

An Evaluation of Preventive Medicine Associates Incorporated
in a Changing Health Care Environment

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Preventive Medicine Associates, Incorporated (PMAI) offers primary-care to address the medical and substance abuse treatment needs of Massachusetts residents amid a changing health care environment. Since the Massachusetts substance abuse treatment system first evolved in the middle of the last century, the types of population drug problems and patient demographics have changed markedly. New medical treatment options have become available, and funding mechanisms for substance abuse treatment services have altered greatly. These changes represent significant new challenges and opportunities for substance abuse treatment providers. This report describes how Preventive Medicine Associates Incorporated can be understood as a private-sector adaptation to this new substance abuse treatment reality. The report also examines how the elements of PMAI's treatment model address many of the long-standing shortcomings of the substance abuse treatment system.

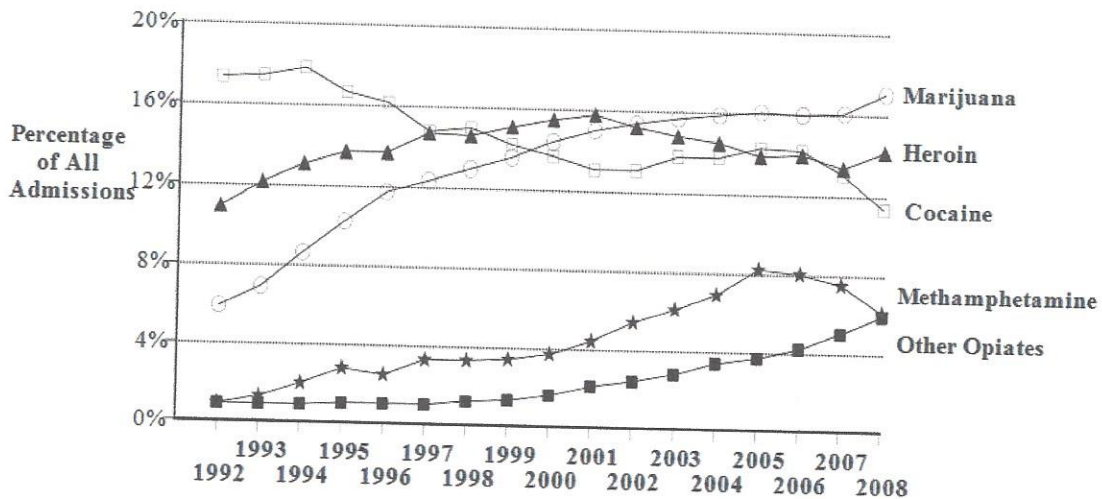
THE CHANGING DRUG SCENE

Today's drug problems are more than just marijuana abuse in the middle class suburbs and heroin and crack addiction in the inner-city minority populations. Prescription drug abuse, especially abuse of opioids such as Vicodin and OxyContin, has become the nation's fastest growing drug problem (Office of Applied Studies 2009). Since nonmedical drug use became a national phenomenon in the 1960s, most users would first try marijuana. Now, the first drug tried is as likely to be a prescription opioid (Office of Applied Studies 2009). The users of these drugs are mostly white middle or working class persons from suburban or rural areas who have health insurance. The hot spots on the east coast are in Appalachia, especially in West Virginia (78 primary non-heroin opioid admissions per 100,000 residents age 12 and over in fiscal year 2006) and Kentucky (48), and in New England, especially Maine (229 admissions per 100,000) and Vermont (192 in 2005; 2006 missing) (Office of Applied Studies 2008).

The non-heroin Treatment Episode Data Set (TEDS) admissions rate per 100,000 residents in Massachusetts (78) was lower than the rates in Maine and Vermont but still substantial when compared to prior years in Massachusetts and current rates in most other states. The Massachusetts non-heroin opioid treatment admissions rate per 100,000 residents in 2006 was nearly ten times higher than it was in 1996, and it is nearly three times higher than the national rate (29 per 100,000) in 2006. Between 1990 and 2007, opioid overdose deaths (heroin and prescription opioids) increased almost seven fold (678%) in Massachusetts (Massachusetts Department of Public Health 2009). In the decade from 1997 to 2007, the number of acute care hospital patients with opioid-related discharge diagnoses grew 85% in Massachusetts.

