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Towards an endgame for tobacco

Background

The reduction in smoking in Australia in the past 30 years has established the conditions in which elimination of smoking should now be considered. This is sometimes referred to as the 'tobacco endgame'. A range of approaches can be considered and any that are implemented would build on current actions such as plain packaging.

Objective

This article outlines possible public health and policy approaches with the goal of leading to the elimination of smoking, and discusses a potential target date for the elimination of smoking in Australia.

Discussion

The most effective strategy for eliminating smoking in Australia is likely to be one that reverses the tolerable, addictive nature of modern tobacco by the elimination of all additives and by specifying a very low level of true nicotine delivery. Use of an unsatisfying, costly and toxic product would naturally, and rapidly, decline.

Keywords

smoking cessation; public health; policy



In the early 1950s when (Sir) Richard Doll and Bradford Hill proved that smoking was associated with lung cancer, the smoking rate in male British doctors aged over 35 years was more than 87%.¹ Rates of smoking in Australian doctors had fallen to 3% 15 years ago² and it is likely to be even lower now. The Australian Government has specified a national smoking target of 10% by 2018,³ which would be a sharp fall from current rates. If near elimination of smoking is possible in medical professionals, it is surely reasonable to have the same aim for the whole community. This is the tobacco endgame – the development and implementation of single or multiple strategies that will see smoking rates fall to near zero in a relatively rapid time.⁴ New Zealand has adopted a target date of 2025⁵ and Finland a more conservative 2040.⁶ In New Zealand there are high levels of support for radical aims and actions and, importantly, the support is strongest in groups who are relatively disadvantaged.⁷

The notion of substantially lowering smoking rates has produced responses from tobacco company executives.

"There's an interesting question you should ask the public health people," he said, "What do you think smokers would do if they didn't smoke? You get some pleasure from it, and you also get some other beneficial things, such as stress relief. Nobody knows what you'd turn to if you didn't smoke. Maybe you'd beat your wife. Maybe you'd drive cars fast. Who knows what the hell you'd do?"

Geoffrey Bible CEO Philip Morris 1998 – quoted in *New York Times*⁸

Australia has been successful in reducing the average rate of adult daily smoking in the community to 15.1% but this still amounts to 3.3 million smokers.⁹ While these numbers remain unacceptable, they are low enough that the elimination of smoking can be contemplated. In doing this, one particular challenge will be the existence of pockets of high smoking prevalence such as in those living with mental illness, who have lower educational attainment, who are economically disadvantaged or of Indigenous origin. Evolving tobacco control strategies must include plans with a very effective reach into all of these areas.

As we entertain the possibility of an endgame, immediately possible actions should still be completed. Plain packaging will have an effect on both uptake and cessation. Recent studies in Paris¹⁰ and Glasgow¹¹ confirm that plain packaging is less attractive, is associated with lesser levels of smoker esteem, and is likely to lead to reduction in cigarette use and more cessation attempts. Retail licensing should be implemented to reduce the number and nature of tobacco outlets so as to reduce the purchase of 'impulse relapse cigarettes'



from convenient stores such as service stations or vending machines.

Beyond these essential actions, there is a range of further initiatives or policies that could be implemented. Each would contribute to commitments under the Framework Convention on Tobacco Control¹² to reduce demand for and supply of tobacco. Some strategies would have a small, significant incremental benefit if considered individually but in combination with other choices would have a more marked effect. Others would either immediately or eventually eliminate tobacco use. Each plan is discussed below. Means to address smuggling and fraud would be necessary for most plans, most notably in the short term, but this need would decline with time.

An outright ban with pre-warning

In many ways this is the simplest approach. Tobacco is a product that when used as designed kills in excess of half its users. There is no safe lower limit of use. If it were a novel product, marketing of tobacco would never be permitted. If a ban is proposed, it will be countered that tobacco is a legal product and as such its use should not be constrained. However, many legally marketed toys are instantly banned when the potential for harm – much less than that of tobacco – is realised. Therefore, legality in itself is not an argument and banning unsafe products is not indicative of a ‘nanny state’. With a pre-warning, there would be a powerful incentive for smokers to quit well ahead of the ban. An air of inevitability would be about, but the currently addicted could suffer, depending on supports offered as part of a package.

That said, an outright ban is a very easy target for the arguments of the opponents of tobacco control. In general, prohibition has not been an effective strategy to eliminate use of other substances. It can easily be crafted by the tobacco industry as an affront to liberty or as counter to the autonomy of individuals. On those grounds, it will probably not be the answer. A separate consideration is whether some tobacco products presently available should be restricted or banned. Oral or chewing tobacco is banned in Australia but used widely in some other countries. There is thus a precedent.

While not amounting to an outright ban, birthdate based proscription of tobacco purchase and use is an idea that has been floated by a group of Singaporean academics.¹³ In essence, an individual born after a certain date would never be permitted to buy or smoke cigarettes or other tobacco products. This approach is very simple, there is no need to engineer the product and there is no withdrawal harm to current smokers. This initiative would have the highest level of public support, as it is primarily protective of children. It would require enforcement action and, of itself, does not address current smokers. There would be a residual libertarian counter argument asking why the future generation, when of adult age, should not be permitted the choice to try tobacco. This is not persuasive.

