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Clinical Case Discussion: Pathological Gambling and Nicotine Dependence

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This clinical case involves a woman requesting treatment for nicotine dependence and pathological gambling. Information is presented to expert clinicians who share their reasoning and recommendations, followed by a clinical summary.

CASE DESCRIPTION

Initial Evaluation

A 34 year old married woman presented for smoking cessation and problematic gambling. The patient began smoking at age 16 years. She used to smoke a cigarette “occasionally.” For the two years prior to evaluation, however, she had been smoking 1–2 packs approximately three times per week. Her smoking coincided with times when she was gambling at the casino. When not gambling, she smoked 1 to 3 cigarettes every few days. Her smoking had worsened her asthma and made it difficult for her to exercise. Her non-smoking husband complained about her smoking. She wanted to stop smoking but worried that she could not unless she also quit gambling, a behavior she was ambivalent about stopping.

The patient had begun gambling approximately two years ago when her work had become more stressful. She had found gambling to be an “escape,” and she reported that she felt “out of control almost instantly.” She had initially gambled with her husband but had more recently gone without him stating “He wants to leave too early.” At the time of evaluation, she reported gambling about three times per week, and the amount she gambled had increased over the past

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two years. When not gambling, she reported intense urges to gamble. When gambling, she reported cravings to smoke. She gambled exclusively on slot machines and usually spent about 6 to 8 hours gambling each time she went to the casino. She was preoccupied most days with thoughts of gambling, and often returned to the casino after losing money order to “get even.” She had recently begun lying to her husband about both the extent of her gambling and smoking. Often exhausted at work or arriving late to work due to gambling, she had received warnings from her boss about her job performance. Despite these mounting problems, the patient admitted ambivalence about stopping gambling – “it’s the one thing I enjoy.” She had tried one time previously to quit but admitted that it had been a “half-hearted” attempt. She denied having felt restless or irritable when she had tried quitting in the past. She had not committed any illegal acts due to gambling and had not needed to borrow money from others. At the time of evaluation, she scored a 26 on the Yale Brown Obsessive Compulsive Scale Modified for Pathological Gambling (a score signifying a severe gambling problem).

Upon examination, the patient's mood was stable. She reported no history of other substance or behavioral addictions or mental health concerns or having taken psychotropic medications. Her medical history was notable only for asthma. The patient's parents had both smoked cigarettes (1 pack per day each) and her paternal grandfather and brother were both reported to have been alcoholics.

She reported having been raised in a middle-class family with loving, married parents. She denied any history of sexual or physical abuse. She stated she had been a “good” student in high school receiving As and Bs. After high school, she had attended a two-year technical college for secretarial training. She had been working at a legal office for the past 13 years, and until the gambling worsened, had always received excellent job reviews. She had been married for 8 years and reported loving her husband. She stated that they had an “excellent” marriage. She reported planning to have children in the next few years.

The patient received psychoeducation on the health problems associated with tobacco use and the benefits of quitting. She was also educated on the clinical aspects of pathological gambling, its course, and problems associated with continued gambling. In addition, she was informed about available treatment approaches for both tobacco smoking and pathological gambling and the evidence supporting these treatment options. The patient was adamant that she would not take medication and was not interested in attending Gamblers Anonymous.

The patient was educated about behavioral strategies for quitting smoking at the initial visit, as well as about nicotine replacement options such as the patch and gum. As the gambling appeared related to the tobacco smoking, the patient was referred for 6 to 8 sessions of cognitive behavioral therapy for pathological gambling.

First Follow-Up (3 months later)

The patient returned for her follow-up appointment after having undergone weekly cognitive behavioral therapy for eight weeks. She reported that her gambling behavior was much better controlled. She still gambled, but was now doing so only once every two weeks instead of multiple times per week. She described the goal of abstinence as “punitive” and had set a different goal of “controlled gambling.” When she gambled, she still spent 6 to 8 hours each time and so some work repercussions remained. In addition, her husband thought she was doing much better and so the patient did not tell him when she gambled “because it would only upset him.” Urges to gamble, however, were still severe and the patient felt exhausted in her attempts to resist the urges.

