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Smoking Cessation Interventions: A Literature Review.

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Smoking Cessation Literature Review - Executive Summary

AFAO/NAPWA EDUCATION TEAM (ANET) Commissioned Dr Jeanne Ellard from the National Centre in HIV Social Research, to review published research on smoking cessation in relation to the following areas:

- successful and cost effective smoking cessation interventions
- barriers to smoking cessation among HIV-positive smokers
- a comparison between peer-based interventions, clinic based interventions, pharmacotherapy and mass general population interventions
- optimal target populations for smoking cessation interventions i.e., PLHIV smokers only, or the GLBT community in general
- the role of social networks in supporting and undermining smoking cessation efforts, and
- the effectiveness of combined smoking cessation strategies i.e., pharmacotherapy and counselling.

The aim of this review was to provide AFAO and its member organisations with information to assist in the development of policy and strategies regarding education and prevention in relation to cigarette smoking and HIV.

Methodology

A literature search was conducted of the relevant published research from the major sociological, psychological and medical databases; with a focus on literature specifically addressing smoking cessation interventions amongst HIV-positive people and the broader GLBT community. A selection of literature addressing smoking cessation interventions in the general population was also included to provide an overview of recognised effective smoking cessation interventions. This paper discusses research findings in relation to:

- impact of smoking cessation on disease burden and quality of life
 - barriers to quitting
 - potential impact of smoking among the broader GLBT community
 - willingness to quit
 - relapse
 - social support
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- tailored interventions
 - behavioural and pharmacotherapy based interventions
 - internet and phone interventions, and
 - clinicians and health care providers.

Findings

Impact of smoking cessation on disease burden and quality of life

HIV- positive people have significantly higher rates of cigarette smoking compared to the general population in many western countries. Data from the Australian HIV Futures 6 study shows that 42.3% of PLHIV smoke compared to 23% of the general population (Gierson et al. 2009).

The availability of effective antiretroviral treatments (ARTs) in many western countries has greatly reduced mortality due to AIDS–related causes and it is now possible for PLHIV to live longer and healthier lives. However, the proportions of deaths due to non AIDS-related illnesses, such as cardiovascular disease and lung diseases are increasingly affecting PLHIV (Masia, et al. 2007; Vidrine, et al. 2007).

In treated PLHIV, mortality is now dominated by non-AIDS-related causes in which tobacco smoking is a predominant risk factor (Benard et al. 2007; Niaura et al. 2000; Vidrine, et al. 2007). Cigarette smoking in HIV-positive people has been associated with a number of diseases and health risks including:

- Increased risk of lung infection,
- Doubled risk of PCP,
- Developing TB,
- Developing non-AIDS related Cancers, and
- Cardiovascular disease.

(Benard et al. 2008; Lloyd-Richardson et al. 2008 ; Masia et al. 2007 ; Miquez-Burbano et al. 2003 ; Niaura et al. 2000 ; Vidrine et al. 2007).

Effective smoking cessation interventions have the potential to greatly reduce the disease burden and improve the quality of life of PLHIV. Smoking cessation offers significant health benefits, with observable benefits apparent as early as 3 months (Vidrine et al. 2007). For this reason smoking cessation interventions are recommended as a central part of contemporary HIV/AIDS care (Benard et al. 2007; Niaura et al. 2007; Vidrine, et al. 2007).

Barriers to quitting

Published research identifies a number of positive factors that contribute to a high prevalence of smoking among PLHIV, including:

- pleasure
- assisting and sustaining social engagement (Reynolds et al. 2004)

The research also identifies some negative factors such as:

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- high levels of depression
 - social isolation
 - stress and having a stigmatising disease (Reynolds et al. 2004)

These factors associated with low expectations around long-term health and mortality pose potential barriers to successfully quitting (Mammary et al. 2002; Reynolds et al. 2004; Tesoriero et al. 2007).

Potential impact of smoking among the broader GLBT community

Research conducted by McNair et al. (2001) indicates that gay, lesbian and bisexual youth are more likely than heterosexual youth to be depressed or lonely, experience physical and verbal victimisation and this is likely to contribute to increased substance use. The authors call for this population to be represented in tobacco smoking surveillance to thoroughly investigate the factors that influence the high smoking prevalence amongst this group.

Willingness to quit

The research also found that PLHIV smokers had limited knowledge of the 'unique threats' associated with HIV and smoking; however, despite a range of barriers to quitting many smokers desired to quit, but were concerned about intensification of stress, anxiety and depression (Reynolds et al. 2004). A number of studies have shown an association between depression and smoking among PLHIV (Tesoriero et al. 2007); therefore the researchers recommended that any programs should include medication where indicated, and counselling for anxiety; HIV-related stress; depression and co-dependencies.

Relapse

Miller et al. (2003) notes that the chronic nature of tobacco dependence means many smokers cycle through relapse before quitting, and for some relapse itself can become a barrier to quitting. While approximately 50% of smokers make a quit attempt each year, 75-80% of them relapse in six months. Among PLHIV, stress has been identified as one of the primary reasons for relapse (Tesoriero et al. 2007). Therefore developing interventions that specifically address HIV-related stress may be important in preventing relapse.

Social support

Webb et al. (2007) found that there was a positive relationship between social support and improved health and in contrast, lack of social support is associated with the use of 'avoidant coping strategies'. For this reason the research recommends that clinicians and health care providers encourage PLHIV to actively seek social support when considering smoking cessation.

Tailored interventions

A number of studies have also indicated that PLHIV are interested in smoking cessation interventions that are tailored to HIV specifically. The authors note that credibility and trust in providers seemed to be an important factor in decisions to participate. Based on these findings the researchers call for interventions that resonate with gay men's social contexts and specifically develop strategies that support non-smoking in gay social and recreational activities (Schwappach et al. 2008).

Behavioural and pharmacotherapy based interventions

A review by Miller et al. (2003) found that a combination of different NRT's was more effective than the use of one form along. However, researchers propose that further research is needed to explore the comparative effectiveness of different pharmacotherapies and the use of different treatments in combination.

