REVIEW ARTICLE

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Opioid Addiction in Anesthesiology

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Introduction

OPIOID addiction is a major issue in the anesthesia workplace. At least 26 anesthesia personnel in the United States have died of drug overdose in the last 2

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OPIOID ADDICTION

yr. This article reviews basic concepts in addiction, including pathophysiology, clinical manifestations, and legal issues.

Anesthesia personnel may suffer from a variety of impairments, including abuse of alcohol, cocaine, sedatives, nitrous oxide, or potent inhaled anesthetics. Our focus will be opioid addiction, the form of workplace-related chemical dependence that is the most common in our profession. The drugs of choice for anesthesiologists entering treatment in recent years have been fentanyl and sufentanil.1

It is not the purpose of this article to present a manual for the treatment of addiction, because this should be undertaken by qualified addictionists. All anesthesia personnel, however, should be aware of the basic nature of the problem, and possess the necessary information to assist an impaired colleague.

Definitions

Terminology in the field of substance abuse is not standardized. Addiction is a chronic disorder characterized by the compulsive use of a substance, resulting in physical, psychological, or social harm to the user, and continued use despite that harm. A series of definitions, listed in Table 1, have been derived by a task force of the American Medical Association’s (AMA) Council on Scientific Affairs’ Panels on Alcoholism and Drug Abuse,2 and will be used in this article.

Prevalence

The data available to determine the prevalence of drug use by anesthesia personnel are derived primarily from analyses of treatment populations and surveys of physician groups. Other available data include records of disciplinary actions, mortality statistics, and registries for known addicts. Because of difficulties in interpretation of these types of data, it has been concluded that the true prevalence of addiction in physicians is unknown.3

Gravenstein et al.4 surveyed 31 academic anesthesia departments from 1974 through 1979. In the 15 responding departments, “...between 1% and 2% of clinical personnel were sufficiently affected by drug abuse or alcohol to come to a chairman’s attention.”

A survey by Ward et al.5 reviewed responses from 247 anesthesia training programs from the period 1970–1980, and deduced a figure of 1.1% of confirmed abuse.

Data suggesting that addiction is common among anesthesiologists was reported in a review of 1,000 treated physicians.6 Anesthesia residents represented 33.7% of all presenting residents. Anesthesia residents composed only 4.6% of all U.S. resident physicians at the time of the study, thus presenting an apparent 7.4-times increased prevalence of anesthesia residents in the study population. More definitive data should become available from an ongoing study sponsored by the American Society of Anesthesiologists. Limited data for certified registered nurse anesthetists (CRNA) indicates that the prevalence of chemical dependence is similar to that for physicians.4

Etiology

After years of controversy and research,7 the AMA declared alcoholism to be an illness8 and, in 1987, ex-

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Table 1. Definition of Some Substance Abuse Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Advocacy</td>
<td>Written and verbal support of the recovering individual to federal, state, and hospital authorities by treatment professionals.</td>
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<tr>
<td>Addiction</td>
<td>A chronic disorder characterized by the compulsive use of a substance resulting in physical, psychological, or social harm to the user and continued use despite that harm.</td>
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<td>Chemical dependence</td>
<td>Generic term relating to psychological or physical dependence, or both, on an exogenous substance.</td>
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<tr>
<td>Cross-tolerance</td>
<td>Tolerance, originally produced by long-term administration of one drug, which is manifested toward a second drug not previously administered.</td>
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<tr>
<td>Disease concept</td>
<td>Recognition that chemical dependency is a chronic, progressive, and potentially fatal biogenetic and psychologic disease characterized by tolerance and physical dependence manifested by a loss of control, as well as diverse personality changes and social consequences.</td>
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<tr>
<td>Physical dependence</td>
<td>A physiologic state of adaptation to a drug or alcohol, usually characterized by the development of tolerance to a drug’s effects and the emergence of a withdrawal syndrome during prolonged abstinence.</td>
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<tr>
<td>Psychologic dependence</td>
<td>The emotional state of craving a drug either for its positive effect or to avoid negative effects associated with its absence.</td>
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<tr>
<td>Recovery</td>
<td>A process of overcoming both physiologic and psychologic dependence on a drug.</td>
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<tr>
<td>Rehabilitation</td>
<td>The restoration of an optimum state of health by medical, psychologic, social, and peer group support for a chemically dependent person and his significant others.</td>
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<tr>
<td>Relapse</td>
<td>Recurrence of alcohol- or drug-dependent behavior in an individual who has previously achieved and maintained abstinence for a significant time beyond the period of detoxification.</td>
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<tr>
<td>Sobriety</td>
<td>Generally refers to the state of complete abstinence from alcohol and other drugs of abuse in conjunction with a satisfactory quality of life.</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>The use of a psychoactive substance in a manner detrimental to the individual or society but not meeting criteria for dependence.</td>
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Adapted from reference 2.

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tended the declaration to include dependence on all drugs.

There have been many theories concerning the etiology of chemical dependence, including genetic and biochemical theories. A pharmacologic understanding of opiate addiction seemed possible after the description of opiate receptors in the early 1970s. No definitive change in the number or affinity of these receptors has been correlated with opiate addiction. Recent evidence at the postreceptor level has described persistent upregulation of the cAMP system that may be related to gene expression. Nonetheless, these findings have yet to explain the pathogenesis of the disease in a form that has influenced either diagnosis or therapy.

Models of Addictive Behavior

The disease concept offers a useful framework for assisting the individual and encourages positive intervention. A developmental history of models of addictive behavior and their implications for intervention are reviewed by Miller et al. and Peele. With the exception of moralistic models, all stress therapeutic intervention. The specifics of these approaches are beyond the scope of this review.

Chemical dependence may be associated with other psychopathology. One study found personality disorders in 57 of 100 substance abusers. Chemical dependence was the primary diagnosis in over 90% of individuals admitted to one inpatient drug/alcohol treatment facility. Extensive evaluation of those patients showed that 5.9% had a primary psychiatric diagnosis apart from chemical dependence. Coexisting psychopathology, and its relation to the addictive disorder, should be assessed by addictionists and psychiatric personnel on an individual basis.

Clinical Manifestations

Manifestations of opioid addiction include those related to the pharmacologic properties of the drug and behaviors associated with addiction. Behaviors specific to the abuse of opioids in the anesthesia workplace will be discussed.

Opioid Syndromes

There are two opioid-induced organic disorders, intoxication and withdrawal, described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R). Opioid intoxication is described in Table 2, and opioid withdrawal is described in Table 3. Characterization of the behavioral relationship to the use of opioids over time is described in Table 4.

Dental

Chemical dependence is invariably associated with nonrecognition, or denial, by the sufferer, and, therefore, treatment is seldom spontaneously sought. There are no limitations to the denial process, and it is unaffected by education and training.

Table 3. DSM-III-R Diagnostic Criteria for Opioid Withdrawal

A. Cessation of prolonged (several weeks or more) moderate or heavy use of an opioid or reduction in the amount of opioid used (or administration of an opioid antagonist after a brief period of use), followed by at least three of the following:

1. Craving for an opioid
2. Nausea or vomiting
3. Muscle aches
4. Lacrimation or rhinorrhea
5. Pupillary dilation, piloerection, or sweating
6. Diarrhea
7. Yawning
8. Fever
9. Insomnia

B. Not due to any physical or other mental disorder

Note: When the differential diagnosis must be made without a clear-cut history, testing with an opioid antagonist, or toxicologic analysis of body fluids, it may be qualified as "provisional."

describe physician patients as having grandiose ideas of invulnerability and self-sufficiency. They cannot easily accept that abuse leads to addiction and that addiction is loss of autonomy.²⁰

Denial is not limited to the addict, but affects friends, relatives, and associates who either make excuses for, or prefer not to deal with, the impaired physician.²¹

Suspicion of a problem in a colleague warrants a thorough and confidential investigation (see Investigation section). All suspicions are, by definition, uncertain. Failure to initiate an investigation because of “uncertainty,” masked as concern for the individual, is denial.

