

# THE CARLAT REPORT

## PSYCHIATRY

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**Steve Balt, MD**  
**Editor-in-Chief**  
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Learning objectives for this issue:

1. Effectively treat patients with eating disorders despite numerous challenges. 2. Explain how eating disorders are similar to substance addictions. 3. Describe some of the ways to treat patients with eating disorders, including hospitalization. 4. Understand some of the current findings in the literature regarding psychiatric treatment.

## Eating Disorder Treatment Challenges

Sarah O'Neil, MD  
Child, adolescent, and adult psychiatrist

Dr. O'Neil has disclosed that she has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

Even though she denies any problems, deep inside your patient feels out of control, her life a treadmill gone haywire. She feels numb to any emotional experience and feels absent from her own life. She fragments herself into two selves, her public persona, always competent and in control, and the hidden, secret self of the eating disorder, until her mind no longer has the energy to preserve that duality.

An eating disorder is a terrible thing to live with.

Let's be blunt. Without recognition and appropriate management of the "secret self" of the eating disorder, patients can die. Anorexia has the highest mortality rate of any psychiatric illness, and mortality correlates with the extent and duration of starvation. Sufferers are 5.6 times more likely to die than their

peers in an age-matched population. The cause of death is divided evenly among suicide, cardiac disease (heart failure and arrhythmias), and starvation-related causes. With bulimia, medical complications are related to frequency and mode of purging. Both illnesses can cause potentially lethal complications in nearly every organ system (Mahler PS, *Int J Eat Disorder* 2011;44(2):95-104).

But diagnosis can be difficult, especially if you simply focus on diagnostic criteria. Instead, I advise framing questions in three general categories: disturbed eating habits; extreme methods of weight control; and concerns about weight and shape (inability to see weight loss and inability to appreciate medical seriousness of the illness) (Cooper Z and Fairburn CG, *Intl J Eating Dis* 1987;6:1-8).

The following accounts illustrate these domains:

### Disturbed Eating Habits

Restriction and bingeing are the most obvious food-related behaviors to

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## Eating Disorders as Addictions

Sara Brewer, MD  
Assistant clinical professor  
Tufts University School of Medicine

Dr. Brewer has disclosed that she has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

We all know that substance abuse and dependence are serious, difficult-to-treat conditions. But ideas about what exactly constitutes substance abuse and addictions are changing.

Authors of the upcoming DSM-5 have proposed that substance use disorders (SUD) be categorized as "Substance Abuse and Addictive Disorders," which would also include gambling addiction

and would recommend other behavioral addictions (such as Internet addiction) for further study. Clinical experience, as well as a growing body of research, is asking whether food might also be considered a substance of abuse, and whether eating disorders are addictions.

The low cost and ready availability of highly processed foods have led some to speculate that these foods may contribute to eating disorders, just as newly available addictive substances like methamphetamine and MDMA/ecstasy have fueled a rise in addictions (Volkow N and Wise RA, *Nat Neurosci* 2005;8(5):555-560). As with addictions, remission rates in anorexia and bulimia are low. Binge eating and obesity are on the rise worldwide and are also difficult to treat. There

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## Eating Disorder Treatment Challenges

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look for, but rituals and obsessiveness about food can also be a clue to an eating disorder. Extremely rigid meal schedules and patterns, or an excessive degree of knowledge about foods and their content are common.

*Mary decided to cut out desserts, then fat in general, then meat, and then carbohydrates. It was as if, with each food eliminated, she was having a revelation: "If a serving of M&Ms has this much fat, then one M&M has this much." Then, Mary "realized" she was supposed to stop eating as soon as her belly stopped growling. She had no concept that her eating habits were no longer normal.*

## Extreme Weight Control Methods

While dieting and concerns over weight and shape are commonplace in our society, patients with eating disorders take these concerns to a new level. Self-induced purging is a hallmark of bulimia,

but you should also explore other forms of non-purging compensatory behaviors, which can be extreme and at times irrational.