Miller et al, 2003 conducted a review of Australian and International research on best practice smoking cessation methods. The review found that pharmacotherapy (e.g. NRT [nicotine replacement therapy], Zyban, Clonidine) combined with behavioural support (e.g. self-help, brief cessation advice, counselling) significantly increased the success of quit attempts. There is also good evidence that tailoring interventions to individuals and specific group needs is a more effective approach to health behaviour changes than untailored messages and interventions (Fjedsoe et al. 2009).

Internet and phone interventions

The current literature does suggest that internet-based and mobile phone interventions offer a potential low cost way to deliver tailored smoking cessation programs and interventions (Fjedsoe et al. 2009). However, to date there is limited research on smoking cessation interventions that use new technologies such as mobile phones and the internet, therefore researchers call for more research to be conducted to evaluate the long term efficacy of mobile and internet-based interventions (Fjedsoe et al. 2009, Lustia et al. 2009).

Clinicians and Health Care providers

Clinicians and other health care providers are known to play a significant role in smoking cessation. However, both Australian and international research indicates that health care professionals are *not* routinely discussing smoking cessation with clients/patients. Surveys of Australian health care providers found only 34% of GPs reported giving smoking cessation advice during every routine consultation with patients who smoked. However, the nature of HIV means the majority of PLHIV have regular and ongoing interactions with medical practitioners; providing numerous occasions for GP to discuss smoking cessation options with their clients/patients. Diagnosis is also an optimal '*and important teachable moment*' for interventions (Tesoriero et al. 2007:9), given that PLHIV are more likely to be receptive to lifestyle and health behaviour changes in the early phase of HIV diagnosis.

Smoking and smoking cessation among HIV-positive smokers: a selected literature review and discussion of potential effective smoking cessation interventions targeting HIV-positive smokers.

Background

HIV- positive people have significantly higher rates of cigarette smoking compared to the general population in many western countries including Australia, USA, France and Switzerland (Benard et al. 2008; Gierson et al. 2009; Mamary et al. 2002; Niaura et al. 2000; Webb et al. 2007). Internationally the prevalence of smoking among people living with HIV (PLHIV) is reported to be 2-3 times higher than in the general population (Fingeret et al. 2007; Mamary et al. 2002). Data from the Australian HIV Futures 6 study shows that 42.3%of PLHIV smoke, more than twice the rate of the general Australian population 23% (Gierson et al. 2009). The availability in many western countries of effective HIV treatments has greatly reduced mortality due to AIDS-related causes and it is now possible for PLHIV to live longer and healthier lives. However, while the rate of AIDS -related deaths has dramatically decreased, the proportion of deaths due to non AIDS-related illnesses has increased (Benard, et al. 2007; Vidrine et al. 2007). In the post Anti-Retroviral Therapy (ART) era, non-AIDS illnesses such as cardiovascular disease, pulmonary disease and lung disease are increasingly affecting PLHIV (Masia, et al, 2007; Vidrine, et al, 2007). Cigarette smoking in HIV-infected people has been identified with a number of diseases and health risks including increased risk of lung infection, doubled risk of PCP, developing TB, non AIDS-related cancers and cardiovascular disease (Benard et al. 2008; Lloyd-Richardson et al. 2008; Masia et al. 2007;Miquez-Burbano et al. 2003; Niaura et al. 2000; Vidrine et al. 2007) A small number of studies have also found that smoking adversely effects immune and virological response to ART (Miquez-Burbano et al. 2003; Reynolds et al. 2004) however it should be noted that other studies have not supported this finding (Webb et al. 2007; Lloyd-Richardson et al. 2008). In treated HIV-infected patients, mortality is now dominated by non-AIDS-related causes in which tobacco smoking is a predominant risk factor (Benard et al. 2007). For this reason smoking cessation interventions are recommended as a central part of contemporary HIV/AIDS care (Benard, et al, 2007; Niaura et al., 2000; Vidrine, et al, 2007). Successful smoking cessation interventions have the potential to greatly reduce the disease burden and improve the quality of life of PLHIV (Vidrine et al, 2007). This paper reviews a selection of available literature on smoking and smoking cessation to identify potential effective smoking cessation interventions appropriate for HIV-positive people who smoke tobacco.

Aim

The aim of this paper is to review published research on smoking cessation, to provide AFAO and its member organisations with information to assist in the development of policy and strategies regarding education and prevention in relation to cigarette smoking and HIV.

AFAO is particularly interested in what the current research offers in relation to the following areas:

- Successful and cost effective smoking cessation interventions, in particular interventions that can be implemented by community-based HIV/AIDS organisations.
- Barriers to smoking cessation among HIV-positive smokers.
- Effectiveness of peer-based interventions, compared to clinic based interventions, pharmacotherapy, and general population interventions.

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- The optimal target population for smoking cessation interventions i.e., HIV-positive smokers only or, all GLBTI community who smoke.
 - Effectiveness of combined cessation strategies i.e. pharmacotherapy and counselling.
 - The role of social networks in supporting and undermining smoking cessation.

Method

A literature search was conducted of the relevant published research from the major sociological, psychological and medical databases.¹ The criteria for inclusion in this search were the following keywords and subject headings: HIV-positive people; gay men; homosexual men; smoking; effective smoking cessation interventions, smoking cessation and social support, cost effectiveness of smoking cessation interventions. In addition to specific research about HIV-positive people and smoking cessation, a small selection of research about smoking among GLBT communities was included in order to explore whether there is reason to target the GLBT community in general in order to effectively support HIV-positive gay men's efforts to quit. The literature on smoking cessation in the general population is large and therefore it was not possible or appropriate to conduct a systematic review, but a selection of relevant research published in the last 5 years has been provided, including a number of meta-analyses to provide an overview of recognised effective smoking cessation interventions. The paper discusses research findings in relation to barriers to quitting, willingness to quit, relapse, social support, impact of smoking cessation on disease burden and quality of life, potential impact of smoking among the broader GLBT community, behavioural and pharmacotherapy based interventions, tailored interventions, and internet and phone interventions.

