





# Tackling Indigenous Smoking and Healthy Lifestyle Programme Review: A Rapid Review of the Literature

Report 1 of 3

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## 1. What is the Issue?

Aboriginal and Torres Strait Islander people suffer the worst health of any population group in Australia, having a burden of disease estimated to be two and a half times that of the total Australian population (Australian Bureau of Statistics, 2010). Furthermore, Indigenous Australians<sup>1</sup> are much more likely than non-Indigenous Australians to die prematurely from preventable 'lifestyle diseases' such as obesity, hypertension, cardiovascular disease and type 2 diabetes mellitus (Gracey & King, 2009). These chronic diseases can often be prevented, delayed and/or better managed through active intervention, effective management, and lifestyle change (i.e. increased physical activity, better diet, reduced alcohol intake and smoking cessation). Tobacco smoking in particular has been identified as the most preventable cause of premature death among Indigenous Australians (Briggs et al., 2003).

Whilst in the general population of Australia, smoking rates have declined from approximately 24% in 1991 to 15% in 2010 (Australian Institute of Health and Welfare, 2011), this is not the case for all population groups; 41% of Indigenous Australians are current smokers (Australian Bureau of Statistics, 2013). Reducing the prevalence of tobacco use is therefore an important focus for increasing the health of this population.

Quitting by current smokers is the best way of reducing tobacco related mortality in the medium term (Lancaster et al., 2000). Smoking cessation is generally acknowledged to be a process rather than an event; consequently individuals may make several quit attempts before successfully stopping smoking. Unassisted quit rates have been suggested to be as low as 2-3% in the general population (Stead et al., 2008), and it is generally acknowledged that most individuals benefit from some form of support in order to quit for good (Lancaster et al., 2000). Any intervention which increases the quit rate to over 2-4% may therefore be considered to have an effect; quit rates of over 5% or more could therefore be considered to be 'good', as they exceed the unassisted cessation rates.

This rapid review is the first in a series of documents produced to support the Tackling Indigenous Smoking and Healthy Lifestyle Programme review. It examines the available evidence for the effectiveness of smoking and healthy lifestyles programmes for the Australian Indigenous population, assesses the quality of the evidence, and identifies the strategies that have been demonstrated to be effective.

<sup>&</sup>lt;sup>1</sup> The collective term, 'Indigenous Australians' will be used to refer to the First Nations' people of Australia – Aboriginal and Torres Strait Islander peoples and no offence is intended. It is also acknowledged and respected that Aboriginal peoples and Torres Strait Islanders constitute many nations, language groups and cultures.

## 2. Method

A rapid review was conducted to synthesise the current evidence of effectiveness of smoking and chronic disease prevention, and healthy lifestyle health promotion activities for Indigenous Australians.

A systematic search process was undertaken to identify relevant policy, research and other documents relating to improving healthy lifestyles in Indigenous Australians, with a focus on tackling smoking. The search strategy aimed to identify as wide a range of published papers and reports as possible in the limited time available. The databases searched included PubMed, Ovid Medline, PsycINFO, Web of Science, ATSIhealth, Australian Indigenous HealthInfoNet, Cochrane Library, CINAHL along with a search of relevant government department websites and a general internet search.

The search was limited to papers, reports and studies published within the past 10 years, (2004 - 2014), to ensure that articles retrieved were relevant to current policy and practice. The search was confined to publications written in English.

Additional articles were identified through hand searching reference lists of relevant publications. Eight evaluation reports relating to a number of existing programmes and organisations were also provided by the Australian Government Department of Health. Four systematic reviews and one synthesis of reviews were also identified and included in the findings. Members of the research team viewed abstracts and summaries to agree upon the final papers/reports to be included in the review.

A critical appraisal was undertaken to determine the quality of the evidence, and the effectiveness of each programme/interventions in terms of reach, implementation, and future recommendations/sustainability. Judgements about the strength and quality of evidence were made using the NHMRC levels of evidence guidelines for quantitative studies (NHMRC, 1999) (Appendix 1) and Daly's Hierarchy of Evidence for assessing qualitative health research (Daly et al., 2007) (Appendix 2). An adaptation of the RE-AIM Evaluation Framework (Glasgow et al., 2001) was used to systematically identify the effectiveness of each programme (Appendix 3).

## 3. What does the evidence say?

The search produced a substantial number of documents relating to programmes promoting healthier lifestyles in Indigenous Australians, with a focus on tobacco control and smoking cessation. Our search identified a total of 36 documents that met the inclusion criteria for the rapid review. These included academic peer reviewed papers, including both systematic reviews and empirical

research, policy documents which included summaries of recent evidence, evaluation reports and unpublished reports. The papers covered a total of 27 different projects and programmes/interventions concerned with increasing healthy lifestyles in this population, with a focus on smoking prevention and cessation in Indigenous Australian populations.

These programmes were categorised by type (policy/legislative/media campaign/intervention/workforce training); setting (clinical or community); whether universal or targeted (e.g. pregnant women, youths); level (individual/group/population) and preventive or treatment. The broad categories considered in this review are:

- 1. Legislative strategies
- 2. Social marketing campaigns
- 3. School-based interventions
- 4. Pharmacological interventions
- 5. Brief intervention
- 6. Counselling
- 7. Pregnant women
- 8. Quitlines
- 9. Strategic level multi-component interventions
- 10. Community based multi-component interventions

For each of the first eight categories, an overview of the established evidence from mainstream research is presented first, to provide a context for the programmes and policies reviewed here. The evidence of effectiveness for each strategy in Indigenous Australian populations is also assessed using the rating scale developed by lvers (2001) (Appendix 3).

Evidence regarding the effectiveness of physical activity and nutritional health programmes has recently been reviewed by Baker & Costello (2014). In order to ensure full coverage of all healthy lifestyle issues, a summary of this material is provided in two additional sections:

- 11. Interventions promoting physical activity
- 12. Interventions promoting nutritional health

This evidence is drawn primarily from mainstream research; however, any specific evidence related to programmes implemented with Indigenous Australian populations is highlighted. The evidence of effectiveness for each strategy in Indigenous Australian populations is also assessed using the rating scale developed by Ivers (2001) (Appendix 3).

#### 1. Legislative strategies

#### Smoke free policies (7 studies)

The evidence from a number of studies has shown that smoke-free policies are associated with decreases not only in second-hand smoke exposure, but also in tobacco use prevalence among young people and adults (Callinan et al., 2010). Indeed, smoke-free policies for public places are likely to be an important strategy for reducing the general visibility and acceptability of smoking among Indigenous people given the social acceptability of smoking. However, Power et al. (2009) suggested that tobacco regulations are less likely to be strictly enforced in rural and remote areas. It is therefore important to establish the evidence concerning the extent to which tobacco legislation has been enforced in non-urban Indigenous Australian communities as well as considering the wider efficacy of such policies for reducing tobacco use among Indigenous Australians.

The evidence from this review regarding the implementation of tobacco related policies in Indigenous Australian communities, suggests that such policies can be realised in the right circumstances, irrespective of setting. In a study of three remote communities in the Northern Territory, lvers et al. (2006) found that whilst none of the community stores had written smoking policies, all had established and maintained smoke-free communal spaces. A similar situation was reported by Campbell et al. (2014), who found that whilst only three out of 21 businesses and organisations visited in the remote northern communities of Queensland had formal smoke-free policies, the remaining 18 had informal policies, and all had smoke-free areas. Further studies (Fairer Health Victoria, 2009; Fletcher et al., 2011; Thomas et al., 2010) have confirmed that smoke-free policies are more likely to be successful implemented and sustained, in urban, regional, and rural settings, where there is community participation – not just consultation – in their development. The importance of local ownership was also demonstrated by Robertson et al. (2013) in relation to the Top End Tobacco Project. Applying Critical Realism<sup>2</sup> to three case studies showed the importance of strong local leadership for keeping tobacco control on the community agenda and effecting change. Whilst Robertson et al. (2013) found little change in smoking prevalence since the start of the project, changes in attitudes to smoking, including a greater interest in increasing smoke-free spaces in communities was substantial. Furthermore quit attempts encouraged by smoke-free workplace policies led to individuals developing bespoke signs to ensure they were able to have smoke-free homes, without insulting either family or friends who were smokers.

