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Treatment of Smokers with Co-Occurring Disorders: Emphasis on Integration in Mental Health and Addiction Treatment Settings

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Abstract

This article reviews the research on the treatment of cigarette smoking in individuals who have comorbid mental illnesses or non-nicotinic addictions. The prevalence of smoking in mentally ill and substance-abusing populations is presented, as well as reasons for this high prevalence. The historical role of cigarettes and tobacco in mental illness and addiction is reviewed to help the reader better understand the pervasiveness of smoking in these disorders and the relative absence of intervention efforts in mental health and addiction treatment settings. The article then discusses the several reasons for integrating smoking treatment into mental health and addiction settings. The outcome research for adult and adolescent comorbid smokers is reviewed, and barriers to treatment are discussed. The review closes with a brief discussion of models of integration and thoughts about prevention.

Keywords

tobacco; mental illness; substance abuse; intervention; health services

OVERVIEW

The purpose of this review is to discuss the comorbidity between nicotine dependence and other mental health disorders, including non-nicotinic addictions and mental illnesses, in order to better understand the state of the art of the treatment of nicotine dependence in these smokers. We focus on strategies to improve the treatment of cigarette smoking in smokers with mental health and substance abuse disorders and in mental health treatment settings.

The use of tobacco products other than cigarettes (for example, smokeless tobacco and cigars) has not been studied in individuals with mental health disorders and with addictions to non-nicotinic drugs. In this review, we limit our discussion to cigarette smoking treatment.

BACKGROUND

Prevalence of Nicotine Dependence in Co-Occurring Disorders

Nicotine dependence is the most prevalent substance abuse disorder among individuals with mental illness (American Psychiatric Association 1994). Cigarette smoking adversely affects the quantity and quality of life for patients with mental illness (Colton & Manderscheid 2006), is predictive of future suicidal behavior (Oquendo et al. 2004), and can reduce the therapeutic blood levels of a number of psychiatric medications (Zevin & Benowitz 1999),

thereby decreasing their effectiveness. Treating smoking can be considered one of the most important activities a clinician can perform (Hughes 1998).

Population-based studies suggest that individuals with mental illness smoke at nearly twice the rate of the general population (41% versus 23%), with even higher rates among the seriously mentally ill and those with additional addictions (Lasser et al. 2000, Rohde et al. 2003). Rates of cigarette use vary by diagnostic group, with particularly high rates among individuals with schizophrenia, bipolar disorder, and co-occurring alcohol and illicit drug disorders (de Leon et al. 1995, Lasser et al. 2000, Prochaska et al. 2004b). Because they are often heavy smokers, individuals with co-occurring mental illness or addictive disorders are now estimated to comprise 44% to 46% of the U.S. cigarette market (Grant et al. 2004, Lasser et al. 2000). This equates to 175 billion cigarettes and \$39 billion in annual sales (Federal Trade Commission 2005).

Smoking may serve as a gateway to other drugs of abuse for youth with substance use disorders and is particularly prevalent among these individuals (Brown et al. 1996, Lindsay & Rainey 1997). Studies have found that more than 80% of youth with substance use disorders report current tobacco use, most report daily smoking, and many become highly dependent, long-term tobacco users (McDonald et al. 2000, Myers & MacPherson 2004, Upadhyaya et al. 2002).

Why is Cigarette Smoking So Prevalent Among Individuals with Co-Occurring Disorders?

Both neurobiological and psychosocial factors have been identified as contributing to the elevated rates of cigarette smoking with co-occurring disorders, including the reinforcing mood-altering effects of nicotine, shared genetic factors, and reduced coping for cessation (Dursun & Kutcher 1999, Kendler et al. 1993, Ziedonis et al. 1994). Although the literature has emphasized genetic and neurobiological causes, our review is focused on the person-and systems-level factors that contribute to the high rates of cigarette smoking in this vulnerable group of patients and that have largely gone ignored.

HISTORY OF TOBACCO USE IN MENTAL HEALTH AND ADDICTIONS TREATMENT

Cigarette smoking in mental health has a long history with negative consequences. Sigmund Freud, the father of psychoanalysis, was a heavy smoker—averaging 20 cigars a day (Jones 1955). Despite recommendations from his physician, a diagnosis of oral cancer, undergoing 33 operations for cancer of the jaw and oral cavity, jaw replacement, pain, and suffering from “tobacco angina,” Freud continued to smoke up until his death, attributed to cancer, in 1939 at the age of 83. In a chapter on the behavior of therapists during treatment sessions, a 1951 handbook for psychotherapy encouraged tobacco use in sessions “as a small pleasure that you should feel free to enjoy” (Colby 1951).

To this day, higher rates of cigarette smoking have been reported among psychiatry residents and practicing psychiatrists relative to other medical specialties (Frank et al. 2001). In comparison with other health care providers, psychiatrists are less likely to treat cigarette smoking (Frank et al. 2001, Thorndike et al. 2001); this phenomenon may be related to their higher smoking rate.

Prioritization of mental health treatment, lack of an appreciation of the health effects of cigarette smoking, and beliefs among clinicians that persons with mental illness are not able or willing to quit have contributed to a culture in many treatment settings that accepts and “normalizes” cigarette smoking. Psychiatry settings have a long history of providing cigarettes to patients, an effective contingency for rewarding treatment compliance (Holtzman 1975,

Robertson 2000, Torrey 1980). Mental health patient advocacy groups and the tobacco industry also successfully fought efforts by hospitals, states, and the Joint Committee for Accreditation of Healthcare Organizations to ban cigarette smoking in inpatient psychiatric facilities (Prochaska et al. 2008b). As of 2006, 59% of state psychiatric hospitals in the United States permitted patient smoking on their premises (Monihan et al. 2006).

The tobacco industry has marketed its product to persons with mental illness, provided tax-free cigarettes to psychiatric facilities, and funded research promoting a self-medication hypothesis for nicotine (Prochaska et al. 2008b). Viewing tobacco as an increasingly “downscale social activity,” the tobacco industry marketed its “value” brands to “street people,” a substantial number of whom have mental illness. The tobacco industry also used service providers in homeless shelters, psychiatric facilities, and drug treatment programs to further its political goals (Apollonio & Malone 2005).

Tobacco’s place in alcohol and drug treatment is similarly long-standing and detrimental. Both of the cofounders of Alcoholics Anonymous (Bill Wilson and Dr. Bob Smith) smoked heavily and died from causes related to their cigarette use (Hartman 2001). Today, treatment of tobacco dependence is not included in most addictions treatment settings. In a survey of 223 addictions treatment programs in Canada, only 10% reported offering formal smoking-cessation programs, 54% reported placing very little emphasis on smoking, and 47% still allowed smoking indoors (Currie et al. 2003). Tobacco use is prevalent among addiction counselors, who themselves are often in recovery from alcohol and drugs. Having experienced the “normalization of tobacco” within the addiction treatment and 12-step communities, counselors may continue to perpetuate its use by smoking with clients and discouraging quit attempts out of fears that sobriety may be compromised. In focus groups conducted with 78 patients recruited from methadone clinics, about a third reported being advised by friends, treatment staff, and Alcoholics Anonymous/Narcotics Anonymous (AA/NA) sponsors to delay quitting (Richter et al. 2002). Unlike alcohol and non-nicotinic drugs, cigarette smoking has few immediate consequences and cessation has not been a priority. Yet among individuals treated for alcohol dependence, tobacco-related diseases were responsible for half of all deaths, a proportion that is greater than alcohol-related causes (Hurt & Offord 1996). In a 24-year study of long-term drug abusers, Hser et al. (1994, 2004) documented the death rate among cigarette smokers to be four times that of nonsmokers. The health consequences of tobacco and other drug use are synergistic and estimated to be 50% greater than the sum of each individually (Bien & Burge 1990).

REASONS FOR BETTER INTEGRATION OF CIGARETTE SMOKING INTO ADDICTIONS TREATMENT AND MENTAL HEALTH SETTINGS

Adherence to Practice Guidelines and National Reports

The 2000 practice guidelines for smoking cessation (Fiore 2000), the key clinical reference in the treatment of cigarette smoking, recommend that smokers with psychiatric conditions should be provided the same smoking-cessation treatments as the general population. At the time of the preparation of the guidelines, few data existed relevant to psychiatric patients, and the recommendations were generalizations from findings in the general population. The only disorder-specific recommendation was that sustained-release bupropion and nortriptyline, both antidepressant drugs known to facilitate cigarette abstinence, should be considered for treating smokers with current or past depression. The authors apparently reasoned that using these drugs would treat both smoking and depression. The guidelines also support the provision of smoking-cessation treatment to individuals in chemical dependency.

The smoking-cessation practice guidelines were updated in 2008 (Fiore 2008). They now include an emphasis on the need for practitioners to treat smokers with mental health and substance abuse diagnoses. The updated guidelines note that some data suggest that bupropion and nicotine replacement therapy (NRT) may improve negative symptoms of schizophrenia, and that individuals on atypical antipsychotic drugs may be more responsive to bupropion than those on traditional antipsychotic medication. The guidelines suggest that it is currently unclear whether interventions tailored for specific disorders are especially useful. They also note that there is little evidence that quitting smoking during chemical-dependency treatment interferes with abstinence from non-nicotine drugs, although they do point out that one study suggests that smoking-cessation treatment early in alcohol recovery may interfere with abstinence from alcohol (Joseph et al. 2004).