Factors Associated With Smoking and Smoking Cessation among PLHIV

The small body of published research on smoking and smoking cessation among PLHIV identifies a number of positive factors that contribute to a high prevalence of smoking among this population, including, pleasure, assisting and sustaining social engagement (Reynolds et al. 2004). It also identifies some negative factors, including high levels of depression, social isolation, stress, and having a stigmatised disease (Reynolds et al. 2004). These factors coupled with low expectations around long-term health and mortality pose potential barriers to successful quitting (Mamary et al. 2002; Reynolds et al. 2004; Tesoriero et al. 2007). A study of HIV-positive men and women in San Francisco found a high prevalence of smoking, 54%, however 63% of smokers were currently thinking about quitting (Mamary et al. 2002). The study found that reasons for not quitting were linked to pessimistic views of the likelihood of long-term survival held by PLHIV and their clinicians. Further, clinicians were reluctant to add to the burden of already large pharmacotherapy regimes by prescribing nicotine replacement.

A US qualitative study of HIV-positive men investigated knowledge and beliefs about smoking and HIV (Reynolds et al. 2004). Two focus groups were conducted with participants recruited from a large AIDS clinic trial unit in Midwestern USA. One focus group was with current smokers and the other with former smokers. Participants in both groups identified a number of benefits of smoking, including pleasure, facilitating and sustaining social engagement and reducing stress related to having HIV. Participants also identified some disadvantages associated with smoking including the expense of smoking, that addiction was sometimes inconvenient or controlling and harmful to health for example, coughing and sinus trouble. Neither group saw the impact on HIV

¹ The databases searched were Cochrane Library, Medline, Web of Science, Social Science citation index, Social Science Index, Health & Society, Sociological Abstracts, Science Direct, HIV/AIDS, Anthropology Plus, Meditext and the Annual Review Data base.

as a principal concern, on the basis that they would not live long enough to suffer the long-term effects of smoking (Reynolds et al. 2004). The researchers found that participants had limited knowledge of the 'unique threats' (2004:41) associated with HIV and smoking and even when these were raised, participants felt that the benefits outweighed the risks. Smoking was seen as a way to cope with stress and consequently participants were concerned that quitting smoking would increase their level of stress and this would in turn negatively impact on their HIV. Some respondents sought to counter the bad effects of smoking with good diet, reduced alcohol consumption and exercise. All the smokers had desired to quit or tried to quit, but were concerned about possible weight gain, (minority), intensification of stress and anxiety or depression. The authors observe that there is logic to undesirable health behaviours that need to be addressed in any programs, including offering counselling for anxiety and depression, and medication where indicated.

Webb et al. (2007) explored the association between demographics, disease, substance use and psychosocial factors on smoking in a clinic based sample of 212 PLHIV in the US. Of the 212 people who participated in the study 74% smoked. The study found that low education level was associated with heavy smoking (more than 20 per day), younger age among men who have sex with men (MSM), alcohol and marijuana use and lower levels of social support. While depression rates were high among the sample they were not found to be related to smoking incidence. A number of other studies have shown an association between depression and smoking among PLHIV (Tesoriero et al. 2007). A French study (Bernard et al. 2007) among HIV-infected inpatients and outpatients attending five hospitals in south-western France investigated tobacco consumption to identify depression, and other dependencies among smokers with the aim of informing appropriate cessation interventions. Of the 509 patients included in the study, 257 (51%) were regular smokers, among them, 60% had strong nicotine dependence and 146 of the smokers experienced depressive symptoms. A further 23% were co-dependent on cannabis and 12% on alcohol. Overall, only 35 (14%) of regular smokers were motivated to quit, non-co-dependent and without depressive symptoms. The authors conclude that only a small number of patients would benefit from standard tobacco cessations programs. They propose that to address the needs of the majority of HIV-positive smokers, smoking cessation interventions should be specifically developed that take account of depression and co-dependencies in addition to nicotine dependence and motivation to quit.

Body Image and HIV

Concerns about body image are known to be a factor in lower smoking cessation rates in the general population, for example a study by Clark et al. (2004), found a significant negative association between motivation to quit smoking and weight concerns among men enrolled in a smoking cessation trial. Body image concerns are widely recognised among PLHIV, linked to treatments that can alter appearance and bodily functioning. However there is very little research on the body image issues for PLHIV and only one study (Fingeret et al. 2007) that specifically addresses smoking and smoking cessation. Fingeret et al. (2007), investigated whether concerns about body image affected HIV-positive smokers' willingness to quit. In view of the significant body image concerns among PLHIV, the researchers expected to find lower cessation rates among individuals with highest body image concerns. While the study did find a link between body image concerns and stress, anxiety and depression, all factors that are known barriers to quitting, they found no direct link between body image concerns and lower rates of quitting. There were no significant differences between participants with higher or lower body image issues. However, Reynolds et al. 2004 found that a small number of smokers were concerned that smoking cessation would lead to weight gain.

Clinicians and Health Care Providers

Clinicians and other health care providers are known to play a significant role in smoking cessation (Miller et al. 2003). Brief clinical interventions offer an effective and low cost approach to smoking cessation (Miller et al. 2003). However, both Australian and international research indicates that health care professionals are not routinely discussing smoking cessation with clients. Research from the US found that only about 1/3 of patients in the general population received advice about smoking cessation (Mamary et al. 2002). Surveys of Australian health care providers report similarly low levels of smoking cessation advice, for example a survey in 2000 of Australian GPs found that only 34% reported giving smoking cessation advice during every routine consultation with patients who smoked (Miller et al. 2003). Clinicians and health care professionals working with PLHIV are also missing opportunities to routinely discuss smoking cessation with their HIV-positive clients. A recent study by Tesoriero et al. (2007) investigated the attitudes and practices to smoking cessation and willingness to incorporate smoking cessation programs into the existing service structures among medical and non-medical HIV/AIDS service providers in New York State. This same study also explored the level of information about smoking and interest in quitting among PLHIV using HIV/AIDS services in New York State. The study found that while 94% of service providers were interested in offering smoking cessation services, assessment of smoking was far from universal with 60% of medical and 30% non-medical providers reporting that they did not always assess client's smoking and interest in quitting. Some service providers reported that barriers to offering service included lack of reimbursement of pharmacotherapy, lack of community referral services, and too few requests from clients. The same study found that the majority of PLHIV were aware that smoking was harmful and of the 59% who smoked, 74% were interested in quitting. While 80% of PLHIV said they had been approached by a health professional about stopping smoking less than half had ever been recommended any form of pharmacotherapy to assist them. The authors note that one barrier to smoking cessation in this population may be the apparent disconnect between providers' perceptions of client interest and actual client interest.

