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# **Nicotine replacement therapy (NRT) as a smoking cessation aid among disadvantaged smokers: What answers do we need?**

**Running Head:** Exploring Nicotine Replacement Therapy use by disadvantaged smokers

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## **ABSTRACT**

In Australia and New Zealand, population groups who experience social disadvantage smoke at much higher rates than the general population. As there is limited data specific to these groups regarding the success of Nicotine Replacement Therapy (NRT) for smoking cessation, this commentary will provide an overview of the relevant international literature supplemented with observational data relevant to the policy contexts in Australia and New Zealand.

**Key Words:** smoking cessation, population groups, nicotinic agonists, Australia, New Zealand

## COMMENTARY

### Introduction

In Australia and New Zealand, 12.8% [1] and 15% [2] respectively of the adult population smoke cigarettes daily. Despite significant declines in smoking rates for the general population and for some disadvantaged groups such as Indigenous Australians [1], those experiencing social disadvantage continue to smoke at much higher rates than the general population. In Australia, these rates of smoking include: 19.9% for the lowest socio-economic quintile [1], 31.6-44.6% for Aboriginal and Torres Strait Islander people [1,3], 32.4% of those with mental illness [4], 77% of those reporting substance abuse [5], and 75-85% of prisoners [6,7]. In New Zealand, Maori (33%) and Pacific Island peoples (23%) smoke at much higher rates than the general population [2].

Nicotine Replacement Therapy (NRT) can increase the rate of successful smoking cessation by 50%-70% across the general population [8]. However, the impact of NRT on smoking cessation among specific disadvantaged groups has not been thoroughly examined.

Addressing this knowledge gap could lead to better policy decisions and reduced smoking rates in Australia and New Zealand. This commentary provides an overview of published and grey literature which is relevant to policy-related decisions in Australia and New Zealand regarding the use of NRT as a tool for increasing smoking cessation in disadvantaged groups.

The critical issues covered in this commentary include:

- Understanding whether NRT is effective for disadvantaged groups;
- Identifying access to and uptake of NRT among disadvantaged groups in Australia and New Zealand; and

- Considering enablers, challenges and barriers to NRT use among disadvantaged groups in Australia and New Zealand.

For the purpose of the overview, disadvantaged populations were defined as those who have a low income, and/or, face a number of other issues such as mental illness, sole parenthood, unemployment, family violence, homelessness, drug and alcohol problems, criminal justice issues, limited education, social isolation as well as Aboriginal or Torres Strait Islander people, and Maori or Pacific Islander people.

Given the lack of NRT trial evidence collected in the Australian and New Zealand context, the intention of the commentary was to provide a policy-relevant overview, drawing firstly on the international trial evidence and secondly drawing on observational data with relevance to Australia and New Zealand. Therefore, the literature search involved: Two systematic searches of electronic databases to identify reviews (meta-analyses or narrative syntheses) and individual studies published 2004-2014 which contained either: i) assessment of NRT effectiveness with disadvantaged populations as part of primary or sub-group analyses; or ii) descriptions of barriers to NRT use among disadvantaged groups in Australia and New Zealand. Hand searches of Australian and New Zealand health-related journals (2011-2014) and targeted searches of the grey literature were also performed, including review of websites and contacting organisations relevant to each objective regarding published reviews, reports and data. Relevant organisations included the Australian and New Zealand state and federal health departments, non-government health organisations, professional associations, and individual tobacco control researchers. Together these approaches were intended to capture the key evidence needed to inform

policy development in Australia and New Zealand regarding NRT as a smoking cessation strategy for disadvantaged groups.

### **Effectiveness of NRT on smoking cessation among disadvantaged people**

While a number of reviews have examined the effectiveness of smoking interventions more broadly in disadvantaged groups, these reviews failed to specifically isolate the impact of NRT use amongst these groups. As indicated in Table 1, few randomised trials have examined the effectiveness of NRT among disadvantaged groups worldwide. Most trials involved NRT used in combination with other forms of cessation support such as telephone or face-to-face counselling. The evidence is generally equivocal regarding whether the use of NRT in combination with other support is effective for smoking cessation in disadvantaged groups.

