# Substance Abuse Among Physicians: What You Need to Know

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ost physicians are not surprised when told that more than 10% of Americans have a substance abuse problem at some time during their lives. Anyone who has rotated through an emergency department is aware of the magnitude of the problem. However, many are unaware that physicians themselves develop substance abuse problems at least as frequently, and perhaps more frequently, than the population in general. <sup>2,3</sup>

Although the exact rate of substance abuse among physicians is uncertain, even the most conservative estimates are that 8% to 12% of physicians will develop a substance abuse problem at some point during their career. At any given time, as many as 7% of practicing physicians—roughly 1 out of every 14—are active substance abusers. No group of physicians are immune. The numbers are similar for every specialty, every region of the country, every age range, in urban or rural areas, and in academic medicine versus private practice.

The impact of the problem is severe. Chemical impairment has been shown to be a major risk factor for medical malpractice and negligence lawsuits, <sup>6</sup> the development of physical and psychological illness, <sup>7</sup> and adverse effects on the substance abuser's family. <sup>2</sup> Left untreated, the mortality rate of substance abuse among physicians has been reported as high as 17%. <sup>7</sup>

Despite its high prevalence among physicians, substance abuse is rarely discussed at professional meetings (with the exception of anesthesiology organizations) and receives limited coverage in medical school curricula. In the majority of cases, physicians with substance abuse problems remain undetected by their colleagues for several years before any intervention is made.<sup>7,8</sup>

How does such an endemic problem remain so ignored? Largely because physicians who are abusing drugs or alcohol work hard to keep their problem invisible. The physician abuser often becomes a loner, avoiding colleagues and friends who might notice the effects of abuse. Any suggestion that the person's behavior or performance has changed is first met with explanations and later with simply avoidance or outright anger. The

abusing physician will often leave a job (or several jobs) rather than risk being identified as impaired.

The inability or unwillingness of physicians to recognize the signs and symptoms of substance abuse in their colleagues also contributes to the delay in identifying the physician with a substance abuse problem. Almost every physician is familiar with the patients with end-stage alcoholism or drug abuse who haunt emergency departments. However, far fewer physicians consider substance abuse as a possible diagnosis before that end stage is reached. Fewer than 40% of primary care physicians routinely question patients regarding alcohol abuse, and fewer than 20% screen for potential drug abuse. Only a small minority of physicians feel they have a basic knowledge concerning the diagnosis and treatment of substance abuse.

Diagnosing substance abuse in a physician is even more difficult than diagnosing the problem in the general population. Most physician substance abusers continue to function quite well until the problem is far advanced. Because their work provides either the income for drugs or access to drugs, physicians are very likely to protect their performance at work until the disease has neared end stage. The duration of this period varies largely according to the substance(s) involved. Alcoholics can often remain sober during working hours for many years, even though they drink large quantities at night and on weekends. Intravenous opiate or cocaine abusers, on the other hand, may go from experimentation to collapse in a matter of weeks or months.<sup>10</sup>

Nevertheless, signs of substance abuse are usually present to the objective evaluator, and certain risk factors for the problem are well recognized. Given that as many as  $10\%^3$  to  $15\%^1$  of our colleagues develop a substance abuse problem during their careers, each of us should become aware of the signs and symptoms of the

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problem, and know how to contact the appropriate support groups to provide treatment and aftercare to the physician when needed.

# **CHARACTERISTICS OF SUBSTANCE ABUSE**

Unfortunately, the public and far too many physicians continue to think of substance abuse as a bad habit or a moral weakness rather than as a disease.<sup>1,9</sup> All modern medical authorities, however, consider substance abuse to be a neurologic or psychiatric illness that is contributed to by genetic, social, emotional, and psychological problems.<sup>1,3,6,11,12</sup> The individual with a true substance abuse disorder is no more able to control their disease without treatment than a person with severe endogenous depression is able to stop feeling depressed through will power.

