

**The Use and Effectiveness of Smoking
Cessation Programmes and/or Support by
People with Mental Illness**

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Introduction

Across the world smoking prevalence is significantly higher among people with mental illness than in the general population. The 2003/04 New Zealand Mental Health Survey Te Rau Hinengaro reported that 32.3% of people with mental illness (non-institutionalised) smoke, compared with 20.7% of people without mental illness (Browne et al 2006). SANE Australia (2006) similarly reported that in Australia the smoking prevalence of the general population (including those with or without mental illness) is 20%, compared to 40% of people with mental illness. In the United States, almost half of all the cigarettes consumed are smoked by those with mental illness (Lasser et al 2000). Similarly, a conservative estimate from a New Zealand study suggested that about 33% of all cigarettes are consumed by people with a current mental disorder (i.e. in the last 12 months) (Tobias et al 2008). Heavier smoking patterns and greater levels of nicotine dependency are also characteristics of this group (El-Guebaly et al 2002; McNeill 2001). A recent American prevalence study across six community mental health centres estimated the average number of cigarettes smoked per week by mental health out-patients to be 136 (Dixon et al 2007).

The highest smoking rates across psychiatric diagnoses are found in those with a diagnosis of schizophrenia and/or substance abuse (Lasser et al 2000). In one particular study, it was found that people with schizophrenia initiate smoking earlier in age, and smoke with a greater frequency than people with mood disorders (de Leon et al 2002). In one United Kingdom study of a psychiatric in-patient unit, 83% and 65% of the patients with schizophrenia and mood disorders were current daily smokers, as opposed to 26% of the control group from the community. It is hypothesised that it is the experience of psychosis that is explicitly linked with

increased smoking prevalence (Meltzer et al 1996). A recent meta-analysis found consistently strong associations between schizophrenia and smoking across studies in over 20 nations, giving rise to the theory that common biological mechanisms may underlie both conditions (de Leon and Diaz 2005).

Smoking rates are approximately 40-86% among clinical samples and 34-61% among non-clinical populations of people with post-traumatic stress disorder (PTSD), depression, agoraphobia, and panic disorder (PD) (Zvolensky and Bernstein 2005). Smokers are also disproportionately over-represented amongst people with Attention-Deficit Hyperactivity Disorder (ADHD), thought to be due to the positive effects of tobacco on attention and concentration being harnessed as a form of self medication (Lerman et al 2001). Interestingly, people with autism spectrum disorders (ASD) and obsessive-compulsive disorder (OCD) are among the only sub-groups of people with mental disorders that have a lower prevalence smoking than the general population, and this is proposed to be linked to the relative disturbance in motor ability or 'catatonia' in these conditions (Bejerot and Nylander 2003).

Just as those who have a mental illness are more likely to smoke, those who smoke (but have never experienced a mental illness) have also been shown to have an increased risk of developing psychiatric symptoms in the future (Cuijpers et al 2007). For example, it has been identified that after a disaster, victims that are smokers are at an increased risk of developing symptoms of PTSD, severe anxiety and hostility (Van der Velden et al 2007).

Smoking is considered by many as a 'useful tool' for those with mental illness. For example, Lawn et al (2002) found smoking amongst people with mental illness to contribute to 'reasons for living' and other existential issues, viewing smoking as a

practice adding to quality of life. Tobacco is also commonly used as a form of self medication, to regulate and control internal psychological processes. One qualitative study strongly emphasised smoking as a 'core need' among people with mental health, as a useful tool to prevent negative affect, control mood, enable concentration, vent anxiety, and fend off delusions (Lawn et al 2002). In people suffering from psychosis, nicotine can be used to self-regulate symptoms and to aid relaxation. Additionally, there is a known interaction between tobacco use and psychiatric medication. In people with schizophrenia, smoking has been associated with reduced neuroleptic side effects associated with antipsychotic medication (Anfang and Pope 1997; de Leon et al 2005).

The physical health inequalities experienced by people with severe mental health illness are now well recognised (Brown et al 2000; Schmitz et al 2003). Excess smoking behaviour is recognised as a major contribution to the increased mortality and morbidity in this population, and decreased physical and economic well being throughout life (McCreadie and Kelly 2000). Although physicians and mental health specialists are aware of the high correlations between tobacco addiction and mental illness, in the past they characteristically have made little effort to address smoking cessation in their treatment settings (Himelhoch and Daumit 2003). A recent survey of the attitudes of psychiatrists and general practitioners (GPs) in Australia revealed that compared to GPs, psychiatrists displayed less belief in the helpfulness of reducing smoking for young people with either psychosis or depression (Lubman et al 2007). This is despite the excellent opportunity presented to these clinicians to treat the psychiatric disorder and nicotine addiction concurrently by offering counselling about smoking, a referral to a smoking cessation service, follow-up visit, or prescribing nicotine replacement therapy (NRT) (Price et al 2007; Thorndike et al 2001).