*Soon after starting her diet, Emily decided she needed to exercise to burn every calorie she had eaten. She had no concept that her eating habits were no longer normal. Exercise felt cathartic, even if it meant several hundred sit-ups each day or waking up at 4 am to get an elliptical machine at her gym.*

## Concerns about Weight and Shape

As important as evaluating the behavior in an eating disorder is understanding the motivation behind the behavior. All eating disorders share one central, overvalued idea: weight is somehow the only factor in assessment of worth by self and others. It is critical to understand this organizing truth if one is going to work with an eating-disordered patient (see *TCPR*, October 2007). This belief, to the patient, is self-evident. "How else would someone assess me?" she asks. She cannot—or will not—acknowledge the cognitive distortion, because she sees no distortion. As a result, she also cannot recognize the

danger she's in due to her weight loss or purging. Instead, she believes seamlessly and without question that others will be impressed by her thinness and like her more because of her control over eating. She also ashamedly believes that if others knew of her secret bingeing and self-induced vomiting, they would despise her.

*At no point during her eating disorder did Heather ever perceive any weight loss. She lost more than 20 pounds but continued to see her old body, which she regarded with disgust and loathing. She felt she had to keep going; she would know that this "project" was done when she had achieved a proper size. Heather envisioned an emotional resolution, an "aha" experience that would let her know that she had reached her goal, and her problems would be solved. That time never came.*

## Denial and Lack of Insight

It is also common for patients with eating disorders to be in denial that they have a problem and to have a lack of insight into their own behavior.

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### Resources

- Two self-report questionnaires, the Eating Attitudes Test (EAT-26) and the Eating Disorder Examination Questionnaire (EDQ Version 9.0), can help inform the clinician about the most symptomatic areas in a given eating disorder.
  - The EAT-26 ([www.eat-26.com](http://www.eat-26.com)), a 26-item questionnaire, provides a list of eating disorder symptoms that your patients can identify to help you assess whether they have clinically relevant eating behaviors and body preoccupations (Garner D et al, *Intl J Eating Dis* 1987;12:871-878). Providers can print a free copy for their practice after obtaining permission online.
  - The EDQ Version 9.0 is a self-report questionnaire that provides data on key behavioral features of an eating disorder. It is available at no cost at <http://bit.ly/S86rdC> (Mond JM et al, *Intl J Eating Dis* 2004;42(5):551-567).
- The Multi-Service Eating Disorder Association also has a great website ([www.MEDAinc.org](http://www.MEDAinc.org)), where you can find resources such as provider lists, common signs and symptoms of an eating disorder, perspectives on eating disorders from recovered patients, and patient and professional educational material.
- The American Academy of Eating Disorders ([www.aedweb.org](http://www.aedweb.org)) is an organization devoted to research, prevention and treatment of eating disorders. Its website offers information for clinicians, patients, and families. The AED Report is a readable booklet that provides information about early recognition of an eating disorder and management of medical problems that may arise as a result.

## Eating Disorders as Addictions

Continued from page 1

is urgency, then, to develop other treatments for eating disorders, and viewing them through the lens of addiction may be fruitful.

Are eating disorders addictions? Our current eating disorder diagnoses are a mixed group: anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified (EDNOS), which currently includes the proposed binge-eating disorder (BED) and other atypical eating disorder presentations. Many patients with these diagnoses display symptoms that parallel the DSM-IV criteria for SUD: tolerance/needing more to achieve a desired effect (increased quantity); withdrawal symptoms when desired foods are restricted (often unpleasant emotional states); eating more than intended (binges); attempts to cut down (dieting); spending large amounts of time seeking the substance (excessive time and money spent on food and eating); functional impairment (social withdrawal, eating in secret); and continued use despite consequences (damage to teeth, esophagus, cardiac arrhythmias in BN; type II diabetes and heart disease in obesity) (Corsica J and Pelchat M, *Curr Opin Gastroenterol* 2010;26:165–169). Some subtypes of eating disorders seem to fit these criteria more closely (BED, BN, obesity) and others less so (AN); but all involve the obsessiveness, craving, preoccupation with a substance (food), and other cognitive symptoms that are characteristic of addictive thinking.