In contrast, research conducted in urban, regional, and rural settings by GFK and Cultural & Indigenous Research Centre (CIRCA) (Ell et al., 2013) found that whilst this legislation has resulted

<sup>&</sup>lt;sup>2</sup> Critical realism is a research methodology in which qualitative data is interrogated to discover a causal explanation for a specified phenomenon by explicitly identifying the means by which structural mechanisms and contextual conditions interact to generate a given set of events

in the smoking environment changing substantially over recent years, this has also led to smokers feeling persecuted and becoming more defensive. Furthermore, such legislation has created a barrier between smokers and non-smokers; whilst smokers feel pushed away from the non-smoking population, and feel a strong sense of solidarity with other smokers. Being part of this distinct group can even be another reason not to quit. Consultation with the workforce regarding smoke free policies may be one way of avoiding situations where smokers feeling persecuted.

Good quit rates have however, been achieved in contexts where locally agreed smoke-free legislation has been combined with support to quit. For example, the Neami Psychosocial Services (Fairer Health Victoria, 2009) reported that 12% of service users who were smokers (and a number of staff members) had successfully quit approximately a year after the introduction of a smoke-free environment policy along with quit support services.

**Key message:** Smoke-free policies will be more effectively implemented where the local community has ownership, and therefore commitment, to that policy. This seems to be especially true in remote and rural settings. Combining these community owned policies with access to quit support services will increase the success of these policies in relation to enabling individuals to quit.

Applicability to Indigenous Australians: A

#### Tobacco sales to minors (2 studies)

Overall, the evidence regarding restrictions on sales to minors suggests that these may be an effective deterrent for younger smokers, though this depends on enforcement by retailers (Oglvie et al., 2005). However, since some groups of younger smokers will obtain their cigarettes from noncommercial sources (including older siblings or friends and peers), this needs to be combined with other controls which will influence consumption and attitudes such as restrictions in schools, health warnings and media campaigns (Thomas et al., 2013). There is no evidence that restricting sales to minors is effective as a preventative measure without these additional activities.

Ensuring compliance with legislation around selling tobacco to minors in Indigenous Australian communities was found to be more difficult to enforce in remote areas, particularly where access to tobacco was through vending machines or independent traders (Ivers et al., 2006). It is proposed that interventions to support and enforce legislation through community stores will be most effective if members of staff are trained in the legalities of tobacco sales and the delivery of point-of-sale quit-smoking information, as has been used in nutrition interventions (e.g. Lee et al., 1996). Monitoring compliance of community retail outlets with legislation on tobacco sales was also intended to be one aspect of a community based multi-component intervention implemented in far north Queensland

(Campbell et al., 2014), however no visits were conducted by environmental officers in order to increase compliance with tobacco sales legislation during the study period, suggesting on-going difficulties with monitoring in remote areas.

**Key message:** Restriction of sales to minors may be difficult to enforce in remote areas, although regular monitoring of compliance of retail outlets with legislation on tobacco sales may help this. Increasing point of sale quit services may also increase the effectiveness of these policies for deterring young smokers. Restriction of sales to minors may therefore have more impact in urban settings where cigarettes are purchased from conventional shops; however the same caveats from mainstream research concerning the need to combine this with other activities would also apply. **Applicability to Indigenous Australians: D** 

#### Tax increases (1 study)

Whilst there is world-wide evidence that increasing taxes on tobacco products does reduce purchasing and can be a motivator to quit (Frank et al., 2012), not all smokers are responsive to price changes (Asgba & Sharaf, 2011). In particular, it seems that some high-risk populations including heavy smokers and Aboriginal Americans (Bader et al., 2011), are less likely to change their behaviour in response to a price increase. There is also evidence that whilst many smokers will reduce the number of cigarettes purchased, this is counterbalanced by a change in purchasing habits to cigarettes with a higher nicotine content. (Evans & Farelly, 1998) or by more intensive smoking of each cigarette smoked, thereby extracting more nicotine (Adda & Cornaglia, 2006). There is also evidence that price sensitive consumers will purchase less expensive cigarettes, or find other ways to cut costs, which may decrease future cessation efforts (Hyland et al., 2005). Thus, despite the widespread adoption and acceptance of pricing as a deterrent to smoking, the implications of changes in purchasing of cigarettes for quitting, is difficult to establish and not all consumers are sensitive to increase in pricing.

There is some evidence from Indigenous Australian communities that price increases do affect tobacco purchases, however this should be interpreted cautiously. Thomas et al. (2012) found a 2.2% average reduction in total tobacco sold in stores in remote Indigenous Australian communities in the 7 months after a rise in tobacco excise, compared with the 7 months before the price increase. However, this result was not statistically significant, and a large variation was seen across the 18 stores audited. Interviews with store staff and community members demonstrated support for increasing tobacco tax in order to encourage quitting, however there was no evidence that individuals attempted to quit because of the price increase. Rather the study provided evidence that

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smokers had changed their approach to getting tobacco; an increased reliance on social and family obligations to share cigarettes ("humbugging") was reported, suggesting that the burden of price increases may have been borne by those individuals with greater disposable income. Interviewees did however suggest that to be effective for behaviour change, such tax rises needed to be accompanied by more local support for quit attempts. Thomas et al. (2012) notes that future tax rises may have a more typical impact as smoking becomes less normalised in these communities, and tobacco control is better supported.

**Key message:** Tax rises on tobacco products are generally viewed positively, however, the impact of increases in tobacco pricing on smoking behaviours in this population is not yet clear. Combining national policies with access to quit support services may help increase the effect of these policies on individual quit rates.

Applicability to Indigenous Australians: B/C

#### 2. Social marketing and mass media campaigns (5 studies)

Social marketing and mass media campaigns aim to change smoking prevalence by changing attitudes, beliefs and intentions surrounding tobacco use, with the ultimate intention of prompting a change in the behaviours associated with these attitudes. They use education about the negative consequences of smoking and the benefits of not smoking for two purposes: to prevent the uptake of smoking (particularly in youths) and to promote quit attempts in current smokers. Mass media campaigns take a traditional marketing approach to this aim, treating the desired attitudes as a product to be sold. In contrast, social marketing uses knowledge of specific community barriers to develop more targeted marketing approaches.

There is evidence that both mass media and social marketing campaigns can help prevent smoking uptake and promote smoking cessation, particularly where campaigns are combined with other tobacco control activities (Wakefield et al., 2010, Durkin et al., 2012). There is also some evidence that marketing campaigns may prevent relapse amongst recent quitters by reminding them about why they chose to stop smoking (Wakefield et al., 2012). However, the biggest effect is in relation to promotion of cessation as measured through access to cessation support services; a number of studies have, for example, demonstrated a strong relationship between anti-smoking television campaigns and volume of calls to Quitline (Miller et al., 2003; Farrelly et al., 2011). Indeed, it has been suggested that the most effective way of preventing smoking in young people is to denormalise smoking and reduce the prevalence of smoking in adults (Jamrozik, 2004), since the role modelling

provided by parents and siblings who smoke has a significant influence on youth uptake of smoking (Kelly et al, 2011) and access to cigarettes (Leatherdale, 2011). The protective effect of these campaigns is therefore thought to be an indirect consequence of eventual reductions in adult smoking triggered by these campaigns.

However, campaign success may be influenced by reach, intensity, duration and message type; evidence suggests that television is the primary channel to effectively reach and influence adult smokers, with negative health effects messages having been found to be the most effective for increasing knowledge, and changing attitudes and behaviour (Durkin et al., 2012). Furthermore, emotive personal testimonials have been found to be the most powerful for influencing intention to quit (Farrelly et al., 2012).

Evidence regarding the effectiveness of mass media and social marketing campaigns in reducing smoking rates among Indigenous Australians is limited. There is however good evidence that these campaigns work in the same way as in mainstream society, by impacting on awareness of risk, and attitudes about smoking. High levels of recall around the key messages of mainstream mass media campaigns have been demonstrated in Indigenous Australians (Ivers et al., 2005), although the self-reported cessation rates of those exposed to these adverts was only 6%. In comparison, Ivers et al. (2005) found that individuals who did not recall seeing the adverts had a self-reported cessation rate of 10%.

