Up in Smoke

Unlocking Tobacco Harm Reduction

By Daniel Pryor

BRIEFING PAPER

EXECUTIVE SUMMARY

- The United Kingdom is a world leader in encouraging smokers to switch to alternative, less harmful nicotine products.
- Britain's success is closely linked to the broad, evidence-based consensus in favour of e-cigarettes as a smoking cessation tool. Public Health England has declared that vaping is "at least 95% less harmful".
- There is a very strong correlation between the reduction in cigarette usage and the increase in e-cigarette usage in recent years. According to PHE estimates, up to 57,000 more people have quit a year due to e-cigarettes.
- The available evidence does not substantiate recent concerns about e-cigarettes. The vast majority of e-cigarette users are former (53%) or current 'dual users' (39%) of cigarettes. Relatively few young people in the UK have taken up vaping and less than 1% of young people who have never smoked have tried vaping products. Furthermore, safety risks related to illicit products have not and are unlikely to become a concern in the UK.
- There is a need for further progress in harm reduction: there are 8.56 million smokers in Great Britain, 4.37 million smokers have tried e-cigarettes but gone back to smoking, while 2.88 million smokers have yet to try a reduced-risk product.
- There is widespread misinformation about the relative risk of e-cigarettes. Over two-fifths (43%) of UK smokers do not believe that e-cigarettes are less harmful than tobacco cigarettes.
- The most common reason for e-cigarette users returning to smoking is that vaping "didn't feel like smoking a cigarette."
- Leaving the European Union presents an opportunity for the UK to liberalise the treatment of reduced risk products, including harnessing the potential of alternative reduced-risk products such as heated tobacco and oral nicotine pouches, and ensuring high levels of public awareness about the relative risk levels of different products.
- If the Government wants to turbocharge tobacco harm reduction and achieve its stated goal of a 'smoke-free' society by 2030, they should:
    1. Develop an evidence-based set of generic health claims that can be used by regulated e-cigarette marketers to advertise products;
    2. Commission independent research to develop the evidence base in relation to heated tobacco products, with a view to allowing accurate communication of this information by marketers;

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3. Reform counterproductive elements of the EU Tobacco Products Directive post-Brexit;
4. Implement risk-based taxation to incentivise switching to reduced-risk products, building on the creation of a separate taxation category for heated tobacco;
5. Legalise snus post-Brexit with a sensible regulatory framework;
6. Encourage the NHS to take a leadership role in promoting tobacco harm reduction across trusts;
7. Allow cigarette pack inserts that exclusively advertise reduced-risk products.

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INTRODUCTION

The United Kingdom is a world leader in tobacco harm reduction: encouraging smokers to switch to alternative nicotine products that cause them significantly less harm.

Since e-cigarettes emerged onto the market earlier this decade, our public health authorities have championed them as a vital tool for encouraging smoking cessation and significantly reducing the health harms caused by smoking tobacco.[1] They have been joined by free market liberals who see reduced-risk products like e-cigarettes as an innovative, market-led method of increasing choice and safety for nicotine users.[2]

Policymakers across the political spectrum have adopted a sensible approach and based our comparatively liberal regulatory framework for e-cigarettes on reliable scientific evidence rather than media scaremongering. The results speak for themselves. Cancer Research UK has concluded that "e-cigarettes are the most popular method smokers are using to quit"[3]. The latest independent research, published in the peer-reviewed New England Journal of Medicine, shows that when e-cigarettes are accompanied by behavioural support they are "more effective for smoking cessation than nicotine-replacement therapy".[4] The United Kingdom now has one of the lowest smoking rates in Europe.[5]

While our world-leading approach to e-cigarettes is paying dividends, there is still much work to be done if we are to unlock the full potential of tobacco harm reduction. Millions of smokers have tried switching to e-cigarettes but gone back to smoking, while millions more have yet to even try a reduced-risk product.

There are two key factors contributing to this failure. Firstly, there is a lack of focus on harnessing the potential of alternative reduced-risk products such as heated tobacco and oral nicotine pouches, which can provide new options for smokers looking to switch. Secondly, there is an uncomfortably high proportion of UK smokers still unaware of, or outright reject, the public health consensus that e-cigarettes are significantly less harmful to health than cigarettes.[6]

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1 Public Health England states that "vaping is at least 95% less harmful than smoking": Public Health England, "Evidence review of e-cigarettes and heated tobacco products 2018:executive summary", (2018). Available at: https://www.gov.uk/government/publications/e-cigarettes-and-heated -tobacco-products-evidence-review/evidence-review-of-e-cigarettes-and-heated-tobacco-products-2018-executive-summary#health-risks-of-e-cigarettes

2 Daniel Pryor, "1 Million Years of Life", (2019) Available at: https://www.adamsmith.org/research/1-million-years-of-life-how-harm-reduction-in-tobacco-policy-can-save-lives

3 Cancer Research, "Electronic Cigarettes: Q&A", (2019) https://www.cancerresearchuk.org/sites/default/files /qa_electronic_cigarettes_jan_2019.pdf

4 The New England Journal of Medicine, "A randomized trial of e-cigarettes versus Nicotine-Replacement Therapy", (2019). Available at: https://www.nejm.org/doi/full/10.1056/NEJMoa1808779

5 Statistica, "Current smokers in Europe by Country" (2017). Available at: https://www.statista.com/statisti cs/433390/individuals-who-currently-smoke-cigarettes-in-european-countries/

6 Samara Wilson, Timea Partos, Ann McNeill, Leonie S.Brose, "Harm perceptions of e-cigarettes and other nicotine products in a UK sample" Available at: https://www.onlinelibrary.wiley.com/doi/10.1111/

Politicians and regulators have the power to build on recent success by enacting policy changes now that help more smokers make the switch successfully. The Government's recently released Prevention Green Paper set the goal of a 'smoke-free' society by 2030 (defined as 5% or less of the population smoking).[7] To achieve this goal the Government must fully embrace liberal harm reduction: providing a range of alternative options for current smokers looking to quit and ensuring high levels of public awareness about their relative risk levels.

