

Review of: "E-cigarettes in young people: applying the precautionary principle in primary care"

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According to its authors, this editorial by the Royal College of General Practitioners (RCGP) Adolescent Health Group...

...highlights the concerns about adolescents, and offers support to primary care practitioners when assessing e-cigarette use in young people.

Unfortunately, the editorial does not meet an acceptable standard for publication or for informing hard-pressed general practitioners (GPs) with reliable or actionable insights.

I will describe a range of issues with the paper.

1. The precautionary principle is misapplied

From its title, the editorial claims to apply the precautionary principle to adolescent vaping in primary care. But to make that the central premise of the paper, it is important to know what this principle means in reality and how to apply it in this situation. Despite featuring in the title, there is no discussion of the precautionary principle, no citation of a definition, and no attempt to apply this (undefined) principle to the situation they are discussing. The final section of the paper has the words 'precautionary principle' in the title, but doesn't say anything about it. The authors could have drawn on, for example, the application of the precautionary principle in use in the European Union since 2000.^[1] Had they done so, they would have found the precautionary principle does not automatically justify restrictions or bans as a response to uncertainty. It requires the application of several general risk-management principles:^[2]

Proportionality between the measures taken and the chosen level of protection;

Non-discrimination in application of the measures;

Consistency of the measures with similar measures already taken in similar situations or using similar approaches;

Examination of the benefits and costs of action or lack of action;

Review of the measures in the light of scientific developments.

In a world where cigarettes are permitted and pervasively available, it is hard to see how punitive restrictions or bans on

vaping products would meet these criteria.

The precautionary principle is a common vehicle for expressing opposition to innovation, and vaping has been no exception.^[3] However, this principle does not work well in a situation where banning or over-regulating vaping can cause unintended consequences that are far worse than vaping itself. In other words, the principle may be applicable when creating a novel risk where none currently exists, especially if it has foreseeable serious or irreversible consequences. However, it is not straightforward where a novel low-risk consumer technology enters a market dominated by an established high-risk technology, in this case, cigarettes. Equal weight has to be given to the risks of both intervention and non-intervention - allowing, disallowing or suppressing the new innovation. That means assessing potential unintended consequences arising from "precautionary" intervention - such as increased smoking or other substance use, criminalising supply (including young people who become involved in supply), or stimulation of users' homemade workarounds.

2. The discussion of vaping prevalence ignores the beneficial displacement of smoking by e-cigarettes

The authors discuss the rise of youth vaping without discussing the decline in smoking. In 2021, 3% of pupils were classified as current smokers. This is a fall from 5% in 2018, and continues a general decline since 1996 when 22% of pupils were current smokers.^[4] There is a substantial literature explaining that cigarettes and e-cigarettes function as substitutes^[5] and that this is likely for youth too.^[6] If they are substitutes, vaping may be a good thing, even among adolescents. In the expert community, it has been established for some time that headline prevalence statistics can conceal more than they reveal and that any analysis of youth vaping should account for frequency or intensity of use and the likelihood that a person would otherwise be a smoker.^[7] A young person who vapes instead of smoking - either because they have switched or diverted from smoking onset - represents a public health gain, even if they are vaping frequently.

The authors wish to draw the attention of GPs to the rise in youth vaping.

Around 8% of young people are currently using e-cigarettes.

They cite a survey by ASH^[8] [Figure 2] that gives regular use (meaning more than once per week, in this case) at 3.7%. Occasional use is of little public health concern, given the low risk profile of vaping, and the likelihood that experimental vaping will be transient. More frequent or intense use is of more concern, but this is likely to displace smoking in those inclined to nicotine use: making it a benefit. Figure 5 in the same ASH briefing shows that only 0.8% of never-smokers use vapes more than once per week - the rest are current or former smokers. Even among this 0.8%, a substantial fraction would have become smokers in a counterfactual world in which vapes did not exist. The rest were already engaged in smoking and nicotine use.

3. Perceptions of vaping safety are not responsible for youth vaping, and truthful risk communication

remains of paramount importance

The authors are concerned that young people may believe that vapes are much safer than cigarettes but that this may be causing an uptake of vaping. This is flawed in both practice and principle.