Likewise Clifford & Parker (2014) demonstrated a positive change in attitudes for individuals who had seen The Deadly Choices <sup>™</sup> video campaign, although this was not significant for all types of media, with online messages having the most significant impact. This change in attitude was also associated with an increase in health service use, although this was measured at a generic level rather than smoking cessation services specifically. The study also found individuals who had seen the advertisements had an increased concern about their own smoking, not just on themselves, but also about the impact of smoking around others. The Deadly Choices Evaluation (Institute for Urban Indigenous Health, 2014) reported that perceived relevance is an important factor in successful advertising campaigns and this can help drive visits to health services. The campaign videos feature Indigenous Australian rugby league players, legends from the National Rugby League, and prominent local Indigenous community identities, which is believed to have contributed to their success.

Relevance is indeed key for engagement, and the context, characters and role models used in media communications must be authentic, if smokers are to connect to them. When the environment or context depicted in the media does not relate to smokers' self-perceptions, they may find it hard to

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recognise themselves in the advertisement and thus find it hard to engage. GKF & CIRCA (Ell et al., 2013) found that many smokers have become 'immune' to the 'shock' of 'graphic ads' that show disease imagery. Communications need to show smokers what it means (on a daily basis) to have the diseases associated with smoking. Guilt is a powerful emotion to instil in a smoker, but some smokers are resentful of the continual use of guilt in advertising.

GFK & CIRCA also suggest that Indigenous Australian smokers are at a different point in their journey compared to mainstream smokers. People are aware of health consequences of smoking and many are interested in quitting but lack support, information and skills. Furthermore, the high prevalence of smoking in indigenous communities acts as a barrier to quitting. Smoking is identified as a community or group activity and as such community based (as opposed to individual clinically situated) approaches to quitting are suggested to be the best way forward.

These findings are echoed by the evidence established by a recently completed national survey, 'Talking about the Smokes' (Thomas, 2014). This survey, which represents the voices of over 3000 Indigenous Australian smokers and non-smokers, found good knowledge about the health harms caused by smoking and second-hand smoke within this population. It is recommended that future activities need to reduce Indigenous Australian smokers' perceived social acceptability of smoking, while building on their negative personal attitudes to smoking.

One study that has demonstrated the impact of social marketing campaigns on smoking behaviour is 'The Tobacco Project' (Thomas et al., 2010). Communities were asked to prioritise and plan tobacco control activities from a list of possible community education and awareness-raising interventions, for which the Project was able to provide support. An overall reduction in daily tobacco consumption of 1.2% was found at the end of the project across all communities. Furthermore, there was a 5% reduction in tobacco consumption during the time when most of the project activity occurred, compared with the same time the year before. However, individual community reductions ranged from 1.4% to 10.6%, with two communities showing an increase in tobacco consumption. The communities where there was most success were those where stakeholders within the community had identified tobacco control as a priority, developed local strategies, and had a dedicated local workforce to deliver services. The importance of combining social marketing with activities which support behaviour change is clearly demonstrated by the fact that the community that had the biggest absolute reduction in tobacco use, showed the sharpest decline in consumption at the start of increased local tobacco control activity, including the employment of a public health nurse and tobacco community worker. Unfortunately, tobacco consumption returned to previously higher levels of consumption soon after the local activity and the Project ended. The successes of 'The

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Tobacco Project' therefore appear to have been underpinned by community readiness, engagement and strong local drivers of change, including cessation support. This impetus for change was however undermined by a lack of resources to sustain activities.

**Key message:** Social marketing and mass media can have a powerful impact on attitudes and beliefs about smoking, but messages need to have personal and cultural relevance to be effective. Changes in attitude brought about by social marketing can act as a precursor to behaviour change and this will be most effective where communities are actively driving tobacco control activities, and a local workforce is available to support individuals to quit.

Applicability to Indigenous Australians: A

#### 3. School-based interventions (3 studies)

Whilst school-based interventions are often seen as the principal approach to preventing uptake of risky healthy behaviours such as smoking in young people, the evidence regarding their effectiveness is mixed. Studies lack rigour, and few evaluate the long-term impact of these programmes; those that do, show little impact on smoking prevalence (Wiehe et al., 2005). However, in a recent analysis of reviews Flay (2009) argues that school-based interventions can be effective in both the short term and long term, particularly where programmes have an interactive delivery, include social influences, community components and peer leaders. Flay (2009) also recommends a duration of 15 or more sessions, and delivery at least up until the ages of 14 or 15 years. Furthermore, he highlights the importance of cultural sensitivity; recent evidence from Canada suggests that including culturally appropriate activities can make the message more effective (McKennitt et al., 2012).

Evaluation of school-based tobacco prevention and cessation programmes targeting Indigenous Australian students reflect some of the same limitations as mainstream studies. According to Power (2009), studies are generally small-scale and often only partially implemented. Evaluation is also limited, and usually qualitative in nature; Power's review found one evaluation of a school based intervention (Gray et al., 2002), which had methodological problems and so was unable to report any quantitative findings. The study did however report increased student self-esteem based on the qualitative data that was collected.

Two studies considered school based health education activities, both located in Queensland. One, the 'Smokin' No Way' programme (Campbell et al., 2014) was designed as part of a multi-component

community intervention in remote northern Queensland. However, as the school education programme was never implemented as intended, it is difficult to attribute any changes in smoking behaviour within the community to this aspect of the project. In contrast, The Deadly Choices<sup>™</sup> programme (Malseed et al., 2014) is a successful school-based chronic disease promotion and education programme that encourages Indigenous young people to be positive role models, influencing health and lifestyle choices made by family and friends. Since 2010 this programme has been delivered to more than 250 Indigenous students across 20 schools and training centres throughout South East Queensland. The programme is accompanied by a video campaign the positive impact of which was discussed under 'Social marketing'. The programme was found to have a positive impact of risk factors such as smoking, drinking alcohol and poor nutrition.

**Key message:** School based programme can change attitudes to smoking. Programmes are most effective for where they encourage active leadership from young people and are supported by community-wide initiatives.

Applicability to Indigenous Australians: D

#### 4. Pharmacological interventions (6 studies)

The effectiveness of commonly used pharmacological smoking cessation therapies such Nicotine replacement therapy (NRT) bupropion and varenicline is well established in the mainstream literature. For example a recent Cochrane review and meta-analysis of international studies, showed that all can increase the odds of smoking cessation, with the most significant advantage provided by varenicline (Cahill et al., 2013). No difference in effectiveness was found between types of NRT administration (patches, gum and so on), however a combination of different NRTs is more effective than single formulations and provides the same level of advantage as varenicline.

A number of studies have examined the extent to which NRT (particularly if subsidised or provided cost-free) is an effective smoking cessation intervention for Indigenous Australians. Whilst studies used the most rigorous method for clinical testing, the randomised control trial (RCT), they do tend to be limited by small participant numbers. For example Ivers et al. (2003) attained a 6 month quit rate of 10% among participants through administration of free nicotine patches to Indigenous people who were also receiving a brief intervention. Whilst this is lower than quit rates achieved in NRT interventions within the broader population, where quit rates between 15-19% have been reported

(Ellerman et al., 2012), it is higher than the quit rate lvers et al. (2003) reported for brief interventions alone (less than 2%). However these findings lack statistical power, with only 34 individuals completing the NRT intervention arm and 59 the control intervention. Furthermore 38% of participants reported being less ready to quit after trying NRT, compared to 29% reporting being less ready to quit following brief intervention only. Ivers et al. (2003) suggest that the programme would have been more effective if it was delivered in a community rather than a clinical setting, as participants would have felt more comfortable.

However, quit rates remain low (6% and 9%) in studies using accessible community based settings to provide high intensity counselling and free NRT (Mark et al., 2004; DiGiacomo et al., 2007). These results (which again rely on small numbers) are thought to reflect the social difficulties which inhibit quit maintenance in Indigenous Australian communities; according to DiGiacomo et al. (2007) relapse was usually precipitated by moderate to major life stressors as measured by the Social Readjustment scale (Holmes and Rahne, 1967). However, in contrast to Ivers et al. (2003), Mark et al. (2004) did not report any negative impact on attitudes to quitting at the end of the programme. Most participants had reduced their smoking by the end of programme, 82% had attempted to quit and the majority reported feeling more confident to try to quit again in the future.

