

Public Health and Therapeutic Aspects of Smoking Bans in Mental Health and Addiction Settings

Nady el-Guebaly, M.D.

Janice Cathcart, B.S.N., M.Ed.

Shawn Currie, Ph.D.

Diane Brown, R.N.

Susan Gloster, R.N., B.N.

Objective: Health care facilities are increasingly implementing policies that ban smoking. A concern has been raised that these policies may have a negative impact on smokers who are mentally ill or substance dependent. The authors conducted a literature review to analyze the relevant empirical evidence. **Methods:** Major health care databases were searched. Major search terms included smoking, smoking cessation, nicotine, health policy, hospital policy, smoke-free policy, psychiatric disorders, and substance use disorders. The search was limited to empirical studies, which were analyzed on the basis of design, the behavioral indicators monitored, and the results of questionnaires. **Results and conclusions:** A total of 22 investigations of the impact of total or partial smoking bans suggest that the policies have had no major long-standing untoward effect in terms of behavioral indicators of unrest or compliance. However, the policies appear to have had little or no effect on smoking cessation. Smoking cessation strategies should be an inherent component of policies that ban smoking. (*Psychiatric Services* 53: 1617–1622, 2002)

In response to the demonstrated health hazards of tobacco smoking, health care facilities are increasingly implementing policies that ban smoking on their premises. Persons with psychiatric illnesses are about twice as likely to smoke cigarettes as the general population (1), and the prevalence of smoking among persons with schizophrenia is reported to be three or four times higher than in the general population (2,3). Alcohol and drug abuse are also strongly associated with a high rate of smoking, with prevalence estimates ranging from 71 percent to 100 per-

cent (4–6). Thus persons with psychiatric or substance use disorders are particularly affected by smoking bans. A concern has been raised that policies that address the risks of smoking in the general population may deter smokers who are mentally ill or substance dependent from obtaining services.

Methods

We conducted a critical review of the literature to assess the strength of the empirical evidence supporting this concern about smoking bans in psychiatric populations. We reviewed the

literature on the association between smoking and psychiatric disorders. We then focused on the studies of the impact of smoking bans and attempted to draw policy implications.

We used major health care databases to conduct the search: MEDLINE (1997 to 2001), CINAHL (1990 to 2001), PsycINFO (1990 to 2001), Best Evidence/EBM Reviews (1991 to 2002), Healthstar (1996 to 2001), the Cochrane Database of Systematic Reviews (2001), and EMBASE (1990 to 2002). In addition, Legal Trac (1990 to 2002), Bioethicsline (1973 to 2001), Philosopher's Index (1980 to 2002), and Dissertation Abstracts (1990 to 2002) were searched. Some articles were drawn from the reference lists of previous articles, and unpublished empirical studies were located through a Web search. Major search terms included smoking, smoking cessation, nicotine, health policy, hospital policy, smoke-free policy, psychiatric disorders, mental disorders, and substance use disorders.

Several of the articles on the impact of nonsmoking policies in psychiatric settings and the treatment of smoking in this population were reviews or discussion papers or were based on anecdotal evidence. These papers (a total of 17) were excluded.

Results

Smoking and psychiatric disorders

Investigations of the association between tobacco smoking and psychiatric disorders can be categorized into four areas of interest: smoking as

The authors are affiliated with the Foothills Hospital Addiction Centre, Calgary Regional Health Authority, 1403 Twenty-ninth Street, N.W., Calgary, Alberta T2N 2T9 Canada (e-mail, nady.el-guebaly@calgaryhealthregion.ca). Dr. el-Guebaly and Dr. Currie are also affiliated with the department of psychiatry at the University of Calgary.

self-medication, nicotine and vulnerability to mental illness, smoking and medication, and the impact of forced nicotine withdrawal.

