Smoking bans in psychiatric inpatient settings? A review of the research

Sharon Lawn, Rene Pols

Objective: This paper reviews the findings from 26 international studies that report on the effectiveness of smoking bans in inpatient psychiatric settings. The main aim is to identify which processes contribute to successful implementation of smoking bans and which processes create problems for implementation in these settings.
Method: After performing an electronic search of the literature, the studies were compared for methods used, subjects involved, type of setting, type of ban, measures and processes used and overall results. Total bans were distinguished from partial bans. All known studies of smoking bans in psychiatric inpatient units from 1988 to the present were included.
Results: Staff generally anticipated more smoking-related problems than actually occurred. There was no increase in aggression, use of seclusion, discharge against medical advice or increased use of as-needed medication following the ban. Consistency, coordination and full administrative support for the ban were seen as essential to success, with problems occurring where this was not the case. Nicotine replacement therapy was widely used by patients as part of coping with bans. However, many patients continued to smoke post-admission indicating that bans were not necessarily effective in assisting people to quit in the longer term.
Conclusions: The introduction of smoking bans in psychiatric inpatient settings is possible but would need to be a clearly and carefully planned process involving all parties affected by the bans. Imposing bans in inpatient settings is seen as only part of a much larger strategy needed to overcome the high rates of smoking among mental health populations.
Key words: mental health, policy, psychiatry, smoking bans, tobacco.

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This paper serves as a review of the evidence for the feasibility of smoking bans in psychiatric inpatient settings. A brief summary of the literature on smoking and mental illness and a rationale for investigating this issue as a major public health concern provide the context for the timeliness of this review. The Australian experience is reflective of similar concerns internationally [1,2].

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Smoking as a public health problem

Links between smoking and cancer of the lung were first confirmed by Doll and Hill [3,4]. The Royal College of Physicians published the first major authoritative report on smoking and health in 1962 [5], being the forerunner to many other major reports, such as that of the US Surgeon General in 1964 [6]. Since that time, the links between smoking and disease have been well established, with more than 57 000 scientific articles published on this subject [7]. Both the Royal College of Physicians

and the US Surgeon General have been responsible for several of these reports [5,6,8–13]. Since then, the evidence for smoking as a serious public health concern has been growing. Tobacco smoking accounts for 3–5 million deaths worldwide each year, with this figure predicted to reach 10 million per year in the decade 2020–2030 [14]. Globally, tobacco is the leading risk factor for disease burden [15]. Indirect exposure to smoking as a result of environmental tobacco smoke or passive smoking has also been confirmed worldwide as a significant public health problem [16–19].

Comorbid nicotine dependence and mental illness

Smoking prevalence is among the highest for people with mental illness; up to 88% for those with mental illness compared to approximately 25% for the general population. Research has also clearly established that mentally ill smokers tend to smoke more heavily, for more years and favour higher tar cigarettes than the general population [20–22]. Using data from the National Survey of Mental Health and Wellbeing of Adults in 1997, Jorm [23] found this association to be particularly prominent in the 18- to 39-year-old age group. Despite the vast body of literature and research on cigarette smoking, the majority of research has concluded that quit rates for people with a concurrent mental illness continue to be extremely low [20,21,24–27]. The high prevalence of smoking among all people with a mental illness is a concerning public health problem. Links between smoking and higher premature death rates from all major physical health conditions have been noted for this group when compared to the general population [28–30]. The presence of fewer health-promoting behaviours and poorer nutrition, generally for people with mental illness, has also been proposed to help explain their greater risk of premature death [31].

Reviews of the existing research on smoking and mental illness have found significant comorbidity with several pharmacological and psychosocial reasons for this comorbidity proposed [1,32,33]. Smokers with schizophrenia are thought to use cigarettes to self-medicate the effects of negative symptoms of their illness [27,34,35]. Smoking has also been reputed to have antidepressant effects in people suffering from unipolar depression with smoking cessation attempts being causally implicated in the relapse of these people's depression [36,37]. Research has also shown that smoking relapse is more likely in the presence of negative mood states [38]. Nicotine's role in regulating a dysfunctional dopamine system, by augmenting dopamine release, has been proposed as the mechanism involved in smoking dependence for people suffering from schizophrenia and depression [36]. More generally, central nervous system mesolimbic dopaminergic pathway activity has been found to be especially important in mediating reward in nicotine dependence [39,40]. Smoking has also been shown to mitigate the side-effects of neuroleptic medications that are widely used by psychiatric populations, to treat their mental illness. One such side-effect, neuroleptic-induced parkinsonism, has been increasingly found to be less common in smokers [20,27,41,42]. Recent biological in vivo research with non-psychiatric populations has confirmed that smoking and the development of dependence are associated with increased dopamine activity in the basal ganglia and that smokers have special sensitivity to presynaptic dopaminergic activation by nicotine [43]. The role of nicotine in improving cognitive function has also been proposed, with mentally ill smokers reporting that smoking helps to overcome deficits in attention, concentration, memory and cognitive functions generally. Nicotine has been shown to improve sensory gating so that smoking alleviates sensory information processing difficulties. Auditory sensory gating deficits are found in more than 75% of people with schizophrenia and these deficits are temporarily normalized by smoking for these people. However, it is unclear whether nicotine has direct positive effects on cognitive function in smokers or whether it plays a role in reversing cognitive deficits [44–46]. What may be of greater relevance is the notion that, once smoking and addiction become established, smokers with mental illness may find quitting more difficult because of a range of psychosocial reasons such as impairments in social and cognitive functioning [47], and problems associated with anxiety, medication side-effects, motivation and lack of other coping resources [48]. Therefore, cessation programs that rely on the transtheoretical model, with its emphasis on motivation levels and readiness to change, may not be appropriate for this group of smokers [49,50]. Smoking has also been proposed to have a protective effect against dementia, but this has not been confirmed in a report reviewing the evidence [51]. The existential, social and cultural influence of psychiatric settings and mental illness on smoking rates for staff and patients has been explored elsewhere [33,50,52,53].

