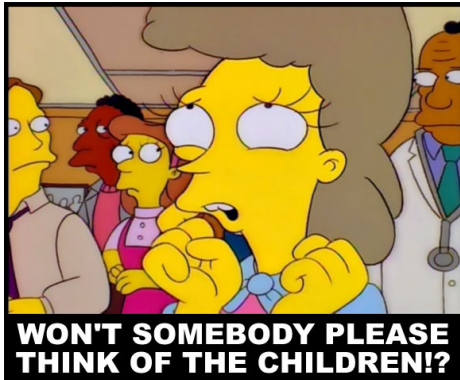


We need to talk about the children - the gateway effect examined

written by Clive Bates | 17 June 2013



Time to discuss the 'gateway effect'... the idea that e-cigarettes or snus (a form of low risk smokeless tobacco) might be a cause of children taking up high risk cigarette smoking that would not otherwise happen. There's virtually nothing in this theory - it is largely a campaigning tactic. But you hear much less about the genuine *beneficial gateway effects* that lead kids away from smoking. As my friend David Sweanor puts it:

"beware the unintended consequences of our fear of unintended consequences"

This Huff Post article is typical of the casual expression of this concern: [E-Cigarettes Gain Steam, But Health Experts Wary It Could Serve As 'Gateway' To Tobacco Smoking](#). Similar sentiments from [ASH at the announcement of the MHRA decision to regulate e-cigarettes](#):

Crucially [regulation] will also ensure marketing of e-cigarettes and other such products is controlled to prevent their promotion to children and non-smokers"

And this commentary in the Journal of Adolescent Health, [E-cigarettes: the new nicotine gateway](#) expressed the author's concern thus:

What can be done to prevent e-cigarettes from becoming the newest gateway to addiction for millions of youth? Lessons from years of dealing with the tobacco industry and burden of tobacco in our society, especially our youth, should be heeded

A more complete look at gateways

But this vaguely expressed concern doesn't capture all the possible changes to smoking behaviours that might arise from the introduction of e-cigarettes into a world where nicotine use is dominated by smoking. There are also interesting and valuable 'gateways' for youth that you don't hear much about from the public health community when the subject of gateways comes up. And its always important to consider a 'counterfactual' - what would have happened if there were no e-cigs. For example, new pathways for young people that might arise following introduction of e-cigarettes include:

1. Kids who would have otherwise smoked for life start to use e-cigs instead and stick with them for life
2. Kids who would have otherwise smoked for life start smoking but switch to e-cigs before they are 35 and so avoid almost all of the excess mortality risk [see below] - either using e-cigs for life or using them to quit completely
3. Kids who would have otherwise started smoking start using e-cigs then 'progress' to smoking
4. Kids who would never have smoked or used nicotine start using e-cigs, and may stop or use them for life
5. Kids who would never have smoked or used nicotine, start to use e-cigs and 'progress' to smoking then switch back to e-cigs before they are 35 - either using them for life or to quit
6. Kids who would never have smoked or used nicotine, start to use e-cigs and 'progress' to smoking and then smoke for life without going back to e-cigs
7. Kids who start smoking and never use e-cigarettes despite their availability and reduced risk (not really a new pathway)

Different types gateways

The following is a simple assessment based on the two assumptions: that people who stop smoking before 35 avoid all of the long term risk [see below] and e-cigs and snus have negligible risks - the effect of switching to them on long term

mortality risk is close to the same as quitting (or if not safe, close to other lifestyle risks we routinely accept).

Beneficial gateways. In pathways 1 and 2 there are very significant health gains as e-cigs displace long-term smoking that would otherwise happen. These are 'good' gateways and it is important that concern about 'bad' gateways doesn't close these down with indifference to the harmful consequences. Every gateway discussion should include a rejoinder about these pathways.

Neutral gateways. In pathways 3, 4 and 5 the *net* health impact of introducing e-cigarettes is likely to be negligible. Pathway 7 represents the dominant gateway to smoking - directly via cigarette smoking. This option always remains even if you shut down the e-cig route completely with a complete ban, as some misguided countries have done. These pathways are important for people who like taking nicotine.