As a consequence, the total percentage of treatment admissions for narcotic addiction has increased markedly, even as admissions for treatment of heroin have remained mostly unchanged. According to the 2008 Treatment Episode Data Set (TEDS) (Office of Applied Studies 2010a), the percentage of all admissions that were for prescription opioids increased nationwide between 1998 and 2008 from 1% to 6%, while the percentage of treatment admissions for heroin declined slightly from 14.5% in 1997 to 14.1% in 2008. The increase in opioid admissions was the highest, while the second largest increase was 4% for marijuana. Tranquilizer admissions doubled in the decade (0.3% in 1998 to 0.6% in 2008) (see Figure 1).

Figure 1 National Treatment Admissions from 1992 to 2008



Recent studies of methadone and residential treatment clients, including a study in Massachusetts, have found that between 30% and 60% of them became addicted originally due to medical treatment of chronic pain with prescription opioids (Jamison et al. 2000; Rosenblum et al. 2003; Potter 2004; Brands et al. 2004). These percentages of iatrogenic addicts are far higher than they have been in the distant past. This change in the nature of drug problems could have profound long-term effects on treatment services that the population will require. The overall trend in prescription opioid problems stemming from medical and nonmedical use could also mark the beginning of a major worsening of national and local drug problems as the cases accumulate over time (Martins et al. 2010).

In a sample of 744 patients from one of PMAI's offices south of Boston, opioid addiction was the largest single drug problem. When asked in their initial intake interview to name their most severe substance problem, 41% named alcohol. The same percentage of TEDS primary admissions were for alcohol treatment nationwide in 2008 (Office of Applied Studies 2010). The remaining 59% of the PMAI patient sample described an addictive drug as their primary problem: 22% prescription opioids, 21% heroin, 13% cocaine, 2% marijuana, and less than 1% each for stimulants, tranquilizers, hallucinogens, and miscellaneous drugs. Analyzing prescription opioids and heroin together showed that they were the substances of choice for the largest proportion of patients (43%). The patients were also asked to name any other drug to which they were addicted. With primary, secondary, and tertiary addictions combined, 25% of the patients were addicted to heroin, 31% were addicted to a prescription opioid, and 1% were addicted to both heroin and one or more prescription opioids. Thus, a total of 57% of the sample were addicted to at least one opiate drug, with non-heroin opiates accounting for the largest proportion. Eighty-one percent of the sample was accounted for by primary alcohol and opioid admissions.

Although half of the sample (50%) took their substance primarily orally, 30% injected drugs some of the time, and 26% injected drugs primarily. Those patients were at high risk of a range of diseases including HIV/AIDS and hepatitis. The remainder of the patient sample primarily snorted drugs (16%) or smoked them (8%). Seventy-five percent (75%) of the sample

reported that they had a family history of substance abuse (alcohol or drugs).

Changing Client Demographics

The changing drug scene has widened the demographic distribution of drug abusers. Studies have long found that people who are addicted to illicit drugs such as heroin, cocaine, and marijuana differ demographically from those who are addicted to prescription drugs used for nonmedical purposes, and the difference is even greater for people who are addicted to prescription drugs used only for medical purposes (Wesson et al. 1978). According to the 2008 TEDS national admissions statistics (Office of Applied Studies 2010), clients admitted for treatment of alcohol use disorders were much more likely to be males than females (74% versus 26%), as were those admitted for treatment of disorders stemming from use of heroin (68% versus 32%) and marijuana (74% versus 26%). Clients admitted for treatment of use disorders involving amphetamines were more likely to be females than males (54% versus 46%), while nearly the same percentages of males and females were found among abusers of prescription opioids (53% males versus 47% females), tranquilizers (49% versus 51%), and sedatives (43% versus 57%). TEDS clients admitted in 2008 with nonmedical prescription opioid use disorders were younger on average than were those with heroin use disorders (32 versus 36 years respectively). In the national TEDS data base 39% of heroin-addicted admittees were 40 years or older, while 25% of prescription opioid-addicted admittees were 40 years or older. Persons admitted in 2008 for problems related to sedatives and tranquilizers had higher proportions than prescription opioids in both the oldest and youngest age categories (55 years and older and 19 years of age or younger). The statistics on clients admitted with prescription drug use disorders do not specify what proportion of the clients were nonmedical users or iatrogenic addicts, but the findings described above indicate that iatrogenic addicts are a growing proportion of patients being treated for prescription drug use disorders. The iatrogenic addict population is generally even more likely than the nonmedical prescription opioid addict population to be middle aged, middle class, and from suburban or rural communities (Krych et al. 1995; Fischer et al. 2008; Kelly et al. 2008). Their treatment preferences also differ from the nonmedical addicts that have long been the focus of the public drug treatment system. Community-based outpatient health programs that promise confidentiality and quality care are at a premium for iatrogenic addicts.