The patient's smoking was also reduced. Because she was not going to the casino as often, she did not smoke as much. When at the casino, however, she still smoked approximately 1 to 2

packs. She appeared frustrated with her difficulties in stopping her smoking. She had tried nicotine gum and patch but she reported them to be ineffective when she was at the casino.

At this visit, the patient was informed about the possible benefit of an amino acid, N-acetyl cysteine, for her urges to gamble. She was told about the experimental nature of this health food supplement for the treatment of pathological gambling, the supplement's general health benefits (e.g., decongests lungs, boosts immune response, protects the liver from toxins), its side effects (e.g., nausea, vomiting, headache, dry mouth, dizziness, and abdominal pain), and hypothesized mechanism of action (appears to restore extracellular levels of glutamate in the nucleus accumbens and thereby blocks reinstitution of compulsive behaviors and decrease cravings). She was started on 1200 mg p.o. b.i.d. The patient was pleased to be offered an alternative to pharmaceutical medications.

Second Follow-Up (2 months later)

The patient came for follow-up reporting that she had been taking N-acetyl cysteine as prescribed. Although she had some mild flatulence for the first week, she tolerated the supplement without additional problems. She also reported that she felt her urges to gamble were significantly reduced. She reported occasional mild urges but felt quite capable of resisting them. She had gambled only one time since the last visit. She described going to the casino with some friends who had asked her to go. She further reported that “it felt different – no great rush or desire to be there.” She stayed at the casino for about three or four hours and then went home. She had money and opportunity to go on other occasions, but “felt no need to go.” “I guess I’ve kept myself pretty busy. I’m using the behavioral skills more.” “I not saying I won’t ever gamble again, but for now, I have other things to do.”

The patient had not smoked since the last visit. “When I’m not gambling, I don’t have much of an urge to smoke.” The patient reported that she felt “healthier” and intended on starting to exercise again.

DISCUSSION

Donald W. Black, MD

The case illustrates how two addictions intertwine – one pharmacologic (nicotine), the other behavioral (gambling). In this case, uncontrolled gambling fuels the nicotine addiction, although the reverse appears not to be true. Yet, the resolution of the nicotine dependence depends on treating the patient's pathological gambling (PG).

In many respects the case is typical and illustrates the growing problem of PG. Though gambling is more common in men than women, the prevalence in women is growing, particularly as gambling opportunities have increased (National Opinion Research Center at the University of Chicago, 1999; Cunningham-Williams & Cottler, 2001). The patient began her gambling “career” at age 32, and it quickly became problematic because she felt “out of control almost instantly.” This is not uncommon; whereas women take up gambling later in life than men, they move from recreational to problematic gambling more rapidly, a phenomenon called “telescoping” (Tavares et al., 2001). Her gambling mainly involved playing the slot machines (at a casino), also not surprising because women tend to be more interested in passive forms of gambling, rather than more active forms (card and table games). While subtyping of persons with PG remains controversial (Aasved, 2002), one of the oldest distinctions is between the “escape-seekers” and the “sensation-seekers” (Blaszczynski & McConaghy, 1989). The former group includes persons – often women – who are reported to gamble to relieve conditions of emotional tension, anxiety, or depression. For such people, gambling acts as an analgesic by providing an escape from unpleasant situations (Blaszczynski

& McConaghy, 1989). The latter group includes persons who seek stimulation and arousal to alleviate boredom or hyperarousal; for some, gambling provides an intense thrill or feeling of excitement (Custer, 1985). More recently, Blaszczynski and Nower proposed a “pathways” model integrating biological, developmental, cognitive, and other determinants of disordered gambling (Blaszczynski & Nower, 2002). This patient would probably fit his category of the behaviorally-conditioned gambler in which gamblers have no specific predisposing psychopathology, and develop PG as a result of distorted cognitions and bad judgments. Their depression, alcohol abuse, and anxiety result from gambling, but are not causal.