Smoking as self-medication

Both neurobiological and psychosocial factors reinforce the use of nicotine in psychiatric populations. Nicotine is thought to interact with a number of neurotransmitter systems: serotonin, dopamine, glutamate, acetylcholine, and norepinephrine (3,7). There is growing evidence that nicotine functions to normalize two different physiological dysfunctions in schizophrenia, auditory sensory gating (8,9) and abnormal smooth-pursuit eye movements (7). In addition, the dopaminergic and glutaminergic alterations created by nicotine are thought to improve negative symptoms (10). The link between smoking and depression has been attributed to the use of nicotine for alleviating dysphoric moods (11,12). Smokers who have a history of depression are more vulnerable to developing depression during nicotine withdrawal, and the withdrawal syndrome is more severe among these persons (7,13).

A strong correlation between nicotine use and other substance abuse also exists. Among all persons with a psychiatric diagnosis, those who abuse alcohol have the highest rates of smoking, in terms of having ever smoked (13). In a study of nicotine dependence and abstinence in schizophrenia, Ziedonis and colleagues (10) found that smokers had significantly higher rates of alcohol and drug abuse than nonsmokers and that heavy smokers had the highest rates of both alcohol and drug use disorders.

The subjective calming effect of nicotine is also thought to be particularly reinforcing for persons with psychiatric illness (14). It has been suggested that smoking reduces social inhibition and isolation and that it may provide an outlet for the expression of dependency needs among persons with schizophrenia (10,14). Van Dongen (14) found that for many people with persistent mental illness, smoking is a major part of their daily routine and is considered to provide some structure to a day with few activities.

Moreover, smoking has long been considered an integral part of the psychiatric culture, and there exists an ingrained belief that persons with mental illness are not able or willing to quit smoking. As a result, this population has been largely excluded from the greater societal movement toward minimizing smoking, and health professionals who work with persons who have mental illness have taken a passive stance in talking to their patients about quitting smoking.

Nicotine and vulnerability to mental illness

A few studies suggest that nicotine may increase one's vulnerability to mental illness. Ziedonis and colleagues (10) found that the onset of schizophrenia is significantly earlier among those who smoke. Another study reported that persons who smoke daily have an elevated risk of first-time occurrence of panic attack (15). Smoking has also been found to increase the risk of certain anxiety disorders during late adolescence and early adulthood (16). Other evidence suggests that smoking is associated with an elevated risk of depression (1,17,18). Finally, there is evidence that smokers are more vulnerable to other forms of substance abuse, with nicotine acting as a "gateway" drug (4,19).

Smoking and medication

Smoking cigarettes can reduce the blood concentrations of a number of psychiatric medications (3,20–22). Plasma neuroleptic concentrations can be up to 50 percent lower among heavy smokers, because smoking induces higher enzymatic activity, which accelerates the metabolism of these medications (3,21,22). Thus patients who smoke tend to receive significantly higher doses of neuroleptics (10,23–25). There is no evidence that specifically links the metabolism of neuroleptic medications to nicotine; rather, it is believed that the effect is produced by the tar in cigarettes (10). It is interesting that patients who are taking conventional antipsychotics are likely to smoke more, whereas patients who are taking atypical antipsychotics, such as clozapine, tend to smoke less (3).

Some studies have found that pa-

tients with schizophrenia who smoke have fewer parkinsonian symptoms than those who do not smoke (23,26), which suggests that smoking has a protective effect on dopamine systems (25). Other research has shown higher rates of tardive dyskinesia among patients with schizophrenia who smoke (1,27). However, the findings related to both parkinsonism and tardive dyskinesia are mixed and inconclusive. In a study by Linnoila and associates (20), smoking was associated with low plasma amitriptyline and nortriptyline concentrations, although there have been contradictory findings.