TOBACCO HARM REDUCTION: THE STORY SO FAR

E-cigarettes were initially regulated by Trading Standards as consumer products. However, following the 2014 European Union Tobacco Products Directive or 'TPD' (implemented in the UK by the Tobacco and Related Products Regulation in 2016), e-cigarettes and refill containers became subject to additional regulations covering product standards, nicotine strength, safety, labelling, packaging, notification, vigilance, advertising and annual reporting.[8][9] The Medicines and Healthcare products Regulatory Agency (MHRA) became responsible for implementing these new provisions. While the UK is currently complying with the TPD, it has retained a comparatively liberal regulatory regime in areas that aren't covered by its provisions: some areas of advertising, taxation, flavourings, smoke-free environments, and more.

Public Health England first stated that "e-cigarettes are around 95% less harmful than smoking" in 2015.[10] E-cigarettes have since been embraced as an important way of reducing the harms of smoking by Cancer Research UK[11], the British Heart Foundation[12], the British Lung Foundation[13], the Royal College of Physicians[14], the

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7 Seema Kennedy MP, "Advancing our health: prevention in the 2020s", (2019). Available at: https://www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document (this was later updated to "at least 95%" in 2018, see: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684963/Evidence_review_of_e-cigarettes_and_heated_tobacco_products_2018.pdf (pg 20)

8 "EU Tobacco Directive 2014/40/EU" (2014). Available at: https://ec.europa.eu/health/sites/health/files/ tobacco/docs/dir_201440_en.pdf

9 UK "Tobacco and Related Products Regulations", (2016). Available at: http://www.legislation.gov.uk/uksi/2 016/507/contents/made

10 This has since been changed to "at least 95% less harmful than smoking." Public Health England, "E-cigarettes around 95% less harmful than tobacco estimates landmark review", (2015). Available at: https://www.gov.uk/government/news/e-cigarettes-around-95-less-harmful-than-tobacco -estimates-landmark-review

11 Cancer Research, "UK Briefing: Electronic Cigarettes", (2019). Available at: https://www.cancerresearchuk.org/sites/default/files/e-cigarette_policy_briefing_july_19_3.pdf

12 British Heart Foundation, "E-cigarettes could boost UK health, headlines claim", (2019). Available at: https://www.bhf.org.uk/informationsupport/heart-matters-magazine/news/behind-the-headlines/e-cigarettes-rcp-report

13 British Lung Foundation, "There's more evidence than ever that e-cigarettes are safe than smoking" (2019) Available: https://www.blf.org.uk/your-stories/more-evidence-than-ever-e-cigs-safer-than-smoking

14 Royal College of Physicians, "Promote e-cigarettes widely as a substitute for smoking says new RCP report", (2016). Available at: https://www.rcplondon.ac.uk/news/promote-e-cigarettes-widely-

Royal College of General Practitioners[15], Action on Smoking and Health[16], NHS Health Scotland[17], Public Health Wales[18], and more.

E-cigarettes usage and reduction in cigarette smoking

Cigarette smoking has been trending downwards in recent decades. Nevertheless, e-cigarettes appear to have helped many users quit smoking. There is an extraordinarily strong correlation between e-cigarette usage and cigarette smoking rates in recent years (See Table 1, Figure 1). The uptake in e-cigarette users has correlated closely with a reduction in cigarette smokers, and the reverse: cigarette smoking increased when e-cigarette usage slightly declined over 2016-17. In a simple linear regression model, 97.07% (r=-0.9707) of the variation in cigarette smoking since 2012 is explained by changes in e-cigarette usage. In statistical terms, this is a near perfect association between the two figures. While it is difficult to directly infer causation from an association, it does indicate the possibility of a causal relationship.

Table 1. E-cigarette users and cigarette smokers in Great Britain, 2012-18

	E-cigarette users	Cigarette smokers
2012	800,000	10,514,976
2013	1,300,000	9,896,448
2014	1,841,490	9,690,272
2015	2,275,920	9,174,832
2016	2,855,048	8,298,584
2017	2,819,740	8,659,392
2018	3,248,217	8,556,304

Source: E-cigarette use in Great Britain & Adult smoking habits in Great Britain, Office of National Statistics, 2012-2018

Previous estimates of the marginal impact that e-cigarettes have on overall quit rates vary: Public Health England has given an "upper bound estimate of around 57,000 additional quitters annually resulting from e-cigarettes" for 2016.[19] Similar

substitute- smoking-says-new-rcp-report

15 Royal College of General Practitioners, "E-cigarettes: Is vaping safe?" (2017). Available at: https://www.rcgp.org.uk/clinical-and-research/about/clinical-news/2018/september/ecigarettes-is-vaping-safe.aspx

16 Action on Smoking and Health, "ASH welcomes new Public Health England report on E-cigarettes", (2018). Available at: https://ash.org.uk/media-and-news/press-releases-media-and-news/ash-welcomes-new-public-health-england-report-e-cigarettes/

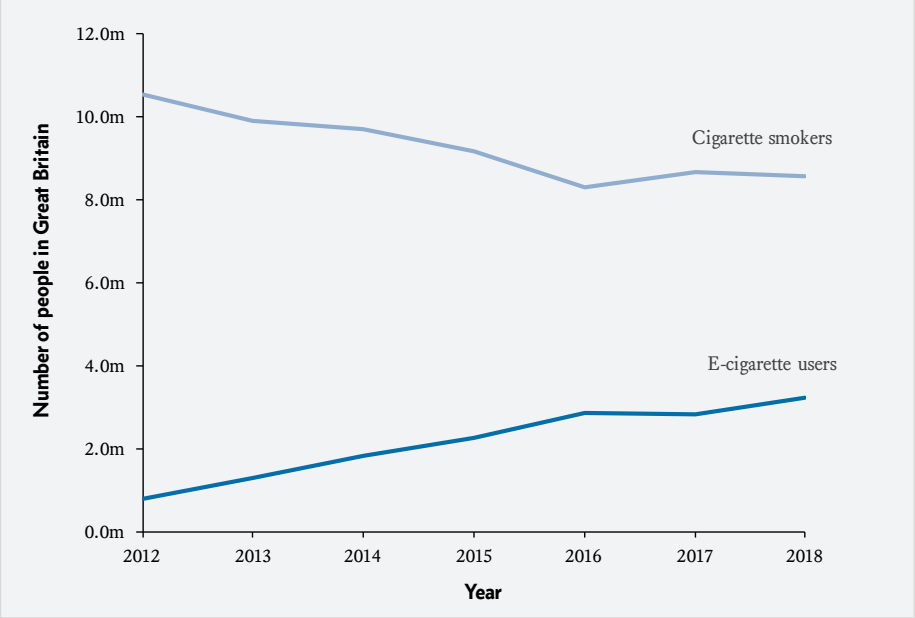
17 Public Health Scotland, "Consensus statement on e-cigarettes" (2019). Available at: http://www.healthscotland.scot/media/1576/e-cigarettes-consensus-statement_sep-2017.pdf