### Similarities to Other Addictions

In the last decade, several observations of biological changes in eating disorders similar to those observed in addiction have become increasingly well established. First, neurohormonal systems are altered in the presence of food, particularly highly palatable foods such as simple sugars or high fat/high sugar diets. In fact, the mere taste, smell, and appearance of food have been shown to alter brain and body chemistry in patterns similar to the rewarding effects of abused substances. The most striking similarity to drug and alcohol abuse occurs when food is used in a restrictive/excessive pattern as seen in BED and BN, in which an episode of overeating is followed by either dieting or purging, which leads to further overeating. This

pattern is associated with changes in the dopaminergic, opioid, and cannabinoid systems as well as in gut peptides (such as ghrelin, leptin, insulin) and, to a lesser extent, serotonin. These biochemical changes have been shown to both trigger and maintain the disordered eating patterns. In other words, in humans (and lab animals) who are predisposed to eating disorders, disordered eating leads to biological alterations that make the habit hard to break. In addition, as with other addictions, food may act differently in individuals with altered genetic systems. The evidence that food alters the brain in similar ways to other addictions provides a growing base for the food addiction concept.

A phenomenon similar to tolerance has also been described after prolonged consumption of foods, particularly highly palatable foods as noted previously. Studies have shown that dopaminergic reward systems are down-regulated with excessive food consumption, contributing to persistent overconsumption. This finding might explain why certain people find that the more they consume particular foods, such as highly concentrated simple sugars and carbohydrates, the more they ultimately need to satisfy cravings. Surprisingly, there's also evidence of withdrawal from food. In studies of bulimic patients and of rats trained to develop binge-eating-like habits after intermittent feeding with highly palatable foods, the restriction of highly rewarding foods leads to elevated stress hormone levels, which are associated with anxiety, sleep disturbance, and increased cravings in humans, and increased fear sensitivity and anxiety in the rats. As explained by one of the pioneers in this field, Princeton psychologist Bart Hoebel, food addiction begins as hedonistic—for the pursuit of reward—but ultimately progresses to a type of negative reinforcement in which excessive food consumption is driven by the use of food to manage negative physiological states and affects (reviewed in Parylak S et al, *Physiol Behav* 2011;104(1):149–156). A similar process is described for other chemical and behavioral addictions and parallels the histories that most patients explain to us.

### Measuring Food Addiction

Psychiatrists at Yale have recently

developed a clinical instrument to measure food addiction. The Yale Food Addiction Scale (YFAS) (Gearhardt A et al, *Appetite* 2009;52(2):432–436) looks at the construct of food addiction as applied to people who meet the behavioral criteria for SUD with respect to food. This measure has yielded some interesting findings.

The first, which I will call the milkshake study, found that women who met criteria for food addiction as defined by the YFAS showed higher levels of MRI activation in the caudate and medial orbitofrontal cortex (areas underlying craving and motivation) and lower activation in the lateral orbitofrontal cortex (self-control) upon seeing a milkshake, compared to women with lower YFAS scores. This finding echoes the biological findings above, that food targets the same reward systems as other drugs of abuse, and suggests further addiction-like features such as low levels of self-control.

A 2011 study of people with obesity found that only half who met criteria for BED had food addiction as measured by the YFAS. Similarly, only 70% of people with food addiction are binge eaters. Two other recent studies found that between 8% and 11% of young adults with food addiction on the YFAS were actually normal or underweight (Meule A, *Front Psych* 2011;2(61):1–4). None of these studies found a correlation between YFAS score and body mass index, suggesting that not all food addiction results in obesity. In fact, just as drug or alcohol addicts may give the impression that their use is under control, even normal-weight bulimics and binge-eaters might have all the characteristics of true food addicts.

#### TCPR'S VERDICT

Food can do things to the brain that addictive substances can do, and disordered eating patterns can yield biochemical changes like those seen in SUD. The concept of “food addiction” is not yet widely accepted, but an addiction-like profile is clearly over-represented in people with obesity and BED. Further research is needed to determine whether addictive behavior is increased in AN and BN as well. Exploration of these questions will advance our knowledge of not only eating disorders but also of the addictions as a whole.

