

Submission

No 9

INQUIRY INTO TOBACCO SMOKING IN NEW SOUTH WALES

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Theme:

Summary

SUBMISSION TO THE INQUIRY INTO TOBACCO SMOKING IN
NEW SOUTH WALES

Smoking and Smoking Cessation Support

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Recommendation

That there be sustained funding for Smokers' Clinics and/or dedicated smoking cessation professionals for in and out-patient requirements in every hospital in the State of NSW.

Summary of Supporting Evidence

The notion that tobacco smoking can be dependence producing is not new, but this notion is not readily translated into the implication this may have on our smoking populations. Tobacco addiction is not a choice.

Smokers are not an homogenous group, they range from mild to severely dependent. Those mildly dependent are more readily able to quit and quit permanently. Ability to quit is shown to be directly related to measurable levels of addiction. Multiple attempts to quit unsuccessfully have also been shown to correlate with higher levels of dependency.

Those severely dependent, persisting with smoking despite the medical consequences are a heavy burden on the socio-economic structure of society and their own wellbeing, through medical care and hospitalizations.

Outpatient Clinics and core in-patient treatment facilities such as are available for Diabetes, Heart, Lung, and Renal diseases are commonplace and need no justification, nor do dieticians, podiatrists or physiotherapists all of whom are standard health care professionals in every major hospital facility. Smokers Clinics have been shown to be cost-effective both here and in the UK.

Given that smoking and smoking cessation has a profound effect on the health and wellbeing of our population it should be mandatory that all hospitals have a resident smoking cessation facility.

Using a medical model, chronic nicotine dependence is similar to most chronic diseases in that there is a long history of the illness, there may be remissions, relapse is endemic and conventional treatments often have poor outcomes. In support of this submission, those assessing the problem of smoking may require a greater knowledge base of the illness.

The Problem of Smoking: The Biology and Psychology of Tobacco Use

- Smoking as a medical model: a chronic illness
- Some aspects of nicotine action and nicotine addiction
- Criteria for dependence and addiction
- Tobacco withdrawal syndrome
- Differences in smokers
- Nicotine in the brain and mind
- Quitting and relapse
- Measuring tobacco dependence

Smoking as a medical model: a chronic illness

The W.H.O. views smoking as if it were a chronic illness (1). This may help to explain why some smokers may not be receptive to messages about quitting or find it difficult to quit. Like any chronic illness, some smokers have :-

- A LONG HISTORY—they may have been smoking for many decades
- SOME REMISSIONS- they may have been able to occasionally cease smoking
- ENDEMIC RELAPSES - they will have gone back to smoking many times
- POOR SPONTANEOUS RECOVERY - just stopping smoking without any effort is unusual
- POOR TREATMENT OUTCOMES - at best 50% of smokers using intensive interventions quit for good

Some Aspects of Nicotine Action and Nicotine Addiction

Nicotine is a fast acting drug with a short activity (half-life). The most effective means of delivering nicotine to the brain is through smoking. It encourages the expression in the brain of an enormous array of neurotransmitter substances that all have very positive neurological effects in some people. With as little as one inhalation from a cigarette, addicted smokers immediately feel less anxious, less moody, are able to concentrate more effectively, feel less distressed, less hungry, less aggressive and are relieved of strong urges to smoke. These positively

reinforcing effects that occur very quickly are the bases for nicotine dependence [3].

Dependent smokers finely titrate (or adjust) their nicotine blood levels by inhaling deeper or longer to affect a higher nicotine level or inhaling lighter and puffing quicker to lower levels. Many smokers “self-medicate” with smoking tobacco to counteract anxiety or a depressed mood. Smokers smoke both for these positive rewards gained and the relief of withdrawals that are induced.

The brain areas affected by nicotine, by implication, affect their respective roles in human behaviour. Action in the centre of the brain can directly affect mood and cognition.

There are potential nicotine receptor sites on every neuron in the brain, therefore every receptor in the brain could be effected. However, there is evidence that individuals have different numbers of accessible receptor sites and that these may be genetically predetermined [4].

In order to ascertain whether a person is dependent or addicted to a substance certain well described criteria need to be met.

Criteria for Tobacco Dependence / Addiction

According to the Diagnostic and Statistical manual of Mental Disorders, Forth Edition (DSM IV) [5]. substance dependence is shown by the repeated self-administration of the substance which leads to tolerance,

withdrawal and compulsive drug taking behaviour. The DSM IV describes the specifics of the nicotine dependence and withdrawal as:-

A) daily use of nicotine for at least several weeks.