While the term "drug addiction" remains in widespread use, it is generally avoided by substance abuse professionals because of its emotional connotations. The terms "substance abuse" or "substance dependence" are preferred for clinical diagnosis. The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV*) defines substance abuse as a maladaptive pattern of use of a chemical substance within a 12 month period that significantly interferes with the person's life as indicated by any 1 of the following<sup>13</sup>:

- 1. Neglect of work, school, or home obligations
- 2. Recurrent use of the substance in hazardous situations (eg, driving, operating machinery, or—in the case of a physician—caring for patients)
- 3. Repeated substance-related legal problems
- Continued use of the substance despite recurrent social or interpersonal problems associated with its use

A simple summary of the *DSM-IV* criteria for substance abuse is "repeated use of a mood altering chemical, despite adverse consequences from previous use." By such a definition, any individual who receives a second arrest for driving while intoxicated would be automatically be considered to have a substance abuse problem because he or she continued to drink and drive despite having previous adverse consequences.

Physical dependence, that is, the development of withdrawal symptoms when abstaining from the substance, is not necessary to make the diagnosis of substance abuse. Certain substances of abuse—notably the hallucinogens, marijuana, and, to some extent, cocaine—do not result in significant physical withdrawal symptoms even if taken in massive quantities for a prolonged period.<sup>14</sup> Even when abusing substances known to cause withdrawal symptoms, some abusers spend years in exhibiting a binge pattern of abuse and never experience classic withdrawal. Binge abuse—episodes of excessive drug or alcohol use followed by weeks or months of abstinence—is common early in the course of substance abuse. <sup>1,3</sup> A "binge alcoholic," for example, may go weeks or months without a drink to "prove" that they do not have a problem. When they do drink, however, they often drink far more than they had planned and frequently have adverse consequences.

As with most chronic diseases, the long-term course of substance abuse is one of deterioration over time. During the early phases of the disease, however, many individuals have a waxing and waning course as their efforts to control the problem have some short-term success. As the disease progresses, attempts at self control become shorter and less effective, and the effects on the individual, as well as on his or her family, become devastating.<sup>6,10</sup>

The time course of deterioration varies according to the individual and the substance of abuse. Alcohol, benzodiazepine, and marijuana abuse usually show a slow, indolent course. It is often years or even decades before the problem becomes clearly evident; of course, some persons suffer significant effects in a much shorter time. Conversely, intravenous opiate and cocaine abuse (and smoking crack cocaine) usually has a very rapid course; persons abusing these substances often suffer dramatic deterioration within months of their first experimentation.<sup>6,10</sup>

# THE ETIOLOGIES OF SUBSTANCE ABUSE

While there is no single "cause and effect" factor for developing substance abuse, several risk factors that pre-dispose individuals to developing the disease are known. Substance abuse has a strong familial association, often affecting multiple family members over several generations. The familial association apparently represents both a genetic predisposition and the influence of environmental factors. Genetically, it has been shown that in comparison to non-abusers, some substance abusers tend to have different central nervous system responses and form different metabolic byproducts after ingesting cocaine, opiates, or alcohol. 14,15 However, substance abusers are also likely to have grown up in dysfunctional homes and to have suffered physical or emotional abuse or family disruption during childhood.

Nearly 90% of substance abusers suffer additional psychiatric disorders. <sup>12</sup> Depressive illness, bipolar illness, and anxiety disorder are often either present in the affected individual or evident in the family history. <sup>12,16</sup> Personality

**Table 1.** General Factors Associated with Substance Abuse

Depressive or bipolar illness
Divorced or separated marital status
Family history of alcoholism or substance abuse
Family history of psychiatric illness
History of childhood or adolescent abuse
Male gender

disorders also occur more frequently in substance abusers than in the general population. <sup>10</sup> It is not clear, however, whether the psychiatric illness predisposes to substance abuse, results from substance abuse, or whether both the substance abuse and the concurrent psychiatric diagnosis are different manifestations of an underlying pathology. In all likelihood, each of these possibilities exists in various cases. Particularly in physicians, some cases of substance abuse originate as attempts to "self medicate" an underlying depressive or bipolar illness.

There are gender differences in the frequency of substance abuse, which may be even more apparent among physicians than in the general population. Although nearly one third of physicians are female, nearly 90% of physicians referred for substance abuse treatment are male.<sup>3</sup> Compared to their male counterparts, female physicians who develop substance abuse problems are significantly more likely to suffer major depressive illness and less likely to have a personality disorder or to have criminal consequences of their abuse.<sup>17</sup> However, female physicians who do undergo substance abuse treatment are significantly more likely to have suffered permanent physical damage from their substance abuse than are their male counterparts.<sup>18</sup>

Females physicians are also more likely to have initiated substance abuse after a traumatic life event and to have a shorter course between the onset of abuse and the initiation of treatment. Conversely, some reports indicate that whereas female physicians are less likely to use illicit substances or to be treated for substance abuse, they are far more likely to take prescribed tranquilizers and opioids than are male physicians. Although taking prescribed medication does not represent substance abuse, the use of such medications while practicing may have significant medicolegal implications in the event of an adverse outcome or malpractice litigation.