The nature of HIV means the majority of PLHIV have regular and ongoing interactions providing numerous occasions for intervention. Further several studies note that many PLHIV make efforts to improve their health in response to receiving diagnosis, and therefore diagnosis may be 'an important teachable moment' (Tesoriero et al. 2007:9). Reynolds et al. (2004), also conclude that diagnosis is an optimal time for intervention, given HIV-positive people are more likely to be receptive to lifestyle and health behaviour changes in the early phase of HIV diagnosis. A US study exploring HIV cost and service utilization found that 49% of smokers quit or reduced smoking following diagnosis. They argue that health behaviour changes following diagnosis are indicative of self care and a desire to exert control. They also recommend that health care providers actively pursue behaviour change in the early stages of diagnosis (Collins et al. 2001).

Relapse

A review article on effective smoking cessation interventions by Miller et al. (2003) notes that the chronic nature of tobacco dependence means many smokers cycle through relapse before quitting, and for some relapse itself can become a barrier to quitting (Miller et al. 2003). While approximately 50% of smokers make a quit attempt each year, 75-80% of them relapse in six months. A survey study of prevalence of smoking and interest in quitting among a sample of HIV-positive patients attending an outpatient clinic in San Francisco (Mamary et al. 2002) found that most of the cigarette smokers had previously attempted to quit. Men in the study were more than twice as likely to have attempted to quit smoking as women. For this reason the researchers recommend additional follow-up for men to improve their long-term abstinence. A pilot peer-led intervention among HIV-positive

smokers (Wewers et al. 2000) recommended that future cessation interventions consider the inclusion of relapse counselling in response to feedback from participants. Among PLHIV stress has been identified as one of the primary reasons for relapse (Tesoriero et al. 2007), therefore developing interventions that specifically address HIV related stress may be important in preventing relapse.

Smoking Cessation Interventions

While the risks to health of smoking for PLHIV are high, the small body of available literature indicates that smoking cessation offers significant health benefits to the majority of PLHIV. Vidrine et al. (2007), found that consecutive days not smoking was associated with lower levels of HIV related symptom burden, although there were no observable benefits when participants only quit for a day or two. However, observable benefits were apparent as early as 3 months and positively correlated with the length of abstinence. Despite the range of barriers to quitting outlined above, research indicates that many PLHIV are interested in quitting (Mamary et al. 2002; Tesoriero et al. 2007; Vidrine et al. 2006). Further a recent study by Patten et al. (2008) observed no differences associated with stage of HIV-infection or level of CD4 T-cell in relation to motivation to quit, which suggests that all PLHIV who smoke should be targeted for smoking cessation interventions. Identifying effective and appropriate smoking cessation interventions is more likely to increase the number of PLHIV who successfully quit smoking and therefore also increase the life-expectancy and quality of life of PLHIV and reduce overall health expenditure (Shearer et al. 2006). The following section draws on literature about smoking cessation interventions to provide an overview of the types of intervention available and the effectiveness of various interventions.

Smoking Cessation Interventions in the General Population

Miller et al. 2003 reviewed Australian and international research on smoking cessation to investigate the effectiveness and appropriateness of various smoking cessation methods in order to identify best practice in smoking cessation interventions for a range of health care providers and health services in the Australian context (Miller et al. 2003). The review considered two primary approaches to smoking cessation, behavioural interventions and pharmacotherapy interventions, but did not include mass media campaigns or other strategies that promote quitting at the population level. Behavioural interventions include self-help, minimal clinical interventions and intensive clinical interventions. Self-help involves the use of various materials that provide behavioural strategies for quitting, including printed leaflets, booklets, audio-tapes and computer internet programs. Minimal clinical interventions typically involve brief (less than 5 minutes) cessation advice from health care providers, delivered in the context of routine consultations, whether or not patients have actively sought advice on quitting. Intensive clinical interventions also rely on behavioural methods to facilitate quitting but are usually delivered over a period of time and include individual behavioural counselling delivered by a usual health care provider or a cessation specialist, proactive phone counselling, group behaviour sessions and aversion therapy (Miller et al. 2004). Pharmacological interventions include Nicotine Replacement Therapy (NRT), in Australia these are available over the counter and assist quitting by reducing withdrawal symptoms. Anti-depressants such as Zyban, fluoxetine and nortriptyline are available via prescription in Australia. Other pharmacological products have also been tested including clonidine, mecamylamine, naltrexone, anxiolytics and silver acetate. A range of other interventions are also available including acupuncture and hypnotherapy (Miller et al. 2004).

The review found that self-help materials alone were not very effective in sustaining cessation, although the authors note that self-help materials have a potential to reach a large number of smokers at a relatively low cost and even a small rate of success has the potential to translate into a large number of successful quitters at the population level (Miller et al. 2004). However using self-

help materials in conjunction with other strategies for example clinical advice or NRT does not improve smoking cessation rates. There is evidence that tailoring materials to the needs and cessation stages of individual smokers is effective, but less evidence that targeting particular population groups through self-help materials is effective. Quitlines¹ were found to be effective, particularly when promoted in conjunction with advertising campaigns.

While authors note that computer and internet based interventions are able to be more interactive and individually tailored than printed materials and therefore potentially more effective than other forms of self-help, there is too little research on this type of intervention to comment on its effectiveness. The review found strong and consistent evidence that brief and opportunistic advice on smoking cessation given by health professionals increased the number and success of quit attempts. In general these brief interventions follow the guideline 'Ask about smoking at every opportunity; advise all patients/clients to quit; assess willingness to quit; assist in quitting; arrange follow-up' (Miller et al: 304). However the reviewers noted that some guidelines do not include the 'assess willingness to quit stage', for example the UK, and this does not seem to negatively impact on the effectiveness of the intervention. While most of the research on the effectiveness of brief opportunistic interventions is based on advice given by doctors and nurses, the authors propose that the intervention is transferable to other health care settings and professions, for example, pharmacists, dentists, psychologists and specialist doctors'. They argue that specialists could utilise the 'teachable moments' afforded by higher-risk disorders and complications due to smoking (Miller et al. 304), this observation is highly relevant to the field of HIV.