The demographic characteristics of the PMAI sample of 744 patients analyzed for this evaluation were generally consistent with national treatment client statistics. In PMAI sample, 87% were males and 13% were females. The mean and median age of the patients was 35.4 years and 34.0 years respectively, with a range from 18 to 72 years. PMAI's clients admitted for treatment of nonmedical prescription opioid use disorders were substantially younger than were those admitted for heroin use disorders. Whereas only half (52%) of the persons admitted for heroin problems were whites, most of those admitted for nonmedical prescription opioid disorders were whites (88%). When asked about their drug of choice, women in this sample were more likely to mention prescription opioids rather than heroin (31% versus 18%), while men were slightly more likely to mention heroin rather than prescription opioids (22% versus 21%).

Changing Public Policies

Public policy responses to the drug problem have changed importantly in the past few years. On November 4, 2008, Massachusetts voters approved a law removing criminal penalties for possession of an ounce or less of marijuana. Since implementation of this law in 2009, possession has constituted a civil violation punishable by a \$100 fine. Eleven other states have

decriminalized Marijuana in similar ways: Alaska, California, Colorado, Maine, Minnesota, Nebraska, Nevada, New York, North Carolina, Ohio, and Oregon. Massachusetts and Nevada (2002) did so recently, while the others did so in the 1970s. All of these states except Nebraska had rates above the national average for past-year marijuana use by adolescents in the combined 2005 and 2006 National Surveys of Drug Use and Health (Hughes et al. 2008). Although the impact of this change in law is unknown, if the prevalence of marijuana use were to increase, an increase in the number of people who develop use disorders and subsequently demand treatment would not be surprising. Figure 1 showed that nationally admissions for treatment of marijuana use disorders has increased steadily as a percentage of all admissions since 1992.

The growth of drug courts also reflects a shift in public policy from a criminal-justice approach to a treatment-oriented approach. According to the Substance Abuse and Mental Health Services Administration (2010), nationwide there were 2,100 drug courts in 2008. Drug courts seek to divert arrestees from prison to the drug treatment system, thereby increasing demand for community drug treatment resources. In many cases the drug offenders need treatment but would not seek it on their own as readily and would not have access to it in prison. Publicly-supported facilities have experienced difficulties meeting the resulting increased demand for services despite federal grants designed to fund additional services required for drug courts. To fill the gap in treatment services available to drug court offenders, PMAI offices in Falmouth, Sandwich, Barnstable, Malden, Holyoke, and Yarmouth have developed active relationships with the drug courts in those towns. The Barnstable staff will be presenting the PMAI model at the upcoming 2010 National Association of Drug Court Professionals (NADCP) 16TH Annual Training Conference.

Changes Medical Patterns of Practice

In medicine, two countervailing patterns have emerged that are relevant to substance abuse services. In an effort to reduce under-treatment of pain, doctors have become much more willing to prescribe medicines with addiction potential. Despite the limits of existing scientific evidence (Chou et al. 2009), pain specialists have argued strongly that the risk of iatrogenic addiction is greatly exaggerated. The number of prescriptions has increased greatly due to an increase in the number of patients being treated with these medications and the dosages prescribed (Katz et al. 2010). That trend has been followed by a steadily increasing rate of prescription drug diversions, overdoses, people with drug use disorders, and both medical and nonmedical prescription drug addicts seeking treatment (Jamison et al. 2000).

At the same time, doctors have become more involved in providing office-based treatment of substance use disorders. These physicians have helped increase patient access to substance abuse treatment and relieve the burden of unmet demand from the existing clinic-based substance abuse treatment system. PMAI has been a significant participant in this new trend in Massachusetts. PMAI has provided substance abuse treatment services to approximately 7,000 patients in the past year. These patients access treatment in 30 different clinical offices or programs in the Commonwealth. There are PMAI offices or programs located in all the major population areas of the state: Boston (Brighton and West Roxbury neighborhoods), towns immediately west of Boston (Brookline-2 offices, Waltham, and Framingham), north of Boston (North Andover, Woburn, and Malden-2), south of Boston (Quincy-2, Weymouth, Norton, New