There is a divide in the health sector community about whether to tackle the smoking issue in the mental health setting, or focus solely on mental health issues (Baker et al 2006a). Some health professionals are of the opinion that to exercise true 'benevolence' they should not be challenging smoking habits in mental health settings but to allow people with mental illness one of few pleasures (Stubbs et al 2004). There is also a notion that smoking and some mental health conditions, for example schizophrenia, are so intertwined (and biologically driven) that there is little hope or point in combating smoking in these populations. Other reasons, such as the fear that smoking cessation may exacerbate the person's mental health condition or that the mentally unwell person will be unable to cope with the stress during the withdrawal period of quitting smoking also restricts cessation efforts (Stubbs et al 2004). It is widely reported in the literature that smoking cessation in patients with a past history of depression is associated with depression recurrence (Glassman et al 2001; Stage et al 1996; Tsoh et al 2000). However, it has also been found that cessation attempts do not in fact significantly alter psychiatric symptoms amongst sufferers of mental illness, signifying these beliefs may be unfounded (McNeill 2001; Addington et al 1998; George et al 2000). A recent study by Prochaska et al (2008) has summarised the divide in the literature and has reported evidence that people who have current clinical depression can be aided to stop smoking without adversely affecting their mental health recovery.

Adding to this, studies show that among people with mental illness who are willing to make a quit attempt the rates of abstinence or reduction of smoking after cessation treatments can be at least comparable to those in the general population (Edmonds and Bremner 2007). This indicates that mental health consumers are just as worthy a target for smoking cessation interventions as the general public, if not more so.

However, smoking cessation programmes designed for the general public may be less accessible for people with mental illness. In addition, symptoms of mental illness may interfere with treatment benefits (Friedli and Dardis 2002). Mental health consumers may be less well equipped with the appropriate coping skills, mood management skills, and decision making skills to avoid the temptations of smoking. At the same time, once addicted, they may be psychologically less equipped to initiate a quit attempt and to maintain abstinence, placing them at a disadvantage (Kinnunen et al 1996). For example, mental health consumers with low self efficacy, low motivation, and low perceived susceptibility to harmful physical health outcomes are less likely or willing to access cessation help or attend standard group treatment (Carosella et al 1999, cited in Esterberg and Compton 2005). In some cases, impairments in cognitive function may impede understanding and participation in a standard treatment programme. Additionally, impairments in coping skills, stress management, and mood regulation puts this population at increased risk of relapse during a quit attempt, and this relapse has the potential of leading to further disturbance of mental state making a subsequent quit attempt less likely to happen. The symptoms and cognitive and social deficits associated with schizophrenia specifically make participation in existing smoking cessation programmes difficult (Addington et al 1998). If associated environmental factors such as reduced social systems, lower economic status and lower level of education are also taken into account, this paints a grim picture for the mentally unwell person who could benefit substantially from being smokefree.

Unfortunately, most of the research on the efficacy of tobacco cessation interventions has been carried out in sample groups that exclude people with a past or present history of mental illness, thus this population has remained relatively poorly understood when it comes to effective intervention strategies (Gulliver et al

2004). Given that this sub-group represents a large proportion of the smoker population, it is worthwhile to ascertain knowledge of the specific cessation interventions or components of cessation interventions that are maximally efficacious in this population.

Objective

The objective of this literature review is to investigate and summarise the published and grey literature around the use and effectiveness of smoking cessation programmes and/or support by people with mental health.

Method

A search of available grey and published literature was undertaken. Databases searched included MEDLINE (1950 to June Week 1 2008), PsycINFO (1967 to June Week 1 2008), EMBASE (1988 to 2008 Week 22) and the Cochrane Database of Systematic Reviews, 2007. Search terms included:

- mental health
- mental illness
- psychiatr*
- smoking
- tobacco
- nicotine dependence
- depression
- schizophrenia
- anxiety
- smoking cessation
- smoking treatment
- smoking intervention.

Further citations were tracked from retrieved articles. A Google search was performed to obtain links to smoking cessation organisation websites, from which resource lists were searched for relevant information. Key experts in New Zealand on smoking and mental health were contacted for further grey literature and recommendations. Treatment studies in psychiatric in-patients were included as these were useful in reporting outcomes in patients with more severe mental illness.

Findings

Methodological issues

Treatment and smoking cessation studies reviewed were varied in quality and methodology. The methodologies of the studies reviewed were not often consistent or comparable. There were common differences between them that may have influenced study results and interpretation.

- Studies often had notable exclusion criteria e.g. many excluded those who were in a current depressive episode, had had a recent substance abuse disorder, or who were taking psychiatric medication. This significantly narrowed the demographics within the mental health population and could not be interpreted as reflecting the underlying mentally unwell population as a whole.
- Many treatment studies relied on self referral for recruitment and therefore were more likely to recruit participants who were more motivated to quit. Some studies additionally offered a monetary reward for completing all the treatment and follow-ups, thus creating unnatural retention rates and potentially increasing likelihood of treatment success.
- Most treatment studies involved using more than one type of therapy in participants with and/or without mental illness e.g. cognitive-behavioural therapy (CBT) plus bupropion vs NRT. Because the study designs did not allow for the individual components of these combined treatments to be individually analysed it was unclear as to which component of the studied treatment was the more influential.
- Outcome measures for tobacco cessation varied. The most common outcome measure used for treatment efficacy was seven-day point prevalence abstinence, confirmed by level of carbon monoxide (CO) in expired air.