18 Public Health Wales, "Public Health Wales issues updated advice on e-cigarettes" (2017). Available at: http://www.wales.nhs.uk/sitesplus/888/news/43873

19 Public Health England, "Evidence review of E-cigarette and heated tobacco products 2018", (2018)

estimates have been given for 2017.[20] Recent modelling of e-cigarette adoption's potential effects on premature deaths and life years saved in the United States has yielded conservative estimates that e-cigarettes could prevent 1.6 million premature deaths and save 20.8 million years of life.[21] Previous Adam Smith Institute research concluded that under realistic assumptions over 1 million years of life could be saved if young British women used e-cigarettes at the same rate as young British men.[22]

Figure 1. E-cigarette users and cigarette smokers in Great Britain, 2012-18



Source: E-cigarette use in Great Britain & Adult smoking habits in Great Britain, Office of National Statistics, 2012-2018

The more specific data on e-cigarette users from the Office of National Statistics helps reveal the patterns of behaviour of current, previous, and potential users (see Table 2).[23] There are currently 3.2 million e-cigarette users in Great Britain. Just over half (53%) of e-cigarette users are ex-smokers, 39% are 'dual users' (of cigarettes and e-cigarettes), and less than 1-in-10 (7%) have never smoked (see Figure 2).[24] Overall, "only 0.8% of people who have never smoked... currently vape".

https://www.gov.uk/government/publications/e-cigarettes-and-heated-tobacco-products-evidence-review/evidence-review-of-e-cigarettes-and-heated-tobacco-products-2018-executive-summary

20 E Beard, R West, S Michie, J Brown in Addiction, "Association of prevalence of electronic cigarette use with smoking cessation and cigarette consumption in England: a time series analysis between 2006 and 2017" (2019). Available at: https://onlinelibrary.wiley.com/doi/abs/10.1111/add.14851

21 David T Levey, Ron Baorland, Eric Lindblom, Maciek L Goniewicz, Radael Meza, Theodore Holford, Zhe Yuan, Yuying Luo, Richard O'Connor, Raymond Niaura and David B Abrams in BMJ, "Potential deaths averted in USA by replacing cigarettes with E-cigarettes" (2017). Available at: https://tobaccocontrol.bmj .com/content/27/1/18

22 Daniel Pryor, "1 Million Years of Life", (2019) Available at: https://www.adamsmith.org/research/1-million-years-of-life-how-harm-reduction-in-tobacco-policy-can-save-lives

23 Office for National Statistics, "E-cigarette use in Great Britain", (2019). Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/datasets/ecigaretteuseingreatbritain (2018 data set, Table 2a)

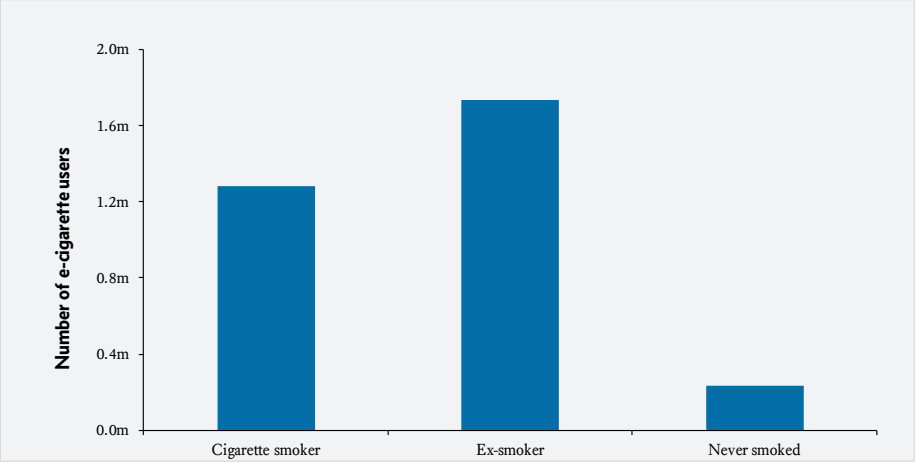
24 Office for National Statistics, "Adult smoking habits in the UK: 2018", (2018). Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2018#the-use-of-electronic-cigarettes-e-cigarettes-great-britain

Table 2. E-cigarette users in Great Britain, 2018

	Cigarette smoker	Ex-smoker	Never smoked	Total
Current e-cigarette user	1,281,000	1,731,000	236,000	3,248,000
Previous e-cigarette user	4,373,000	1,407,000	1,209,000	6,989,000
Never used e-cigarettes	2,878,000	10,401,000	28,034,000	41,313,000
Total	8,532,000	13,539,000	29,479,000	51,550,000

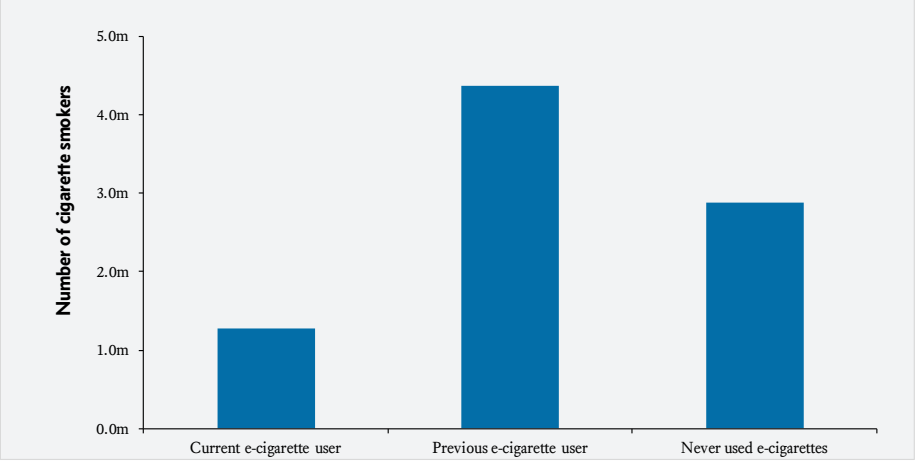
All British persons aged 16 and over, estimated overall numbers calculated from ONS percentages and weighted samples.
Source: E-cigarette use in Great Britain, Office of National Statistics, 2018