The practice guidelines of the American Psychiatric Association specifically first addressed the treatment of nicotine dependence in psychiatric patients and those with substance abuse disorders in 1996 (American Psychiatric Association 1996). These guidelines were updated in 2006 (American Psychiatric Association 2006). The guidelines encourage mental health clinicians to assess smoking status with all patients and to assist smokers in quitting. The guidelines acknowledge that smoking cessation may be more difficult for smokers with psychiatric disorders, and treatment may need to be more intensive. The treatment guidelines encourage strategies that address motivation and combine behavioral support and pharmacotherapy. The guidelines state there is little support for tailoring tobacco-cessation treatments to specific diagnostic psychiatric groups (for example, schizophrenia). Also, the guidelines identify psychiatric inpatient stays as a good time to begin treatment of cigarette smoking because of the exposure to staff knowledgeable about behavior change, the diagnosis of new (and possibly smoking-related) health issues, and the absence of cues that elicit craving for cigarettes. The guidelines recommend provision of NRT for withdrawal symptoms for all inpatients who smoke.

In June 2006, the National Institutes of Health (NIH) convened a state-of-the-science consensus meeting on cigarette smoking treatment. The consensus statement noted the high rate of cigarette smoking in those with psychiatric and substance abuse disorders, the adverse health consequences among psychiatric populations as a function of continued smoking, as well the potential of progression and complications of the comorbid conditions as a function of continued smoking. The report notes that the benefits of quitting for persons with these conditions is high and recommends treatment (Hall 2006, National Institutes of Health 2006).

In summary, the U.S. practice guidelines, the American Psychiatric Association, and the NIH all favor treatment of smokers with mental health and substance abuse diagnoses. The practice guidelines and the NIH statement both acknowledge the lack of research in smoking-cessation interventions with these populations and suggest that interventions useful with the general population should be used, pending further research targeted to these groups.

Despite the recommendations of these three national reports, implementation of these recommendations in mental health and addiction treatment settings has been slow.

Motivation to Quit Among Smokers Who Are Mentally Ill and Abuse Substances

A second reason to integrate smoking cessation treatment into the treatment of other addictions and of mental health disorders is the substantial level of motivation to quit that exists in these populations, even though the implicit assumption has been that motivation in these smokers would be low. There are plausible reasons to believe that smokers who are mentally ill and who abuse substances might not be motivated to quit smoking. For example, smokers in treatment for substance abuse often have a chaotic lifestyle, and one might assume the resultant lack of stability and stress would drain energy from health-maintenance behaviors, such as

quitting smoking. Similarly, smokers with mental health problems might be too amotivated or disorganized to quit smoking. For the most part, however, recent data do not support these beliefs.

The construct used in most studies of readiness or motivation for cigarette abstinence is derived from the stages of change model (DiClemente et al. 1991, Prochaska et al. 2001, Velicer & Prochaska 1999). This model posits five stages of change in quitting smoking. These are (a) precontemplation—a person has no intention of quitting smoking in the foreseeable future, defined as the next six months; (b) contemplation—a person is contemplating stopping smoking in the next six months, but not the next 30 days; (c) preparation—a person intends to stop smoking in the next month and has made at least one quit attempt in the past year; (d) action—a person has quit smoking for less than six months; and (e) maintenance—a person has quit smoking for six months or longer. The model itself is broader than the stages alone, including both motivational aspects (stages of change, situational temptations) and cognitive aspects (processes of change, pros and cons of change). However, stages are generally accepted as a measure of motivation.

Early studies that followed chronic psychiatric patients drawn from Veterans Administration samples who were living in board and care homes reported low readiness to quit smoking (Hall et al. 1995). Similarly, Carosella et al. (1999) interviewed 92 Veterans Administration patients contacted in admissions, long-term care, or psychiatric/chemical-dependence units and found that most smokers were in precontemplation or contemplation (Carosella et al. 1999). A third study, conducted with patients with schizophrenia, also found that the majority were in precontemplation (Addington et al. 1997).

In contrast, more recent studies with patients recruited from both outpatient and inpatient mental health settings suggest that smokers with psychiatric disorders are about as likely to want to quit smoking as is the general population. Acton et al. (2005) studied a convenience sample of 205 psychiatric outpatients with mixed diagnoses (Acton et al. 2005). The investigators found that motivation to quit in their patient samples was similar to that of U.S. population samples. In the clinic sample, 29% were in precontemplation (versus 37%–42% in population samples), 43% were in contemplation (versus 39%–47%), and 28% were in preparation (versus 16%–20%). Similarly, Prochaska et al. (2004c) studied outpatients in treatment for depression and found that the majority (79%) intended to quit smoking, with 24% ready to take action within the next 30 days. Prochaska et al. (2006a) studied 100 patients treated in a psychiatric inpatient unit who had a variety of diagnoses, including schizophrenia. In this inpatient sample, 35% were in precontemplation, 41% in contemplation, and 24% in preparation.

In work with Swiss samples, Etter et al. (2004) reported stages of change in 151 patients with either schizophrenia or schizoaffective disorders and compared them to the general population in Switzerland. The distribution for both samples was markedly different from the distributions found in the United States, but the sample of patients with schizophrenic disorders and general population samples differed little. In the Swiss sample of individuals with schizophrenia, 79% were in precontemplation, 18% in contemplation, and 3% in preparation. Comparable percentages in the general Swiss population were 74%, 22%, and 4%, respectively. Thus, in both countries, the distribution of motivation as measured by stage of change in psychiatric samples parallels that for the general population.

The smoking-cessation goals of psychiatric patients also have been examined using the Thoughts about Abstinence measure originally proposed by Marlatt and coworkers (1988) and further developed by Hall and colleagues (Hall 1990, Hall 1991, Wasserman et al. 1998). Hall et al. (2006) queried a sample of smokers, who were in treatment for depression, about their

cessation goals (Hall et al. 2006). In this sample of 322 smokers, 309 responded to the query. Of these 309, 101 (33%) wanted to quit smoking forever, 146 (47%) named some form of reduced smoking as a goal, and only 62 (20%) said quitting smoking was not a current goal. In their inpatient study, Prochaska et al. (2006a) found that 26% of patients wanted to quit forever; 48% had a goal of some form of reduced smoking, and 26% did not have changes in smoking as a goal. Both samples consisted of patients recruited into a study of current smokers, where Motivation to change smoking behavior was not a goal. The Thoughts about Abstinence measure has not been administered to smokers not ready to quit in the general population, so it is unknown how these figures compare to what would be found in a population sample. Nevertheless, it is worth noting that the majority of patients in both the inpatient and the outpatient samples expressed the desire to change their smoking behavior and that a substantial minority wanted to attain abstinence.

In summary, the recent data suggest that both psychiatric inpatients and outpatients, with a variety of diagnoses, are as ready to quit smoking as is the general population. In the United States, the patients who are thinking about quitting in the next one to six months greatly outnumber those who are not considering quitting. The data do not support the argument that cigarette smoking-treatment services offered in mental health clinics and hospitals would find an unreceptive or unmotivated patient population.

Similarly, the assumption that individuals with substance abuse problems do not want to quit smoking has not been supported. Surveys of individuals in addictions treatment have documented that 44% to 80% are interested in quitting their cigarette smoking (Clarke et al. 2001, Nahvi et al. 2006, Richter et al. 2001, Rohsenow et al. 2003, Zullino et al. 2000). The optimal timing for promoting smoking cessation with this population, however, has not been identified, and 17% to 41% of clients report concern that quitting smoking during addictions treatment may make it harder to stay sober (Asher et al. 2003, Stein & Anderson 2003). It is not known how clients' concerns are related to advice they may have received from treatment providers to delay attempts to quit smoking.

AVAILABILITY OF EMPIRICALLY VERIFIED TREATMENTS

Treatment of Smokers Who Abuse Substances in Addition to Nicotine

In a meta-analysis, Prochaska et al. (2004b) reviewed 19 randomized controlled trials examining tobacco-cessation interventions with smokers in addictions treatment (12 studies) or in recovery from substance abuse, defined as sober for at least 12 months (7 studies). The studies were published between January 1996 and September 2003. At post-treatment, participants who received a smoking-cessation intervention were significantly more likely to quit smoking than were those in control groups. This was true for individuals who received the smoking-cessation intervention during addictions treatment (smoking quit rates of 12% for intervention versus 3% in the control conditions) or when in recovery (smoking quit rates of 38% for intervention versus 22% in the control conditions). Subgroup analyses indicated that those using NRT were more likely to have significant results for the intervention condition. Cigarette abstinence rates at long-term follow-up indicated a trend toward greater abstinence among the intervention participants, but differences were no longer significant.

More recently, Joseph and colleagues (2004) randomly assigned 1943 patients in treatment for alcohol dependence or abuse to either concurrent (during alcohol treatment) or delayed (six months later) smoking intervention. The smoking intervention included individual behavioral counseling and nicotine replacement. Participants in the concurrent group were more likely to participate in smoking treatment than were those in the delayed group, but there was no significant difference in cessation rates at 18 months. Prolonged 6-month and 30-day abstinence from alcohol were worse in the concurrent group than in the delayed group at follow-

up. The authors suggested that these data indicate that smoking-cessation interventions should be provided to patients after intensive alcohol treatment but note that the data require confirmation because they are not consistent with the existing literature (Joseph et al. 2004). Another study not included in the review recruited 225 cigarette smokers from methadone maintenance and drug and alcohol treatment clinics (Reid et al. 2008). The study was funded by the National Institute on Drug Abuse Clinical Trials Network, a collaborative of university and community researchers. The findings mirrored those of the earlier meta-analysis. Participants randomly assigned to cigarette smoking treatment were more likely to be abstinent both at the end of treatment and at follow-up assessments, but results were statistically significant only at the end of treatment. No effect on primary drug of abuse was noted.

Treatment of Smokers with Psychiatric Disorder

Affective disorders—In the 1980s, research suggested that the prevalence of a history of depression, specifically major depressive disorder (MDD), was higher among participants entering smoking-treatment research clinics than in the general population. These data were derived from intake interviews, conducted primarily to screen out smokers with current depression from trials where the presence of psychiatric illness was an exclusionary criterion (Glassman et al. 1988, Hall et al. 1993). At the same time, data were emerging from population-based studies indicating that the rate of smoking was higher among depressed individuals than in those who were not depressed. These two converging sets of findings intrigued smoking-treatment researchers, most working in freestanding clinics that did not have the mental health staff coverage to support currently depressed patients. Because of this historical accident, most of the studies of depression and cigarette smoking were completed in individuals who were not acutely ill but who had histories of MDD.

