Title page

Manuscript title. E-cigarettes in young people: applying the precautionary principle in primary care

Manuscript type. Editorial

Authors.

Ichechim White, Liz Hare, Marian Davis, Stephanie Lamb, Emma Park, Lucy White, Faraz Mughal

-------------------------------------------------------------------------------------------------------

Dr Ichechim White, iBSc, MBBS, MRCGP, Adolescent Clinical Lead. GP at Villa Street Medical Centre, 47 Villa Street, London, SE17 2EL. RCGP Adolescent Health Group.

Dr Liz Hare, FRCSI, DFFP, MRCGP, PgDip, GP, Tudor Lodge Surgery, Weston-super-Mare, BS23 4JP. RCGP Adolescent Health Group

Dr Marian Davis, MBChB, DipObs (NZ), DCH, FRCGP; locum GP, Herefordshire; Member and former Chair of RCGP Adolescent Health Group; Member of Policy Committee, IAAH

Dr Stephanie Lamb, MBBS, MRCGP, DRCOG, GP Partner and Clinical Director, Herne Hill Group and The Well Centre, London, SE24 9QP. Chair, RCGP Adolescent Health Group

Dr Emma Park, MBChB MRCGP PGCME, GP and vice chair, RCGP Adolescent Health Group, Primary Care Sheffield, Sheffield, S9 4EU

Lucy White, BmedSc, PGDip, Physicians Associate and Medical Student at Kent and Medway Medical School, Pears Building, Parkwood Road, University of Kent, CT2 7FS.

Dr Faraz Mughal, DCH, MPhil, FRCGP, GP and National Institute for Health and Care Research Doctoral Fellow, School of Medicine, Keele University, Keele, ST5 5BG. RCGP Adolescent Health Group.

Word count. 938

References. 12

Conflicts of interest.

IW, LH, MD (former chair), SL (chair), EP (vice-chair), and FM are members of the RCGP Adolescent Health Group.

Funding.

Faraz Mughal, Doctoral Fellow, is funded by NIHR (300957). The views in this manuscript are those of the authors, and not necessarily those of the NIHR, NHS, or Department for Health and Social Care.

**National priority**

In 2019 the UK Government set out to make England smoke free (smoking prevalence of 5% or less) by 2030 (1). The ‘Tobacco Control Plan for England’ states smoking as the single largest cause of preventable deaths, with almost 6 million people still smoking in the UK (1).

This plan also sets out to ‘eliminate smoking in under 18s and achieve the first smoke free generation’ (1). An independent ‘Khan review’ into the smoke free policy in 2022 set out 15 recommendations to support smoking cessation (2). Crucially, promoting the use of e-cigarettes in existing smokers has been suggested as a key element to achieve the smokefree target (2). The free ‘swap to stop packs’ launched April 2023 aims to provide one million cigarette smokers with e-cigarettes in exchange. The Khan review did acknowledge the need to reduce young people’s uptake of e-cigarettes by banning child friendly labelling and packaging. In the UK, selling e-cigarettes to under 18 year olds is illegal (3).

Despite recognition that e-cigarettes should not be targeted at adolescents there are growing health and environmental concerns over e-cigarette use in young people. This editorial highlights the concerns about adolescents, and offers support to primary care practitioners when assessing e-cigarette use in young people.

**What are e-cigarettes?**

E-cigarettes are electronic nicotine delivery systems or electronic non-nicotine delivery systems. They require heating, vaporising an e-liquid mixture via lithium battery power, so it can be inhaled. The e-liquid consists most commonly of water, propylene glycol, nicotine, and flavourings. There are over 7000 flavours (4).

**Young people and e-cigarettes**

E-cigarette use, commonly known as vaping, among the adolescent population appears to be increasing. In 2023, 21% of 11-18 year olds in Great Britain had tried vaping, an increase from 13.9% in 2020 before the first lockdown ([ASH June 2023](https://ash.org.uk/resources/view/use-of-e-cigarettes-among-young-people-in-great-britain)). Around 8% of young people are currently using e-cigarettes. 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 (3).

**A new ecological threat**

Disposable e-cigarette models (which are pre-filled with liquid and used only once) are the most popular type of vaping device and their use is increasing (3). In 2022, just over half of 11 to 18 year olds in Great Britain who currently vape use disposables, whilst 18.7%, use tank models (reusable and rechargeable kits) (3).

The Lancet recently highlighted environment concerns with regards to incorrect vape disposal due to the release of plastic, electronic and hazardous chemical waste into the environment (5). 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 (5). The Royal College of Paediatricians has called for a ban of all disposable e-cigarettes (6).

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. In Australia, the sale of non-prescribed, nicotine containing e-cigarettes is to be banned in young people and includes disposable vapes (7).

**Nicotine and the ‘Gateway Effect’**

There is debate as to whether use of e-cigarettes increases initiation of tobacco smoking or use of other drugs, termed as the ‘gateway effect’ (8). 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 (8).

The US outbreak of e-cigarette vaping associated lung injury (EVALI) from 2019 to 2020 reflects the need for clinicians to remain vigilant to potential complications from use and report these to the MHRA via the yellow card system (9). In these cases, Vitamin E acetate and tetrahydrocannabinol were additives implicated, with a small proportion of cases (11%) where nicotine liquids were only used (9).