Figure 2. E-cigarettes users in Great Britain, 2018



Source: E-cigarette use in Great Britain, Office of National Statistics, 2018

Figure 3. Cigarette smokers relationship with e-cigarettes in Great Britain, 2018



Source: E-cigarette use in Great Britain, Office of National Statistics, 2018

Despite these significant public health gains from e-cigarettes, two figures of concern stand out in Figure 3. Firstly, despite e-cigarettes being widely available in the UK for the best part of a decade, a third of smokers have never tried them. This is partially due to a significant proportion of smokers holding false beliefs about the relative harms of e-cigarettes compared to cigarettes: a colossal failure to effectively communicate with smokers and an indictment of sensationalist media reporting on the subject. Recent research from King's College London has found that over two-fifths (42.7%) of UK smokers do not believe that e-cigarettes are less harmful

than tobacco cigarettes.[25] The same study also found that compared to the general population, smokers are particularly likely to be misinformed about the relative risk of e-cigarettes. There is widespread ignorance of basic facts about smoking and health among smokers, with nearly 40% holding the false belief that "nicotine in tobacco cigarettes is the chemical that causes most of the cancer."[26] Given this data, it is incumbent upon policymakers to ensure smokers' knowledge about the relative risk of e-cigarettes is improved: especially among those who have never tried e-cigarettes.

Secondly, over half (51.3%) of UK smokers are previous e-cigarettes users but not continued to use them. E-cigarettes are playing a significant role in reducing the harm caused by smoking tobacco, but they clearly aren't a viable alternative for every smoker. Action on Smoking and Health recently polled current smokers who have tried e-cigarettes but are no longer using them; they found that the most cited reason (23%) was that they "didn't feel like smoking a cigarette."[27] Other popular reasons included "they didn't help me deal with cravings for smoking" (13%) and "I didn't like the taste" (9%).

ALTERNATIVE REDUCED-RISK PRODUCTS: HEATED TOBACCO AND ORAL NICOTINE POUCHES

The evidence indicates that there is a significant proportion of smokers who are not willing or capable of switching to e-cigarettes. This raises the question as to whether there are any alternative nicotine products that are less harmful than cigarettes. Two potential options are heated tobacco and Swedish snus (as well as similar non-tobacco nicotine pouches).

Heated tobacco

Heated tobacco products are "electronic devices that heat processed tobacco instead of combusting it".[28] They have been on sale in the UK for several years and different devices are currently available in many countries around the world.

There is reasonable evidence that these alternative products are less harmful than cigarettes, play an important role in reducing health harms and encourage smoking cessation.

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25 Wilson S, Partos T, McNeill A and Brose LS, "Harm perceptions of e-cigarettes and other nicotine products in a UK sample" (2019) https://www.ncbi.nlm.nih.gov/pubmed/30609154
The situation in the USA is even worse: "the proportion of US adults who perceived e-cigarettes to be as harmful as or more harmful than cigarettes increased substantially from 2012 to 2017"
J Huang, B Feng, SR Weaver, TF Pechacek, P Slovik, M Eriksen, "Changing Perceptions of Harm of e-Cigarette vs. Cigarette Use Among Adults in 2 US National Surveys from 2012-2017", (2019). Available at: https://www.ncbi.nlm.nih.gov/pubmed/30924893

26 Ibid. (Worryingly, this also appears to be shared among many UK GPs: see https://www.emerald.com/insight/content/doi/10.1108/DAT-02-2013-0010/full/html)

27 Action on Smoking and Health, "Large national survey finds 2.9 million people now vape in Britain", (2017) https://ash.org.uk/media-and-news/press-releases-media-and-news/large-national-survey-finds-2-9-million-people-now-vape-in-britain-for-the-first-time-over-half-no-longer-smoke/

28 Erikas Simonavicius, Ann McNeill, Lion Shahab and Leonie S Brose, "Heat-not-burn tobacco products: A systematic literature review", (2019) https://tobaccocontrol.bmj.com/content/28/5/582

Public Health England concluded in 2018 that "the available evidence suggests that heated tobacco products may be considerably less harmful than tobacco cigarettes and more harmful than EC [e-cigarettes]."[29]

A recent systematic literature review of heated tobacco products concluded that "HnB [heat-not-burn] are effective nicotine delivery devices that expose users and bystanders to substantially fewer harmful and potentially harmful compounds than smoking cigarettes."[30] This review included both independent and industry-funded studies, concluding that their "findings were largely similar".

When evaluating one line of heated tobacco products, the US Food & Drug Administration found that they were "appropriate for the protection of the public health because, among several key considerations, the products produce fewer or lower levels of some toxins than combustible cigarettes."[31]

Emerging independent and industry evidence also supports the claim that the use of heated tobacco products induces smokers to substitute away from traditional cigarettes.[32][33]

Snus

Snus is a smokeless tobacco product placed under the upper lip in order to deliver nicotine. While snus has been illegal to sell in the European Union since 1992 (with the exception of Sweden, where it has remained popular for decades), similar nicotine pouches that do not contain any tobacco are currently legal for sale in the UK.

