

# Confronting a Neglected Epidemic: Tobacco Cessation for Persons with Mental Illnesses and Substance Abuse Problems

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## Key Words

tobacco use, smoking cessation, tobacco control, mental illnesses

## Abstract

Tobacco use exerts a huge toll on persons with mental illnesses and substance abuse disorders, accounting for 200,000 of the annual 443,000 annual tobacco-related deaths in the United States. Persons with chronic mental illness die 25 years earlier than the general population does, and smoking is the major contributor to that premature mortality. This population consumes 44% of all cigarettes, reflecting very high prevalence rates plus heavy smoking by users. The pattern reflects a combination of biological, psychosocial, cultural, and tobacco industry-related factors. Although provider and patient perspectives are changing, smoking has been a historically accepted part of behavioral health settings. Additional harm results from the economic burden imposed by purchasing cigarettes and enduring the stigma attached to smoking. Tailored treatment for this population involves standard cessation treatments including counseling, medications, and telephone quitlines. Further progress depends on clinician and patient education, expanded access to treatment, and the resolution of existing knowledge gaps.

## INTRODUCTION

Despite recent progress, tobacco use remains the largest preventable cause of death and disability in the United States and worldwide (106). Because smoking is concentrated in the special populations of persons with mental illnesses and/or substance abuse disorders, these populations are key to achieving desired gains in population health (108). Yet, tobacco use in these groups remained a hidden epidemic until quite recently (105, 108).

This review explains why tobacco use is such an important public health problem among those with mental illnesses and/or substance abuse disorders, with the intention of stimulating interest in reducing tobacco-related health disparities. No other public health field contains such potential gains in preventable death and disability.

## SMOKING'S CONSEQUENCES AND EPIDEMIOLOGY

### Harm from Active and Passive Smoking

The National Centers for Disease Control and Prevention (CDC) estimate that smoking accounts for premature deaths of 443,000 persons annually in the United States, with an additional 8.6 million disabled from smoking-related diseases (18, 19). The World Health Organization estimates an annual toll worldwide of 5 million deaths, which—given current trends—will increase to 10 million by the year 2030 (134).

The known adverse health consequences of tobacco use expand annually, as new studies reveal new associations. For example, smoking has recently been shown to increase the risk of acquiring type 2 diabetes mellitus (128) and cognitive decline (for secondhand smoke exposure) (72). The many smoking-associated diseases have been reviewed recently by the Surgeon General (124).

The discovery of the damages from secondhand smoke is a major factor behind the successful advocacy of smoke-free public buildings and areas (72, 125). An estimated 50,000 of the

443,000 premature deaths from tobacco use result from such exposure.

Although nicotine alone is relatively harmless as a potential pathogen, it is highly significant as the addictive agent in tobacco, causing the release of neurotransmitters that yield brain perceptions of pleasure (7, 8). However, many persons—including health professionals—labor under the misconception that it is nicotine, rather than the almost 5,000 compounds in tobacco smoke, that causes illness (9). Because nicotine replacement therapy (NRT) is a mainstay in helping smokers quit, this misperception hampers smoking cessation efforts.

A great success story of modern public health is the steady decline in tobacco use over the past 50 years. The most recent survey by the CDC showed 2007 adult smoking rates to be at a modern low of 19.8% (21). Additionally, there has been a general shift among smokers toward smoking fewer cigarettes (16, 88, 90). The CDC cautions, however, that because its survey is limited to landline telephones it may underestimate smoking prevalence because it excludes the burgeoning group of exclusive cell phone users, who may have higher smoking rates. Even with the gains made toward decreasing tobacco use, the 2007 results indicate that the United States will not achieve the Healthy People 2010 national goal of an adult smoking prevalence below 12% (123).

### Wide Demographic Disparities in Smoking

Women, at 17.4%, smoke less than men do (22.3%) (21). Wide geographic discrepancies exist, with rates generally lower in northern, more prosperous states, and higher in southern, poorer states (21). States with the lowest prevalence are Utah (11.7%) and California (14.3%), whereas Kentuckians smoke the most (28.3%). Differences also exist by ethnic status. Native Americans have the highest rates (36%), followed by whites (21%), African Americans (20%), Hispanics (13%), and Asian-Americans (10%) (17). Large differences in

**Table 1 Tobacco smoking status and quit rates based on presence of psychiatric disorder in lifetime for individuals in the United States**