B) Abrupt cessation of nicotine use, or reduction of the amount of nicotine used, followed within 24 hours of four or more of the following signs:

- 1) dysphoric (depressed) mood
- 2) insomnia
- 3) irritability, frustration or anger
- 4) anxiety
- 5) difficulty concentrating
- 6) restlessness
- 7) decreased heart rate
- 8) increased appetite or weight gain

C) The symptoms in criterion B cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D) The symptoms are not due to a general medical condition and are not better accounted for by another mental disorder.

Tobacco Withdrawal Syndrome

Most smokers show at least some symptoms of tobacco withdrawal. It is a well-documented syndrome comprised of a combination of anxiety, distress, aggressiveness, urges to smoke, inability to concentrate, increase in appetite and general moodiness [6]. These acute symptoms occur in some smokers even between cigarettes as nicotine blood levels quickly fall and may certainly manifest to some degree in many smokers within hours of their last intake when nicotine plasma levels have fallen to very low levels.

Withdrawals can persist for days or weeks but are generally finite within a timeframe of two weeks.

Longer-term symptoms of withdrawal can include depression and infrequent but irritating urges to smoke linked to situations of psychological distress and other strong, often negative, triggers [7]. Smokers have learned that these events can be “cured” by smoking [8].

Other physical symptoms of withdrawal that may occur within weeks of quitting include mouth ulcers and cough which, ironically, may appear for the first time or increase when having quit smoking.

Smokers have also “learned” the beneficial neurological effects of smoking that can occur in combination with other substances such as alcohol, caffeine and THC. There are potent cue conditioned responses resulting in strong urges to smoke that accompany the use of these substances [9].

Smokers are known to consume at least twice the amount of alcohol and caffeine as non-smokers and to suffer alcohol or caffeine toxicity on quitting smoking [6].

There is evidence that adolescent smokers are as prone to these symptoms as adult smokers.

Differences in Smokers

It is evident that some smokers have few symptoms of withdrawal when nicotine deprived; many spontaneously cease smoking without aid and do not relapse, while others self-report formidable and overwhelming symptoms, and though persistently attempt to quit, always relapse [9].

There is evidently a “hierarchy” of quitting. Figure 1. demonstrates this hierarchy as a pyramid where increasingly, dependent smokers will require more intensive interventions despite their exposure to smoking cessation propaganda. Thus smokers and quitters are not an homogenous group.

There is now growing evidence that the fundamental nature of the addiction to nicotine may be dependent on an individual's “sensitivity” to nicotine in the brain and ability to metabolize nicotine in the liver, much of which seems to be genetically determined [11].

Though initiation into smoking, that is, the first cigarettes ever smoked, is ruled by a multiplicity of factors including peer pressure, bravado, rebellion, advertising, weight control and curiosity the evidence points to biological predispositions to “responsiveness” to nicotine in the brain in some smokers and ability to metabolize nicotine in the liver [11,12]. These predispositions are likely to lead to neurological rewards from smoking, and physiological tolerance to nicotine, which may initiate a lifelong dilemma with smoking.

There is growing evidence of differences in liver metabolism of nicotine. Poor metabolisers are reported to smoke less and find quitting easier than fast metabolisers. Racial origin can also impact on nicotine metabolism [12].

Some researchers believe that the reactions to the very first cigarettes smoked are a clue as to whether a person will go on to smoke continuously. Researchers believe that pre-existing sensitivities to nicotine determine long-term use. The more sensitive (or reactive) the first-time smoker is to nicotine the more likely he or she is likely to go on to become a regular, daily smoker [13]. Studies have shown that identical twins separated at birth from their parents and each other are likely to be dependent smokers irrespective of personal histories of exposure or non-exposure or environmental and cultural circumstances if their biological parents were dependent smokers [14].

There is now substantial evidence in the scientific literature on the genetic predisposition or heritability of nicotine dependency.

Nicotine in the Brain and the Mind

It is inevitable that many smokers, having received such overwhelming chemical joy from smoking and displeasure from not smoking, should seek to continue to use tobacco regularly, if not simply to allay withdrawals between cigarettes and remain "normal". The mood alteration that commonly occurs in other drug dependencies, "the highs", do not occur in smoking. Rather it is the avoidance of the "lows" that typifies the dependent smoker. The overall "emotional" effects on the smoker can now be almost directly linked with the increase and then decrease of nicotine in the brain areas directly affected [15]. For example there have been reports of subjects demonstrating an acute lack of concentration or an inability to perform tasks requiring short term memory during nicotine deprivation which may be directly attributed to the deprivation of nicotine in the area of the brain involved [16].