The review found evidence that counselling and group therapy can increase smoking cessation rates, and that the overall success rate is improved when there are a greater number of sessions and some follow-up in the month following quitting. Proactive telephone counselling was found to be effective alone, or as an adjunct to other advice programs. They note that while there is evidence that intensive counselling is more effective than brief interventions the cost is also much greater. There is little evidence of difference in cessation rates between group and individual therapies with similar content. The types of behavioural therapy that have been shown to be effective are problem-solving skills training, social support as part of treatment (e.g. group support) and social support outside of treatment (e.g. buddy system). However they also found that some intensive behavioural approaches were no more effective than no intervention, these include relaxation/breathing, negative affect association, weight/diet therapy and most aversion methods.

The review found that pharmacotherapy combined with behavioural support significantly increased the success of quit attempts. The most effective pharmacotherapies were NRT, bupropion SR and clonidine. The review also found that a combination of different NRT forms were more effective than the use of one form alone. There are only a small number of studies of anti-depressants like bupropion SR (zyban) but the current evidence indicates that they increase long term abstinence rates to the same or greater extent than NRT. However, contraindications and adverse side effects may limit the use of anti-depressants. The authors found insufficient evidence to recommend hypnosis or acupuncture as an aid to smoking cessation. There was some

¹ Note: A Quitline is a telephone helpline offering advanced treatment for addiction [to tobacco or alcohol] and behaviour change. The treatment protocol in most tobacco cessation Quitlines is a mixture of motivational interviewing, behaviour therapy, and pharmacological consultation. Quitline numbers are presently printed on cigarette packages in several countries as a part of the health warning labels. Tobacco Quitlines may offer a reactive service; meaning that counsellors initiate no contact but clients signing up for support are encouraged to call the service whenever they need; or a proactive service where patients signing up for treatment are offered a call up service. Many Quitlines offer both reactive and proactive treatments and leave it up to the client to choose.

evidence that the use of anti-depressant treatments in combination with NRT is more effective than either alone in achieving long term cessation. One study also found that the use of prozac significantly increased cessation rate in depressed smokers but had no apparent effect on smokers who were not depressed. They propose that further research is needed to explore the comparative effectiveness of different pharmacotherapies and the use of different treatments in combination. In light of their review Miller et al. (2004), recommend that NRT and some anti-depressant pharmacotherapies should be offered to all smokers wishing to quit unless contra-indicated as they increase cessation rates up to 75-150% and enhance the quit rates of most other cessation methods.

Cost Effectiveness and Smoking Cessation

Smoking cessation interventions are often referred to as the 'gold standard' (Shearer et al. 2006:428) of healthcare cost effectiveness because they achieve more life years gained for fewer resources than other medical and preventive health interventions. A recent study by Shearer et al. investigated which smoking cessation interventions provide the most efficient use of health care resources at the population level. In the Australian context the authors found telephone counselling to be the most cost effective first-line approach to smoking cessation. The combination of telephone counselling and pharmacotherapies increased the number of quitters but at a relatively high cost. While telephone counselling was more cost effective than brief GP delivered interventions, the authors note that GPs have many more contact opportunities with smokers and are therefore are an important first contact, motivator and key referral point to quit lines. They argue that all effective strategies are relatively cost effective compared to the cost of treating the health effects of smoking and therefore worth investment. However telephone counselling programs, particularly proactive, relapse-sensitive and linked to both bupropion and NRT treatment are particularly cost-effective strategies (Shearer et al. 2006).

Targeting and Tailoring Smoking Cessation Interventions

The evidence on smoking cessation indicates that combination approaches, i.e. counselling and pharmacotherapy, offer the best long term success rates (Mamary et al. 2002; Miller et al. 2003). There is also good evidence that tailoring interventions to individuals and specific group needs is a more effective approach to health behaviour change than untailored messages and interventions (Fjedsoe et al. 2009). For example, Travis et al. (2009) assessed the effectiveness of an age-tailored self-help smoking cessation program for college students; the study compared a demographically tailored stage-based self-help smoking cessation intervention with an adult stage-based usual care intervention. Participants were randomised to one of two groups: one group was given the usual care intervention for adults, which included booklets addressing the contemplation stage and information about quitting strategies for smokers in the later stages of change. The other group was given the demographically tailored intervention developed by the researchers, which included age-appropriate information, reference materials and novelty items that were seen to appeal to college students. The RCT demonstrated the effectiveness of a new stage-based demographically tailored smoking cessation program for young people (Travis et al. 2009). The study found that programs designed with attention to age, contextual factors, and developmental characteristics can be effective in promotion of smoking cessation to young people.

Targeting and Tailoring Smoking Cessation Interventions for HIV

A number of studies have indicated that PLHIV are interested in smoking cessation interventions that are to some degree tailored to HIV specifically, for example a study of PLHIV found that the majority of smokers had a preference for group therapy sessions that only included PLHIV (Mamary et al. 2002). A recent Swiss study explored attitudes towards tailored group smoking cessation programmes among gay smokers in Zurich, in particular whether they would prefer targeted over generic interventions, and what features of an intervention factored into decisions about participation (Schwappach et al. 2008). An internet survey was completed by 408 gay identified men and of these 80% were current smokers and 13% former smokers. 29 men were excluded from the analysis because they had never smoked. Respondents were offered a number of hypothetical group services to choose from, they were offered either at a general cancer service or at a gay male community organisation. Participants were asked to show a preference for groups that included mixed gender and sexual orientation vs. gay men only and similar vs. diverse social background. Overall about 42% of participants were interested in group programs, the majority preferred gay participants and gay delivery. Issues of socioeconomic diversity or cultural background were not important. The authors note that credibility and trust in providers seemed to be an important factor in decisions to participate. Based on these findings the researchers call for interventions that resonate with gay men's social contexts and specifically develop strategies that support non-smoking in gay social and recreational activities and for gay health care organisations to become involved in global anti-smoking movements (Schwappach et al. 2008).

A pilot study examining the effectiveness of an 8 week nurse-managed but peer led intervention among HIV-positive smokers (Wewers et al. 2000) found encouraging abstinence rates. The invention was based on a general population intervention and was delivered by an HIV-positive ex-smoker who had been trained in counselling cessation by a practice nurse. Eight male HIV positive smokers were assigned to the intervention group and received nicotine patch therapy for six weeks plus weekly face-to-face or telephone counselling and skills in substitute strategies for not smoking. The control group were given written self-help materials on smoking cessation. Abstinence rates between groups were compared at eight months and resulted in 62% of the intervention group biochemically confirmed to be not smoking, and zero in the control group. The peer educator was seen to have credibility because they were an ex-smoker and also HIV-positive. Both the peer educator and the participants identified a number of ways the intervention could be improved including more contact with the peer educator, increasing the length to 3 months, incorporating group sessions, adding an exercise program and setting up a buddy system.