### ARE CERTAIN PHYSICIANS AT INCREASED RISK?

Minor differences exist in the frequency of abuse in certain medical subspecialties, with emergency medi-

**Table 2.** Physician-Specific Factors Associated with Substance Abuse

Cigarette use > I pack per day

High stress or long work hours

History of multiple affairs and/or multiple marriages

History of multiple jobs, especially in multiple communities

Occupational access to controlled substances

Practice in academic medicine

Practice in emergency medicine, anesthesiology, psychiatry Self-medicating or self-prescribing behavior

cine, psychiatry, and anesthesiology having slightly higher rates of substance abuse than other specialties.<sup>2</sup> Because this increased incidence is as apparent among residents as among long-term practitioners in these fields, it seems unlikely that the type of practice causes substance abuse.<sup>2</sup> Rather, it may be that persons with a predisposition toward substance abuse are more likely to choose these specialties. Some reports also indicate that physicians in academic medicine have a slightly higher incidence of substance abuse than those in private practice.<sup>19</sup>

Most of the risk factors for physician substance abuse parallel those of the general public (Table 1). 1,6,10,16 Although not absolute, the strongest risk factors appear to be a family history of substance abuse and the presence of psychological or psychiatric illness in the individual. There are also certain risk factors that are specific to physicians (Table 2). 3,5,6,10 Among the strongest physician-specific predispositions to developing substance abuse are (1) self-treatment with prescription medications, (2) high stress or long hours of practice, and (3) easy or constant access to controlled substances.<sup>3,5,19</sup> It should be noted that all of these risk factors are relative. Physicians with no apparent risk factors do develop substance abuse problems; conversely, a physician with every possible risk factor may never develop such a problem.

# IDENTIFYING THE PHYSICIAN WITH A SUBSTANCE ABUSE PROBLEM

As most emergency department physicians can attest, it is fairly simple to detect an individual in the latter stages of substance abuse, after the ravages of the disease have taken their emotional and physical toll. In the vast majority of cases, symptoms of substance abuse are minimal at first and only become evident over time. When symptoms first become evident, they can often be explained by a number of other possible

**Table 3.** Signs and Symptoms of Substance Abuse in Physicians

#### **Professional activities**

Behavior toward staff or patients becomes unpredictable Closes and locks office door frequently

Frequently at hospital at unusual times or when not on call Frequently gives others breaks (particularly in anesthesiology) Frequently late or absent

Increased patient complaints about the physician

Quality of charting or notes deteriorates

Self prescribes or receives personal samples frequently

Spends long hours at office or hospital and may be less productive

Unavailable or behavior is inappropriate when on call

#### Physical status

Evidence of emotional distress or depression Frequent medical illness Multiple accidents or traumatic injuries Personal hygiene or dress deteriorates

## Social/family

Arrests for driving while intoxicated or other legal problems Children develop problem behaviors

Heavy drinking or intoxication at parties or social functions Isolated or withdraws from family and social activities

Marital discord or separation

Multiple affairs

Unpredictable personal behavior, including high risk behaviors

# **Professional history**

Employed in positions not appropriate for training and qualifications

Frequent job changes, often with geographic relocations Unexplained time lapses between jobs

Vague or indefinite letters of reference

Adapted from Talbott GD, Gallegos KV, Angres DH. Impairment and recovery in physicians and other health professionals. In: Graham AW, Schultz TK, Wilford BB, editors. Principles of addiction medicine. 2nd ed. Chevy Chase (MD): American Society of Addiction Medicine; 1998:1267.

causes. Substance abuse is even more difficult to detect in a physician because he or she is aware of the possible symptoms of abuse and makes every effort to conceal them. Additionally, common symptoms, such as daytime somnolence or inability to concentrate, are easily attributed to the high stress or long hours that most physicians experience. Signs of substance abuse in physicians are listed in **Table 3**.