Continuous abstinence was also often measured. Smoking reduction, recorded in some studies, was also a clinically significant measure in studies of smokers who could not abstain but nevertheless succeeded in significantly reducing their tobacco consumption. Also, the patients' subjective experience of the treatment reported in some studies may have been useful in a research setting as a measure of outcome (as well as participant retention rates).

- Follow-up periods also varied. Some studies only measured outcomes at baseline and at the treatment end point, although outcomes at a three-, six- or 12-month follow-up period proved more clinically useful.
- Study groups were often poorly defined and could have differed significantly with respect to severity of psychiatric condition, chronicity, co-morbidity, specific Diagnostic and Statistical Manual of Mental Disorder 4th Edition (DSM-IV) diagnoses, recurrence, in-patient or out-patient status. Some of these variables may have been important determinants of the relative efficacy of a treatment – e.g. in one study significant effects of the intervention treatment was preferentially found people with recurrent major depressive disorder (Brown et al 2001b).

Neurobiological mechanisms

Neurobiological mechanisms underlying the links between smoking and mental health are well founded (Dalack et al, 1998). Simply, nicotine, one of the main psychoactive drugs in tobacco, acts on nicotinic receptors in the brain and activates or influences neurotransmitter systems which go on to provoke feelings of reward, stimulation and calm. These same neurotransmitter systems are implicated in the pathophysiology of the psychiatric disorders. While a single short term exposure to

nicotine can have these rewarding effects, repeat exposure to the drug can have the opposite effect on the brain systems, leading to tolerance, addiction and down-regulation of neurotransmitter system sensitivity. It is hypothesised that these long term neurotransmitter effects are associated with the onset of depressive symptoms, hence the link between tobacco dependence and depressive disorders. Similarly, interactions between nicotine and dopamine, and nicotine and glutamate are thought to form the basis of the strong link between smoking and schizophrenia, or psychosis (Dalack et al 1998).

Additionally, the tar in tobacco smoke is known to induce liver enzymes such as cytochrome 1A2 which results in increased metabolism of many psychiatric drugs. Therefore, while people with mental illness are smoking, they commonly require higher doses of psychiatric medication to maintain the required therapeutic level of the drug in their blood. If they quit smoking suddenly, they no longer are metabolising the drug at a faster rate and may require lower doses of the antipsychotic, or run the risk of accumulating toxic levels of the drug, precipitating more side effects (Strasser 2001). Medication which is affected by tobacco consumption includes (but is not limited to) the antipsychotics clozapine, fluphenazine, haloperidol, olanzapine; the antidepressants amitriptyline, nortriptyline, imipramine, clomipramine, fluvoxamine, trazodone and other drugs such as insulin, heparin and caffeine.

Smoking cessation studies

The next section contains outcomes of cessation intervention studies conducted in people with 'unspecified' mental illness in the community, followed by cessation intervention outcomes in specific diagnostic groups.

Considering the widespread impact of mental illness on smoking behaviour and ability to quit smoking, it is important to address deficits in mental functioning that may impede quit attempts when designing a smoking cessation service for clients with mental illness. Group therapy has been shown to improve cessation outcomes, and can offer additional benefits in terms of increased social support (Kisely and Campbell, 2008). One-to-one therapies have also been identified as being useful, in enabling greater flexibility and ability to modify the support based on the individual needs of the client (Edmonds and Bremner 2007). Components of psychotherapies specifically suited to the needs of people with mental health issues were reviewed in Steinberg et al (2003) and are discussed below.

Psychosocial therapies for smoking cessation involve aspects of:

- social skills training
- stimulus control techniques
- CBT
- relapse prevention
- psychosocial support
- psychoeducation
- motivational interviewing (MI) (described later in the section)
- brief treatment intervention.

Considerations specific to cessation therapy in mental health settings include to:

- address the importance of relapse prevention, e.g. teaching clients to avoid/cope with triggers (common cues include negative mood states etc)
- address the importance to distinguish between a 'lapse' and a 'relapse' to avoid potential quitters getting disappointed and dejected about quitting
- address social facilitative effects, e.g. smoking may be a good social catalyst for people with mental illness who may have reduced social skills
- address boredom as being a risk factor for relapse for people with mental illness, e.g. help with time management and weekend preparation
- acknowledge MI as a useful technique as people with mental illness may have a lower level of self efficacy or may perceive themselves to be a failure which may impact on their quit attempt.

Specialised smoking cessation CBT interventions have been shown to be efficacious in this population. A manual based programme of four to eight weeks CBT tailored for people with mental illness was effective in achieving a 16% quit rate at the end of treatment and 19% quit rate at one-year follow-up in an uncontrolled sample of people with 'severe and persistent' mental illness in the community. The quit rates were comparable to the general population (Currie et al 2007). Notably, 14 of the 15 quitters were also taking NRT to support their quitting. Similarly, veterans with mental health diagnoses enrolled in the Mental Health Clinical Smoking Cessation Programme (involving six weeks of group counselling, bupropion, NRT or a combination of support) had recorded quit rates of 36.4% at the end of treatment (Grand et al 2007).