There is also evidence that snus is significantly less harmful than smoking and aids smoking cessation, with the FDA recently granting modified-risk status to several snus products.[34]

A recent systematic analysis using the Global Burden of Disease Study 2016 found no difference in any measured health outcome as a result of snus use compared to the general population.[35]

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29 Public Health England, "Evidence review of e-cigarettes and heated tobacco products in 2018", (2018) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684963/Evidence_review_of_e-cigarettes_and_heated_tobacco_products_2018.pdf (pg 220)

30 Erikas Simonavicius, Ann McNeill, Lion Shahab and Leonie S Brose, "Heat-not-burn tobacco products: A systematic literature review", (2019) https://tobaccocontrol.bmj.com/content/28/5/582

31 FDA, "FDA permits sale of IQOS Tobacco heating system", (2019) Available at: https://www.fda.gov/news -events/press-announcements/fda-permits-sale-iqos-tobacco-heating-system-through-premarket-tobacco-product-application-pathway

32 Stoklosa M, Cahn Z, Liber A, et al, "Effect of IQOS introduction on cigarette sales: evidence of decline and replacement Tobacco Control " (2019) Available at: https://tobaccocontrol.bmj.com/content/early/2019/06/1 1/tobaccocontrol-2019-054998

33 Philip Morris Annual Report (2018) http://www.annualreports.com/HostedData/AnnualReports/PDF/NYSE_PM_2018.pdf ""...IQOS continues to have high conversion rates across all markets – with converted/predominant rates ranging from 70% to 90%."" (pg 3)

34 FDA, "FDA grants first-ever modified risk orders to eight smokless tobacco products" (2019) Available at: https://www.fda.gov/news-events/press-announcements/fda-grants-first-ever-modified-risk-orders-eight-smokeless-tobacco-products

35 Global Health Metrics, "Systematic analysis for the Global Burden of Disease Study 2016", (2016).

A 2014 analysis of World Health Organisation data found that "the use of snus among Swedish men has yielded substantial public health benefits by contributing to make their level of mortality attributable to tobacco [the] lowest in Europe."[36]

Furthermore, a 2016 study concluded that "snus has both contributed to decreasing initiation of smoking and, when used subsequent to smoking, appears to facilitate smoking cessation".[37]

And although little research has been conducted into non-tobacco nicotine pouches, they are also likely to hold similar—or potentially even lower—levels of relative risk compared to cigarettes as they do not contain any tobacco-specific nitrosamines (TSNA), which are carcinogenic in certain quantities.[38]

There are some signs that the UK is beginning to change its approach to these alternative reduced-risk products. It was one of the first countries to introduce an independent taxation category for heated tobacco products, which came into force in July 2019.[39][40] Last year, the Science and Technology Committee recommended an "evidence-based review of the case for discontinuing the ban on 'snus' oral tobacco."[41]

However, much work remains to be done. Awareness of heated tobacco products is extremely low and smokers' knowledge about their relative risk level compared to cigarettes is almost certainly minimal.[42] There is virtually no data on awareness of snus or non-tobacco nicotine pouches in the UK and it is reasonable to assume that smokers are almost completely unaware of their relative risk levels.

Available at: https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(17)32366-8.pdf (pg 1364)

36 Lars Ramström and Tom Wikmans, "Mortality attributable to tobacco among men in Sweden and other European countries: an analysis of data in a WHO report", (2014). Available at: https://tobaccoinducedd iseases.biomedcentral.com/articles/10.1186/1617-9625-12-14

37 Lars Ramström, Ron Borland and Tom Wikmans, "Patterns of Smoking and Snus use in Sweden: Implications for Public Health", (2016). Available at: https://www.mdpi.com/1660-4601/13/11/1110

38 Swedish snus contains trace amounts of TSNA, which have been substantially reduced in recent decades following the adoption of the GothiaTek® industrial standard for all smokeless tobacco products in Europe (see Figure 3): https://harmreductionjournal.biomedcentral.com/articles/10.1186/1477-7517-8-11

39 The Tobacco Products (Descriptions of Products) (Amendment) Order 2019. Available at: http://www.legislation.gov.uk/uksi/2019/953/article/2/made

40 UK Tobacco Products Duty. Available at: https://www.gov.uk/guidance/tobacco-products-duty#rates

41 House of Commons Science & Technology Committee, "E-Cigarettes - Seventh Report of Session 2017-2019" (2018) - https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/505/505.pdf (pg 4)

42 The latest ONS data shows that 96.3% of UK persons aged 16 and over have never heard of heated tobacco products (2018 data set) (see Table 7): ONS, "E-cigarette use in Britain", (2019). Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/datasets/ecigaretteuseingreatbritain

Young people and the 'gateway effect'

United Kingdom

In the UK, very few young people are regularly using e-cigarettes and fears of a 'gateway effect' are not borne out by the available evidence.

The latest available NHS figures show that 2% of young people (secondary school pupils in England in Years 7 to 11) regularly use e-cigarettes.[43] Of this group, the vast majority also report that they regularly smoke cigarettes. Overall, less than 1% of young people who have never smoked have tried vaping products. A recent overview of research into the idea that e-cigarettes provide a gateway into smoking concluded that "a true gateway effect in youths has not yet been demonstrated."[44] Public Health England stated in 2019 that "while experimentation with e-cigarettes among young people has increased in recent years, regular use remains low." [45]

Furthermore, broadening out to the 16 to 24 age group, e-cigarette usage is relatively low compared to the general population and declined slightly in 2018 (See Table 3). Meanwhile cigarette smoking remains stubbornly high in the age group. This indicates the need for further harm reduction strategies targeted at young people.

Table 3. Cigarette smokers and e-cigarette users, 16-24 year olds, in Great Britain, 2014-2018

Year	E-cigarette users	Cigarette smokers
2014	1.4%	23.1%
2015	2.8%	23.5%
2016	5.8%	16.6%
2017	5.4%	19.9%
2018	4.8%	23.6%

Source: E-cigarette use in Great Britain & Adult smoking habits in Great Britain, Office of National Statistics, 2014-2018

43 NHS, "Smoking, Drinking and Drug Use among Young People in England 2018", (2019) Available at: https://digital.nhs.uk/data-and-information/publications/statistical/smoking-drinking-and-drug-use-among-young-people-in-england/2018/part-4-electronic-cigarette-use-vaping)

44 Peter Lee, Katherine Coombs and Esther Afolalu, "considerations related to vaping as a possible gateway into cigarette smoking: an analytical review", (2018) Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC6652100/

45 Public Health England, "Regular e-cigarette use remains low among young people in Britain", (2019). Available at: https://www.gov.uk/government/news/regular-e-cigarette-use-remains-low-among-young-people-in-britain

In the USA, research has found an "inverse relationship between vaping and smoking" amongst young people.[46] The weight of evidence currently suggests that contrary to fears about e-cigarettes being a causal gateway into smoking, the socio-odemographic, environmental, and behavioral factors that lead to e-cigarette use are the same factors that increase the likelihood of youth smoking (this has been termed the 'common liability' hypothesis by Public Health England).

