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# Addressing high rates of smoking in remote Aboriginal communities

## New evidence for GPs

### Objective

To inform smoking interventions by clinicians, particularly doctors, in primary healthcare settings in remote Aboriginal communities, we describe the results of tobacco surveys in remote Northern Territory communities.

### Method

During 2008–09 in three remote communities in the Northern Territory, 400 people (aged  $\geq 16$  years) were asked about their tobacco use.

### Results

Extremely high rates of smoking persist: 71%, 78% and 82% of those interviewed in the three communities. More than half the smokers were either thinking about or actively trying to quit, despite limited access to appropriate support. Among former smokers, the most common motivator for quitting was 'health concerns'. Of those citing 'health concerns', 22% specifically mentioned receiving advice from a clinician, usually a 'doctor'.

### Conclusion

General practitioners, and their colleagues in similar primary healthcare settings, are well placed and are strongly encouraged to take every opportunity to make what could be a significant impact on reducing harms related to smoking and environmental smoke.

### Keywords

Aborigine (health); substance related disorder, smoking; general practice

Smoking rates have halved in Australians over the past 30 years, falling below 16%.<sup>1</sup> In Indigenous populations, smoking rates have remained at more than twice this level, with higher rates reported in remote communities.<sup>2</sup> Currently there is limited evidence as to what constitutes effective smoking cessation interventions among Indigenous Australians,<sup>3</sup> particularly in the unique environments of remote communities.

In the Northern Territory, several surveys since 1986 have documented remote community smoking rates ranging from 61–85%.<sup>4–6</sup> These have remained relatively unchanged, particularly in the 'Top End'. Clinicians working in remote communities face significant challenges to consistently deliver smoking interventions. These include rapid staff turnover, geographical isolation, and their principal obligation to provide acute patient care.<sup>7</sup>

To inform and encourage provision of smoking interventions by clinicians working in these settings, we describe the results of tobacco surveys in remote Northern Territory communities. The surveys provided a baseline for a 5 year tobacco study. Preliminary unpublished analysis of the recently completed follow up surveys demonstrates little change in smoking prevalence, but an increase in the number of smokers thinking about or actively trying to quit. This, along with the baseline survey results, reinforces the pressing need for clinicians to take every opportunity to encourage smoking cessation. We make practical recommendations, specifically for doctors working as part of primary healthcare teams, to support smokers wanting to change.

### Method

Data for this study are derived from a multiple component, community action intervention and evaluation study to reduce tobacco smoking in three Aboriginal communities in the Top End of the Northern Territory.

### Settings

Located in three corners of Arnhem Land, the populations of these communities range from 1100–1600 people. Comprised of more than 90% Aboriginal people, language and cultural practices largely remain intact. People living in these communities suffer extreme socioeconomic disadvantage. Geographical isolation further reduces access to many services. Strong social and historical factors have 'normalised' tobacco in everyday life, creating significant barriers to smoking cessation.<sup>8</sup>

### Interviews and survey data

Community surveys were undertaken in 2008–09. Paid, local community members assisted the non-Indigenous research team with participant recruitment and data collection, described in detail elsewhere.<sup>9</sup> The survey captured both qualitative and quantitative data in order to deepen understandings of local cultural and social contexts of tobacco use.

### Quantitative data

Smoking status was recorded as 'current', 'former' (no tobacco use  $\geq 6$  months) or 'never' (including those who had tried once but had not taken it up). Daily tobacco consumption was assessed using questions about purchasing, sharing and personal use. Time-to-first-cigarette (TTFC) and cigarettes per day (CPD) assessed tobacco dependence.<sup>10</sup> Self reported smoking status was confirmed using a

handheld expired breath carbon monoxide monitor. Current smokers were asked to clarify any intentions about quitting (thinking, trying, not thinking). Former and current smokers were asked if they decided to quit with or without medical advice or support. Knowledge and use of cessation medicines, factors contributing to changing smoking, and whether participants restricted smoking in selected environments were documented.

### Qualitative information

'Current' and 'former' smokers were invited to plot their tobacco journey from uptake to time of interview. Details of general concerns about tobacco use, quit attempts and relapse were recorded.

Free nicotine replacement therapy (NRT) in the form of patches (21 mg) and gum (2 mg and 4 mg) were offered (where appropriate) for participants to try, along with information about effective use.