Smoking bans in psychiatric settings

The culture of smoking in psychiatric settings is perceived to be an entrenched process that has been central to the history of mental institutions over the past three centuries with the development of asylums and their evolution into our current psychiatric inpatient facilities. Tobacco rations were an assumed part of day-to-day life in

many such institutions [54]. The idea of imposing smoking bans in psychiatric settings is thought to be a recent phenomenon. However, there is evidence for much anti-tobacco sentiment, for example, in the 1800s in the USA. In the 1830s and 1840s Samuel B Woodward, the Superintendent of the Worcester State Hospital in Massachusetts, wrote vast commentaries raising the harms of smoking [55]. In 1848, an article in the *American Journal of Insanity* by Dr Pliny Earle, the Superintendent of the Bloomingdale asylum in New York, concluded that 'smoking is considered so deleterious that in most of the well-conducted establishments for the insane in this country, its use among the patients is prohibited. At this institution it is not permitted, excepting in a few cases, in small quantities, by patients who have resided here many years' [56].

The British College of Physicians and US Surgeon General reports of the 1950s and 1960s highlighted the physical harms of smoking and triggered a new wave of concern. These reports eventually influenced and prompted a number of US psychiatric institutions to introduce smoking bans from the late 1980s and early 1990s. In 1992, the US Joint Commission on Accreditation of Healthcare Organizations declared that hospital buildings must adopt the goal of eventually becoming smoke-free. The following review of 26 studies documents the experiences of these and later psychiatric studies of settings, where smoking bans were introduced. The review would seem timely because of the recent proliferation of research in this area and increasing activity in and demands from the practice field for clear policy to guide solutions to this dilemma. All these studies are useful for their articulation of the processes they followed in order to achieve smoking bans and the lessons they learned along the way.

Method

This review builds on an earlier review by Patten *et al*. [57]. The search strategy used for the review of research on smoking bans in psychiatric settings involved a general electronic database search of Pubmed using the terms (tobacco use disorder OR smoking OR smoking cessation OR cigarette*) and (hospitals* AND mental disorders OR psychiatric hospitals OR psychiatric department, hospital). The search was restricted to English language and included any sources from 1970 onwards. One hundred and eighty records were retrieved. PsychINFO was also searched using the terms nicotine or smoking, smoking-cessation, tobacco-smoking, psychiatric hospitals, or psychiatric units. This search was also restricted to English language and included any sources from 1970 onwards. Thirty-six records were retrieved. Reference lists used in each relevant research paper were also examined as well as existing policy documents on the topic of smoking and mental illness generally. The main author also routinely checked a broad range of journal publications by means of the Elsevier Science Contents Direct electronic alert system. As research in this area is limited, all known studies were included. Table 1 provides a summary of each study found, the type of setting, who it involved, the type of ban imposed, interventions offered to facilitate the ban and methodological aspects of the study. The most important findings are displayed and readers are encouraged to consult the original reports for further articulation of these points. Table 2 provides a summary of overall findings in order of how frequently they appeared in the studies, listed from most frequent to least frequent finding. This table is limited to the 12 most frequent findings following a thematic analysis of results from the studies. A further distinction is made within this latter table with regard to the type of setting because many of the studies, particularly the earlier studies, give a false impression of results once it is realized that their definition of smoking ban applies to bans inside the buildings only. This negates the fact that patients and staff can still smoke outside the buildings and many of them do smoke heavily and in large groups without any impact on resolving the problem of smoking within psychiatric settings [33]. Therefore, the results of those studies where a total ban is genuinely applied to the settings are also defined.

Discussion

Overall, the findings of these studies are mixed. Unintended negative consequences of change are evident in each study presented. However, staff generally anticipated more smoking-related problems than actually occurred. Some researchers stated that few transition problems were experienced by patients and staff, while other studies clearly present some concerning findings.

Of greatest significance was that most studies found that there was no increase in aggression, discharge against medical advice or increased use of as-needed medication following the ban. This was the case for approximately 75% of all study sites regardless of the type of ban imposed and in 90% of sites that imposed total bans. Of the two study sites that reported an increase in these problems with the imposition of a total ban, the first described four case studies of highly disturbed patients who were detained and unable to enter the grounds to smoke. This study also noted problems with no administrative process to provide consistent enforcement of the ban, suggesting fragmentation may account for these problems [58]. This need for consistency of approach by staff, ranging from management to clinical staff support, was noted by several studies to be important for success. The concerns for staff morale and anxiety levels as part of a change process and the destructive effects of not having a consistent approach were noted in several of these studies and elsewhere [33]. There was also no mention of staff education about differentiating between psychotic symptoms of distress and nicotine withdrawal symptoms for patients at either of these sites, which may also have contributed to this negative result [52,58]. The impact of fragmentation and inconsistent application of bans across the patient population tended to cause more harm and