Q & A  
With  
the Expert

## *This Month's Expert*

### Helping Patients with Eating Disorders Terry Schwartz, MD

*Clinical director UCSD Eating Disorder Adult and Adolescent Programs  
Assistant clinical professor UCSD School of Medicine, Dept. of Psychiatry*



Dr. Schwartz has disclosed that she has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

#### **TCPR: Can you explain the factors determining whether to hospitalize somebody with an eating disorder?**

**Dr. Schwartz:** There are two types of hospitalizations to consider. One is in a medical unit with psychiatric support, and the other is in a psychiatric unit, preferably a specialized eating disorder unit that has medical services available if necessary. The type we choose has to do with the patient's degree of medical instability, starting with vital signs. If a patient's pulse gets very low, below 40 or 50, blood pressure falls, or if he or she is significantly orthostatic or has low electrolytes, we tend to consider a medical unit. Similarly, if there is evidence of liver, kidney, or cardiac problems, a medical unit is more appropriate. Some limited measures can be taken in urgent care or the ER, such as replacing potassium. Also, we consider hospitalization in patients with anorexia nervosa when they have had acute weight loss and they are refusing food, due to the risk of re-feeding syndrome. If you have a patient who has been eating very low calories a day for a period of weeks, you have to carefully titrate their calories up to avoid this syndrome, which can be dangerous and lead to death. That is something that should be monitored in a hospital setting. We consider psychiatric hospitalization if patients' psychiatric co-morbidity is severe and they are medically stable, or if we feel they require a lower level of care but are unable to provide themselves with meals. However, a specialized psychiatric unit for eating disorders is preferred, as most general psychiatric units are not able to provide the type of meal support and monitoring required. A specialized psychiatric unit is also appropriate if patients purge after every meal, or they are taking laxatives or drugs or alcohol, or they have expressed suicidality with intention. Occasionally people are hospitalized if they are from rural areas and it is not possible for them to participate in an outpatient setting. The lack of specialists in some rural areas is a real problem.

#### **TCPR: When, in the course of the illness, is hospitalization necessary?**

**Dr. Schwartz:** Sometimes people initially present to an emergency room or their primary care doctor before they've ever been diagnosed with an eating disorder. I have had people seek help for fatigue, and then they're found to have a hematocrit of 20 or something, and their weight is dangerously low. So the medical abnormality can come at any point during the disease.

#### **TCPR: In those patients who have never been diagnosed, is that because psychiatric care is not available? Or do they refuse psychiatric care?**

**Dr. Schwartz:** One critical feature of eating disorders is the ego-syntonic nature of the disease and the subsequent denial. Often, people with anorexia nervosa are simply not upset by it. It's something that they find to be helpful, that helps them feel like they are stronger people, helps manage anxiety, and gives them some kind of success in their own minds in terms of accomplishing something that most people cannot accomplish, albeit to an extent that is potentially deadly. As a result of their perception of the physical and psychological advantages of their low weight, they don't present for treatment because they don't see the problems. Often a parent, friend, or spouse will insist that somebody with anorexia nervosa come for treatment. Sometimes parents don't recognize it, either. We have had parents say, "She was a little chubby and we noticed that she was losing weight. We thought it was a good thing and she looked great." But then she went to the doctor, who found that she fell off her growth curve, and the doctor noticed that the weight loss was enough to be concerning.

#### **TCPR: Is there anything we can do to help patients recognize the damage that they are doing to their bodies?**

**Dr. Schwartz:** Getting patients with anorexia nervosa to recognize the damage that they are doing to their bodies is extremely difficult. They have a strangely laissez-faire attitude, despite often being very bright. One way that we actually get adolescents to engage in treatment is through the parents. Even with adults, if they are receiving financial or other forms of support from parents or a husband or somebody, it is just critical to bring in family members. It's usually the family member who can put in contingencies that can help motivate the patient in recovery. Keep in mind that when patients are starving, it is very important to get them to want to recover because when they eat their anxiety level is intolerable. It is just too painful. I have had people tell me they just can't bear it. So they need a lot of support to get there.