**Behavior Patterns**

Chemically dependent anesthesia personnel may appear quite functional and are often able to escape de-
Table 6. Signs Noted Outside the Hospital

1. Look for unusual changes in behavior—wide mood swings, periods of depression, anger, and irritability—alternating with periods of euphoria.
2. Addiction is a disease of loneliness and isolation. Addicts quickly withdraw from family, friends, and leisure activities.
3. Denial is the primary symptom of addiction. When directly confronted by a spouse, the addict may become defensive, vehemently rejecting accusations.
4. Domestic strife, fights, and arguments may increase in number and intensity.
5. Addicts need to be near their drug source. For a health-care professional addicted to narcotics or other medical drugs, this means long hours at the hospital, even when off duty. For alcoholics, it means frequently calling in sick to work. Alcoholics may disappear without explanation to bars or hiding places to drink secretly.
6. Watch for unexplained overspending, legal problems (such as DWIs), gambling, extramarital affairs, and increased problems at work.
7. Sexual drive may decrease significantly.
8. Pills, syringes, or alcohol bottles found around the house are another sign of addiction.
9. Bloody swabs or tissues found at home may indicate an intravenous drug user.
10. Addicts suddenly may develop the habit of locking themselves in the bathroom or other rooms while they are using drugs.
11. An obvious physical sign of alcoholism is the frequent smell of alcohol on the breath.
12. Narcotic addicts often have pinpoint pupils.
13. They also may display evidence of withdrawal, especially diaphoresis (sweating) and tremors.
14. Weight loss and pale skin are also common.
15. Undetected addicts are found comatose.
16. Untreated addicts are found dead.

The spouse of an addicted doctor or nurse may detect a number of addiction symptoms, some similar to those found in the workplace, and some additional signs. Addiction to potent narcotics progresses very quickly (in a few weeks or months), giving little time for symptoms to develop. For addiction to drugs, signs may appear over a period of years.


Protection for a protracted period. Changes in behavior are frequently noted. Tables 5 and 6 identify symptoms typically found inside and outside of the anesthesia workplace. Mood swings are common, and include periods of irritability, anger, euphoria, and depression. Recognition of inappropriate behavior may be difficult in large departments or with new personnel.

The addict prefers opioid-based techniques for all cases. The administration of opioid may be noted on the anesthetic record when an alternate drug was used. Entire cases may be done with inhalational agents and charted as opioid based. The addict may switch a opioid syringe for one containing saline or a mixture of lidocaine and esmolol during a relief break. Proficiency at removing controlled substances from secure places is commonly acquired. Drugs may be removed from glass ampules and replaced with another liquid without evident damage to the vial.

Marked tolerance to opioids develops rapidly. Self administration of 1,000 µg fentanyl is not uncommon. Programs that track opioid use often note a rise in the quantity of opioids requested, particularly on Fridays.

The addict becomes extraordinarily attentive to the job at hand. As many personal aspects of the individual's life disintegrate, maintaining a job in close proximity to the source of drugs becomes paramount.

Legal Issues

Physician impairment is intimately associated with a series of legal considerations. Reporting a physician as potentially impaired may immediately jeopardize the individual's license to practice medicine. Failure to report an impaired colleague may be considered negligence. This section explores these issues, but should not be construed as legal advice. Legal counsel is mandatory.

The legal requirements and protections associated with physician impairment vary across states and are continuously changing. This is particularly true for confidentiality of records and the relationship of Impaired Physician Programs to licensure boards. The Health Care Quality Improvement Act of 1986 (HCQIA) has had an impact on the management of the impaired physician.

Diverstion/Impaired Physician Programs

Each of the 50 states and the District of Columbia have statutorily created medical and nursing licensing boards. The spectrum of disciplinary actions available to these boards extends to proceedings leading to suspension or revocation of the license to practice.

Medical societies are organized as academic and protective bodies for the professions. These organizations espouse ethical standards; however, their involvement in disciplinary matters is generally ineffective. "The struggle by the medical societies to win some control over qualification standards, peer reviews, and disciplinary monitoring began too late and lacked coherence and strength."

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Licensure boards, other regulatory agencies, and medical and nursing societies have developed Impaired Professionals Programs (IPPs) for cooperative interaction. Although licensing agencies are generally reluctant to accept any diminution of authority, they recognize that professional societies can more easily engage the impaired colleague. A few state IPPs have negotiated a significant responsibility for investigation, intervention, and diversion in reported cases of impairment.\(^{22-24}\) Diversion is the process of intervening in the case of a physician or nurse and arranging for assessment, treatment, and return to practice independent of licensure authorities. The potential for involving licensure authorities represents the coercive power of diversion programs. The relationship between an IPP and its associated licensing board is highly variable from state to state, and subject to constant reassessment.\(^{25}\)

Many IPPs are expert in organizing and administering ongoing monitoring and treatment, and may provide invaluable assistance and advocacy for the recovering individual. These programs can provide consultation concerning intervention strategies, state-specific legal considerations, and reporting requirements. Some IPPs sponsor group-therapy sessions for recovering health professionals. Impaired Professionals Programs can be a great information resource, providing listings of available self-help groups, therapists, treatment centers, sources of legal advice, and urine-monitoring facilities.

The Appendix lists the addresses and phone numbers of state society programs and services that assist impaired physicians and nurses.

Confidentiality
Patient-physician confidentiality includes information regarding impaired physicians. Federal constitutional rights covered by the 4th, 5th, 6th, and 14th amendments are delineated in the Code of Federal Regulations (CFR) 42 Part 2 Confidentiality of Alcohol and Drug Abuse Patient Records. Sections 2.38 and 2.40, which stated that “granting the request for disclosure will not be harmful to the patient,” have been repealed.

Regulatory agencies have a general interest in publishing or releasing data concerning their actions. These agencies endorse the deterrent effect of making public examples of disciplinary actions, and publication indicates that the agency is fulfilling its obligations to the public interest.\(^{22}\) The passage of the HCQIA, as outlined below, responded to public demands for the release of such information. This is consistent with recent legislation concerning freedom of information.\(^{22}\) “As long as confidentiality cannot be assured, the medical profession will continue to view the entire policy of the licensing agency toward physician impairment as punitive and humiliating rather than rehabilitative, and treatable physicians will therefore avoid contact with the treatment program.”\(^{22}\) There is, however, a general trend toward cooperation with the medical profession for confidentiality, on the premise that sympathetic, responsible joint efforts in culling out unfit physicians will be most successful.”\(^{22}\)

Physicians and nurses in question should avoid general waivers of confidentiality. A waiver of confidentiality should be made for a particular purpose, e.g., a licensure hearing.\(^{22}\)

Mandatory Reporting and Immunity
State and national legislation requires that statutorily designated individuals or institutions report clearly, or likely, impaired physicians or nurses to a licensing or disciplinary body or to the state society. Licensed health care practitioners are almost uniformly included by these statutes. Failure to report as required by law may result in disciplinary action against the institution or designated individual.\(^{5}\) Many of these so-called “snitch laws” provide immunity for persons who report an impaired professional; however, some specifically do not.\(^{22}\) A recent review disclosed no known case of prosecution for failure to report an impaired physician.\(^{22}\)

Health Care Quality Improvement Act of 1986
Based on a perceived need to improve the quality of medical care and concern for the occurrence of malpractice, the United States Congress enacted the Health Care Quality Improvement Act of 1986 (Title IV of Public Law 99-660). This law created the National Practitioner Data Bank (NPDB) to function as a repository for information concerning professional conduct, licensure status, and malpractice claims of the nation’s physicians. Adverse actions taken by medical societies, hospital boards, licensure boards, and medical malpractice awards must be reported to the NPDB. Health providers are required to query the NPDB when hiring a physician, and before periodic renewal of privileges. Voluntary entry into a substance-abuse
treatment program does not, in itself, require reporting to the NPDB. Although a case of voluntary surrender of a medical license during treatment may not require reporting, suspension of a physician's clinical privileges for greater than 30 days is reportable. "Voluntary surrender or restriction of hospital privileges while under, or to avoid, investigation must be reported." The intent of this legislation is to improve quality of medical care by encouraging physicians, dentists, and other health care practitioners to identify and discipline those who engage in unprofessional behavior; and to restrict the ability of incompetent physicians, dentists, and other health care practitioners to move from state to state without disclosure or discovery of the practitioners' previous damaging or incompetent performance. Health care providers, state medical and dental boards, and malpractice insurance companies are mandated to report to the NPDB. Failure to report is subject to significant sanctions. The HCQIA establishes immunity from suit for the reporters. The NPDB opened on September 1, 1990, and received 14,006 reports concerning physicians in the first year of operation. Of these, about 84% represented malpractice payment reports.

The Americans With Disabilities Act
The enactment of the Americans With Disabilities Act (ADA) in July 1992 has added new constraints to an employer's relationship with an individual recovering from substance abuse. Under Section 104, Illegal Use of Drugs and Alcohol, the ADA states a "Qualified Individual With a Disability:"

1. has successfully completed a supervised drug rehabilitation program and is no longer engaging in the illegal use of drugs, or has otherwise been rehabilitated successfully and is no longer engaging in such use;
2. is participating in a supervised rehabilitation program and is no longer engaging in such use; or
3. is erroneously regarded as engaging in such use, but is not engaging in such use; except that it shall not be a violation of this Act for a covered entity to adopt or administer reasonable policies or procedures, including but not limited to drug testing, designed to ensure that an individual described in paragraph 1 or 2 is no longer engaging in the illegal use of drugs.