Table 4. High School cigarette smokers and e-cigarette users in the United States, 2002-2018 (More than once in the past 30 days)

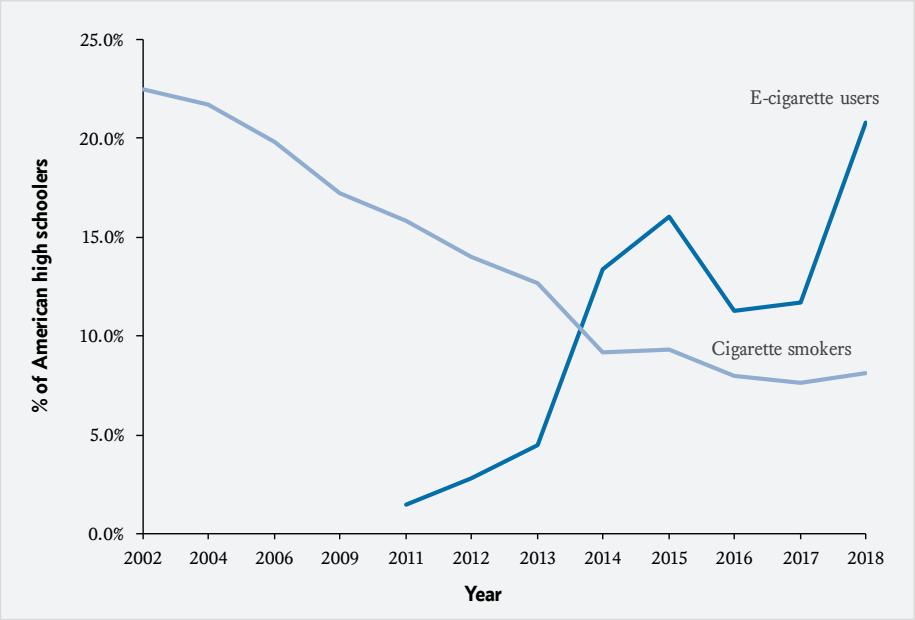
Year	E-cigarette	Cigarette
2002	-	22.5%
2004	-	21.7%
2006	-	19.8%
2009	-	17.2%
2011	1.5%	15.8%
2012	2.8%	14.0%
2013	4.5%	12.7%
2014	13.4%	9.2%
2015	16.0%	9.3%
2016	11.3%	8.0%
2017	11.7%	7.6%
2018	20.8%	8.1%

Source: National Youth Tobacco Survey 2002-2018, Centre for Disease Control[47]

46 Levy DT, Warner KE, Cummings KM, et al, "Examining the relationship of vaping to smoking initiation among US youth and young adults: a reality check Tobacco Control", (2018) Available at: https://tobacco control.bmj.com/content/early/2018/10/31/tobaccocontrol-2018-054446

47 CDC, National Youth Tobacco Survey (NYTS). Available at: https://www.cdc.gov/tobacco/data_statistics/surveys/nyts/index.htm

Figure 4. High School cigarette smokers and e-cigarette users in the United States, 2002-2018 (More than once in the past 30 days)



Source: National Youth Tobacco Survey 2002-2018, Centre for Disease Control

Secondary analysis of the latest data on e-cigarette use among US high school students—conducted by former Director of Action on Smoking and Health Clive Bates—has found that:

> Much of the youth vaping epidemic is occasional use: almost half (48.7%) is on 5 days or less – approximately weekly – rising to 58.7% vaping on 9 days or less in the last 30. Among the 26% of vapers who had not previously used other tobacco products, occasional use rises to 71.2% vaping on 5 days or less and to 80.3% on 9 days or less. [48]

Less than 1% of high school students who regularly vaped had never used tobacco products. Even if there was some evidence of a gateway effect, the overall impact of e-cigarette use on population health would be a net positive. Research published earlier this year found that for the USA, even "under worst-case assumptions, in which vaping increases smoking initiation by 6% and cessation by 5%, and vaping-induced quitters lose 10% of the health benefits, the population gains over 580000 life-years."[49]

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48 Clive Bates, "The great American youth vaping epidemic. Really?", (2019) Available at: https://www.clivebates.com/the-great-american-youth-vaping-epidemic-really/

49 Kenneth Warner and David Mendez, "E-cigarettes: Comparing the Risks of Increased Smoking Initiation with the Potential Benefits of Increased Smoking Cessation", (2018) Available at: https://academic.oup.cob m/ntr/advance-article-abstract/doi/10.1093/ntr/nty062/4956222?redirectedFrom=fulltext

Issues with illicit vaping products in the US

Recent fatalities in the United States related to e-cigarettes are not indicative of a higher level of risk for UK users.[50]

Earlier this year, a cluster of people developed severe and sudden lung injuries after e-cigarette use and several deaths have been linked to this.[51]

Following these reports, the U.S Centre for Disease Control quickly stoked fears by recommending that the public "consider not using e-cigarette products."[52] This message was being enthusiastically spread by various UK media outlets.

However, the risks for UK vapers (and worldwide e-cigarette users) are extremely low. While these unfortunate deaths and lung injuries cannot yet be traced to one underlying cause, all indications currently point towards unregulated, black market e-liquids containing THC (the psychoactive ingredient in cannabis). No such cases have ever been reported in the UK, perhaps down to the competence of our regulator (the MHRA). Public health experts in the UK weighed in on the controversy.[53] For example, Prof Peter Hajek, Director of the Tobacco Dependence Research Unit, Queen Mary University of London (QMUL), commented:

> The mystery seems to have been resolved now, with cases being traced to a contaminated marijuana extract. Although the scare is being used to put smokers off switching from cigarettes to much less risky vaping, it has nothing to do with e-cigarettes as they are normally used in this country.
>
> E-cigarettes have been around for over a decade now and are used by millions of people, with no such cases occurring. The outbreak is similar to methanol poisonings that kill people every now and then when contaminated alcohol is sold.