Table 1. Studies on smoking bans in psychiatric treatment units

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
1	Dingman *et al.* (1988) [68]	12-bed acute locked University Hospital Unit, Oregon, US	60 patients (73%) and 23 nursing staff (20%)	Ban inside buildings only: • Not recorded	Surveys 1 week before and 1 month post-introduction of ban	Staff support for the ban changed from 24% to 95% post-policy. No significant increases in aggression were reported. Decreased conflict over cigarettes and staff more free to deal with other care issues.
2	Dawley *et al.* (1989) [69]	Outpatient day hospital, outpatient day treatment and inpatient alcohol dependence treatment program for psychiatric patients, Veterans' Medical Center, New Orleans, US	Patients and staff (50% and 80% response rate, respectively) • 36 from inpatient unit • 47 from outpatient units	Banned smoking to designated areas only (indoor and outdoor): • Not recorded	Questionnaire containing four multiple choice questions on smoking control. One week observation of settings (four 10-minute periods each day)	Overall positive view of smoking control and good compliance was noted and observed. No complaints were found from patients or staff.
3	Resnick and Bosworth (1989a) [70]	12-bed acute locked University Hospital Unit, Oregon, US	1. 165 patients (71%) and 45 staff 2. 60 patients (100%) admitted consecutively (30 pre and 30 post-ban)	Ban inside buildings only: • NRT • Education groups/patients	1. Patient and staff surveyed pre and post-introduction of ban about their attitudes to a ban 2. Review of incidents 1 month pre and 1 month post-smoking ban (e.g. PRN use, seclusion, calls for security and discharge against advice)	1. Pre-policy, 7% of patients and 24% of staff favoured a ban. After policy, 22% of patients and 90% of staff endorsed the ban. 2. No significant increases in negative behavioural incidents.
4	Resnick *et al.* (1989b) [71]	49 psychiatric units, Oregon, US	18 Head Nurses or program directors	NA	Phone poll with one staff participant from each site following the initial study above	Significant increase in positive attitudes toward smoking bans.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
5	Thorward and Birnbaum (1989) [72]	17-bed acute locked unit, Washington, US	152 patients (65%) + staff	Ban inside buildings only: • NRT	Moos Ward Atmosphere Scale 6 month pre and 6 months post-introduction of ban Records kept of incidents and use of PRN medications	No significant changes noted by patients or staff. No significant changes in use of PRN medications. Low uptake of NRT option. Violations of ban were significant post-implementation. No significant change to patients' post-admission smoking behaviour as a result of the ban.
6	Smith and Grant (1989) [73]	42-bed inpatient open unit, Seattle, US	32 patients (41%) and 45 staff (18%)	Ban inside buildings only: • NRT • Stress management • Staff education	Patient and staff surveys Review of patient behaviour records pre and post-ban	Patients who smoked rated effects of ban more negatively than non-smokers. Staff anticipated more problems than actually occurred.
7	Bronaugh and Frances (1990) [74]	Acute locked University Hospital Unit, New Jersey, US	94 patients (62%) and staff	Total ban for all patients: • Not recorded	Surveys to patients asking about habits post-ban Observation of the setting for 4-month ban period	Prior focus on smoking was perceived as the cause of much staff–patient tension. Severely addicted patients were the most disruptive and least likely to respond positively to interventions. Staff consistency seen as essential for success. Significant problems noted with surreptitious smoking by patients post-ban.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
8	Greeman and McClellan (1991) [58]	60-bed acute open unit of a 600-bed Veterans' Hospital, Minnesota, US	1796 patients and clinical staff	Ban inside buildings only Total ban for those patients in locked settings: • NRT • Education groups/patients	4 case studies and anecdotal data from staff on patients' acceptance of policy over a 2-year period	Fewer negative incidents were observed than were initially feared. Two years later 20–25% of patients still had adjustment problems with 10% still having significant problems. Increased use of seclusion and demands on staff, and increased vulnerability to standover were noted. No administrative process for enforcement of ban led to several problems (e.g. absconding and bartering). A special unit suggested for allowing smoking for involuntary disturbed patients.
9	Erwin and Biordi (1991) [75]	Two 21-bed acute open units, Veterans' Hospital, Illinois, US	29 nursing staff	Ban inside buildings only: • Education groups/patients • Stress management • Self-help materials	Survey based on Levine's four conservation principles of nursing given to staff just before and 4 weeks after ban policy	After ban, 75% of staff reported its success. Extensive collaboration and consultation at all levels was noted as part of positive result. Clear and agreed protocol to address non-compliance helped as did enlisting family support for ban.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
10	Cooke (1991) [76]	20-bed acute unit (15-minute passouts with doctor's approval), Nova Scotia, Canada	Patients and nursing staff	Ban inside buildings only: • Education groups/patients • Self-help materials	Anecdotal reports from patients and staff over a 2-year period	No increase in aggressive behaviour or use of PRN medications. Some patients took the opportunity to cut down and several quit. Strong support by staff and patients for a designated smoking area, though nurses emphasizing that this would potentially promote stigma from other sections on hospital that sought to treat psychiatric patients differently.
11	Jonas and Eagle (1991) [77]	Community patients recently discharged from acute units, Cape Cod Hospital, Massachusetts, US	39 smokers discharged from smoke-free psychiatric unit	Total ban for patients while in hospital: • NRT (gum) provided pre and post-discharge • Self-help materials	Survey post-discharge	80% (n = 28) resumed smoking immediately upon discharge; three within 1 week. Concluded that mandatory cessation as an inpatient does not lead to long-term abstinence, therefore structured support is needed pre and post-discharge.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
12	Hoffman and Eryavec (1992) [78]	18-bed acute open unit, Mount Sinai Hospital, Toronto, Canada	Patients and staff	Ban inside buildings only Passouts to go outside the hospital to smoke: • NRT • Education groups/patients • Staff education	Anecdotal reports from patients and staff	Initial problems because of staff inconsistency in imposing protocols led to problems such as increased surreptitious smoking by patients and staff conflict. Assertive staff consultations rectified this problem and more positive support followed with no increase in violence reported. Staff and patients were able to reduce overall smoking. Several patients reported that the ban helped prevent them from relapsing to smoking once admitted.
13	Beemer (1993) [79]	Open psychiatric units of general hospital, Vancouver, Canada	Patients and staff	Total ban: • NRT • Clonodine patches	Anecdotal reports from staff	No increase in use of PRN meds or physical restraints was reported. Noticeable improvements in workplace conditions were noted by staff who had expected more problems than actually occurred. Assertive advertising of the impending ban to patients, other units and hospitals and several community agencies helped the implementation of the ban.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