Bedford, Taunton, and Wareham), on the Cape and Islands (Falmouth, Sandwich, Barnstable, West Yarmouth, and Vineyard Haven), in the center of the state (Worcester-2 and Fitchburg), and in the Western part of the state (Greenfield, Pittsfield, Holyoke, and Springfield-3). Consequently, patients can obtain services from an office near them after they re-settle in a new area of the state, and few patients have to travel long distances to obtain care. Research has shown that treatment outcomes are correlated with length of treatment, and patients are more likely to stay in treatment if the facilities are not too far away (Beardsley et al. 2003; Schmitt et al. 2003). If treatment facilities are located far from where the people in need reside, prospective patients may be less likely to seek treatment, put their names on a waiting list, remain in treatment until recovery is sufficiently established, or return for aftercare or long-term monitoring (Beardsley et al. 2003; Schmitt et al. 2003).

Drug Treatment System Adaptations

The American community drug abuse treatment system was originally developed in response to a heroin epidemic largely among young minority males that began in the 1950's, a marijuana and hallucinogen epidemic that started among middle class youth and spread to the entire society of young people in the 1960's, a cocaine epidemic among middle-class young adults in the early 1980's, and a crack epidemic among minorities that began between 1985 and 1990. Until the early 1970's, the American drug treatment system was quite small. It consisted of two federal Public Health Service hospitals which opened in the 1930's, a few parole and probation programs, small private residential facilities, a few state hospitals that specialized in treatment of addiction in places where narcotic addiction was most severe (e.g., New York and California), and a small number of detoxification beds in state psychiatric facilities (e.g., Maryland). In response to the series of drug epidemics, federal support beginning in the early 1970's fostered development of a much larger community-based drug treatment system. In recent decades half of the cost of treatment for residents who lacked insurance coverage or an ability to pay out of pocket came from federal block grants as well as state and local funds (Zarkin et al. 1995). The other half came from private insurance, Medicare and Medicaid, and out of pocket expenditures.

However, this funding system often has serious shortcomings. Insurance benefits were often limited to one or a couple episodes of care and the length of stay or number of visits for any treatment episode was also limited. Government funding for treatment services was often slow to respond to increases in population demand. States were the funding source of last resort. However, due to constraints placed on state substance abuse budgets, waiting lists were common at methadone maintenance programs and long-term residential facilities. Hampered by inadequate funding, staff members at substance abuse treatment facilities often had limited professional training and lacked other treatment resources.

With the expansion of the Massachusetts parity law to include coverage of substance abuse services by insurance companies and the recent passage of near universal insurance coverage at the state and federal levels, the changed funding of drug and alcohol treatment services will likely reshape the system. Most, if not all, of the general population can be expected eventually to have health insurance, and the coverage for substance abuse services will no longer be limited to brief courses of treatment that are inconsistent with the chronic nature of substance

abuse. With substance abuse treatment in effect becoming a federal entitlement, separate block grant treatment funding should no longer be needed. Fixed state allocations for substance abuse services should also decline in importance as a source of funding for substance abuse treatment of low income people. The large state network of substance abuse clinics mostly reimbursed by state substance abuse contracts could diminish markedly in size as it is replaced by a network of office-based providers.

Because Massachusetts has implemented health care reform over the past two years, PMAI is an example of how office-based providers of substance abuse services adapt to health care reform. PMAI does not obtain any funding directly from the state. All of its patients either have insurance or pay out of pocket. PMAI currently has contracts with a large number of health insurance companies (about 200 at last count), and PMAI's staff actively assists all patients without health insurance to obtain coverage through the appropriate MA health insurance reform plans (Commonwealth Care Health Insurance Program, MassHealth, and Commonwealth Health Insurance Connector). As a result, PMAI has grown rapidly in the last couple of years. It averaged approximately 600 new patients per month in the past year, and submitted 52,808 bills for their care to third-party payers.

NEW APPROACHES TO LONG-STANDING TREATMENT SYSTEM PROBLEMS

Dr. Kishore, PMAI's founder, designed its treatment model to address long-standing problems in the drug treatment system. A primary obstacle to insurance coverage of substance abuse services and access to care by those that lack adequate insurance coverage is the high cost of substance abuse treatment, especially inpatient and residential care for those who have severe disorders and are at risk of withdrawal-related medical issues such as seizures and other medical complications. While PMAI refers patients to hospitals and residential detoxification when medically necessary, PMAI's outpatient home detoxification, rehabilitative treatment, and recovery maintenance are sufficient for most clients and much less expensive than hospital or residential care. The reduced cost makes provision of long-term substance abuse treatment realistic for insurance providers and for people who pay out of pocket.