The vignette does not indicate distance to the casino, but many Americans live within an easy drive of a casino giving them ready access to a variety of gambling options. This has become particularly true as gambling has become widespread in the past two decades. Research suggests that prevalence of PG is greater when gambling venues are close (National Opinion Research Center at the University of Chicago, 2001). While most persons exposed to casinos and other gambling venues gamble responsibly, a small percentage – including this woman – do not.

At her initial appointment she minimizes the significance of her gambling noting that she hadn't committed illegal acts, or borrowed money to fuel her gambling. Some degree of denial is expected with many patients, not unlike what we observe with alcohol and drug addicts. My hunch is that had her gambling continued unabated, these problems would develop. She achieved a score of 26 on the Yale Brown Obsessive Compulsive Scale modified for PG, a score of that puts her in the mid-range of subjects who enter gambling treatment studies (Black et al., 2007). She also expresses ambivalence about stopping gambling, which resonates with my experience with gamblers: they like it and very few of them seem to develop the goal of wanting to stop gambling altogether. They may acknowledge that problems are accumulating, but believe that if they just cut back on their gambling that will be sufficient. The fact that her family history is positive for alcoholism is also typical, as research showed that first degree relatives frequently have an alcohol or drug disorder. While the history does not indicate that other relatives have developed gambling problems, PG gambling disorders are themselves familial, and there is a large genetic component for the disorder (Black et al., 2006).

The fact that there are no standard treatments or approved medications for PG complicates the clinician's task. The patient herself limits her treatment options with her *a priori* statement that she would not take medication or attend Gamblers Anonymous. “Treatment rejecters” tie the clinician's hand, and in my view is never a good sign. Yet, she was willing to engage in cognitive behavioral therapy, and the fact that she attended therapy for eight weeks is perhaps a credit to the clinician for engaging her in therapy. That said, the drop-out rate is high (Black et al., 2007) and while the vignette doesn't provide details, perhaps motivational interviewing methods were used. These techniques tend to help keep people in treatment (Wulfert et al., 2006). While her goal is “controlled treatment,” this reflects her ambivalence about giving it up, and is not a goal most therapists recommend.

The follow-up suggests while she is gambling less, it remains problematic because she continues to lie to her husband. Interestingly, her smoking is less, but this is not surprising because the two are connected and her smoking frequency is a reflection of gambling frequency. She reports not having responded well to nicotine replacement therapy, but the vignette does not indicate whether other options were offered, such as bupropion or varenicline.

While she had indicated was not interested in medication, she agreed to enter a treatment protocol using n-acetyl cysteine, an amino acid available without prescription. Apparently, the fact that it is “natural” allowed her to justify taking it, whereas prescription medications were

not acceptable (e.g., naltrexone). At a two-month follow-up (was she seen during the interim?) she reports that her urges were significantly reduced, and she had only gambled a single time. Her improvement is attributed to the naltrexone, though other considerations are equally plausible: first, PG has a high placebo response rate with rates reported to range to 72% (Saiz-Ruiz et al., 2005); second, the natural history of PG, tends to wax and wane, so periods of abstinence are not uncommon (Argo & Black, 2004). The vignette does not include other information that may help explain the abstinence: did her husband threaten divorce? Or, did he threaten to have a financial conservator appointed?

What else might I have done for this patient? First, I would conduct a thorough psychiatric assessment to identify any comorbid psychiatric disorders that could help explain the gambling addiction. Does she have bipolar disorder? Does depression or anxiety help explain her gambling? Treatment of comorbid disorders may help bring the gambling under control. Presuming that no other disorder “explains” the gambling, I would have a frank discussion regarding PG and its ill effects on the patient and her family (Shaw et al., 2007). I would also inform the patient that, as a competent adult, she is responsible for her behavior and its consequences. Patients should understand that the onus for improvement is on them, not the clinician. Other steps I recommend include banning herself from her local (and perhaps other) casinos. These self-exclusion programs can be very helpful because the threat of arrest may be sufficient to keep some gamblers away (Ladouceur et al., 2000).