14	Taylor *et al.* (1993) [80]	Two 26-bed locked units of 934-bed general hospital, New York, US	232 patients and 50 staff	Total ban: • NRT • Lollies and other substitutes	Staff surveys pre and post-ban for patients (staff had already experienced 2-year ban on staff-smoking; 8 of 50 staff were smokers at time of patient ban) Patient Log kept of PRN use, seclusion/restraint, elopement and adverse other incidents	Significant change in staff attitudes toward patients' smoking was noted post-ban. Patients' smoking behaviour did not change pre and post-ban; smoking rate continued at 53%. No significant difference in disruptive events post-ban. Poor uptake of provided alternative to smoking by patients.
15	Parks and Devine (1993) [81]	41 state operated extended care units (mean number of beds = 255), US	Staff	Ban inside buildings only: • NRT • Clonodine patches	Telephone survey of staff from the units	Implementation of ban had more positive results that staff anticipated with fewer adverse incidents than expected. Most perceived ban to be easier to institute in these settings than in acute settings. Two hospitals that tried to have total ban that included hospital grounds reported severe problems with enforcement. Bans caused most problems where physical structure of buildings prevented patients from going outside without staff supervision. Smoking bans were easier to implement were administrators and department heads were non-smokers.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
16	Richardson (1994) [82]	Acute open unit, Massachusetts, US	Staff	Ban inside buildings only: • NRT • Education group/patients • Staff education	Anecdotal reports from staff over 3-year preparation period pre-ban and reports and observations over the several months post-ban	One-to-one smoking escort privileges caused more conflict than they averted. Ban was found to be more successful once nursing staff showed uniform commitment to the process.
17	Landow *et al.* (1995) [83]	Multiple psychiatric inpatient sites, US	Psychiatrists	• NRT	Mailed questionnaire to 128 chairs of US academic psychiatry departments	58% response rate. 57% believed that stress of nicotine withdrawal impaired patients' medical therapy. 67% allow patients to smoke.
18	Patten *et al.* (1995) [84]	28-bed locked unit, San Diego, CA, US	Staff	Total ban: • NRT • Education groups/patients • Staff education	Survey of 204 staff pre and post-ban + review of 362 patient case notes for incidents of acting out behaviour	No significant increase in use of PRN meds or in acting out behaviour found. Few patients utilized smoking cessation interventions and the majority of patients resumed smoking post-discharge from hospital.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
19	Haller *et al.* (1996) [85]	16-bed locked unit, San Francisco, CA, US	Patients and staff	Total ban: • NRT • Educational reading matter for patients • Staff education	Ward Atmosphere Scale (WAS) completed by 67 staff 1 month pre and 53 staff post-ban as well as anonymous questionnaire to staff pre-ban Survey of 21 patients discharged from unit in the month pre-ban and 93 patients discharged for a 2-month period 1 month post-ban Retrospective analysis of patients charts for the period 1 month pre to 1 month post-ban regarding use of PRN medications, use of seclusion/restraint, discharge against medical advice etc. Overt Aggression Scale (OAS) completed for the period 1 month pre and 1 month post-ban	No increase in aggression or use of PRN medications. Staff anticipated more problems than actually occurred. There were fewer conflicts between patients and staff when a total ban was imposed, with cigarettes being seen as the source of much conflict.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
20	Ryabik *et al.* (1995) [86] 2-year follow-up study by Velasco *et al.* (1996) [59]	25-bed locked unit, Kentucky, US	Staff	Total ban: • NRT	Observations 6 weeks pre and 6 weeks post-ban with staff documenting number of security calls, use of seclusion/restraint, verbal and physical assaults, use of PRN, use of NRT and discharges against medical advice Survey of the above aspects at 2-year follow-up	Significant increase in verbal assaults and PRN use immediately after ban but not 2 years later. Increased use of NRT at post-ban and 2 years later (though problems with patients using gum). No change in other observed aspects over the research period. Significant use of 'soft' restraints (Cloth posey nests) at 2-year follow-up. Recommendations were alternative activities and NRT and increased education for staff about nicotine withdrawal to help them differentiate between this and psychiatric symptoms.
21	Rauter *et al.* (1997) [87]	145-bed acute open units, New Hampshire, US	Patients and staff	Ban inside buildings (escorted smoke breaks for locked ward patients and free access for those with off-ward privileges): • NRT • Education groups/patients • Staff education	2 pre-smoking ban baseline periods and a 3 month post-ban follow-up, all over the colder months for maximum effect Incident reports, patient acuity, complaints and population density measured	Ban period was significantly associated with fewer intensive nursing interventions. Most incidents of contraband occurred in the month before implementation of the ban with no significant increase after ban. No difference in assaults related to smoking was recorded pre and post-ban. Complaints by patients dropped significantly post-ban. Firm and uniform commitment by all levels of staff.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
22	Quinn *et al.* (2000) [88]	190-bed acute unit with 98% involuntary patients, Texas, US	Patients	Total ban for patients, staff and visitors on any part of hospital campus: • NRT • Education group/patients	Patient verbal and physical acts of aggression recorded 1 month pre and post-ban	A 45% decrease in verbal acts of aggression post-ban and a 50% decrease in physical acts of aggression post-ban, both results being significant. This was in contrast to what staff feared pre-ban. The unequal distribution of tobacco products in the patient population was seen as a primary contributor to aggression pre-ban.
23	D'Mello *et al.* (2001) [89]	Acute open unit, Michigan, US	Patients	Total ban for patients: • NRT	Retrospective review of case notes from 55 randomly selected patients in a smoke-free unit to determine utilization of NRT (gum, inhaler, patch and nasal spray)	Preference was shown for inhaler over other options possibly because of oral, handling and sensory reinforcement ($p < 0.0001$).
24	York (2002) [personal correspondence]	20-bed closed extended care geriatric unit, Adelaide, SA, Australia	Patients and staff	Total ban for patients: • NRT • Education groups/patients • Staff education • Lollies and other substitutes	Gradual phasing out of smoking routine	No increase in violence, agitation or problems with clinical management was noted. Thorough preparation, coordination and commitment by all staff was seen as vital for success of ban.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
25	Hempel *et al.* (2002) [90]	Maximum security forensic psychiatric hospital, Texas, US	140 patients	Total ban for patients: • NRT • Education groups/patients	10 weeks before ban, patients were notified of impending ban Patient records were retrieved 12 weeks post-ban's implementation. Patient must have resided in the unit at least 4 weeks pre and 4 weeks post-ban Variables measured were disruptive behaviours, use of PRN meds, verbal and physical aggression incidents, use of restraint/seclusion, sick calls and weight gain	Staff fears of increased aggression and disruptive behaviours were unfounded with behaviour and health-improving post-ban. Reasons given for this were: 1. the nature and source of social interactions (cigarettes) changed; 2. the addiction cycle typical of pre-ban period continually destabilized patients mental state; and 3. possible positive role of neweratypical antipsychotics. Thorough planning for system change to help staff was recommended.