One study (Adams et al., 2006) did report quit rates comparable to mainstream levels (19%), however as with other studies in this area the findings lack statistical power since the actual numbers involved are small (6 successful quitters). Furthermore 19% reflects the end of programme quit rate, with no medium to long term follow up data provided.

Following observations of the delivery of tobacco control interventions in three remote Northern Territory communities, Johnston & Thomas (2010) note that NRT may well work in this population, but compliance is an issue for a number of reasons including: time taken for NRT supplies to arrive in remote areas, individuals running out of patches because they share with other family members, and cost. However, observation of the successful delivery of NRT in one community by a public health nurse showed how compliance improves when regular support and counselling is provided: NRT was supplied in one week blocks with face-to-face follow-up every week at the client's home.

**Key message:** Although the evidence is limited, NRT, particularly if free or subsidised seems to increase quit rates in this population, although not to the same level as found in mainstream studies. This may be because of poor treatment compliance; focusing on increasing concordance and providing appropriate regular support may help improve quit rates.

Applicability to Indigenous Australians: A

#### 5. Brief intervention (6 studies)

Brief intervention is accepted as an effective population approach which increases quit rates in motivated individuals (Lancaster et al., 2000). Unassisted quit rates are assumed to be around 2-3% in the general population, and brief intervention is thought to increase this to 3-6% (Stead et al., 2008). However, whilst brief interventions can be important for prompting people to decide to attempt a quit, there efficacy is improved when combined with other interventions such as behavioural support, NRT and so on (Aveyard et al., 2011).

Similar cessation rates have been found for brief interventions used within the Australian Indigenous population; in a critical review of smoking cessation interventions, Clifford et al. (2010) found quit rates following brief intervention were 6% at three months (Johnston et al., 1998). However, Panaretto et al. (2010) found significant variation in use of brief intervention for different risk factors, although brief intervention for smoking was perceived as the easiest to apply. This suggests that brief intervention may not always be applied by health practitioners; this has also been noted in mainstream studies, with reasons for not using a brief intervention including lack of time and fear of alienating patients (Aveyard et al., 2011).

In addition, specific barriers to the use of brief interventions with Indigenous Australian clients have been demonstrated. These include the high rate of smoking among Aboriginal Health Workers themselves, preconceived judgements by health workers that individuals will not be able to quit (Johnston & Thomas, 2010) and cultural tenets which value autonomy and seek to avoid confrontation (Powers et al., 2009). Such cultural beliefs are particularly important, as they mean that brief intervention is often seen to be inappropriately telling people how to behave. In response to this, the Queensland Government developed a brief intervention training program - "SmokeCheck" for Aboriginal Health Workers and other health professionals who work with Indigenous Australian health clients and communities. "SmokeCheck" addresses some of these barriers, by providing culturally sensitive materials and approaches for brief intervention. In so doing, it increases health workers ability to feel confident that they are delivering key tobacco information in an appropriate way, and assures them that delivering such advice is an important part of their role (Queensland Health, 2006). Pre- and post- evaluation of clients seen by health workers who had been trained using 'SmokeCheck', compared with a control group of clients who received no brief intervention, found 'SmokeCheck' to be effective in increasing clients' motivation to guit smoking and reducing daily cigarette intake (Queensland Health, 2006). 'SmokeCheck' has also been adopted in New South Wales, where an evaluation of the impact on health workers demonstrated a significant

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increase in confidence when talking about health issues, offering quit advice, assessing readiness to quit and initiating a conversation about smoking (Hearn et al., 2011). Furthermore, participants also reported offering more advice about NRT and reducing tobacco use after training, suggesting a change in behaviour as well as confidence. In contrast a recent study which included 'SmokeCheck' training as part of a multi-component community project, found that whilst health workers spoke positively about the training, no-one implemented the intervention as they had been shown. Rather they adapted their approach using only some of the components (Campbell et al., 2014). No evidence was provided regarding how this affected client responses to the intervention – it may have been that these adaptations were appropriate responses to individual need. Alternatively they may have reflected limited skills on the part of the health worker.

**Key message:** Brief interventions are effective in Indigenous Australian populations if applied consistently, and with culturally sensitivity. The effectiveness of brief interventions will be enhanced when combined with other therapies such as NRT.

Applicability to Indigenous Australians: A

#### 6. High intensity counselling (1 study)

Behavioural counselling is well established as an effective support mechanism for individuals wishing to quit smoking, although no advantage has been found for intensive counselling over low intensity interventions (Lancaster & Stead, 2008).

We found one evaluation of an Aboriginal delivered intensive programme - 'Be Our Ally Beat Smoking' (BOABS). This RCT demonstrated that intensive counselling, provided in addition to usual care (quit advice, pharmacotherapy, and self-initiated follow up) can double quit rates in this population, raising it to around 12% (Marley et al., 2014). This effect was found despite the intervention being implemented with less intensity than originally planned. Unfortunately this study, like other RCTs reported in this review was statistically underpowered, with only 95 participants randomised to usual care and 49 to intervention. Differences in intervention and usual care were not significant. Marley et al. (2014) provides a number of reasons why people chose not to participate in the study, despite wanting help to quit. In the main these related to the consent and randomisation processes. As Marley et al. (2014) note, this suggests that RCTs, whilst often lauded as the gold standard for research evidence may not be the most effective way of gathering evidence in this population. Given the nature of behaviour change interventions, complex intervention methodology

such as a stepped wedge design (Brown & Lilford, 2006), or non-RCT approaches may well be more appropriate.

**Key message:** Although the evidence is limited, Intensive counselling does seem to increase quit rates in this population.

Applicability to Indigenous Australians: A

#### 7. Quitlines (0 studies)

Telephone based tobacco cessation services, or Quitlines, have become central components of many comprehensive tobacco control programmes (Anderson & Zhu, 2007). Quitlines are popular because they are an efficient, easy to access and cost effective means of delivering evidence based treatment, support and information to large numbers of tobacco users.

No published studies on the effectiveness of Quitlines for Australian Indigenous smokers were identified in this review. Power et al. (2009) identified a 2002 study from the Department of Health and Aging on the barriers to accessing smoking cessation programmes for at risk populations. This indicated that Indigenous Australians may be reluctant to use mainstream Quitline because of a perception that non-Indigenous counsellors would be unable to relate to them, or that they would talk down to them. According to Power et al., Quit Victoria has attempted to overcome this by providing cultural awareness training to Quitline counsellors and publicising the Quitline to Indigenous communities, along with reassurance that Quitline counsellors have received some training.

Furthermore, since 2010 the Department of Health has provided funding to seven regions including Victoria<sup>3</sup> to enhance the capacity and knowledge of Quitline counsellors so as to enable them to deliver appropriate and culturally sensitive services to the Indigenous Australian population. The intention was also to develop partnerships with Indigenous communities to promote and encourage use of Quitline services. Reports from the organisations commissioned to undertake this work indicate that this attempt to build capacity has been effective, with most staff having undertaken training, and an increase in referrals to Quitline (both self-referrals and referrals by agencies) being seen across sites. However, whilst up take of services has clearly benefited from this approach, the evidence to support the effectiveness of Quitline for supporting cessation attempts in this population is still lacking.

<sup>&</sup>lt;sup>3</sup> Other regions funded are: Northern Territories, New South Wales, Southern Australia, Western Australia, Queensland and Tasmania

**Key message:** We found no evidence to support or contest the relevance of Quitlines for this population. Since brief intervention provided face-to-face is as effective in this population as it is in mainstream populations, there is no reason to believe that culturally sensitive Quitlines would not be effective.

Applicability to Indigenous Australians: B

#### 8. Interventions for pregnant women (2 studies)

Pharmacological interventions such as NRT are usually not advised during pregnancy, particularly as the evidence is unclear as to whether or not NRT is effective or safe when used in pregnancy (Coleman et al., 2011). Mainstream evidence does however suggest that low intensity cessation counselling delivered by a trained provider, along with the provision of pregnancy specific self-help materials, significantly increases smoking cessation rates amongst pregnant smokers (Melvin et al., 2000). However, a recent Cochrane review demonstrated that whilst quit rates are increased with brief interventions, by far the most effective intervention was the use of financial incentives, which helped around 24% of women to quit smoking during pregnancy (Lumley et al., 2009).

