Office for Health Improvement & Disparities
Youth vaping: Call for evidence
Evidence submitted by the Royal College of Paediatrics and Child Health.

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The Royal College of Paediatrics and Child Health (RCPCH) is responsible for training and examining paediatricians, setting professional standards and informing research and policy. RCPCH has over 20,000 members in the UK and internationally. We work to transform child health through knowledge, research and expertise, to improve the health and wellbeing of infants, children and young people across the world.

Question	Comments
Do you have any evidence to provide on building regulatory compliance?	Yes
What evidence is there about how and where children are accessing vapes?	• The main source for purchasing e-cigarettes in the UK is via shops with 48% of 11-17 year olds getting their e-cigarettes from shops, while 46% get given them by somebody. [ASH (2023) *Headline results ASH Smokefree GB adults and youth survey results 2023*] • Online retailers have become an accessible means to purchase e-cigarettes. Researchers in Australia conducted an audit to assess the e-cigarette e-commerce market. The audit found that only half of the 30 retailers required age verification, and that almost one-quarter provided information on where and how to purchase liquid nicotine. Inconsistencies in product displays were also identified, and promotional tactics such as promotional codes, discounting, competitions and prizes, and free samples were used to attract sales. [Wood N. (2021) *Charlotte's accessible web: how west Australian children and adolescents can access e-cigarettes online*. Aust N Z J Public Health 45: 81–82]
What evidence is there of the type of products children are accessing?	• The most frequently used device among 11-17 year olds in 2023 is a single use disposable vape, with 69% reporting to most frequently be using this type of e-cigarette, an increase from 7.7% in 2021 and 52% in 2022. The big increase in the use of disposable products has happened concurrently with higher levels of youth use. [ASH (2023) *Headline results ASH Smokefree GB adults and youth survey results 2023*]
What evidence is there of effective measures to limit children's access to vapes?	Views were collated from RCPCH members, who have suggested that: • Regulations for conventional cigarettes e.g. plain packaging and keeping cigarettes out of sight in shops has reduced access to children and young people, which suggests the same should be applied to e-cigarettes. • Requiring age verification for online sales of e-cigarettes could help prevent minors from purchasing these products. • Restricting flavours of e-cigarettes by limiting the availability of flavoured e-cigarettes, which are often marketed to young people, could help reduce their appeal to minors. • Restricting the marketing and advertising of e-cigarettes to young people could help reduce their exposure to these products.

	• Training could be provided to retailers on how to prevent the sale of e-cigarettes to minors to help reduce underage access to these products. • Enforcing existing laws and regulations related to the sale of e-cigarettes to minors could help deter retailers from selling these products to young people.
Are there any potential unintended consequences to the measures you have suggested?	
What evidence is there of children accessing nicotine-containing products, other than vapes and tobacco?	• The use of smokeless tobacco and nicotine pouches by children and young people in the UK has been less recognised. There is limited data on the use of these products, but awareness and usage of nicotine pouches is higher in younger adults. There are many different smokeless tobacco products available, including chewing tobacco and snuff. There are health concerns with these products, such as dental issues and oral cancers. Nicotine pouches are not regulated in the same way as conventional and e-cigarettes, and can be sold to those under 18 years of age due to a loophole in legislation. Previous research has reported that nicotine addiction occurs much faster in children and young people. Health professionals need to be aware of the use of smokeless tobacco and nicotine products by children and young people and be able to counsel patients and families around any risks. [Brown, S (2023) *The legal loophole letting nicotine pouches be sold to children needs addressing*]
Is there any other evidence on building regulatory compliance that the government should be aware of?	
Do you have any evidence to provide on the appeal of vapes to children? Yes/No	Yes
What evidence is there about the appeal of vapes to children?	• Young people in the UK are drawn to e-cigarettes due to the availability of various flavours, they are also convenient for young people as they are simple to use and can be easily concealed, making them a convenient substitute for traditional cigarettes. E-cigarettes are generally perceived as safer than traditional cigarettes by users and may contribute to their popularity among young people. [ASH (2022) Use of e-cigarettes among young people in Great Britain; Amin S, Dunn AG, Laranjo L. Social influence in the uptake and use of electronic cigarettes: a systematic review. Am J Prev Med 2020; 58: 129–41]
What evidence is there about the appeal of vape flavours to children?	
What evidence is there of effective measures to limit the appeal of vapes to children?	• To make vaping less appealing to young people, research suggests all e-cigarette packaging should be made similar to the type used for regular cigarettes in the UK. A study found that 11-18 year olds had higher odds of reporting no interest in trying e-cigarettes in standardised green packaging than e-cigarettes in branded packaging. [Taylor. E. (2023) *Standardised e-cigarette*