Lifetime diagnosis	U.S. population (%)	Current smoker (%)	Lifetime smoker (%)	Smoking quit rates <sup>a</sup> (%)
No psychiatric diagnosis	50.7	22.5	39.1	42.5
Anxiety disorders				
Social phobia	12.5	35.9	54.0	33.4
Posttraumatic stress disorder	6.4	45.3	63.3	28.4
Agoraphobia	5.4	38.4	58.9	34.5
Generalized anxiety disorder	4.8	46.0	68.4	32.7
Panic disorder	3.4	35.9	61.3	41.4
Mood disorder				
Major depression	16.9	36.6	59.0	38.1
Dysthymia	6.8	37.8	60.0	37.0
Bipolar disorder	1.6	68.8	82.5	16.6
Psychotic disorder (nonaffective)	0.6	49.4	67.9	27.2

<sup>a</sup>Smoking quit rate was defined as the proportion of lifetime smokers who were not current smokers (no significant difference in these rates when quit rate was defined as having quit smoking for more than the past year).

smoking prevalence exist by class. Using level of education as a marker for socioeconomic status, smoking rates are 6% for those with graduate degrees, 11% for undergraduate degrees, and 25% and 44%, respectively, for those who did not graduate high school or received a general equivalency diploma (GED). (The high smoking prevalence of GED recipients may reflect the fact that many GEDs are obtained in prison, where incarceration is commonly from substance abuse.) With a prevalence rate of 1%, physicians have the lowest smoking rates among the highly educated (1).

Smoking rates are very high in persons with mental health and substance abuse disorders (Table 1) (137). In general, the more severe the psychiatric condition, (e.g., schizophrenia), the higher the smoking prevalence (6, 10, 21, 27, 41, 58, 64, 67). Although persons with mental illnesses, including substance abuse disorders, account for only ~22% of the United States population (59, 100), they consume 44% of cigarettes sold (67). Not only are they more likely to smoke, but they also smoke more cigarettes daily and smoke them down to the butt (30, 67).

### Disproportionate Harm from Smoking Among Those with Mental Illnesses and Substance Abuse Disorders

The high smoking rates in the mental illness/substance abuse population exert major tolls on mortality, health, social status, and life style. About 200,000 of the 443,000 premature deaths from smoking in the United States are estimated to occur in these populations (74, 108, 133). These individuals also suffer disproportionately from smoking-related disabilities. A recent report highlighted the shocking news that persons with chronic mental illness die, on average, 25 years earlier than the general population. The major causes of death were cardiovascular disease, lung disease, and diabetes mellitus (23, 74), the very illnesses exacerbated by smoking.

Nationally, 77%–93% of clients in substance abuse treatment settings use tobacco (98). A landmark study demonstrated the health disparities these individuals face: 845 patients hospitalized at the Mayo Clinic with diagnoses of alcoholism or drug abuse were followed for 20 years. The mortality rate was 48%, almost triple the expected 18% rate; half the deaths

were attributed to smoking (50). Another example is the 38-fold greater risk of developing cancers of the mouth and throat among those who use both alcohol and tobacco (122).

Smoking also causes economic and social hardship. Persons with mental illnesses and substance abuse disorders are more likely to depend on public assistance, and cigarettes consume an increasing fraction of their monthly expenditures. For these individuals, national average rent for one-bedroom apartments is more than the monthly Supplemental Security Income (SSI) they receive, making it difficult to afford food and shelter, much less cigarettes (89). Nevertheless, persons with disabilities spend up to 27% of their budgets on tobacco (115). And this doesn't account for the 2009 federal 62 cent per pack tax increase plus the many imminent increases in state tobacco taxes. Already facing severe economic hardship and societal stigma, smokers with behavioral health disorders also find it increasingly difficult to integrate into communities and workplaces that no longer condone smoking (22, 76, 107, 108, 115).

### **WHY THE HEIGHTENED VULNERABILITY TO TOBACCO ADDICTION?**

The relatively high prevalence of nicotine dependency in persons with mental illnesses and substance abuse disorders reflects biological, psychosocial, and cultural factors plus targeting by the tobacco industry. Some mental illnesses have associated neurobiological features that increase their tendency to use nicotine, make it more difficult to quit, and complicate the withdrawal phase of tobacco cessation. Genetic linkage studies have found associations between both schizophrenia and bipolar disorder and chromosome 15 in a location at the alpha 7-nicotinic receptor subunit gene (34, 70), and the alpha-7 nicotinic receptor gene has been implicated in impaired sensory processing in individuals with schizophrenia and schizoaffective disorder (73). Individuals with this gene have auditory sensory-gating deficits