Impact of forced nicotine withdrawal

Forced nicotine withdrawal is associated with significant risks for psychiatric patients. Nicotine withdrawal produces physiological, behavioral, and subjective changes that present similarly to positive and negative psychiatric symptoms, side effects of medications, and alcohol or drug withdrawal (28). Thus there is a risk of misinterpretation and exacerbation of symptoms when psychiatric patients cease smoking (25,29,30). People with schizophrenia or a history of depression or anxiety report more severe withdrawal symptoms than do persons without these disorders (31). Smoking cessation can also precipitate a relapse of depression among smokers who have a history of depression and can increase anxiety for some patients (28).

Because smoking increases the metabolism of neuroleptic medications, forced smoking cessation may alter the blood concentrations of various psychiatric medications and may result in dangerously high drug concentrations and problematic side effects (32).

Empirical studies of smoking ban policies

Policies that ban smoking in inpatient psychiatric or addiction settings are either "total," which means that no smoking is allowed within the facility or on passes, or "partial," which means that smoking is allowed in the facility or on passes. Our literature search yielded seven investigations of the impact of total bans in inpatient psychiatric settings, listed in Table 1,

Table 1

Studies on the effects of total nonsmoking policies in psychiatric and addiction treatment settings

Reference	Study design	Behavioral disturbance	Behavioral indicators		Questionnaire results	
			Discharged against medical advice	Medication	Patients	Staff
Dingman et al. (35)	60 patients, 23 staff; locked unit; length of stay (LOS)=5.5 days; 55 percent involuntary; chart review	No change	No change	No change		75% of nurses quit smoking; 24–95% in favor pre- and postban
Resnick and Bosworth (36)	165 patients, 45 staff; LOS=4 days involuntary and 7 days voluntary; chart review	No change	No change	No change	7% in favor preban and 22% postban	24% in favor preban and 95% postban
Jonas and Eagle (37)	39 patients; LOS=14.1 days; 85% with mood disorder or schizophrenia; 6–18 month follow-up				80% smoking at discharge and 89% at one-month follow-up	
Haller et al. (38)	162 patients, 67 staff; LOS=14 days; 83% involuntary; chart review; Ward Atmosphere Scale and Overt Aggression Scale	No change	No change	No change	More positive postban	More positive postban than patients; no change in ward milieu
Velasco et al. (39)	289 patients; two-year follow-up; LOS=9 days; chart review	Increase in verbal assault initially	No change	Initial increase in anxiolytics; no change at two years		
Smith et al. (33)	44 smokers, LOS=17 days; 16 nonsmokers, LOS=28 days; chart review	Decrease in smokers' hostility			Increase in anxiety among smokers; no change in BPRS ^a scores	
Quinn et al. (40)	190 patients preban and 188 postban	Decrease in verbal and physical aggression				

^a Brief Psychiatric Rating Scale

and seven on the impact of partial bans, which are listed in Table 2 (33–49). In addition, three investigations examined the impact of bans in outpatient waiting rooms or day hospital programs; these studies are also listed in Table 2. We retrieved two studies of total bans and three of partial bans in addiction settings. The impact was assessed either through chart reviews or through structured questionnaires, and the behavioral indicators included the use of restraints or seclusion, the occurrence of assault or injury, the number of calls to security,

discharges against medical advice or elopements, medication changes, and records of illicit smoking in patients' rooms. The Ward Atmosphere Scale and the Overt Aggression Scale were the most common instruments used. However, published studies have not been consistent in the use of behavioral indicators, and some studies collected no objective data. Thus the use of meta-analytic methods was precluded by the lack of uniform dependent variables across studies. The number of studies that used similar outcome measures was too small for their

effect sizes to be reliably estimated.