## Results

### Tobacco users in the sample

The study sample comprised 15% of the total number of Indigenous population aged 16 years

or over (400 participants). In the sample, 76% were current tobacco users with prevalence varying from 71% to 82% across communities. There was little difference between the proportion of males and females who were current users overall. Former users comprised 10% of the sample, while 14% had never used tobacco (Table 1).

Average age of first use among current users was 17 years (range 4–38 years), varying little between the communities ( $p=0.161$ ) and between males and females ( $p=0.946$ ). The average age of first use among current users in the younger age bracket (16–29 years) was consistently lower by 1.5–2 years than in users aged 30+ years.

### Current smokers

The few users who exclusively chewed tobacco were excluded. Around 75% of the current smokers smoked daily (Table 1) with no differences in daily smoking between males and females across the communities. Daily use was often reported as constrained by lack of money on the 'off' pay week. Of those who provided details of daily consumption, 44% smoked <10

CPD. Generally, males were heavier smokers than females ( $p=0.005$ ).

Among the current smokers, 291 provided information about TTFC. Of these, 41% reported that they had their first cigarette after breakfast or later. In data not shown, we found heavier smokers were almost three times more likely to smoke 'first thing' ( $p=0.001$ ) and nine times more likely to smoke 'during the night' ( $p<0.001$ ). However, it is noteworthy that one-third of those who smoked during the night or smoked first thing were lighter smokers.

Across the communities, 1 in 8 of the current smokers reported they were actively trying to quit or cut down at time of interview (Table 2): 'Trying to wait at least 2 hours between smokes'. 'I'm trying to quit. I go out bush to get away'. A further 60% reported they were thinking about quitting: 'I want to quit – want to live long to see granddaughter'. 'I'm thinking about quitting a little bit – I'm in footy training now'. The remaining 27% said they were not thinking about changing their smoking: 'I can't quit, it's difficult; everyone will say we want to quit, but can't'. 'I can't quit, I will smoke till I die'. Overall, females were around

**Table 1. Tobacco use by gender, including patterns of use by gender among current smokers**

Tobacco use	Total sample (n=400)		
	Female n=194	Male n=206	p value*
Never used tobacco	31 (16%)	23 (11%)	0.337
Former user	18 (9%) <sup>†</sup>	23 (11%) <sup>§</sup>	
Current user	145 (75%) <sup>‡</sup>	160 (78%)	
<b>Current smokers (n=301)</b>			
Daily smoker (n=223/301)	107 (76%)	116 (73%)	0.550
<b>Consumption (n=225)**</b>			
Smokes <10 cigarettes per day	59 (54%)	41 (35%)	0.005
Smokes >10 cigarettes per day	50 (46%)	75 (65%)	
<b>Time-to-first cigarette (n=291)**</b>			
After breakfast	61 (45%)	57 (37%)	0.134
First thing/during the night	74 (55%)	99 (63%)	
<b>Intentions toward smoking (n=297)**</b>			
Thinking about/trying to quit smoking	91 (65%)	125 (80%)	0.005
Not thinking about quitting	49 (35%)	32 (20%)	

\* Pearson chi-square comparing proportions in each group and t-tests comparing mean age of first use in each age group

\*\* Number of current and former smokers who provided this information

† Includes two women who were former users who exclusively chewed tobacco

‡ Includes four women in one community currently using tobacco who chewed but did not smoke it

§ Includes one former male user in one community who exclusively chewed tobacco

half as likely to report thinking about or actively trying to quit.

There was general willingness to try nicotine gum and patches. Several participants reported that patches did not adhere well to skin in humid conditions. Some participants reported that the gums reduced ‘starving for ngarali [tobacco]’, enabling reduced daily consumption.

Females were considerably more likely to restrict their smoking in selected environments, such as inside homes or cars (data not shown) ( $p=0.005$ ): ‘I take the kids outside when I’m smoking’. ‘I smoke outside the house – my uncle had an operation so I don’t smoke around him’.

Overwhelmingly the most frequently mentioned concerns were regarding the impact of tobacco on health of self and/or others, children smoking and their young age of uptake: ‘Too many kids smoking – younger than me when I started’. ‘Children as young as 8–9 years starting to smoke’.

### Quit attempts

Information about quit attempts was provided by 145 current and 38 former smokers. With very little difference between current and former smokers, these groups have been combined (Table 2). Females seemed more likely to attempt to quit with medical advice, males making their own decision. Less than a third of the current

and former smokers knew about cessation medications and only 16% reported having ever tried them (Table 2). Medicines most frequently identified by participants were NRT patches and gums. Only three reported being prescribed varenicline, and all stated they had not felt confident to use it. Knowledge about how to use any of these medications effectively was rare.