Plans based on increases in cost or reduction in access

“The problem with tax increases is that it does decrease consumption, just as desired by the social engineers posing these increases want to see.”¹⁴

The tobacco industry is aware that price increases are effective. There has been a massive increase in the tax on tobacco products in the recent New Zealand budget and in Australia substantial tax increases followed the report of the Preventative Health Taskforce. There was a time when influential charities devoted to the case of the socially disadvantaged were opposed to tax increases. It is now collectively agreed that the longer term benefits are outstanding because of the health gains and, importantly, the transfer of expenditures from tobacco to better food, housing or other necessary costs of living.

An enhanced version of the tax approach is the smoker’s licence.¹⁵ Presumably purchased, this would require that a smoker be granted or obtain a licence to purchase and/or consume tobacco. This would need to be linked to retail licensing. A licence would generate a cost and inconvenience barrier to tobacco use. If a licence was not renewed, the possibility of impulse relapse would be reduced and this certainly would be protective of the recent quitter. However, it would necessitate a bureaucracy. The regulatory costs would have to be borne by the smoker but would not be delivered fully as a tax benefit to the community, as would a price rise from taxation or excise. Unless the licence itself could be shown as a substantial benefit above its own cost effect, simpler strategies may be preferred.

A hybrid of the cost and banning approach is the concept of a system of cap-and-trade with a sinking lid¹⁶ – similar to some of the plans designed to reduce future CO₂ emissions. Here tobacco companies would bid for the right to sell tobacco creating an upward pressure on prices. Over time, the total sales amount available would be reduced – the sinking lid. Market economics should ensure that cigarette cost increases as supply reduces to the point of elimination. An advantage here is that change is gradual and smokers will be making individual, autonomous decisions to attempt cessation at their own price point.

A final cost initiative would be differential nicotine taxation. As there is a level of nicotine below which cigarettes are nonsatisfying (see below for further discussion), such ultra low nicotine delivery cigarettes could be taxed at a low rate and all presently available and higher nicotine cigarettes would be taxed at a much higher level – perhaps prohibitively so. This does not amount to an outright ban on tobacco sales. Cigarettes would be still available but the policy would steer smokers toward essentially nonaddictive tobacco products. For the recent quitter there would be a greater cost barrier against smoking a ‘relapse cigarette’ that might re-start the addiction cycle.

Product regulation – additives

In considering these plans, it is first necessary to review some basics of tobacco chemistry and product development. The modern cigarette is not simply dried vegetable matter in paper. It is a remanufactured paper-like material containing tobacco leaf, other components of the tobacco plant and a wide range of additives. In submissions to the United States of America’s Department of Health and Human Services in 1994, the five major tobacco companies nominated 599 additives that might be included in some or all cigarettes marketed in the USA. These range from sugars, corn oils, starches to tea leaf and any number of individual compounds with uncertain harms when burnt and inhaled. Philip Morris lists on its website over 140 additives and extracts in its products sold in Australia.¹⁷ A nonexhaustive list of



some common substances known to be added in the process of tobacco manufacture include:

- herbs, spices
- honey, glucose, sucrose, fructose
- strawberry, grape, orange
- clove, cinnamon
- pineapple, vanilla, coconut, liquorice
- cocoa, chocolate, cherry, coffee
- nicotine
- ammonia.

The particular role of individual additives is largely undeclared but broadly they alter flavour characteristics or make smoking less unpleasant. In many countries and in some Australian states, there are some restrictions on additives – generally to ban fruity flavoured cigarettes. A more effective strategy would be to ban all nontobacco additives. This would leave the manufacturer free to blend different styles of tobacco leaf or stem only. Based on disclosed information, the resultant cigarette would be described as harsh or unpleasant. It may be still addictive, but there would be an inherent aversive experience during smoking. This is likely to have a great effect on childhood smoking uptake, encourage adult cessation and reduce the risk of sustained relapse after cessation.

“Contrary to the view that Philip Morris ‘lucked’ into the highly successful Marlboro, it is logical to assume that the Marlboro was a systematically designed cigarette incorporating results from the basic biological, behavioural, and product research Philip Morris had conducted over a period of many years. The results from more recent research permit Philip Morris to systematically modify the Marlboro in a logical manner.”¹⁸

A ban on only some additives could be problematic. The regulatory body doing so would, in effect, be specifying what is safe versus unsafe as a cigarette component and we lack the knowledge to do so. If only a subset of additives were banned, which would be permitted and which banned? If the initial round of exclusions has no effect, how many iterative steps would be gone through? Even proving nonaddiction would be a significant challenge as many of the additives also occur naturally in tobacco. A further criticism could be that, by banning additives, the intent is to change a pleasant pursuit to an unpleasant one.