Table 1. Continued

Study no.	Author (date)	Setting	Patients (% smokers)	Type of ban: • Smoking interventions offered	Measures and processes	Results
26	Rich and Knowlden (2002) [91]	Acute open psychiatric units, Fairfield/Liverpool and Bankstown Hospitals, Sydney, NSW, Australia	16 patients, 9 staff and 4 consumer reps	Total ban for those who participated: • NRT • Education groups/patients • Staff education	Measures of NRT use and effectiveness in smoking cessation up to 3 months post-commencement of cessation attempt	Need for community level so that new skills patients learn are not lost at discharge. Smoking cessation interventions must be included in the discharge summary. Smoke-free policy is entirely feasible for mental health units. NRT is effective for people with mental illness, developing a smoke free mental health service and in reducing anxiety, aggression and acting out behaviour. Attitude change is the most important element in going smoke-free. Dependent smokers may require high doses of NRT (two or more patches per day perhaps with additional gum) to prevent withdrawal symptoms, with no adverse consequences observed.

NA, not available; NRT, Nicotine Replacement Therapy.

Table 2. Summary of key findings from the 26 reviewed studies

	Key findings	Studies no. (n = 26)	Studies no. (total ban) (n = 10)
1a	There was no increase in aggression, use of seclusion, discharge against medical advice or increased use of PRN medication following the ban.	1–7, 10, 12–15, 18–22, 24–26 (n = 20)	7, 13, 18–20, 22, 24–26 (n = 9)
1b	There was a significant increase in the use of PRN medications and seclusion, and verbal assaults immediately post-ban.	8, 19 (n = 2)	8, 20 (n = 2)
2a	NRT was used by patients as part of imposing the ban.	3, 5, 6, 8, 11–16, 18–26 (n = 19)†	8, 13, 18–20, 22, 24–26 (n = 9)
2b	Uptake of NRT was low despite being offered as part of imposing the ban.	5, 14, 20, 23 (n = 4)	18, 23 (n = 2)
3	Staff predicted more adverse effects than actually occurred and they developed a much more positive view post-ban.	1, 3, 4, 6, 8, 9, 12–15, 18, 22, 24, 25 (n = 14)	8, 13, 20, 22, 24, 25 (n = 6)
4	Consistency, coordination and full administrative support for the ban were seen as essential to success with problems occurring where this was not the case.	7–9, 12, 13, 15, 16, 18, 21, 24, 25 (n = 11)	7, 13, 19, 24, 25 (n = 5)
5	Bans were seen as an opportunity for staff to develop new clinical skills.	1, 3, 4, 6, 13, 19, 26 (n = 7)	13, 20, 26 (n = 3)
6	Smoking escort privileges for individual patients post-ban caused increased staff and patient complaints and increased verbal aggression and animosity.	12, 16, 18, 21, 22, 25 (n = 6)	20, 22, 25 (n = 3)
7	Violations such as smuggling, leaving the grounds and increased fire risks were noted post-ban. Enforcement problems were also noted.	5, 7, 8, 15, 19 (n = 5)	7, 8, 20 (n = 3)
8	Severely disturbed patients who were smokers coped less well with the ban.	6, 8, 15, 19, 21 (n = 5)	8, 20 (n = 2)
9a	Many patients continued to smoke post-admission.	5, 6, 11, 20, 25, 26 (n = 6)	11, 18, 25, 26 (n = 4)
9b	Patients gained a greater sense of self-esteem and self-control as a result of the ban, prompting them to consider quitting.	6, 10 (n = 2)	
10a	Decreased problems were noted with nursing tasks such as gaining patient cooperation and discussing treatment.	1, 7, 21, 22 (n = 4)	7, 22 (n = 2)
10b	Increased problems were noted with nursing tasks such as gaining patient cooperation and discussing treatment.	6 (n = 1)	

†Two further studies offered education about quitting to patients. Four studies did not record what smoking interventions were offered. NRT, nicotine replacement therapy.

disruption as experienced by studies that tried to impose selective bans. Where restrictions are graduated over time, they can have the unintended consequence of focusing on the negotiation of smoking privileges, increasing the value of cigarettes as a tool for exchange and therefore heightening the potential for conflict [33,50,59]. This is exactly what 11 of the 26 studies found (key findings 6 and 7).

When questioned before the implementation of bans, most staff, particularly nursing staff, predicted more adverse effects than actually occurred. However, they developed a much more positive view post-ban. This was noted in approximately 55% of studies overall and in 70% of studies where total bans were imposed. The initial fears of nursing staff can be attributed to staff in this profession playing the most significant role in providing direct care to patients, more so than other disciplines within psychiatric settings. Therefore, nurses are arguably more likely than others to be assaulted by agitated patients and to develop extremely close nurturing roles with patients and identify strongly with patient distress, nicotine withdrawal being one of these. There is also a vast literature on the high rates of smoking by psychiatric nurses, compared to other nurses and other health professionals [60–63]. When smoking bans have been imposed, the rate of smoking by staff has been shown to decline with many staff taking the opportunity to quit once bans are imposed [64,65].

The design of many of these studies appears to be weighted disproportionately at researching the impacts of bans on the staff and the institution itself, rather than on the impacts on patient wellbeing. This is evidenced by the lack of consideration many of the studies give to patient quit rates and relapse rates. The impact of bans on staff quit rates is likewise scantily covered and omitted by most of these studies. Initiation into smoking or relapse to smoking, as a result of a strong smoking culture in inpatient settings, has been acknowledged as a significant problem for people who are admitted to these settings [33]. It would therefore seem of great interest to measure what the impact of imposing bans would be. Clear policies and collaborative partnerships between hospitals and community services are needed to provide continuous and consistent pathways of care and support. This is essential if the gains achieved in inpatient settings where bans are imposed are to continue in the community.

Central to the notion of change is the need to understand why change is often perceived as so difficult to achieve. Schon's [66] concept of 'dynamic conservatism' is a useful one and is supported by Ogburn [67]. They suggest that organizations are resistant to change and that staff and patients tend to use existing forms of behaviour management, out of habit, rather than create new ones. The accepted use of cigarettes by staff to manage patients in mental health settings before imposing bans may have acted as the mechanism for many of the rules of interaction, and procedures and actions taken in the settings. Once a ban is imposed, many of these rules need to be renegotiated. This can be a difficult transition for all concerned, dependent on the consistency of and commitment to the new approach, provision of education and other supports to both staff and patients, and other potential factors that influence cultural change in the setting. Six of the reviewed studies noted that staff saw the bans as an opportunity to learn new clinical skills.

Conclusions

This review is based on research from three countries (US, Canada and Australia) and most of it is from the US. This may limit generalizability of findings to countries which are culturally similar to these. In general, the findings show that a number of measures would need to be considered in order to introduce effective smoking bans.