MI is a therapeutic technique designed to increase intrinsic motivation to change addictive behaviours, and is seen to be a potentially beneficial cessation treatment

strategy for those with mental illness (Steinberg et al 2003). However, no additional efficacy of MI over a brief advice intervention was found overall in a randomised controlled trial (n=191) of adolescent psychiatric in-patients (although both treatments were effective; with quit rates between 10 and 14%) (Brown et al 2003). Interestingly the MI approach was found to be significantly more effective in those people who had little or no intention to quit (while being slightly detrimental for those who were already contemplating change) and was effective in increasing sense of self efficacy amongst study participants overall, highlighting its potential benefit in populations of low self efficacy and low motivation to quit.

Contingent reinforcement (CR) paradigms are based on behavioural principles of reinforcement and salience. The paradigms are most commonly used as a cessation treatment strategy for various abused substances, including cocaine, opiates, and tobacco (Petty 2000). Two small studies have demonstrated the efficacy of CR for smoking reduction in people with serious mental illness (Roll et al 1998; Tidey et al 2002). In the latter, nicotine patches did not improve quit rates beyond what was achieved with CR. However, follow-up periods for these studies were not sufficiently long enough (Gallagher et al 2007). A further study addressed these issues by comparing cessation interventions in a group of people (n=181) with serious mental illness (Gallagher et al 2007). A CR intervention was compared to a combined CR and NRT (CR+NRT) intervention and a control intervention (minimal intervention/self quit group). Although no difference in quit rate was observed between the studies (and no effect of NRT), reduced smoking was achieved in the CR and CR+NRT groups and no psychiatric symptom exacerbation was noted.

NRT patches (8mg) have shown efficacy in the immediate short term in reducing the amount of tobacco consumed by psychiatric in-patients over a seven-hour period

[only in those who were heavy smokers (≥ 12 cigarettes/day)] (Hartman et al 1991). This result was encouraging given that the participants had no prior interest in giving up or reducing their smoking habits. As only the 8mg dose was trialed it would be of interest to study the short term effect of different dosages of NRT on the smoking behaviour in this group.

Combining NRT with non-NRT pharmacotherapy has been shown in many studies to increase efficacy of either therapy alone in smokers with co-morbid mental illness. For example, combining NRT with bupropion in comparison to NRT, bupropion, or placebo alone significantly increases quit rates (Gold et al 2002; Johnston et al 1999; Jorenby et al 1999).

Varenicline is a nicotine receptor partial agonist. One study reported significantly better short term cessation in a large group of mentally unwell people ($n=111$) with varenicline compared to NRT (Stapleton et al 2007). However, more research evidence on the effectiveness of varenicline for smokers with mental health problems is needed to sustain the claim.

Access Economics recently conducted a cost-benefit analysis of smoking behaviour among mentally ill consumers in Australia, and revealed startling high figures of the total costs to the individual smoker and the government. They concluded, in terms of cost effectiveness, the mentally unwell population was a crucial group to specifically target, and found that proactive telephone counselling with either bupropion or NRT on a population level was one of the most cost effective interventions (Access Economics 2007). Although quantitative data was not available about the production and use of written resources, this was also mentioned in the report as a potentially extremely low cost way to reach a large sector of disadvantaged smokers.

People with a past history of major depressive disorder (MDD)

The most efficacious cessation treatment in people with a past history of MDD is CBT; alone or in conjunction with pharmacotherapy (Kisely and Campbell 2008). Standard group CBT for smoking cessation plus NRT has been shown to be effective in smokers with or without a history of depression. Ginsberg et al (1997) state that it is the group cohesion and social support components that helped to promote cessation and foster commitment regardless of depression history (Ginsberg et al 1997).

Whether smokers with a history of MDD would benefit more from a more specialised therapy has been the research subject of many studies. Because recurrence of low mood after smoking abstinence is associated with increased likelihood of relapse (Lekka et al 2007), and people with a history of MDD are more susceptible to developing low mood; treatment interventions in depressed populations that aim to prevent or reduce the recurrence of post cessation low mood are expected to be more efficacious in preventing relapse (Steinberg et al 2003). Also, because many smokers smoke to improve mood, psychological treatments that aim to reduce negative affect may simultaneously reduce the need for dysphoria related smoking. Therefore the addition of 'mood management' therapy to conventional therapy for smoking cessation may have additional benefits in this group. Some additional components of mood management include:

- increasing pleasant activities
- identifying situations that precipitate negative mood
- addressing alternative coping strategies
- goal setting
- addressing techniques to avoid demoralisation (Steinberg et al 2003).

Five studies have investigated the efficacy of specialised therapy for smokers with a history of MDD, and reported mixed results. Patten et al (2002) conducted a cessation treatment study in smokers with a history of alcohol dependence and found that, contrary to most cessation studies, smokers with high levels of depressive symptoms at baseline were more likely to be abstinent at the end of treatment. The difference in the strategy used by Patten et al (2002) was the use of mood management therapy. The authors hypothesised that smokers who demonstrate vulnerability to negative affect (and who therefore may be more likely to resort to drugs to regulate mood) will benefit from a therapy that addresses these deficits in mood management and therefore can address the depressive symptoms, tobacco and other substance addiction concurrently.

