist the urge to prescribe for every psychological crisis.11,22,25,26

Patient safety should always be a consideration when prescribing medication. Because use of second-generation antipsychotics is associated with the metabolic syndrome, the patient’s baseline weight and fasting glucose, lipids, and hemoglobin A1c levels should be obtained and monitored regularly. Weight gain can be particularly distressing to patients, increase stress and anxiety, and hinder the doctor-patient relationship.25 Finally, medications with abuse potential or that can be lethal in overdose (eg, tricyclic antidepressants and benzodiazepines) are best avoided in patients with emotional lability and impulsivity.25,26

**Tailor treatment to the specific PD**

**Tx for cluster A disorders.** Few studies have examined the effectiveness of psychotherapies for cluster A disorders. Cognitive therapy may have benefit in addressing cognitive distortions and social impairment in schizotypal PD.11,12,22 There is little evidence supporting psychotherapy for paranoid PD, because challenging patients’ beliefs in this form is likely to exacerbate paranoia. Low-dose risperidone has demonstrated some beneficial effects on perceptual paranoia; however, the adverse metabolic effects of this medication may outweigh any potential benefit, as these symptoms are often not distressing to patients.6,27 In comparison, patients often find deficits in memory and attention to be more bothersome, and some data suggest that the alpha-2 agonist guanfacine may help treat these symptoms.28

> **CONTINUED**
Patients often view the specific traits of obsessive-compulsive personality disorder, such as perfectionism, as desirable.

**Tx for cluster B disorders.** Several forms of psychotherapy have proven effective in managing symptoms and improving overall functioning in patients with borderline PD, including dialectical behavioral therapy, mentalization-based therapy, transference-focused therapy, and schema therapy. Dialectical behavioral therapy is often the initial treatment because it emphasizes reducing self-harm behaviors and emotion regulation.26,27,28

Gunderson developed a more basic approach to treating borderline PD that is intended to be used by all clinicians who treat the disorder, and not just mental health professionals with advanced training in psychotherapy. A large, multisite randomized controlled trial found that the clinical efficacy of the technique, known as good psychiatric management, rivaled that of dialectical behavioral therapy.20,21

The general premise is that clinicians foster a therapeutic relationship that is supportive, engaging, and flexible. Physicians are encouraged to educate patients about the disorder and emphasize improvement in daily functioning. Clinicians should share the diagnosis with patients, which may give patients a sense of relief in having an accurate diagnosis and allow them to fully invest in diagnosis-specific treatments.19

Systematic reviews and meta-analyses of studies that evaluated pharmacotherapy for borderline PD often have had conflicting conclusions as a result of analyzing data from underpowered studies with varying study designs.23,24,26,30,31 In targeting specific symptoms of the disorder, the most consistent evidence has supported the use of antipsychotics for cognitive perceptual disturbances; patients commonly experience depersonalization or out-of-body experiences.25 Additionally, the use of antipsychotics and mood stabilizers (lamotrigine and topiramate) appears to be somewhat effective for managing emotional lability and impulsivity.26,32,33 Despite the widespread use of SSRIs, a recent systematic review found the least support for these and other antidepressants for management of borderline PD.25

**Tx for cluster C disorders.** Some evidence supports using cognitive and interpersonal psychotherapies to treat cluster C PDs. In contrast, there is little evidence to support the use of pharmacotherapy. However, given the significant overlap among these disorders (especially avoidant PD) and social phobia and generalized anxiety disorder, effective pharmacologic strategies can be inferred based on data for those conditions.11 SSRIs, serotonin-norepinephrine reuptake inhibitors (eg, venlafaxine), and gabapentin have demonstrated efficacy in anxiety disorders and are reasonable and safe initial treatments for patients with a cluster C PD.11,34

CASE 1 ▶ Mr. A’s schizotypal PD symptoms interfere with medication adherence because of his unusual belief system. Importantly, unlike patients with frank delusions, patients with schizotypal PD are willing to consider alternative explanations for their unusual beliefs. Mr. A’s intense suspiciousness may indicate some degree of overlap between paranoid and schizotypal PDs.

The FP is patient and willing to listen to Mr. A’s beliefs without devaluing them. To improve medication adherence, the FP offers him reasonable alternatives with clear explanations. (“I understand you have concerns about previous medications. At the same time, it seems that managing your blood pressure and cholesterol is important to you. Can we discuss alternative treatments?”)

CASE 2 ▶ In response to Ms. B’s borderline PD, the FP must be cautious to avoid reacting out of frustration, which may upset the patient and validate her mistrust. The FP first reflects her anger (“I can tell you are upset because you don’t think I want to help you”), which may allow her to calmly engage in a discussion. He wants to recognize Ms. B’s dramatic behavior, but not reward it with added attention and unreasonable concessions. To help establish rapport, he provides a statement to legitimize Ms. B’s concerns (“Many patients would be frustrated during the process of changing physicians”).

The FP listens empathically to Ms. B, sets clear limits, and provides consistent and evidence-based treatments. He also provides early referral to psychotherapy, but to mitigate any perceived abandonment, he assures
CASE 3

The FP recognizes that Ms. C’s pattern of perfectionism, formality, and rigidity in thought and behavior are likely a manifestation of obsessive-compulsive PD, and that the maladaptive psychological traits underlying her anxiety are distinct from a primary anxiety disorder.

An SSRI may be a reasonable option to treat Ms. B’s anxiety, and the FP also refers her for CBT. (“I can tell you are feeling really anxious and many people feel that way, especially with work. I think the medication is a good improvement.”) Because of their exacting nature, many patients with cluster C personality traits are willing to engage in treatments, especially if they are supported by data and recommended by a knowledgeable physician.

CORRESPONDENCE
Nicholas Morcos, Department of Psychiatry, University of Michigan Health System, 1500 East Medical Center Drive, Ann Arbor, MI 48109; nmorcos@med.umich.edu.

References