Further information regarding the implications of the ADA may be obtained from the Civil Rights Division of the United States Department of Justice, Washington, D.C. (telephone 202-514-0301).

Evaluation of the Potentially Impaired Professional

Investigation
Investigation is the process of collecting information concerning an individual suspected of impairment, which may lead to intervention. Intervention is the term used for the advocacy-oriented confrontation of a health professional, often by specifically trained personnel. The investigation phase, which may be quite prolonged, involves assembling significant evidence of drug use, drug diversion, and associated behavioral changes. Investigation must not be confused with diagnosis. The diagnosis of chemical dependence is made by an addictionist or psychiatrist, who may also be of assistance during the investigation phase. It may be very difficult to investigate someone in one's own department in a suitably discreet manner. In some states, the IPP or INP may be best able to do a confidential, yet thorough, investigation.

"The physician who learns through direct observation that a practitioner colleague is, or is likely to be, impaired or incompetent undoubtedly is faced with a quandary that no single statute or professional rule of ethics can resolve. . . The hospital department head appears to shoulder the heaviest burden. Having received a report, the chief must act with discretion and follow protocols in place at the institution, as outlined by quality assurance and peer review standards. Consultation with hospital counsel to protect against litigation from potentially injured patients as well as retaliatory action by the allegedly impaired physician also is recommended."22

Clinical Manifestations. Allegations of impairment must be carefully verified. Information from a variety of sources should be collected without compromising confidentiality.

Review of Records. Discrepancies in pharmacy records, as well as anesthetic records kept by the individual in question, should be reviewed in detail. A drastic change in recording practice or handwriting may be discovered. All opened, unused controlled substances returned to the pharmacy should be analyzed (see Drug Control section). Hospital or government authorities are likely to require comparable record reviews.
Intervention requires sufficient evidence to mandate either an evaluation or, alternatively, a report to state authorities. In the absence of such evidence, an intervention should not be undertaken.

**Intervention**

Impaired professionals infrequently request aid; therefore, intervention is almost always necessary. When the presenting sign is a major event, such as an overdose, a predesignated intervention protocol should be followed, because even such an obvious circumstance may not eliminate the individual’s denial.\(^{21,27}\)

**The Intervention Team.** The intervention team should consist of a minimum of two or three members. One-on-one confrontation with the subject of the intervention should, essentially, never be attempted. One member of the team should be someone the subject can identify with in terms of sex, specialty, or recovery from a similar impairment, but should have no close relationship with the subject. Professional intervenors may be available from IPPs. Impaired Professionals Programs can be uniquely qualified to help with interventions. Often, they have legal authority to apply increasing degrees of coercion to obtain cooperation from the impaired health professionals and clearly defined options for nonvoluntary removal from practice for individuals who refuse treatment. A motivated spouse may be a powerful encouragement for compliance, or may be an enormously powerful enabler and, thus, a saboteur of the intervention process. Expert advice should be sought in advance regarding the suitability of including a particular spouse on the intervention team.

**Preparing the Intervention.** An intervention protocol with clear objectives should be defined with the help of an IPP. In developing an intervention protocol, hospital legal counsel may or may not be helpful. Rarely is legal counsel part of the intervention team. The attitude of the intervention team should be supportive of the concept of chemical dependence as a disease. It should be clear that intervention is part of an advocacy program, not a tribunal mandating punishment. The function and roles of each member of the team should be firmly defined in advance, preferably with the aid of experienced personnel.

The team must be prepared for massive denial, anger, threats, and hostility. The individual may be suffering from other social or emotional problems as part of, or independent from, chemical dependency. After intervention, the individual may elect to leave the department, seek drugs from alternative sources, or contemplate suicide.

Specifics of the intervention plan will vary by location and may include preparation for: 1) immediate blood or urine toxicology; 2) immediate mandatory inpatient admission; 3) accompanied transfer to a treatment center; and 4) contingencies for non-compliance.

**Intervention.** The individual is summoned to a location sufficiently private to avoid interruptions or eavesdropping. The following general outline\(^{27}\) may be helpful:

1. Have the team leader introduce the members of the team and explain that the team represents the department, the hospital staff, etc.
2. Tell the individual that there is a perception of a problem, and that the purpose of the meeting is to explore the situation and to offer assistance.
3. Present a description of the individual’s behavior, including specific details, in a factual, nonjudgmental manner.
4. Do not allow the individual to sidetrack the discussion by discussing other problems or demanding to confront the sources of the various reports.
5. Anticipate personal and professional attacks by the individual against the members of the confrontation team.
6. Allow the individual to voice his views on drug abuse. Follow this with a discussion of drug abuse behavior and its consequences, both treated and untreated.
7. Discuss the options available to the individual. Mention should be made of the degrees of coercion available to the team should the individual fail to cooperate.
8. Make it clear that, although assistance is available, recovery is the responsibility of the individual.
9. Place the individual in an environment where he can be observed until such time as he can be delivered, accompanied by a responsible individual, to a treatment or evaluation program. The individual should not be left alone before entering evaluation.

An intervention is considered successful when the dependent health professional agrees to enter an evaluation program. Often, the individual will refuse immediate evaluation.\(^{27}\) The degree of coercion available to the intervention team varies from case to case.

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Diagnosis and Treatment

Diagnosis and treatment should be directed by an addictionist. Addictionology is a relatively new specialty. Addiction psychiatry was formally recognized by the American Board of Medical Specialists in 1992. The American Board of Psychiatry and Neurology will be offering added qualifications in addiction psychiatry after the first certification examination in April 1993.28 Although not recognized by the American Board of Medical Specialties, the American Society of Addiction Medicine (ASAM) has established a credentialing and examination process for its members, and has issued certificates to approximately 2,619 individuals as of March 1993. There are many individuals with extensive experience in the field of addiction who are either not members of ASAM or who have not undertaken any certification process. An addictionist referral may be obtained from drug treatment centers, the ASAM, or IPPs.

Initial Therapeutic Period

Most treatment centers are based on the Minnesota treatment model,29 which is derived from the recovery model of Alcoholics Anonymous. Ideally, the impaired health professional should be treated in a facility with other impaired professionals.30 Treatment involves detoxification, monitored abstinence, intensive education, exposure to self-help groups, and psychotherapy. Various models of individual and group therapy all aim at altering key addictive behaviors.31 Inpatient therapy is an intensive form of treatment, with staff contact extending up to 12 h per day, 7 days per week. In this setting, patients are removed from the stresses of daily life and from access to alcohol and drugs. The duration of inpatient therapy may be limited to initial detoxification, followed by entry into a therapeutic living environment. A structured "halfway house" community, with 60–120 h/week of staff contact, is often recommended for a 4–8 week period.

Outpatient therapy may be appropriate under certain conditions. Outpatients must be able to function in their normal daily environment, and are expected to remain abstinent despite normal availability of alcohol and drugs.32 It is our opinion that the chemically impaired anesthesiologist is best initially treated in an inpatient setting. However, future trends in reimbursement and treatment costs may make outpatient therapy the only available option.

The intention of this initial period is to lay a groundwork for long-term abstinence and recovery. Anesthesiologists who are abusing opioids are commonly sent for residential treatment that may last from 1 month to a year or more. The treatment center should have a proven record of treating impaired health professionals. The cost of a typical 4–12-week course of therapy is $12,000–$25,000. Most health insurance does not cover the expense of chemical dependence therapy, or, at best, has a substantial limitation on the reimbursement for diagnostic and therapeutic expenses.

Subsequent Therapeutic Modalities

Extended therapeutic modalities are determined by the treating addictionist and IPPs or government authorities. Treatment options may include the following.

Abstinence Monitoring. Urine testing is the cornerstone for monitoring and documenting abstinence in the recovering addict.32 The value of urine testing as a therapeutic tool has not been clarified; however, it is commonly thought to have a deterrent effect on drug use. Details of urine testing are described in a subsequent section.

Receptor Antagonists. Naltrexone, like naloxone, is a relatively pure μ-receptor antagonist. In contrast to naloxone, naltrexone is highly effective orally. It produces sustained competitive antagonism of opioid agonists for as long as 24–48 h.7 Naltrexone is taken either 50 mg daily, or 100 mg three times per week. The antagonism may be overcome by large doses of opioids, which may result in immediate respiratory arrest. The blocking of agonist activity by an antagonist should be contrasted with the activity of a metabolic inhibitor, such as disulfiram (Antabuse, Wyeth-Ayerst, Philadelphia, PA), which blocks an enzyme in the pathway of alcohol metabolism, leading to the accumulation of a noxious metabolite.35 Detoxification is mandatory before prescription of naltrexone, because

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<th>Table 7. Side Effects Associated with Naltrexone</th>
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<tr>
<td>Abdominal pain/cramps</td>
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<td>Anxiety</td>
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<td>Chills</td>
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<td>Constipation</td>
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<td>Sleep disturbances</td>
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<td>Vomiting</td>
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ingestion without detoxification will precipitate a severe withdrawal syndrome. Significant side effects associated with the use of naltrexone are listed in Table 7.