A study conducted by Ingersoll et al. (2007) tested two combination motivational plus pharmacological interventions among HIV-positive smokers. Participants were randomly assigned to self-guided reading plus nicotine patch (n=18) or motivational interviewing plus nicotine patch (n=22). Contrary to other evidence this study found no differences between the two groups.

Targeting, Tailoring and New Technology

A number of reviews and studies have investigated the potential benefits of using new technologies such as mobile phones, computers and the internet to deliver tailored health behaviour change interventions, including smoking cessation. For example computer and internet based interventions have the capacity to tailor content and strategies to individual needs (Lustia et al. 2009). Lustia et al. (2009) reviewed a number of studies of computer and internet based interventions to identify the various mechanisms being used to individualise messages, they found that interventions ranged from health/risk assessments to customized health programs. Web-based interventions were able to offer mechanisms for two-way feedback, chatting, and activities like quizzes that potentially engage and educate. Some interventions tailored programs to fit individual stages of change

and specific risk factors (Lustia et al. 2009). While the authors note the potential of web-based interventions, the review did not investigate the effectiveness of computer and internet based interventions (Lustia et al. 2009). A recent meta-analysis of published studies about the use of computers to promote healthy behaviours including smoking cessation, undertaken by Portnoy et al. (2008), concluded that computer-delivered interventions can lead to improved behavioural health outcomes at first post-test assessment. However, further research is needed to evaluate the long term efficacy of computer-delivered interventions. The authors identify a number of positive features of computer-delivered interventions, including uniformity of intervention delivery, 24 hour access and the ability to tailor interventions to an individual. There is evidence that when the intervention content is tailored to individual needs, behaviour change is enhanced and efficacy and user satisfaction is increased. Other potential advantages of computer-delivered interventions is that they can be accessed by people living in remote areas and are a potentially cost effective way to deliver behaviour change interventions to a large number of people. There is currently no published research on computer and internet-based smoking cessation interventions among PLHIV, however there have been a number of studies that use mobile phone technology and forms of tailoring.

Mobile Phones

The authors of a recent meta-analysis of research on health behaviour change interventions delivered via SMS text (Fjedsoe et al, 2009) observe that the ready availability of mobile phones in developed countries like Australia, and the common use of text messaging to all age groups, socio-economic and ethnic groups make them a potentially cost effective way to deliver health behaviour change. Health messages can be delivered instantaneously, direct to individuals at any time, place or setting and can be accessed at a time that suits the individual. The authors note that SMS based interventions may be particularly valuable for populations who are high users of mobile phones this includes young people, people who rent and move often and those who are socioeconomically disadvantaged, these same groups are often hard to reach. They reviewed interventions that primarily used SMS, had to have pre-post design but were not required to have a control group, and that were reported in peer reviewed journals; a total of fourteen studies between 1990 and 2008. Four studies used SMS for preventive health behaviour change, for example smoking cessation, the other ten studies used SMS to support ongoing clinical care change, for example diabetes self-management. They found positive behaviour change in eight studies, five demonstrated positive trend, and one study showed no positive behaviour change. The two studies that used untailored SMS had the highest participant withdrawal. Of the 14 SMS interventions reviewed, 13 demonstrated positive behaviour changes, although some studies were too statistically underpowered to show significant results. The authors note that there is currently a lack of high quality SMS intervention studies and call for further research.

Mobile Phone Interventions and HIV

A US study (Lazev et al. 2003), examined the feasibility of using cellular phone telephones to improve access to smoking cessation counselling in a low-income HIV positive population. Initially the researchers conducted a trial with HIV-positive clients at a clinic in Texas (n= 49) to assess their level of interest in smoking cessation interventions and identify barriers to accessing smoking cessation interventions. People with low incomes are known to have a high prevalence of smoking, including minorities and the medically underserved. While these populations are in need of smoking cessation programs the majority of research and prevention has been aimed at mid to high income populations (Lazev et al. 2003). Reported barriers were lack of working phone, household moves, and lack of transportation. Participants expressed interest in various interventions and endorsed personal sessions with a counsellor over group counselling. The most highly endorsed intervention was a cellular phone intervention, while home visits by a counsellor scored low. Participants also expressed more interest in interventions that did not have follow-up

assessment at the clinic and provided an incentive. In light of these findings a pilot proactive phone counselling intervention was conducted, as other research has shown cellular phone interventions to be efficacious and effective across a wide range of populations (Lazev et al. 2003). Twenty participants were recruited, all had to set a quit date within 7 days, carry a cellular phone which was given to them at no cost and participate in 6 cellular phone counselling sessions in a two week period. Calls were scheduled to coincide with the nominated quit date, participants received a call one day prior to the proposed quit date, on the quit date, two days after, 4 days after, 7 days after and 14 days after. The calls were of at least 3 minutes in length and used cognitive behavioural therapy and supportive counselling in line with US public health service guidelines. Participants were given a reminder calendar so they would know when a call was expected. A 24 hour 7 day a week hotline was also available and participants were advised to call when and if they had urges or cravings to smoke or when they desired support. The majority of participants took all the counselling calls within 24 hrs of the scheduled time and a number of participants made calls to the hotline. Nineteen participants made a quit attempt (one person was excluded from the study) and although abstinence was not the aim of the study, 15 people were abstinent at 1-2 weeks post quitting. Seven participants reported relapsing, but five made a second quit attempt. The researchers note that cellular phone counselling allowed for counselling and support in 'real-world, real-time situations' (Lazev et al. 2003:284). Further support was provided in a potentially cost-effective manner. They concluded that it is a promising technology for difficult to reach populations and offered unique benefits including intensity of treatment, flexibility, convenience, confidentiality, and counselling in the context of everyday life.