**Communication with young people**

Primary care clinicians can discuss e-cigarette use with young people, supporting, and signposting to smoking cessation services. We provide areas for clinicians to consider when consulting young people (11-25 years):

1. Attempt to assess young person alone (explain confidentiality and avoid judgemental statements)
2. Consider routinely asking AND recording e-cigarettes use as part of a holistic health screen e.g., discussing use of any external substances, as part of ‘Drugs’ in the HEA**D**SSS framework (Home, Education/Eating, Activities, **Drugs**, Sleep, Safety/Social Media, Sex/Relationships). (10)
3. Enquire, where appropriate, if young person is an existing cigarette smoker or e-cigarette user: Why and how long? What do they vape e.g., strength/product. Consider illicit substance misuse; THC (tetrahydrocannabinol), spice or black market e-liquids
4. Check where/who the young person obtains e-cigarettes from. If under 18, consider is there is a safeguarding concern and discuss with young person if need to share due to risk/vulnerability/age.
5. Check knowledge about e-cigarettes (components and potential harms, such as EVALI).
6. Highlight ecological harm from disposable vape use. This may motivate young people to stop on grounds of climate change. For those over 18 years using for cessation, suggest rechargeable devices.
7. Consider as an alternative to tobacco smoking in those over 18 years struggling with cessation. Remember ‘swap to stop’ schemes and signposting to local support offers/referral schemes.

**A public health challenge**

The UK [government has just announced](https://www.gov.uk/government/speeches/chief-medical-officer-for-england-on-vaping) steps to reduce marketing of e-cigarettes to under 18s. National guidance and policy supports the use of nicotine-containing e-cigarettes as a stop-smoking intervention (2,11). A recent systematic review of perceptions around e-cigarettes in GPs globally described mixed views from GPs supporting the use of e-cigarettes as a cessation aid, with some GPs hesitant to do so (12). Although suggested as a key component of stopping smoking, primary care clinicians appear to remain unsure, and this identifies the need for ongoing evidence-informed education and training.

**The precautionary principle**

E-cigarette use in young people is rising and this is worrying given the possible risk of addiction and unknown long-term effects. The evidence base at present is inconclusive about the long-term impacts of e-cigarettes and there are concerns over possible harmful ingredients. National guidance suggests nicotine-containing e-cigarettes should be a stop smoking intervention option but only in adults (over 18).

Primary care clinicians are thus in a difficult position: needing to balance the offer of cessation to young adult smokers where appropriate with vigilant prevention of e-cigarette uptake in non-smoking young people. Clinicians should communicate the possible benefits and risks of e-cigarette use with young smokers in a personalised approach to smoking cessation. In non-smokers and primary users of e-cigarettes clinicians are encouraged to use a proactive health promotion approach to attempt to reduce use.

**References**

1. Office for Health Improvement and Disparities. Smoking and tobacco: applying All Our Health [Internet]. 2022 [cited 2023 May 19]. Available from: https://www.gov.uk/government/publications/smoking-and-tobacco-applying-all-our-health/smoking-and-tobacco-applying-all-our-health

2. Khan J. The Khan review: making smoking obsolete [Internet]. 2022 Aug [cited 2023 May 19]. Available from: https://www.gov.uk/government/publications/the-khan-review-making-smoking-obsolete

3. Office for Health Improvement and Disparities. Nicotine vaping in England: 2022 evidence update summary [Internet]. 2022 [cited 2023 May 19]. Available from: <https://www.gov.uk/government/publications/nicotine-vaping-in-england-2022-evidence-update/nicotine-vaping-in-england-2022-evidence-update-summary>

4. Allen JG, Flanigan SS, LeBlanc M, Vallarino J, MacNaughton P et al. Flavoring Chemicals in E-Cigarettes: Diacetyl, 2,3-Pentanedione, and Acetoin in a Sample of 51 Products, Including Fruit-, Candy-, and Cocktail-Flavored E-Cigarettes. Environ Health Perspect. 2016 1;124(6):733–9.

5. Sutherland N, Smith L. Environmental impact of disposable vapes [Internet]. 2022 [cited 2023 May 19]. Available from: https://commonslibrary.parliament.uk/research-briefings/cdp-2022-0216/

6. Mahase E. Paediatricians call for ban on disposable e-cigarettes as child vaping rises. BMJ [Internet]. 2023 Jun [cited 2023 July 04];2023(381):p1266. Available from: <https://doi.org/10.1136/bmj.p1266>

7. Nogrady B. Australia bans all vapes except on prescription to stem use in children. BMJ [Internet]. 2023 May [ cited 2023 July 04];2023(381):p1014. Available from: <https://doi.org/10.1136/bmj.p1014>

8. Hartmann-Boyce J, Begh R, Lindson N, Livingstone-Banks J, Fanshawe TR, et al. Electronic cigarettes and subsequent cigarette smoking in young people. 2022 Mar 24. In: Cochrane Database of Systematic Reviews [Internet]. 154KB. Available from: 10.1002/14651858.CD015170 Record No.: CD015170.

9. Medicines and Healthcare products Regulatory Agency. E-cigarette use or vaping: reporting suspected adverse reactions, including lung injury [Internet]. 2020 [cited 2023 May 19]. Available from: <https://www.gov.uk/drug-safety-update/e-cigarette-use-or-vaping-reporting-suspected-adverse-reactions-including-lung-injury>

10. Doukrou M, Segal TY. Fifteen-minute consultation: Communicating with young people—how to use HEEADSSS, a psychosocial interview for adolescents. Arch Dis Child Educ Pract Ed. 2018; 103:15-19

11. National Institute for Health and Care Excellence. Tobacco: preventing uptake, promoting quitting and treating dependence [Internet]. 2023 [cited 2023 May 19]. Available from: <https://www.nice.org.uk/guidance/ng209>

12. Selamoglu M, Erbas B, Kasiviswanathan K, Barton C. General practitioners’ knowledge, attitudes, beliefs and practices surrounding the prescription of e-cigarettes for smoking cessation: a mixed-methods systematic review. BMC Public Health [Internet]. 2022 Dec [cited 2023 July 04]; 22: 2415. Available from: https://doi.org/10.1186/s12889-022-14696-3