OVERVIEW OF MEDICAL EDUCATION IN SUBSTANCE ABUSE

Research consistently demonstrates that substance use disorders (SUDs) constitute a major public health problem. For example, drug abuse is responsible for more than 25,000 deaths annually and $100 billion in total annual economic costs in the United States (Association for Medical Education and Research in Substance Abuse [AMERSA], 2002a). Alcohol use in the United States is estimated to be responsible for 100,000 deaths annually and a health care cost of $185 billion (Fiellin et al., 2002). Patients with alcohol problems consume more than 15 percent of the national health care budget, with 39 percent of these costs representing morbidity costs from secondary health and social effects. Recent surveys indicate that roughly 40 million Americans drink in excess of recommended amounts, and approximately 70 percent of adults visit a physician once every two years (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2001).

The general health care system in the United States offers an ideal opportunity to identify and treat these people and thereby reduce associated adverse health, family, and societal effects. Practitioners from various disciplines, including physicians, nurses, pharmacists, dentists, social workers, psychologists, and allied health professionals, are essential participants in national efforts to deal with these problems (Fleming, 2002). Physicians are particularly well-positioned to play a role in the recognition and treatment of patients with SUDs (National Institute on Drug Abuse [NIDA], 1998). Yet there is evidence that physicians are not adequately trained in the recognition and treatment of SUDs (Fiellin et al., 2002). In a survey of 1,082 physicians on their screening practices regarding illicit drug use, 68 percent reported that they regularly ask new outpatients about drug use. For diagnosed illicit drug abuse, 55 percent reported that they routinely offer formal treatment referral, but 15 percent reported that they do not intervene (Kessler et al., 1994). In a similar survey about alcohol problems, 88 percent of 853 respondent physicians indicated that they usually or always ask new outpatients about alcohol use. When evaluating patients who drink, 82 percent routinely offered intervention to problem drinkers (Bush et al., 1997), but only 13 percent used formal alcohol screening tools. A recent survey of emergency medicine residency directors revealed that only 25 percent provide education on specific screening questionnaires, and only 36 percent teach the NIAAA quantity and frequency guidelines for at-risk drinking (Lewis et al., 1987).

This report outlines the rationale for greater physician involvement in recognizing and treating patients with SUDs, describes current barriers to education in this field, and identifies the successes of prior efforts to improve physician education about SUDs. The following section describes core clinical competencies for all physicians, based on important work that has been done by a number of organizations over the past 30 years (American Medical Association [AMA], 1979; Lewis, 1994; AMERSA, 2002a, 2002b). A concluding section summarizes the long-term recommendations and immediate action steps outlined by the leaders in organized medicine, medical education, licensure and accreditation, and Federal health agencies who gathered for the Leadership Conference.

The Challenge of Substance Abuse

Federally supported research has led to unprecedented advances in our understanding of substance use disorders. Research funded by NIAAA and NIDA has identified the primary receptors for every major class of abused drug (including alcohol), identified their genetic code, and cloned the receptors (NIDA, 1994, 1996). The researchers have mapped the locations of those receptors in the brain and determined the neurotransmitter systems involved (Institute of Medicine, 1996). They have demonstrated the activation of these areas during addiction, withdrawal, and craving (Volkow et al., 1996); identified and separated the mechanisms underlying drug-seeking behavior and physical dependence (Maldonado et al., 1997); and developed animal models for drug self-administration (Koob, 2000). Most importantly, they have demonstrated that the mesolimbic dopamine system is the primary site of the dysfunction caused by abused drugs (Wise, 1996).

Outcomes studies supported by the Center for Substance Abuse Prevention (CSAP) and the Center for Substance Abuse Treatment (CSAT) have developed a documented body of knowledge regarding "what works" in drug abuse prevention, as well as clear evidence that treatment of SUDs is at least as effective as the treatment of other chronic medical problems. Moreover, these studies have provided direction as to how to organize prevention and treatment for specific populations to increase the likelihood of success.