There is similar evidence that quit-support and brief interventions for women who are pregnant are effective with Indigenous Australian women (Power et al., 2009), whilst the addition of intensive NRT for pregnant women who have had two failed quit attempts does not appear to increase cessation (Eades et al., 2012). However, there may be limitations to such programmes given that a large number of Indigenous women do not seek antenatal care in the first trimester (Power et al., 2009). A qualitative study by Wood et al. (2008) provides some context around the impact of circumstantial factors which influence smoking maintenance, showing that smoking cessation even in pregnancy was not a priority for most Indigenous Australian women, given the considerable social and economic pressures that they face in their lives. Furthermore, the risks of smoking in pregnancy do not always seem to be understood; women may even believe that quitting when pregnant is bad for the baby. Smoking in pregnancy may even be sustained by socio-cultural norms and family influences (Gould et al. 2013). Gould notes that quitting is perceived as hard and despite strong protective attitudes for the foetus, continued smoking may be rationalised as a necessary response to life stressors.

This suggests a need for greater awareness arising around the problems which smoking in pregnancy can cause. This was the purpose of the 'Quit for You Quit for Two' campaign undertaken as part of the National Tobacco Campaign - More Targeted Approach (2011-2013). An evaluation of

the impact of the campaign demonstrated increased awareness of the issues related to smoking in pregnancy of similar levels in mainstream and Indigenous Australian groups (ORIMA, 2013). Furthermore, self-reported attempts to quit/cut down were high in those exposed to the advert (48%), whilst 72% reported that they were planning to take further actions in the next month as a result of exposure to the campaign.

In the absence of evidence for effective interventions, Gould et al. (2014) propose a pragmatic approach to addressing smoking in pregnant Indigenous Australian women. Gould and colleagues note that despite limited research in the field, some experts have concluded that low dose intermittent NRT is safer than continuing to smoke in pregnancy (e.g. Bittoun & Femia, 2010). They therefore recommend that, although an initial pharmacotherapy-free attempt should be made, if abstinence is not realised in the first few days, the woman should be offered accelerated NRT. The offer of NRT would therefore come much sooner than in the trial described above by Eades et al. (2012), where NRT was only suggested after 7-10 days of failed pharmacotherapy free quitting. Gould et al. advise starting with oral forms of NRT, but if this is not effective, progressing to nicotine patches, or if necessary combined therapy (i.e. patches plus oral forms). Counselling should also be offered for at least 12 weeks to help women cope with quitting, set appropriate goals, and increase feelings of self-efficacy. Support should also continue post-partum to enable the woman to maintain her smoke free status. Gould et al. also advise providing counselling and cessation support to partners and family, and linking the woman in with other support that is available either from the community, Aboriginal Medical Services, or even social media such as the Quit for You, Quit for Two mobile device 'app'.

**Key message:** Brief interventions can be an effective approach to quitting in pregnancy, however awareness of the impact of smoking in pregnancy needs to increase if quit rates in this group are to be improved. There is some evidence that targeted social marketing does change attitudes and intention to quit in this group.

Applicability to Indigenous Australians: A

#### 9. Strategic level multi-component interventions (3 studies)

#### Indigenous Chronic Disease Package

Under the National Partnership Agreement (NPA) on 'Closing the Gap in Indigenous Health Outcomes', the Australian Government funded the Indigenous Chronic Disease Package (ICDP) (2009-2013) to tackle chronic disease among Indigenous Australians. The ICDP comprised 14 different measures across three priority areas:

- A. Tackling chronic disease risk factors;
- B. Primary health care services that deliver through earlier detection, improved management and follow-up of chronic diseases;
- C. Improving the patient journey by expansion of the Indigenous Australian workforce and increasing the health workforce capacity to deliver effective care.

Of particular relevance to this review is the first priority listed here, which included three measures: National action to reduce smoking rates (A1); action to reduce risk of chronic disease (A2); and local community campaigns (A3).

The A1 and A2 measures aimed to reduce the incidence and impact of chronic disease risk factors in Indigenous Australians by engaging communities through social marketing and community based activities which focus on smoking cessation and healthy lifestyle choices. A1 and A2 measures had four key components:

- Research into culturally appropriate tobacco control social marketing and communication strategies for Indigenous Australians;
- Regional Tackling Smoking and Healthy Lifestyle (RTSHL) teams who were expected to deliver a variety of smoking cessation and healthy lifestyles activities and develop links between community members and relevant local health services;
- Programme supports for RTSHL teams, which included access to a special community project fund, and a resource kit with information on health promotion and smoking cessation activities;
- National-level supports and activities for smoking prevention and cessation such as support from the National Tackling Smoking Co-ordinator, smoke-free work place policies for Aboriginal Health Services (AHSs), and national media campaigns such as 'Break the Chain'.

The A3 measure funded a series of locally generated and delivered health promotion initiatives which aimed to encourage Indigenous Australian communities to adopt sustainable healthy lifestyle choices and increase their use of primary care services. The A3 measure had three key components:

- Research to inform the design of the local community campaigns;
- Grants to support the implementation of these local (or regional) community campaigns;
- A national support strategy comprising the 'Get Active, Eat Good Tucker, Live Longer!' Website, a Community Health Action Pack, and local 'Health Community Day' events

We reviewed three evaluation documents provided by the Australian Government Department of Health detailing evaluative data on the effectiveness of this initiative each of which are reviewed below (KPMG, 2013; KPMG, 2014; Bailie et al., 2013). These evaluation documents suggested that 215,342 Indigenous Australians have benefited from the ICDP, with 75 diverse local level community campaigns established across Australia, targeting a broad range of audiences and reaching approximately 200 communities across the country. In addition, by 2012 154 RTSHL team staff had been recruited. At least 12,240 individuals were reported to have participated across the 75 local community campaigns, which does not account for broader reach from media and communications-style campaigns that broadcast health messages via television or radio.

#### **Evaluation and monitoring of ICDP by KPMG (2013, 2014)**

The evaluation of A1 and A2 impacts showed that staff employed within the RTSHL teams had improved knowledge and skills relevant to their roles, having engaged in training, although access to opportunities for workplace development varied across sites. However in the main, workers were delivering appropriate community based activities, although community awareness of the RTSHL teams and their role was still developing during the evaluation period; lack of recognition of teams may also have been because teams promoted the programmes they were running, rather than themselves. However it was suggested that the new workforce had increased the capacity of host organisations to support individuals at risk of chronic illness. The greatest challenge to teams for delivering services and developing community links appeared to be around the size of some of the regions, particularly in remote and rural areas.

The evaluation did not identify a change in communities understanding of the health risks associated with smoking and the benefits of a healthy lifestyle; it appeared that a general level of understanding of the dangers of smoking and the benefits of healthy lifestyle already existed within communities prior to the introduction of RTSHL teams. However, an increased understanding of the resources available to support smoking cessation and healthy lifestyle choices was demonstrated. Increased access to Quitline, engagement with mainstream GP services, and the use of pharmacological interventions to support smoking cessation was also noted during the evaluation period, although it is difficult to assess the extent to which RTSHL team activities had caused these changes. It was however apparent that teams had been able to develop successful partnerships with other community organisations (e.g. social services, schools) and with other teams within their own organisation (e.g. 'drugs and alcohol', 'mums and bubs'). There was also some indication that people were reducing their level of smoking and adopting healthy lifestyle choices, although the extent of this varied across sites.

The capacity of RTSHL teams to drive the demand for culturally safe smoking cessation and healthy lifestyle support services differed across sites. Evidence from the KPMG evaluation suggests that fully realising the potential of these teams to deliver evidence-based and locally relevant activities would require a greater focus on providing strategic and practical support to develop the skills and capabilities of this new workforce. Furthermore some host organisations focussed on local issues and found it challenging to build a regional focus for health promotion. Increased awareness of the risks of smoking and motivation to quit were however leading to increased demand for individualised support for quit attempts. Recording of smoking status in clinical information systems would be an important step in the implementation of brief interventions and support to quit.