	packaging with interest in trying products among youths and adults in Great Britain JAMA Network Open, 6(3):e231799 • Some countries have banned the sale of flavoured e-cigarettes, suggesting that these flavours are attractive to young people. [O'Brien, D., Long, J., Quigley, J. et al. Association between electronic cigarette use and tobacco cigarette smoking initiation in adolescents: a systematic review and meta-analysis. BMC Public Health 21, 954 (2021). https://doi.org/10.1186/s12889-021-10935-1] • Other measures include increasing taxes on e-cigarettes and restricting advertising and marketing of e-cigarettes. • [Cotti C, Courtemanche C, Maclean JC, Nesson E, Pesko MF, Tefft NW. The effects of e-cigarette taxes on e-cigarette prices and tobacco product sales: Evidence from retail panel data. J Health Econ. 2022 Dec;86:102676. doi: 10.1016/j.jhealeco.2022.102676. Epub 2022 Sep 5. PMID: 36103752.] • [Hammond D, Reid JL, Burkhalter R, Rynard VL. E-cigarette Marketing Regulations and Youth Vaping: Cross-Sectional Surveys, 2017-2019. Pediatrics. 2020 Jul;146(1):e20194020. doi: 10.1542/peds.2019-4020. PMID: 32601126; PMCID: PMC7329261.]
Are there any potential unintended consequences to the measures you have suggested?	
Do you have any evidence to provide on the marketing and promotion of vape products? Yes/No	Yes
What evidence is there that vapes are being targeted specifically at children?	• A systematic review of 124 American publications on e-cigarette marketing and communication showed increases in e-cigarette marketing expenditures and online engagement through social media over time, that e-cigarettes are often framed as an alternative to combustible cigarettes, and that e-cigarette advertisement exposure may be associated with e-cigarette trial in adolescents and young adults. Findings from this review demonstrate parallels in the marketing strategies for combustible cigarettes and e-cigarettes, using price promotions and themes appealing to youth as well as placement of advertisements across retail and media channels. [Collins. L (2019) *E-cigarette marketing and communication: How e-cigarette companies market e-cigarettes and the public engages with e-cigarette information,* Nicotine Tob Res, 21(1): 14–24]
What evidence is there of effective measures to limit the marketing and or promotion of vapes to children?	
Do you have any evidence to provide on the role of social media? Yes/No	Yes
What evidence is there that social media influences children's behaviour relating to vapes?	• A systematic review looking into social influence in the uptake and use of electronic cigarettes suggests that given the increased popularity among non-smokers and the potential for advertising to increase e-cigarette use, closer public health monitoring of e-cigarette uptake by non-smokers is warranted. Future primary research should be designed to measure how

	social factors affect smokers and non-smokers differently. [Amin S, Dunn AG, Laranjo L. *Social influence in the uptake and use of electronic cigarettes: a systematic review*. Am J Prev Med 2020; 58: 129–41] • The findings from a thematic analysis indicate that the use of Twitter can contribute to making e-cigarette products more accepted and appealing to non-smokers and young people, unless regulations and counter messages are established to reduce this risk. [Allem JP, Majmundar A, Dharmapuri L, Cruz TB, Unger JB. *E-liquid-related posts to Twitter in 2018: thematic analysis.* Addict Behav Rep. (2019) 10:100196. Doi: 10.1016/j.abrep.2019.100196] • A study has found that online portrayals of e-cigarettes were heavily influenced by e-cigarette companies and advertisers, who utilised online media and social media platforms to influence consumers. [Collins. L (2019) *E-cigarette marketing and communication: How e-cigarette companies market e-cigarettes and the public engages with e-cigarette information,* Nicotine Tob Res, 21(1): 14–24]
What evidence is there of effective measures to ensure vapes are not targeted to children through social media platforms?	
Are there any potential unintended consequences to the measures you have suggested?	Adults who still wish to vape will do so, just as those that wish to smoke conventional cigarettes will do so.
Do you have any evidence to provide on effective educational approaches?	Yes
What evidence is there (either directly or by inference from other topic areas) of effective interventions in educational settings that could reduce vaping among children?	• Educational programs that address adolescents' misperceptions of e-cigarette harms and benefits and increase refusal skills play an important role in preventing initiation and use. A study evaluating changes in adolescents' e-cigarette perceptions, knowledge, refusal skills, and intentions to use following a real-world implementation of a school-based vaping-prevention curriculum found that educational sessions were associated with improvements on all 15 perceptions items, including increased perceptions of e-cigarette and cigarette addictiveness, decreased perceptions that e-cigarettes reduce stress, and decreased agreement that tobacco companies are truthful. Participants reported increased agreement that they will damage their own lungs if they vape, and that using e-cigarettes can be harmful to others. There was a notable improvement on one of the two refusal skill items, and a higher proportion of participants correctly identified that e-cigarettes deliver nicotine in the form of an aerosol. There was also a reduction in participants' willingness to try an e-cigarette if offered by a friend. [Devin M. McCauley, Michael Baiocchi, Summer Cruse, Bonnie Halpern-Felsher, *Effects of a short school-based vaping prevention program for high school students, Preventive Medicine Reports*, Volume 33, 2023, 102184, ISSN 2211-3355, https://doi.org/10.1016/j.pmedr.2023.102184] • Best practices for developing and implementing prevention programs include the importance of grounding programs in theories and frameworks that empower adolescents, including normative and