Such advances have provided a clear understanding that substance abuse is a preventable behavior and that addiction is a treatable disease of the brain. This paradigm shift provides unprecedented opportunities to achieve the overarching goal of the Office of National Drug Control Policy (ONDCP): to reduce the health and social consequences of substance misuse, abuse, and addiction throughout the United States.

However, there is a gap between research and clinical practice. It is ONDCP's goal to close this gap in the prevention, identification, and treatment of SUDs. In organizing the Leadership Conference, ONDCP sought the advice of experts in medical education, licensure, and accreditation, as well as addiction medicine and the other medical specialties, as to specific steps that can be taken to increase primary care physicians' awareness of SUDs and their motivation and knowledge to incorporate the findings of recent research into their clinical practices. It thus represents a further step in ONDCP's long-term efforts to foster the adoption of evidence-based prevention and treatment interventions. The benefits of adopting such "best practices" are clear. For example, pediatricians who are knowledgeable about the risk and protective factors for adolescent drug use may be able to work with their young patients and their families to strengthen protective factors while diminishing risk factors.

Why Is It Important to Reach Primary Care Physicians?

SUDs are associated with many of the Nation's most serious and tragic problems, including violence, injury, disease, and death. Indeed, it has been estimated that, of the more than 2 million deaths in the United States each year, approximately one in four is attributable to alcohol, tobacco, or other drug use (AMERSA, 2002b). Some groups, such as members of ethnic and cultural minority populations, are disproportionately affected by the consequences of drug abuse and addiction. Moreover, it is estimated that one out of four children in the United States under 18 years of age is exposed to alcohol abuse or alcohol dependence in the family — a figure magnified by the countless numbers of other children adversely affected by parents and other caregivers who are impaired by use of other psychoactive drugs (AMERSA, 2002a).

As part of the President's National Drug Control Strategy, ONDCP has committed to intensifying its efforts in all areas of public and practitioner education. The strategy also commits ONDCP to a special effort to address the problem of misuse and abuse of prescription medications.

As noted earlier, Federally funded research and outcomes studies hold the potential for important progress in preventing and treating SUDs. Unfortunately, we have not made similar progress in another key area that holds tremendous potential: the education and training of the health care workforce. Far too little attention has been paid to educating primary care physicians and other health professionals — nurses, dentists, physician assistants, psychologists, pharmacists, social workers, and others — to respond to the needs of the millions of individuals and families affected by SUDs.

As a result, primary care physicians do not identify and diagnose alcohol and drug problems with the same acuity they bring to other medical disorders. The role of these front-line health professionals in prevention, early identification, and referral thus remains largely untapped. Yet primary care physicians are in an ideal position to provide preventive guidance, education, and intervention to children, adolescents, adults, and their families. In fact, it has been estimated that up to 20 percent of visits to primary care physicians are related to such problems (Bradley, 1994). Moreover, patients with alcohol and other drug problems are twice as likely to consult a primary care physician as individuals without such problems (Rush, 1989).

Recent research shows that the public ***wants*** such help from their caregivers. For example, in a public opinion survey conducted by the Harvard School of Public Health and The Robert Wood Johnson Foundation (2000), 74 percent of respondents said they believe that addicts can stop using drugs, but that to do so they need help from professionals or organizations outside their families. By "help," two-thirds said they meant intervention by a health care professional.

Research also shows that physicians play an important role in their patients' health decisions. For example, a recent review of brief interventions for alcohol and drug problems concluded that primary care physicians can be effective in changing the course of patients' harmful drinking (Bien et al., 1993; Fleming et al., 1997). Smoking cessation research shows that a physician's statement to quit smoking is enough to convince many patients to undertake such an effort. And interventions by emergency physicians have been shown to reduce subsequent alcohol use and readmission for traumatic injuries (Gentilello et al., 1999), as well as drinking and driving, traffic violations, alcohol-related injuries, and alcohol-related problems among 18- and 19-year-olds (Monti et al., 1999).