I have already discussed her refusal to attend Gamblers Anonymous, or to take medication, but point out that these views limit her treatment options, which are few. While GA has a high drop-out rate, those who stick with it can benefit (Brown, 1985). And, while she was willing to participate in CBT, trained therapists knowledgeable about PG are not readily available in many parts of the country, and this can further limit treatment options. Many states, including Iowa, provide a hotline that gamblers can call to access state-supported gambling counseling. I always make sure that patients are aware of this resource. Additionally, she would be educated about medication studies of PG, and that mounting evidence suggests that opiate antagonists are currently the best option for curbing PG. In the end, the patient must be responsible for making treatment decisions.

Dan J. Stein, MD, PhD

A key feature of this case is the association between gambling and smoking. Although the exact reason for the patient's choosing to present for clinical treatment is not specified, the case description suggests that the smoking is more ego-dystonic than the gambling (it worsened her asthma and made it difficult for her to exercise), but that at the same time she is aware of a connection between her smoking and gambling. The association of smoking and ill health is well-recognized, but it turns out that there may also be important links between pathological gambling and ill health, even when controlling for nicotine use (Morasco, 2006a). These associations reinforce the importance of viewing both gambling and smoking, and their common comorbidity (Grant & Potenza, 2005b), as major public health issues.

We are not specifically told whether the patient met DSM-IV criteria for pathological gambling or nicotine dependence, but there are certainly symptoms of both. In DSM-IV these conditions are classified in different sections (impulse control disorders not otherwise specified, and substance use disorders), and an immediate question is whether pathological gambling should rather be conceptualized as a behavioral addiction (perhaps classified together with the substance use disorders) (Potenza, 2006; Petry, 2006). The high degree of comorbidity across substance use disorders and addictive behaviors is one argument for this, although in the current case an important piece of clinical information is that there are no behavioral addictions other than gambling.

The patient's reluctance to disclose details of her gambling to her husband is reflective of a more general reluctance of people to disclose information about behavioral addictions. Shame may play an important role in this, although other factors such as the fact that some relevant behaviors are highly expensive or overtly illegal may also contribute. I would have liked some reassurance that the treating clinician did inquire about behaviors such as internet gambling, compulsive sex, and so on. In addition to adaptations of the Y-BOCS which was useful in the current case, there are a number of rating scales, screening tools, and diagnostic instruments which assess a range of behavioral addictions (Christo et al., 2003; du Toit et al., 2001).

Comorbidity of gambling and smoking next raises the question of whether evolved circuits and molecules are involved in these behaviors (Pomerleau, 1997; Spinella, 2003). One candidate is circuitry involved in reward processing (Stein & Grant, 2005). This patient, like others with these behaviors, enjoys the casino, has urges to gamble, and when she does gamble has cravings to smoke. Reward circuitry includes the nucleus accumbens, which in turn is innervated by the dopaminergic and glutamatergic systems. Gene variants in these systems may contribute to genetic vulnerability to both substance use and behavioral addiction (Li et al., 2003; Ibáñez et al., 2003), even if the precise genes are not always shared across conditions (Xian et al., 2007), and this patient's family history is notable. Remarkably, she appeared to respond well to n-acetyl-cysteine, which acts on the glutamatergic system. Naltrexone and bupropion also act on reward circuitry, each has shown some promise for gambling and smoking, and so can also be considered here.

Another set of circuits that may play a role in both gambling and smoking are those involved in the stress response. This patient, like many with either pathological gambling or substance abuse, notes a connection between stress and the behavior. Relevant circuitry includes limbic regions such as the amygdala and hippocampus, which are in turn innervated by serotonergic and other systems. Individual differences are again mediated by genes and environments, and it is important to note that this patient has no history of childhood abuse. Although we don't have details of her cognitive-behavioral therapy, this often addresses the cognitions and emotions sparked by stress. SSRIs have inconsistent effects in both gambling and smoking, and these may be independent of comorbid affective symptoms; however, they can certainly be considered in patients with comorbid depression or anxiety disorders (Oakley-Browne et al., 2000; Grant & Kim, 2006a), which are common in this context (Potenza et al., 2004).