	interactive education, and having programs that are easily accessible and free of cost. Programs should also address key factors driving adolescent e-cigarette use, including discussing misperceptions, flavours, nicotine content, addiction, and the role that marketing plays in appealing to adolescents. [Liu, J et al (2022) *School-based programs to prevent adolescent e-cigarette use: A report card*, Current Problems in Pediatric and Adolescent Health Care, Volume 52, Issue 6, 2022, 101204, ISSN 1538-5442, https://doi.org/10.1016/j.cppeds.2022.101204]
Are there any potential unintended consequences to the interventions you have suggested?	
What evidence is there of children receiving misinformation about vapes?	
What evidence is there of schools developing behaviour policies that have been effective in reducing children's use of vapes?	• Vape detectors have been installed in school toilets which may have contributed to a decrease in on-premises vaping (BBC 2023). However, it is challenging to determine their overall effectiveness as a deterrent. • In the US, a web-based search of currently available e-cigarette prevention and cessation/treatment programs was conducted using Google in 2020. Most prevention programs included the importance of understanding flavored e-cigarette products, addressed industry-targeted marketing, included social learning activities to develop refusal skills, delivered free-of-cost, available online, and explicitly stated their incorporation of theory. Although the programs reviewed largely incorporated theory and included key components known to be effective, there are some gaps in the programs' overall ability to prevent and stop adolescents from using e-cigarettes, such as lack of dedicated e-cigarette materials. More evidence-based tools, resources, and evaluations are needed to best inform adolescent e-cigarette cessation. [Liu J, Gaiha SM, Halpern-Felsher B. (2020) *A Breath of Knowledge: Overview of Current Adolescent E-cigarette Prevention and Cessation Programs*. Curr Addict Rep.7(4):520-532]
Is there any other evidence on educational approaches to prevent children using vapes that the government should be aware of?	
Do you have any evidence of the environmental impact of disposable vapes? Yes/No	Yes
What evidence is there of the impact of disposable vapes on the natural environment when they are discarded?	• Disposable vapes are creating a huge waste problem as they contain single use plastics and only a small number are disposed of correctly, they should be discarded with electrical waste. These devices contain precious metals such as lithium, which is in short supply and critical to the UK's green transition, and the e-liquids contain toxic chemicals that qualify as hazardous waste. When littered improperly, the devices can leak these materials into the environment. [ASH Scotland (2022) Briefing: E-cigarette waste] • Many disposable vapes are discarded into public litter bins, which in turn can cause health and safety and fire risks for those dealing with

	this waste. The biggest risk is from the lithium battery in the vape because if a lithium battery is compromised in transit and is pierced, it may spontaneously ignite like a firework. [IEMA (2022) *Disposable vapes – a challenge to the recycling sector*]
What evidence is there of the impact of disposable vapes during their manufacture or use?	
If any impact has been identified how does that compare with the impacts of reusable vaping products?	
What evidence is there of effective measures to reduce the environmental impact of disposable vapes?	RCPCH recommends a ban of disposable vapes should be implemented to reduce their accessibility to young people and harm to the environment.
Are there any potential unintended consequences to the measures you have suggested?	
Is there any other evidence on the impact of the environmental harm caused by disposable or other vaping related products that the government should be aware of?	
Do you have any evidence of vaping's wider economic impact?	Yes
What evidence is there on whether price makes vapes appealing to children?	
What evidence is there of the impact on demand for vapes from children and adults if the price changes?	• A report found that prices of e-cigarette products are inversely related to sales volume: as prices have declined, sales have sharply increased. Findings also suggest that amongst the youth, young adults and low socio-economic groups, they may be more price-sensitive in the purchase of e-cigarette products, and thus they may be more likely to stop using e-cigarettes as their price increases. [National Centre for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health (2016) *E-cigarette Use Among Youth and Young Adults*]
What evidence is there on the price range of vape products and the price differential between different product types? For example, conventional, disposable, flavoured varieties, and non-nicotine products.	
What evidence is there that indicates how likely users are to switch from one product to another?	