Research-Supported Treatment Methods

PMAI's treatment model has focused on techniques based on scientific research. Historically, alcohol and drug treatment regimens were developed in times of crisis caused by the unexpected drug epidemics. Large numbers of addicts needed new forms of help, and there was no time to develop programs or regimens experimentally. Treatment methods for drug addiction were adapted from treatments for other substance problems such as alcoholism. Much of the clinical efficacy research therefore focused on evaluating drug abuse treatment regimens and methods that were already widely used (e.g., residential detoxification, therapeutic communities, outpatient drug-free counseling, and methadone maintenance). The research methods for conducting randomized trials were poorly developed (McAuliffe and Ashery 1993; Ashery and McAuliffe 1992), public research funding was limited, and pharmaceutical companies were not yet heavily involved. However, more recently, new medical and psychosocial treatment methods have been developed and evaluated experimentally. The federal

government's National Registry of Evidence-based Programs and Practices now boasts having 46 substance use disorder psychosocial interventions with empirical evidence of effectiveness.

An area of special interest is medication-assisted substance abuse treatment. The National Institute on Drug Abuse established a medications development division in 1990 to work with the Food and Drug Administration, clinical pharmaceutical researchers in academia, and pharmaceutical companies to develop medications to treat drug use disorders. The principal medications developed thus far for treatment of opioid addiction include methadone, long-acting methadone (LAAM), buprenorphine (Subutex), buprenorphine-naloxone (Suboxone), and naltrexone. Naltrexone is an opioid antagonist that blocks the effects of abused opioid drugs such as heroin, OxyContin, and Vicodin. The drug is generally safe when used according to medical direction, and it has no abuse potential. Naltrexone has also been shown to be effective in the treatment of alcohol dependence (Morris et al. 2001; Maxwell and Shinderman 2000), and the FDA has approved it for that purpose. However, poor patient compliance has limited Naltrexone's clinical effectiveness (Hulse and Basso 1999; Chick et al. 2000). A new sustained-released version of Naltrexone, called Vivitrol, which is injected and lasts for a month, has evidence of efficacy in randomized trials (Lobmaier et al. 2008; Johnson 2007; Hulse et al. 2009). These medications have given individual providers new tools to provide office-based treatment in addition to clinic-based treatment of opioid addiction.¹

Although it does not provide methadone or buprenorphine maintenance treatment, PMAI has used Vivitrol extensively in the treatment of its many patients with alcohol and opioid use disorders (84% of the PMAI sample analyzed for this report). A patient visits the PMAI office daily for the first 5 days to give urine samples and see the medical provider/counselor. The provider prescribes medications as needed to address withdrawal symptoms and support recovery maintenance. Upon completion of the cessation/detoxification phase, the patient will begin receiving Vivitrol for recovery maintenance. The injection lasts for a month. At first the patient returns to the office once a week for monitoring of progress and needed brief interventions. As recovery progresses satisfactorily, the patient eventually visits the office once a month to obtain an injection of Vivitrol, meet with a clinician, and provide a urine sample. The patient can obtain group or individual counseling free of charge.

PMAI also uses the non-addictive medicines Campral and Topamax to assist patients with alcohol use disorders. In 2004, the Food and Drug Administration approved Campral for the treatment of alcohol use disorders, and the medication has been used for that purpose in Europe for many years. Over a million patients have been treated for alcoholism with Campral. Topamax is an anti-seizure medicine that has been found to reduce cravings for alcohol and should to help actively drinking patients to stop and remain abstinent.

Community Acceptance

Community resistance to methadone programs and other substance abuse treatment

¹The difference between Suboxone and Subutex is that the latter contains only buprenorphine, while the former also contains Naloxone. Naloxone is included to prevent injection of the drug for purpose of abusing it. When taken as directed, i.e., sublingually (under the tongue), the Naloxone is not absorbed while the buprenorphine is.

facilities has dogged the system for the past five decades. Residents and business owners often do not want substance abuse treatment clinics in their area. Communities fear that treatment programs, especially those that provide opioid maintenance, attract drug abusers from elsewhere. Community residents fear that the patients will commit property crimes when passing through the town on the way to the clinic. Also, clinic patients sometimes divert take-home opioid medications to other users, and some patients sell non-opioid drugs to other patients. Community resistance frequently results in an inadequate supply of treatment services in a town that already has its own drug problem. Some towns have allowed methadone to be dispensed by mobile vans only as a compromise solution.