Evaluation of the A3 local community campaign impacts suggests that all aspects of this measure were successfully implemented. The evaluation found good engagement by communities in the activities that were delivered, and the majority of campaigns (70%) reported increased community awareness, knowledge and understanding of risk and benefits of lifestyle choices (although only 10% of stakeholders were able to support this with systematic data collection). However, as multiple programmes were operating in some sites, it was difficult to determine the extent to which the local community campaigns had caused these changes. Qualitative evidence however, indicated that the local community campaigns helped participants to make healthy lifestyle choices, and made progress in building the capacity of community organisations to continue working with individuals to achieve long-term health outcomes. Media and communications-style campaigns were also found to be effective for information dissemination and raising the awareness of the benefits of a healthy lifestyle, although impact on behaviour was not reported. Those campaigns that included a 'pull through' strategy, which connected participants to a service, or organisation that they could access for assistance with improving their health, may have greater potential to connect with and assist individuals than broad media campaigns.

The key challenges that faced local community campaigns included timeframes that made it difficult for some campaigns to generate the momentum required to sustain their activities. In addition the ambitious nature of some campaigns led to unrealistic expectations and thus required organisations to rethink their strategies. Finally, organisational capacity to recruit staff and provide the administrative support required varied across campaigns.

Future strategies should consider the following design factors for individual local community campaigns, which may be critical to the potential longer-term success of this approach:

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- Developing follow through strategies as part of the design of social marketing campaigns to enable participants to be supported in the long term, such as linking them to a primary health care service or linking them to RTSHLTs;
- Building in sustainability measures to enable community organisations to continue beyond the funding period (albeit in limited form without on-going funding);
- Networking locally and across the community to enhance the value of any one campaign and expand the reach of the campaign to a broader audience;
- Promoting local learning and enhancing local governance through self-evaluation as an integral part of local campaigns.

#### Sentinel Sites Evaluation (Bailie et al., 2013)

The Sentinel Sites Evaluation (SSE) was commissioned by the Australian Government Department of Health and Ageing to support and refine the implementation of the Indigenous Chronic Disease Package (ICDP) (2010-2013) and to identify challenges and innovations in the programme.

The SSE reported on the implementation and progress of the ICDP in 24 Sentinel Sites (4 remote, 12 regional, 8 urban). Over 700 interviews were completed with key informants, 72 community focus groups were conducted with a total of 670 participants, and 41 Health Services provided clinical indicator data. RTSHL teams had been established across the majority of Sentinel Sites and almost all teams were based in AHSs. Implementation of the different elements of the measures varied across Sentinel Sites. This variation in progress with implementation was due to a complex mix of local, regional and national influences, some of which vary over time.

Overall the SSE reported successful implementation of the ICDP, resulting in:

'A workforce with skills and capacity, and systems and services with capacity to improve access to, and delivery of, high-quality services and programs for prevention and management of chronic disease for Aboriginal and Torres Strait Islander people.' (Baille et al., 2013, p.16)

RTSHL teams were established across the majority of sites, typically being based in AHSs. A high level of engagement was shown by the teams in various training activities funded through the measure and considerable activity in the development and distribution of toolkits and resources to support the workforce in their roles. There was increasing awareness of the teams over the course of the SSE, and the design and delivery of programmes and services gained momentum.

Increasing awareness of grant funding availability to support local community campaigns was noted, with perceptions of Healthy Community Days being generally positive (this was attributed in part to

existing high levels of community awareness regarding risk factors for chronic illness). The extent to which the goal of developing and delivering locally generated campaigns, including Healthy Community Day events, could be achieved was influenced by organisational characteristics, particularly the capacity to engage with the grants programme and national support strategies, and to develop and implement programmes.

Despite variation across sites in terms of the uptake of measures under priorities B and C, interest in measures such as the Pharmaceutical Benefit Schedule (PBS) Co-payment and adult health assessments exceeded expectations. The SSE found that the ICDP ran most effectively in sites where a systems approach to developing and engaging the health workforce was operating. Taking a systems approach means that workforce development and engagement are considered as part of a whole-of-service system response to providing improved chronic disease services to Indigenous Australians. The evaluation reported that the greatest potential gains are likely to be made in:

- enhancing the practice of the existing workforce and the capability of less capable services
- strengthening evidence-based practice in prevention and health promotion
- strengthening evaluation and effectiveness of local health promotion initiatives

There was a general lack of adequately developed local evidence-oriented monitoring and evaluation systems to support preventive and health promotion programmes. Consequently there was a lack of quality data on activities and processes, and on the extent to which these were consistent with evidence-based practice.

Efforts to strengthen the primary health care system should be based on best local and international evidence. A critical requirement for ongoing implementation of programmes to enhance chronic illness care is to build a stronger systems-orientation and population health perspective in the organisation and operation of Health Services and programs. The re-orientation of Health Services and systems development that is needed to achieve demonstrable impact at the community and population level will take sustained attention.

#### 10. Community level multi-component interventions (2 studies)

Two studies fitted this category. The first of these, the Indigenous Healthy Lifestyles Project (IHLP) was a community based, bespoke programme combing screening for diabetes and cardiovascular disease with smoking prevention and cessation activities (Larson, 2010; Cargo et al., 2011). The project integrated existing relevant activities and aimed to build local capacity. This flexible model of

supporting community-based projects is reported to have successfully enabled communities to adopt healthy behaviours, this being achieved through project workers with good community relationships. Evidence of change was revealed through stories demonstrating positive changes resulting from people having the confidence to take control of their health (Larson, 2010).

According to Cargo et al. (2011) one of the important IHLP outcomes was the increase in organisational partnering seen over the three years of the project. The IHLP also provided lessons on how to deliver effective Aboriginal health projects and it is recommended that similar projects focus on:

- Effective governance, since without good processes projects have poor impact and outcomes. This includes ensuring the full support of senior management, commitment to a Reconciliation Action Plan, consultation with the Indigenous Australian community, and appropriate training for staff working with Indigenous Australians;
- Ensuring workforce development, clarity of roles, effective line-management and mentoring to enable Indigenous Australian project workers to work confidently and effectively;
- Good integration with other service providers to ensure health outcomes are not compromised by access to support for health behaviour change;
- Monitoring agreed outcome targets and project implementation through conversations between workers, other services and the community about what worked, what did not work and what should be done next. Strategic plans and monitoring tools should be avoided as they can be alienating for workers and are not associated with project success.

The second study in this category was focussed more specifically on tobacco control, but included six separate components some of which have already been discussed: a school-based education program 'Smokin' No Way', 'SmokeCheck" tobacco brief intervention training for health workers, assistance to develop workplace smoke-free policies, an Event Support Programme, a quit support group called 'Smoke Rings' and enforcement of tobacco sales legislation (Cambell et al., 2014). Unfortunately fidelity of programme delivery was poor for components. However, despite this the evaluation reported an impact on self-reported smoking prevalence in all five intervention communities. This was however only statistically significant in one of these intervention sites (decreasing from 75.5% at baseline to 49.3%). It should also be noted that a significant decline was seen in one of the control communities (from 51.4% at baseline to 35.2%). It is suggested that possible 'contamination' may have influenced results, as interventions such as the Event Support Programme and "SmokeCheck" brief intervention were available in communities allocated to the 'control' condition. Response bias may also be relevant here, particularly as it was likely that

interviewers knew respondents. However, it is also possible that findings reflect the study design; as there was no intention to explore the effectiveness of the intervention at the individual level; participants interviewed at follow-up were not necessarily the same as those interviewed at baseline.

#### 11. Interventions promoting physical activity

Baker & Costello (2014) identified 11 broad types of intervention within mainstream research which focused on increasing physical activity in adults and children. However, they found insufficient evidence of effect for a range of these interventions, with some approaches consistently failing to show an increase in physical activity. In particular, they cite a lack of evidence that population level interventions are effective, noting that the data around community approaches is inconsistent and relies primarily on small, poorly designed studies. Those studies that are more rigorous (e.g. RCTs) tend not to demonstrate an intervention effect.