#### **TCPR: Is it possible that we are looking here at something like a delusional or psychotic process?**

**Dr. Schwartz:** There are some symptoms similar to psychosis, more in the range of what you might see with body dysmorphic disorder, where people are not psychotic in other areas of their life. It is really about weight, body image, what they eat, and the impact it is going to have on their body. They also have a devastating level of anxiety about overeating and gaining weight, when in fact they should be more devastated about their body weight being so low. I would say that the belief system is on the line between severe distortion and an actual delusion. Some patients actually have some level of insight.

#### **TCPR: Is there any role for antipsychotic medication?**

**Dr. Schwartz:** Prior to the appearance of atypical antipsychotics, the typical antipsychotics really did not provide much help or

success in restoring weight. There are some positive case series with the atypicals, but that may be due to their role in handling the affective, emotional, and anxiety symptoms that accompany or facilitate the eating disorder symptoms.

**TCPR: What happens inside a psychiatric unit like yours, that specializes in eating disorders?**

**Dr. Schwartz:** First of all, we have a very specialized team. It is probably one of the most integrated treatment approaches that I have seen anywhere in psychiatry. We have a psychiatrist specialized in eating disorder treatment, and an internist with expertise in nutrition and in managing the unique medical risks. We have therapists with specialized training, and psychologists who are experienced in the techniques that have been either shown to help or are promising to help with eating disorders. Generally all specialized units also have a dietician who works with the internist and/or the psychiatrist to help in the re-feeding process and also works with patients to challenge them a little bit with foods, and make sure they get adequate nutrition. It's also important that the nurses and the psych techs be trained as well. All of these people may be eating meals with these patients, and there are a lot of discussions that are not appropriate at meals or even in between meals. Moreover, people with eating disorders have all kinds of sneaky and ritualistic behaviors around food, so we train staff to be able to recognize them. We have people who hide food in their sleeves or hide it under the table. Some have specific behaviors like cutting the food into little pieces and eating really slowly. Others will find ways to purge food, so supervision is necessary. There are some behavioral modifications that we put into place that help normalize their eating behaviors.

**TCPR: Can you describe your psychotherapeutic approach to treating an eating disorder?**

**Dr. Schwartz:** Particularly for adolescents, there has been a lot of research recently into the Maudsley Model, which has been shown to have better results than other family therapies and individual therapy. This model was developed in England and has been studied primarily in adolescents with anorexia nervosa. The treatment is family-based and focuses on training the parents in specific techniques that are very useful in re-feeding their kids. The therapy starts off with what people call "the funeral session." It helps families realize the severity of the disease, and recognize that even though patients are supposed to be going through the process of separation and individuation, they first need to be able to feed themselves, and if they can't, the parents have to step in and take over.

**TCPR: It must be difficult for patients to hand over power to their parents?**

**Dr. Schwartz:** It is. Patients generally do not like it, but at the same time the recovery rates are much better with this approach. Even though starving actually helps reduce the anorexic's anxiety and helps her feel better, if she is trying to individuate and exert her independence like that, it is severely pathological. After they are re-fed, then they can do the work of separating in other healthy ways. But neuroplasticity is so reduced in someone with anorexia when they are in the starvation state that therapy is not as effective. They become much more rigid and inflexible in their thinking.

**TCPR: What else are we learning about the biology of eating disorders?**

**Dr. Schwartz:** At this point we cannot predict who is going to get anorexia nervosa with brain scans, although we can certainly identify temperamentally and historically who might be at risk. One marker is on the receptor level. Some people with anorexia have increased 5-HT<sub>1a</sub> binding potential and lower 5-HT<sub>2a</sub> binding potential, and that imbalance actually makes them predisposed to being more anxious, more perfectionistic (Kaye WH et al, *Nat Rev Neurosci* 2009;10(8):573–584). Interestingly, food produces anxiety in people with anorexia nervosa. For most people food produces a pleasure response due to increased dopamine in the nucleus accumbens. For patients with anorexia nervosa the increase in dopamine is felt as anxiety, so they actually get aversive reactions to food (Bailer UF et al, *Int J Eat Disord* 2012;45(2):263–271). This is made even stronger by the higher cortical regions telling them that being thin is better. And so it abnormally overpowers the hunger that someone without an eating disorder who is starving would feel.