and diminished suppression of the auditory-evoked P50 response. Nicotine briefly normalizes this deficit, suggesting an association with diminished P50 response and decreased alpha-7 subunits of nicotinic receptors for persons with these psychiatric illnesses (70). Gene studies have also found that adolescents with at least one A1 allele have increased impairment of dopaminergic functioning, symptoms of depression, and smoking (4). These genetic linkages and receptor abnormalities are one of many factors explaining heavy levels of smoking in these individuals (69), as nicotine might normalize associated deficits in sensory processing, attention, cognition and mood (36, 39, 73, 99). Nicotine may also offer brief relief from medication side-effects, since tobacco use significantly decreases blood levels of common psychiatric medications (138).

For persons with substance abuse disorders, tobacco use affects the same neural pathway—the mesolimbic dopamine system—as do alcohol, opiates, cocaine, and marijuana (91). The effects of nicotine and opiates on the brain's reward system are equally potent in a key pleasure-sensing area of the brain: the nucleus accumbens (12).

Persons with mental illnesses and substance abuse disorders also use tobacco for the same reasons as the general population: as part of a daily routine to relieve stress and anxiety. Unfortunately the culture of mental health and substance abuse care reinforces tobacco use in treatment settings, residential facilities, and housing (11, 84, 112). Tobacco use is perceived as a way to fit in (81) and to cope with boredom when social and vocational options are limited (38, 81, 111, 126). Mental health and substance abuse providers also have high smoking prevalence rates—30%–35% (77, 121)—thereby impeding tobacco cessation efforts (40, 81). By contrast smoking rates among primary care physicians are only 1% (1).

Many mental health and substance abuse providers believe tobacco cessation is unrealistic for their clients. Smoking is often presented as “one of the last personal freedoms remaining” (81). “Why would we (providers)

want to take that away?” Tobacco use is viewed by many providers as a lesser problem than the immediate consequences of other substance abuse (33). Despite opinions to the contrary, the smoking cessation rates of persons with mental illnesses and substance abuse disorders who desire to quit are comparable to the general population (55, 97). Several studies have found that 77%–79% of these individuals intend to quit, many in the next month (55, 95).

Although these clients may desire to quit, most are not afforded the same cessation opportunities as the general population. Behavioral health specialists, in contrast to primary care providers, rarely assess for smoking status or provide cessation counseling (139). Psychiatric patients receive cessation counseling in only 38% of their visits to primary care physicians and 12% of their visits to psychiatrists (118). The situation appears even worse in inpatient settings, where—among 250 psychiatric inpatients—only 1% were assessed for smoking status, nicotine dependency was not assessed, and smoking status was never included in treatment plans (93).

Providers and administrators warn that forbidding smoking will disrupt the treatment milieu, dramatically increase behavioral problems, and result in premature or irregular discharges (137). But, studies from multiple countries did not find smoking bans had a negative effect on psychiatric symptoms or management in treatment units (51, 61, 68). A survey of 158 U.S. state psychiatric facilities found that 41% did not permit smoking at their facility or grounds (85). Of the remaining 59% still allowing smoking, half planned to go tobacco-free in the near future. The sites that had gone tobacco-free reported improved health of patients and cleaner grounds/environment. Banning smoking reduced seclusion and restraint, decreased coercion and threats among patients and staff, and increased availability of tobacco cessation medication (85).

The tobacco industry has long targeted individuals with mental illnesses and substance abuse disorders, labeling these populations as “downscale markets.” Prochaska analyzed

tobacco industry documents from 1955 to 2004 and found that the industry monitored or directly funded research supporting the concept that persons with schizophrenia were less susceptible to the harms of tobacco and needed tobacco as self-medication (94). The industry promoted smoking in psychiatric settings by providing free cigarettes and aiding efforts to block hospital smoking bans (3).