In contrast with studies in psychiatric settings, the five studies on the impact of smoking bans in addiction settings focused mostly on the smokers' interest in quitting before and after the ban rather than on behavioral disorders and management issues arising from the policy. Joseph and colleagues (50), in two consecutive studies of total bans in residential programs, found an increase in the proportion of smokers who were interested in quitting after the ban (from 24 percent to 61 percent) and

Table 2

Studies on the effects of partial nonsmoking policies in psychiatric and addiction treatment settings

Reference	Study design	Behavioral indicators			Questionnaire results		
		Behavioral disturbance	Discharged against medical advice	Medication	Room smoking	Patients	Staff
Inpatient studies							
Smith and Grant (41)	32 patients, 142 staff; chart review; Ward Atmosphere Scale	No change	No change			No change	More positive postban
Thorward and Birnbaum (42)	82 patients preban and 70 postban; length of stay (LOS)=9 days; chart review; Ward Atmosphere Scale					Perception that the ward had "more control"	
Bronaugh and Frances (34)	94 patients; interview and Fagerstrom Tolerance Questionnaire				Yes	Severely addicted were less compliant	
Taylor et al. (43)	232 patients, 60% involuntary; 50 staff LOS=26 days; chart review	No change	No change	No change			Increase in support postban
Patten et al. (44)	362 patients; locked unit; LOS=11 days; chart review and phone interview	No change	No change			Low use of smoking services; 95% smoking postdischarge; LOS shorter for smokers postban	More positive postban; change easier than expected
Rauter et al. (45)	128 patients, mostly involuntary; chart review; reported complaints				Yes	More formal complaints initially, fewer one year later	
Downey et al. (46)	20 restricted smokers, LOS=8.7 days; 22 ad lib smokers, LOS=11 days; Fagerstrom Tolerance Questionnaire, Depression Scale, State/Trait Anxiety Inventory, Stages of Changes					Motivation decreased for restricted smokers and increased for ad lib smokers	
Outpatient studies							
Munetz and Davies (47)	72 patients with schizophrenia; questionnaire					55% of smokers supported restrictions	
Maiuro et al. (48)	147 patients, 48 staff; questionnaire					Smokers denied health benefit	
Steiner (49)	32 staff, 25 day hospital patients; questionnaire					Support increased postban; no impact on smoking	Staff supportive overall; 30% felt ban had negative emotional impact

in the proportion of those who actually abstained from smoking (41 percent after the ban compared with 9 percent before the ban). No adverse effect on drug or alcohol treatment was noted (51).

Regarding partial bans, a survey of 19 program directors reported fewer complaints than anticipated, but nicotine treatment was not fully integrated into most programs (52). In another study, staff support for an emphasis on smoking cessation declined after the policy was implemented (53). Kempf and Stanley (54) compared two adolescent residential units, one with a total ban on smoking and one with a partial ban, and found no difference between the two units in rates of initial rejection of the program or in dropout rates, with heavy smokers more likely to drop out from either unit.

The preponderance of evidence from the reviewed literature suggests that policies that ban smoking have no major long-standing untoward effects in terms of the behavioral indicators of unrest or noncompliance. One study found no association between scores on the Fagerstrom Tolerance Questionnaire (FTQ) or the Nicotine Withdrawal Checklist (NWC) and subjective anxiety (33), whereas another study found a negative association between FTQ scores and compliance with a nonsmoking policy (34). Indeed, the amount of support for the policies among patients and staff may actually be higher after the ban. However, these self-reports contrast with the results of three studies that showed that smoking resumed immediately after discharge or that motivation to quit was lower among patients whose smoking was restricted.

Discussion and conclusions

We found a discrepancy between studies that showed a significant interaction between smoking and psychiatric disorders and the fact that only four of the 17 studies reported behavioral consequences of smoking bans. Explanations may be found in the relatively crude indicators of behavioral unrest or noncompliance that have been used to study the impact of nonsmoking policies. Forced

nicotine withdrawal may not always translate into aggressive behavior, need for restraint, or other forms of noncompliance. Also, administrative bias in favor of a nonsmoking policy may mean that fewer untoward effects are reported.

Although policies that ban smoking satisfy a public health agenda during residential treatment, they appear to have little or no effect on the goal of smoking cessation. Despite self-reported increases in support for smoking bans after implementation of the policy, resumption of smoking after discharge is highly prevalent and immediate. Motivation for quitting smoking may even decline if a restrictive smoking policy is insensitive to the progression of the stages of change that are required before a person can quit smoking.