Data from these studies indicated that smokers with a history of depression have increased smoking-abstinence rates with more intensive treatment. Although increased treatment length and intensity generally increase abstinence rates, independent of diagnosis, the amount of increase appears differentially greater for smokers with a history of depression than those with no such history (Hall et al. 1994, 1996, 1998). There is also evidence that cognitive behavioral therapy (CBT) interventions are especially helpful to smokers with a history of depression, but only with smokers who have a history of recurrent episodes of MDD rather than a history of a single episode (Brown et al. 2001, Haas et al. 2004). The reason for this specificity is not clear. It is possible that a single episode of depression is a disorder that is qualitatively different from recurrent episodes. For example, a single episode could be brought on by life events, such as illness or loss, that are not detected in the assessment. It is also possible that individuals with recurrent episodes have, over their lifetimes, learned to use skills to manage depression, anger, irritability, and other poor moods, and find CBT to be consistent with their coping styles.

One clinical trial that recruited from the general population included 91 smokers with current depression and found nicotine gum was particularly helpful among depressed versus nondepressed smokers (Kinnunen et al. 1996). In this study, current depression was defined as falling above a predetermined cutoff on the Center for Epidemiological Studies Depression Scale (Radloff 1977), a measure of depression widely used in the general population.

In the literature, there is only one randomized trial of smoking-cessation treatments for smokers who were clinically diagnosed with current depressive disorders (Hall et al. 2006). In this study, participants were recruited from outpatient mental health clinics. All had unipolar depression. Participants did not need to want to quit smoking to be included. They were randomly assigned to a stepped-care intervention or a brief contact and referral control. The first step of the experimental intervention included motivational counseling using a stages-of-change model computer-delivered expert system (Prochaska et al. 2001, Velicer & Prochaska 1999). The second step, implemented for smokers who were interested in quitting, included provision of

12 weeks of nicotine patches and six sessions of CBT counseling. As hypothesized, the experimental intervention increased seven-day point-prevalence abstinence rates at months 12 (20% versus 13%) and 18 (25% versus 19%) over that obtained in the control condition. The quit rate of 25% at 18 months in the treatment condition mirrors that found with stage-based expert system inter-ventions applied with the general population of unmotivated smokers (Prochaska et al. 2006c). Also, as hypothesized, the intervention made it more likely that heavy smokers would make a quit attempt but did not change the probability of a quit attempt for light smokers. A final hypothesis, that the innovative intervention would increase the probability of participants reporting a goal of total and complete abstinence, also was supported. The level of depression at study entrance did not predict smoking-treatment outcome, suggesting that depressed patients with a range of severity can profitably be offered smoking-treatment services.

Studies of the role of antidepressant drugs in the treatment of cigarette smoking followed studies of CBT in the treatment of cigarette smoking. It was implicitly assumed that the action of antidepressants would parallel that of CBT because they have somewhat parallel effects in the treatment of depression. That is, it was suggested that antidepressant drugs would be differentially helpful for smokers with a history of depressive disorder or with a current depressive disorder. Only two drugs commonly used as antidepressants have been shown to be effective treatments for cigarette smoking— sustained release bupropion and nortriptyline (Fiore 2000). However, neither drug is differentially effective for smokers with a history of depression. (Hughes et al. 2007). Other antidepressant drugs studied include fluoxetine (Blondal et al. 1999; Dalack et al. 1995; Niaura et al. 1997, 2002), sertraline (Covey et al. 2002), and venlafaxine (Frederick et al. 1997); none demonstrated efficacy in the treatment of cigarette smoking (Hughes et al. 2007).

Despite the number of tobacco-cessation treatment for smokers with current or past depression, many unanswered questions remain. We do not know, for example, if the findings of increased abstinence rates with CBT in patients with recurring depression will also hold for currently depressed smokers, and we do not know or if more extended and intensive behavioral and pharmacotherapy treatments will be needed to support long-term cessation. These questions have important implications for the integration of smoking-cessation treatment into mental health settings because the answers will dictate the practices and the personnel who provide smoking treatment in those settings. For example, differential effectiveness for CBT would suggest the need for providers with strong psychological backgrounds rather than those with a background in health education. However, it does appear that currently depressed smokers are interested in quitting and that interventions useful in the general population can help them do so. Current knowledge is sufficient to begin to offer smoking-cessation treatment to such patients.

An epidemiological study by Lasser and colleagues (2000) indicated a very high rate of smoking in individuals with bipolar disorders— 60.6%. This was the highest rate observed in any of the mental health disorders and was exceeded only by the substance abuse disorders. Despite this finding, there are no published studies of cigarette smoking cessation focused on smokers with bipolar disorder, and these individuals have been systematically excluded from many studies of smoking cessation, especially studies of antidepressants, because of concerns about possible precipitation of a manic episode by antidepressant administration. The only published report on smoking-cessation treatment in an individual with bipolar disorder is a recent case report suggesting that varenicline may have induced a manic episode (Kohen & Kremen 2007). Clearly, more work is needed examining tobacco-cessation treatment in smokers with bipolar depressive disorders.

Schizophrenia and schizoaffective disorders—The cigarette smoking rate among individuals with schizophrenia spectrum disorders is estimated to be as high as 88% in some samples, with rates particularly elevated in institutional settings in comparison with outpatient settings (Kalman 1998). A 2002 review identified only eight smoking cessation trials with currently mentally ill samples (El-Guebaly et al. 2002), all conducted with individuals diagnosed with schizophrenia. Sample sizes were small ($N = 9$ to 70), with six-month overall quit rates ranging from 7% to 16%. Pharmacological treatment, in the form of NRT, was suggested to be an important treatment component (Ziedonis & George 1997). Patient factors identified as positively associated with smoking cessation included fewer cigarettes per day at baseline, longer prior quit attempts, no history of alcohol or drug problems, and greater confidence about succeeding with cessation.

Early studies largely used NRT as a treatment adjunct and found modest cessation rates (for example, George et al. 2002, Ziedonis & George 1997). One study designed and evaluated an intervention tailored for patients with schizophrenia and found that it did no better than standard psychoeducational counseling (George et al. 2002). Two studies suggest that bupropion enhances smoking-cessation rates in smokers with schizophrenia and that it is safe for these individuals. In both studies, the cessation rates were low, even though they exceeded those of the placebo group, and relapse rates were high. George et al. (2002) reported a 50% abstinence rate at the end of treatment using bupropion compared to 12% in the placebo control condition. Evins et al. (2005) reported a 36% end-of-treatment abstinence rate with bupropion compared to 7% in the placebo condition (Evins et al. 2005). The difference in rates between these two studies may reflect the more stringent screening procedures used by George and colleagues, who required reports of motivation to quit smoking on three separate occasions before acceptance into the study. Both studies reported considerable relapse by six months from study start.

There are several reasons why smokers with schizophrenia may be relatively refractory to smoking-cessation treatments. For the most part, these individuals are heavy smokers; in the general population, greater nicotine dependence and cigarettes smoked per day predict smoking-treatment failure. Also, it is possible that the stimulant effects of nicotine may counteract some of the sedating effects of antipsychotic medications and that nicotine may facilitate cognitive processes that are impaired in schizophrenia (Dalack et al. 1998).

A recent case series with 19 smokers diagnosed with schizophrenia reported on the efficacy, safety, and tolerability of varenicline for smoking cessation (Evins 2008). The 19 patients had attempted cessation previously with NRT or bupropion, were on stable antipsychotic medication regimens, and received a standard titration of varenicline. Varenicline treatment was associated with reduced craving to smoke in all 19 patients. Side effects of nausea and vomiting led to four patients discontinuing varenicline use, though one of the four later restarted varenicline and was able to tolerate treatment without vomiting. Thirteen of the 19 patients who continued varenicline treatment quit smoking and maintained abstinence for at least 12 weeks, verified with periodic expired air carbon monoxide measurements of <9 ppm. Larger, randomized controlled trials are needed to further evaluate varenicline use with individuals diagnosed with schizophrenia.

Anxiety disorders—In a randomized controlled clinical trial with patients in a Veterans Health Administration (VHA) hospital, McFall et al. (2005) assigned smokers in treatment for posttraumatic stress disorder (PTSD) to cigarette smoking treatment delivered by their PTSD clinicians and integrated within their PTSD care (integrated care) or to smoking services delivered by cessation specialists separately (usual care). Seven-day point-prevalence abstinence was measured at 2, 4, 6, and 9 months after study start. Results indicated that subjects assigned to integrated care were five times more likely than were subjects undergoing usual

care to be abstinent from smoking across the follow-up assessments. They also were more likely to receive NRT and attended more cessation sessions. Treatment for cigarette smoking was not found to be associated with worsening PTSD symptoms (McFall et al. 2005). This intervention is being studied in a multisite clinical trial at 10 VHA hospitals, with a projected N of 1400. Participants will be assessed every three or six months for up to four years. This study will provide the largest-scale test of the feasibility and effectiveness of smoking-cessation treatment in psychiatric care settings ever conducted (McFall et al. 2007). Data from a very small clinical trial also suggest that bupropion may be safe, efficacious, and well tolerated among patients with PTSD (Hertzberg et al. 2001).

Lasser's national epidemiological data suggest that individuals with current generalized anxiety disorder have the second-highest rate of cigarette smoking among the mental health disorders, second only to bipolar disorder (Lasser et al. 2000). Despite this, no interventions for cigarette smoking in smokers with anxiety disorders other than PTSD have been reported.