Often, naltrexone is recommended for anesthesiologists reentering the operating room.\textsuperscript{54,55} This serves two theoretical purposes. Naltrexone may help break the association of opioid availability and usage,\textsuperscript{55,56} and witnessed naltrexone intake may provide a degree of reassurance of continued abstinence to hospital and licensing authorities. Naltrexone prescription, however, is frequently discontinued because of side effects.\textsuperscript{56} There is no documentation that naltrexone decreases the incidence of relapse; however, Washton \textit{et al.} did find that 74\% of physicians completed 6 months of naltrexone treatment and were practicing medicine at a 1-yr followup.\textsuperscript{57} A comprehensive review of therapeutic trials of naltrexone was published by Gonzalez and Brogden.\textsuperscript{58}

**Self-Help Groups.** Participation in self-help groups is considered a vital component in the therapy of the impaired physician.\textsuperscript{39} Self-help groups originated as a response to a need for support and services.\textsuperscript{40} The Alcoholics Anonymous (AA) 12-step program is the prototype organization serving as a model for Narcotics Anonymous (NA) and other self-help groups. A short history of the development of AA provides a perspective for understanding its function and limitations.

The principal founder of AA was an alcoholic known as “Bill W” (in accordance with the AA tradition of personal anonymity). Bill was influenced by a member of an evangelical sect that encouraged open confessions and guidance from members. During his last hospitalization, Bill conceived that only an alcoholic could help another alcoholic to maintain sobriety. Bill’s initial efforts to help other alcoholics included a physician known as “Dr. Bob.” Together, they founded Alcoholics Anonymous and, subsequently, published the book, “Alcoholics Anonymous,” which became the guide for the movement.\textsuperscript{4} Alcoholics Anonymous institutionalized the “Twelve Steps” and “Twelve Traditions,” stressing the personal anonymity of its membership and the policy of neutrality to outside issues. Such programs have become essential to current therapy for addiction.\textsuperscript{39,41} Details of these programs are available in other publications.\textsuperscript{42,43} Meetings of AA and NA are frequent, and are available nationwide.

There are organizations of recovering health professionals. Local groups can be found by calling the AA or NA Intergroup organizations that are listed in most phone directories. Another alternative is International Doctors in Alcoholics Anonymous (IDAA), founded in 1949, which serves as an umbrella organization for physician recovery groups around the world. They may be reached by contacting their Executive Secretary, C. Richard McKinley, M.D., at P.O. Box 199, Augusia, Missouri 63332, or 314-228-4548. A similar group dedicated to recovering CRNAs is Anesthetists in Recovery (AIR), which may be reached by contacting Rusty Ratliff, 2205 22nd Avenue South, Minneapolis, Minnesota 55404, or 612-724-8238 (home) or 612-347-3157 (work).

**Professional Behavioral Observation.** Recovering physicians may be required to schedule regular office appointments with a certified addictionist. Regular observation may uncover behaviors and attitudes that can threaten ongoing recovery.

**Behavior-Oriented Psychotherapy.** The denial system of the addicted individual may incorporate learned behaviors, attitudes, and emotional responses. Group and individual therapy may be prescribed for a protracted period to educate the individual and modify these behavioral factors to support continued recovery.\textsuperscript{34}

**Family-Oriented Therapy.** In recent years, attention has been directed to the stresses peculiar to a medical family and to the role played by family members in impairment.\textsuperscript{45} This is a developing subject in substance-abuse therapy.

**Prognosis**

There are few studies specifically examining the prognosis and prognostic indicators of continued recovery in the addicted anesthesiologist. These studies are discussed in the next section.

**Reentry into Anesthesiology**

**Prospects**

Whether anesthesia personnel should be allowed to return to the operating room after successful treatment is highly controversial. A distinction between a resident and an attending anesthesiologist is commonly drawn; the attending should be given a chance to reenter practice, but the resident should find another specialty. The attending, according to this reasoning, has fewer options. Attitudes regarding CRNAs vary widely.
For many years, the common suggestion was that most anesthesiologists who completed therapy should be allowed to return to work. Data from The Impaired Physicians Program of The Medical Association of Georgia indicate that 90% of physicians compliant with their prescribed program remain abstinent at 2 yr followup.44 Because individuals lost to followup were not included in the evaluation, the majority of case failures were excluded before analysis.

A recent report of 180 cases of substance abuse by residents in anesthesiology concluded that prolonged abstinence was unusual and that redirection to another medical specialty is the desired course for an individual who abuses parenteral opioids.45 This study reviewed the response to a two-part anonymous questionnaire that had been sent to directors of U.S. anesthesiology training programs. The authors distinguished between abuse of parenteral opioids and other drugs. Of the 180 case reports, 13 (7%) presented as death or anoxic brain injury. Of the 167 remaining cases, 113 (67%) were allowed to reenter anesthesiology training. Figure 1 displays the difference in success rate for reentry between the two groups. Success was defined by the authors as an individual who underwent treatment, completed the residency, and had no relapse in practice to the best of the director's knowledge.

This study has been criticized as representing an incomplete survey of directors whose recall may be inaccurate, and for suggesting that residents be redirected to other specialties without evaluating the outcome of those who were.46 Furthermore, only 37% of the residents reviewed received more than 6 weeks of inpatient treatment,45 a figure considered inadequate by some experts in the field.57 There are no similar data for attending anesthesiologists or CRNAs.

We do not advocate automatic reentry into anesthesiology for residents, attending physicians, or CRNAs. Rather, we believe that each case must be evaluated on an individual basis. Currently, a nationwide survey of experience with chemically dependent anesthesiologists is underway; this survey may provide more data on which to develop a policy. Implicit in this discussion of reentry is the potential for denying reentry into anesthesiology. If an addictionist recommends that an individual should not return to the practice of anesthesiology, we believe that denial of reentry can be successfully defended.

In the case in which the addictionist recommends reentry into anesthesia, denial of reentry is problematic. The ADA (Section IIIE) has placed the onus of responsibility on the employer to prove that the employee is unable to perform the responsibilities of his occupation.

Work Reentry Contract

If an impaired professional is allowed to reenter medical practice, an agreement is created outlining the individual's responsibilities. This is referred to as a work reentry contract. Open communication ought to be maintained between the treating physician, the recovery support network, and persons responsible for verifying compliance with the work reentry contract. The following model is similar to one proposed by the ASA Committee on Occupational Health of Operating Room Personnel.

1. Abstention: The individual agrees to abstain from self-administration of mood-altering substances. All concerned must agree to a clear plan of action, should a return to drug use or self-medication be identified. This may require additional therapy, loss of employment, or a report to state authorities. It must be clear that this agreement is not negotiable in the event of relapse.

All medications should be prospectively approved by a physician who is thoroughly familiar with the disease of addiction and the patient's history. This includes both prescription and over-the-counter

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Table 8. Policy Statement of the American Board of Anesthesiology

The Americans with Disabilities Act (ADA) protects individuals with a history of alcoholism who are rehabilitated and protects former drug users who currently do not use drugs illegally. The American Board of Anesthesiology (ABA) supports the intent of the ADA. The ABA will admit qualified applicants and candidates with a history of alcoholism to its examination system and if they submit documentation acceptable to the ABA that they do not currently pose a direct threat to the health and safety of others. The ABA will admit qualified applicants and candidates with a history of illegal use of drugs to its examination system if they submit documentation acceptable to the ABA that they currently are not actively engaged in the illegal use of drugs.

After a candidate with a history of alcoholism or illegal use of drugs satisfies the examination requirements for certification, the ABA will determine whether it should defer awarding its certification to the candidate for a period of time to avoid certification of a candidate who poses a direct threat to the health and safety of others. If the ABA determines that deferral of the candidate’s certification is appropriate because the candidate currently poses a threat to the health and safety of others, the ABA will determine the length of time the candidate’s certification is deferred following an individual assessment of the specific circumstances of the candidate’s history of alcoholism or illegal use of drugs.


drugs, with the possible exception of antacids, aspirin, or acetaminophen. Self medication is unacceptable.

2. Monitor: An individual is assigned to monitor the recovering addict’s compliance with the terms of the work reentry contract. The monitor should meet with the individual at regular intervals, and is responsible for organizing the collection of urine or blood specimens. The monitor must be informed a priori of any medications prescribed or approved. The monitor assumes the role of the Medical Review Officer described below.