A final set of circuits involved in habitual behaviors, perhaps including gambling and smoking, are prefrontal regions which exert inhibitory effects (Stein et al., 2006). For example, a recent study of pathological gambling and alcohol dependence found both groups were characterized by diminished inhibition, flexibility and planning tasks (Goudriaan et al., 2006). In the current case, we have no information on neuropsychological impairment, but like other gamblers she has the erroneous cognition that gambling can in fact allow one to "get even", and she begins to lie. Psychoeducation may be able to begin to address abnormal executive processes in pathological gambling and substance abuse, but more specific interventions, whether pharmacotherapeutic or psychotherapeutic, are likely necessary for a robust effect. Fortunately, this patient is at least partially adherent and attempts such treatment.

One argument against the construct of behavioral addiction is that there is relatively little evidence of classical substance withdrawal symptoms in these conditions. This patient, for example, denies feeling restless or irritable when she tries to quit her gambling. Certainly, the specific effects of substances on circuitry are substantial, and substance withdrawal symptoms are similarly associated with significant biological correlates. Conversely, pharmacological interventions used to treat withdrawal from substances are not necessarily useful in pathological gambling. In this patient, for example, nicotine replacement was itself not effective for gambling, nor for smoking associated with gambling.

It is interesting that the association between pathological gambling and nicotine dependence is more common in women, in both clinical (Grant & Potenza, 2005b) and community (Desai & Potenza, 2008) studies. It is unknown whether this represents psychosocial or neurobiological mechanisms. There are certainly psychosocial issues that could be explored further in this patient, for example, her thoughts and feelings about having children in “the next few years.” Speculatively, more gender-specific etiological mechanisms may also play a role; it might be informative to ask, for example, whether urges and cravings in this patient fluctuated with menstrual cycle.

In general, in both pathological gambling and nicotine dependence, we can expect that gene-environment interactions play a role in pathogenesis (Li et al., 2003; Ibáñez et al., 2003). Similarly, it is possible that both behavioral skills and medication response played a role in this patient's recovery. For other subtypes of these conditions, where different genes and environments may play a role (Lochner et al., 2005), other interventions, including Gamblers Anonymous, might be effective. Future work could also potentially address the question of whether specific medications were able to enhance psychotherapy (paralleling, for example, cycloserine for fear extinction in anxiety disorders) (Stein & Matsunaga, 2006). Stigma about pharmacotherapy continues to be an important consideration in the treatment of both gambling and smoking, as illustrated by this patient's willingness to try a nutraceutical, but not a pharmaceutical. More detailed understandings of the pathogenesis of these behaviors, and more individualized and evidence-based treatments will hopefully contribute to overcoming this.

Marc N. Potenza, MD, PhD

Drs. Black and Stein provide important and sound responses to Dr. Grant's clinical case. Several aspects of the case and the points raised by Drs. Black and Stein warrant further discussion.

Dr. Black raises questions about co-occurring mental health symptoms and disorders in relationship to the patient described in this case vignette. Clinical (Grant et al., 2005a) and community data (Petry et al., 2005) indicate high frequencies of Axis I and II disorders in individuals with PG or other impulse control disorders. The presence of co-occurring disorders has been used in studies to examine the efficacies and tolerabilities of specific pharmacotherapies in individuals with PG. For example, lithium has been found in a placebo-controlled, double-blind, randomized, parallel-arm trial to be superior to placebo in reducing symptoms of gambling and mania in individuals with PG and co-occurring bipolar spectrum (largely bipolar II) symptomatology (Hollander et al., 2005). In an independent trial using open-label escitalopram treatment followed by double-blind discontinuation in individuals with PG and co-occurring anxiety disorders, reductions in gambling and anxiety symptomatology occurred during the open-label phase (Grant & Potenza, 2006b). Upon double-blind discontinuation, randomization to active drug was associated with continued remission of anxiety and gambling symptomatology whereas randomization to placebo was associated with resumption of symptoms in both domains (Grant & Potenza, 2006b). In a separate study of individuals with alcohol dependence and a co-occurring non-gambling mental health disorder, the presence of PG symptomatology was associated with poorer treatment outcome in alcohol and mental health domains (Potenza, 2008). Taken together, these findings suggest that concurrent treatment of gambling and other psychiatric symptomatology be performed, and that treatment algorithms based on co-occurring disorders be considered and empirically validated (Hollander et al., 2004; Potenza, 2007a). The nutraceutical N-acetyl cysteine has shown preliminary efficacy in the treatment of PG (Grant et al., 2008) and its proposed mechanism of action involving influences on glutamatergic neurotransmission has been receiving attention in the medication development field for drug addiction (Kalivas and Volkow, 2005). Although some treatments receiving empirical support for nicotine dependence have not shown early promise in the treatment of PG (e.g., bupropion (Black et