Moreover, a small number of physicians inappropriately prescribe therapeutic medications that have abuse potential, thus inducing or sustaining SUDs in their patients and others to whom such drugs may be given or resold. This poses an

additional educational challenge: how to provide training in the clinical, legal, and ethical issues involved in prescribing drugs with abuse potential as part of undergraduate, graduate, and continuing medical education in all specialties. At the completion of each level of training, physicians should be able to demonstrate that they have the knowledge and skills required to prescribe in a therapeutic manner to their patients, including patients at risk for, presenting with, or with a history of SUDs, so as to minimize the risk of inducing or perpetuating prescription drug misuse or abuse.

Unfortunately, although primary care physicians are the professionals most often cited by patients and families as the "most appropriate" source of advice and guidance about issues related to the use of alcohol, tobacco, and other drugs (including prescription drugs), they also are reported to be the "least helpful" in actually addressing these issues. The diagnosis of drug abuse or addiction often is missed by physicians and, even when such a diagnosis is made, many physicians do not know how to do a brief intervention or develop an organized plan for patient referral or treatment. Clearly the basic clinical skills of screening, assessment, presenting the diagnosis, negotiating a treatment plan, and ongoing monitoring — all skills that physicians routinely employ in the management of other chronic disorders — need attention when it comes to drug abuse and addiction (Conigliaro et al., 2003).

Core Values and Paradigms of Physicians

Feillin and colleagues (2002) note that physicians' core values include the restoration of health, patient comfort, and quality of life whenever possible. These values are congruent with the diagnosis and treatment of patients with SUDs. Although many physicians are well equipped to treat the medical and psychiatric complications of substance abuse, most are not prepared to treat substance abuse as a primary disorder. Despite the high prevalence of SUDs in the general population (Kessler et al., 1994), and their increased prevalence in medical settings (Bush et al., 1987), most physicians receive limited training in the science of addiction. This lack of training frequently results in missed opportunities for care.

The biomedical model — a central paradigm for physicians — is based on the concept that disease is the result of perturbations in anatomy or physiology and stems from a combination of genetic, behavioral, and biologic phenomena. The recognition that SUDs fit the criteria for the disease model (Lewis et al., 1987; Page, 1988), given validity by the AMA in 1966 (AMA, 1966), came during a time of discoveries regarding the genetic, physiologic, and behavioral factors involved in the etiology, natural history, and treatment of these disorders (Nestler & Aghajanian, 1997).

This biomedical "legitimacy," running counter to the popular misconception that these disorders stem from weakness of the will (Dole, 1988; Musto, 1992), provides support for the expansion of physicians' efforts on behalf of patients with SUDs. The disease model, particularly the recognition that, for many patients, SUDs are chronic diseases with periods of remission and relapse (McLellan et al., 2000), has provided a basis for physicians to modify the natural history of these disorders and to intervene at stages ranging from at-risk use to abuse and dependence using standard medical approaches, such as prevention, pharmacotherapy, and counseling. Recent efforts have focused on incorporating evidence-based medicine into the treatment of patients with SUDs (Fiellin et al., 1988, 2000; McCrady & Langenbucher, 1996; Mayo-Smith, 1997; Wilk et al., 1997), which should help assure patients the full benefits of basic, clinical and services research.

Physician Training.

Practicing physicians in the United States must have obtained either an M.D. (doctor of medicine or allopathic physician) or a D.O. (doctor of osteopathy) degree (Fiellin et al., 2002). Physicians with an M.D. degree represent approximately 93.5 percent of the current physician workforce, with osteopathic physicians representing just over 6.5 percent of the Nation's physicians.

Physicians can be broadly classified as generalists or specialists. Generalist physicians provide primary and longitudinal care to patients in the fields of pediatrics, internal medicine, obstetrics/gynecology, and family medicine; in the case of emergency medicine, primary care is provided in the emergency setting. By contrast, specialist physicians typically provide care focused either by organ system (e.g., gastroenterology, cardiology) or by technical expertise (e.g., interventional radiology, plastic surgery).

Generalist and specialty medical care is delivered in a variety of clinical settings. The majority of patient care is rendered in outpatient settings, such as private offices, clinics, community health centers, urgent care centers, surgical centers, and emergency departments. A much smaller percentage of patient care is delivered in hospital settings; however, because of the intensity of services provided in the hospital, care provided in that setting consumes a disproportionate share of health care dollars. Individuals with SUDs are disproportionately high consumers of hospital-based services, which makes hospitals a particularly important setting for offering substance abuse screening, intervention, and referral services.