Harmful gateways. Only in pathway 6 is there significant *net additional* harm arising from the introduction of e-cigarettes. We must then consider how popular this pathway is likely to be. Pathway 4 and 5 are not especially harmful but involve nicotine use where there otherwise would be none - in this case, we have to weigh our concern about recreation drug use compared to the cancer, cardiovascular and respiratory risks.

Some observations

Valuing the beneficial gateways. The two beneficial gateways provide an early diversion from a life of smoking, and as such they are actually very important with potentially life-saving benefits to young people. If you intervene because of fear of the harmful gateway, you may close down these pathways and have more smoking, disease and death as a result- an *unintended consequence of the fear of unintended consequences*. There is no reason to restrict harm reduction to older people, and no reason to prevent younger people choosing safer alternatives to cigarettes, given they make a choice and cigarettes are widely available and used by many.

Finding the harmful gateway. Note that it is very difficult to tell pathways 3 & 6 apart - both end in smoking, the question is whether the e-cig use caused the smoking. Mere observation of use of e-cigs by kids cannot do this - yet

observational evidence of e-cig use (as in 3) is often used to suggest that it is causal in leading to smoking (as in 6). At a hearing in the European Parliament for World No Tobacco Day on 30 May, the European Commission official Dominik Schnichels warned the audience of a study by Dautzenberg et al. [E-cigarette a new tobacco product for school children in Paris](#) which he said was new evidence supporting a gateway effect:

64 percent of 12-14 year olds who had used e-cigarettes had never used tobacco

Wow that sounds bad: a big number, e-cigarettes and teenagers all in one sentence. But it is obviously flawed as a demonstration of gateway effects. I assumed this was cynical rather than incompetent, so I was moved to ask two questions:

Question 1: in that survey, what proportion of 12-14 year old had used e-cigs? He didn't know, of course, but the answer is 6.4% - meaning the big sounding number 64% is actually referring 64% of 6.4% of kids. He should have known this and not disclosing it was misleading - but then the Commission has virtually no evidence for what it is trying to do so we've come to expect this sort of thing.

Question 2: how many of these kids would have otherwise experimented with smoking had there been no e-cigs? He didn't know the answer to this either. But this time he has an excuse - it can't be known. But whatever the answer is, it determines whether this tiny effect is actually a gateway or not. It is perfectly possible that all the kids observed with e-cigs would have experimented with cigarettes or that starting use of e-cigarettes is just a random ordering effect and wouldn't be the *cause* of starting to smoke subsequently.

You read more of this sort of manipulative misuse of the observed nicotine status or attitudes of kids in the German Cancer Research Center publication: [Electronic cigarettes - an overview](#) (see p.18). This report draws a conclusion that is superficially sensible, but actually perverse:

Although willingness to try electronic cigarettes seems to be particularly high among those adolescents who are more open to smoking [92], it is important that initiation of nicotine use should not be facilitated but discouraged amongst young people.

No, not really... this contains a contradiction. Do they really mean those most inclined to smoke should be left to smoke and alternatives marginalised or banned? Perhaps the smokers should be *encouraged* to use e-cigarettes instead of smoking - or at least not dissuaded or prevented?

Plausibility of the harmful gateway. However, none of that is to say the harmful pathway (pathway 6 above) can't happen. But how plausible is it and at what scale? How likely is the 'progression' from e-cigarettes to smoking in pathway 6 given the characteristics of e-cigs and cigs respectively? So we take some advice from an excellent post by Carl Pillips: [*How to convince someone they really don't understand what they are talking about*](#). His main recommendation is that you ask people to explain in detail how their beliefs work in practice. So we will try to think through how this harmful gateway would happen in reality.

- What sort of teenagers just have one bad habit at a time and have them in an order that allows us to claim the earlier one caused the later one?
- Why would someone who wouldn't otherwise have smoked decide to vape but not try smoking?
- Why would they then decide that they want to progress from a clean, practically harmless, diverse, customisable, non-pariah product into something harmful, dirty, messy anti-social etc? It would be like going from colour TV to black and white; word processor to hand writing. Most smokers express delight at the switch from cigs to e-cigs.
- Why would they not turn back to e-cigs at some point by mid life and join pathway 4 - this avoiding almost all harm?
- What is the plausibility that someone would *only* experiment with e-cigs but not cigs - surely kids are trying a bit of everything?
- Maybe nicotine addiction grips them? But if they were inclined to nicotine addiction, why wouldn't they discover that cigarettes were for them from the outset?
- Maybe they are lured in because e-cigs are safer? But if fear is a factor (unlikely anyway) why would they switch to something more dangerous?
- And so on...