Periods of both voluntary and enforced abstinence were regarded uniformly by participants as quit attempts and therefore have been reported as such, eg. lack of access to tobacco through bedridden hospitalisation or isolation from a retail outlet. Spending time on outstations away from the main community was perceived as a good opportunity to quit because of reduced access to tobacco, reduced cue exposure and more diversion opportunities: ‘I was stuck on the outstation in the wet season. Ran out of tobacco. I was eating well, hunting turtle and dugong, helps stay off the ngarali [tobacco]’.

Information about relapse was provided by 72 of those who made at least one quit attempt (data not shown). ‘Cue exposure’ was identified by 65% of these as the main reason for relapse, eg. ‘I came back to the community and I’m surrounded by smokers’ and ‘My wife and friends all smoke, so it’s too hard to give up’.

### Motivators to quit

Of the 145 current smokers who had made at least one quit attempt, 134 provided information about motivators to quit. Major motivators in descending frequency of mention include:

- concern about a diagnosed chronic or acute health condition or physical sign, such as shortness of breath
- lack of access to tobacco
- pregnancy
- advised by a doctor to quit (neither nurses nor Indigenous health workers [IHWs] were reported as having provided this advice)
- concern for future health
- role model, particularly as a parent but also as a health worker
- wanting to increase fitness
- demand sharing pressures
- death in the family
- social marketing
- cost.

### Discussion

Community based approaches have been advocated to promote health and prevent disease, particularly those that emphasise changing social norms.<sup>11</sup> With extraordinary rates of smoking in these populations, we advise that interventions by clinicians at the individual level are more likely to be successful if part of a range of concurrent community based intervention components. Recent research has identified the need to improve the uptake of secondary preventive strategies such as brief interventions.<sup>12</sup> Offering assistance with quitting is more effective than merely advice to quit.<sup>13</sup> Among the current and former smokers it was evident that doctors played an important role in motivating smokers to quit. Because smoking journeys were long, quit attempts were recounted by participants as having occurred over the past 40 years, indicating that the work of doctors has been a consistent, long term force for change in these settings.<sup>14</sup>

While biofeedback has been found to have limited impact on increasing cessation,<sup>15</sup> the carbon monoxide monitor was found to be a consistently useful tool to engage survey participants and other members of these communities in brief interventions.

Time-to-first cigarette, including waking through the night, is an indicator of dependence which

**Table 2. Characteristics of the quit attempts made**

	Current (n=145) and former smokers (n=38)		
	Female n=79	Male n=104	p value
<b>Quit attempts (n=183)*</b>			
One only	59 (75%)	79 (76%)	0.842
More than one	20 (25%)	25 (24%)	
<b>Quit attempt informed by (n=154)*</b>			
Own decision without medical advice or support	34 (58%)	72 (77%)	0.004
Medical advice and/or diagnosed tobacco-related medical condition	27 (44%)	21 (23%)	
<b>Knowledge and use of cessation pharmacotherapies (n=158)*</b>			
Knew nothing about them	24 (37%)	36 (39%)	
Knew about them but never used	27 (42%)	46 (49%)	0.243
Tried pharmacotherapies	14 (22%)	11 (12%)	
* Number of current and former smokers who provided this information			

may require more intense levels of treatment.<sup>10</sup> This study showed that even light smokers woke during the night for a cigarette, possibly reflecting the impact of environmental factors, such as overcrowding with consequent disturbed sleep, rather than nicotine withdrawal, *per se*. Thorough exploration of compulsion to use and presence of withdrawal symptoms before prescribing cessation medications is recommended.<sup>16</sup>

A 2008 Australian survey (n=697) revealed that 45.6% of quitters used cessation medications,<sup>17</sup> a considerably higher proportion than found in these communities. Despite their reported readiness for change, smokers in the study communities had little knowledge of cessation methods or medications. This raises issues of both access and awareness. More time may be needed to ensure that patients understand

effective treatment regimens. Less dependent smokers may benefit from short acting NRT which is not readily available.<sup>18</sup> When prescribing varenicline, potential risks should be weighed up against cessation benefits, and patients asked to immediately report adverse effects.<sup>19</sup>