[INSERT TABLE 1 HERE]

### **Access to and uptake of NRT for disadvantaged groups in Australia and New Zealand**

NRT (nicotine gum, lozenges, patches and inhalers) is available in both Australia and New Zealand over-the-counter at pharmacies or supermarkets. In New Zealand, free NRT is available for at least four weeks with a prescription [35], or without a prescription via Quitcards and Quitline. Maori and Pacific Islander persons also have access to NRT and quit smoking programmes via providers of smoking cessation services [36-38] and New Zealand prisons provide NRT to inmates [39]. The Australian government heavily subsidises one 12 week course of nicotine patches per year with a prescription via the Pharmaceutical Benefits Scheme (PBS) [40]. Concession card holders have their cost even further subsidised. Aboriginal and Torres Strait Islander people are able to access additional courses of NRT at low or no cost under the Closing the Gap scheme and/or via community organisations [41-

43]. Most state or territory smoke-free policies or legislation for mental health facilities include the provision of NRT to manage nicotine withdrawal [44-48]. Almost all Australian states provide access to NRT for adult prisoners [49], with the context of cessation rapidly changing as more prisons become smoke-free.

Evidence of NRT uptake is variable. In New Zealand, population survey data indicate that 21% of smokers of Maori background had used NRT to assist with quit attempts [50].

Quitline users of Maori background and those most socioeconomically disadvantaged were more likely to be dispensed NRT [51]. In Australia, an analysis of Medicare data indicated that approximately 75% of prescriptions for nicotine patches were for concession patients [52]. The International Tobacco Control survey of Australian smokers reported that 29% of recent quitters of low socioeconomic status (SES) used NRT, with no differences in NRT use according to SES level [53]. Only half of mental health inpatients assessed as nicotine dependent are offered NRT, and only 26% of community mental health services in New South Wales recommend NRT to the majority of clients [54,55]. Despite New Zealand prisons being 100% smoke-free since 2011, and the majority of Australian State and Territory prisons adopting smoke-free policies, the impact of these initiatives on NRT use is unreported.

### **Enablers, barriers and challenges to NRT use among disadvantaged smokers**

Despite subsidisation, the cost of NRT has been identified as a barrier to its use by disadvantaged groups [56-61]. Lack of awareness of NRT availability is an identified barrier for use among Aboriginal and Torres Strait Islander people [62,63], Arabic speaking residents [60], clients from community welfare services in Australia [59]; and to those residing in highly deprived areas in New Zealand [64]. Perceived ineffectiveness of NRT has



been noted by prisoners and ex-prisoners [65], those who identify as Maori [57] and peers of welfare organisation clients [59]. Barriers to distributing NRT in mental health and drug and alcohol settings [66,67] include: an acceptance of smoking; low perceived priority of smoking cessation care; inadequate staff time, skills, training and knowledge [68]; and perceived client disinterest [69]. Disadvantaged [70] and Maori smokers [71] report the cost and effort required to obtain NRT from services outweigh the benefits of subsidies. Similarly, the limited and delayed availability of NRT in remote communities is a barrier to use [62]. People who identified as Maori felt that NRT was not culturally appropriate [71] while Aboriginal people reported that smoking is an accepted behaviour in communities, and that cultural beliefs impede accessing NRT [72].

### **Resolving the Conundrum of NRT use among Disadvantaged Groups**

The evidence that NRT is effective in improving cessation among specific disadvantaged groups is weak. In both Australia and New Zealand some forms of free and/or subsidised NRT are available for disadvantaged population groups. Analysis of the relative costs and benefits of strategies to increase the ease of access to free or subsidised NRT appears warranted. A range of studies are needed to provide a sound basis for policy making.

A large placebo-controlled randomised controlled trial is needed to compare the effectiveness of NRT with no intervention or minimal intervention for encouraging disadvantaged smokers to successfully quit. Such a trial needs to be designed and sufficiently powered to conduct sub-group analyses for particular disadvantaged groups such as those with a mental illness.

In addition, comparative effectiveness trials should be conducted to examine whether NRT in combination with other evidence-based strategies, including population-level strategies,

provides any additional cessation benefit for disadvantaged groups. In addition, qualitative and observational studies are needed to further examine the following in disadvantaged groups: knowledge regarding smoking and NRT, the benefits of pro-active methods for offering NRT, interventions which address cultural and economic barriers to using NRT, the behaviour of health care providers and how cultural barriers to NRT may be addressed.

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**Table 1: Number of Randomised Trials Exploring the Effectiveness of NRT in Disadvantaged Groups**

Disadvantaged Group	Country	Studies finding significant cessation benefit (short-term or long-term) (n)	Studies finding no significant cessation benefit (n)
Low Income	US, UK, Australia	2[9,10]	2[11,12]
Indigenous Groups	NZ, Australia, Canada, USA	0[13]	3[14-16] Inconclusive: 2[17,18]
People with a mental illness	US, Taiwan, Australia, NZ	4[19-22]	4[23-26]
Culturally and Linguistically Diverse Groups	US	2[27,28]	2[29,30]
Homeless people	US	1[31]	0
Prisoners	Australia, UK	3[32-34]	0