**TCPR: When treating a patient in an inpatient setting, how do you know that a patient is safe enough to go home?**

**Dr. Schwartz:** Unfortunately, managed care often dictates when patients leave the hospital, and they sometimes have different criteria than our internists, pediatricians, or psychiatrists. In general, to leave an inpatient level of care I would expect patients to be able to pick out their own meals in a weight-restoring direction, and demonstrate fewer of the compulsive, ritualistic behaviors around food. Many times we step them down to day treatment, which is a more cost-effective treatment when patients are a little bit more stable psychiatrically and medically. They still have most of their meals monitored and given to them on site and they participate in a structured day treatment. The question basically comes down to: do we think that they can manage at that level of care? We take into account vital signs, of course, but also weight. When they are below 80% of expected weight, it is often extremely hard for people to put on weight in an outpatient setting. Also, we consider the associated compulsive exercise and purging behaviors and any other psychiatric co-morbidity, and make sure these are under control.

**TCPR: What are some good resources to find centers that might take patients? Where can patients be referred on a national basis?**

**Dr. Schwartz:** EDreferrals.com and the NEDA website ([bit.ly/d13iNf](http://bit.ly/d13iNf)) are good educational sites, with links to providers and treatment centers nationwide. Our department's website at <http://eatingdisorders.ucsd.edu> also contains a list of helpful resources for professionals and patients.

**TCPR: Thank you, Dr. Schwartz.**

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**The therapy starts off with what people call the "funeral session" to help families realize the severity of the disease.**

Terry Schwartz, MD

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## Research Updates IN PSYCHIATRY

Section Editor, Glen Spielmans, PhD

Glen Spielmans, PhD, has disclosed that he has no relevant financial or other interests in any commercial companies pertaining to this educational activity.

### DEPRESSION

#### **Study Looks at Use of TMS to Treat Depression**

Transcranial magnetic stimulation, or TMS, was approved by the FDA for treatment of major depression in October 2008. A newly published observational study evaluating the effectiveness of TMS treatment in more than 300 patients at 42 clinical settings across the United States has found that most patients responded well to this intervention, with few adverse effects (Carpenter LL et al, *Dep Anx* 2012;29(8):587–596).

The study followed 307 outpatients who were approved for TMS treatment due to failing at least one antidepressant trial (multiple failures were not required). Most treatment settings (76%) were private clinical practices, and TMS was paid for either by patients themselves or by their insurance provider. Importantly, both subjects and investigators received a “modest remuneration” for their participation in the study. Also, there was no control or “sham TMS” group.

The primary outcome measure was the Clinical Global Impressions-Severity of Illness (CGI-S) scale. This scale simply asks the question “how mentally ill is the patient at this time,” measured by the clinician on a scale of 0 to 7. In the study, mean CGI-S scores decreased from 5.1 at the start of treatment to 3.2 at the end of treatment (ie, the point at which the clinician felt “maximum improvement” was reached). Response rate was 58.0% while remission rate was 37.1%. Similar results were found on two secondary outcome measures, the patient self-rating scales PHQ-9 and IDS.

Given the generally positive results, investigators searched for patient-specific factors that might predict a beneficial response to TMS. They found that patients younger than 55 years of age and who had less severe depression were more likely to benefit from treatment than others. Furthermore, those who had failed only one antidepressant (54% of the sample) did better than those who had failed two or more.

**TCPR’s Take:** At first glance, this naturalistic study seems to show an impressive benefit of TMS in real-world settings. Side effects were minimal (there was one seizure, in a woman taking several concurrent medications who was “sleep-deprived” at the time of TMS) even with an average of 28.3 TMS sessions over 42 days. However, the take-home message is called into question by the absence of a control group, the financial incentive to both patients and providers, and the sponsorship of the paper by the TMS device manufacturer. Most important, given the increasing emphasis on placebo response and patient expectations, it would have been interesting to determine whether patients’ (or providers’) beliefs about TMS influenced response to treatment, but this was not assessed.