al., 2007)), others (e.g., nicotine patch and varenicline) have not been examined, and none have been examined specifically in individuals with co-occurring PG and nicotine dependence. Such investigations seem particularly important to undertake given the overlap between gambling and smoking behaviors observed in pre-treatment (Potenza et al., 2004), treatment (Grant et al., in press(c); Grant & Potenza, 2005) and community settings (Petry et al., 2005; Grant et al., in press(a)).

Both Drs. Stein and Black comment on sex differences in PG, noting differences in the types of gambling preferred and performed (slot machines), motivations for gambling (escape from boredom/dysphoria), and progression of gambling (“telescoping”) (Blanco et al., 2006; Potenza et al., 2006; Potenza et al., 2001; Tavares et al., 2001). These patterns appear to extend to co-occurring disorders. For example, an increasing frequency of major depression is observed in women but not men in association with increasing numbers of DSM criteria for PG that are acknowledged (Desai & Potenza, 2008). In conjunction with data cited in the previous paragraph, these findings suggest that there might exist important sex differences with respect to treatment selection.

In considering treatments for patients, individual differences will likely play an increasingly important role in clinical decision-making. In the case of the patient presented, one salient characteristic is the strong family history of alcoholism. A family history of alcoholism has been associated with treatment response to opioid antagonists for individuals with either alcohol dependence or pathological gambling (Grant et al., 2008). Given the data supporting naltrexone in the treatment of PG (Grant et al., in press(b); Kim et al., 2001) and a preferential response in individuals with a positive family history of alcoholism (Grant et al., 2008), this form of therapy warrants strong consideration in the treatment of this patient. Furthermore, if presented with the data supporting this treatment for her, she might be more willing to consider a trial of the medication.

Other individual differences with likely relevance have yet to be examined in PG as they have in other disorders. For example, an allelic variant of the gene encoding the mu-opioid receptor have been linked to naltrexone treatment outcome in alcohol dependence (Oslin et al., 2003) and nicotine dependence (Lerman et al., 2005), and it is a reasonable hypothesis that this allelic variant would also be associated with naltrexone response in PG. The investigation of this and other commonly occurring allelic variants in conjunction with behavioral and pharmacological treatments for PG represents an important undertaking.

Another important consideration involves brain imaging technologies. Although investigations of individuals with other psychiatric disorders (e.g., major depression (Brody et al., 1999) or drug dependence (Brewer et al., in press; Kosten et al., 2006)) have identified brain activation patterns associated with treatment outcome, similar studies have not been reported in individuals with PG. Investigators have reported that imaging measures may be more sensitive than neurocognitive ones in identifying individual differences linked to treatment outcome (Brewer et al., 2008; Streeter et al., 2007). As recent work has reported associations between neurocognitive performance and treatment outcome in PG, both neurocognitive and neuroimaging measures will be important to investigate in conjunction with treatment outcome in PG.

