Review

Smoking or Alcohol Dependence Among Indigenous Australians: Treatment May Be Needed, Not Just Education

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Background: **In trying to help Aboriginal and Torres Strait Islander (Indigenous) individuals or communities to stop smoking or reduce the harms from alcohol, it is important to be aware of the strong biological basis of the drive to return to nicotine or alcohol.**

Methods: **In this paper we briefly describe the social and neurobiological factors that drive a dependent smoker or drinker to keep using. We set out the current range of pharmacological treatments for dependence, their role in assisting a person to either stop using or avoid relapse, and we discuss issues relating to their use in Aboriginal Australians.**

Concluding comments: **There is a firm evidence base for the use of pharmacological treatments for nicotine or alcohol dependence, particularly in severe dependence or when counselling or non-pharmacological approaches have failed. Indigenous Australians should be able to access the full range of approaches to managing these conditions. Working in partnership with Indigenous health staff and agencies can help ensure that appropriate access to treatment and quality treatment delivery occurs.**

(Heart, Lung and Circulation 2012;21:626–631)

Keywords. Indigenous Australian; Aboriginal; Smoking; Nicotine dependence; Alcohol dependence; Treatment; Pharmacotherapy; Medications; Relapse prevention; Nicotine replacement therapy

Background

Supporting Aboriginal and Torres Strait Islander (Indigenous) Australians to tackle smoking and alcohol misuse, is vital to achieving improved duration and quality of life. For Indigenous Australians, the high prevalence of diabetes and high blood pressure secondary to kidney problems makes smoking cessation a particularly pressing concern. But the impact of smoking is not just on the smoker; overcrowded houses increase the harms of passive smoking, and smoking in pregnancy may influence the long term health of offspring [1]. So it is vital that all clinicians are aware of state of the art approaches for smoking cessation and can contribute to providing these for Indigenous Australians. In contrast to smoking, the role of alcohol in cardiovascular health is often underestimated. As well as being a common cause of high blood pressure, and a trigger for atrial fibrillation, regular excess can result in insulin resistance and over time, cardiomyopathy [2]. Episodic heavy drinking, such as on pay day, increases the risk of sudden cardiac death [3]. Individuals are also more likely to smoke, and smoke more, when they drink [4]. This phenomenon has neurobiological [4] and metabolic roots. But alcohol stands out also because of its major effects on others [5]. A dependent drinker will not be able to care for their own health, and the disruption from their drinking can keep others from attending to theirs. Furthermore, the stress of living with a drinker can lead many a strong person to crave for a 'calming' smoke.

This paper reviews why individuals who are dependent on cigarettes or on alcohol can find it so hard to stop, and describes the role and use of pharmacological treatments for dependence among Indigenous Australians.

Current Knowledge: The Nature and Causes of Dependence and its Treatment

For any person, how they use a psychoactive substance depends on how addictive the drug is, the person's social context [6], and individual biological factors, such as the 'hardwiring' of their reward centre [7]. Unemployment (with resulting boredom and loss of sense of identity,

Available online 20 July 2012

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1443-9506/04/$36.00
http://dx.doi.org/10.1016/j.hlc.2012.06.009

worth or control) and social disadvantage relative to the broader population can increase the risk of alcohol misuse and smoking [8,9]. In addition, major traumas, including early life stress or separation, can increase the chance of substance dependence [9]. On the other hand, young people who feel secure, valued and connected are less likely to misuse drugs [10]. So it is not surprising that where Indigenous peoples have been colonised, and experience ongoing sense of lack of control, limited connectedness to mainstream society and threats to traditional culture, there can be an increased risk of substance misuse [11]. Individuals can come to rely on alcohol or cigarettes for relief of stress or grief, for relaxation and enjoyment, and for socialising. This can result in a normalisation of smoking or of an all or nothing drinking style. The impacts of drinking can perpetuate a cycle of stress and trauma, while smoking-related disease and death can perpetuate grief and loss, and so vicious cycles are set up. And for those who become dependent, stopping can be very challenging because of constant cue exposure which re-ignites craving.