3. Supervising Professional: A member of the department should be assigned to observe and assess the recovering health professional’s practice of medicine. Unexplained absences or unprofessional conduct must be satisfactorily explained to the supervising professional. The supervising professional may also request urine or blood specimens.

4. Attendance at Self-Help Groups: This is usually mandated. Documentation of attendance at meetings may be required. Because confidentiality is crucial to these programs, documenting attendance at these meetings is difficult. The Anonymous programs cannot be held responsible to those agencies mandating attendance.

5. Therapy: Many work reentry contracts specifically require group or individual therapy for the recovering health professional. The therapist is an integral part of the group monitoring the recovering individual. A therapist may have the right to request a random witnessed urine collection.

6. Urine/Blood Screening Tests: These tests will be requested on a random, unannounced basis. Failure to submit to testing is grounds for disciplinary action. The frequency of testing, and the specific drugs tested for, must be individualized for each case. Details of urine testing are described in a subsequent section.

7. Naltrexone: Administration of naltrexone may be required in an work reentry contract. Witnessed naltrexone ingestion may be mandated to assure compliance.

One treatment center suggests that the first 3-month period of reentry to the operating room should exclude night calls, weekend calls, and the handling of opioids. At the end of this period, the practitioner is reevaluated by treatment personnel.

The American Board of Anesthesiologists (ABA) developed a specific policy regarding entry of chemically dependent individuals into their examination process (Table 8). There is no written policy regarding chemically dependent diplomates of the ABA.

Prevention

Prevention of chemical dependence is preferable to treatment. Unfortunately, secondary prevention, in the form of earlier identification and treatment, remains easier than primary prevention. Current efforts at primary prevention are control of drug supply and education. Random drug screening for all anesthesia personnel is contentious.

Drug Control

A frequently mentioned contributing cause of addiction in anesthesiology is easy access to opioids and other psychoactive substances. Even if access does not foster drug abuse, tight control allows for earlier detection and documentation in suspected cases of abuse. A re-
cent report was unable to obtain a meaningful statistical analysis of the utility of drug control.\textsuperscript{49}

A number of methods for control of opioids and other drugs in the operating room exist that involve careful record keeping and evaluation of use patterns.\textsuperscript{50-53} Computerized dispensing units are available. In many institutions, a satellite pharmacy dispenses controlled substances each morning, with a drug disposition form. Subsequently, every anesthesia record is checked against the drug disposition record. Anesthesia personnel are asked to explain any discrepancy. All discrepancies are reported to the departmental impaired professionals committee.

All waste drugs are returned to the pharmacy and analyzed on a random basis to verify content. The Division of Quality Control, Department of Pharmacy of the Mount Sinai Medical Center has established the following policy for evaluating returned waste drugs. All undiluted returned drugs are analyzed by either refractometry or, for alkaloids (morphine, demerol, fentanyl, cocaine, etc.), by precipitation with Mayer's reagent.\textsuperscript{54} Diluted drugs are not detected by these methods. In cases of repeated negative qualitative assay for any substance, quantitative analysis is requested from a forensic laboratory. Forensic laboratories are equipped for quantitative analysis of current anesthesia-related psychoactive compounds, including fentanyl, sufentanil, and propofol.\textsuperscript{55} Such analysis will cost approximately \$280 per specimen.

\textbf{Education}

There is a recent effort toward education of the anesthesiology community regarding substance abuse. Presumably, widespread education of the anesthesia community may aid in early detection of afflicted colleagues. A recent survey of chief residents reported that between 47 and 89% of anesthesia programs examined on a regional basis had at least one lecture on substance abuse, but a maximum of 33% reported that their program had an identifiable substance abuse program or committee.\textsuperscript{56} Whether education prevents addiction is not clear.

Other specialties have published recommended educational guidelines for substance abuse.\textsuperscript{55,56} These efforts are directed primarily at patient care. Questions regarding substance abuse appeared on the 1991 ABA In-training examination.

Many departments conduct special seminars concerning substance abuse. The impact of these programs may be highly dependent on the personalities involved. A number of educational video tapes are available.\textsuperscript{57}

\textbf{Preemployment and Random Drug Screens}

The rationale for urine testing as a deterrent derives, in part, from the experience of the U.S. Military, which indicates that urinalysis reduced illegal drug use.\textsuperscript{57,58} Urine test avoidance may account for a part of this reduction.

The legal issues involved in widespread drug testing are complex. A recent review concluded that hospitals considering a drug testing program should contact expert legal counsel in advance.\textsuperscript{58}

Many physicians express concerns involving the interpretation of drug test results and the implications of false positives. Avoiding these very real pitfalls is the responsibility of the Medical Review Officer (MRO). The details of urine testing, including the role of the MRO, are contained in the next section.

\textbf{Stress Management}

Stress is routinely reported to contribute to drug addiction.\textsuperscript{59} Elimination of unnecessary stress and encouragement of adequate rest are intuitively appealing. Programs that specifically address coping skills, spiritual development, leisure activities, or other approaches may be undertaken by groups willing to engage in such activities. Individual therapy or support may be offered. There is no guidance available, and no data addresses the utility of stress reduction in preventing impairment.

\textbf{Departmental Policy}

A recent position paper by the Association of Program Directors in Internal Medicine made the following recommendations:

1. A formal, organized process should be present to address the problem of substance abuse among residents in training programs.
2. All house staff and attending faculty should know of the policies of the medical center regarding substance abuse and impairment.
3. Information should be provided to orient residents and their families to the problem of substance abuse among physicians.
4. A clearly defined process should exist for referral (and self referral) of residents who are abusing alcohol, other drugs, or both.
Table 9. Drug Analysis Methods and Sensitivity Ranges

<table>
<thead>
<tr>
<th>Method</th>
<th>Sensitivity Range (ng/ml)</th>
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<tbody>
<tr>
<td>Thin layer chromatography (TLC)</td>
<td>1,000–2,000</td>
</tr>
<tr>
<td>Enzyme immunoassay (EIA)</td>
<td>20–1,000</td>
</tr>
<tr>
<td>Enzyme multiplied immunoassay test (EMIT)</td>
<td>20–1,000</td>
</tr>
<tr>
<td>Fluorescent polarization immunoassay (FPIA)</td>
<td>20–1,000</td>
</tr>
<tr>
<td>Gas–liquid chromatography (GLC)</td>
<td>10–300</td>
</tr>
<tr>
<td>High-performance liquid chromatography (HPLC)</td>
<td>20–300</td>
</tr>
<tr>
<td>Radiolimmunoassay (RIA)</td>
<td>2–200</td>
</tr>
<tr>
<td>Gas chromatography/mass spectrometry (GC/MS)</td>
<td>5–100</td>
</tr>
</tbody>
</table>

The sensitivities are specific to the testing methodology, irrespective of the substance tested. TLC is used commonly as a screening test, whereas GC/MS is used primarily for confirmation of screening tests. No specific recommendation can be made regarding which test to choose. Users should understand what their contracted laboratory is utilizing to properly understand the reported results. Modified from reference 72.

5. Residents and staff physicians should be aware of how to seek help for a resident who is suspected of substance abuse.50

The above recommendations should serve as an outline for the development of departmental policy.

Urine Testing

Urine testing for drugs of abuse is undertaken for emergency, rehabilitation, and diagnostic toxicology. Each has somewhat separate considerations. Emergency toxicology casts a wide net and requires rapid response to a situation in which large doses of a drug were recently used. Rehabilitation toxicology seeks to verify abstinence or lack of abstinence. The urgency is decreased and the need for sensitivity is much higher. A screening test is usually followed by a more specific confirmatory test. Diagnostic testing requires the highest sensitivity to avoid a false negative diagnosis among a large panel of potential substances. This section outlines technical and forensic concerns associated with urine drug testing.61–63

Different laboratories have varying definitions of the terms comprehensive or general drug screen. Morphine, codeine, and demerol may be included. Fentanyl, sufentanil, or alfentanil are almost never part of a standard drug screen. Familiarity with the available laboratory procedures allows for proper test selection and interpretation. A general drug screen is important, because abuse of multiple drugs is common. It is vital to notify the laboratory in advance that fentanyl, sufentanil, or even propofol should be included. Table 9 lists the commonly available assays and sensitivities. Gas chromatography/magnetic resonance spectroscopy (GC/MS) is considered the gold standard against which other methods are compared, and by which any positive result should be confirmed.64 The details of these methods are beyond the scope of this review (see Hanks and Bissell58 and Blank64).

Medical Review Officer

The Medical Review Officer (MRO) is the designated individual responsible for the collection and interpretation of drug tests. The primary responsibilities of the MRO are outlined in table 10. The MRO should neither rubber stamp all results nor act as a crusader ridding the workplace of drug abuse. This individual’s role is specific, technical, and, essentially, neutral.55 The MRO must have knowledge of substance abuse issues, chain-of-custody arrangements, and the utility and limitations of forensic drug testing. Appropriate medical training is necessary to interpret and evaluate positive test results.