Summary—The treatment of smokers with co-occurring psychiatric and substance abuse disorders is certainly in its infancy, especially if one focuses on treatment in patients with active disorders and is interested in the full range of psychopathology, including more than depression. The limited data available suggest that treatments developed for the general population produce higher abstinence rates than do placebo or other control treatments, but the overall abstinence rates in both psychiatric and substance abuse treatment populations are lower than in studies that draw from the general population. Efforts to integrate smoking treatment are lacking. The ongoing study by McFall et al. (2005) promises to shed light on the success of such integration in at least one setting—Veterans Health Administration hospitals. This pioneering effort does have some limitations, as the authors acknowledge, including the restriction to one health care setting and the lack of female smokers in the sample.

The provision of cigarette smoking assessment, referral, and treatment in mental health settings would seem to be especially acute in the case of the seriously mentally ill, and a substantial proportion of that group have schizophrenic disorders. Psychiatrists are frequently the only physicians with whom the seriously mentally ill have consistent contact. On those few occasions when these patients do see primary care providers, their behavior may be such that the provider is unable to supply optimal care. Since the primary care provider is often considered the conduit to smoking treatment, if not the provider of such treatment, this group of patients may be seriously underserved with respect to their cigarette smoking if cessation treatment is not offered in mental health settings. This is doubly unfortunate when the high smoking rates of these patients are taken into account (Shore 1996).

Adolescent Smokers with Co-Occurring Disorders

Despite the high rate of smoking among comorbid adolescents, there are only three published studies on the treatment of smoking cessation in this age group, one with adolescents with co-occurring mental illness and two focused on smokers with co-occurring addictive disorders. A randomized trial recruited 191 adolescents from an acute psychiatric inpatient setting and compared motivational interviewing to brief advice for treating nicotine dependence. The motivational intervention increased self-efficacy for quitting smoking, but differences in abstinence rates were not significant, perhaps due to inadequate power (Brown et al. 2003). At 12 months, quit rates were 14% and 9% for the motivational intervention and brief advice conditions, respectively. The authors concluded that more enhanced and intensified cessation-treatment approaches are needed for adolescent smokers with psychiatric comorbidity (Brown et al. 2003).

Among adolescents with co-occurring addictive disorders, an uncontrolled trial with 35 adolescents demonstrated that participation in a tobacco-related intervention during substance

abuse treatment was associated with abstinence and cessation in the three months following treatment (Myers et al. 2000). A follow-up controlled efficacy study with 54 adolescents in substance abuse treatment compared a six-session tobacco-cessation intervention to a wait-list control group. Adolescents receiving the tobacco-cessation intervention had significantly greater point-prevalence abstinence at three-month follow-up than did those in the control group (Myers & Brown 2005). In a follow-up analysis, Myers & Prochaska (2008) found that adolescents in substance abuse treatment who were randomized to a cigarette smoking intervention reported significantly fewer days of substance use and were somewhat more likely to be abstinent at three-month follow-up than were those in the control condition (Myers & Prochaska 2008).

BARRIERS TO TREATMENT

Given that smoking prevalence is high among comorbid populations, that major health groups support smoking-cessation services for comorbid patients, and that useful treatments are available, one must ask why so few mental health or substance abuse facilities offer smoking-cessation treatment to their clients. Several explanations exist, including concerns that in the case of psychiatric patients, cessation will result in worsening of psychiatric symptoms, and that in the case of patients in substance abuse, cessation will interfere with abstinence from other drugs. Other barriers are the lack of preparation of mental health personnel for treatment of cigarette smoking and insufficient reimbursement.

Perceptions that Quitting Smoking Will Worsen Mental Health Recovery

Most mental illnesses are chronic, relapsing disorders. There is concern that termination of cigarette smoking will result in an increase in psychiatric symptomatology or in relapse in patients who are symptom free while they are smoking. There are several possible mechanisms by which this might occur. The stress of cessation could exacerbate symptoms, as any other stressor might. With respect to MDD, the symptoms of cigarette smoking withdrawal overlap with the symptoms of depression, so it seems plausible that smoking cessation might exacerbate symptoms or even precipitate a depressive episode. There is biologically based evidence that the nicotine in cigarette smoking may function much like an antidepressant. For example, data show that tobacco smoke exposure is correlated with a reduction in brain monoamine oxidase (MAO) (Fowler et al. 1996). MAO inhibitors are effective antidepressants, and it is possible that removal of MAO inhibition during smoking abstinence would result in depression. Similarly, investigators have suggested that smoking in schizophrenia may be a way to self-medicate the symptoms of the disease. For example, Dalack et al. (1998) have suggested that schizophrenic patients have a primary defect in the central nervous system's nicotinic system that leads to abnormal processing of information (Dalack et al. 1998).

Depression—There has been considerable interest in the reoccurrence of MDD among smokers with a history of MDD who quit smoking. The majority of reports in the literature are based on case studies of individuals who quit smoking (for example, Borrelli et al. 1996; Covey et al. 1990, 1997). These studies suggest that smokers with an MDD history may have an increased risk of a relapse to depression after quitting smoking. The cessation attempt may be linked to abstinence, but since MDD is a chronic and relapsing disease, this cannot be determined from case studies.

There are two published studies of reasonable size that included some form of controls and systematically addressed this issue. They produced disparate outcomes. In the first, Tsoh et al. (2000) studied 304 participants and found no differences in rate of occurrence of episode of depression as a function of abstinence status over a one-year period. However, there was a 14.1% incidence of depressive episodes over that period, independent of history of depression. Among individuals with a depression history, 23.9% experienced a depressive episode. Among

those without such a history, 9.7% experienced such an episode. For both history-positive and history-negative subjects, the occurrence of an episode was independent of abstinence status at the time of the assessment. These findings suggest that abstinence and depression are unrelated. The incidence of episodes is quite high, however, and the high incidence of episodes across both abstinent and smoking participants suggests caution should be used in interpreting the findings. It is possible that the process of quitting itself, or even a reduction in the amount smoked, could precipitate depressive episodes. This study, however, was not designed to address these issues.

Glassman et al. (2001) studied 100 participants, all of whom had a diagnosis of past MDD. These investigators found that 6% ($n = 2$) of those smoking reported a recurrence of depression compared to 31% ($n = 13$) of those who were abstinent. These results are not conclusive, however, because of the marked differential dropout rates between smokers in the two abstinence status categories; 95% (42/44) of quitters were followed, as compared with 61% (34/56) of continuing smokers. The authors reported no significant confounding factors between smoking and abstinent participants at baseline; it remains, however, that a much higher proportion of smokers were not contacted. Therefore, it is reasonable to assume that individuals who were suffering from depressive episodes were less likely to return for follow-up and hence that the rate of recurrence of depression among smokers is underestimated.

In the study of smokers in outpatient treatment for current depression (Hall et al. 2006), there was no evidence of recurrence or worsening of symptoms as a function of cigarette abstinence (Prochaska et al. 2008c). Smoking status was unrelated to changes in mental health functioning as measured by the Short Form-36, days of hospitalization, or changes in severity of depression or suicidal ideation as measured by the Beck Depression Inventory-II (Beck et al. 1996). Also, there were no differences in cessation outcomes as a function of depression type (recurrent versus single episode), severity of depression, or whether the depression was current or in remission (Hall et al. 2006).

Schizophrenia—A few studies of smokers with schizophrenia have examined side effects of smoking treatment. None of the studies that have addressed this issue has found evidence that smoking cessation increases schizophrenia symptomatology (Addington 1998, Evins et al. 2005, George et al. 2002). Two small randomized trials that used bupropion as a treatment adjunct indicated that bupropion had positive effects on treatment outcome and also decreased the negative symptoms of schizophrenia (Evins et al. 2005, George et al. 2002). George et al. (2002) reported that use of atypical antipsychotics increased responsiveness to bupropion as a smoking-cessation adjunct. Furthermore, Addington et al. (1998) used nicotine patches along with group treatment and found no evidence of worsening of schizophrenic symptoms. Thus, it appears that smoking cessation does not result in an exacerbation of schizophrenia symptoms, and that medications commonly used to treat tobacco dependence—NRT, and especially bupropion—may have mildly positive effects on the symptoms of schizophrenia.

In a recent case report, Freedman (2007) described an episode of uncontrolled behavior in a patient with schizophrenia who was being treated with varenicline for tobacco dependence and provided a receptor-based rationale for why varenicline might be harmful for use in schizophrenic patients. However, this single case study has yet to be substantiated in controlled work or work with larger samples. In the case series report of varenicline use with 19 smokers diagnosed with schizophrenia described above, none of the patients evidenced psychotic relapse, significant worsening of psychiatric symptoms, or side effects of antipsychotic medications, and none were hospitalized for psychiatric illness within 24 weeks of starting varenicline (Evins 2008).

In summary, then, fears that smoking cessation can produce worsening of the symptoms of psychiatric illnesses may be unfounded, but the issue has not been resolved entirely. In evaluating the individual cases studies and case study series that suggest worsening may occur, it must be remembered that, for the most part, psychiatric disorders are chronic, relapsing disorders that can be expected to wax and wane over time. To the extent to which stress influences psychiatric symptoms, one can also argue that it is quite reasonable for cessation or even cessation attempts to potentially exacerbate symptoms, much as any stressor might. This phenomenon is another argument for providing smoking-cessation services in mental health treatment settings, where personnel are trained to recognize and treat increases in symptoms. It is always prudent for the clinician to be aware of the possibility of worsening symptoms during the course of smoking-cessation treatment, but such concerns should not be a reason for delaying or denying cessation treatment to smokers with psychiatric illnesses.

Concern that Smoking Cessation Will Interfere with Abstinence from Other Substances

It has long been the case that alcohol treatment patients were discouraged from focusing on major life changes other than their alcohol use. As recently as 1983, in a survey of alcohol treatment staff, 55% indicated they thought the best time to encourage cessation would be after one year of sobriety, 23% thought that five years after sobriety would be best, and another 23% responded “never” (Bobo & Gilchrist 1983). By 1995, the picture had changed considerably. In a similar survey (Bobo et al. 1995), even though only 3% of staff indicated that they would discourage a client who desired to stop, a minority (35%) agreed that alcohol treatment patients should be urged to quit smoking while in treatment; 77% thought that alcohol treatment patients who had been abstinent for one year should be urged to quit. In 1995, 49% had specifically advised a client to quit smoking, and 30% stated that they routinely advised clients to quit. These data are quite revealing, and as Bobo et al. (1995) suggest, indicate considerable ambivalence about treating tobacco use in substance abusers.