## APPROACHES TO SMOKING CESSATION TREATMENT

### General Approach

Nicotine dependency is a chronic, relapsing disorder often requiring multiple attempts before individuals quit for good. Only 4%–7% of unaided quit attempts are successful, but proven treatments exist that significantly enhance those odds (32, 83). Combining counseling and nicotine replacement therapy (NRT) or other FDA approved smoking cessation medications is the most effective option (32). A basic platform for all tobacco cessation services is the “5 A’s” (Ask, Advise, Assess, Assist and Arrange) or an abbreviated “2 A’s and R” model (Ask, Advise, and Refer). For clinics that lack cessation services onsite, clinicians are encouraged to “Ask” all patients at every visit if they smoke. If they do smoke the clinician should “Advise” them in a personalized manner to quit, and then make appropriate referrals. A primary referral source is to quitlines. This 5-minute or less intervention is referred to as the “2 As & R” model. When possible, centers may also use the full “5 As” model. Providers go on to “Assess” patients’ willingness to make a quit attempt over the next month, “Assist” in setting a quit date and getting services, and “Arrange” for a follow-up contact to determine if quitting occurred.

Effective tobacco cessation counseling includes individual, group, and telephone sessions. For each, the Stages of Change Model—or Transtheoretical Model—can gauge individuals’ readiness for change (78, 96). In this model, motivational interviewing allows providers to tailor interventions to shifting

stages of change, and assists patients to become autonomously motivated and competent to make cessation attempts (26, 129). Individual or group treatment should include practical counseling (e.g., problem solving, skills training), and social support (32). Cognitive behavioral therapy (CBT) helps accomplish these goals by changing dysfunctional thoughts, emotions, and behaviors that often accompany nicotine dependency.

A general rule regarding smoking cessation efforts is that more is better. More intensive treatment frequency and increased duration lead to greater quit rates. Also, multiple types of clinicians are effective in delivering tobacco treatment, and involving more than one type of provider leads to greater success (32).

With the establishment of a national phone line, 1-800-QUIT-NOW, all U.S. tobacco users have access to some combination of telephone counseling, self-help materials, cessation medications, and referrals for additional support. Over 400,000 U.S. tobacco users contact quitlines each year, (24) the efficacy of which have been rigorously demonstrated for the general population (2, 113, 135). After the initial contact, quitline counselors may offer on-the-spot service or subsequently make proactive calls to help smokers prepare to quit, prevent relapse, and in some instances dispense medications (2, 32).

Every individual attempting to quit should be offered cessation medications. There are five FDA-approved NRTs (patch, gum, lozenge, nasal spray, and inhaler) and two other first-line medications (bupropion and varenicline). Each of these options increases cessation and long-term abstinence rates (32, 108).

Successful cessation interventions also depend on community support. As a key component of a tobacco control strategy, hospitals, outpatient treatment centers, and other service settings (e.g., supportive housing) are increasingly going tobacco-free. These facilities need careful planning to create timelines and checklists, draft and enforce policies, consider clinical implications, address the high prevalence of tobacco use among staff, and

create community buy-in (15, 85, 131). Health care facilities further support tobacco cessation by creating intervention prompts in electronic medical charts or reminder stickers for paper charts (20). Such reminders are effective alone or in conjunction with provider education. Another proven method of increasing cessation rates is to decrease out-of-pocket costs while increasing the price of tobacco products through taxes (20). Findings across 17 studies suggest that a 10% price increase would lead to over a 4% decrease in tobacco use. At the same time, providing low cost services makes it more likely that tobacco users will seek out effective cessation treatments and that the total number of tobacco-using patients who quit will increase.

### **Do Smoking Cessation Attempts for Persons with Mental Illnesses and/or Substance Abuse Disorders Require Special Considerations?**

Individuals with mental illnesses and substance abuse disorders respond to the same evidence-based approaches as the general population (31, 32, 137). However, these populations exhibit more severe nicotine addiction than the general population, necessitating more intensive interventions (136). Both pharmacotherapy and counseling strategies need to be individualized to each patient's current mental health and substance abuse status, quit history, and level of nicotine dependency (120). Smokers need not be free of mental health symptoms to be motivated to quit (44, 93, 119). Generally, if interested in quitting they should be supported, unless there are ongoing medication changes or worsening psychiatric symptoms.

Just as with the general population, providers should encourage every smoker—unless medically contra-indicated—to use cessation medications. Many will require higher doses, combination treatments, and longer duration (32). Persons with behavioral health disorders who make quit attempts should be carefully assessed and monitored for depressive symptoms, particularly if they have a depression history (42, 57). Even subclinical depression



symptoms predict poorer maintained abstinence (56, 71, 87).

By inducing the P450 isoenzyme, smoking increases the metabolism of various antipsychotic medications (28). When persons on these medications quit smoking, blood drug levels can increase significantly, making it imperative for health care providers to assess for medication side-effects and adjust dosages accordingly.