Collection

Various states, e.g., Rhode Island, require that random drug screening programs guarantee privacy for employees while providing bodily fluids for drug testing.56 This degree of privacy does not apply to a documented case of substance abuse in a monitoring program. Witnessed collection is necessary to avoid a sham urine sample. Methods to circumvent detection include self instillation of "clean" urine into the urinary bladder. Male addicts may use an artificial penis with a reservoir for clean urine. Artificial urine is commercially available.

Table 10. Responsibilities of the Medical Review Officer

<table>
<thead>
<tr>
<th>Responsibility</th>
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<tbody>
<tr>
<td>Receive test results from the laboratory.</td>
</tr>
<tr>
<td>Notify the employee of a confirmed positive test result.</td>
</tr>
<tr>
<td>Review and interpret each confirmed positive test result.</td>
</tr>
<tr>
<td>Provide the opportunity for employees to discuss positive test results.</td>
</tr>
<tr>
<td>Consult addiction treatment professionals when appropriate.</td>
</tr>
<tr>
<td>Review employee’s medical history and records.</td>
</tr>
<tr>
<td>Verify laboratory report and assessment.</td>
</tr>
<tr>
<td>Notify employer of verified positive test.</td>
</tr>
<tr>
<td>Make return-to-duty or decision-to-hire recommendation.</td>
</tr>
</tbody>
</table>

available, along with a pamphlet entitled "Conquering the Urine Drug Tests." An addict will avoid drug use if a urine test is announced in advance or if a routine collection time becomes apparent. Random observed urine collection is mandatory.

**Chain of Custody**

A forensically defensible test result demands comprehensive documentation (chain-of-custody document) to demonstrate that the integrity of the specimen has been maintained. The sample is kept in constant view until sealed and labeled. The collector begins a chain-of-custody form, which is dated and signed by the person releasing the specimen and by the person accepting it whenever the sample changes hands. The specimen can then be sent to the laboratory. If the specimen is not immediately prepared for shipment, it must be appropriately safeguarded during temporary storage.

**Reliability of Assays**

Urine drug testing for anesthesia personnel requires accurate forensic testing for fentanyl and its derivatives. Most drug testing laboratories initially test specimens with various screening tests, most of which are immunoassays. Gas chromatography/magnetic resonance spectroscopy provides essentially absolute identification of a substance.

A major concern is the accuracy of the testing laboratories. One study of laboratory performance using commercially prepared controls reported 2% false-positive and 20% false-negative results. Performance testing, in the form of known blind samples, should be submitted to the designated laboratory on a regular basis (e.g., 3 per 100 specimens) from high-volume testing centers. Knowledge of the laboratory's error rate (either false positive or false negative) on these blind controls is essential in evaluating analytic results.

A variety of additives are used to alter or replace urine before testing. The degree of sophistication that can be brought to bear in circumventing drug testing may be equal to that employed by the testers.

**Excretion Rates for Opioids**

Drug abuse detection requires knowledge of the suspected drug's biologic half life, extent of biotransformation, and major route of excretion. McClain and Hug estimated that renal clearance of fentanyl in volunteers was only 6%; primary clearance is metabolic. It has been estimated that a regular user will have detectable fentanyl in urine for 3–5 days. A recent report described a 1–5-day duration of fentanyl in urine after either <10 µg/kg or 20–40 µg/kg in 11 adolescent patients using a radioimmunoassay. Nanogram quantities of fentanyl can be detected in urine. There are anecdotal reports from "recovering" addicts of regular fentanyl and sufentanil abuse not detected on routine urine tests; the methods employed in these cases are not known. A recent study of urine excretion of fentanyl and the fentanyl metabolites norfentanyl and despropionyl fentanyl showed that norfentanyl can be detected up to 96 h after small (100 µg) doses of fentanyl, and should probably be the analysis of choice. Detection of sufentanil is currently limited to the parent compound. In the near future, metabolites of sufentanil will become commercially available, at which time a test for sufentanil metabolites may become available. Because the metabolism of sufentanil is similar to fentanyl, the detection interval for the parent compound is probably shorter than the detection interval for its metabolites.

The primary inactive metabolite of morphine is morphine-3-glucuronide (M3G). Morphine-3-glucuronide is detectable in the plasma 1 min after intravenous administration of morphine sulfate, and is detectable in urine for up to 72 h. Meperidine is primarily metabolized to normeperidine, which has an elimination half life of 15–40 h, and can be detected in urine for as long as 3 days after administration.

**Misleading Positive Results**

In 1987, Struempler reported significant concentrations of codeine and morphine in urine at 6 and 22 h after the consumption of 3 poppy seed bagels. This is not a false positive, but, rather, a positive result with a dietary cause. Recovering addicts should avoid the consumption of poppy seeds. In this setting, specific ratios of codeine to morphine can be identified. Nonprescription medications may cross react with forensic tests for psychoactive drugs. This stresses the importance of the evaluation of forensic test results by the MRO.

**Cost**

What constitutes a generalized drug screen varies among laboratories. It is very important to know in advance what substances are assayed by the chosen laboratory, and to assure that a generalized screening is
performed. In addition, testing for specific appropriate drugs should be requested.

Although the cost of initial drug screens is usually borne by the hospital or department, the recovering addict is often required to bear the cost of ongoing drug monitoring. One laboratory in New York State charges $66.00 for a screening urine test with a fentanyl assay (RIA). Another laboratory will do a fentanyl, sufentanil, alfentanil assay by GC/MS for $278.00, which does not include a generalized drug screen. In general, a negative screening test eliminates further confirmation by more expensive methods. Nonetheless, this is a significant expense for individuals requiring four to six screens per month as part of a monitoring program. Responsibility for the expense of testing should be clear and agreed to in advance. Often, arrangements for bulk discount can be made by medical societies or hospitals.

Naltrexone Assays

Naltrexone assays exist as a measure of patient compliance. Difficulties reside in the stability of the specimen. One laboratory will only accept serum or plasma that is wrapped in foil and shipped frozen. Because of sample instability, a negative test may not indicate noncompliance with prescribed naltrexone ingestion. The only reliable measure of compliance with naltrexone therapy is witnessed ingestion.

Conclusions

Addiction continues to have a catastrophic impact on individuals in our profession. We have reviewed the epidemiology, detection, treatment, and legal and educational issues of this problem. Like any medical specialty, the field of substance abuse is continually evolving in response to new research and changing social requirements. Our focus has not been to present a manual for the treatment of substance abuse, but, rather, to outline those aspects of the disease and its processes that impact on anesthesia personnel. It is our hope that this information will prove a useful stimulus and resource for the development of both educational programs and impaired professionals committees in anesthesia departments. Perhaps such efforts will minimize the impact of work-related addiction in the anesthesia workplace.

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References


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53. Schmidt KA, Schlesinger MD: A reliable accounting system for controlled substances in the operating room. ANESTHESIOLOGY 78:184–190, 1993
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Footnotes
14. Mayer's reagent = 15.5 g mercuric chloride and 50 g potassium iodide are dissolved in 1,000 ml of water. This reagent is used as a test for alkaloid, with which it gives a white precipitate.

Appendix: Services to Assist Impaired Health Care Professionals

<table>
<thead>
<tr>
<th>ALABAMA</th>
<th>Alaska Practitioner Recovery Program</th>
<th>Impaired Nurse Committee</th>
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<tr>
<td>Impaired Physicians Program</td>
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<td>Arizona Nurses Association</td>
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<tr>
<td>Medical Association of Alabama</td>
<td>Kate Morris, RN</td>
<td>Sara Whitt, RN, MS</td>
</tr>
<tr>
<td>19 South Jackson Street</td>
<td>237 East 3rd Avenue</td>
<td>1850 East Southern Avenue, Suite 1</td>
</tr>
<tr>
<td>PO Box 1900</td>
<td>Anchorage, AK 99501-2532</td>
<td>Tempe, AZ 85282</td>
</tr>
<tr>
<td>Montgomery, AL 36102</td>
<td>(907) 274-0827 (daytime)</td>
<td>(602) 831-0404</td>
</tr>
<tr>
<td>(205) 263-6441</td>
<td></td>
<td></td>
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<td>Helpline: (205) 261-2044</td>
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<td>Alaska State Medical Association</td>
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<td>Arizona Medical Society</td>
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<tr>
<td>4107 Laurel Street</td>
<td></td>
<td>810 W. Bethany Home Road</td>
<td></td>
</tr>
<tr>
<td>Anchorage, AK 99508</td>
<td>Phoenix, AZ 85013</td>
<td>(602) 249-1520</td>
<td></td>
</tr>
<tr>
<td>(907) 562-2662</td>
<td>Hotline: (602) 253-7039</td>
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<td>Arizona Medical Association</td>
<td>Physicians Health Committee</td>
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<tr>
<td>810 W. Bethany Home Road</td>
<td>10 Corporate Hill, Suite 300</td>
<td>Physicians Health Committee</td>
<td></td>
</tr>
<tr>
<td>Phoenix, AZ 85013</td>
<td>PO Box 5776</td>
<td>Arizona Medical Society</td>
<td></td>
</tr>
<tr>
<td>(602) 249-1520</td>
<td>Little Rock, AR 72215</td>
<td>10 Corporate Hill, Suite 300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(501) 224-8967</td>
<td>PO Box 5776</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hotline: (501) 370-8221</td>
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</tr>
</tbody>
</table>