Hall et al (1994; 1996; 2006) has also conducted several treatment comparison studies using mood management therapy in smokers with a history of MDD compared to those without a history of MDD. Their initial finding was that people with MDD responded preferentially to mood management skills training compared to standard cessation therapy alone (in contrast to those without a history of MDD) (Hall et al 1994). However, a follow-up study with equal therapist contact time revealed no increased efficacy of the mood management therapy in the MDD group and instead attributed the earlier result to increased therapist time (Hall et al 1996). Notably, mood management training did not attenuate the pronounced increase in depressive symptoms seen after cessation in the MDD group, as was hoped. This led to the conclusion that additional support, rather than a specific treatment, is the key to improving quit rates in this group.

Combining CBT approaches for both smoking cessation and depression (compared with standard CBT for smoking cessation) has also been shown to be more successful

among smokers with recurrent major depression and heavy smokers but not among smokers with single episode/mild depression, highlighting the importance of differentiating between people with MDD of varying severity (Brown et al 2001b). It is possible that the difference in condition severity may explain the mixed results in the previous studies by Hall et al – as is true for treatment for depression, monotherapy is equally efficacious in cases of mild depression; while those with severe depression benefit more from intensive combined therapy (Brown et al 2001a). In terms of smoking cessation, a combined treatment strategy may be especially advantageous to those smokers who have characteristics that predict poor treatment outcome, such as heavy smoking, high nicotine dependency, and severe depression.

All the studies described above excluded people in a current major depressive episode. Hall et al (2006) conducted a large unique study in that the participants (n=322) were currently depressed and actively engaged in out-patient treatment for their depression. The smoking intervention was staged – participants in the intervention group first received computerised motivational counselling every three months, to encourage them to contemplate or commit to quit smoking [based on Prochaska's stages of change model (Appendix 1)]. Participants who reached the contemplation stage went on to receive six half-hour smoking cessation counselling sessions and optional NRT/bupropion. The intervention was effective in that 20.8% in the intervention group was abstinent at 12-month follow-up compared to 13.4% in the control group. This study addresses three stages of change – intention to change, attempt to change, and success in changing. The consideration of stages of change in the methodology was useful and springs light on possible confounding factors in previous studies, namely, that those studies which relied on self referral for recruitment likely ended up with highly motivated-to-quit sample groups, which may have led to an over-estimation of the true quit rate. Its findings further emphasise

that 1) people with current MDD are willing and open to quit smoking and 2) they are capable of quitting with similar outcomes to the general population.

Three studies directly investigated the efficacy of NRT in smokers with MDD. There was no additional effect of NRT patches (14mg) as adjunctive treatment to CBT (8 weeks) in nine out-patients with current MDD, although in both groups tobacco consumption reduced and depressive symptoms improved (Hill and Chang 2007). However, this study sample was small, the dose of NRT was low, and there was a high drop out rate so the findings are not reliable. By contrast Thorsteinsson et al (2001) reported a highly significant effect of NRT patches (21mg) (adjunctive to group therapy) prescribed for two weeks following a target quit date. Notably, this period is much shorter than the recommended duration of treatment (Ministry of Health 2007). Only 22% of those taking NRT relapsed over the three-week follow-up after the target quit date (compared to 50% of those in the group therapy only condition). Kinnunen et al (1996) similarly found that NRT gum (2 and 4mg) was effective and superior to placebo and brief counselling in a group of 269 smokers (with or without current MDD) who attempted to quit smoking from baseline for three months. Among the participants that were currently depressed (34%), 29.5% of those treated with NRT achieved abstinence at 3-month (compared to 12.5% in the placebo group). While evidence suggests NRT is beneficial in smokers with MDD, it is possible that dosage may account for some of the negative findings mentioned above (considering larger doses are indicated in heavy smokers, which is characteristic of this group).

Bupropion-SR has shown promising effects in smokers with a history of MDD. A significant dose-response effect for bupropion (prescribed for six weeks after a target quit date) was found in a trial of 615 smokers (18% with MDD); independent

of history of MDD, with a 15.8% quit rate achieved at 12-month follow-up (Hayford et al 1999). Bupropion-SR (300mg) has also been shown to be effective as adjunctive treatment to a selective serotonin re-uptake inhibitor (SSRI) (Chengappa et al 2001) and for long term relapse prevention following abstinence (Cox et al 2004).

Therefore, incorporating a behavioural intervention component in smoking cessation programmes increases the success rate among people with MDD, and helps to reduce the rise in depressive symptoms following cessation. There is a need to develop or identify therapies that take into account common underlying pathologies that predispose to both MDD and tobacco dependence. Addressing both issues concurrently appears to be the best strategy although there is so far no consensus on what component of the integrated therapy is the delineating factor i.e. mood management training, CBT for the depression, or simply therapist time or group support. Combining pharmacotherapy (such as NRT) with CBT is preferentially effective in this group.