Public Health England's media response to the US vaping scare was exemplary.[54] However, contemporary research into e-cigarettes and alternative products such as heated tobacco often suffers from severe limitations in the strength of conclusions drawn its findings.[55] For example, research claiming that e-cigarettes cause heart

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50 This section contains revised material from the Adam Smith Institute blog: https://www.adamsmith.org/blog/dont-be-alarmed-by-americas-latest-vaping-scare

51 Jennifer Layden, Isaac Ghinai et al, "Pulmonary illness related to e-cigarette use in Illinois and Wisconsin Preliminary Report", (2019) Available at: https://www.nejm.org/doi/full/10.1056/NEJMoa1911614?query=feat ured_home

52 Center for Disease Control, "Outbreak Lung Injury Associated with E-cigarette Use, or Vaping" (2019) Available at: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html

53 Paul Aveyard, "Expert reaction to paper and commentary on recent cases of harm through vaping in the US", (2019) Available at: https://www.sciencemediacentre.org/expert-reaction-to-paper-and-commentary-on- recent-cases-of-harm-through-vaping-in-the-us/

54 For example, PHE Head of Tobacco Control Martin Dockrell in this BBC News article: https://www.bbc.co.uk/news/newsbeat-49649486

55 For a general overview of common themes in this area, see: https://www.bmj.com/content/354/bmj.i4645/rr-0

attacks made the basic error of confusing correlation with causation.[56] One study raising concerns about a flavouring often found in menthol e-cigarettes suffered from a number of key methodological issues.[57] A paper on the effects of e-cigarettes and heated tobacco aerosol went well beyond the data to make several "misleading" and alarmist claims.[58]

UNLOCKING TOBACCO HARM REDUCTION

The UK Government's stated goal is to reach 'smoke-free' by 2030. To achieve this goal, there is a need for policy changes to improve smokers' awareness of the relative risk of e-cigarettes, heated tobacco, and oral nicotine products. If policymakers and regulators want to give UK smokers the best access to safer alternatives in the world to achieve their stated smoking reduction goals they should:

1. Develop an evidence-based set of generic health claims that can be used by regulated e-cigarette marketers to advertise products.

Many smokers do not know that e-cigarettes are significantly less harmful to their health than cigarettes. There are a number of public health resources available online and in some Stop Smoking services that make the disparity clear, however, these measures have clearly not worked as effectively as is needed. The e-cigarette industry can play an important positive role in this regard through informational marketing.

In November 2018, regulations around health claims in e-cigarette marketing were relaxed for methods of non-broadcast advertising: outdoor advertising, posters on public transport, cinema, leaflets and direct mail.[59] However, the new rules state that health claims "must be specific to the advertised product" and "reports which describe the general benefits of using e-cigarettes rather than smoking tobacco, even when those reports are authored by a credible body [e.g. Public Health England], are unlikely to be considered adequate substantiation."[60]

This level of restriction is disproportionate when considering the fact that "all e-cigarette products in the UK are tightly regulated for quality and safety by the Medicines and Healthcare Products Regulatory Agency."[61] While the recent

56 Konstantinos Farsalinos and Raymond Niaura, "E-cigarette Use and Myocardial Infarction: Association Versus Causal Inference" (2019) Available at: https://www.ajpmonline.org/article/S0749-3797(18)32437- 1/abstract

57 Paul Aveyard, "Expert reaction to paper and commentary on recent cases of harm through vaping in the US", (2019) Available at: https://www.sciencemediacentre.org/expert-reaction-to-paper-and-commentary-on- recent-cases-of-harm-through-vaping-in-the-us/

58 Ed Stephens, "Expert reaction to study comparing heat-not-burn vaping and smoking", (2019) Availabe at: https://www.sciencemediacentre.org/expert-reaction-to-study-comparing-heat-not-burn-vaping-and-smoking/

59 CAP News, "Can e-cigarettes claim to be healthy?" (2018). Available at: https://www.asa.org.uk/news/can- e-cigarettes-claim-to-be-healthy.html

60 CAP and BCAP, "Claims about health in ads for e-cigarettes", (2017) Available at: https://www.asa.org.uk/ uploads/assets/uploaded/39f85b30-3dcb-4c48-af01ba313813e7db.pdf (pg 9)

61 Martin Dockrell, head of Tobacco Control at Public Health England: https://www.bbc.co.uk/news/

change is welcome, it appears that no marketer of e-cigarettes has taken advantage of the ability to make specific claims about the relative risk of their products by, for example, saying they are less harmful than cigarettes. The immense expenditure required to conduct randomised controlled experimental human studies for specific products makes it unviable.

Therefore, advertising regulators and stakeholders should work with Public Health England to design a generic list of approved health statements that can be used in marketing for all regulated e-cigarettes in the UK. This would follow the precedent of Health Canada, which is currently considering a draft list of approved relative risk statements after receiving advice from its Scientific Advisory Board on Vaping Products[62].

2. Commission independent research to develop the evidence base in relation to heated tobacco products, with a view to allowing accurate communication of this information by marketers.

As discussed, there is emerging evidence that heated tobacco products are significantly less harmful than cigarettes and effective at helping smokers to quit. However, the majority of this evidence comes from the tobacco industry. Much of it has been subject to independent scrutiny and evaluation, but it is not the gold standard of independent, peer reviewed research from randomised controlled trials. There is already a solid case for supporting regulatory changes that allow heated tobacco marketers to communicate reduced-risk statements to smokers subject to safeguards. Nevertheless, in order to ensure expert and public confidence in such a policy, the Government should commission industry-independent research to further substantiate existing data.

This need has been acknowledged by politicians. In June 2019, David Jones MP argued that the responsibility to produce this independent research "lies with the Government, as they have acknowledged."[63] Seema Kennedy MP, former Parliamentary Under Secretary of State for Public Health and Primary Care, responded by recognising the "definite need for more [independent] research to be done on heated tobacco products".