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Appendix (Continued)

ARKANSAS (Continued)
Recovery for Nurses Council
Arkansas Nurses Association
Charlene Bradham, RN, MNSc
Department of Nursing
University of Arkansas-Little Rock
2801 S. University Avenue
Little Rock, AR 72204
(501) 569-8084 (daytime)
(501) 562-2444 (evening)

CALIFORNIA
Committee on Well-Being of Physicians
California Medical Association
221 Main Street, 2nd Floor
PO Box 7890
San Francisco, CA 94120-7690
(415) 541-0900

Well Being Committee
California Nurses Association
Mary Jo Gormley-Lucero
1855 Folsom Street, Suite 670
San Francisco, CA 94103
(415) 864-4141 (Daytime)

COLORADO
Colorado Physician Health Program
700 E. 9th Avenue
Denver, CO 80203
(303) 860-0122
1-800-927-0122

N.U.R.S.E.S. of Colorado Corporation
Colorado Nurses Association
Elizabeth M. Pace, RN, BS
P.O. Box 81294
Denver, CO 80206
(303) 758-0596

CONNECTICUT
Physician Health Committee
Connecticut State Medical Society
160 Saint Ronan Street
New Haven, CT 06511
(203) 865-0587
Hotline: 1-800-835-7740

Connecticut Nurses Intervention Program
210 Bradley Avenue
Meriden, CT 06450
(203) 235-5863

DELAWARE
Physicians’ Health Committee
Medical Society of Delaware
1925 Lovering Avenue
Wilmington, DE 19806
(302) 658-7596
Helpline: (302) 654-1001

Impaired Nurse Peer Assistance Committee
Delaware Nurses Association
L. Alberta Regan, RN, MSN
53 Stanford Court
Wilmington, DE 19804
(302) 994-5538 (daytime or evening)
(302) 366-1775 (hotline)

DISTRICT OF COLUMBIA
Physicians Health Committee
Med. Soc. of the District of Columbia
1707 L Street, N.W., Suite 400
Washington, D.C. 20036
(202) 465-1800
Helpline: (202) 466-1809

FLORIDA
Impaired Physician Program
Florida Medical Association
PO Box 1881
Fernandina Beach, FL 32034
(904) 277-8004
Hotline: 1-800-888-8776

Intervention Project for Nurses (IPN)
Linda Smith, RN
1200 Gulf Life Drive, Suite 915
Jacksonville, FL 32202
(904) 348-2720

GEORGIA
Impaired Physician Program
Medical Association of Georgia
938 Peachtree St., N.E.
Atlanta, GA 30309
(404) 876-7535
1-800-282-0224

Georgia Nurses Association Impaired Nurse Comm.
Georgia State Nurses Association
Rose Robinson, RN, MSN
1362 W. Peachtree, N.W.
Atlanta, GA 30309
(404) 721-2079 (daytime)
(404) 863-7383 (evening)

HAWAII
Impaired Physicians Program
Hawaii Medical Association
1360 S. Beretania Street, 2nd Floor
Honolulu, HI 96814
(808) 536-7702

IDAHO
Impaired Physician Program
Idaho Medical Association
305 W. Jefferson
PO Box 2668
Boise, ID 83701
(208) 344-7888

Idaho Nurse Peer Assistance Program
Idaho Nurses Association
Diane Johnson
8409 Willowdale Drive
Boise, ID 83714
(208) 336-5100 ext. 7225 (daytime)
(208) 375-9579 (evening)

ILLINOIS
Physician Assistance Program
Illinois State Medical Society
20 N. Michigan Avenue, #700
Chicago, IL 60602
(312) 782-1854
Hotline: (312) 580-2499

Peer Assistance Network for Nurses
Illinois Nurses Association
Monica M. Russell, RN, BSN, Ed.
20 North Wacker Drive, Suite 2520
Chicago, IL 60606
(312) 238-9708 (daytime)

INDIANA
Physician Assistance Program
Indiana State Medical Association
322 Canal Walk
Indianapolis, IN 46202-3252
(317) 261-2060
1-800-257-4762

Peer Review and Assistance Program for
Registered Nurses
Indiana State Nurses Association
Ernest C. Klein, Jr.
2915 North High School Road
Indianapolis, IN 46224
(317) 299-4575 (daytime)

IOWA
Impaired Physician Program
Iowa Medical Society
1001 Grand Avenue
West Des Moines, IA 50265
(515) 223-1401
Helpline: 1-800-747-3070

Peer Assistance Program Planning Committee
Iowa Nurses Association
100 Court Avenue
Suite 9 LL
Des Moines, IA 50309
1-800-383-Nurse

KANSAS
Impaired Physician Program
Kansan Medical Society
623 W. 10th Avenue
Topeka, KS 66612
(913) 235-2583
1-800-332-0156

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Appendix (Continued)

KENTUCKY
Impaired Physician Program
Kentucky Medical Association
301 North Hurstbourne Parkway, Suite 200
Louisville, KY 40222-8512
(502) 426-8200

Nurses Assisting Nurses
Melva Jo Hendrix, RN, DNSc, FAAN
University of Kentucky
College of Nursing
760 Rose Street
Lexington, KY 40536
(606) 257-1587 (daytime)

LOUISIANA
Impaired Physician Program
Louisiana State Medical Society
3501 N. Causeway Blvd., Suite 800
Metairie, LA 70002
(504) 832-9815
1-800-375-9508

Recovering Nurse Program
150 Baronne Street, Suite 912
New Orleans, LA 70112
(504) 588-5484

MAINE
Committee on Physician Health
Maine Medical Association
PO Box 190, Association Drive
Manchester, ME 03151
(207) 623-9266

MARYLAND
Physician Rehabilitation Program
Medical and Chirurgical Faculty of Maryland
1204 Maryland Avenue
Baltimore, MD 21201
(410) 962-5580
1-800-992-7010
Hotline: (410) 727-0120

Impaired Nurses Committee
Maryland Nurses Association, Inc.
Marla C. McCarthy, RN, MS, CS
401 Kennington Road
Baltimore, MD 21229
(301) 233-3342 (daytime/evening)

MASSACHUSETTS
Special Physician Services
Massachusetts Medical Society
1440 Main Street
Waltham, MA 02254
(617) 893-4610

The Massachusetts Nurses Association
Peer Assistance Program
Massachusetts Nurses Association
Department of Nursing Staff
340 Turnpike Street
Canton, MA 02021
(617) 821-4625 (daytime)

MICHIGAN
Impaired Physicians Program
Michigan State Medical Society
120 W. Seguinaw, P.W. Box 950
East Lansing, MI 48826-0950
(517) 337-1351

Michigan Impaired Professional Functioning Committee
Michigan Nurses Association
Shelita Aboud
2310 Jolly Oak Road
Okemos, MI 48864
(517) 349-5640

MINNESOTA
Impaired Physician Program
Minnesota Medical Association
2221 University Avenue, S.E., #400
Minneapolis, MN 55414
(612) 378-1875
1-800-999-1875

The Minnesota Nurses Association’s Peer Assistance Program for Nurses
Minnesota Nurses Association
Grethchen Lindgren
1235 Bandana Boulevard North
St. Paul, MN 55108
(651) 646-4807

MISSISSIPPI
Impaired Professional Program
Mississippi State Medical Association
735 Riverside Drive
Jackson, MS 39202-1166
(601) 354-4446
Hotline: 1-800-844-1446
The Mississippi Nurses’ Foundation’s Educational Resource Committee
Mississippi Nurses Association
David Allday, RN, C., CCRN
135 Bounds Street
Jackson, MS 39206
(601) 982-9183

MISSOURI
Missouri Physicians Health Program
Missouri State Medical Association
113 Madison Street
PO Box 1028
Jefferson City, MO 65102
(314) 636-5151
Hotline: (314) 768-4990
The Missouri Nurses Association Peer Assistance Program
Missouri Nurses Association
Belinda Helmericks, RN, MSN
P.O. Box 325
206 East Dunklin Street
Jefferson City, MO 65102
(314) 636-4823