More recently, Fuller et al. (2007) surveyed 3786 employees of drug treatment clinics who participated in the Clinical Trials Network smoking cessation study led by Reid et al. (2008). These investigators focused on attitudes toward integrating smoking cessation services into drug treatment and the correlates of positive attitudes toward cessation. Staff attitudes toward integration were more positive in agencies that offered some kind of treatment for nicotine dependence. It is difficult, of course, to disentangle cause and effect in this relationship. Measured on a 5-point Likert scale, with higher scores indicating more favorable attitudes, staff from agencies that offered some sort of treatment for nicotine dependence were more favorably inclined toward integration ($M = 3.7$) than those that did not ($M = 3.5$), but in both cases, this level of endorsement can be considered only moderately positive.

Taken together, these data, sparse and in part dated, suggest a picture of addiction treatment systems that have, at best, mixed perceptions about the value of smoking cessation treatment. Yet, the meta-analysis completed by Prochaska et al. (2004a) indicated that providing smoking-cessation interventions did not impede abstinence from alcohol and illicit drugs. At post-treatment assessment, non-nicotine substance-use abstinence rates were 52% in the intervention group and 54% in the comparison condition, a nonsignificant difference. At long-term follow-up, non-nicotine abstinence rates were 37% in the intervention group and 31% in the comparison conditions, indicating a slight but significant increase in the likelihood of abstinence from drugs and alcohol among participants receiving a smoking-cessation intervention relative to participants in the control condition. Few studies in the meta-analysis reported differences in substance use among patients in recovery treated for smoking cessation, but those that did so seemed to indicate no differences between smoking intervention and control conditions.

The study later reported by Joseph and colleagues, however, suggests that timing may be important (Joseph et al. 2004). Six-month abstinence from alcohol and 30-day abstinence from alcohol were consistently worse in the concurrent smoking-cessation group than in the delayed group at 6, 12, and 18 months. The authors concluded that smoking-cessation interventions may be best provided with patients after intensive alcohol treatment. These data stand alone, however, and the final answer must await further study.

Lack of Provider Awareness and Education

A variety of medical curricula have been developed to address cigarette smoking, and a recent systematic review (Lancaster et al. 2000) suggested that training health professionals had a measurable effect on professional performance, including offering counseling, setting quit dates and follow-up visits, distributing self-help materials, and recommending nicotine replacement. Of the 10 trials identified, however, none was conducted with mental health professionals (Lancaster et al. 2000). Importantly, surveys in the literature suggest the need for training psychologists, psychiatrists, and other mental health providers in evidence-based tobacco-cessation treatments.

Psychologists—A national survey of 256 practicing psychologists found that few psychologists regularly assess clients' tobacco use, advise them to quit, assess their willingness to quit, assist them with quitting, or arrange follow-up (Phillips & Brandon 2004). Psychologists' intervention on tobacco use was significantly lower than for other client behaviors, such as alcohol or illicit drug abuse. Lack of clinician training in evidence-based tobacco-cessation treatments and an underappreciation of the benefits of cessation were identified as factors contributing to the low levels of intervention.

Psychiatrists and psychiatry residents

Few psychiatrists routinely address patients' cigarette smoking, and psychiatry residents report a lack of cigarette smoking treatment in medical school and psychiatry residency (Himelhoch & Daumit 2003, Montoya et al. 2005, Prochaska et al. 2005). Nationally, only half of psychiatry residency programs provide training for treating cigarette smoking and dependence, with a median reported duration of one hour (Prochaska et al. 2006b). Programs without cessation training report low levels of confidence in residents' skills for treating nicotine dependence and specify lack of faculty expertise as a barrier to training.

Dissemination of an evidence-based cigarette smoking treatment curriculum has the potential of dramatically increasing the proportion of smokers with mental illness who receive assistance with quitting. The *Rx for Change in Psychiatry* curriculum, developed for psychiatry residency training programs, provides four hours of evidenced-based training in treating cigarette smoking in smokers with co-occurring disorders (Prochaska et al. 2008a). The curriculum was evaluated with 55 residents in three psychiatry residency training programs and was associated with improvements in psychiatry residents' knowledge, attitudes, confidence, and counseling behaviors for treating cigarette smoking among their patients, with initial changes from pre- to post-training sustained at three-months follow-up ($p < 0.05$). Residents' self-reported changes in treating patients' cigarette smoking were substantiated through systematic review of 1204 medical records.

Lack of health care coverage—Medicare covers cessation counseling and pharmacotherapy (e.g., NRT, bupropion) for smokers with tobacco-related health conditions or drug interactions. Medicaid coverage for smoking cessation varies greatly by state (Schauffler et al. 2001). Among private insurance plans, services and resources vary widely by plan type within carrier and may change over time. Some plans offer online programs, behavioral coaches via telephone, access to cessation pharmacotherapy, or group treatment.

We are not aware of any health care programs that routinely provide services integrating mental health or addictions treatment with smoking cessation.

Cost—The issue of cost of treatment is invariably raised when the provision of a new service is proposed. No formal cost-effectiveness studies have compared provision of cigarette smoking treatment in mental health settings with referral to outside sources. Barnett and colleagues (2008) studied the cost effectiveness of providing smoking cessation within a mental health clinic. The analysis compared smokers who were assigned to the experimental stepped-care intervention to a standard treatment control (described in more detail in section 5.B.1). Total cost of smoking cessation and mental health services was \$4805 in the stepped-care group and \$4173 in the brief-contact-care group, a nonsignificant difference. Smoking-cessation services cost \$6204 per successful quit. Costs for cessation services and mental health care were \$11,496 per successful quit. Based on the abstinence increment of 5.1% and findings in the literature that smoking cessation yields 1.2 years additional life, Barnett et al. (2008) concluded that the cessation services cost \$5170 per life-year, and cessation services and mental health care cost \$9580 per life-year, an acceptable cost.

Conceptually, it seems quite reasonable that provision of smoking-cessation services within mental health and substance abuse settings would be cost effective. Providers have many of the skills needed to provide treatment, including counseling and cognitive behavioral therapy skills. Staff usually includes professionals versed in psychopharmacology. Furthermore, the pharmacology of NRT is straightforward, and three of the five available formulations (transdermal patch, gum, and lozenge) are available over the counter. One other drug used in the treatment of nicotine dependence, bupropion, is used primarily as an antidepressant, and as such is well known to mental health providers at least, if not also to substance abuse treatment providers.

MODELS OF INTEGRATION

Ziedonis and colleagues (2003) have developed a model program that integrates treatment for tobacco dependence into mental health treatment for the seriously mentally ill based at the University of Medicine and Dentistry of New Jersey. The model includes a motivation-based treatment module, assessment of smoking in all patients, acceptance of harm reduction, and access to treatment. This model includes extensive community consultation, which has been implemented in more than 30 mental health clinics. No data on its success have been provided.

The VHA has been a leader in the integration of smoking-cessation services into general health care in multiple ways, including staff education, establishment of smoke-free campuses, identification of smokers in the treatment system, provision of medication and cessation counseling, and implementation of ideal practices that emphasize both pharmacological and behavioral treatment. The history of cigarette smoking treatment in the VHA has been aptly described by Hamlett-Berry (2004). However, for the most part, the model has consisted primarily of referral of smokers to comprehensive smoking-cessation services, and with the exception of the multisite study being conducted by McFall et al. (2005), integration of cessation services into mental health and drug abuse services does not generally occur. As Hamlett-Berry (2004) suggests, “As the largest single provider of mental health and substance abuse care, the VA also has the potential to serve as a national laboratory to assist in the development and evaluation of evidence-based intervention for special populations, such as psychiatric and substance use disorder populations that are disproportionately affected by smoking and smoking-related illnesses.”

Researchers, clinicians, and policy advocates have called for implementation of “denormalization of smoking” in the addiction treatment and recovery community (Ziedonis

et al. 2006). Such strategies include banning cigarette smoking among clients and staff from treatment grounds, assessing and treating tobacco dependence in treatment programs, attention to secondhand smoke effects on children and families of people in recovery, and revealing how the tobacco industry targets people with other addictions (for example, marketing strategies that link alcohol and tobacco) (Ziedonis et al. 2006). Research on the best strategies for denormalizing smoking and the resulting impact on treatment practices and patient smoking rates are needed.

PREVENTION

In addition to serving as treatment sites for cigarette smoking, mental health and substance abuse treatment facilities may also be sites for prevention efforts in comorbid populations. For example, attention deficit-hyperactivity disorder (ADHD) is most commonly diagnosed between seven and nine years of age. Initiation of cigarette smoking occurs later, increasing rapidly after age 11, and peaking around ages 17 to 19 (Escobedo et al. 1990). Rates of smoking for adolescents with ADHD are two to three times higher than those for adolescents without ADHD (Hall 2007), and there is evidence that adults with childhood ADHD may have more difficulty in quitting smoking than the general population (Humfleet et al. 2005). Clinicians treating these children would be well advised to begin smoking-prevention efforts as soon as the disorder is identified. Such efforts could include smoking-cessation treatment with parents who smoke, as well as patient and parent education.

Another group that may be at risk is children of individuals with alcohol and other substance abuse disorders. Schuckit and colleagues (2004) reported that sons of individuals with alcohol problems were more likely to be recent smokers than were controls, regardless of whether they had an alcohol problem themselves. Treating patients in alcohol treatment for cigarette smoking may thus not only help them, it may also reduce the probability of smoking among their children. That, plus parental education about the increased risks of initiation of smoking, could potentially be beneficial. The same argument could be made with any mental disorder that appears to have a familial linkage.