Physicians with substance abuse problems rarely exhibit the obvious symptoms of intoxication, such as slurred speech, pinpoint pupils, or bizarre behavior. Somnolence occurs with certain drugs but is easily explained as exhaustion from being on call or working long hours. Because they have access to sterile, small bore needles, physicians who are intravenous substance abusers will rarely have obvious needle marks (ie, "tracks").

Directly questioning a physician about his or her substance abuse is rarely successful and will often lead to counteraccusations ("you're out to get me" and "you're trying to ruin my practice" are common) or other angry responses. A hallmark of substance abuse is a remarkable denial on the part of the abuser that there is a problem, even as they go to great lengths to hide the symptoms of the problem.<sup>1,3,10</sup> On some levels, this effort may be conscious, but the person involved has often elaborately rationalized and justified the substance abuse so that he or she truly does not believe there is a problem.

The most consistent initial symptoms of substance abuse problems in physicians tend to involve changes in personal relationships and community activities. Increasing isolation is often the most noticeable early sign. Substance abusers find reasons to miss parties, social activities, and even family vacations. Family members and close friends are usually the first to notice the effects but may deny that there is a problem, even to themselves; no one wants to discover that a friend or loved one is a "drug addict." Domestic strife, frequent arguments, and loss of sexual interest are also common early symptoms, although often not apparent to anyone other than the involved domestic partner. One symptom that may be apparent to outsiders is that the children of substance abusers frequently develop behavioral problems.<sup>3</sup>

At-work behavior may differ depending on the substance of abuse. If work provides access to the desired substances, the substance-abusing physician is often a stellar performer, frequently working long hours, even when not on call, in order to remain near the source of supply. Working long hours also makes coworkers likely to attribute some signs of substance abuse to fatigue or stress and allows the abuser to avoid family members and spouses who are more likely to notice such changes.<sup>6,10</sup>

Such individuals often prefer to work alone. Physicians working in areas with access to injectable medications, such as anesthesiologists or emergency department physicians, may frequently give others breaks, while rarely taking breaks themselves. However, intravenous abusers

may need frequent restroom breaks and may lock the doors to their offices. More obvious, but less common, signs include heavy use of "sample" medications for their patients or having samples sent to their home.<sup>10</sup>

Physicians who abuse alcohol or illicit substances obtained away from the workplace often have quite different patterns of behavior. These physicians are often late to work, need to leave early, take long lunch hours or extended breaks during the workday, or are absent from work altogether as they fight the effects of binges and hangovers. Whereas cocaine and amphetamine abuse often causes noticeable personality changes within weeks or months, persons abusing alcohol or tranquilizers often have no apparent signs in the workplace for many years.<sup>7,10</sup>

Mood swings, depression, irritability, and inability to get along with coworkers are frequently seen in substance abusers, even early in the course of the disease. Affected individuals are likely to change jobs rather frequently as a means of avoiding suspicion or comments about their behaviors. The nonchemical problems common in substance abusers, such as numerous extramarital affairs, gambling problems, overspending or other financial difficulties, and behavior problems (particularly inappropriate anger or rage attacks) are often more apparent than the effects of the abused substance.<sup>3</sup>

Unfortunately, physicians are quite adept at hiding their problem from others until the end stage of the substance abuse is reached. Profound consequences, such as death from accidental overdose, criminal charges from self-prescribing or driving while intoxicated, loss of hospital privileges, malpractice suits from practicing while impaired, and suicide from severe depression, are often the first clear sign that a physician might have a substance abuse problem.<sup>3,4,10</sup> It is, therefore, of utmost importance that every physician become aware that ignoring the subtle symptoms in a friend and colleague will actually prevent that person from getting help and may ultimately have tragic consequences. Only a vanishingly small percentage of substance abusers will quit for more than a few months without treatment and aftercare.<sup>1,3</sup>

# WHAT TO DO IF YOU SUSPECT A COLLEAGUE HAS A SUBSTANCE ABUSE PROBLEM

Physicians with substance abuse problems are occasionally detected in a way that is so obvious there can be no question the problem exists, such as when a physician is caught diverting medication or is arrested for buying drugs on the street. In most cases, however, enough signs of abuse (Table 3) are present to provide a reasonable degree of suspicion that the physician in question might have a problem but not to clearly prove that they do.