Unintended consequences. I'm sure harmful gateways could happen, but only in tiny numbers - and we cannot design any system that creates complete isolation of young people from products intended for adults. We simply do not create absolute protections of young people - not least because we allow the dominant

pathway to smoking, cigarettes, to be widely available and easily accessible to young people (pathway 7 above). On the other hand, restrictions on e-cigarettes to prevent a harmful gateway happening would actually imperil young people by denying them beneficial gateways in pathways 1 and 2. I have never heard a single proponent of 'gateway' effects ever mention and weigh the harms caused by denying these beneficial gateways - and its one reason to suspect that 'gateways' are more a campaigning tactic than real or a well-founded concern.

How real might the unintended consequences of the fear of unintended consequences be? The study cited in the quote above from the German Cancer Center report is Pepper et al [Adolescent Males' Awareness of and Willingness to Try Electronic Cigarettes](#). It's a small study and not that good, but illustrates some useful points. In the discussion:

Being a smoker was the strongest predictor of willingness to try an e-cigarette. Even after controlling for other statistically significant correlates, the odds of a smoker being willing to try an e-cigarette were 10 times the odds of a nonsmoker. This pattern is consistent with survey data showing that most adult e-cigarette users are or were smokers. Because adolescent smokers exhibit more sensation seeking than nonsmokers, smokers may be more willing to try new, potentially risky behaviors, such as e-cigarette use, than their nonsmoking counterparts.

So, this study at least shows that those with a higher propensity to smoke have much greater interest in e-cigs. This is good news. It means that e-cigarettes might be able to divert them away from smoking - onto beneficial pathways 1 and 2 above. I draw the absolute opposite conclusion from most of the commentary about this report. Young smokers are interested in switching - that's a very a good thing, and we would be mad to intervene to prevent them or dissuade them in some way.

Renormalisation of smoking? Kids will do what adults do... The dominant determinant of teenage smoking is the adult smoking behaviours that young people are exposed to - it is part of an initiation into adult life [see [here](#), [here](#) and [here](#)]. It follows that one of the most promising means of reducing teenage smoking is reducing smoking among adults. This is where e-cigs have amazing potential both for adults and for kids. Those that say that e-cigs renormalise

smoking have this wrong: their differences are far greater than their similarities, and no-one can mistake their parent's use of an e-cig for smoking. E-cigarettes only normalise e-cigarettes *and this is good*: it makes the beneficial gateways 1 and 2 more likely as well as encouraging adult smokers to try them - see [The Economist](#) on this. Again, when people say that e-cigs normalise smoking rather than e-cigs, I suggest you ask them how that works, and would they mind explaining it [wear your politely interested, but mildly pitying face while you do this].

Youth smoking campaigns - cream skimming and sump dipping. Supposing that instead of pursuing the beneficial gateways above, we instead focussed only on prevention of youth initiation - ie trying to stop kids starting any sort of nicotine use. But what if those campaigns or measures were effective mostly with kids that are more likely to give up before 35 anyway, and less effective with those destined to be life long smokers? Measures targeted at prevention of youth initiation may have a 'cream skimming' effect. Those who have been 'protected' by tobacco control measures may not have been in that much danger to start with - all we avoid is a youthful flirtation with tobacco. We should look carefully at whether the beneficial gateways from smoking to e-cigs are capable of reaching a population of 'hard core' nicotine users that are not reached so easily by other methods - people with certain psychiatric condition might be a good example, or people who live in very poor circumstances where smoking is still pervasive. This is partly conjecture on my part, but it's the sort of question that never figures in the litany of distracting questions about e-cigs thrown up by crypto-prohibitionists - as in this [blog & report](#) from Cancer Research UK.