Despite the general lack of evidence around population level interventions, one approach which often uses community based implementation was found to have a 'significant and clinically relevant "medium" positive effect' (Baker & Costello, 2014, p. 11) at 12 month follow up. This was the promotion and organisation of people to walk in groups (with trained leaders). Interventions targeting older adults were found to be more effective than those targeting individuals under the age of sixty. For example, one study conducted in Australia with older adults significantly increased the amount of physical activity being undertaken by participants in the 30 neighbourhoods where the intervention was implemented, compared to 30 control neighbourhoods (Jancey et al., 2008).

However, the most successful approaches reviewed used individual level interventions based on the theory of implementation intentions (Sheeran et al., 2005). In these 'intention interventions', programme staff help participants to plan physical activity into their daily lives, supporting them to decide when, where and how to do activities (see Hobbs et al., 2013 for a review of programmes using this approach). Focusing on implementation intentions is thought to be effective because it enables individuals to develop an action plan that takes their situational context into account, identifying opportunities to act which overcome competing goals, bad habits, and possible tempting distractions. However, Hobbs et al (2013) note that whilst this approach was effective at 12 month follow up, no significant positive effect was seen beyond this time point. There is therefore some uncertainty regarding the possible maintenance of any changes in the longer term.

According to Baker & Costello (2014), primary care appears to be a useful setting to promote physical activity in sedentary adults, although exercise referral schemes do not appear to be effective (Orrow et al., 2012). For children, schools provide the best setting for increasing children's physical activity level. Providing tailored activity sessions which are theoretically grounded (e.g. use

of behavioural modification) increases children's activity levels and this change may be maintained post intervention (Lai et al., 2014).

It is clear from the synthesis of evidence provided by Baker & Costello (2014) that information relating specifically to the application of physical activity interventions in Indigenous Australian populations is lacking. Although some of the studies in the successful interventions considered by Baker & Costello (2014) were carried out in Australia, none described participant ethnicity. Furthermore, the one review that focused on cultural adaptations reported on studies conducted in the United States of America, and did not detect any effect in physical activity levels (Nierkens et al., 2013).

**Key message:** For adults, individual level interventions which focus on participant's intention to implement physical activity appear to be the most effective for changing behaviours, although the impact of community based walking groups for older adults should not be discounted. For children, theory based interventions seem to deliver the most sustained effects. Whilst this evidence comes primarily from mainstream settings, there is no evidence to suggest these approaches would be any less effective in Indigenous Australian populations.

Applicability to Indigenous Australians: B

## 12. Interventions promoting nutritional health

In relation to the promotion of nutritional health, Baker & Costello (2014) identified eight broad intervention types within mainstream research. Of these, the approach that was found to be most effective for improving adult diets was tailored nutritional education. This approach can increase fruit and vegetable intake, and decrease fat intake in adults, and also improve diabetes management (Eyles & Mhurchu, 2009; Pérez-Escamilla et al., 2008).

In addition, lifestyle interventions including the following features (Dunkley et al., 2014) were found to be effective for achieving weight loss:

- Promotion of changes in both diet and physical activity;
- Use of established behaviour change techniques such as goal setting, self-monitoring, motivation, self-talk, and tailoring;
- A person-centred empathetic approach;
- Promotion of social support, using a group size of less than 15;
- Intervention period of at least 9 18 months;
- Provision of at least 16 hours contact time in the initial 18 months;
- Provision of information on benefits of lifestyle changes, reinforcement of participants' reasons for wanting change, building confidence (self-efficacy);

• A logical sequence of intervention methods (motivation, action planning, maintenance).

Among children, multi-strategy lifestyle interventions appear to be effective for preventing unhealthy weight gain in general child populations (Waters et al., 2011), and for reducing cardio-metabolic risk factors in overweight children (Ho et al., 2012). The evidence points to the value of school based interventions which comprise:

- A curriculum that includes healthy eating, physical activity and body image;
- Increased sessions for physical activity and the development of fundamental movement skills throughout the school week;
- Improvements in nutritional quality of the food supply in schools;
- Environments and cultural practices that support children eating healthier foods and being active throughout each day;
- Support for teachers and other staff to implement health promotion strategies and activities (e.g. professional development, capacity building activities);
- Parent support and home activities that encourage children to be more active, eat more nutritious foods and spend less time in screen based activities.

Published evidence concerning the effectiveness of these nutritional health interventions for Indigenous Australian populations is limited. Whilst positive effects were found for tailored education within priority ethnic groups (Pérez-Escamilla et al., 2008), this study did not include Indigenous Australians. However, one of the lifestyle intervention studies (Payne et al., 2008) was conducted in Australia, and included Indigenous Australians. Whilst the study findings are not differentiated by ethnicity, there is no reason to believe that outcomes differed for these participants compared to other Australians.

**Key message:** For adults, tailored nutritional educational interventions appear to be the most effective for changing eating behaviours; for promoting weight loss, programmes combining nutrition and physical activity are recommended. For children, school based multi-component interventions are most effective. Whilst this evidence comes primarily from mainstream settings, there is no evidence to suggest these approaches would be any less effective in Indigenous Australian populations.

Applicability to Indigenous Australians: B

## 4. What is the quality of the evidence available?

Using NHMRC guidelines (1999), the quality of the quantitative evidence presented cannot be rated above III-3. However, the appropriateness of applying NHMRC levels of evidence to population health interventions such as those presented here has been questioned (Power et al., 2009). The 'gold standard' of evidence according to these guidelines concerns the meta-analysis of RCTs,

however RCTs are rarely feasible in a public health setting, making attainment of this gold standard somewhat challenging. Furthermore, research studies that focus on Indigenous Australian smoking and healthy lifestyle interventions are still few in number, and rarely use RCTs; thus there is insufficient data available for a meta-analysis.

RCTs are most applicable in this area where they concern clinical practices such as brief intervention or NRT. A number of RCTs were considered in this review, however the majority suffered limitations of statistical power due to small numbers of participants being recruited to trial. The small numbers may well reflect distrust of research processes (Marley et al., 2014), suggesting alternative approaches to gathering data may be necessary. Other areas of research such as that undertaken around the impact on attitudes and behaviours of legislative practices, social marketing, and school or community based interventions, can often at best only use evidence from historical controls (NHMRC evidence level III-3) for quantitative studies because of their design. However this does not mean that research has been conducted without rigour. Thus the low ratings do not necessarily reflect poor quality studies, but rather the application of research methods which are appropriate to public health interventions.

Not surprisingly, complex multi-component interventions require complex evaluation strategies. Thus the ICDP Monitoring and Evaluation Framework used a programme logic structure for the ICDP as a whole and for the individual measures that link programme inputs and activities to expected outcomes. The Framework acted as an overarching guide for ICDP monitoring and evaluation activities. The Sentinel Sites Evaluation provided formative and summative place-based evaluation to understand variation in ICDP implementation at the local level. The ICDP National Monitoring and Evaluation project complemented the place-based approach of the Sentinel Sites Evaluation and helped to provide an integrated, national perspective on the implementation and impact of the ICDP. Qualitative case studies, programme documentation, and interviews with grant recipients were also collected as part of the evaluation. The quality of this evidence was rated highly (I and II) using the Daly et al. (2007) evidence levels.

In contrast the sentinel sites evaluation used place-based monitoring and formative evaluation. Both quantitative and qualitative data were collected, analysed, interpreted and fed back in five six-monthly cycles, with each round of data collection, analysis and interpretation informing the next. Unfortunately a general lack of adequately developed local evidence-oriented monitoring and evaluation systems to support preventive and health promotion programmes resulted in a lack of quality data on activities and processes, and on the extent to which these were consistent with evidence-based practice.

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#### 5. Summary and Conclusion

Research conducted by GFK & CIRCA (Ell et al., 2013) found that the smoking environment has changed substantially over recent years with new legislation relating to where people can smoke, the plain packaging of tobacco products, price increases, and increased health messaging and health warnings. Evidence concerning whether or not this has led to smokers feeling persecuted and becoming more defensive, is mixed. GFK & CIRCA, for instance, report that although smokers are feeling more knowledgeable about the impacts of smoking, this can be a barrier to continued engagement with messaging as they feel that they 'know everything'. Other studies (e.g. Thomas et al., 2010, Robertson et al., 2013) are able to demonstrate a clear link between health messages, negative attitudes to smoking, and increased promotion and maintenance of smoke-free areas both at home and in the wider Indigenous Australian community.