A growing body of literature shows that, in general, smoking cessation strategies result in outcomes among psychiatric patients that are not very different from those in the general population (55,56). Relatively brief interventions can increase the number of persons who quit smoking. Minimal training that can encourage health professionals to be sensitive and to be prepared to address patients' concerns about quitting is a cost-effective investment. Smoking cessation strategies, which can range from supportive counseling to pharmacotherapy, should be an inherent component of nonsmoking policies.

Total bans and outdoor bans raise ethical issues in terms of balancing the rights of nonsmokers against those of smokers. Arguments center around the extent of the threat presented by outdoor, second-hand smoke. Although chronic and cumulative exposure to indoor smoking—for example, living with a smoker or working in a smoking environment—creates a definite hazard, the risk associated with fleeting outdoor exposure is much more controversial and does not justify a lack of flexibility. The support for outdoor bans may be based more on the demand for an aesthetically pleasing environment for nonsmokers and the need for health care facilities to model healthier lifestyle practices for their clients (57,58).

This study was limited in that a

meta-analysis could not be conducted. Our conclusions about the impact of smoking bans on patients' behavior are largely qualitative given that a majority of studies did not show large untoward reactions. The lack of uniform measures of outcome is not surprising given that most studies used retrospective designs. More studies with prospective designs are needed to verify our conclusions.

As nonsmoking policies evolve with changes in social awareness and acceptance of tobacco smoking, flexibility is recommended in order to protect nonsmokers while promoting a therapeutic agenda for smokers. The significant interactive effects between smoking and psychiatric disorders pose particular challenges to smoking cessation that must be addressed. ♦

References

1. Lasser K, Boyd W, Woolhandler S, et al: Smoking and mental illness: a population-based 2610, 2000
2. El-Guebaly N, Hodgins D: Schizophrenia and substance abuse: prevalence issues. *Canadian Journal of Psychiatry* 37:704–710, 1992
3. Lyon E: A review of the effects of nicotine on schizophrenia and antipsychotic medications. *Psychiatric Services* 50:1346–1350, 1999
4. Ker M, Leischow S, Markowitz I, et al: Involuntary smoking cessation: a treatment option in chemical dependency programs for women and children. *Journal of Psychoactive Drugs* 28:47–60, 1996
5. Patten C, Martin J, Owen N: Can psychiatric and chemical dependency treatment units be smoke free? *Journal of Substance Abuse Treatment* 13:107–118, 1996
6. Martin J, Calfas K, Patten C, et al: Prospective evaluation of three smoking interventions in 205 recovering alcoholics: one-year results of project SCRAP-Tobacco. *Journal of Consulting and Clinical Psychology* 65:190–194, 1997
7. Dursun S, Kutcher S: Smoking, nicotine, and psychiatric disorders: evidence for therapeutic role, controversies, and implications for future research. *Medical Hypotheses* 52:101–109, 1999
8. Adler L, Hoffer L, Wiser A, et al: Normalization of auditory physiology by cigarette smoking in schizophrenic patients. *American Journal of Psychiatry* 150:1856–1861, 1993
9. Griffith J, O'Neill J, Petty F, et al: Nicotinic receptor desensitization and sensory gating deficits in schizophrenia. *Biological Psychiatry* 44:98–106, 1998
10. Ziedonis D, Kosten T, Glazer W, et al: Nicotine dependence and schizophrenia. *Hospital and Community Psychiatry* 45:

11. Anda R, Williamson D, Escobedo L, et al: Depression and the dynamics of smoking: a national perspective. *JAMA* 264:1541-1545, 1990
12. Hawkins J: Antidepressant effects of nicotine. *Journal of Clinical Psychiatry* 58:324, 1997
13. Glassman A: Cigarette smoking: implications for psychiatric illness. *American Journal of Psychiatry* 150:546-552, 1993
14. Van Dongen C: Smoking and persistent mental illness: an exploratory study. *Journal of Psychosocial Nursing* 37:26-34, 1999
15. Breslau N, Klein D: Smoking and panic attacks: an epidemiological investigation. *Archives of General Psychiatry* 56:1141-1147, 1999
16. Johnson J, Cohen P, Pine D, et al: Association between cigarette smoking and anxiety disorders during adolescence and early adulthood. *JAMA* 284:2348-2351, 2000
17. Hall S, Munoz R, Reus V, et al: Nicotine, negative affect, and depression. *Journal of Consulting and Clinical Psychology* 61: 761-67, 1993
18. Tanskanen A, Viinamaki H, Koivumaa-Honkanen H, et al: Smoking and suicidality among psychiatric patients. *American Journal of Psychiatry* 155:129-130, 1998
19. Hoffman A, Slade J: Following the pioneers: addressing tobacco in chemical dependency treatment. *Journal of Substance Abuse Treatment* 10:153-160, 1993
20. Linnoila M, George L, Guthrie S, et al: Effect of alcohol consumption and cigarette smoking on antidepressant levels of depressed patients. *American Journal of Psychiatry* 138:841-842, 1981
21. Vinarova E, Vinar O, Kalvach Z: Smokers need higher doses of neuroleptic drugs. *Biological Psychiatry* 19:1265-1268, 1984
22. Blumberg D, Safran M: Effects of smoking cessation on serum neuroleptic levels. *American Journal of Psychiatry* 148:1269, 1991
23. Decina P, Caracci G, Sandik R, et al: Cigarette smoking and neuroleptic-induced parkinsonism. *Biological Psychiatry* 28: 502-508, 1990
24. Menza M, Grossman N, Van Horn M, et al: Smoking and movement disorders in psychiatric patients. *Biological Psychiatry* 30:109-115, 1991
25. Dalack G, Meador-Woodruff J: Smoking, smoking withdrawal, and schizophrenia: case reports and a review of the literature. *Schizophrenia Research* 22:133-141, 1996
26. Goff D, Henderson M, Amico B: Cigarette smoking in schizophrenia: relationship to psychopathology and medication side effects. *American Journal of Psychiatry* 149:1189-1194, 1992
27. Binder R, Kazamatsuri H, Nishimura T, et al: Smoking and tardive dyskinesia. *Biological Psychiatry* 22:1280-1282, 1987
28. Hughes J: Possible effects of smoke-free inpatient units on psychiatric diagnosis and treatment. *Journal of Clinical Psychiatry* 54:109-114, 1993
29. Glynn S, Sussman S: Why patients smoke. *Hospital and Community Psychiatry* 41: 1027-1028, 1990
30. Greeman M, McClellan T: Negative effects of a smoking ban on an inpatient psychiatry service. *Hospital and Community Psychiatry* 42:408-441, 1991
31. Breslau N, Kilbey M, Andreski P: Nicotine withdrawal symptoms and psychiatric disorders: findings from an epidemiologic study of young adults. *American Journal of Psychiatry* 149:464-469, 1992
32. Hughes J: Treatment of smoking cessation in smokers with past alcohol/drug problems. *Journal of Substance Abuse Treatment* 10:181-187, 1993
33. Smith C, Pristach C, Cartagena M: Obligatory cessation of smoking by psychiatric inpatients. *Psychiatric Services* 50:91-94, 1999
34. Bronaugh T, Frances R: Establishing a smoke-free inpatient unit: is it feasible? *Hospital and Community Psychiatry* 41: 1303-1305, 1990
35. Dingman P, Resnick M, Bosworth E, et al: A nonsmoking policy on an acute psychiatric unit. *Journal of Psychosocial Nursing* 26:11-14, 1988