3. Reform counterproductive elements of the EU Tobacco Products Directive post-Brexit.

EU rules currently set unreasonably low limits on the size of e-cigarette liquid tanks and refill containers while limiting e-liquid nicotine content. The Adam Smith Institute has previously criticised these requirements and called for reform:

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newsbeat-49649486

62 Government of Canada, "Meeting Summary - November 19-20, 2018: Scientific Advisory Board on Vaping products", (2018). Available at: https://www.canada.ca/en/health-canada/corporate/about-health-canada/public-engagement/external-advisory-bodies/vaping-products/meeting-11-18.html

63 Hansard, "26 June 2019 11.00 AM - Mr David Jones (Clyd West) (Con)", (2019). Available at: https://hans ard.parliament.uk/commons/2019-06-26/debates/6E94BAB5-94BB-45B3-A5BC-C8456F43439C/HeatedTobacco

> Devices that can hold more than 2ml of e-liquid at any one time were banned, resulting in added inconvenience for users who must now refill their tanks more often. Meanwhile, the maximum size of e-liquid refill bottles was set at 10ml— smaller than the pre-TPD average—and has resulted in further inconvenience. This ban was enacted despite existing requirements that ensure all e-liquid bottles are childproof, meaning that any risks from children drinking or spilling e-liquid were already mitigated appropriately. Consumers must now carry more refill containers with them and manufacturers face increased packaging costs. Furthermore, an 20mg/ml upper limit on nicotine concentration in e-liquids has prevented some smokers from being able to effectively match their equivalent nicotine intake from cigarettes, reducing the viability of e-cigarettes as a smoking cessation aid.[64]

The Tobacco Products Directive (TPD) also prohibits all forms of broadcast advertising, further hampering the ability of marketers to effectively communicate the reduced-risk of e-cigarettes to current smokers. Policymakers should therefore prioritise repealing or reforming these elements of the TPD if and when the UK leaves the European Union.

4. Implement risk-based taxation to incentivise switching to reduced-risk products, building on the creation of a separate taxation category for heated tobacco.

Although the introduction of a separate taxation category for heated tobacco earlier this year is welcome, the duty rate has initially been set at the same rate as hand-rolling tobacco. Even on cautious interpretations of the current evidence, heated tobacco products are likely to be considerably less harmful than cigarettes. The Government should therefore fully implement the concept of risk-based taxation for heated tobacco in order to "maximize incentives for tobacco users to switch from the most harmful products to the least harmful ones."[65]

5. Legalise snus post-Brexit with a sensible regulatory framework.

The snus ban is hampering efforts to reduce the smoking rate. Finland was forced to ban snus in 1995 following accession to the European Union. An independent peer-reviewed study found that "in the post-ban period, smoking was 3.47 percentage points higher in Finland relative to what it would have been in the absence of the ban."[66] The UK lacks a tradition of using snus and it is likely that our ban is

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64 Daniel Pryor, "1 Million Years of Life", (2019) Available at: https://www.adamsmith.org/research/1-million-years-of-life-how-harm-reduction-in-tobacco-policy-can-save-lives

65 For a detailed explanation of risk-based taxation for nicotine-yielding products, see: Frank Chaloupka, David Sweanor and Kenneth Warner, "Differential Taxes for Differential Risks - Toward Reduced Harm from Nicotine-Yielding Products" (2015) Available at: https://www.nejm.org/doi/full/10.1056/NEJMp1505710

66 J Maki, "The incentives created by a harm reduction approach to smoking cessation: Snus and smoking in Sweden and Finland", (2015). Available at: https://www.ncbi.nlm.nih.gov/pubmed/25214359

not quite as damaging, but the Finnish data reinforces the case that legalising snus would provide UK smokers with an effective, desirable quit option.

Policymakers should begin to outline an appropriate regulatory framework for a legal, regulated snus market. Initially, Public Health England should include snus and non-tobacco nicotine pouches in its annual evidence updates on reduced-risk products (albeit the reviewed evidence will have to come from overseas). Given the available data, it is very likely that they will conclude that the relative risk of snus and non-tobacco nicotine pouch use is similar to current estimates for e-cigarettes. It should be treated in a similar regulatory manner, with marketers allowed to display substantiated relative risk statements and the Government implementing risk-based taxation in order to incentivise smokers to switch away from cigarettes.

In the interim, regulation should be quickly introduced for non-tobacco nicotine pouches in order to cement their status as a viable smoking alternative. There is currently no legal age of sale limit, no proxy-purchasing legislation, and no specific advertising regulations other than general requirements.

6. Encourage the NHS to take a leadership role in promoting tobacco harm reduction across trusts.

A recent survey of NHS trusts in England found that more than half of those surveyed prohibited vaping entirely on hospital grounds in 2018: although 14% expressed plans to amend this policy in 2019.[67] While the situation was better for mental health trusts (which disproportionately tend to cater to smokers), more than one-third of those surveyed prohibited vaping entirely.[68]

In line with the Science and Technology Committee's 2018 recommendations, "NHS England should set a clear central NHS policy on e-cigarettes in mental health facilities which establishes a default of allowing e-cigarette use by patients unless an NHS trust can show reasons for not doing so which are demonstrably evidence-based."[69] However, this policy should be extended to non-mental health trusts as well in order to maximise the scope of harm reduction.

7. Allow cigarette pack inserts that exclusively advertise reduced-risk products.

If the UK legislates to allow cigarette pack inserts that inform smokers about a range of reduced-risk products (including e-cigarettes, heated tobacco, or nicotine pouches), this will undoubtedly improve their awareness of safer alternatives and result in more switching away from cigarettes. It will also act as a strong incentive for industry actors to further develop their portfolios of reduced-risk products, re-

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67 Mark Tovey, "Prejudice and Prohibition - Results of a study of smoking and vaping policies in NHS policies trusts", (2019) Available at: http://www.forestonline.org/files/3915/5222/7436/Prejudice_and_Prohibition.pdf

68 "Smoking prevalence among people with a mental health condition is higher than the average rate in the general population." See: http://smokefreeaction.org.uk/smokefree-nhs/smoking-and-mental-health/

69 House of Commons Science & Technology Committee, "E-Cigarettes - Seventh Report of Session 2017-2019" (2018) Availble at: https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/505/505.pdf (pg 26 Section 57)

sulting in more attractive alternatives for current smokers. These inserts could be regulated or managed by the Department of Health, and should include substantiated statements on relative risk.

CONCLUSION

The Government's recent green paper on prevention emphasises the concept of 'personalised prevention'. Applied to the field of tobacco harm reduction, this means providing smokers with reduced-risk alternatives that cater for specific tastes and requirements. Different individuals have different ways of giving up smoking that work best for them, and it is incumbent upon policymakers to ensure they are fully aware of safer nicotine options: as well as incentivised to switch to them.

Tobacco harm reduction has been a huge success in the United Kingdom. It now enjoys support from across the political divide, uniting public health authorities and free market liberals alike. While nicotine is here to stay, for many Brits smoking has already been superseded by superior, safer alternatives. The task for politicians and regulators is to ensure we keep up this momentum and harness the power of liberalism in the fight to improve everyone's wellbeing.