Although PMAI has experienced this community resistance in some instances, often PMAI has opened an office by invitation from community leaders concerned about the lack of adequate substance abuse treatment services to address their local substance abuse problems. Community members need not fear drug diversion because PMAI does not dispense addictive maintenance drugs, and it exercises strict controls over addictive medications prescribed on a short-term basis. Vivitrol, which is non-addictive, is the primary medication PMAI uses to maintain recovery. The PMAI approach minimizes the use of tranquilizers, sedatives, amphetamines, and other stimulants in treatment of patient diseases by emphasizing non-medical approaches to problems often treated with addictive medications. Patients with histories of substance abuse are at high risk of iatrogenic addiction when treated with those medications. PMAI's treatment philosophy is recovery-oriented rather than lifelong drug maintenance-oriented. Because of this policy and its de-emphasis of addictive medications, PMAI is not in conflict with the drug-free philosophies of Alcoholics Anonymous and Narcotics Anonymous.

Confidentiality is a significant concern to middle class and young people who need treatment but who do not want to go to a drug program where they will be recognized by fellow community members. PMAI does not advertise itself as a drug program per se. It is a primary care provider that offers substance abuse treatment services as part of a comprehensive primary care clinic. Patients and communities are not concerned about exposure to the stigma of being a substance abuser when patients visit a primary-care medical office.

Chronicity of Substance Use Disorders

Although substance use disorder treatment specialists and researchers widely acknowledge the chronic nature of drug and alcohol problems, historically most treatments (detoxification, residential rehabilitation, outpatient counseling) have been inherently short- to medium-term, lasting from a few days to a year at the most. In most cases, patients move from provider to provider during the de-addiction treatment process, and little professional attention is given structurally or programmatically to life-long monitoring and care. By contrast, PMAI assumes that most patients with a substance use disorder have a long-term illness, with many cycles of relapse and recovery. A responsive treatment regime must include the entire de-addiction process including having the patient return regularly for checkups and refreshed treatment as indicated.

A key element of the primary care approach to chronic disease is to measure treatment progress with each patient visit. PMAI employs urine, saliva, or hair monitoring as part of each visit to insure that the staff are alerted when a relapse is in progress or the patient is

noncompliant. PMAI processes the urine samples with its own equipment. Woburn, Taunton and Springfield use the Olympus AU 400 analyzer which tests by using spectrophotometric wavelengths specific to each individual drug assay. Positively evaluated by European Committee for Clinical Laboratory Standards (Bilic et al. 2000), the automated Olympus is capable of running 400 tests per hour. The Cape offices have a MGC 240 analyzer which also uses spectrophotometric reading and is capable of running 240 tests per hour. The PMAI staff concluded that by testing urine creatine and specific gravity, it could enhance its diagnostic tools. The staff can determine if a specimen is manually diluted or diluted by ingesting huge amounts of water. The staff can determine if a patient is improving or not, and the course of treatment is adjusted accordingly.

Consistent with a primary approach to chronic diseases, PMAI emphasizes continuity of treatment despite clinical setbacks and drug relapses. It employs a range of non-medical substance abuse services to promote long-term recovery: individual counseling, peer self help groups, sober houses, and family participation in care and support of the patient. They also include recovery groups for presenting and reinforcing relapse prevention skills. PMAI behavioral staff is currently evaluating implementation of Recovery Training and Self Help program (RTSH) and the Clean Start program (McAuliffe and Chien 1986; McAuliffe and Albert 1992; Zackon et al. 1993). RTSH is a six-month outpatient group cognitive-behavioral relapse prevention program which was effective in a randomized clinical trial conducted in New England and Hong Kong (McAuliffe 1990). Clean Start is a one-month outpatient group drug use cessation program based on the same principles as RTSH.

PMAI's intake system is also designed to respond to the chronic nature of substance abuse. Patients with substance use disorders frequently are in denial and resistant to obtaining treatment that they need. They leave treatment prematurely, and may relapse to substance use during treatment or immediately thereafter. When not in treatment, substance abusers frequently are in crisis, seek immediate treatment, and benefit when providers are responsive to calls for help when these crises occur. Once the crisis has passed, the motivation to enter treatment may decline rapidly. PMAI designed its intake system so that patients can call PMAI anytime day or night and be seen within 24 hours.