Follow up is an important feature of relapse prevention, both to address prolonged withdrawal symptoms and develop relapse prevention strategies.<sup>20</sup> Initial follow up should be within the first week,<sup>21</sup> which may entail a home visit. Local IHWs or 'tobacco workers' may be able to assist. Engaging in reciprocal learning approaches with local IHWs should contribute to the adaptation of cessation interventions to suit the cultural context.<sup>7</sup> Cue exposure was cited as the major reason for relapse. In other settings, smoke free homes encourage quit attempts and reduce relapse.<sup>22</sup> Advocacy for smoke free homes and other environments has generally been well received over the life of the project.<sup>23</sup>

Among the general population in Australia, the main motivators for changing smoking have been concerns about health impacts and the financial cost.<sup>1</sup> In our baseline surveys, while health concerns were also a major motivator, cost ranked last, perhaps because daily consumption is about half that of the general Indigenous population,<sup>2</sup> and therefore less of a financial burden. Highly ranked motivators included pregnancy and advice by a doctor. Antenatal presentations provide a major opportunity to engage in brief interventions that should be well received. Lack of access to tobacco was a major factor in quit attempts and those embarking on cessation may be encouraged to spend some time on an outstation in the early weeks.

## Limitations

The study sample was not randomly selected so results cannot be generalised. However, participants were opportunistically recruited and reflected age and gender balances of each community.

## Recommendations and conclusions

We refer readers to the *National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people*,<sup>24</sup> and offer our own recommendations for practice, with

**Table 3. Practice points and examples for clinicians undertaking tobacco interventions in remote community settings**

Recommended practice points	Practical examples
Record the smoking status of all patients	This may be systematically collected through adult health checks or other routine screening processes. (National recommendations are to screen patients aged 10 years or over for smoking history)
Make the most of every opportunity to engage all smokers in brief interventions	Ask patients if they have any concerns about smoking. Results from the breath carbon monoxide monitor can open the doorway to brief interventions (eg. discussing the presence of invisible poisons from the burning cigarette and that carbon monoxide is only one of thousands of poisons in tobacco smoke). Offer cessation support as well as quit advice
Engage with pregnant women who are smokers	Many clinics do not have on-site midwives. IHWs, particularly those working in women's business as either clinic based health workers or community educators, should have thorough knowledge of tobacco related harms and cessation support, including medications
Establish the patient has a clear understanding of how to use cessation medications effectively	This may involve simple but thorough explanations of the process of addiction, particularly if prescribing NRT (eg. talking about craving in terms of the brain starving for nicotine). A health worker may assist with interpretation and also confirm or clarify the patient's understandings
Be prepared to discuss tobacco use within the local cultural context	How is tobacco used? Is it chewed or smoked? In parts of Arnhem Land there are strong cultural connections to tobacco, including ceremonial obligations that would need acknowledgement in treatment plans. Find a cultural mentor who will explain these matters. Are there community based or visiting tobacco workers you can liaise with?
Actively promote the benefits of smoke-free environments, particularly homes and cars	Discuss the idea of not sharing poisons with other non-smoking family members, especially babies, small children and the frail elderly. If family members are trying to quit, a smoke-free home is the rest of the family's commitment to supporting a healthy choice. Have signage or posters on hand that can be placed in homes. Often families shifting into new houses are interested in starting out with smoke-free rules

examples shown in *Table 3*. Despite high rates of tobacco use, there is a great readiness for change, with more than half of smokers thinking about or actively trying to quit. Health concerns, including pregnancy, are the major motivator for quitting. With cue exposure cited as the major cause for relapse, smoke-free homes should be promoted, both as a strategy to aid cessation and to decrease health impacts on other family members. There is a need for improved access and awareness of cessation medications. Finally, it is clear that GPs working in primary healthcare teams in these remote populations are well placed to make a significant impact on the extremely high rates of smoking.