Unfortunately, drug abuse treatment may facilitate the initiation or resumption of smoking, especially if smoking is allowed among clients and staff. Kohn and coworkers (2003) studied patients who received drug and alcohol treatment in a health maintenance organization and assessed smoking status at baseline and one year. Of the 749 participants who entered the study, 649 (86.9%) were retained at follow-up. At one year, 13% of the participants who were smoking at baseline had quit, and 12% of those who were nonsmokers had relapsed or resumed smoking. It is unknown whether this phenomenon will be replicated in other samples or whether mental health facilities are also at risk of encouraging smoking initiation or relapse. This issue is worthy of further study.

SUMMARY AND CONCLUSIONS

In summary, smoking rates are high among individuals with substance abuse and mental health disorders. Motivation for quitting in these groups appears to approximate that of the general population, and treatment strategies are available that benefit them, at least for adults. The data for adolescents are extremely sparse. The relationship of nicotine and tobacco abstinence and relapse to other symptomatology— be it psychiatric or alcohol and drug related— is not yet resolved, but the evidence is tipped somewhat toward lack of a relationship between tobacco abstinence and relapse. Nevertheless, with individual clients, clinicians would be well advised to be alert for possible interactions and to modify treatment appropriately. Much remains to be done to facilitate the integration of smoking-cessation services in mental health and drug abuse treatment settings, including developing system-wide interventions and influencing insurers

to provide comprehensive and extended coverage of smoking-cessation services. Finally, mental health and substance abuse settings may provide new venues for prevention because they allow access to populations with high cigarette smoking rates.

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LITERATURE CITED

- Acton GS, Kunz JD, Wilson M, Hall SM. The construct of internalization: conceptualization, measurement, and prediction of smoking treatment outcome. *Psychol. Med* 2005;35:395–408. [PubMed: 15841875]
- Addington J. Group treatment for smoking cessation among persons with schizophrenia. *Psychiatr. Serv* 1998;49:925–928. [PubMed: 9661227]
- Addington J, El-Guebaly N, Addington D, Hodgins D. Readiness to stop smoking in schizophrenia. *Can. J. Psychiatry* 1997;42:49–52. [PubMed: 9040923]
- American Psychiatric Association. *Diagnostic Criteria from DSM-IV*. Washington, DC: Am. Psychiatr. Assoc; 1994.
- oAmerican Psychiatric Association. *Practice Guidelines for the treatment of patients with nicotine dependence*. *Am. J. Psychiatry* 1996;153:1–31.
- American Psychiatric Association. *Practice Guidelines for the Treatment of Patients with Substance Use Disorders*. Vol. 2nd ed. Washington, DC: Am. Psychiatr. Assoc; 2006.
- Apollonio DE, Malone RE. Marketing to the marginalised: tobacco industry targeting of the homeless and mentally ill. *Tob. Control* 2005;14:409–415. [PubMed: 16319365]
- Asher MK, Martin RA, Rohsenow DJ, MacKinnon SV, Traficante R, Monti PM. Perceived barriers to quitting smoking among alcohol dependent patients in treatment. *J. Subst. Abuse Treat* 2003;24:169–174. [PubMed: 12745034]
- Barnett PG, Wong W, Hall S. The cost-effectiveness of a smoking cessation program for out-patients in treatment for depression. *Addiction* 2008;103:834–840. [PubMed: 18412763]
- Beck, AT.; Steer, RA.; Brown, G. *Beck Depression Inventory*. Vol. 2nd ed. San Antonio, TX: Harcourt Brace Educ. Meas; 1996.
- Bien TH, Burge R. Smoking and drinking: a review of the literature. *Int. J. Addict* 1990;25:1429–1454. [PubMed: 2094682]
- Blondal T, Gudmundsson LJ, Tomasson K, Jonsdottir D, Hilmarsdottir H, et al. The effects of fluoxetine combined with nicotine inhalers in smoking cessation—a randomized trial. *Addiction* 1999;94:1007–1015. [PubMed: 10707439]
- Bobo JK, Gilchrist LD. Urging the alcoholic client to quit smoking cigarettes. *Addict. Behav* 1983;8:297–305. [PubMed: 6666694]
- Bobo JK, Slade J, Hoffman A. Nicotine addiction counseling for chemically dependent patients. *Psychiatr. Serv* 1995;46:945–947. [PubMed: 7583510]
- Borrelli B, Niaura R, Keuthen NJ, Goldstein MG, DePue JD, et al. Development of major depressive disorder during smoking-cessation treatment. *J. Clin. Psychiatry* 1996;57:534–538. [PubMed: 8968303]
- Brown RA, Kahler CW, Niaura R, Abrams DB, Sales SD, et al. Cognitive-behavioral treatment for depression in smoking cessation. *J. Consult. Clin. Psychol* 2001;69:471–480. [PubMed: 11495176]
- Brown RA, Lewinsohn PM, Seeley JR, Wagner EF. Cigarette smoking, major depression, and other psychiatric disorders among adolescents. *J. Am. Acad. Child Adolesc. Psychiatry* 1996;35:1602–1610. [PubMed: 8973066]
- Brown RA, Ramsey SE, Strong DR, Myers MG, Kahler CW, et al. Effects of motivational interviewing on smoking cessation in adolescents with psychiatric disorders. *Tob. Control* 2003;12:iv3–iv10. [PubMed: 14645934]

- Carosella AM, Ossip-Klein DJ, Owens CA. Smoking attitudes, beliefs, and readiness to change among acute and long term care inpatients with psychiatric diagnoses. *Addict. Behav* 1999;24:331–344. [PubMed: 10400273]
- Clarke JG, Stein MD, McGarry KA, Gogineni A. Interest in smoking cessation among injection drug users. *Am. J. Addict* 2001;10:159–166. [PubMed: 11444157]
- Colby, KM. *A Primer for Psychotherapists*. New York: Ronald Press; 1951.
- Colton CW, Manderscheid RW. Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. *Prev. Chronic Dis* 2006;3:A42. [PubMed: 16539783]
- Covey LS, Glassman AH, Stetner F. Depression and depressive symptoms in smoking cessation. *Compr. Psychiatry* 1990;31:350–354. [PubMed: 2387147]
- Covey LS, Glassman AH, Stetner F. Major depression following smoking cessation. *Am. J. Psychiatry* 1997;154:263–265. [PubMed: 9016279]
- Covey LS, Glassman AH, Stetner F, Rivelli S, Stage K. A randomized trial of sertraline as a cessation aid for smokers with a history of major depression. *Am. J. Psychiatry* 2002;159:1731–1737. [PubMed: 12359680]
- Currie SR, Nesbitt K, Wood C, Lawson A. Survey of smoking cessation services in Canadian addiction programs. *J. Subst. Abuse Treat* 2003;24:59–65. [PubMed: 12646331]
- Dalack GW, Glassman AH, Rivelli S, Covey L, Stetner F. Mood, major depression and fluoxetine response in cigarette smokers. *Am. J. Psychiatry* 1995;152:398–403. [PubMed: 7864266]
- Dalack GW, Healy DJ, Meador-Woodruff JH. Nicotine dependence in schizophrenia: clinical phenomena and laboratory findings. *Am. J. Psychiatry* 1998;155:1490–1501. [PubMed: 9812108]
- de Leon J, Dadvand M, Canuso C, White AO, Stanilla JK, Simpson GM. Schizophrenia and smoking: an epidemiological survey in a state hospital. *Am. J. Psychiatry* 1995;152:453–455. [PubMed: 7864277]
- DiClemente CC, Prochaska JO, Fairhurst SK, Velicer WF, Velasquez MM, Rossi JS. The process of smoking cessation: an analysis of precontemplation, contemplation, and preparation stages of change. *J. Consult. Clin. Psychol* 1991;59:395–404.
- Dursun SM, Kutcher S. Smoking, nicotine and psychiatric disorders: evidence for therapeutic role, controversies and implications for future research. *Med. Hypotheses* 1999;52:101–109. [PubMed: 10340289]
- El-Guebaly N, Cathcart J, Currie S, Brown D, Gloster S. Smoking cessation approaches for persons with mental illness or addictive disorders. *Psychiatr. Serv* 2002;53:1166–1170. [PubMed: 12221317]
- Escobedo LG, Anda RF, Smith PF, Remington PL, Mast EE. Sociodemographic characteristics of cigarette smoking initiation in the United States. Implications for smoking prevention policy. *J. Am. Med. Assoc* 1990;264:1550–1555.
- Etter M, Mohr S, Garin C, Etter JF. Stages of change in smokers with schizophrenia or schizoaffective disorder and in the general population. *Schizophr. Bull* 2004;30:459–468. [PubMed: 15279060]
- Evins AE. Varenicline treatment for smokers with schizophrenia: a case series. *J. Clin. Psychiatry* 2008;69:1016. [PubMed: 18683999]
- Evins AE, Cather C, Deckersbach T, Freudenreich O, Culhane MA, et al. A double-blind placebo-controlled trial of bupropion sustained-release for smoking cessation in schizophrenia. *J. Clin. Psychopharmacol* 2005;25:218–225. [PubMed: 15876899]
- Federal Trade Commission Cigarette Report for 2003. Washington, DC: Fed. Trade Commiss; 2005. Federal Trade Commission.
- Fiore MC. Clinical practice guidelines for treating tobacco use and dependence: a U.S. Public Health Service Report. *J. Am. Med. Assoc* 2000;283:3244–3254.
- Fiore, MC. Treating tobacco use and dependence: 2008 update. Clinical practice guideline. Rockville, MD: U.S. Dep. Health Human Serv., Public Health Serv. Rep; 2008.
- Fowler JS, Volkow ND, Wang GJ, Pappas N, Logan J, et al. Brain monoamine oxidase A inhibition in cigarette smokers. *Proc. Natl. Acad. Sci. USA* 1996;93:14065–14069. [PubMed: 8943061]
- Frank E, Boswell L, Dickstein L, Chapman D. Characteristics of female psychiatrists. *Am. J. Psychiatry* 2001;158:205–212. [PubMed: 11156802]