Provider training and accurate patient information must address unfounded but common concerns about potential interactions between cessation medications and other psychiatric medications, or with interference with mental health or substance abuse recovery (116, 131). Behavioral health providers also voice inaccurate beliefs that tobacco cessation, concurrent with other drug treatment, will cause relapse of psychiatric symptoms and alcohol and/or drug use. Rather than complicating recovery, participation in smoking cessation efforts while engaged in other substance abuse treatment is associated with a 25% greater likelihood of long-term abstinence from alcohol and other drugs (95, 102), and tobacco cessation does not appear to adversely effect mental health treatment (5, 81). Yet, substance abuse and mental health providers seldom offer smoking cessation services (54, 55, 132).

Individual or group counseling sessions can build upon effective cessation programs in the general population, but several issues require emphasis. Interventions should address both patients' misconceptions regarding tobacco use and realistic fears about quitting, including weight gain and withdrawal. Persons with mental illnesses are at heightened risk for obesity and the metabolic syndrome because of side effects of psychiatric medications as well as physical inactivity (13, 53, 86, 110). It is imperative that they learn healthy coping strategies, including good nutrition and exercise. Some will also benefit from alterations to standard cessation protocols. Lower cognitively functioning clients may have difficulty processing abstract concepts. Rather than focus on insight-oriented treatment, counseling might include cognitive behavioral therapy, concrete strate-

gies for developing basic coping skills, and practicing informed decision-making (14, 42, 85, 140). Some persons with behavioral disorders will be ready to set a quit date; for others, cutting down before eventual cessation may be more realistic.

Peer-to-peer interventions, now a central part of the behavioral health recovery movement, can augment provider-driven cessation strategies. The "recovery movement" suggests that adjuncts to formal treatment, involvement in self-help groups, and social opportunities in community and institutional settings foster empowerment and self-efficacy (25, 62).

In the general population, peer-to-peer models have been shown to be effective (66), but applications to behavioral healthcare are just emerging. One prominent example is the Consumers Helping Others Improve their Condition by Ending Smoking (CHOICES) program. Started in New Jersey ([www.njchoices.org](http://www.njchoices.org)) and now being disseminated nationally by the Smoking Cessation Leadership Center (SCLC), the program employs behavioral health peer counselors who received intensive training on addressing peer tobacco use (130).

### How Well Do Telephone Quitlines Work for These Populations?

Though quitlines work for the general population, researchers are just beginning to study them for the behavioral health population. Quitlines can overcome common barriers to access faced by persons served in the public mental health system (e.g., transportation and cost), and have extended the reach of more traditional cessation programs (80).

Several recent studies suggest quitlines might be effective for smokers with mental illnesses. Kreinbring found that self-reported 7-day abstinence rates for those who reported having mental illnesses was 21% compared to 27% for all callers (65). Another study found that self-reported, 7-day point prevalence tobacco abstinence at 6 months among persons with mental illnesses equaled the overall quit

rate (48). A randomized study of persons treated in public mental health systems showed that quitline counseling plus nicotine replacement therapy led to a significant reduction in self-reported number of cigarettes smoked per day (80). Unpublished data from the California Helpline reveal similar results. A large proportion of callers report a history of mental illness and their motivation to quit and success in quitting were quite similar to the general population (117).

Quitline counseling strategies and materials must be appropriate to the literacy and cognitive levels of the individuals served (2). Also, quitline staff work more effectively with persons with diagnosed—and undiagnosed—behavioral health issues after receiving training on behavioral health issues (80). Though quitlines appear to be one cost-effective cessation strategy for this population, unfortunately, far too few smokers avail themselves of this free service (37). In an effort to make the Ask, Advise, Refer (“2 A’s and R”) strategy more convenient for clinicians, the SCLC developed a wallet-sized plastic “blue card” that is available at cost and unbranded. To date, over 4 million of these have been ordered and used by groups including the state of Kentucky, the American Dental Hygienists Association, the American College of Emergency Physicians, the American Society of Anesthesiologists, and the Department of Veterans Affairs hospitals (101).