### SUICIDE

#### **Parasite Infection Possible Precursor to Suicidal Behavior**

A major thrust of much psychiatric research is to identify predictors of suicidality, in hopes of intervening earlier to prevent this devastating outcome. In a recent study, a Danish group made a surprising contribution to this endeavor by identifying *Toxoplasma gondii* infection as a possible precursor to suicidal behavior.

*Toxoplasma* is a parasite commonly found in the GI tract of cats, and is carried by almost one-third of adult humans. Humans become infected by exposure to cat feces, eating undercooked meat, and eating unwashed vegetables. Some have linked acute infection to psychotic symptoms, and *Toxoplasma* antibodies have been found to be elevated in patients with schizophrenia.

Between 1992 and 1995, more than 45,000 pregnant women living in five counties in Denmark, and their newborns, were screened for *Toxoplasma* IgG antibodies. Nearly 27% of the women were seropositive for IgG, reflecting past infection. Among these women, there were a total of 488 incidents of self-directed violence in the next 10 years of

follow-up. These were more common in seropositive women, with a relative risk (RR) of 1.53. The risk was elevated with higher IgG levels, up to a relative risk of 1.91 in those with the highest concentration of antibodies. Also, the risk was greater in women with no past history of mental illness (RR=1.56).

More than 500 women had a prior history of self-directed violence, and 84 had recurrent acts during the study period. Here, too, seropositive women were at higher risk (RR=1.54), although this was not significant. Finally, there were 18 completed suicides in the entire study population, and seropositive women were also overrepresented in this group (n=8), with a relative risk of 2.05. Even though this risk was not significantly elevated, the very low numbers of completed suicides make it hard to draw conclusions about this group.

**TCPR’s Take:** These results offer an interesting—if unexpected—insight into the neurobiology of self-directed violence. While it’s still a stretch to conclude that *Toxoplasma* infection causes suicidality, the authors argue that elevations in inflammatory compounds such as interleukin-6 or tumor necrosis factor- $\alpha$ , or in downstream mediators like kynurenines (from the breakdown of tryptophan in the *Toxoplasma* parasite) might influence behavior. The study’s findings are limited by the low incidence of actual suicide or self-harm, the inability to assess acuity of *Toxoplasma* infection, and the exclusion of men. Nevertheless, these findings open the way for further research into biological correlates or biomarkers of violence and suicidality.

### PTSD

#### **Study Suggests DCS Not Effective in PTSD Treatment**

Exposure therapy is a cognitive behavioral strategy that serves as a core treatment for anxiety disorders. Animal and human studies alike have supported the use of D-cycloserine (DCS) as an agent to augment the

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## CME Post-Test

To earn CME or CE credit, you must read the articles and log on to [www.TheCarlatReport.com](http://www.TheCarlatReport.com) to take the post-test. You must answer at least four questions correctly to earn credit. You will be given two attempts to pass the test. Tests must be taken by September 30, 2013. As a subscriber to *TCPR*, you already have a username and password to log on [www.TheCarlatReport.com](http://www.TheCarlatReport.com). To obtain your username and password or if you cannot take the test online, please email [info@thecarlatreport.com](mailto:info@thecarlatreport.com) or call 978-499-0583.

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Below are the questions for this month's CME post-test. This page is intended as a study guide. Please complete the test online at [www.TheCarlatReport.com](http://www.TheCarlatReport.com). Note: Learning objectives are listed on page 1.

- Patients with anorexia are how many times more likely to die than their peers in an age-matched population (Learning Objective #1)?  
 a) 2.1                       b) 5.6                       c) 8.7                       d) 14.6
- What is the name of the clinical instrument developed by psychiatrists at Yale University to measure food addiction (LO #2)?  
 a) The Yale Weight Measurement Scale (YWMS)                       b) The Yale Appetite Scale (YAS)  
 c) The Yale Food Addiction Scale (YFAS)                       d) The Yale Food Reward Scale (YFRS)
- Where was the Maudsley Model, used primarily to treat adolescents and their families with anorexia nervosa, developed (LO #3)?  
 a) The United States                       b) Sweden                       c) Germany                       d) England
- Toxoplasma, a parasite commonly found in the GI tract of cats, is carried by what fraction of adult humans (LO #4)?  
 a) Almost one-third                       b) Almost two-thirds                       c) Less than one percent                       d) One-half
- An observational study by Carpenter LL et al found what group of patients were more likely to benefit from transcranial magnetic stimulation, or TMS, to treat depression (LO #4)?  
 a) Patients older than 55 years of age, who had less severe depression  
 b) Patients older than 55 years of age, who had the most severe depression  
 c) Patients younger than 55 years of age, who had less severe depression  
 d) Patients younger than 55 years of age, who had the most severe depression