People with schizophrenia and schizoaffective disorder

Study intervention in this population typically involves two or more therapies, commonly a behavioural therapy coupled with a pharmacological therapy. NRT is effective for smoking cessation treatment in people with schizophrenia, although quit rates are less than expected in the general population (Williams and Hughes 2003). Treatment with NRT patches (7mg and 14mg) significantly reduced smoking behaviours in out-patients with schizophrenia in one randomised controlled trial (RCT) (Chou et al 2004). Nicotine nasal spray (combined with psychosocial support)

has also been shown to produce effective quit rates (42%) and also reduce smoking frequency and amount maintained over a 3-month period (Williams et al 2004).

Combining nicotine patch (21mg/day) with treatment with an atypical antipsychotic has been shown to significantly enhance the quit rate (George et al 2000). The use of a nicotine patch (22mg/day) over 32 hours led to smoking suppression in heavy smokers with schizophrenia, therefore, the effects of NRT can emerge over a relatively acute time period (Dalack et al 1999). Evidence that NRT can be successfully used to maintain smoking cessation long term in people with schizophrenia is provided by a study by Horst et al (2005). Of participants provided with NRT (14, 21 or 42mg depending on nicotine level) during a 3-month open label phase 36% achieved abstinence at 3 months. Abstinent participants (n=17) were then randomised to receive either NRT or placebo, plus group motivational sessions with a health educator; for a further nine months. Notably 66% of the NRT group remained abstinent for the whole nine-month period (compared to 0% of the placebo treated group). The Smoking Reduction and Cessation for people with Schizophrenia: Guidelines for General Practitioners developed in Australia recommends use of NRT in this population (Strasser 2001).

Bupropion has shown some efficacy as an adjunctive treatment to psychological therapy in smokers with schizophrenia. Evins et al (2001) investigated the effect of adding bupropion-SR (150mg/day) to CBT for three months in 19 stable out-patients with schizophrenia who wanted to quit smoking. Participants treated with bupropion exhibited greater reductions in smoking (66% vs 11%), were more likely to be abstinent (6% vs 0%), and experienced a greater stability of psychotic and depressive symptoms compared to placebo. A follow-up study found these effects persisted and actually strengthened two years later (Evins et al 2004). One further

RCT and one open label trial (George et al, 2002; Weiner et al 2001 respectively) have similarly shown a reduction in smoking behaviour and an increase in quit rates with bupropion. An improvement in depressive symptoms is an additional benefit seen consistently. However, apart from Evins et al (2004) the effects of bupropion did not persist after discontinuation of treatment, as many participants relapsed. Additionally, the Australian Smoking Reduction and Cessation for people with Schizophrenia: Guidelines for General Practitioners for GPs advises caution in using this drug in people with schizophrenia, as it may precipitate or exacerbate psychosis, and lead to other neuropsychiatric side effects, hence the need for careful awareness and monitoring by prescribers (Strasser 2001).

Gathering evidence suggests treatment for schizophrenia with atypical antipsychotics has an additional anti-smoking effect. Certainly in studies mentioned above, the effect of the treatment of interest (bupropion, NRT or group therapy) is significantly enhanced in combination with an atypical antipsychotic (George et al 2000; George et al 2002). Switching medications from typical antipsychotics haloperidol or fluphenazine to clozapine in treating refractory schizophrenics is associated with a reduction in smoking behaviour in those patients that smoke. Interestingly, smokers also had a better therapeutic response to clozapine, signifying that there may be an underlying link between smoking and the mechanism of action of clozapine (McEvoy et al 1999).

Although the use of varenicline for smoking cessation has been shown to be effective in people with mental illness (Stapleton et al 2007) caution should be taken in using the treatment in those with schizophrenia. In one case study of a patient with schizophrenia, commencement of the treatment coincided with a psychotic relapse that ended when use of the drug stopped (Kohen and Kremen 2007).

As with smokers with depression, the question arises whether smokers with schizophrenia could benefit from more specialised smoking cessation therapies. Many specialised approaches have been trialled in this population. A group smoking cessation programme modified for smokers with schizophrenia (plus optional NRT) (Addington et al 1998) was found effective in a group of 50 out-patients, with quit rates of 42% at the end of treatment and 12% at 6-month follow-up, comparable to rates in the general population. The treatment was based on the American Lung Association (ALA) 'Freedom from smoking' programme. As there was no control condition to compare these outcomes with, it is unclear whether this treatment would have been more effective than the standard programme.

George et al (2000) however compared the outcomes of a standard ALA programme for smoking cessation with a specialised group therapy programme with those with schizophrenia, including motivational enhancement, relapse prevention, social skills training, and psycho-education. They found no additional benefit of the specialised therapy over the standard therapy.

Baker et al (2006b) investigated the efficacy of an eight-session, individually administered smoking cessation intervention compared to a routine care comparison in a large sample (n=298) of smokers with a psychotic disorder in the community. The intervention consisted of NRT, MI, and CBT. Although no difference between treatments in quit rates was found, a significant dose-response relationship existed between attending intervention sessions, likelihood of abstinence, and smoking reduction. Fifty percent of those who completed the intervention programme achieved a 50% or greater reduction in daily tobacco consumption, relative to 20% of the control condition completers. Therefore this treatment approach was seen to present additional benefits for smokers with schizophrenia.