Building on the pilot study outlined above (Lazev et al. 2003), a larger study was undertaken to assess the effectiveness of an innovative smoking cessation intervention using cellular phones among a multiethnic, disadvantaged HIV positive population (Vidrine et al. 2006). The study included two innovations: cellular phone technology and targeting/tailoring. The trial had 95 participants and of these 77 completed the 3 month follow-up. Participants were recruited from a large inner city clinic in Texas and had to be willing to set a quit date within 7 days. The researchers note that while potentially eligible participants were not actively seeking cessation treatment at the time of recruitment 65% of those approached were interested, suggesting this population is receptive and should be actively targeted. Following completion of a baseline interview participants were randomly assigned to one of two groups, the first offered recommended standard of care (RSOC) the second a cell phone intervention in addition to RSOC. Standard care involved a physician advising participants to quit smoking, assisting them to set a quit date within 7 days, and offered them a 10 week supply of nicotine replacement. They were also given a personalised quit smoking plan and a general self-help pamphlet and a tip sheet designed to address the concerns of the HIV-positive smoker. There was no further contact until 3 month follow-up assessment. The cell phone intervention group received the usual care components and were given a prepaid cell phone, a proactive counselling call schedule and the phone number of a hotline. There were eight proactive phone-counselling sessions over 2 months, with more clustered around the quit date and the first month. The counselling took a cognitive behavioural therapy approach, broadly aiming to give participants support, skills and strategies to cope with situations that could potentially trigger smoking. In addition to the scheduled counselling, participants in this arm also had access to a hotline for additional support. In some cases the counselling was tailored to meet specific needs of HIV-positive smokers, for example focussing on the unique health benefits of quitting in relation to treatment side-effects such as fatigue, or offering strategies other than smoking to deal with stressful health issues such as CD4 falling. At the 3 month follow-up 10.3% of the usual care group were biochemically verified as abstinent and 36.8% of the cell phone group. They concluded that cell phone interventions are feasible with a multiethnic, socially disadvantaged HIV-positive population. Further targeting smoking cessation interventions to the special needs of PLHIV can significantly increase abstinence rates compared to usual care.

Social support

Social support is known to play an important role in health behaviour change, including smoking. A USA study exploring the influence of social support and HRQOL (Health Related Quality of Life), found an association between reduced risk and positive behaviour change in the areas of obesity, drug misuse and smoking (Strine et al. 2008). This same study found the prevalence of smoking and obesity increased with declining levels of social and emotional support (Strine et al. 2008). Support can take a number of forms, including providing information, giving instrumental support, for example giving someone a lift to a group therapy session, and emotional support (Patten et al. 2008). Social support can be provided by family, friends and partners and through organised support groups and persons, for example 'a quit buddy'. A recent pilot study conducted by Patten et al. (2008) investigated whether support persons could play a role in motivating and encouraging smokers to call a quit helpline. The authors note that while quit helplines are an evidence-based intervention, they are not well utilised in many jurisdictions, including Minnesota in the USA where the study was conducted. In Minnesota only 1.5% of smokers had used the quit helpline. The study recruited 30 support people and provided them with literature and information about smoking cessation and counselling aimed at giving them strategies to support their smoker. The smokers had low levels of readiness to quit but five contacted the quitline, suggesting that interventions with support persons are a potentially effective way to reach smokers with a low readiness to quit. They concluded that interventions which used 'natural support networks' (Patten et al. 2008:?) comprising partners, family or friends were a feasible approach to motivating and supporting smokers to quit (Patten et al. 2008).

Social Support and HIV

Research focused on smoking and smoking cessation among PLHIV indicates that partners, friends and social networks had a role to play in smoking and non-smoking behaviours of PLHIV (Reynolds et al.2004). An investigation by Webb et al. (2007) of psychosocial factors associated with smoking prevalence among PLHIV found that HIV-positive people who perceived less social support were more likely to report smoking heavily. They found that there was a positive relationship between social support and improved health and in contrast lack of social support is associated with the use of 'avoidant coping strategies' (Webb et al. 2007:372). Reynolds et al. (2004) note that all the current smokers in their study lived with or had a partner who smoked while the former smokers did not. Former smokers described persons in their social network as playing a pivotal role in their successful smoking cessation. As discussed earlier in this paper PLHIV may experience a loss of social support due to the stigmatised nature of HIV illness (Webb et al. 2007). For this reason some research has recommended that clinicians and health care providers encourage PLHIV to actively seek social support when considering smoking cessation, and where necessary provide links to appropriate therapy groups or peer networks (Webb et al. 2007).

Social Networks, Contexts and Smoking Cessation

Increasingly research indicates that long-term and sustained health behaviour change involves the development of policy, education and prevention strategies that target not only individuals, but also the social networks, communities and physical environments in which people live, work and socialise (Maibach et al. 2007;Ritchie et al. 2007; Smith et al. 2008). Broader social networks affect health through a variety of mechanisms including social support, social influence, access to resources and social involvement (Ritchie et al. 2007; Smith & Christakis, 2008). For example, the peer effect on smoking behaviour of adolescents is significant and influences the odds of smoking initiation, continuation and cessation. Consequently smoking cessation programs that provide peer support, 'that is, that modify the social network of the target – are more successful than those that do not' (Smith et al. 2008:410). Likewise approaches to smoking cessation that target the places in which people smoke, for example the bans

on smoking in bars and restaurants, influences individual behaviour but it also addresses community norms around smoking (Maibach et al. 2007). In the Australian context the majority of PLHIV are gay men and therefore smoking cessation interventions are likely to be more successful if they are embedded in the broader Gay, Lesbian, Bisexual, Transgender and Intersex (GLBTI) community.

GLBTI Community and Smoking

While there is little published research on smoking prevalence among GLBTI communities, the available research indicates that smoking prevalence is higher than in the general population in many western countries including Australia. Research conducted by McNair et al. (2001) on health inequalities among GLBTI communities in Victoria noted a higher prevalence of smoking among this group compared to the general population; rates were particularly high among lesbians. Ryan et al (2001) reviewed published research about smoking prevalence among gay, lesbian and bisexual people to collect smoking estimates in this population. The review included 12 USA studies conducted between 1987 through 2000. Estimated smoking rates among lesbians, gays and bisexuals ranged from 38% to 59% among youth and from 11% to 50% among adults. National smoking rates during comparable time periods ranged from 28% to 35% among youth and approximately 28% among adults. The authors identify a number of factors that may contribute to the a high prevalence of smoking in this population, including stress, socialising in bars, and higher rates of alcohol and drug use, all of which are associated with smoking prevalence (Ryan et al. 2001). The authors observe that gay, lesbian and bisexual people may experience homophobia and discrimination that increase their levels of stress. Further a history of exclusion from a range of social settings they argue, has led gays, lesbians and bisexuals to make bars an important social focus. Factors that influence smoking among gay, lesbian and bisexual adolescents are potentially more complex than those influencing adults. Smoking among youth in general is associated with social desirability, ready access to cigarettes, risk taking and rebelliousness, feelings of being unsupported, low self-esteem, negative mood factors and other mental health factors (2001:142).