### **Educating Mental Health Clinicians and General Medical Care Clinicians**

Physicians and other clinicians underperform at helping smokers quit (1, 104). This is a special problem for the mental health and substance abuse treatment community. In order to assist these clinicians, at least three special curricula have been developed. One, “Tobacco Free for Recovery: Assisting Mental Health Consumers with Tobacco Cessation,” is adapted from *Rx for Change* to meet the needs of mental health peer counselors and other mental health providers (49). Another, “Psychiatry Rx

for Change,” was developed and evaluated for psychiatric residents and other mental health professionals (92). Finally, the University of Colorado Denver, Behavioral Health and Wellness Program (BHWP) and Colorado Department of Public Health and Environment partnered to develop resources for tobacco users with mental illnesses. This effort produced “Smoking Cessation for Persons with Mental Illnesses: A Toolkit for Mental Health Providers,” a resource for a broad continuum of mental health providers, including clinicians, prescribers, and administrators. The toolkit contains information for assessing readiness to quit, treatments, strategies for reducing relapse, and national resources (available at <http://smokingcessationleadership.ucsf.edu>) (82).

## **CONTROVERSIES AND UNRESOLVED ISSUES**

### **Prevention versus Cessation: A False Dichotomy**

The field of tobacco control sometimes debates whether funds are better used to prevent initiation of tobacco use or to support tobacco cessation services. In reality, of course, both are essential. The number of smokers in a defined population is a simple function of those who start to smoke, plus the number of continuing smokers, minus those who quit—either voluntarily, in the face of serious medical conditions, or by dying (**Figure 1**). Though it is essential to employ both strategies—prevent initiation and encourage cessation—the latter is the fastest way to reduce overall smoking prevalence. Optimal tobacco control results when public health (e.g., taxes, clean indoor air laws, counter-marketing) and clinical strategies (cessation services) are aligned (127). Many of these strategies serve the dual purpose of discouraging initiation and encouraging cessation.

### **Will Cessation Exacerbate Underlying Chronic Mental Illness or Substance Abuse Disorders?**

Accumulating evidence affirms that it is safe to help these smokers quit (44). Colorado



developed a pilot project designed to test tobacco cessation interventions in the public behavioral health system (79). Participants were recruited from one of four community mental health centers and randomized to one of two treatment interventions: quitline counseling and NRT alone or quitline services in combination with a 10-week tobacco cessation wellness group. Although abstinence rates at 12 months were lower than in previous studies, participants in both treatment groups noted a significant reduction in self-reported number of cigarettes smoked per day and tobacco dependency. Consistent with other studies (5) there was no exacerbation of psychiatric symptoms. All groups showed significant reductions in depressive and psychotic symptoms, suggesting that smoking cessation interventions do not worsen psychiatric symptoms. Unfortunately, this attitude is not yet well established in the mental health treatment community (81, 85, 108).

### Scope of Work: Who Is Responsible for Tobacco Cessation?

An interlinking network of cessation options is needed for persons with behavioral health disorders (120). Cessation services are delivered by primary care, behavioral health, quitlines, and specialty cessation programs. Tobacco cessation should fall within all providers' scope of practice. Behavioral health clinics are one setting offering healthy alternatives to tobacco use. While few behavioral health providers currently ask patients about smoking or advise quitting (47), psychiatric and addictions treatment providers are experts in behavioral change strategies that could be used to help people stop smoking. Behavioral health agencies are logical settings to address tobacco cessation because providers treat patients over long periods of time, have therapeutic alliances that might facilitate regular tobacco use assessment, and are able to regularly provide treatment and monitor for symptom exacerbation (75). Established linkages with behavioral health providers might

also reassure other community cessation resources (e.g., quitlines) that behavioral health issues are being monitored appropriately.

### Should Smoking Cessation Drugs Be Used Differently in These Populations?

Because most cessation drug trials excluded patients with mental illnesses or substance abuse disorders, we know less about the appropriate role of cessation therapy in these populations. It is puzzling, however, that the customary duration of FDA approved therapy for smoking cessation drugs is 12 weeks, yet we know that smoking creates chronic brain changes (8, 108). For other chemical dependency disorders, such as heroin abuse, chemical replacement therapy (i.e., methadone, buprenorphine) is for longer duration. Hall treated smokers who had chronic depression with nortriptyline (a second line cessation agent) for 52 weeks and reported 50% long-term cessation (43). Given their high rates of smoking, associated addictive disorders, and high daily cigarette consumption, perhaps these patients need longer treatment.