It is thought that motivating smokers with schizophrenia to quit smoking can be just as beneficial as offering quit support. Steinberg et al (2004) assessed the efficacy of one 40-minute session of MI compared to standard psycho-educational counselling (40 min) or advice only (5 min) in smokers with schizophrenia in terms of affecting proactive quit smoking behaviour. As hypothesised, participants who received the MI intervention were more likely to contact a tobacco dependence provider (32% vs 11% and 0%) and attend the first session of counselling (28% vs 9% and 0%) within a month.

People with anxiety disorders

Research into effective interventions for smoking cessation in smokers with anxiety disorders is still at an early stage, with few studies, limiting the available evidence. For smokers with panic disorder, it is suggested that it may be useful to directly integrate smoking cessation within CBT. One such combined integration has been developed by Zvolensky et al (2003). In a small study (n=15) of smokers with PTSD, bupropion-SR (combined with behavioural counselling) was effective in increasing quit rate. At the six-month follow-up, four out of ten participants in the treatment group were abstinent (compared to one out of five in the control group) (Hertzberg et al 2001).

McFall et al have examined integrating tobacco dependence treatment with mental health care for veterans with PTSD. In one preliminary study of this integrated treatment (McFall et al 2005), significantly increased quit rates were reported at two-, four-, six- and nine-months in participants in the integrated treatment as opposed to the usual care (42%, 30%, 21%, 18% compared to 13%, 14%, 10%,

7%). The integrated intervention extended over six sessions, and was designed to work with existing mental health and smoking cessation care, to facilitate or improve access to this care.

A subsequent observational study was conducted in 107 patients with PTSD using the same integrated intervention (McFall et al 2006). Quit rates were similar to those observed in the above RCT (28%, 23%, 25%, 18% at two-, four-, six-, and nine-month follow ups). Following these two studies, a large scale study (n=1400) of smoking cessation in veterans with PTSD is underway, with details of development of the study design published for potential referral by others considering a trial of this scale (McFall et al 2007).

People with bipolar disorder

There are no studies of tobacco dependence treatments specifically in people with bipolar disorder. Bupropion should be used with caution in this group as its antidepressant actions have the potential to precipitate a manic episode. Similarly, varenicline has been reported to induce a manic episode in one patient with bipolar disorder, which subsided after discontinuation of the drug (Kohen and Kremen 2007).

The withdrawal effect – fear of post cessation relapse

Many health professionals harbour reluctance to advise their mentally unwell patients to quit smoking because of the view that this may add undue 'stress' to their system and precipitate an exacerbation of their psychiatric condition (Lubman et al 2007).

Patients with past or present mental health issues are also often reluctant to make a quit attempt out of fear of psychiatric relapse (Lawn et al 2002). Because patients often view nicotine as a form of self medication for their psychiatric symptoms, the belief that cessation will reverse this effect is understandable. In fact while smoking may improve psychiatric symptom profiles in the short term, continued use leads to worsening psychiatric state. It can be understood that when the patient experiences symptom relief after tobacco consumption, he/she is actually experiencing relief from the nicotine withdrawal (that was worsening with increasing time since the tobacco consumption), in addition to the neurochemically rewarding effect of the drug. Large scale trials and meta-analyses report that although negative withdrawal symptoms do emerge after cessation, these clear within two to four weeks of withdrawal, and smoking cessation has actually been shown to lead to improvement in symptoms of anxiety and depression and general mental health (Mino et al 2000; Currie et al 2007; Prochaska et al 2008).

Smoking cessation and community mental health programmes

Many cessation programmes around the world now cater for smokers with mental illness. SANE Australia has developed a factsheet for smokers with mental illness and a manual kit for workers in cessation, addiction or mental health settings (see <http://www.sane.org>). The Tobacco and Mental Illness Project, piloted in South Australia and now expanded to service all of Australia, comprises worker training, workshops, resources and information for smoking cessation and mental health. The project focuses on three areas: awareness raising, policy and practice change and smoking cessation/reduction programs (Ministerial Council on Drug Strategy 2004).

In the United Kingdom a programme was recently developed to address cessation support needs in people with mental health problems (Edmonds et al 2007). Mental health workers were first trained to deliver cessation support to those with mental illness. During the training staff were engaged to brainstorm factors that they thought were relevant to smoking and mentally unwell patients in their experience.

Adapted material included:

- literature and research on smoking, mental health and smoking cessation
- why people with mental health problems smoke
- the general and specific barriers to quitting
- interactions between smoking and psychotropic medication.

One-to-one support for people with mental health problems was then offered out of a community cessation service. The one-to-one model was highly valued amongst users - it allowed flexibility in tailoring the support to individual needs of the target group and there was the freedom for the participants to input into timing, location and frequency of support sessions. Hence, they were able to access the treatment again if they relapsed (after 6 months), were given the option to set their own follow up dates, treatment length, and setting, which was different from their usual structured mental health care. This therefore created a sense of control and self empowerment amongst users (Edmonds et al 2007).

Participants highly valued the personal support that was offered, 'being treated like an individual'. Support from someone experienced in both the mental health and smoking cessation fields enabled a mental health sensitive cessation programme that was considered useful for users. Additionally, simply the supportive, listening qualities of the individual therapists had a big impact on the users' positive opinion of the service (Edmonds et al 2007).