Development of Physician Training About SUDs.

Early physician involvement in the care of patients with SUDs focused primarily on the adverse medical complications of alcohol and other substances and tended to have limited effectiveness because it was not based on a recognition of

the disease process. More recent involvement by physicians in the treatment of patients with these disorders has paralleled societal tolerances to the problems of addiction (Musto, 1992). Physicians in the late 19th and early 20th centuries used medicinal compounds that often included high concentrations of alcohol, opium, codeine, heroin, and cocaine. Heroin was used for the treatment of cough, and cocaine was used for allergy symptoms (Musto, 1992). At the turn of the 20th century, physicians providing maintenance treatment for patients with opioid dependence were halted by the Harrison Narcotic Act of 1914 and a Federal legislative policy against maintenance that accompanied Prohibition in 1919 (Musto, 1992).

Later 20th-century physician efforts in the treatment of SUDs include, among others, research on the natural history and mechanism of the alcohol withdrawal syndrome (Victor, 1966; Bill, 1994), the demonstration of the effectiveness of methadone maintenance for opioid dependence (Dole, 1965), and the recognition of the adverse effects of alcohol on fetal development (American Academy of Pediatrics, 2000). Physicians have also been involved in developing and implementing effective psychosocial treatments for SUDs, including motivational techniques, cognitive behavioral therapy, contingency management, and self-help group facilitation (Carroll & Schottenfeld, 1997).

Key elements of these psychosocial interventions have been identified and used successfully by physicians during brief interventions with patients who have SUDs (Bien et al., 1993; Wilk et al., 1997). Recent advances in understanding the neurochemical basis of SUDs have allowed physicians to use pharmacological interventions such as the approval of buprenorphine and naltrexone for the treatment of drug addiction, and of acamprosate for the prevention of alcohol relapse (American College of Physicians, 1989; O'Malley et al., 1992; Volpicelli et al., 1992; Nestler & Aghajanian, 1997; O'Brien, 1997; O'Connor et al., 1997; Fiellin et al., 2000). Pharmacotherapies that have been successfully used by physicians for detoxification and relapse prevention of opioid dependence include methadone, buprenorphine, naltrexone, clonidine, and lofexidine (Dole, 1965; Newman, 1987; O'Connor et al., 1988; Strain et al., 1993, 1999; Ling et al., 1988; O'Connor & Kosten, 1998).

Enhanced efforts to train physicians in the care of patients with SUDs resulted from the increase in substance abuse during the 1960s and continued progress in understanding the biomedical basis of these disorders.

One of the earliest meetings called to discuss deficiencies in the traditional medical school curriculum and the need for better professional training was sponsored by the National Council on Alcoholism in 1970 (NIDA, 1998). Early efforts by the AMA and the Medical Society on Alcoholism also were directed toward increasing physician education about SUDs (Lewis et al., 1987). Later, Federal funding for the Career Teacher Program in the Addictions provided faculty support to 59 medical schools and represented a successful effort to increase the number of academic physicians who could teach other physicians about SUDs (Fleming, 1994). One result of this program was the creation in NIAAA and NIDA of offices to administer efforts to improve alcohol and drug abuse education for health professionals (NIDA, 1998). In addition, two prominent research societies, the Research Society on Alcoholism and the Committee on Problems of Drug Dependence, have provided a national and international forum for sharing current research findings.

A landmark conference held at the AMERSA Ninth Annual Meeting in 1985 addressed the issues of the minimal alcohol and drug abuse knowledge and skills for physicians. The conferees concluded that information on SUDs should be routinely integrated with preclinical course work and repeated during subsequent years (NIDA, 1998).

Concurrent with these early programs were efforts to provide resources and faculty development, including Project CORK (Lewis et al., 1987) and Project ADEPT (Dube et al., 1989) and efforts by members of the Society of General Internal Medicine and the Society of Teachers of Family Medicine, the Ambulatory Pediatric Association, the American Psychiatric Association, the American College of Emergency Physicians, and the American College of Obstetricians and Gynecologists (ACOG) (Graham et al., 1997). Seven-year follow-up of one of these programs demonstrated ongoing success in promoting publications, presentations at national meetings, and clinical teaching by the fellowship participants (Graham et al., 1997).