1. The over-reliance by nursing staff on smoking to assist with the clinical management of patients would need to be addressed. Helping nursing staff to find alternative options is seen as essential. The use of nicotine replacement therapy (NRT) by patients as part of imposing the ban is shown to improve success.
2. Extensive consultation and collaboration, coordination of efforts across the disciplines, provision of alternative activities, dietary changes, clear protocols and family support for the bans would need to occur.
3. More effective measures to accommodate patients who are unable to tolerate abrupt abstinence would be needed.
4. Greater awareness of the ban before admission would be useful. This would involve coordination and partnership across the mental health sector between community and inpatient services.
5. Greater support for and education of direct-care staff on distinguishing mental illness symptoms from nicotine withdrawal symptoms is seen as vital. This would require support at all levels, from direct care of patients to hospital administration and policy.
6. A preparation period, before the ban, involved community agencies and groups and inpatient staff involving education and advertising of the impending ban to patients is also proposed.
7. Where staff are banned from smoking at work, alternative supports would need to be developed to assist staff to manage their own stress levels and to clinically manage patients.
8. Patients may interpret restrictions as a further source of powerlessness and control by others, with implications for staff morale as agents of further social control. This would need to be addressed with open and equitable consultation with all parties.
9. Trade and standover for cigarettes within the grounds of the hospital may increase, with potential for such activities to increasingly spread beyond the grounds to nearby shops, houses and the community generally. A planned transition to the ban with widespread consultation and implementation of strategies would be needed.
10. Black market use and sale of tobacco within mental health settings may increase. Use of other drugs may increase.
11. Nicotine interacts with antipsychotic drug metabolism so that patients tend to need more medication when they smoke and less when they quit smoking. There is also a high expectation that many patients would return to smoking upon discharge from hospital. Therefore, patients who have been banned from smoking while in inpatient settings, who then return to smoking upon discharge, may need their medication reviewed to account for this change. Community mental health teams would need to be aware of this as part of improved coordination of follow-up.
12. Given that many patients returned to smoking post-discharge, it is clear that bans alone were not effective

in assisting people to quit in the longer term. Imposing bans in inpatient settings is seen as only part of a much larger strategy needed to overcome the high rates of smoking among mental health populations, generally.

13. More coordinated efforts would be needed between hospital and community staff to help patients who wish to stay quit as part of discharge planning.
14. Mental health services would need to develop clearer policies with regard to smoking and occupational health and safety concerns for staff and patients as part of the process of imposing bans and maintaining them. This would include clearer clinical and ethical guidelines that address the issue of distress and withdrawal, patient autonomy and legal aspects of imposing a ban [40].

This review has shown that the introduction of smoking bans in psychiatric inpatient settings is possible but would need to be a clearly and carefully planned process involving all parties affected by the bans. Consistency, coordination and full clinical and administrative support for smoking bans are seen as essential to their successful implementation.

References

1. McNeill A. *Smoking and mental health: a review of the literature*. London: SmokeFree London Programme, London Region National Health Service, 2001.
2. Seymour L. *Where do we go from here? Tobacco control policies within psychiatric and long-stay units: guidance on development and implementation*. London: Health Development Agency, 2001.
3. Doll R, Hill AB. Smoking and carcinoma of the lung. *British Medical Journal* 1950; 2:739–748.
4. Doll R, Hill AB. Mortality in relation to smoking: ten years' observations of British doctors. *British Medical Journal* 1964; 2:1399–1410.
5. Royal College of Physicians. *Smoking and health*. Tunbridge Wells, Kent: Pitman Medical, 1962.
6. US Department of Health and Human Services. *Smoking and health: report of the advisory committee to the Surgeon General of the public health service*. Washington, DC: US Department of Health and Human Services, Government Printing Office, 1964.
7. Australian Parliament. *The tobacco industry and the cost of tobacco-related illness: report of the Senate Community Affairs Reference Committee*. Commonwealth of Australia, Senate Community Affairs Committee Secretariat, 1995.
8. Royal College of Physicians. *Smoking and health now, second report*. Tunbridge Wells, Kent: Pitman Medical, 1971:144–147.
9. Royal College of Physicians. *Smoking or health, third report*. Tunbridge Wells, Kent: Pitman Medical, 1977.
10. Royal College of Physicians. *Nicotine addiction in Britain, London, Tobacco Advisory Group*. London: Royal College of Physicians, 2000.
11. US Department of Health and Human Services. The health consequences of smoking: cardiovascular disease: a report of the US Surgeon General. DHHS Publication No. (PHS) 84-50204. Rockville, MD: US Department of Health and Human Services, Office on Smoking and Health, 1984.
12. US Department of Health and Human Services. The health consequences of smoking: nicotine and addiction: a report of the US Surgeon General. DHHS Publication No. (CDC) 88-8406. Rockville, MD: US Department of Health and Human Services, Office on Smoking and Health, 1988.
13. US Department of Health and Human Services. Reducing the health consequences of smoking – 25 years of progress: a report of the US Surgeon General. DHHS Publication No. (CDC) 89-8411. Rockville, MD: US Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1989.
14. World Health Organization. *Guidelines for controlling and monitoring the tobacco epidemic*. Geneva: WHO, 1998.
15. Houston T, Kaufman NJ. Tobacco control in the 21st century: searching for answers in a sea of change. *Journal of the American Medical Association* 2000; 284:752–753.
16. Byrd JC, Shapiro RS, Schiedermayer D. Passive smoking: a review of medical and legal issues. *Australian Journal of Public Health* 1989; 79:178–180.
17. National Health & Medical Research Council. *Health effects of passive smoking: an information paper*. Canberra: National Health and Medical Research Council, 1997.
18. Office of Environmental Health Hazard Assessment. *Health effects of exposure to environmental tobacco smoke*. Sacramento: California Environmental Protection Agency, 1997.
19. The Cancer Council Australia. *National Cancer Prevention Policy 2001–03*. Sydney: The Cancer Council Australia, 2001.
20. Goff DC, Henderson DC, Amico E. Cigarette smoking in schizophrenia: relationship to psychopathology and medication side effects. *American Journal of Psychiatry* 1992; 149:1189–1194.
21. Watt J, Hocking B. Mental illness and smoking cessation: an urgent public health issue. In: *Symposium – introduction and abstracts*. Melbourne: Quit Victoria/Schizophrenia Australia, 1996.
22. Australian Institute of Health and Welfare. National Drug Strategy Household Survey: survey report, 1998: detailed findings 2000. Cat. No. PHE 27. Canberra: AIHW.
23. Jorm AF. Association between smoking and mental disorders: results from an Australian National Prevalence Survey. *Australian and New Zealand Journal of Public Health* 1999; 23:245–248.
24. Addington J, el-Guebaly N, Duchak V, Hodgins D. Readiness to stop smoking in schizophrenia. *Canadian Journal of Psychiatry* 1997; 42:49–52.
25. Glynn SM, Sussman S. Why patients smoke. *Hospital and Community Psychiatry* 1990; 41:1027–1028.
26. Hughes JR, Hatsukami DK, Mitchell JE, Dahlgren LA. Prevalence of smoking among psychiatric outpatients. *American Journal of Psychiatry* 1986; 143:993–997.
27. Ziedonis DM, George TP. Schizophrenia and nicotine use: report of a pilot smoking cessation program and review of neurobiological and clinical issues. *Schizophrenia Bulletin* 1997; 23:247–254.
28. Brown S, Birtwhistle J, Roe L, Thompson C. The unhealthy lifestyle of people with schizophrenia. *Psychological Medicine* 1999; 29:697–701.
29. Mortensen PB, Juel K. Mortality and causes of death in first admission schizophrenic patients. *British Journal of Psychiatry* 1993; 163:183–189.
30. Coglan R, Lawrence D, Holman CDJ, Jablensky AV. *Duty of care: physical health in people with mental illness*. Perth: University of Western Australia, 2001.