In general, smokers report distinct cognitive and behavioural effects from smoking including perceptions of relaxation, euphoria, stimulation, as well as anxiolytic and dysphoric effects. Australian smokers have been shown to "self-medicate" symptoms of distress, depression and anxiety and to be users of other substances that mitigate these symptoms [5].

Having successfully initiated into smoking (almost always in adolescence) dependent smokers have thus launched into a cycle of pleasure and displeasure, learning on the way that smoking relieves much of this displeasure almost instantaneously. Relief from symptoms usually occurs

within the first few puffs of a cigarette, rarely any longer. The learning of the "relief" factor of smoking becomes an insidious component of a smoker's behaviour. The experienced relief is used in all types of anxiety states or negative situations and events.

The brain responds not only chemically to nicotine but also electrically. Profound Electroencephalogram (EEG) changes can take place in smokers with and without a cigarette. For example, Alpha wave frequency, an index of relaxation, is enhanced within seconds of smoking and then is reduced as the nicotine blood levels abate. There is much neurotransmission activity with nicotine and thus smokers who complain that in states of nicotine deprivation they feel unable to "think straight" may well have a realistic appraisal of their status.

Does the addiction remove the voluntary usage of the substance? That is, can it be said that smokers are smoking against their will? The psychoactivity of nicotine greatly reduces the ability to control its use. Often deemed a bad "habit", this term seeks to differentiate between physical addiction and psychological addiction but is invalid as they are one and the same entity. It is well accepted that there is no difference between the two in nicotine dependency.

Smoking shows a convincing argument for compulsive behaviour rather than a "bad habit" as a study in the UK has shown that :

96% of smokers do it daily

few smoke less than 5/day

50% smoke within 30 minutes of waking

48% have not abstained for more than 1 week in the past 5 years.

67% of smokers in U.K. say they wish to quit, Heavier smokers wish to quit equally,

80% of smokers have tried to quit, 58% more than once

75% of self-quitting attempts fail in the first week and poignantly, smokers who attempt to quit many times still want to quit [17].

Quitting and Relapse

There is substantial evidence both in Australia and overseas that most smokers want to quit [19]. Relapse is endemic in smokers who make an unaided quit attempt with 50% to 75% relapsing within one week of a concerted quit attempt, more than 62% within the first two weeks with an ever reducing likelihood of relapsing after three months. At best, about 5 to 15% of smokers committed to quitting on their own are still not smoking one year later [9]. Hence the first two weeks, then the first three months are important targets dates for interventions in helping smokers quit.

Measuring Tobacco Dependency

In the 1970s the Swede K.O. Fagerström was one of the first scientists to show that not all smokers were the same, that smokers ranged in dependency from mild to moderate to severe levels of tobacco dependency and that response to smoking cessation initiatives was related

to levels of dependency. Fagerström developed the first of many smoking questionnaires that correlated active smoking to levels of dependency. Ability to quit was shown to be directly related to measurable levels of addiction [18,19]. Multiple attempts to quit unsuccessfully have also been shown to correlate with higher levels of dependency [9]. Currently the Fagerström Tolerance Questionnaire (FTQ) has been reduced to one simple question: How long after you wake do you smoke your first cigarette? This “time to first cigarette” indicates high levels of dependency if it is smoked within the first ½ hour of waking. Note that numbers of cigarettes smoked, brand of cigarettes or history of smoking are not related to levels of dependency.

Evidence to Support Smoking Cessation Clinics

Today's Hard Target

There is evidence that some smokers in Australia, as in North America and Scandinavia, who have been exposed to strong anti-smoking climate, are “hard targets” who require intensive help, pharmacological interventions and relapse prevention advice. They are often smokers who have medical repercussions from smoking but persist, and by definition show high dependency. These smokers respond well to frequent counselling. There is strong evidence that interventions and time taken in consultations are dose related to successful permanent quitting [5]. This level of intensity is reported to be at least as cost effective in this group of smokers as any other medical intervention might be for any other illness.

As the anti-tobacco campaigns have whittled away at the general population of smokers we are left with some smokers we can now say have developed a chronic condition called tobacco dependence. Free Smokers Clinics have shown to be cost effective and essential as medical services both in Australia and the UK in treating these smokers [20]. The Smokers Clinics set up to support patients with Chronic Obstructive Airways Disease at Royal Prince Alfred Hospital has shown that smoking cessation in this difficult cohort of smokers has significantly reduced the frequency of their hospital admissions as well as the length of any admissions [21]. There are currently few such clinics in the state of NSW.