More recently, Federal support for faculty development in substance abuse education and training has come through the Federal Medicine Grants Program and the Faculty Development Program, established in 1989 by CSAP, NIAAA, and NIDA. Between 1989 and 1995, the Faculty Development Program provided grants to 14 medical schools supporting 69 faculty fellows in pediatrics (26 percent), internal medicine (22 percent), psychiatry (19 percent), family medicine (14 percent), and obstetrics/gynecology (nine percent). A recent evaluation of this program found that it produced significant increases over the six-year period in faculty activity in SUDs, as measured by faculty time, publications, grants, and course work (Cosmos Corporation, n.d.). For instance, faculty fellows with substance abuse-related grants increased from eight percent at year one to 26 percent at year five. Similarly, the percentage of Faculty Development Program project directors who were awarded new substance abuse-related grants increased from 15 percent during year one to 55 percent at year five (AMERSA, 2002b).

Another recent model of successful faculty development is represented by Project SAEFP (Substance Abuse Education for Family Physicians) in which 165 faculty participated in a five-day course using learner-centered teaching techniques. An evaluation of this program revealed a two- to threefold increase in substance abuse teaching activities by faculty with residents and medical students 12 months after the completion of the course (Fleming et al., 1994).

In summary, faculty development programs designed to bring about substantive increases in the number of faculty who are trained to provide clinical teaching in the area of SUDs have repeatedly demonstrated success in achieving these goals. Faculty participants have increased their teaching; maintained continued scholarly work, including manuscripts and presentations at national meetings; and secured grant funding to continue research and education in the field of SUDs.

Defining the Core Competencies

The critical core competencies for physicians include a firm understanding of the basic biomedical sciences (e.g., molecular biology, genetics, anatomy, physiology, pharmacology, pathology) and the clinical sciences (e.g., patient interviewing, physical diagnosis, diagnostic reasoning, clinical epidemiology, and psychosocial counseling techniques). All of these competencies have direct application to the care of patients with SUDs (Fiellin et al., 2002). These competencies encompass knowledge and skills in the following areas:

1. **Screening, Prevention, and Brief Intervention.** Physicians should know how and when to screen patients for SUDs and how to perform preventive counseling and brief interventions, as appropriate.
2. **Co-Occurring Medical and Psychiatric Disorders.** Physicians should understand the medical and psychiatric comorbidities and complications of substance use disorders. They also should be able to evaluate patients with such co-occurring disorders and complications and refer patients to specialized treatment services that match the patients' individual treatment needs. Physicians also should be prepared to provide ongoing medical monitoring and to address the needs of special populations, such as adolescents and older adults.
3. **Prescribing Drugs with Abuse Potential.** Physicians should understand and be prepared to address the clinical, legal, and ethical considerations involved in prescribing medications with abuse potential, so as to minimize the risk of inducing or perpetuating prescription drug misuse or abuse.

Each of these competencies is relevant to all disciplines and specialties. In addition, physician education can and should be tailored to specific practice situations and patient populations. For example, pediatricians have a special need for knowledge about SUDs as developmental disorders and the skills to perform screening, intervention, and referral. Such physicians also need to consider the issues raised by children and adolescents whose parents or other caregivers have SUDs and to acquire skills in screening and intervention in these situations. Similarly, specialists in obstetrics/gynecology need the knowledge and skills to address substance-related problems in pregnant and parenting women.

Because primary care physicians serve diverse populations of patients in terms of gender, socioeconomic status, and culture, they also must be culturally competent in communicating with patients and their families.

Screening, Prevention, and Brief Intervention. Physicians should know how and when to screen patients for unrecognized SUDs and how to perform preventive counseling and brief interventions, as appropriate.

Screening for diseases is warranted if the following conditions are met: the disease has a significant prevalence and consequences; effective and acceptable treatments are available; early identification and treatment are preferable; and there are effective screening instruments available that are easy to administer. Strong research evidence supports the fact that SUDs meet all of these criteria; therefore, screening for SUDs is indicated although not often implemented (Fleming, 2002).