What evidence is there on the average price per unit of disposables and refillables?	
What evidence is there that the price per unit differs for flavoured, non-flavoured or non-nicotine types?	
What evidence is there on the average price per 10ml of refill liquid and does this differ depending on nicotine strength and flavour?	
What evidence is there on the average amount of liquid in disposable products and does this differ for flavoured, non-flavoured or non-nicotine types?	
What evidence is there on the average nicotine content or strength of disposables and does this differ for flavoured and non-flavoured types?	• Nicotine content or strength of disposable vapes can vary widely, and flavoured disposable vapes may have higher nicotine content than non-flavoured types. The nicotine content of disposable vapes ranged from 20 mg/mL to 59 mg/mL, with an average of 36 mg/mL. It is important to note that high nicotine content can increase the risk of addiction and harm to health, especially among young people. [Chen JC. Flavored E-cigarette Use and Cigarette Smoking Reduction and Cessation-A Large National Study among Young Adult Smokers. Subst Use Misuse. 2018 Oct 15;53(12):2017-2031. doi: 10.1080/10826084.2018.1455704. Epub 2018 Apr 6. PMID: 29624135]
What evidence is there on the average nicotine content or strength of refillable liquids and does this differ for flavoured and non-flavoured types?	
What evidence is there on the composition of the different types of vaping products, such as size of liquid containers and quantities?	
What evidence is there on the market share of different types of vaping products?	
What evidence is there of methods that estimate the cigarette stick equivalent to vape quantities? This could include methods based on the number of puffs, the average amount consumed per day, the nicotine content, or other possible methods.	• A literature review in the USA found that nicotine yields from automated smoking machines suggest that e-cigarettes deliver less nicotine per puff than traditional cigarettes, and clinical studies indicate that e-cigarettes deliver only modest nicotine concentrations to the inexperienced e-cigarette user. However, current e-cigarette smokers are able to achieve systemic nicotine and/or cotinine concentrations similar to those produced from traditional cigarettes. Therefore, user experience is critically important for nicotine exposure, and may contribute to the products' ability to support and maintain nicotine dependence. [Schroeder MJ., Hoffman AC., *Electronic cigarettes and nicotine clinical pharmacology* Tobacco Control 2014;23:ii30-ii35]

	• In an overview of e-cigarettes impact on human health, a comparison of the serum levels of nicotine from e-cigarette and conventional cigarette consumption has been recently reported. The results revealed higher serum levels of nicotine in the conventional cigarette smoke group than in the e-cigarette group. However, e-cigarettes containing 20 mg/mL of nicotine are more equivalent to normal cigarettes, based on the delivery of approximately 1 mg of nicotine every 5 minutes. [Marques, P., Piqueras, L. & Sanz, MJ,. *An updated overview of e-cigarette impact on human health*, Respir Res 22, 151 (2021). https://doi.org/10.1186/s12931-021-01737-5]
Is there any other evidence on the economic impact of vapes that the government should be aware of?	•
Do you wish to provide further evidence?	Yes
Is there any further evidence on themes not included above that the government should consider when developing policies around children and vapes?	• Vapes are a relatively new product; they aren't risk free and their long-term impacts are not known. The harms of tobacco smoking are known: tobacco has led to millions of deaths and is a significant cause of morbidity. The harms of vaping are, as yet, not fully established but there are concerns regarding acute toxicity, especially when misused, and risks of adverse health outcomes including addiction. [Banks AM, E. et al (2023) *Electronic cigarettes and health outcomes: umbrella and systematic review of the global evidence,* https://onlinelibrary.wiley.com/doi/full/10.5694/mja2.51890] • Exposure to second-hand tobacco smoke has well-established negative health consequences, including for children. The harms of second-hand vaping are not yet conclusive. There are officially no legal restrictions in the UK around e-cigarette use in public places or cars, although many public buildings and transport settings request no vaping. Australia has implemented a ban on vaping in cars when children and young people are present, which the UK should consider. • There is growing evidence that vapes are becoming a gateway product to nicotine addiction amongst young people and that young non-smokers who use vapes are more likely than non-users to take up smoking. [Banks AM, E. et al (2023) *Electronic cigarettes and health outcomes: umbrella and systematic review of the global evidence,* https://onlinelibrary.wiley.com/doi/full/10.5694/mja2.51890] • There is evidence that vaping during pregnancy can have harmful effects on the unborn child, including potential risks to fetal development and long-term health outcomes. [McNeill, A. et al (2022) *Nicotine vaping in England: an evidence update including health risks and perceptions, 2022*] There is also evidence that that e-cigarette exposure can cause low birth weight, preterm delivery, and stillbirth. [National Centre for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health (2016) *E-cigarette Use Among Youth and Young Adults*]