All who completed the follow up (n=7) used NRT. Succeeding in quitting smoking was reported to have a very positive impact on mental health. Six months after the training period, 53% of staff participants said they felt more comfortable to raise awareness and discuss smoking and stop smoking services with clients and colleagues. However, despite developing their knowledge and skills, few had actually gone on to deliver stop smoking support in their workplace. The main barrier to implementing the training was lack of time, and that it was not a priority in their workplace (Edmonds et al 2007).

Discussion and recommendations

Although the smoking rate is higher in people with mental illness than the overall population, clinical studies have shown that this group is willing to quit smoking, despite being less likely to access cessation related support (Access Economics 2007; Lubman et al 2007). Most studies of smoking cessation treatments in this population have involved a behavioural or psychological therapy alone or combined with NRT or non-NRT pharmacological treatments. It is suspected that 'specialised' cessation treatments may benefit people with mental illness preferentially, and some studies support this, while others show cessation treatments aimed at the general population are just as effective in people with mental illness (Kisely and Campbell 2008).

Although it would be ideal to identify a 'crucial factor' in cessation treatment approaches that is preferentially beneficial for those with mental illness, in reality many standard treatments are equally efficacious in this population, and treatment outcomes vary significantly between studies of sample populations, depending on illness severity, diagnostic group, and co-morbidities just to name a few. Severity of tobacco dependence is also often correlated with illness severity and likelihood of quit success.

However, while there is not yet specific evidence for tobacco dependence, there is compelling evidence to support the use and development of combined substance abuse and mental health treatment for non nicotine dependence, therefore enabling both (interlinked) issues to be addressed at the same time (Drake et al 1998; Drake et al 2000). Neurobiological and epidemiological evidence and clinical case studies emphasises the interlinked nature of mental health and tobacco addiction disorders. Hence, as in substance abuse, combined treatment of mental health and tobacco

addiction in the form of optimal pharmacological, psychotherapeutic and social management is likely to result in optimal results. Psychosocial interventions for mental health consumers who smoke may be more effective if they also enable participants to learn healthy coping strategies, affect regulation and stress management, that may be effective in treating both the mental illness and the tobacco addiction. Additionally, studies have shown that in general, the more intensive the cessation therapy (in terms of time, the number of therapies or the amount of therapist contact time) the more likely it is to be effective. In addition, behavioural health treatment providers possess many of the skills needed to provide smoking cessation therapies, placing them in an ideal position to proactively offer cessation support to smokers in their service.

The latest United State based guidelines for treating tobacco use and dependence advise that interventions intended for the 'general population' are efficacious to be used in a variety of specific populations, including those with mental illness. Current evidence is leaning towards but does not convincingly support the increased efficacy of tobacco cessation treatments tailored to people with mental illness compared to standard treatments. However, it is clear that access to cessation services and greater support is needed for this sub-group of smokers.

The New Zealand Smoking Cessation Guidelines (Ministry of Health 2007) advise that more intensive smoking cessation interventions should be provided to people with mental illness and this includes multi-session support and medication. The guidelines also advise that dosage of some medication used to treat mental health disorders may need to be adjusted, due to the reduced metabolism after reducing tobacco consumption or quitting smoking.

Specific recommendations for The Quit Group to consider in cessation service provision for people with mental illness follow.

- Proactive telephone counselling with either bupropion or NRT on a population level was one of the most cost effective interventions (Access Economics 2007). This suggests that there is scope for The Quit Group to provide cost effective cessation support to people with mental illness through the provision of Quitline and subsidised NRT.
- To recognise the importance for both mental health consumers and cessation workers (i.e. Quitline Advisors) to be aware of the interaction of tobacco on psychiatric medication levels, and accordingly monitor side effect closely when a quit attempt is considered.
- Following on from this, it is advisable for the client treated with psychiatric medication considering quitting smoking contact their mental health professional and to work closely alongside them while quitting.
- It is useful to promote awareness of the fact that smoking cessation does not have to lead to a relapse of psychiatric symptoms, and that mental disorder relapse should not be confused with the symptoms of nicotine withdrawal.
- Overall the use of NRT is found to be effective for mental health consumers across different diagnoses.
- For people with depression, combined treatment with bupropion, NRT and psychotherapy is efficacious.
- For people with schizophrenia, NRT and psychotherapy are advisable, and bupropion could be used with caution.
- Although varenicline (Champix) has shown efficacy for smoking cessation in the general population, it is advisable to monitor closely and use with caution in people with mental illness (especially those with a past history of psychosis and bipolar disorder).

- Group support and increased contact time are successful factors in cessation treatments, similar to results found in the general population. The Quitline may consider offering more callbacks to support clients with a mental disorder.
- It would be important to consider specific barriers to quitting amongst this population. For example, for people with mental illness and reduced social skills, smoking is used as a tool to enable social interaction. Taking proactive steps to arrange alternative social activities, and if in supported accommodation, considering the smoke free environment of the home place would be important.

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Appendix 1 Prochaska's Stage of Change Model

- 1) Precontemplation
- 2) Contemplation
- 3) Preparation/ Determination
- 4) Action/ Willpower
- 5) Maintenance
- 6) Relapse