Screening for SUDs may involve (1) direct questioning by a physician or other health care professional; (2) self-administered questionnaires, completed by the patient with pencil and paper or computer; and (3) laboratory tests. Many of these methods have excellent psychometric properties that are comparable to a single measurement of blood pressure as a screening test for hypertension, a fasting blood glucose test to detect diabetes, a mammogram to identify early breast cancer, or a prostate-specific antigen test to detect prostate cancer. Less information is available on screening for drug problems. While evidence for the effectiveness of various screening methods is not as strong as for alcohol, a number of instruments and methods are available. The overall reliability and validity of screening methods to detect alcohol and drug use vary by the method of administration of the test, the clinical setting, and the population of interest. Consumption questions that focus on frequency, quantity, and bingeing are widely recommended as initial screening questions for use in clinical settings (NIAAA, 1998).

Physician training should include attention to the rationale, utility, operating characteristics, and use of various screening methods, including the importance of raising the topic during history-taking and the appropriate use of formal screening instruments (e.g., CAGE, AUDIT), quantity-

frequency questions, and biological markers (e.g., MCV, AST, ALT, carbohydrate-deficient transferrin).

Similarly, physicians should be able to provide preventive counseling to patients at risk for SUDs and brief interventions to those who screen positive for such disorders, using techniques for which effectiveness has been demonstrated in outcomes studies. Prevention of harm from the use of psychoactive substances can help decrease the impact of SUDs on the individual and society. For example, reducing alcohol consumption among pregnant women can reduce the incidence of fetal alcohol syndrome and the more subtle fetal alcohol effect.

In addition, preventive counseling and brief interventions have been shown to be effective in decreasing progression to more severe alcohol or drug problems, which typically are less amenable to treatment. Brief interventions are time-limited, patient-centered counseling strategies that focus on changing behavior and increasing medication compliance. Brief intervention is not unique to the treatment of SUDs; in fact, this strategy is widely used by physicians to address other behaviors. For example, brief interventions are used to help patients change dietary habits, reduce weight, stop smoking, reduce cholesterol or blood pressure, and take medications as prescribed (Fleming, 2002).

Brief intervention is useful in three clinical situations. First, it can reduce alcohol use and the risk of alcohol-related problems in nondependent drinkers who are consuming alcohol above recommended limits. The goal of brief intervention with this population is to reduce consumption or negative consequences, not abstinence. Second, brief intervention may be used to facilitate medication compliance and abstinence (noncompliance is a major issue with patients receiving medication for alcohol problems and co-occurring psychiatric disorders). Finally, brief intervention may be used to facilitate the referral of persons who do not respond to brief counseling alone. Services research shows that most patients who are referred for an assessment or counseling either do not schedule an appointment or fail to keep the appointment. Brief intervention can greatly facilitate this process and increase the probability that the patient will successfully follow through with the referral (Fleming, 2002).

While the full range of risk factors for SUDs, including specific genetic markers, are still being elucidated, and the determinants of progression from substance use to misuse to abuse and addiction are under ongoing evaluation, it is clear that early recognition and intervention by physicians can be effective in decreasing progression from less severe to more severe SUDs. For example, there is evidence that brief interventions can reduce alcohol consumption to below hazardous levels for patients who are found to be engaged in hazardous or harmful drinking.

Training programs should devote specific attention to building physicians' knowledge and skills in these areas. For example, a required curriculum in screening, preventive counseling, and brief treatment interventions should be integrated into the standard curricula of all medical schools and residency training programs. Such a curriculum should outline the components of screening and brief intervention. Also, training in SUDs should devote attention to the effectiveness of office-based screening and interventions in primary care settings.

As a requirement for graduation, medical students should demonstrate competency in screening, preventive counseling, and brief treatment interventions, and licensing examinations should include content and questions relevant to appropriate strategies for identifying and intervening with individuals who are at risk for or experiencing SUDs. Increased curricular content also should be available through continuing medical education (CME) programs.