- Frederick, SL.; Hall, SM.; Reus, VI.; Sees, KL. The effect of venlafaxine on smoking cessation in participants with and without symptoms of depression. In: LS, Harris, editor. *Problems of Drug Dependence*; 1996: 58th Annual Scientific Meeting of the College on Problems of Drug Dependence, Inc; Washington, DC. NIDA; 1997.
- Freedman R. Exacerbation of schizophrenia by varenicline. *Am. J. Psychiatry* 2007;164:1269. [PubMed: 17671295]
- Fuller BE, Guydish J, Tsoh J, Reid MS, Resnick M, et al. Attitudes toward the integration of smoking cessation treatment into drug abuse clinics. *J. Subst. Abuse Treat* 2007;32:53–60. [PubMed: 17175398]
- George TP, Vessicchio JC, Termine A, Bregartner TA, Feingold A, et al. A placebo controlled trial of bupropion for smoking cessation in schizophrenia. *Biol. Psychiatry* 2002;52:53–61. [PubMed: 12079730]
- Glassman AH, Covey LS, Stetner F, Rivelli S. Smoking cessation and the course of major depression: a follow-up study. *Lancet* 2001;357:1129–1132. [PubMed: 11303607]
- Glassman AH, Stetner F, Walsh BT, Raizman PS, Fleiss JL, et al. Heavy smokers, smoking cessation, and clonidine. Results of a double-blind, randomized trial. *J. Am. Med. Assoc* 1988;259:2863–2866.
- Grant BF, Hasin DS, Chou SP, Stinson FS, Dawson DA. Nicotine dependence and psychiatric disorders in the United States—results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch. Gen. Psychiatry* 2004;61:1107–1115. [PubMed: 15520358]
- Haas AL, Muñoz RF, Humfleet GL, Reus VI, Hall SM. Influences of mood, depression history, and treatment modality on outcomes in smoking cessation. *J. Consult. Clin. Psychol* 2004;72:563–570. [PubMed: 15301640]
- Hall RG, Duhamel M, McClanahan R, Miles G, Nason C, et al. Level of functioning, severity of illness, and smoking status among chronic psychiatric patients. *J. Nerv. Ment. Dis* 1995;183:468–471. [PubMed: 7623020]
- Hall, SM. Treatment of co-morbid smokers. Presented at NIH Consensus and State-of-the-Science Statements on Tobacco Use: Prevention, Cessation, and Control; June 12–14, 2006; Bethesda, MD. 2006.
- Hall SM. Nicotine interventions with comorbid populations. *Am. J. Prev. Med* 2007;33:S406–S413. [PubMed: 18021916]
- Hall SM, Havassy BE, Wasserman DA. Commitment to abstinence and acute stress in relapse to alcohol, opiates, and nicotine. *J. Consult. Clin. Psychol* 1990;58:175–181. [PubMed: 2335634]
- Hall SM, Havassy BE, Wasserman DA. Effects of commitment to abstinence, positive moods, stress, and coping on relapse to cocaine use. *J. Consult. Clin. Psychol* 1991;59:526–532. [PubMed: 1918556]
- Hall SM, Muñoz RF, Reus VI. Cognitive-behavioral intervention increases abstinence rates for depressive-history smokers. *J. Consult. Clin. Psychol* 1994;62:141–146. [PubMed: 8034816]
- Hall SM, Muñoz RF, Reus VI, Sees KL. Nicotine, negative affect and depression. *J. Consult. Clin. Psychol* 1993;61:761–767. [PubMed: 7902368]
- Hall SM, Muñoz RF, Reus VI, Sees KL, Duncan C, et al. Mood management and nicotine gum in smoking treatment: a therapeutic contact and placebo-controlled study. *J. Consult. Clin. Psychol* 1996;64:1003–1009. [PubMed: 8916629]
- Hall SM, Reus VI, Muñoz RF, Sees KL, Humfleet G, et al. Nortriptyline and cognitive behavioral therapy in the treatment of cigarette smoking. *Arch. Gen. Psychiatry* 1998;55:683–690. [PubMed: 9707377]
- Hall SM, Tsoh JY, Prochaska JJ, Eisendrath S, Rossi JS, et al. Treatment for cigarette smoking among depressed mental health outpatients: a randomized clinical trial. *Am. J. Public Health* 2006;96:1808–1814. [PubMed: 17008577]
- Hamlett-Berry, K. Smoking Cessation Policy in the VA Health Care System: Where Have We Been and Where Are We Going?. Presented at VA in the Vanguard Conf; Sept. 21, 2004; San Francisco, CA. 2004.
- Hartman, F. A Biography of Alcoholics Anonymous Co-Founder Bill Wilson. Bill, W., editor. New York: St. Martin's Griffin; 2001.
- Hertzberg MA, Moore SD, Feldman ME, Beckham JC. A preliminary study of bupropion sustained-release for smoking cessation in patients with chronic posttraumatic stress disorder. *J. Clin. Psychopharmacol* 2001;21:94–98.

- Himelhoch S, Daumit G. Towhomdo psychiatrists offer smoking-cessation counseling? *Am. J. Psychiatry* 2003;160:2228–2230. [PubMed: 14638595]
- Holtzman A. Memo to Horace Kornegay about tax-free cigarettes for patient treatment. *Tob. Inst.* 1975TCAL0004383
- Hser YI, Gelbert L, Hoffman V, Grella CE, McCarthy W, Anglin MD. Health conditions among aging narcotics addicts: medical examination results. *J. Behav. Med* 2004;27:607–622. [PubMed: 15669446]
- Hser YI, McCarthy WJ, Anglin MD. Tobacco use as a distal predictor of mortality among long-term narcotics addicts. *Prev. Med* 1994;23:61–69. [PubMed: 8016035]
- Hughes JR. Taking smoking cessation treatment seriously: the American Psychiatric Association's practice guideline for the treatment of patients with nicotine dependence. *Addiction* 1998;93:469–470. [PubMed: 9684384]
- Hughes JR, Stead LF, Lancaster T. Antidepressants for smoking cessation. *Cochrane Database Syst Rev.* 2007CD000031
- Humfleet GL, Prochaska JJ, Mengis M, Cullen J, Muñoz R, et al. Preliminary evidence of the association between the history of childhood attention-deficit/hyperactivity disorder and smoking treatment failure. *Nicotine Tob. Res* 2005;7:453–460. [PubMed: 16085513]
- Hurt RD, Offord KP. Mortality following inpatient addictions treatment: role of tobacco use in a community-based cohort. *J. Am. Med. Assoc* 1996;275:1097–1102.
- Jones, E. *Life and Work of Sigmund Freud*. New York: Basic Books; 1955.
- Joseph AM, Willenbring ML, Nugent SM, Nelson DB. A randomized trial of concurrent versus delayed smoking intervention for patients in alcohol dependence treatment. *J. Stud. Alcohol* 2004;65:681–692. [PubMed: 15700504]
- Kalman D. Smoking cessation treatment for substance misusers in early recovery: a review of the literature and recommendations for practice. *Subst. Use Misuse* 1998;33:2021–2047. [PubMed: 9744841]
- Kendler KS, Neale MC, MacLean CJ, Heath AC, Eaves LJ, Kessler RC. Smoking and major depression. A causal analysis. *Arch. Gen. Psychiatry* 1993;50:36–43. [PubMed: 8422220]
- Kinnunen T, Doherty K, Militello FS, Garvey AJ. Depression and smoking cessation: characteristics of depressed smokers and effects of nicotine replacement. *J. Consult. Clin. Psychol* 1996;64:791–798. [PubMed: 8803370]
- Kohen I, Kremen N. Varenicline-induced manic episode in a patient with bipolar disorder. *Am. J. Psychiatry* 2007;164:1269–1270. [PubMed: 17671294]
- Kohn CS, Tsoh JY, Weisner CM. Changes in smoking status among substance abusers: baseline characteristics and abstinence from alcohol and drugs at 12-month follow-up. *Drug Alcohol Depend* 2003;69:61–71. [PubMed: 12536067]
- Lancaster T, Silagy C, Fowler G. Training health professionals in smoking cessation. *Cochrane Database Syst Rev.* 2000CD000214
- Lasser K, Boyd JW, Woolhandler S, Himmelstein DU, McCormick D, Bor DH. Smoking and mental illness: a population-based prevalence study. *J. Am. Med. Assoc* 2000;284:2606–2610.
- Lindsay GB, Rainey J. Psychosocial and pharmacologic explanations of nicotine's "gateway drug" function. *J. Sch. Health* 1997;67:123–126. [PubMed: 9130188]
- Marlatt GA, Curry S, Gordon JR. A longitudinal analysis of unaided smoking cessation. *J. Consult. Clin. Psychol* 1988;56:715–720. [PubMed: 3192787]
- McDonald CA, Roberts S, Descheemaeker N. Intentions to quit smoking in substance-abusing teens exposed to a tobacco program. *J. Subst. Abuse Treat* 2000;18:291–308. [PubMed: 10742645]
- McFall M, Saxon AJ, Thaneemit-Chen S, Smith MW, Joseph AM, et al. Integrating smoking cessation into mental health care for post-traumatic stress disorder. *Clin. Trials* 2007;4:178–189. [PubMed: 17456521]
- McFall M, Saxon AJ, Thompson CE, Yoshimoto D, Malte C, et al. Improving the rates of quitting smoking for veterans with posttraumatic stress disorder. *Am. J. Psychiatry* 2005;162:1311–1319. [PubMed: 15994714]