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### References

1. Australian Institute of Health and Welfare. 2010 National Drug Strategy Household Survey report. Canberra: AIHW, 2011.
2. Australian Institute of Health and Welfare. Substance use among Aboriginal and Torres Strait Islander people. 2011. Available at [www.aihw.gov.au/publication-detail/?id=10737418268&tab=2](http://www.aihw.gov.au/publication-detail/?id=10737418268&tab=2) [Accessed 9 March 2012].
3. Carson KV, Brinn MP, Peters M, Veale A, Easterman AJ, Smith BJ. Interventions for smoking cessation in Indigenous populations. *Cochrane Database Syst Rev* 2012;1:CD009046.
4. Watson C, Alexander K, Fleming J. A survey of drug use patterns in Northern Territory Aboriginal Communities 1896–1987. Darwin: Northern Territory Department of Health and Community Services, Drug and Alcohol Bureau, 1988.
5. Ivers R, Castro A, Parfitt D, et al. Evaluation of a multi-component community tobacco intervention in three remote Australian Aboriginal communities. *Aust N Z J Public Health* 2006;30:132–6.
6. Clough AR, Guyula T, Yunupingu M, et al. Diversity of substance use in eastern Arnhem Land (Australia): patterns and recent changes. *Drug Alcohol Rev* 2002;21:349–56.
7. Robertson J. Tackling tobacco: a call to arms for remote area nurses. *Contemp Nurse* 2011;37:49–56.
8. Brady M. Historical and cultural roots of tobacco use among Aboriginal and Torres Strait Islander people. *Aust N Z J Public Health* 2002;26:2.
9. MacLaren DJ, Conigrave K, Robertson JA, Ivers RG, Eades S, Clough AR. Using breath carbon monoxide to validate self-reported smoking in remote Australian Indigenous communities. *Popul Health Metr* 2010;8:2.
10. Fagerstrom K. Time to first cigarette: the best single indicator of tobacco dependence? *Monaldi Arch Chest Dis* 2003;59:91–4.
11. Merzel C, D'Affitti J. Reconsidering community-based health promotion: promise, performance and potential. *Am J Public Health* 2003;93:557–74.
12. Clifford A, Jackson Pulver L, Richmond R, Shakeshaft A, Ivers R. Disseminating best-evidence health-care to Indigenous health-care settings and programs in Australia: identifying the gaps. *Health Promotion International* 2009;24:404–15.
13. Aveyard P, Begh R, Parsons A, West R. Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. *Addiction* 2011;107:1066–73.
14. Robertson J. Short ones: tobacco stories from Arnhem Land. Cairns: James Cook University, 2011.
15. Bize R, Burnand B, Mueller Y, Rege Walthers M, Cornuz J. Biomedical risk assessment as an aid for smoking cessation. *Cochrane Database Syst Rev* 2009;2:CD004705.
16. Grassi MD, Marchetti R, Alessio MC, Nencini P. Combined counseling and bupropion therapy for smoking cessation: identification of outcome predictors. *Drug Dev Res* 2006;67:3.
17. Fix BV, Hyland A, Rivard C, et al. Usage Patterns of stop smoking medications in Australia, Canada, then United Kingdom, and the United States: Findings from the 2006–2008 International Tobacco Control (ITC) Four Country Survey. *Int J of Environ Res Public Health* 2011;8:222–33.
18. Robertson JA, MacLaren DJ, Clough AR. Should the Pharmaceutical Benefits Advisory Committee extend the range of free nicotine replacement therapies available for Aboriginal and Torres Strait Islander people? *Med J Aust* 2009;191:293.
19. Zwar N, Richmond R, Borland R, et al. Supporting smoking cessation: a guide for health professionals. South Melbourne: The Royal Australian College of General Practitioners, 2011.
20. Fiore M, Jaen C, Baker T, et al. A clinical practice guideline for treating tobacco use and dependence: 2008 Update, A US Public Health Service Report. *Am J Prev Med* 2008;35:158–76.
21. Fiore MC, Jaén CR, Baker TB, et al. Treating tobacco use and dependence: 2008 update. Quick reference guide for clinicians. 2009. Available at [www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/reference/tobaqg.pdf](http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/reference/tobaqg.pdf) [Accessed 17 June 2013].
22. Borland R, Yong HH, Cummings KM, Hyland A, Anderson S, Fong GT. Determinants and consequences of smoke-free homes: findings from the International Tobacco Control (ITC) Four Country Survey. *Tob Control* 2009;15(Suppl 15):iii71–5.
23. Robertson J, Conigrave K, Ivers, Usher K, Clough AR. Translation of tobacco policy into practice in disadvantaged and marginalized subpopulations: a study of challenges and opportunities in remote Australian Indigenous communities. *Health Res Policy Syst* 2012;10:23. Available at [www.biomed-central.com/content/pdf/1478-4505-10-23.pdf](http://www.biomed-central.com/content/pdf/1478-4505-10-23.pdf) [Accessed 8 August 2012].
24. NACCHO/RACGP. National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people. 2nd edn. South Melbourne: The RACGP, 2012. Available at [www.racgp.org.au/your-practice/guidelines/national-guide/](http://www.racgp.org.au/your-practice/guidelines/national-guide/) [Accessed 22 April 2013].

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