Medical Complications and Comorbidity in Substance Abusers

People with substance use disorders suffer from a myriad of medical and psychiatric problems that may be the causes of their substance use or consequences of using drugs or alcohol excessively or for nonmedical reasons. These patients also often have lived unhealthy lifestyles (e.g., poor nutrition, smoking, poor hygiene, violence, and accidents), usually lacked a regular primary care physician, and failed to obtain routine check ups, preventive care, and timely interventions (including dental care). A recent article on addiction medicine noted, "Drug and alcohol abuse have many medical consequences. Health effects may range between cardiomyopathies, immune impairment, endocrine disorders, metabolic and nutritional disorders, liver and gastrointestinal diseases, cancer disease, [and] neuropsychiatric complications to name a few. . ." (Addolorato et al. 2010).

Many of the sample of 744 PMAI patients suffered from an array of diseases. In this group, 97 % had a physical disorder and 42% had psychiatric disorders. Examples of the

physical problems they reported included vein abscesses, acid reflux, anemia, arthritis, asthma, stomach bleeding, broken bones, brain injuries and seizures, cancer, cirrhosis, cataracts, chronic back, leg, shoulder, or neck pain, fungus infections, diabetes, endocarditis, gastritis, gout, hepatitis a, b, and c, herpes, migraine headaches, HIV, Kidney stones, obesity, pancreatitis, neuropathy, stroke, cardiac disease, shingles, ruptured disk, tuberculosis, vitamin deficiency, sleep apnea, stab and gunshot wounds, and tumors. Examples of psychiatric conditions included depression, mania, bipolar disorder, anxiety disorders, eating disorders, insomnia, PTSD, schizophrenia, and obsessive compulsive disorder. Forty-two percent of the patient sample said that they had suicidal thoughts or actions.

When confronting these issues, traditional substance abuse programs typically refer their patients to other providers for general medical care and medical treatment of the consequences of substance abuse. Too often patients fail to follow through on the referrals. PMAI addresses these medical issues as an integral part of its overall primary care program. Of special importance is the skill with which PMAI can manage medical and psychiatric disorders that are commonly treated with medications with abuse potential. Too often medical and psychiatric providers lack experience and perspective to manage these problems in patients with active or recovering substance use disorders. The result can be under-treatment or misuse, relapse, and diversion of addictive substances. PMAI makes full use of non-drug therapies and medications without addictive potential. When addictive medications are required in specific cases, PMAI staff closely controls their administration to prevent diversion and abuse. Patients are seen frequently and family members are enlisted in the effort to control and monitor medication use.

Professional Expertise in Treating Substance Abuse Patients

A concern in the substance abuse treatment field is the adequacy of the training and experience of providers of office-based substance abuse treatment. The substance abuse treatment population is heterogeneous and often demanding. Many nonmedical drug abusers have long histories of misleading physicians in order to obtain supplies of addictive medications. Nonmedical drug abusers very often have criminal histories and are noncompliant with medical regimens involving addictive medications.

PMAI's director, Dr. Punyamurtula S. Kishore, MD, MPH, has extensive training in substance abuse and preventive medicine, and he has decades of experience providing care to patients with a wide range of substance use disorders. He has been practicing medicine since 1974 and was licensed to practice medicine in Massachusetts in 1978. He earned a master of public health degree from the Harvard School of Public Health in 1979. A house staff physician at the Washingtonian Center for Addictions in 1977, he was certified as an addiction specialist by the American Academy of Health Care Providers in Addictive Disorders in 1990, and he was certified as a addiction medicine physician by the American Society in Addiction Medicine in 1987 and 2002. He has been medical or clinical director at the North Charles Institute for the Addictions at Cambridge Health Alliance, Marathon Acute Treatment Services, Highpoint Treatment Centers, Bridgewater Addiction Center, and the Washingtonian Center for Addictions. He was a resident and senior resident in preventive medicine at Carney Hospital in 1993-1994. He is board qualified in preventive medicine and public health.

In addition to Dr. Kishore, PMAI has staff with medical, counseling, and recovering

expertise. The 30 staff physicians have specialties in internal medicine (11), family practice (10), preventive medicine (2), psychiatry (2), neurology (1), OB/GYN (2), pediatrics (1), and surgery (1). There are also six (6) licensed masters-level social workers and one (1) doctoral level psychologist on the staff. PMAI's nurse practitioner staff includes 25 members, including specialists in family practice (17), woman's health (3), adult health (3), pediatrics (1), and geriatrics (1).