There are concerns that young people can perceive e-cigarettes as harmless: the main reason of use in those who had never smoked was 'to give it a try' while recognising a lack of awareness of ingredients and their effects.(4)

The authors' reference (4) is the exhaustive 1,400-page report by experts working for the Office of Health Improvement and Disparities (OHID), which finds that “vaping poses only a small fraction of the risks of smoking” while not without a residual risk.^[9] This report, authored by long-standing experts in the field, provides a clear basis for recommending vaping as an alternative to smoking. It also provides the basis for the advice used by the National Health Service that GPs should align with:^[10]

Also known as vapes or e-cigs, they're far less harmful than cigarettes, and can help you quit smoking for good.

They are not recommended for non-smokers and cannot be sold to people under 18 years old.

There is no evidence to show that young people believe e-cigarettes are “harmless”. The ASH document cited above shows a majority of young people (and a rising trend) incorrectly believe that vaping is at least as harmful or more harmful than smoking, and that only one-third believe they are safer.^[8] [Figure 11]. The proportion of youth believing e-cigarettes are “harmless” is not given by ASH, but among adults, this is just 0.5%.^[11]

It is unlikely that most adolescents would know much about “ingredients and their effects”, given that few people are well informed about this, as would be the case for many products. Surveys suggest that doctors are generally poorly informed about e-cigarette ingredients and their health impacts.^[12] But it should not be a surprise that a subset of young people adopt something in widespread use by adults to “give it a try”? That is a universal characteristic of adolescence. It is also one reason why most adolescent vaping is trivial or experimental and of little material concern: they are just “giving it a try”.

Even if the valid knowledge that vaping is far safer than smoking was actually causing the uptake of vaping (and it would be reasonable to expect this), that would be unethical to conceal this information from either youth or adults or replace it with misleading exaggerations of risk. Health ethicist, Brian Earp, a senior research fellow at the Uehiro Centre for Practical Ethics, University of Oxford, and associate director of the Yale-Hastings Program in Ethics and Health Policy, put it as follows in an interview with *Filter* magazine:^[13]

Children are entitled to age-appropriate factual information about the physical and social world they live in. If the thought is that children should be lied to or have true information suppressed because they might not behave as adults wish them to, this is a failure on the part of adults to communicate truthfully and pragmatically with young

people or to devise relevant enforceable rules in their best interests.

In any case, there is no argument for hiding from adults factual information about the benefits and risks of activities which they, as adults, are legally entitled to engage in; it is wrong, disrespectful and—in consequentialist terms—also often ultimately damaging to public health.

4. Environmental externalities should be balanced with health and economic benefits and communicated correctly

Under the heading “A new ecological threat”, the authors note heightened concerns about littering with disposable single-use vapes.

The Lancet recently highlighted environmental concerns with regards to incorrect vape disposal due to the release of plastic, electronic, and hazardous chemical waste into the environment.⁷ Users can be potentially unaware of the need for recycling, and disposable vapes are designed in such a way that they can be difficult to disassemble.

The authors do not show that ecosystems are under threat or provide any sort of life-cycle analysis that would put the environmental concern into context. Nor do they draw comparisons with other waste streams, including those that might be avoided, for example, medical waste associated with cancer treatment. Finally, the authors do not attempt to weigh the benefits of these products against the costs, including the environmental costs. The UK has a high societal willingness to pay for effective healthcare interventions of up to £30,000/QALY^[14]. The significant monetised benefits of smoking cessation, including longer life, better health, and reduced pressures on the NHS, should be recognised. These then need to be weighed against any environmental externalities and the fact that disposable vapes place no significant burdens on the healthcare sector. Even if a detailed assessment is not possible, it is important to at least frame the trade-offs correctly.

In their recommendations at 6., the authors suggest informing young people about a link with climate change:

Highlight the ecological harm from disposable vape use. This may motivate young people to stop on grounds of climate change.