31. Holmberg SK, Kane C. Health and self-care practices of persons with schizophrenia. *Psychiatric Services* 1999; 50:827–829.
32. George TP, Krystal JH. Comorbidity of psychiatric and substance abuse disorders. *Current Opinion in Psychiatry* 2000; 13:327–331.
33. Lawn SJ. Systemic factors that perpetuate smoking among community and institutionalised public mental health service populations. Unpublished PhD Thesis, Flinders University of South Australia, 2001.
34. Lohr JB, Flynn K. Smoking and schizophrenia. *Schizophrenia Research* 1992; 8:93–102.
35. Sandyk R, Kay SR. Tobacco addiction as a marker of age of onset of schizophrenia. *International Journal of Neuroscience* 1991; 57:259–263.
36. Glassman AH. Cigarette smoking: implications for psychiatric illness. *American Journal of Psychiatry* 1993; 150:546–553.
37. Worthington J, Fava M, Agustin C *et al*. Consumption of alcohol, nicotine, and caffeine among depressed outpatients: relationship with response to treatment. *Psychosomatics* 1996; 37:518–522.
38. Shiffman S, Hickcox M, Paty JA, Gnys M, Kassel JD, Richards TJ. Progression from a smoking lapse to relapse: prediction from abstinence violation effects, nicotine dependence, and lapse characteristics. *Journal of Consulting and Clinical Psychology* 1996; 64:993–1002.
39. Koob GF. Drugs of abuse: anatomy, pharmacology and function of reward pathways. *Trends in Pharmacological Science* 1992; 13:177–184.
40. Pontieri FE, Tanda G, Orzi F, DiChiara G. Effects of nicotine on the nucleus accumbens and similarity to those of addictive drugs. *Nature* 1996; 382:255–257.
41. Decina P, Caracci G, Sandyk R, Berman W, Mukherjee S, Scapicchio P. Cigarette smoking and neuroleptic-induced parkinsonism. *Biological Psychiatry* 1990; 28:502–508.
42. Sandyk R. Cigarette smoking: effects on cognitive functions and drug-induced parkinsonism in chronic schizophrenia. *International Journal of Neuroscience* 1993; 70:193–197.
43. Salokangas RKR, Vilkman H, Ilonen T *et al*. High levels of dopamine in the basal ganglia of cigarette smokers. *American Journal of Psychiatry* 2000; 157:632–634.
44. Adler LE, Hoffer LD, Wiser A, Freedman R. Normalization of auditory physiology by cigarette smoking in schizophrenic patients. *American Journal of Psychiatry* 1993; 150:1856–1861.
45. Taiminen TJ, Salokangas RKR, Saarijarvi S *et al*. Smoking and cognitive deficits in schizophrenia: a pilot study. *Addictive Behaviours* 1998; 23:263–266.
46. Addington J, Duchak V. Reasons for substance use in schizophrenia. *Acta Psychiatrica Scandinavica* 1997; 96:329–333.
47. McChargue DE, Gulliver SB, Hitsman B. Would smokers with schizophrenia benefit from a more flexible approach to smoking treatment? *Addiction* 2002; 97:785–793.
48. Lucksted A, Dixon LB, Sembly JB. A focus group pilot study of tobacco smoking among psychosocial rehabilitation clients. *Psychiatric Services* 2000; 51:1544–1548.
49. Addington J, el-Guebaly N, Duchak V, Hodgins D. Using measures of readiness to change in individuals with schizophrenia. *American Journal of Drug and Alcohol Abuse* 1999; 5:151–161.
50. Lawn SJ, Pols RG, Barber JG. Smoking and quitting: a qualitative study of community-living psychiatric clients. *Social Science and Medicine* 2002; 54:93–104.
51. Brayne C. Smoking and the brain: no good evidence exists that smoking protects against dementia. *British Medical Journal* 2000; 320:1087–1088.
52. Lawn SJ, Pols RG. Nicotine withdrawal: pathway to aggression and assault in the locked psychiatric ward. *Australasian Psychiatry* 2003; 11:199–203.
53. Lawn SJ. Systemic barriers to quitting smoking among institutionalised public mental health service populations: a comparison of two Australian sites. *International Journal of Social Psychiatry* 2004; 50.
54. Shlomowitz EA. The treatment of mental illness in South Australia 1852–1884: from care to custody. Unpublished doctoral dissertation. Flinders University of South Australia, Adelaide, Australia, 1990.
55. Geller JL, Kaye N. Smoking in psychiatric hospitals: a historical view of a hot topic. *Hospital and Community Psychiatry* 1009; 41:1349–1350.
56. Pinta ER. Smoke-free hospital environments in 1848. *American Journal of Psychiatry* 1991; 148:1269.
57. Patten CA, Martin JE, Owen N. Can psychiatric and chemical dependency treatment units be smoke free? *Journal of Substance Abuse Treatment* 1996; 13:107–118.
58. Greeman M, McClellan TA. Negative effects of a smoking ban on an inpatient psychiatric service. *Hospital and Community Psychiatry* 1991; 42:408–412.
59. Velasco MD, Eells TD, Anderson R *et al*. A two-year follow-up on the effects of a smoking ban in an inpatient psychiatric service. *Psychiatric Services* 1996; 47:869–871.
60. Griffith J. Substance abuse disorders in nurses. *Nurses Forum* 1999; 34:19–28.
61. Plant ML, Plant MA, Foster J. Alcohol, tobacco and illicit drug use amongst nurses: a Scottish study. *Drug and Alcohol Dependence* 1991; 28:195–202.
62. Rowe K, Clark JM. The incidence of smoking amongst nurses: a review of the literature. *Journal of Advanced Nursing* 2000; 31:1046–1053.
63. Trinkoff A, Storr C. Substance use among nurses: differences between specialities. *Journal of Addictions Nursing* 1998; 10:77–83.
64. Borland R, Chapman S, Owen N, Hill D. Effects of workplace smoking bans on cigarette consumption. *American Journal of Public Health* 1990; 80:178–180.
65. Chapman S, Borland R, Scollo M, Brownson R, Dominello A, Woodward S. The impact of smoke free workplaces on declining cigarette consumption in Australia and the United States. *American Journal of Public Health* 1999; 89:1018–1023.
66. Schon DA. The social system and social change. In: Nisbet R, ed. *Social change*, Chapter 4. Oxford: Basil Blackwell, 1972:83–100.
67. Ogburn WF. Fixity and persistence in society. In: Nisbet R, ed. *Social change*, Chapter 2. Oxford: Basil Blackwell, 1972:46–71.
68. Dingman P, Resnick M, Bosworth E, Karnada D. A non-smoking policy on an acute psychiatric unit. *Journal of Psychosocial Nursing* 1988; 26:11–14.
69. Dawley HH, Williams JL, Guidry LS, Dawley LT. Smoking control in a psychiatric setting. *Hospital and Community Psychiatry* 1989; 40:1299–1301.
70. Resnick MP, Bosworth EE. A smoke-free psychiatric unit. *Hospital and General Psychiatry* 1989a; 40:525–527.
71. Resnick MP, Gordon R, Bosworth EE. Evolution of smoking policies in Oregon psychiatric facilities. *Hospital and Community Psychiatry* 1989b; 40:527–529.
72. Thorward SR, Birnbaum S. Effects of a smoking ban on a general hospital psychiatric unit. *General Hospital Psychiatry* 1989; 11:63–67.
73. Smith WR, Grant BL. Effects of a smoking ban on a general hospital psychiatric service. *Hospital and Community Psychiatry* 1989; 40:497–502.