In such cases, it may be tempting for a well-intentioned colleague to privately question or confront the individual about the possibility of substance abuse, but this is rarely effective. As mentioned above, this approach often results in angry denial or counteraccusations. In other cases, the accused physician simply quits the practice and starts over elsewhere. There is also a potential for self harm when a physician with a substance abuse problem feels that he or she is about to be detected but does not believe that he or she will be able to live without the drug of abuse.<sup>3,4</sup>

Instead, the facts that lead to suspicion should be reported to a proper authority or group (eg, the department chair, the institution's physician's wellness committee) that can quietly investigate the situation and take effective action. Many states have a legal requirement that a physician must report any suspicions that a colleague may be practicing while impaired to the proper authorities. Failure to do so could theoretically result in sanctions against the physician who does not make such a report.<sup>3</sup>

Reporting also provides protection for the physician suspected of having a substance abuse problem. The resulting investigation is usually completely confidential and, in most cases, is protected from any outside legal discovery processes under peer review laws. If, however, the problem is not reported until legal issues or questions of competence are raised, the right of the physician to confidentiality may be lost and the problem becomes a matter of public record. Public awareness of the physician's problem may result in rejection of provider status by third party payers and inability to obtain future hospital privileges. Of more immediate concern are medical malpractice suits brought by attorneys and former patients who are well aware that informing a jury the physician was practicing while impaired is likely to result in a positive judgment, no matter what the facts of the case are.

If a peer investigation reveals evidence that a substance abuse problem is likely, it is rarely necessary to involve the state medical board or any legal agencies. Every state medical society has a program or committee dedicated to the identification, treatment, and support of physicians with substance abuse. These programs go under various names, such as "physicians' wellness committee," "physicians' health program," or "impaired physician program." These organizations, which can be located by contacting one's state medical society, are usually empowered by the state medical board to intervene with, and to direct treatment and aftercare of, physicians with substance abuse problems. Typically, as long as the physician remains in compliance with the

wellness committee, no action will be taken by the state medical board, and the interaction remains protected by confidentiality laws.

Once the state physician wellness committee has been contacted and confirms that a problem exists, events generally proceed as follows: First, the committee organizes an intervention for the physician in question. The intervention is a planned confrontation by a small group (usually consisting of a colleague or supervisor, 1 or more addiction treatment professionals, a member of the local physician's wellness committee, and sometimes a family member) who attempt to break through the person's denial and help them see that their problem has become obvious to others. The intervention team presents a treatment option that would allow the physician to return to practice and provide hope that the problem can be solved. In cases in which it remains unclear whether substance abuse is involved, a 4- to 7-day evaluation at a treatment center is arranged.

In most cases, the individual will be immediately escorted to treatment or for evaluation. The potential for self harm at this time is very real; it is for this reason that well-meaning colleagues should not directly confront a physician with a substance abuse problem. By the time the problem has become obvious, the affected person has almost certainly realized that he or she cannot just "quit." Without the hope for successful treatment and a better outcome that is provided by having a planned intervention, the individual may simply become more hopeless and even suicidal.<sup>10</sup>

Although some persons are actually relieved that there is help available, others are unwilling to even consider that they have a problem. The intervention team should plan for the possible refusal, and a very real set of consequences (loss of licensure or job) will usually occur if the physician does not follow the recommendations of the team. Nevertheless, not all interventions are successful, and some people will choose to accept any consequences rather than to address the issue of substance abuse.

Such interventions, although sometimes emotionally traumatic, are necessary. Only a small percentage of physicians with substance abuse problems voluntarily enter treatment on their own.<sup>3</sup> Although accurate statistics are not available concerning the number of physicians who have overcome a substance abuse problem without treatment, figures regarding the general population indicate that fewer than 20% of substance abusers successfully stop for more than a few months without some form of treatment or support.<sup>1,20</sup> Because of high chronic stress levels, relatively easy access to drugs, and the widespread (although erroneous) belief

that "self-prescription" is legal and legitimate, some authorities believe that physicians are even less likely than the general population to successfully stop abuse without treatment.<sup>3,21</sup>