### The Special Case of Varenicline

Varenicline is a new medication specifically designed as a partial nicotine agonist. Because varenicline has generated both great enthusiasm as well as considerable controversy, it deserves special consideration in this review. Varenicline works to reduce cravings from nicotine withdrawal and also to lessen the pleasure from smoking. Early trials were quite supportive of its efficacy, and its manufacturer, Pfizer, reports over 7 million prescriptions sold as of January, 2009 (109). Even though patients with mental illnesses were excluded from these trials, there is anecdotal evidence that varenicline is being used in many such patients. Because of reports of suicidal ideation and worsening psychiatric symptoms in some patients using varenicline, the FDA issued a special alert and required Pfizer to provide a warning

and a label change for varenicline (34, 52, 63, 108). The FAA banned airline pilots from using varenicline (52). Notably, bupropion carries a similar warning. Then, in July, 2009, the FDA required the makers of both varenicline and bupropion to add a black boxed warning on the drug labels to highlight possible adverse psychiatric reactions. Although studies are underway to study varenicline in persons with mental illnesses, it is unlikely they will be sufficiently powered to detect a low incidence of such side effects (46). Worsening psychiatric symptoms in smokers with mental illnesses who undergo smoking cessation treatment could indicate one of four causes: 1) the natural course of underlying psychiatric conditions; 2) symptoms of nicotine withdrawal; 3) a result of the varenicline itself; or 4) a combination of the above. It may be some time, if ever, before we understand whether there is an increased risk from varenicline, and—if so—its magnitude. In the meantime, potential hazards must be balanced against the drug's clear efficacy in helping smokers quit (46, 108).

### **How to Increase Federal Agency Involvement?**

Given the huge toll smoking exerts on the health of the public, minimal attention is devoted to smoking among those with mental illnesses and substance abuse disorders by relevant federal agencies. For example, the National Institute of Health devotes less than 1% of its budget to this topic (103), the NIMH and NIDA have given it little emphasis, and the CDC has focused more on overall state tobacco control programs than on these populations. A notable recent exception is the Substance Abuse and Mental Health Services Administration (SAMHSA), which since 2008 has featured smoking cessation as a key priority, trained its staff in smoking cessation, and began a special campaign, the “100 Pioneers for Smoking Cessation Virtual Leadership Academy,” to help existing SAMHSA grantees address tobacco cessation

(<http://smokingcessationleadership.ucsf.edu/pioneers.html>).

### **Preserving the Public Health Infrastructure for Tobacco Control Nationally and at the State Level**

The recent economic downturn threatens vital state tobacco control activities. Because states are unable to accumulate fiscal deficits, programs such as tobacco control activities become attractive budget cuts when state income is curtailed. This is particularly challenging since, compared with other services, such as education and health care, the tobacco control community in general, and tobacco control for those with behavioral health disorders in particular, has so few public advocates. Quitlines are commonly supported by state Master Settlement Agreement (MSA) funds (103) or by other earmarked public health funds such as state tobacco taxes. There are several steps that states might take to protect this funding. Advocates could work to create or strengthen legislation regarding the use of MSA or tobacco tax dollars so that these funds aren't as easily cannibalized during budget shortfalls. Tobacco programming might also be better integrated into the priorities and objectives of state mental health and substance abuse authorities. One method would be to urge states to include tobacco interventions in providers' contractual obligations or provide block grant funding for established/pilot interventions. Advocates and state departments can work to insure that state Medicaid benefits include adequate counseling and cessation medication options, and that the state—as a large insurance purchaser—mandates sufficient tobacco prevention and cessation benefits for state employees.

### **Penetrating the Mental Health and Substance Abuse Treatment Community**

Tobacco use has been denormalized in the general population (22, 45, 107), but not yet in behavioral health. Training staff members to

treat tobacco dependency can change the treatment culture by correcting many of the misconceptions or “clinical lore” about tobacco—such as “tobacco is not a real drug,” “it’s too hard to address all the substances together,” and “quitting tobacco will definitely worsen other substance recovery.” Behavioral health leadership needs to assert that tobacco is both addictive and deadly, and that prevention and cessation efforts are a priority (84, 109, 114). To date, various mental health professional groups have responded differently to this challenge. Notable early actors have been the American Psychiatric Nurses Association, which issued a February/March 2009 special publication of its journal devoted entirely to smoking and mental illness, the National Association of State Mental Health Program Directors, and SAMSHA (108, 109).

### The Incarcerated Population

Over 2.2 million persons are in prison on any given day, and prison is the *de facto* treatment setting for persons with behavioral health disorders: 16% of state prison inmates, 7% of federal inmates, and 16% of those in local jails reported either a mental condition or an overnight stay in a mental hospital (29). Smoking prevalence is high in prisons, ranging from 60% to 80% (60). Prison policies on tobacco regulation have tightened in the past two decades, and have helped raise awareness about prisoner health, second-hand smoke effects, and risk of fires (60). The National Network on Tobacco Prevention and Poverty (NNTPP) and the National Commission on Correctional Health-care created a training curriculum for correctional staff: “Tobacco Cessation for Correctional Populations.”