74. Bronaugh TA, Frances RJ. Establishing a smoke-free inpatient unit: is it feasible? *Hospital and Community Psychiatry* 1990; 41:1303–1305.
75. Erwin S. Biordi D. A smoke free environment: psychiatric nurses respond. *Journal of Psychosocial Nursing* 1991; 29:12–18.
76. Cooke A. Maintaining a smoke-free psychiatric ward. *Dimensions in Health Service* 1991; 68:14–15.
77. Jonas JM, Eagle J. Smoking patterns among patients discharged from a smoke-free inpatient unit. *Hospital and Community Psychiatry* 1991; 42:636–637.
78. Hoffman BF, Eryavec G. Implementation of a no smoking policy on a psychiatric unit. *Canadian Journal of Psychiatry* 1992; 37:74–75.
79. Beemer BR. Hospital psychiatric units: non-smoking policies. *Journal of Psychosocial Nursing* 1993; 31:12–14.
80. Taylor NE, Rosenthal RN, Chabus B *et al*. The feasibility of smoking bans on psychiatric units. *General Hospital Psychiatry* 1993; 15:36–40.
81. Parks JJ, Devine DD. The effects of smoking bans on extended care units at state psychiatric hospitals. *Hospital and Community Psychiatry* 1993; 44:885–886.
82. Richardson M. Nursing implementation of a smoking ban on locked psychiatric wards. *Journal of Psychosocial Nursing* 1994; 32:17–19.
83. Landow L, Szetela B, Know MA. Reducing smoking among psychiatric inpatients: a survey of psychiatrists. *American Journal of Public Health* 1995; 85:1169.
84. Patten CA, Bruce BK, Hurt RD *et al*. Effects of a smoke-free policy on an inpatient psychiatric unit. *Tobacco Control* 1995; 4:372–379.
85. Haller E, McNiel DE, Binder RL. Impact of a smoking ban on a locked psychiatric unit. *Journal of Clinical Psychiatry* 1996; 57:329–332.
86. Ryabik BM, Lippmann SB, Mount R. Implementation of a smoking ban on a locked psychiatric unit. *General Hospital Psychiatry* 1995; 16:200–204.
87. Rauter UK, de Nesnera A, Grandfield S. Up in smoke? Linking inpatient assaults to a hospital's smoking ban. *Journal of Psychosocial Nursing* 1997; 35:35–40.
88. Quinn J, Inman JD, Fadow P. Results of the conversion to a tobacco-free environment in a state psychiatric hospital. *Administration and Policy in Mental Health* 2000; 27:451–453.
89. D'Mello DA, Bandlamudi GR, Colenda CC. Nicotine replacement methods on a psychiatric unit. *American Journal of Drug and Alcohol Abuse* 2001; 27:525–529.
90. Hempel AG, Kownacke R, Malin DH *et al*. Effect of a total smoking ban in a maximum security psychiatric hospital. *Behavioural Sciences and the Law* 2002; 20:507–522.
91. Rich D, Knowlden S. Towards a smoke free mental health workplace: Midas Tobacco Project: mental health goes smoke free. Sydney: South West Sydney Area Health Service/Fairfield Department of General Practice, 2002. http://www.swsahs.nsw.gov.au/areaser/midas/Tobaccomh.asp