This objective has been endorsed by multiple medical organizations and public agencies, including ONDCP (in the 2004 National Drug Control Strategy), AMA (in policy statements adopted or reaffirmed in 1979, 1981, 1991, and 2001), the American Society of Addiction Medicine (ASAM) (in 1987), and others.

Identification and Management of Co-Occurring Substance Use and Medical or Psychiatric Disorders.

Physicians should be able to identify and treat or appropriately refer patients with co-occurring medical and psychiatric conditions and SUDs. In addition, physicians should be prepared to provide ongoing medical monitoring and to address the needs of special populations, such as adolescents and older adults.

Population studies consistently report high rates of comorbid medical and psychiatric disorders in patients with SUDs. For example, the Epidemiological Catchment Area and the National Comorbidity Studies report that 29 to 37 percent of patients diagnosed with alcohol problems have a co-occurring psychiatric disorder (most commonly mood and anxiety disorders, attention deficit disorder, and antisocial personality disorder). Similarly, alcohol or drug problems — as well as the route used to administer drugs (e.g., injection) — are associated with significant comorbid medical conditions such as hepatitis B and C, endocarditis, HIV/AIDS, tuberculosis, and cirrhosis.

Co-occurring disorders can be difficult to detect because substances of abuse can cause symptoms that are time-limited but indistinguishable from those seen in many other medical and psychiatric disorders; for example, substance withdrawal or acute intoxication can mimic almost any psychiatric disorder. On the other hand, treating the co-occurring disorder can markedly improve the outcome of treatment for the SUD.

Also, it is important to note that addiction to more than one substance is common among substance users. For example, nearly 35 percent of cocaine-dependent individuals are estimated to be alcohol-dependent (Carroll et al., 1998). Recognition of such comorbidities is an important factor in appropriate treatment.

Although at present there is little formal training in dual diagnosis for health care providers of any discipline except psychiatry, the addition of this level of sophistication in training and clinical care initiatives can provide an important component to clinical care and improve patient outcomes.

To assure that physicians achieve competence in this area, a curriculum addressing the medical and psychiatric comorbidities of SUDs should be integrated into the standard curricula of all medical schools and residency training programs. Similarly, curricula on the diagnosis and management of conditions that frequently coexist with SUDs, such as liver disorders, HIV/AIDS, and eating disorders, should contain information on the ways in which the symptoms, progression, and management of those disorders may be affected by an undiagnosed SUD.

Increased training on co-occurring disorders also should be available through CME. Such training programs should devote attention to the recognition, treatment, or referral of comorbid medical and psychiatric conditions in patients with SUDs.

This objective has been endorsed by multiple medical organizations and public agencies, including ONDCP (in the 2004 National Drug Control Strategy), AMA (in policy statements adopted or reaffirmed in 1979, 1981, 1991, and 2001), ASAM (in 1987), and others.

Prescribing Drugs with Abuse Potential and the Prevention of Prescription Drug Abuse.

An essential area of competence for physicians is the ability to understand and the skills to address the clinical, legal, and ethical considerations involved in prescribing medications with abuse potential, so as to minimize the risk of inducing or perpetuating prescription drug misuse or abuse.

Appropriate use of prescription drugs encompasses drug selection, communicating the treatment program to the appropriate individuals (patient, family, and other health professionals), correctly executing the prescription order, and monitoring the treatment program to determine if changes are needed to achieve optimum effectiveness and safety of drug therapy. Therapeutic use also involves avoidance of undermedication (underprescribing), overmedication (overprescribing), and drug misuse or abuse (AMA, 1981).

Undermedication occurs when the patient fails to receive adequate drug therapy. For example, the negative impact of excessive concern about psychological and/or physical dependence is revealed by reports that acute and chronic pain often is inadequately treated. Relief of suffering is a legitimate goal of medical practice. On the part of the physician, failure to provide such relief may result from timidity ("pharmacophobia"), incorrect assessment of problem severity, or lack of knowledge or faith in the value of a drug, even when its administration is indicated. Patients contribute to undermedication when they fail to convey the severity of their symptoms to the physician, or to use a prescribed drug in the amount and for the duration of time prescribed (often for economic reasons). Thus, the factors contributing to undermedication are diverse and span the fields of medicine, psychology, sociology, and economics.