While there might be a hazardous waste or littering issue, there is no reason to raise disposable vapes as relevant to climate change, as these products are not a material source of greenhouse gas emissions. It is important that general practitioners retain the trust of young people and do not misrepresent either the environmental impact of vaping products or the causes of climate change and its remedies.

5. Recommending the prohibition of disposable e-cigarettes requires an assessment of trade-offs and unintended consequences

The question is, what is the right approach? The editorial draws on one, and only one, proposal for addressing disposables:

The Royal College of Paediatrics and Child Health has called for a ban of all disposable e-cigarettes.

The authors are implicitly endorsing a ban because the editorial mentions this policy proposal and no others. Other options include taxation, better product stewardship and recycling schemes, improved retailer compliance through licensing, or battery regulation based on a forthcoming EU regulation.^[15] Yet a ban on disposables raises the prospect of multiple unintended consequences. These products provide a low price entry point with no upfront costs, they are simple to use, and provide an immediately satisfactory alternative experience to smoking. They may prove to be valuable in helping low-SES smokers make an initial switch. Some estimates suggest that around half the disposables market is already illicit trade. An outright prohibition would increase the extent and depth of criminal networks, and these come with multiple malign effects, including the recruitment of adolescents into the supply chain. The authors provide no reflection on the costs and consequences of *prohibition*. Given the history of prohibitions, a precautionary approach to this policy ought to be adopted.

6. Most vapes are sold to adults, and the adult market dominates the opportunity for vape companies

The authors express concerns about the marketing of vapes and draw attention to restrictive policies in Australia.

It is widely accepted that the marketing of e-cigarettes appears to target adolescents with newer, cheaper disposable products, a multitude of flavours available, and placement close to confectionary by vendors.

Asserting that something is "widely accepted" avoids any need to show that it is actually true, which it is not. The largest opportunity by far for vaping companies in the UK and anywhere else is the pool of six million adult smokers. Not only are there far more of these users, but they tend to consume nicotine every day and in quite large quantities. This is where most of the sales go too. Taking vaping prevalence and shares of the population, we can deduce that approximately ten times as many British adults use e-cigarettes as compared to adolescents. Not only are there far greater numbers of adult users, but adult users are likely to be more frequent and intensive users than adolescents. Just because there are a few well-publicised examples of irresponsible vape marketing, it does not mean a bold generalisation of the type made above is valid.

7. Australia does not provide an appealing example for the UK to follow

In their deliberation on what to do about disposable vapes, the authors draw on the experience of Australia, one of the most recent and epic failures in all of tobacco control, to flex their prohibitionist reflex:

In Australia, the sale of non-prescribed, nicotine-containing e-cigarettes is to be banned in young people, which includes disposable vapes.

However, the sale of non-prescribed vapes to both adults and young people is *already* banned in Australia. Double-banning something is like double-closing a door; the door isn't any more closed. The only legal way to buy vapes in Australia is via a prescription and an implausibly complicated import scheme that hardly anyone uses.^[16] That's because the effect of this policy has been to create chaos and a massive black market run by Australia's criminal gangs.^[17] In Australia, cigarettes are not subject to such restrictions and declines in smoking have been comparatively sluggish.^[18] Australia's "prescription-only" approach to vaping does not offer a model that Britain's GPs should aspire to.

8. There is no credible evidence for a “gateway” from teenage vaping to smoking - the evidence points in the opposite direction

The authors claim there should be concern about a gateway effect from vaping to smoking.

There is debate as to whether the use of e-cigarettes increases initiation of tobacco smoking or use of other drugs, termed as the ‘gateway effect’. There are concerns that early exposure to nicotine through e-cigarette use could drive addictive patterns in the susceptible adolescent brain. An ongoing Cochrane review aims to assess the relationship between e-cigarette use and later cigarette smoking in young people and should yield important findings.