- Monihan, KM.; Schacht, LM.; Parks, J. A comparative analysis of smoking policies and practices among state psychiatric hospitals. Natl Assoc. State Mental Health Prog. Dir. Res. Inst. Inc. (NRI); 2006. http://www.nri-inc.org/reports_pubs/2006/SmokingPoliciesProceduresReport2006.pdf
- Montoya ID, Herbeck DM, Svikis DS, Pincus HA. Identification and treatment of patients with nicotine problems in routine clinical psychiatry practice. *Am. J. Addict* 2005;14:441–454. [PubMed: 16257881]
- Myers MG, Brown SA. A controlled study of a cigarette smoking cessation intervention for adolescents in substance abuse treatment. *Psychol. Addict. Behav* 2005;19:230–233. [PubMed: 16011397]
- Myers MG, Brown SA, Kelly JF. A smoking intervention for substance abusing adolescents: outcomes, predictors of cessation attempts, and post-treatment substance use. *J. Child Adolesc. Subst. Abuse* 2000;9:77–91.
- Myers MG, MacPherson L. Smoking cessation efforts among substance abusing adolescents. *Drug Alcohol Depend* 2004;73:209–213. [PubMed: 14725961]
- Myers MG, Prochaska JJ. Does smoking intervention influence adolescent substance use disorder treatment outcomes? *Subst. Abuse*. 2006In press
- Nahvi S, Richter K, Li X, Modali L, Arnsten J. Cigarette smoking and interest in quitting in methadone maintenance patients. *Addict. Behav* 2006;31:2127–2134. [PubMed: 16473476]
- National Institutes of Health. State-of-the-Science Conference Statement on Tobacco Use: Prevention, Cessation, and Control. 2006. <http://consensus.nih.gov/2006/TobaccoStatementFinal090506.pdf>
- Niaura R, Spring B, Borrelli B, Goldstein M, Keuthen N, et al. Fluoxetine for smoking cessation: a multicenter randomized double blind dose response study. *Ann. Behav. Med* 1997;19:S042.
- Niaura R, Spring B, Borrelli B, Hedeker D, Goldstein M, et al. Multicenter trial of fluoxetine as an adjunct to behavioral smoking treatment. *J. Consult. Clin. Psychol* 2002;70:887–896. [PubMed: 12182272]
- Oquendo MA, Galfalvy H, Russo S, Ellis SP, Grunebaum MF, et al. Prospective study of clinical predictors of suicidal acts after a major depressive episode in patients with major depressive disorder or bipolar disorder. *Am. J. Psychiatry* 2004;161:1433–1441. [PubMed: 15285970]
- Phillips KM, Brandon TH. Do psychologists adhere to the clinical practice guidelines for tobacco cessation? A survey of practitioners. *Prof. Psychol. Res. Pract* 2004;35:281–285.
- Prochaska JJ, Delucchi K, Hall SM. A meta-analysis of smoking cessation interventions with individuals in substance abuse treatment or recovery. *J. Consult. Clin. Psychol* 2004a;72:1144–1156. [PubMed: 15612860]
- Prochaska JJ, Fletcher L, Hall SE, Hall SM. Return to smoking following a smoke-free psychiatric hospitalization. *Am. J. Addict* 2006a;15:15–22. [PubMed: 16449089]
- Prochaska JJ, Fromont SC, Hall SM. How prepared are psychiatry residents for treating nicotine dependence? *Acad. Psychiatry* 2005;29:256–261. [PubMed: 16141120]
- Prochaska JJ, Fromont SC, Leek D, Hudmon K, Louie AK. Evaluation of an evidence-based tobacco treatment curriculum for psychiatry residency training programs. *Acad. Psychiatry*. 2008aIn press
- Prochaska JJ, Fromont SC, Louie AK, Jacobs MH, Hall SM. Training in tobacco treatments in psychiatry: a national survey of psychiatry residency training directors. *Acad. Psychiatry* 2006b;30:372–378. [PubMed: 17021144]
- Prochaska JJ, Gill P, Hall SM. Treatment of tobacco use in an inpatient psychiatric setting. *Psychiatr. Serv* 2004b;55:1265–1270. [PubMed: 15534015]
- Prochaska JJ, Hall SM, Bero LA. Cigarette smoking among individuals with schizophrenia: What role has the tobacco industry played? *Bull. Schizophr* 2008b;34:555–567.
- Prochaska JJ, Hall SM, Tsoh JY, Eisendrath S, Rossi JS. Treating tobacco dependence in clinically depressed smokers: effect of smoking cessation on mental health functioning. *Am. J. Public Health* 2008c;98:446–448. [PubMed: 17600251]
- Prochaska JJ, Rossi JS, Redding CA, Rosen AB, Tsoh JY, et al. Depressed smokers and stage of change: implications for treatment interventions. *Drug Alcohol Depend* 2004c;76:143–151. [PubMed: 15488338]
- Prochaska JJ, Velicer WF, Prochaska JO, Delucchi K, Hall SM. Comparing intervention outcomes in smokers treated for single versus multiple behavioral risks. *Health Psychol* 2006c;25:380–388. [PubMed: 16719610]

- Prochaska JO, Velicer WF, Fava JL, Rossi JS, Tsoh JY. Evaluating a population-based recruitment approach and a stage-based expert system intervention for smoking cessation. *Addict. Behav* 2001;26:583–602. [PubMed: 11456079]
- Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Appl. Psychol. Meas* 1977;1:385–401.
- Reid MS, Fallon B, Sonne S, Flammio F, Nunes EV, et al. Smoking cessation treatment in community-based substance abuse rehabilitation programs. *J. Subst. Abuse Treat* 2008;35:68–77. [PubMed: 17951021]
- Richter KP, Gibson CA, Ahluwalia JS, Schmelzle KH. Tobacco use and quit attempts among methadone maintenance clients. *Am. J. Public Health* 2001;91:296–299. [PubMed: 11211643]
- Richter KP, McCool RM, Okuyemi KS, Mayo MS, Ahluwalia JS. Patients' views on smoking cessation and tobacco harm reduction during drug treatment. *Nicotine Tob Res* 2002;4:S175–S182. [PubMed: 12573178]
- Robertson, E. Hawaii State Hospital request to RJ Reynolds for cigarettes. 2000. <http://tobaccodocuments.org/landman/522700931-0932.html>
- Rohde P, Lewinsohn PM, Brown RA, Gau JM, Kahler CW. Psychiatric disorders, familial factors and cigarette smoking: I. Associations with smoking initiation. *Nicotine Tob. Res* 2003;5:85–98.
- Rohsenow DJ, Monti PM, Colby SM, Gulliver SB, Swift RM, Abrams DB. Naltrexone treatment for alcoholics: effect on cigarette smoking rates. *Nicotine Tob. Res* 2003;5:231–236. [PubMed: 12745496]
- Schauffler HH, Barker DC, Orleans CT. Medicaid coverage for tobacco-dependence treatments. *Health Aff. (Millwood)* 2001;20:298–303. [PubMed: 11194854]
- Schuckit MA, Danko GP, Smith TL. Patterns of drug-related disorders in a prospective study of men chosen for their family history of alcoholism. *J. Stud. Alcohol* 2004;65:613–620. [PubMed: 15536771]
- Shore JH. Psychiatry at a crossroad: our role in primary care. *Am. J. Psychiatry* 1996;153:1398–1403. [PubMed: 8890671]
- Stein MD, Anderson BJ. Nicotine and drug interaction expectancies among methadone maintained cigarette smokers. *J. Subst. Abuse Treat* 2003;24:357–361. [PubMed: 12867210]
- Thorndike AN, Stafford RS, Rigotti NA. U.S. physicians' treatment of smoking in outpatients with psychiatric diagnoses. *Nicotine Tob. Res* 2001;3:85–91. [PubMed: 11260815]
- Torrey, EF. Cigarette donation request for long-term psychiatric patients. 1980. Bates No. 502358650. <http://legacy.library.ucsf.edu/tid/xjg19d00>
- Tsoh JY, Humfleet GL, Muñoz RF, Reus VI, Hartz DT, Hall SM. Development of major depression following smoking cessation treatment. *Am. J. Psychiatry* 2000;157:368–374. [PubMed: 10698811]
- Upadhyaya HP, Deas D, Brady KT, Kruesi M. Cigarette smoking and psychiatric comorbidity in children and adolescents. *J. Am. Acad. Child Adolesc. Psychiatry* 2002;41:1294–1305. [PubMed: 12410071]
- Velicer WF, Prochaska JO. An expert system intervention for smoking cessation. *Patient Educ. Couns* 1999;36:119–129. [PubMed: 10223017]
- Wasserman DA, Weinstein MG, Havassy BE, Hall SM. Factors associated with lapses to heroin use during methadone maintenance. *Drug Alcohol Depend* 1998;52:183–192. [PubMed: 9839144]
- Zevin S, Benowitz NL. Drug interactions with tobacco smoking. An update *Clin. Pharmacokinet* 1999;36:425–438.
- Ziedonis DM, George TP. Schizophrenia and nicotine use: report of a pilot smoking cessation program and review of neurobiological and clinical issues. *Schizophr. Bull* 1997;23:247–254. [PubMed: 9165635]
- Ziedonis DM, Gudyish J, Williams J, Steinberg M, Foulds J. Barriers and solutions to addressing tobacco dependence in addiction treatment programs. *Alcohol Res. Health* 2006;29:228–235. [PubMed: 17373414]
- Ziedonis DM, Kosten TR, Glazer WM, Frances RJ. Nicotine dependence and schizophrenia. *Hosp. Community Psychiatry* 1994;45:204–206. [PubMed: 7910577]

- Ziedonis DM, Williams JM, Smelson D. Serious mental illness and tobacco addiction: a model program to address this common but neglected issue. *Am. J. Med. Sci* 2003;326:223–230. [PubMed: 14557739]
- Zullino D, Besson J, Schnyder C. Stage of change of cigarette smoking in alcohol-dependent patients. *Eur. Addict. Res* 2000;6:84–90. [PubMed: 10899734]