Research indicates that gay, lesbian and bisexual youth are more likely than heterosexual youth to be depressed or lonely, experience physical and verbal victimisation and this is likely to contribute to increased substance use. The authors, note the need for further investigation of the factors that influence smoking prevalence among gay, lesbian and bisexual youth, including: whether smoking plays a unique role during identity formation, for example 'assumption of masculinity for males, assertion of independence and power for females' (2001:143); the stresses of 'coming out'; potential lack of support from family and peers; feelings of isolation and loneliness and homophobia and discrimination (2001:143). The authors conclude that the gay, lesbian and bisexual population needs to be represented in tobacco-use surveillance, in order to collect data to better understand the apparent high rates of smoking in this population. They also call for prevention and cessation interventions that target these groups.

A number of other studies have also observed the lack of research on smoking among GLBTI despite the prevalence of smoking (Doolan et al. 2006, Gruskin et al. 2007). A large scale population-based study of tobacco use in California of the gay, lesbian and bisexual population found that prevalence rates were higher among lesbians, bisexuals and women who have sex with women than among women in the general California population, 28.8 % of lesbian's v approximately 12% of women in the general population. While there were not statistically significant differences between bisexual men and men in the general population the prevalence of smoking among gay identified men was higher 27.3% v 19.7%. The authors argue for further research to identify risk and protective factors associated with smoking and cessation in this population, for example societal discrimination, health

disparities including HIV/AIDS, sexual identity and other individual, social and environmental factors. The absence of research limits the capacity to develop efficacious smoking cessation programs for these groups (Doolan et al. 2006).

A recent study conducted by Offen et al. (2008) examining the extent of tobacco industry funding of GLBTI organisations in USA and whether leaders of these organisations thought tobacco was a priority health issue for this community found that some service providers perceived smoking to be part of gay and lesbian culture and therefore not a health priority. The authors argue that some service providers considered smoking to part of identity formation and the coming out process – smoking was normalised and therefore it was difficult for respondents to see it as a threat. Most community leaders saw tobacco as a matter of individual choice and were concerned that addressing smoking might be interpreted as judgmental or trying to tell people what to do some even saw it as contrary to their overall mission of ‘instilling acceptance and pride’ (Offen et al. 2008:150).

Smoking Cessation Intervention Targeting Gay Men

While the literature indicates that the GLBTI community would greatly benefit from targeted interventions there very little research on effective interventions for this population. One of the few is a pilot intervention run in a London based community charity (Harding et al. 2004). The intervention was adapted from an existing NHS programme. The programme combined group work, nicotine replacement and ongoing peer support throughout and was orientated toward withdrawal. The programme consisted of an initial information session followed by 6 closed group sessions. 4 groups were run and a quit date was set for week 3. Each group was provided with seven sessions of approximately 2 hours duration. The service aimed to provide a non-judgemental context where gay men could discuss socialising and gay social spaces, recreational drug use, sexuality, HIV and the impact of these on capacity to quit smoking. A deliberate modification of the general programme was to substitute ‘quit buddies’ with ‘quit cells’ made up of 3-4 participants this was based on experience from other group work conducted by the service that found support from more than one person was more reliable. Participants were also given specific information on smoking and HIV and some exercises on assertiveness training to assist participants in communicating intention to remain non-smokers. The groups were facilitated by gay men and focussed on culturally specific contexts to gay men. Of the 98 men who registered for the program 76 attended and 69 did the whole program. Overall attendance at each session was high and 44 (64%) men quit, this is a high success rate compared to the national rate of 53%. The study recommended more research on the smoking cessation needs of GLBT. They also recommend that targeted prevention should be pursued over generalist and that the community and voluntary sector should be considered as a low cost and highly effective site of smoking cessation program delivery.

Conclusion

Currently the published research on smoking cessation interventions focussed on PLHIV is small, and often based on pilot studies. Nonetheless, this literature and general literature on smoking cessation interventions, suggests a number of approaches to smoking cessation relevant to HIV-positive smokers in the Australian context. There is good evidence that brief smoking cessation interventions delivered by clinicians as a routine part of any clinical interaction is an effective and low cost approach to smoking cessation. This may be a particularly useful strategy among PLHIV who are likely to have regular medical appointments. The literature indicates that all PLHIV who smoke would benefit from smoking cessation interventions, regardless of whether they are experiencing poor health or have a low level of CD4. However, there is evidence that people newly diagnosed with HIV are more likely to be interested in health behaviour change and therefore this group should be specifically targeted for smoking cessation interventions. Both the general literature on smoking cessation and research on HIV and smoking indicate that

successful smoking cessation is best achieved when pharmacotherapy is combined with some form behavioural intervention, such as counselling or group therapy. The research also suggests that targeting interventions to particular groups increases the acceptability and effectiveness of interventions. To date there is limited research on smoking cessation interventions that use new technologies such as mobile phones and the internet. However, the current literature does suggest that internet-based and mobile phone interventions offer a potential low-cost way to deliver tailored smoking cessation programs and tailored interventions are more likely to result in successful smoking cessation. There is increasing evidence that social networks and contexts play a significant role in people's health behaviours and therefore it is important to target the GLBTI community more broadly, in order to effectively support HIV-positive smokers who wish to quit. Utilising social contexts and community spaces such as bars, gay social groups and special events for example, Mardi gras, and Queer Screen may provide potential sites for intervention. The movement toward GLBT health occurring in some HIV s in Australia may also provide an opportunity for smoking cessation programs targeting, gay men generally with specific strategies and interventions incorporated for HIV-positive gay men who smoke.

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