The case of snus. A tobacco nicotine product that is about 95-99% lower risk than smoking has been banned in the EU other than in Sweden. The justification for this remains largely based on its supposed role as a gateway. Take this from the European Commission's impact assessment for the proposed tobacco products directive. It forms part of its justification for banning snus in the EU other than in Sweden, but is a complete misreading of the evidence:

A survey undertaken by the Swedish National Institute of Public Health reveals that four out of ten oral tobacco (snus) users started using tobacco with oral tobacco. [288] In Norway, recruitment of oral tobacco (snus) users among young people, including recruitment of those with no previous experience of smoking, is increasing. [289] Results from cross-sectional studies from Norway

show that over 40% of young people (16-20 years old) of daily snus users had no previous smoking experience.

[289] According to SSB Statistics Norway responsible for coordinating all official statistics in Norway, use of oral tobacco (snus) has increased from 9% to 25% among men 16-24 years old from 2001-2011 and from almost not measureable figures to 11% for women in the same age group.

This is a good thing dressed up as a problem. As I'm sure you recognise by now, these findings are consistent with beneficial gateway pathway 1 - many of these snus users would otherwise be smoking, which is what their comrades in other EU countries are doing. What the Commission didn't mention in its analysis of this data is that Sweden (13%) and Norway (16%) have the lowest rates of smoking prevalence in Europe by some distance, and much lower than the EU average of 28%. This suggests that overall, the various beneficial gateways available with the introduction of a low risk product cause a net reduction in smoking. The case for a gateway effect into smoking doesn't exist. In fact, the research suggests snus is a net gateway out of smoking - see [Foulds et al 2003: Effect of smokeless tobacco \(snus\) on smoking and public health in Sweden](#).

Snus availability in Sweden appears to have contributed to the unusually low rates of smoking among Swedish men by helping them transfer to a notably less harmful form of nicotine dependence.

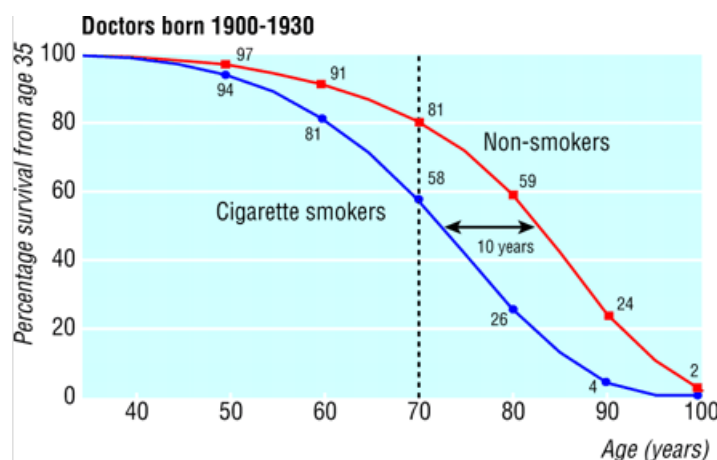
The same effects are found in Norway, from [Lund et al 2010: The association between use of snus and quit rates for smoking: results from seven Norwegian cross-sectional studies](#). The results broadly suggest that snus is used to stop smoking. The authors conclude, with due caution:

Consistent with Swedish studies, Norwegian data shows that experience of using snus is associated with an increased probability of being a former smoker. In Scandinavia, snus may play a role in quitting smoking but other explanations, such as greater motivation to stop in snus users, cannot be ruled out.

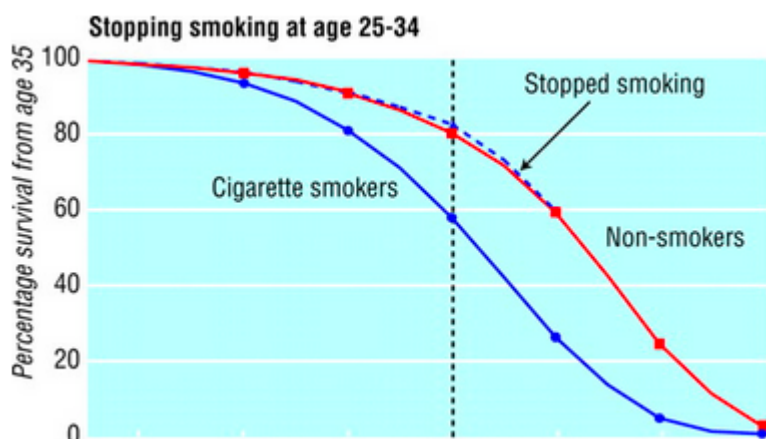
The most significant thing about Sweden and snus is that there is absolutely no sign of any gateway, and it is an [outlier in terms of objective success criteria](#), but

the cancer, heart and lung charities and WHO just don't want to know. This gets back to my point - gateway effects are campaigning tactics.