Despite all these risk factors, Indigenous Australians are less likely than other Australians to have consumed any alcohol at all in the past year, and those who drink usually do not drink daily [12]. But drinking is often to intoxication [12] and in vulnerable families or communities the harms from this can be considerable. For smoking, the persistent high prevalence is a grave concern, with still just under half of Indigenous Australians smoking [13], and pockets of far higher prevalence [14,15]. Though recent data suggest some downward trend in prevalence [13].

"Why Don't People Just Stop?": When More Than Brief Intervention is Needed

Many of us have seen individuals with life threatening consequences of smoking or drinking but who still will not or cannot stop. This can be source of frustration and distress to health staff, to families and often to the individuals themselves. Some may try again and again to stop but keep slipping back. For such individuals, physical dependence on the chemical (nicotine or alcohol) can be a major factor. Assisting an individual to understand dependence and find ways to tackle it is important.

Engaging the individual (and where appropriate the family) is the first step in any attempt to change behaviour. Brief opportunistic intervention is important and should be done well. There are guides and visual aids available [16,17]. This intervention involves more than simply giving facts. It provides individualised respectful feedback on the impact of their substance use and links this to their values and priorities [17]. It shows respect for the individual's right to choose, but provides a clear offer of improved quality of life through change. It helps the individual consider practical steps they can employ to make change. Brief intervention offers a significant benefit [18,19]. But those who are physically dependent on either nicotine or alcohol usually need this followed by more intensive support [19–21].

While some people smoke or drink by choice, those with severe dependence do so to avoid withdrawal or because of intense craving or compulsion. Most dependent smokers make multiple attempts before successfully quitting [22]. Similarly, severe alcohol dependence often behaves like a chronic disease with periods of remission and relapse. The healthcare professional can play an important role to help individuals reduce the length of relapses to use and lengthen remissions.

What Happens in the Brain in Dependence?

The reward centre in our brain is one of its most primitive parts. It is part of the human 'hard wiring' to ensure survival of the individual and the species. Essential behaviours are linked into the reward centre, so eating, drinking water when thirsty, and sex all give a 'high'. This is mediated through neurotransmitters and in particular, through dopamine. Dopamine also strongly reinforces learning of these vital behaviours. The trouble is that tobacco and alcohol (and other psychoactive drugs) also activate the reward centre, and in dependence, this reward can provide a powerful drive to continue use.

With severe alcohol dependence, the reward centre can lead the individual to value alcohol more than food or drink, and more than health, family or community. A severely dependent drinker who cannot get money for alcohol, may turn to methylated spirits, even though the taste is foul and it 'burns' the stomach. So the reward of drinking, and often also the associated oblivion and stress relief, draws the drinker back.

In addition to the powerful craving for smoking or drinking, people who are dependent may experience withdrawal when they stop. With regular, repeated use, the person has become tolerant to the drug and by now, needs more to get the same effect. This is because their brain has adapted to the presence of the drug. So if a novice drinker were to consume a cask of wine, this amount would usually leave them either unconscious or dead. But when a person drinks a lot every day, the brain gradually turns up the 'volume' of its natural stimulation to balance out alcohol's sedating effects. So a tolerant drinker can drink a cask of wine and walk and talk normally. Only the fumes may give them away. But if the alcohol is then taken away, the drinker is then left overstimulated. Their increased natural stimulation is no longer balanced by alcohol. They are anxious, restless and cannot sleep. They may have a tremor, or in a severe case they may experience seizures or even hallucinations. Severe alcohol withdrawal can be life threatening (delirium tremens). In effect, dependent drinkers are 'punished' if they stop.

Withdrawal from smoking is not dangerous in the same way as alcohol withdrawal (though depression can be exacerbated), but it can be very unpleasant, and associated with irritability, poor concentration, insomnia and intense craving for a cigarette.

So in dependence, we have the 'carrot and stick' phenomenon: the lure of pleasure and stress relief leading the person back to use, the 'stick' of withdrawal punishing those who stop. And while the withdrawal syndrome only lasts about a week, some part of the neuroadaptation of dependence never fully reverses. So years after