Dr. Black raises the points of placebo response and natural recovery in PG. These points are particularly relevant for clinicians. Placebo-controlled trials have demonstrated particularly high frequencies of placebo response. Although the placebo response seems to diminish over time in some trials (Hollander et al., 2000), in others it increases over the entire course of the study (e.g., 16 weeks, in one trial (Grant et al., 2003)). As it is not well understood what underlies the placebo response in PG, clinicians should monitor carefully clinical responses

over time. Data from large epidemiological studies suggest that the majority of individuals with PG in the community recover without formal intervention (Slutske, 2006), and the specific factors that might mediate such changes warrant investigation in carefully conducted, longitudinal studies. Regardless of the mediating factors, the findings challenge the notion that PG represents a chronic, persistent condition (Tamminga & Nestler, 2006). The extent to which these findings extend to individuals seeking treatment for PG warrants additional examination. For clinicians, however, both the natural history and placebo response data highlight the complications of attributing specific outcomes to specific interventions, particularly in the absence of control conditions, as is typically the case in clinical settings.

In the context of the current case, one might be concerned about the potential for relapse to gambling, smoking or both. As such, the consideration of additional therapeutic interventions might be warranted over time. For example, naltrexone might be considered, particularly if strong urges were to recur. Although the patient may have been resistant initially to considering a medication, perhaps after psychoeducation, possibly through exploration of perceived differences between pharmaceuticals and nutraceuticals, she might be willing to entertain a trial of naltrexone or other drugs if the clinical situation warranted it, particularly after initially having responded well to n-acetyl cysteine. Attendance at 12-step programs like Gamblers Anonymous could be revisited, particularly as attendance has been associated with improved gambling treatment outcome (Petry et al., 2003). Additionally, touching bases with the patient regarding the utilization of skills obtained through cognitive behavioral therapy might help in ongoing clinical assessments and serve as a reminder to the patient about their use over time. Long-term benefits of cognitive behavioral therapy, including a “sleeper” effect (Carroll et al., 2000), have been reported in the treatment of drug dependence, and the extent to which similar long-term positive influences are associated with cognitive behavioral therapy in the treatment of PG warrants further investigation.

In addition to psychiatric comorbidities, co-occurring medical conditions are important to consider in PG. Problem and pathological gambling co-occur with a broad range of medical conditions, including hypertension, heart, stomach and liver disease, arthritis, and obesity (Desai et al., 2007; Pietrzak et al., 2005; Pietrzak et al., 2007). High frequencies of PG have been reported in general medical settings, with estimates of PG ranging up to 15.4 % and problem/pathological gambling up to 26.0% (Erickson et al., 2005; Ladd & Petry, 2002; Morasco et al., 2006b; Pasternak & Fleming, 1999). PG and other ICDs have also been reported in association with neurological conditions, particularly Parkinson's disease (Potenza et al., 2007b). These findings have multiple implications.

First, clinicians within general medical, medical speciality and neurological settings should be aware of the possibility that patients under their care may be experiencing problems with gambling. Active screening for PG (and other ICDs) is thus important. General screening and assessments instruments exist for pathological gambling and these include the South Oaks Gambling Screen and the Structured Clinical Interview for Pathological Gambling, instruments that have clinical utility in practice and research settings, respectively (see Stinchfield et al., 2004). Other instruments have been designed for use in specific settings; e.g., the Early Intervention Gambling Health Test (EIGHT) has been designed and tested within general medical settings (see Stinchfield et al., 2004), and the Questionnaire for Impulsive-Compulsive Disorders in Parkinson's Disease (QUIP) has been designed and tested for use with patients with Parkinson's Disease (Weintraub et al., in press). Other assessment instruments have utility in following symptoms over time. For example, the Yale-Brown Obsessive-Compulsive Scale modified for Pathological Gambling (PG-YBOCS) and Gambling Symptom Assessment Scale (G-SAS) represent clinician-administered and patient-reported scales, respectively, and each has clinical utility.

Second, once identifying individuals with PG (or other ICDs), having an understanding of how best to help these patients and their families is important. As Dr. Black notes, there exists regional variability with respect to services and expertise. However, specific resources might provide guidance. For example, the National Council on Problem Gambling (for nationwide, confidential information & referral: 800-522-4700; for general inquiries: 202-547-9204 or www.ncpgambling.org) or state council affiliates can help locate treatment options, and Gamblers Anonymous has chapters around the world. Early and increased utilization of health care services for PG would likely reduce the individual, familial and societal costs currently associated with the disorder.

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