However, as GFK & CIRCA's research demonstrated, whilst there are a myriad of motivations to quit, in the main, no single or universal reason prompted Indigenous Australian smokers to 'choose' to quit. Smoking, like other health risk behaviours, is maintained by a complex interwoven set of biological, social, cultural and psychological determinants. Decisions to guit are therefore as complex as the motivators of uptake and maintenance, and the mechanisms to effect change will, by necessity be multi-faceted and focused at all levels - social, psychological and biological. Socioecological models can provided a useful guide for tobacco control programmes, and have shown that individual level interventions alone are less effective than those which include population level strategies which aim to alter socio-political norms around tobacco use (Kothari et al., 2007). The evidence identified in this review indicates that multi-level approaches to tobacco control are likely to be most effective for reducing smoking prevalence in Indigenous Australian communities. Thus programmes such as the ICDP which include targeted, culturally sensitive social media campaigns and community designed educational activities, can influence individual attitudes and social norms. This will in turn lead to more smoke-free environments and to demands for individual support to guit. In communities, formal and informal policies to ensure smoke-free environments within local organisations and businesses can also be effective, but only where these are developed with the active participation of community members to ensure local ownership and enforcement. Support at the individual level should include access to behavioural and pharmacological therapies, provided by a local workforce trained in culturally sensitive interventions. High intensity counselling and brief interventions are supported by the evidence presented here, as is the use of NRT.

Evidence is more limited around three areas: school based interventions, Quitlines and pricing increases. Evidence to support school based interventions is mixed in mainstream literature, and at

present there is little evidence to suggest that such interventions are any more effective for behaviour change in Indigenous Australian populations. However, there is evidence from one study that attitudinal change – which can be a precursor to behaviour change – does result from involvement in the Deadly Choices programme. Quitlines however, have been found to be very useful support mechanisms for smoking cessation in mainstream populations. Given that the support provided is based on the same principles as brief intervention which has been shown to be as effective in the Indigenous Australian populations as in mainstream populations, there is every reason to expect that with the appropriate changes to ensure cultural sensitivity in approach, Quitlines will be a useful addition to smoking cessation provision for this population. Finally the impact of pricing increases based on tax rises has been shown to influence purchasing behaviours both in mainstream and Indigenous Australian populations. What is less clear (in both populations) is what the implications of these changes are for consumption. More research is therefore merited in relation to these three areas.

Finally, the evidence regarding the effectiveness of interventions to increase physical activity and improve nutritional health in this population is lacking. The evidence from mainstream research suggests that community walking groups may be useful for increasing physical activity in older adults; for younger adults individual programmes which focus on implementation intentions are indicated. For improving diet, targeted education is suggested, whilst programmes that tackle both physical activity and nutrition, and use approaches based on psychological theory of behaviour change, are recommended for weight loss. Multi-component school based programmes are suggested to be most useful for children, and can tackle both physical exercise and nutrition. Whilst these approaches have not been assessed in Indigenous Australian populations specifically, there is no indication that they would be any less effective than they are in mainstream populations.

#### 6. Limitations of the review

We undertook a rapid review of the literature in order to identify and summarise the published evidence surrounding the effectiveness of smoking and chronic disease prevention, and healthy lifestyle health promotion activities for Indigenous Australians. Although the review aimed to be rigorous, transparent and explicit in method, it must be acknowledged that this was not a full systematic review of the literature. Thus, whilst we are confident that our time limited search of the literature has accessed the majority of the available evidence, it is possible that some literature has been overlooked. However, our findings are consistent with similar recent systematic reviews on this same topic. Searching the literature between 2001-2007, Powers et al. (2009) found 14 studies directly concerned with smoking cessation interventions for Indigenous Australians. In comparison, this review, which covered 2004-2014 found 27 relevant studies.

A limitation in the available evidence should also be noted. A number of the studies presented here are small in scale and have been conducted in remote communities. The extent to which their findings are applicable to other setting is therefore unknown. Caution is therefore advised when determining policies to pursue in urban or larger rural communities where the social context can be different, and the services accessed by Indigenous Australians may be mainstream.

## 7. Recommendations for future action

- Build on the good work initiated by ICDP and other large scale multi-level programmes to continue reducing Indigenous Australian smokers' perceived social acceptability of smoking, while building on their negative personal attitudes to smoking;
- Build on the association between recall of culturally appropriate and personally relevant antitobacco advertising and wanting to quit among Indigenous Australian smokers;
- Build on Indigenous Australian smokers' success in making their homes, workplaces and communities smoke-free;
- Increase Indigenous Australian smokers' access to and use of stop-smoking medicines such as NRT and culturally appropriate support for cessation ;
- Continue to train clinicians in culturally appropriate brief interventions, encouraging health workers to continue asking Indigenous Australians whether they smoke and supporting them to quit;
- Continue to build local capacity and develop the local workforce;
- Continue to include communities in the design and delivery of programmes, championing active participation rather than just consultation;

- Support further research into the applicability of Quitlines for Indigenous Australians;
- Undertake more health related research into smoking control and healthy lifestyle promotion with Indigenous Australians, in order to develop the evidence base in this area.

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# Appendix 1: National Health and Medical Research Council levels of evidence scale (NHMRC, 1999)

Rating	Evidence
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
I	Evidence obtained from at least one properly designed randomised controlled trial
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
III-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies, or interrupted time series with a control group
III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case series, either post-test or pre-test and post-test

## Appendix 2: Hierarchy of evidence-for-practice in qualitative research – study types and levels (Daly et al., 2007)



## Appendix 3: Framework for Evaluating Tackling Indigenous Smoking & Healthy Lifestyle Programmes (Based on Glasgow et al., 2001)

Dimension	Questions to ask
Study design and methods	Qualitative or quantitative? Pre and post intervention or retrospective data collection? Action research, RCT, cohort study, case study, experimental, quasi experimental, survey (e.g. interview, questionnaire, focus group, workshop), observation? What was measured – e.g. physical health, behaviour, beliefs, attitudes?
Programme design	Individual, group or community approach? Mainstream or bespoke programme? Focused on screening, prevention, counselling, social marketing/ awareness campaign, health education, behaviour intervention, community action, policy intervention, pharmacotherapy, combination interventions, cessation or combined smoking and lifestyle?
Setting (clinical, community or policy)	At what level was the intervention targeted (commonwealth, state or territory/ regional/ local)? Was the programme integrated into routine clinical services (e.g. general practice, hospital and community health services) or delivered in the community (e.g. School, community centre)? Who were the workforce and what was their expertise? If clinical, were services AMS or ACCHS?
Reach (Individual Level)	Who were the eligible participants? What percent of potentially eligible participants a) were excluded, b) took part and c) how representative were they?
Efficacy or Effectiveness (Individual Level)	What impact did the intervention have on a) all participants who began the programme; b) on process intermediate and primary outcomes; and c) on both positive and negative (unintended), outcomes including quality of life?
Adoption (Setting Level)	What percent of settings and intervention agents within these settings (e.g., schools/educators, medical offices/physicians) a) were excluded, b) participated and c) how representative were they? Reach and uptake over time
Implementation (Setting/agent Level)	To what extent were the various intervention components delivered as intended (in the protocol), especially when conducted by different (non-research) staff members in applied settings? What were the costs and staff time commitments of the intervention?
Maintenance (Individual Level)	What were the long-term effects (minimum of 6-12 months following intervention)? b) What was the attrition rate; were drop-outs representative; and how did attrition impact conclusions about effectiveness?
Maintenance (Setting Level)	a) To what extent were different intervention components continued or institutionalized? b) How was the original programme modified?

## Appendix 4: Applicability to Indigenous Australians (Ivers, 2001)

Rating	Evidence
А	Good evidence of effectiveness in other populations and Indigenous populations
В	Good evidence in other populations and no specific evidence in Indigenous populations, but no reason to believe that the intervention would be less effective for Indigenous populations
С	Good evidence in other populations and no specific evidence in Indigenous populations, but reason to believe that the intervention may be less effective for Indigenous populations
D	Limited or no evidence in other populations and in Indigenous populations
E	No evidence of effectiveness in other populations or in Indigenous populations