36. Resnick M, Bosworth E: A smoke-free psychiatric unit. *Hospital and Community Psychiatry* 40:525-527, 1989
37. Jonas J, Eagle J: Smoking patterns among patients discharged from a smoke-free inpatient unit. *Hospital and Community Psychiatry* 42:636-637, 1991
38. Haller E, McNeil D, Binder R: Impact of a smoking ban on a locked psychiatric unit. *Journal of Clinical Psychiatry* 57:329-332, 1996
39. Velasco J, Eells T, Anderson R, et al: A two-year follow-up on the effects of a smoking ban in an inpatient psychiatric service. *Psychiatric Services* 47:869-871, 1996
40. Quinn J, Inman J, Fadow P: Results of the conversion to a tobacco-free environment in a state psychiatric hospital. *Administration and Policy in Mental Health* 27: 451-453, 2000
41. Smith W, Grant B: Effects of a smoking ban on a general hospital psychiatric service. *Hospital and Community Psychiatry* 40: 497-450, 1989
42. Thorward S, Birnbaum S: Effects of a smoking ban on a general hospital psychiatric unit. *General Hospital Psychiatry* 11:63-67, 1989
43. Taylor N, Rosenthal R, Chabus B, et al: The feasibility of smoking bans on psychiatric units. *General Hospital Psychiatry* 15:36-40, 1993
44. Patten C, Bruce B, Hurt R, et al: Effects of a smoke-free policy on an inpatient psychiatric unit. *Tobacco Control* 4:372-379, 1995
45. Rauter U, deNesnera A, Grandfield S: Up in smoke? Linking patient assaults to a psychiatric hospital's smoking ban. *Journal of Psychosocial Nursing* 35:35-40, 1997
46. Downey K, Pomerleau C, Huth A, et al: The effect of a restricted smoking policy on motivation to quit smoking in psychiatric patients. *Journal of Addictive Diseases* 17:1-7, 1998
47. Munetz M, Davies M: Smoking by patients. *Hospital and Community Psychiatry* 38: 413-14, 1987
48. Maiuro R, Michael M, Vitaliano P, et al: Patient reactions to a no smoking policy in a community mental health center. *Community Mental Health Journal* 25:71-77, 1989
49. Steiner J: Becoming a smoke-free day hospital. *International Journal of Partial Hospitalization* 7:155-159, 1991
50. Joseph A, Nichol K, Willenbring M, et al: Beneficial effects of treatment of nicotine dependence during an inpatient substance abuse treatment program. *JAMA* 263: 3043-3046, 1990
51. Joseph A: Nicotine treatment at the drug dependency program of the Minneapolis VA Medical Center. *Journal of Substance Abuse Treatment* 10:147-152, 1993
52. Goldsmith R, Hurt R, Slade J: Development of smoke-free chemical dependency units. *Journal of Addictive Diseases* 11: 67-77, 1991
53. Hurt R, Croghan I, Offord K, et al: Attitudes toward nicotine dependence among chemical dependency staff: before and after a smoking cessation trial. *Journal of Substance Abuse Treatment* 12:247-252, 1995
54. Kempf J, Stanley A: Impact of tobacco-free policy on recruitment and retention of adolescents in residential substance abuse treatment. *Journal of Addictive Diseases* 15:1-11, 1996
55. El-Guebaly N, Cathcart J, Currie S, et al: Smoking cessation approaches for persons with mental illness or addictive disorders. *Psychiatric Services* 53:1166-1170, 2002
56. Borody J, Fogg B: The impact of facility no smoking policies and the promotion of smoking cessation on alcohol and drug rehabilitation program outcomes. *Canadian Centre on Substance Abuse, Addictions Policy Working Group*. Available at <http://www.ccsa.ca/docs/cessation.htm>
57. Bloch M, Shopland D: Outdoor smoking bans: more than meets the eye. *Tobacco Control* 9:99, 2000
58. Chapman S: Banning smoking outdoors is seldom ethically justifiable. *Tobacco Control* 9:95-97, 2000