Stopping smoking by age 35 avoids virtually all the long term damage. I have sort of assumed above that no lasting damage is done if someone stops smoking before they get beyond 35 - but this is actually true. The seminal study that shows this is of UK doctors smoking followed up over 50 years. [Richard Doll et al \(2004\) Mortality in relation to smoking: 50 years' observations on male British doctors](#). They first show the effect of a lifetime of smoking is a loss of 10 years of life on average:



But the especially interesting are the charts on what happens if you quit rather than smoke for life. This is the chart for doctors who quit before age 35. No effect!



Charts for other ages for quitting (35-44, 45-54, 55-64) can be viewed [here](#) - you'll see that even in your sixties there's still a lot of risk that can be avoided.

The not-very popular Campaign for the Protection of Grumpy Old Men. So the

chart shows *no difference* in life expectancy for doctors who smoked to 35 and those who never smoked. This isn't information you hear very often, probably because of concerns it will make smoking look not that dangerous to take up and because the real risk is reaching 35 and being unable to stop due to addiction to nicotine. But if we care about health, it is actually very encouraging - especially once e-cigs enter the picture.

1. It means the primary at-risk group are those entering middle age (ie. 40s onwards) as smokers, not kids *per se*. It means that youthful experimentation does not carry a lifelong penalty - the exist gateways via quitting completely, switching to e-cigs or snus, or quitting via e-cigs or snus provide great health returns.
2. It should mean more of the attention in 'tobacco control' needs to go on the options for this older at-risk group. When to you ever hear politicians with a rally cry: "we must protect the grumpy old men!". We shouldn't take measures that harm this group or fail to provide them with options because of largely groundless fears about gateway effects and young people starting. So I think the ban on snus, which is largely justified on gateway grounds is utterly reprehensible - and anything done to e-cigs to make them less attractive to young people that also makes them less attractive to older people is just as bad.
3. It means that people who have developed a nicotine habit/addiction, or just simply like it, will be able to avoid almost all the premature mortality risk of smoking by switching to e-cigarettes by 35, and without having to quit completely. I don't want to be judgemental about nicotine addiction - I've much more to say in a later post on this slippery subject - but if you consider nicotine to be beneficial or a good drug, the calculations about e-cigarettes and the beneficial gateways above are overwhelmingly favourable.
4. It is never too late to start vaping. Even in your sixties it is possible to avoid a sizeable amount of premature mortality risk. And not to mention all the other more immediate health, wellbeing, social, financial and psychological benefits - whilst still the benefits of nicotine.

Some final conclusions

1. Harmful gateways effects exist mostly in the imagination - or grossly over-

interpreted observational data. It is hard to imagine how they work, why people would go there, and involves believing a simplistic sequential, 'causal chaining' model of normal teenage experimentation.

2. Beneficial gateway effects arise from having a functionally credible low-risk alternative to the dominant high risk product, which people can substitute for. These gateways are much more plausible because they involve much more rationale self-interested transitions.

3. Harmful gateways are mostly used as an unanswerable distracting challenge to harm reduction development people don't like for other reasons - they are mainly a campaigning tactic. When gateways effects are shown to be overwhelmingly positive, as with snus in Sweden, these campaigners do not change their view.

4. Children should not be used as 'policy hostages' by campaigners and used to hold adults to ransom by denying them products and pathways that would help them. We should create the right adult society and kids will initiate themselves into that. It shouldn't work the other way around. Almost any adult behaviour can be challenged by reference to 'think of the children...' arguments with unfalsifiable conjectures about what might go wrong.

5. The compassionate society looks after the welfare of those at greatest risk from smoking by giving them options to reduce their risk (at least not obstructing or banning them), being non-judgemental about recreational drug use *per se* (given we virtually all do it with alcohol or caffeine) and to be fully informed and not misled by propaganda, excessive risk aversion, exaggerated fears etc. Those at greatest risk are adults still smoking as they enter middle age - e-cigs, snus and harm reduction strategies are critical for their welfare.

6. In short, we should stop being infantile about children.