There is no compelling evidence to support the gateway effect; smoking rates have been falling rapidly in places where vaping has been on the increase.^{[19][20]} There are studies that show an *association* between vaping and subsequent smoking, but correlation does not mean causation. There is a perfectly sound and more plausible alternative explanation for these correlations. The explanation is usually referred to as ‘common liabilities’ (also known as common risk factors or confounding): this arises from characteristics of the individual or their circumstances that incline certain young people to both smoking and vaping, which are similar behaviours in many respects. There is a wealth of literature explaining this effect, most recently a study led by mainly UK experts.^{[21][22]} While an evidence synthesis from Cochrane is always welcome, it will not change the existing and persuasive body of evidence. There is plenty of evidence that shows there is no cause for concern about a gateway effect, and if anything, the gateway is an ‘exit’, with vaping displacing smoking.

9. The misattribution of EVALI risk to nicotine vaping

The authors introduce EVALI (E-cigarette and Vaping product-Associated Lung Injury) as a risk arising from e-cigarette use and suggest that nicotine vapes may be implicated. However, this conflicts with the epidemiology of the 2019-20 outbreak of lung injuries largely localised to the United States that EVALI refers to.

The US outbreak of e-cigarette vaping-associated lung injury (EVALI) from 2019– 2020 reflects the need for

clinicians to remain vigilant to potential complications from use and report these to the Medicines and Healthcare products Regulatory Agency via the yellow card system. In these cases, vitamin E acetate and tetrahydrocannabinol (THC) were additives implicated, with a small proportion of cases (11%) where nicotine liquids were only used.

It is *not possible* for nicotine e-liquids to have been implicated in the US lung injury outbreak, which was limited in time and geography and therefore cannot have been a generic problem to vaping products of any type. It was a supply chain issue. Some illicit cannabinoid vape pen manufacturers started adding Vitamin E Acetate (VEA) to dilute THC liquids. VEA was identified as the cause of EVALI, but this diluent cannot be mixed with nicotine e-liquids and would serve no purpose if it were added. The outbreak of lung injuries stopped once the (illegal) THC vapes contaminated with VEA were cleared from the supply chain. No causal agent in *nicotine* liquids was ever identified, and no remedial action was taken for nicotine vapes, yet the lung injuries almost vanished by February 2020. People may claim to have used only nicotine, but that is because admitting to using illicit substances can create serious negative consequences for users with law enforcement, probation, visa applications, employers, educational establishments and parents. For a detailed discussion, see my paper: *The outbreak of lung injuries often known as "EVALI" had nothing to do with nicotine vaping*^[23]

However, the authors assert that EVALI should be discussed with young people in the context of e-cigarettes. Their recommendation 5 includes:

Check knowledge about e-cigarettes (components and potential harms, such as EVALI).

In calling for better knowledge about e-cigarettes, the authors are themselves conveying misleading information about the risks of nicotine vaping, including EVALI. These lung injuries were specific to THC vape supply chain adulteration in 2019-20 in the United States. If that outbreak has relevance in the UK today, it would be as a cautionary tale for consumers about buying unregulated illicit products and a cautionary tale for those recommending prohibitions and thereby ensuring prohibited goods are supplied illegally in unregulated markets.

10. The repeated references to anonymous “concerns”

The paper makes repeated references to "concerns". The word is used six times in this two-page editorial to express a negative sentiment about vaping but without showing who has these concerns or whether they are grounded in reality. Concerns are often ill-informed anxieties created as a by-product of a public discourse plagued with misinformation, as we have seen with anti-vax sentiment or concerns about the 5G cellular network. Scientific and medical institutions and publications should really stick to "findings" or "analysis", not amorphous "concerns" of unattributed origin and unclear foundation.

Recommended alternative reading

May I recommend that GPs consult the following recently published commentary in the Clinical Medicine Journal of the Royal College of Physicians by Professor Caitlin Notley and colleagues, “*Do respiratory physicians not care about people who smoke*”. [24].

Disclosure

I report no conflicts of interest with respect to the tobacco, nicotine and pharmaceutical industries. I have been an advocate for tobacco harm reduction as a public health strategy to address the burdens of smoking since 1998. I run a sustainability consultancy, Counterfactual Consulting, and have previously been a senior civil servant and the Director of Action on Smoking and Health (UK).

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