#### SUBSTANCE ABUSE TREATMENT

Unfortunately, even some physicians mistakenly believe that if the individual can overcome the withdrawal syndrome for their drug of abuse, they will be able to stop their substance abuse problem. Although overcoming physical withdrawal is a precursor to successful treatment, it does nothing to eliminate the psychologic cravings and behaviors that are part of substance abuse problems. The relapse rate of persons who are simply detoxified (overcoming physical withdrawal) but do not receive other treatment is greater than 95%.<sup>2</sup>

Treatment of physicians with substance abuse problems differs significantly from the treatment experienced by the general public for several reasons. Routine substance abuse treatment is usually short term (about 1 month) and often takes place in an outpatient setting. Such programs are known to have high relapse rates (greater than 60%) for any given treatment.<sup>22,23</sup> Because motivated individuals will return to treatment—often several times—the eventual success rate is reasonably high.

Nevertheless, such a high relapse rate is not acceptable for a physician who will return to an occupation in which his or her judgment must be impeccable. Since the 1980s, it has been widely recognized that extended treatment, usually lasting 3 to 4 months, significantly lowers the relapse rate of persons recovering from substance abuse. <sup>2,3,10,23</sup> It also has been shown that treatment of physicians is more successful if it takes place in a center that has a significant number of other physician-patients. Unless there are a number of physician-patients in the program, the physician in treatment often gets special treatment from other patients and staff, negating some of the benefits of treatment. <sup>2,19</sup>

Treatment usually begins in a hospital setting. This early phase of treatment focuses on the physical manifestations of substance abuse, such as preventing withdrawal syndrome and overcoming initial drug cravings. Depending upon the substance involved, this phase may take from a few days to 2 weeks. A program of emotional and psychological therapy, behavior modification, and education begins during this part of treatment and continues during an intermediate treatment period that lasts several weeks. Regular participation in self-help recovery programs, such as Alcoholics Anonymous or Narcotics Anonymous, is a major part of the intermediate phase of treatment.

In most centers, the intermediate and late phases of treatment take place in a "residence recovery" setting. Usually, several persons share an apartment or halfway house, where persons further along in the treatment process can provide help and emotional support for newer arrivals. The late phase of treatment often involves a "mirror image" program, whereby recovering physicians work with persons in early recovery, gaining insight into their own disease by observing its effects in others. Family therapy is a significant part of most treatments, helping to heal the numerous effects that substance abuse has on family members.<sup>3,14</sup>

After successfully completing treatment, the vast majority of physicians return to practice. Although the actual process varies from state to state, in most regions, the physician will sign an aftercare contract with the state physician wellness committee. The contract, which lasts from 2 to 5 years, requires attendance at regular aftercare meetings, random drug screens, and participation in appropriate self-help or therapy groups.

Treatment centers experienced in working with physicians report long-term success rates of greater than 70%, but when such a structured aftercare program is undertaken, the success rate increase to approximately 90%. 1,19,22,23 Many of those who do relapse are quickly detected by an aftercare program and return to treatment, after which they eventually enter successful long-term recovery. The majority of relapses occur during the first 2 years after treatment. After 5 years of abstinence, the recovering physician is statistically less likely to suffer a future episode of substance abuse than are physicians in general. 3

In addition to aiding and monitoring the recovery process, the wellness committee advocates for the physician. In most states, this advocacy is accepted by the state medical board, malpractice insurers, hospitals, and third party payers as evidence of fitness to return to practice. Advocacy goes much further in many states, actively assisting the physician by meeting with partners, colleagues, and hospital staffs, and sometimes negotiating changes in working conditions that may be necessary during early recovery. Although advocacy does not negate or overcome any legal charges that may have been made, it is often considered by judges during plea bargaining or sentencing efforts.

#### CONCLUSION

The central fact to remember concerning treatment of physicians with substance abuse is that it is usually successful. Treatment centers experienced in working with physicians report long-term success rates of 90% or higher. What cannot be described statistically, how-

ever, are the positive effects on the involved physicians and their families. The idea of substance abuse intervention and treatment may be thought of by the abusing physician as the worst thing that could happen. In reality, this is the best thing that could happen to a physician with a substance abuse problem. Although early recovery can be a difficult and emotionally painful process, most recovering physicians are happier and more satisfied than at any time in their lives. Nearly all return to practice, and they (and their coworkers) believe that they are far better physicians after treatment than they ever were before.

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