MONTANA
Montana Medical Association
2021 11th Avenue, Suite 1
Helena, MT 59601
(406) 443-4000
Hotline: (406) 443-7062

NEBRASKA
Physician Advocacy Committee
Nebraska Medical Association
1512 FirstTier Bank Building
Lincoln, NE 68508
(402) 474-4472
Licensee Assistance Program
Malcolm Heard, Director
Division of Alcohol and Drug Abuse
Department of Public Institutions
P.O. Box 94728
Lincoln, NE 68509-4728
(402) 471-2851

NEVADA
Impaired Physician Program
Nevada State Medical Association
3660 Baker Lane, #101
Reno, NV 89509
(702) 825-6788
Washee Cty. Medical Society—Reno
(702) 825-0278
Clark Cty. Medical Society—Las Vegas
(702) 739-9989
Disability Advisory Committee
Nevada Board of Nursing
2670 Chandler #9
Las Vegas, NV 89120
(702) 739-1575

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NEW HAMPSHIRE
Physician Effectiveness Committee
New Hampshire Medical Society
7 N. State Street
Concord, NH 03301
(603) 224-1909

Nurses Peer Assistance Group
New Hampshire Nurses Association
48 West Street
Concord, NH 03301
(603) 224-3632 Hotline

NEW JERSEY
Impaired Physicians Program
Medical Society of New Jersey
2 Princess Road
Lawrenceville, NJ 08648
(609) 896-1766

Peer Assistance Committee
New Jersey State Nurses Association
Dorothy Fleming, RN, MSN
320 West State Street
Trenton, NJ 08618
(609) 392-4884 (daytime)
(609) 662-0108 (hotline)

NEW MEXICO
Physicians Aid Committee
New Mexico Medical Society
401 San Pedro N.E., Suite G
Albuquerque, NM 87108
(505) 266-6199

Committee to Assist Nurses Recover
New Mexico Nurses Association
Florence Hendrickson, RN
909 Virginia N.E., Suite 101
Albuquerque, NM 87108
(505) 268-7744

NEW YORK
Committee for Physicians Health
Med. Soc. of the State of New York
16 The Sage Estate, Suite 302
Albany, NY 12204
(518) 436-4723
Hotline: 1-800-338-1833

The Committee on Impaired Nursing Practice
New York State Nurses Association
Gail K. DeMarco, RN, MS
2113 Western Avenue
Guilderland, NY 12084-9501
(518) 456-5571

NORTH CAROLINA
Physician Health and Effectiveness Program
North Carolina Medical Society
Six Forks Center One
4700 Six Forks Road, Suite 220
Raleigh, NC 27609
(919) 881-0585

North Carolina Nurses Association Peer Assistance Program
North Carolina Nurses Association
Hazel Moore
P.O. Box 12025
Raleigh, NC 27605
(919) 821-4290

NORTH DAKOTA
Committee on the Impaired Physician
North Dakota Medical Association
PO Box 1198
Bismarck, ND 58502
(701) 223-9475
Hotline: 1-800-732-9477

Nurse Advocacy Program (NAP)
Karen McDonald
North Dakota Board of Nursing
919 South 7th Street, Suite 504
Bismarck, ND 58504-5881
(701) 224-2974

OHIO
Physician Effectiveness Program
Ohio State Medical Association
1500 Lake Shore Drive
Columbus, OH 43204-3824
(614) 496-2401

Ohio Nurses Association's Peer Assistance Program for Nurses
Ohio Nurses Association
Zandra Ochit, RN, MA
4000 East Main Street
Columbus, OH 43213-2950
(614) 237-5414 (daytime)
(614) 475-9745 (evening)

OKLAHOMA
Physician Recovery Program
Oklahoma State Medical Association
6704 W. Tucumcari
Norman, OK 73072
(405) 360-4595

Oklahoma Association of Nurse Anesthetists
Chemical Dependency Program
Dolores V. Pasierb, CRNA
604 Broad Lane
Norman, OK 73069
(405) 321-0849

OREGON
Physicians' Committee
Oregon Medical Association
5210 S.W. Corbett Avenue
Portland, OR 97201
(503) 226-1555

Nurse Assistance Network
Oregon Nurses Association
Ginny Pecora, RN
616 East 16th Street
Eugene, OR 97401
(503) 687-1110 (daytime)
(503) 687-9429 (evening)

PENNSYLVANIA
Physicians' Health Programs
Pennsylvania Medical Society
777 E. Park Drive
PO Box 8820
Harrisburg, PA 17105-8820
(717) 558-7750
Hotline: (717) 558-7817

Pennsylvania Nurses Association
Eva Bering, RN, MHA
Administrator, Nursing Practice Program
2578 Interstate Drive
Harrisburg, PA 17110
(717) 655-1222
FAX: (717) 657-3796

PUERTO RICO
Comité de Asistencia al Medico Impedido
Medical Society of Puerto Rico
PO Box 9387
San Juan, PR 00908
(809) 721-8989
FAX: (809) 722-1191

RHODE ISLAND
Physicians' Health Services Committee
Rhode Island Medical Society
106 Francis Street
Providence, RI 02903
(401) 391-9207

Rhode Island State Nurses' Association Peer Assistance Program
Rhode Island State Nurses Association
Sharon Prusik, RN, CD, CAC
1/o Rhode Island Employee Assistance Program
120 Centerville Road
Warwick, RI 02886
1-800-445-1195

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SOUTH CAROLINA
Physicians Advocacy and Assistance
South Carolina Medical Association
PO Box 11188
Columbia, SC 29211
(803) 798-6207
(803) 256-2483
Hotline: (803) 798-6979

Peer Assistance Program for Chemically Dependent Nurses
South Carolina Nurses Association
Kathryn Pearson, RN, MS
1821 Gadsden Street
Columbia, SC 29201
(803) 225-4781

SOUTH DAKOTA
Physicians HELP Program
South Dakota State Medical Association
1225 S. Minnesota Avenue
Sioux Falls, SD 57105
(605) 336-1965

TENNESSEE
Impaired Physicians Program
Tennessee Medical Association
2301 21st Avenue South
PO Box 120909
Nashville, TN 37212-0909
(615) 385-2100
Hotline: (615) 385-3319

Peer Assistance Program for Chemically Dependent Nurses
Tennessee Nurses Association
545 Mainstream Drive, Suite 405
Nashville, TN 37228-1207
(615) 254-0350

UTAH
Impaired Physicians Program
Utah Medical Association
540 East, 500 South
Salt Lake City, UT 84102
(801) 935-7477

Nurses Assisting Nurses with Substance Abuse
Utah Nurses Association
Nadine Ward, M.Sc., RN, NANSU
3125 East 500 South
Salt Lake City, UT 84105
(801) 322-3439

VERMONT
Vermont Recovering Professionals Program
137 Main Street
Montpelier, VT 05602
1-800-232-0131

VIRGINIA
Physicians' Health and Effectiveness Program
Medical Society of Virginia
4205 Dover Road
Richmond, VA 23221
(804) 355-2721

Virginia Nurses Association's Peer Assistance for Chemically Dependent Nurses
Virginia Nurses Association
1311 High Point Avenue
Richmond, VA 23261
1-800-868-6877

WASHINGTON
Washington Physicians' Health Program
Washington State Medical Association
901 Boren, Suite 1660
Cabrini Medical Tower
Seattle, WA 98104
(206) 563-0127
1-800-552-7236

Department of Health
Washington Health Professional Services
P.O. Box 47871
Olympia, WA 98504-7871
(206) 753-2246
FAX: (206) 753-9100

WEST VIRGINIA
Physician Health and Well Being Committee
West Virginia State Medical Association
PO Box 4105
Charleston, WV 25364
(304) 225-0342

WISCONSIN
Impaired Physician Program
State Medical Society of Wisconsin
PO Box 1109
Madison, WI 53701
(608) 257-6781
1-800-362-9080

Wisconsin Professionals Procedure (IPP)
Department of Regulation & Licensure
P.O. Box 8935
Madison, WI 53708
Attention: Lee Ann Cooper
(608) 267-9893

WYOMING
Committee for Impaired Physicians
Wyoming Medical Society
PO Box 4009
Cheyenne, WY 82003
(307) 633-2424

OTHER PLACES TO SEEK HELP:

AMERICAN SOCIETY OF ANESTHESIOLOGISTS
520 North Northwest Highway
Park Ridge, IL 60068-2573
1-800-562-8666

AMERICAN ASSOCIATION OF NURSE ANESTHETISTS
Chairman, Peer Assistance Advisors
216 Higgins Road
Park Ridge, IL 60068-5790
1-800-433-3786 (Inside Illinois)
1-800-654-5167 (outside Illinois)