Overmedication is the unjustified use of a drug. Overmedication occurs when a drug is used for an indication that is no longer accepted medical practice (obsolete), as determined by drug utilization criteria and standards; when there is no proper indication or sound scientific basis for such use; when administration continues despite proven ineffectiveness in curing the disease, disorder, or condition or ameliorating its symptoms; when more effective or less hazardous drugs are available; when the dose is excessive; when a combination drug is used even though only one of its components is indicated; or when more drugs are prescribed than are required (polypharmacy).

Prescription drug *misuse and abuse* involve the use of a drug, usually by self-administration, in a manner that deviates from approved medical, legal, and social standards. The issues of drug abuse and overmedication often are related.

That a small portion of medications are inappropriately prescribed by practitioners or misused or abused by patients and others raises an important policy issue: how to make medically useful drugs readily available for therapeutic use, while limiting access to them for non-therapeutic purposes. This policy mandate poses challenges very different from those of illicit drugs, because prescription drug problems must be prevented or curtailed without impeding patients' access to needed medical care.

To help physicians avoid the problems described above and achieve the desired level of competency, the conferees agreed that training in the clinical, legal, and ethical issues involved in prescribing drugs with abuse potential should be integrated into undergraduate, graduate, and continuing education programs in all specialties. Physicians who complete such training should be able to demonstrate that they have the knowledge and skills required to prescribe in a therapeutic manner to their patients, including patients at risk for, presenting with, or with a history of SUDs, so as to minimize the risk of inducing or perpetuating prescription drug misuse or abuse.

This objective has been endorsed by multiple medical organizations and public agencies, including ONDCP (in the 2004 National Drug Control Strategy), AMA (in policy statements adopted or reaffirmed in 1979, 1981, 1991, and 2001), ASAM (in 1987), and others.

What Are the Principal Challenges in Achieving These Competencies?

Despite general agreement that many patients seen in primary care settings are at risk for or experiencing a problem related to use of alcohol or other drugs, many primary care physicians do not feel adequately prepared to address the issue. For example, a survey of Fellows of the American Academy of Pediatrics (2001) found that only 45 percent routinely screened their patients for alcohol use, and many felt inadequately trained to do so. Moreover, given the limited amount of time they have to manage acute, chronic, and preventive care, as well as the volume of information that inundates their practices, primary care physicians report that they often feel overwhelmed. For example, in a survey of family practitioners, many reported that managed care contracts require them to see as many as four or five patients per hour (American Academy of Family Physicians [AAFP], 2003), leaving as little as 12 minutes for each patient visit.

Another significant challenge is the fact that the nature of drug abuse research is changing our understanding of the disorder. In addition, regional and national drug abuse patterns are constantly evolving; new drugs of abuse and new drug use technologies emerge with striking regularity. Such a rapidly evolving environment demands great flexibility of those who would understand and respond to it.

Like patterns of drug abuse, the nature of primary care practice also is evolving rapidly. Over the past decade, changes in health care organization and financing have required physicians in traditional areas of primary care (such as family medicine) to assume responsibility for treating conditions — such as chronic pain or coronary artery disease — that previously were the province of specialists. On the other hand, physicians in some medical specialties (notably obstetrics/gynecology and emergency medicine) have become de facto primary caregivers for a significant number of patients.

Finally, there is the problem that some physicians still do not regard drug abuse and addiction as biologically based medical disorders. It is interesting to note that opiate (Pert & Snyder, 1973) and lipoprotein (Brown & Goldstein, 1976) receptors were identified at approximately the same time, yet met entirely different reactions on the part of the medical profession and the public. On the one hand, the identification of lipoprotein stimulated a massive research effort that resulted in the discovery of extraordinarily effective cholesterol-lowering drugs (Hebert et al., 1997), which are used extensively by physicians and accepted by the public. On the other hand, despite our new understanding of the contributions of receptors to the development of addiction, until very recently there has been little interest in developing medications to treat addiction and poor acceptance by physicians and patients of those already approved.