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## Eating Disorder Treatment Challenges

Continued from page 2

As Scott entered the sixth month of his rigorous training regimen, he began to lose his tolerance for exercise. He fell off his bike after losing his balance, and after riding several miles in the heat, he heard a loud ringing in his ears. He swore it was the power lines above, but his companion couldn't bear a thing. For several minutes, Scott insisted there was a noise until he finally realized that it was his own ears ringing.

Anna didn't understand why

everyone was so anxious. Sure, her resting pulse was 45, but she felt fine and she read somewhere that that was normal for people in good physical condition. She ignored the fact that it hurt to sit, her face was fuzzy, her hair was drab and thinner, her skin was dry, and she was dizzy and sweaty when she stood up too quickly. After all, she was still getting excellent grades, so what was the big deal?

TCPR'S  
VERDICT

Eating disorders are challenging to treat and to diagnose.

The quest for thinness and the misguided self-assessment based on weight is ego-syntonic; patients do not see themselves as ill. However, at some level, even the most refractory patients are trapped and scared. By learning to recognize and understand the patterns these illnesses often present, you can begin the process of freeing these patients to live full and flexible lives.

## Research Updates

Continued from page 6

effectiveness of exposure therapy in specific phobia, social phobia, panic disorder, and obsessive-compulsive disorder. D-cycloserine, also known as Seromycin, is an antituberculosis drug that also acts as a partial agonist of the NMDA receptor. It is hypothesized that stimulation of NMDA receptors helps enable "extinction learning," or the

remodeling of pathways in the amygdala to decrease conditioned fear responses.

A new study, however, finds that DCS does not improve treatment responses in patients undergoing prolonged exposure therapy for post-traumatic stress disorder, or PTSD. Sixty-seven patients with PTSD underwent a standardized program of up to 10

sessions of prolonged exposure therapy. Half (33) received 50 mg of D-cycloserine one hour before each exposure session while the others received placebo. Most of the patients completing the trial reported a decrease in symptoms as measured by the Post traumatic Stress Symptom Scale (PSS-SR). Patients taking

Continued on page 8

DCS had higher response rates (odds ratio for response was 2.83, 95%CI=1.05-7.61), but statistical tests showed that this could not be attributed to DCS, probably because of differences in baseline severity between groups.

Patients were allowed to continue their other medications during the study, and the events underlying each patient's PTSD varied from sexual assault to traffic accidents. Also, nearly one-third of the patients dropped out of the study. These factors might explain the lack of an obvious benefit of DCS. A subgroup analysis, however, showed that those patients who required the full 10 sessions of therapy were significantly more likely to benefit from DCS: mean PSS-SR scores decreased by 43.9% in those receiving DCS, vs only 7.8% in those receiving placebo (de Kleine RA et al, *Biol Psychiatry* 2012;71:962-968).

**TCPR's Take:** DCS does not appear to enhance treatment response in patients undergoing exposure therapy for PTSD. There was some suggestion that it may help patients with serious symptoms who require longer treatment, compared with those who complete treatment earlier. But previous, smaller studies on DCS in exposure therapy for other anxiety disorders showed effects in just a few sessions, and another recent paper shows that patients undergoing short-term exposure for war-related PTSD actually did worse with DCS (Litz BT et al, *J Psychiatr Res* 2012:online ahead of print). Whether DCS has a place in treating PTSD is still not clear, but these studies suggest that it probably contributes little to a good, evidence-based modality like exposure therapy.

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Eating Disorders

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