Conclusion

In most Western nations the decline in smoking prevalence was spearheaded by the medical and paramedical professions. In-patient services for smoking cessation now needs to be addressed more aggressively by these professions, utilising the medical model of referral for evidence-based treatment for those requiring a more intensive intervention. Smokers Clinics and professional cessation therapists conducted in credible, professional and ethical venues such as hospitals will enable many smokers, who do not choose to be dependant, to seek help when all other attempts to quit have failed.

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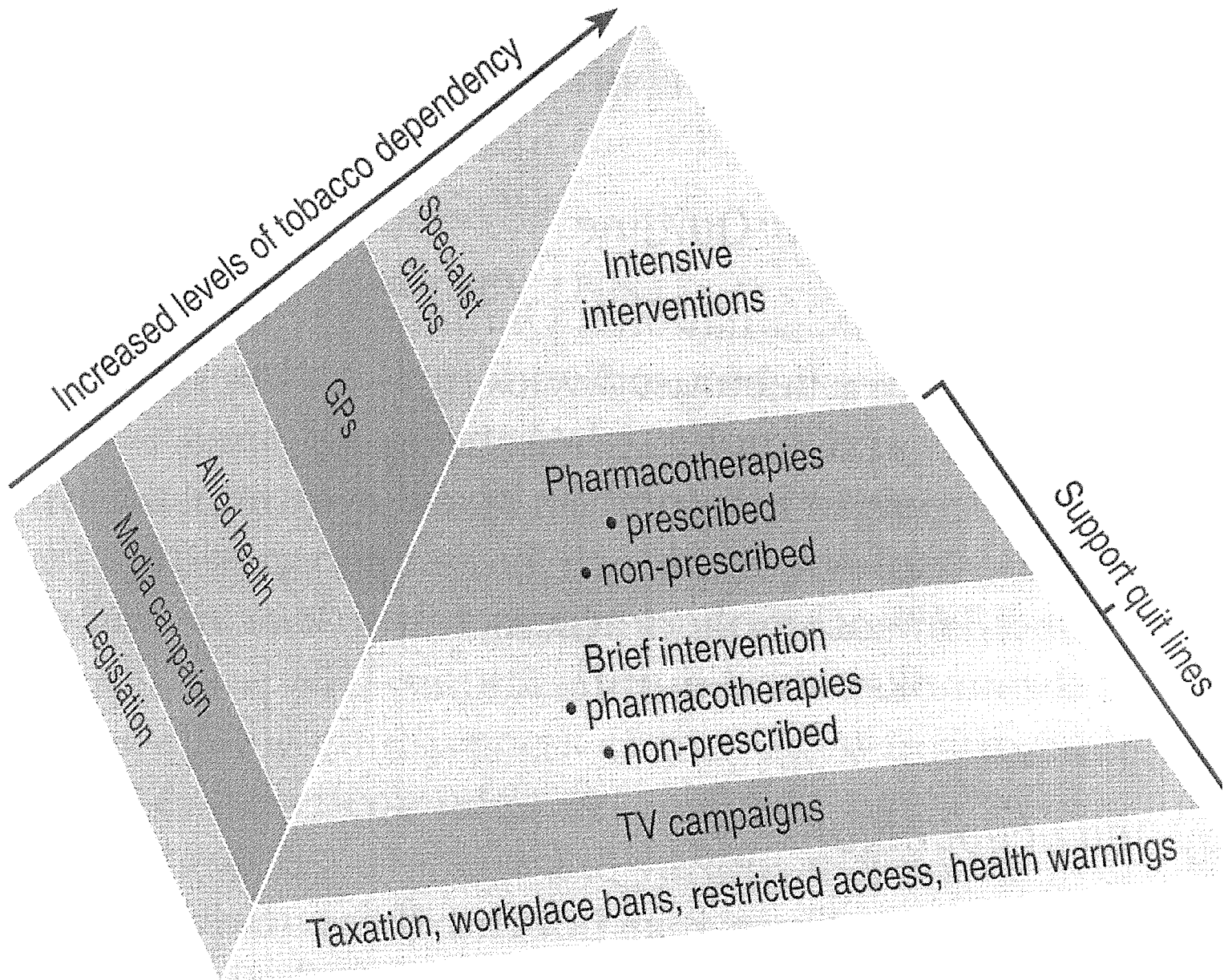
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FIGURE 1.



Smoking cessation pyramid. Bittoun, 2005.

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