Product regulation – nicotine availability and delivery

It is known that the amount of nicotine in what passes for tobacco in a cigarette can be increased or reduced. This can be to the point of virtual elimination and such processes were first patented more than a century ago.¹⁹ However, in retail cigarettes the ratio between nicotine and tar content is kept relatively constant. Cigarettes with low ratios of nicotine to tar are described as unsatisfying whereas those with a high ratio are harsh.²⁰ So-called mild or light cigarettes are low in both tar and nicotine and thus require the dependent smoker to inhale, insensibly, more smoke to achieve the desired nicotine levels. When tar levels first declined in cigarettes in the 1950s and 1960s, it was identified that this created a challenge in ensuring that cigarettes were satisfying (for satisfying read addictive). This is because an inherent characteristic of modern tobacco is

that it burns with relatively acidic smoke – an environment in which nicotine is largely ionised and poorly absorbed. This poor absorption is the reason that cigarette smoke, unlike cigar or pipe smoke, must be deeply inhaled for absorption. To enhance effective nicotine delivery, ammonia or another alkalising substance is added to the remanufactured tobacco. This increases smoke pH and the equivalent of freebasing nicotine is created.²¹ Precise smoke pH manipulation was recognised by competitor companies as one of the main reasons for the success of the Marlboro cigarette.

This product evolution that is responsible for enormous health harms could be reversed by requiring that tobacco have both a maximal smoke pH and measured nicotine delivery. Cigarettes can be developed that deliver more tar and nicotine in vivo than on smoking machines but this may not be important once very low nicotine and tar are specified. There is no doubt that this is technically feasible and it is the simplest and most easily validated form of product regulation. Smokers who switch to lowish nicotine cigarettes auto-regulate smoking so that nicotine and tar exposures remain little changed. No one knew this better than tobacco industry scientists.²² However, maintenance of nicotine levels through compensatory oversmoking is not achieved with ultra low nicotine products and the smoking practice itself appears to mitigate some withdrawal symptoms²³ so that this change should be better tolerated than sudden withdrawal or an implemented ban. Restricting effective delivery of nicotine in a cigarette below a certain level creates a product that smokers will not continue using. This was the experience of Philip Morris when an ultra low nicotine cigarette was test marketed.²⁴ Therefore, even if there is a short term risk of oversmoking these cigarettes, there is a substantially greater benefit from the smoking cessation that will very likely be achieved.

It is possible to combine restrictions on additives and nicotine delivery. The effect would be to reverse the development process of the modern cigarette, which could be effective. Removing the addictive elements of a harmful product is neither novel nor revolutionary. Compulsory reformulation of compound analgesics and the eventual ban on over-the-counter sales in the late 1970s effectively reduced consumption and were followed by dramatic reductions in analgesic nephropathy and other harms of compound analgesic abuse.²⁵ It stands as one of the great achievements of public health by regulation. Importantly, the products were never banned outright but use just faded away. Control of petrol sniffing and other volatile substance use in Australian Indigenous communities is another example. Although a number of interventions and educational actions had been undertaken, it was fuel substitution finally culminating in the implementation of OPAL fuel that saw reductions in sniffing of the magnitude of smoking reductions that are required to reverse health harms.²⁶ Although other actions will be required, only the elimination of a tolerable, addictive cigarette will truly address the harms of smoking in the most vulnerable groups and is the cheapest, effective action as the full costs are transferred to the tobacco manufacturer.

“Anytime we conducted a consumer acceptance test, using very low nicotine-containing cigarettes, we had a great many problems maintaining our smoking population. People did not want to smoke cigarettes with a minimum of nicotine over a long period of time ... from this I am forced to conclude that a nicotine-free cigarette would be most unacceptable.”²¹



A tobacco industry buy-out

In the current model, the tobacco industry has a corporate mission of selling unhealthy products so as to profit its shareholders. Its aims and purposes are intrinsically misaligned with the public good and will ever remain so. However, if the tobacco industry were nationalised, with the intent of winding down operations, the interests of those providing tobacco and public health would be aligned.

For the amount of health harms caused, the tobacco industry is not highly profitable. The total profit of the three major tobacco companies in Australia in 2007 was \$600 million on assets of \$3.6 billion.²⁷ The profit per tobacco related death was approximately \$20 000. Profits must decline in time as smoking rates fall as intended. Based on asset base and a reasonable profit to projected earnings multiple, a buy-out in Australia might cost in the range of \$5 billion. Estimates of the cost of nationalisation in Canada range from \$0–15 billion.²⁸ Purchase could be sweetened by protection from civil litigation. Even if it costs of the order of several billions, it would rapidly return that in terms of quantifiable reductions in healthcare costs.

Conclusion

Australia should follow New Zealand and aim for virtual elimination of tobacco use by 2025. This will begin with societal acceptance of its desirability underpinned by the substantial health and economic benefits that will follow. There may, in coming years, be considerable discussion and disagreement about strategy but there should be none about the need. Discussion is healthy. Importantly, endgame planning does not replace current actions nor is it disrespectful of recent or present initiatives. Multiple actions are required. Social marketing and price increases should continue but the action likely to have greatest impact is the regulation of additives, smoke pH and nicotine as this eliminates the inherent addictive nature of smoking. Only when cigarettes are presented in an expensive and nonaddictive form can it be truly said that smokers choose to commence smoking, to continue smoking or to return to smoking after successful cessation.

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