### CONCLUSION

Though tobacco takes a huge toll among persons with mental illnesses and substance abuse

disorders, attention to tobacco control in this population has been insufficient. Now two circumstances have combined to help correct this historic neglect. First are recent revelations that so many with behavioral health disorders smoke, that they are so damaged from smoking, and that it imperils the health of their families, medical associates, and colleagues. Second is the fact that we now possess many more policy and clinical tools to prevent smoking initiation and help smokers quit. Proper application of these tools has greatly reduced smoking rates in the general population, and there is good reason to assume that similar progress could occur in the behavioral health population.

In order to accelerate such progress, it would be important to get answers to key questions, answers that will depend on federal research support: What are the best smoking cessation treatments for this population, and what is the desired length of therapy? How safe is varenicline? What is the optimal role of telephone quitlines? How can the number of quitline calls be increased? What more can we learn about the effect of smoking on blood levels of psychotropic medications, and the interactions between those drugs and smoking cessation medications?

Beyond the need for new knowledge are unresolved questions regarding the cultures of medical and behavioral health: How can more clinical champions be recruited to promote the cause of smoking cessation? What is the proper balance between motivating smokers to quit while avoiding further marginalization of those who are unable to stop? What could be done to create robust advocacy groups around this issue?

Whether the answers come sooner or later, it seems inevitable that increasing public health and clinical pressures will focus on this important topic. There are also lessons for public health historians about why this important issue was neglected for so long.

## SUMMARY POINTS

1. Tobacco use exerts a disproportionate toll on those with mental illnesses and substance abuse disorders, accounting for ~200,000 of the 443,000 Americans who die annually from smoking. Persons with serious behavioral health disorders die on average 25 years earlier than does the general population, and many of the causes of those premature deaths relate to smoking.
2. Tobacco use also has economic and social costs. Many mental health clients are very poor, and cigarettes consume a large proportion of their discretionary spending. Furthermore, it is harder to achieve community integration when also experiencing stigma related to tobacco use.
3. Although they account for only 22% of the United States population, persons with mental illnesses and/or substance abuse disorders consume 44% of all cigarettes sold in that country. They have higher smoking rates and smoke more cigarettes per day.
4. For many years the mental health treatment community tolerated and even encouraged smoking. Only now, with revelations of smoking's serious health toll in addition to knowledge of the damaging effects of secondhand smoke and the marginalization of smokers, is that pattern beginning to change.
5. Smokers with behavioral health problems respond to the same smoking cessation treatments as the general population: counseling plus medications. Telephone quitlines also seem to work for this population.
6. Despite misperceptions to the contrary, most smokers with behavioral health problems would like to quit, and the quit rates are only slightly lower than for the general population.
7. Smoking cessation will not worsen mental illnesses or cause persons with substance abuse disorders to relapse. In fact, sobriety rates are higher in clients who stop smoking.
8. Meaningful decreases in smoking rates among the behavioral health population will require mobilizing the relevant treatment community to become more knowledgeable and to advocate for smoking cessation.

## DISCLOSURE STATEMENT

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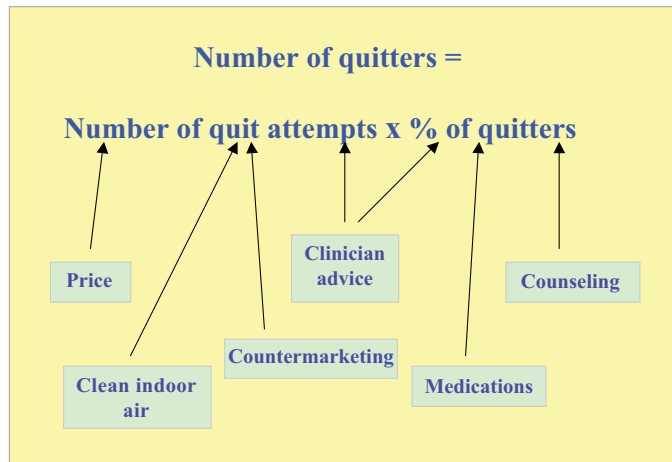


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**Figure 1**

Factors increasing smoking cessation.



# Contents

## Symposium: Public Health Significance of Genomics and Eco-Genetics

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