Nine recovering Ambassadors for Sobriety offer new clients peer support and a model of how to cope with the many threats to long-term recovery that they are likely to encounter when re-integrating into the non-addict community. They are called "ambassadors" because they serve as liaisons between the addicted and sober communities, speaking to both communities about addiction and recovery processes. Ambassadors play a range of roles in the program. They lead clients in peer support groups that help recovering people reintegrate into non-addict society, and they represent the perspectives and interests of recovering people in community meetings and when interacting with state and local officials and representatives of other institutions such as academia and criminal justice. The ambassadors go to schools, hospital grand rounds, and other presentations with Dr. Kishore to speak about the dangers of substance abuse and to tell stories of their addictions and recoveries. They do these presentations to various groups to discourage drug use among youths as well as to motivate individuals in all levels of addiction and recovery to become or stay clean. Recently, one of the Ambassadors spoke to a group of mothers, and he was able to tell them what signs and symptoms to look for if they suspect their teens are using drugs. Because he was a teen himself, the parents valued his opinion as someone who knew first hand what he was discussing. Some ambassadors have worked in PMAI offices leading peer recovery groups, doing waiting-room counseling, and as office staff (receptionists, assistants, and managers). The Ambassador role provides the individuals with reinforcing experiences as they turn their lives around, and it allows them to serve as role models for other patients who are not yet as advanced in recovery.

PMAI's staff has developed clinical expertise as a result of treating large numbers of patients with a wide variety of substance abuse treatment needs. As a result of seeing about 7,000 new patients with a range of substance use disorder problems, medical complications, and general health issues, PMAI has acquired extensive experience managing the issues that these patients present.

CONCLUSIONS

This evaluation has found that PMAI is a primary care medical practice that is designed to adjust to and take advantage of the dramatic changes that have occurred in the substance abuse treatment scene in the last decade. PMAI's network of 30 offices around the state treated 7,000 patients in the past year. With the prospect of health insurance coverage for nearly all members of society, including people with substance use disorders, the publicly funded system of substance abuse clinics is likely to change markedly in the coming years. Privately funded from its inception, PMAI is structured to adapt to the challenges and take advantage of the opportunities to create a better treatment experience.

PMAI has sought to eliminate many of the long-standing short-comings of substance abuse treatment. It has an experienced and credentialed staff that utilizes the latest medical

innovations in the field of substance abuse. For example, it makes use of the non-addicting medications Vivitrol, Campral, and Topamax to assist the recoveries of its many patients with alcohol and opioid use disorders. Instead of depending upon referrals to hospitals or medical clinics for needed general health services, its primary care approach integrates medical care with substance abuse treatment to respond to the clients many medical complications and conditions. Modeled on the long-term medical treatment of chronic physical diseases, the PMAI approach assumes that addiction is a chronic disease. Because periodic relapses are common, frequent monitoring of urine and periodic brief interventions are essential elements of quality care.

METHODOLOGICAL APPENDIX

This evaluation employed a range of research and assessment methods. The authors reviewed relevant literature using Pub Med. Of special importance were the journal articles on the efficacy of the treatment technologies employed by PMAI's medical staff. No program can be effective if the methods it uses are not efficacious according to the results of randomized clinical trials. The authors also reviewed and summarized relevant studies regarding the national and state substance abuse epidemiological trends and treatment services research.

Dr. McAuliffe participated in a series of site visits to PMAI offices, drug courts, and community meetings regarding substance abuse treatment needs. In these visits, he observed the structure and functioning of the offices and talked with the staffs. Dr. McAuliffe conducted a series of interviews with Dr. Kishore regarding the rationale for the design of PMAI's treatment model and its funding mechanisms. Dr. McAuliffe also reviewed prior descriptions and articles regarding Dr. Kishore and the organization. The study team analyzed initial admission data on drug use and demographics from a sample of patients being treated at one of PMAI's offices. These data were coded from medical records by administrative staff at the office. The study team converted the spreadsheet data into a statistical file as part of the SPSS statistical analysis system and performed a series of descriptive analyses.

Finally, the study team conducted a qualitative analysis of recent changes in state laws regarding addictive drugs and laws regarding the funding of health care including the treatment of substance use disorders. The analysis focused on the implications of the changing epidemiological trends and the health insurance policies on the provision of substance abuse treatment and the interface with the PMAI approach.

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