The UK Electronic Cigarette Research Forum Briefing

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Electronic Cigarette Research Briefing – Winter 2025-6

This research briefing is part of a series of quarterly updates aiming to provide an overview of new studies on electronic cigarettes (e-cigarettes). The briefings are intended for researchers, policy makers, health professionals and others who may not have time to keep up to date with new findings and would like to access a summary that goes beyond the study abstract. The text below provides a critical overview of each of the selected studies then puts the study findings in the context of the wider literature and research gaps.

The studies selected do not cover every e-cigarette-related study published each quarter. Instead, they include high profile studies most relevant to key themes identified by the UK Electronic Cigarette Research Forum, including efficacy and safety, smoking cessation, population level impact and marketing. For an explanation of the search strategy used, please see the end of this briefing.

Let's talk e-cigarettes – University of Oxford podcasts Jamie Hartmann-Boyce and Nicola Lindson discuss emerging evidence in e-cigarette research. In the latest episode, they discuss emerging evidence in e-cigarette research and interview Jodi Gilman, Department of Psychiatry at Harvard Medical School and Massachusetts General Hospital. This podcast is a companion to the Cochrane living systematic reviews of e-cigarettes for smoking cessation and interventions for vaping cessation and shares the evidence from the monthly searches. Subscribe with iTunes or Spotify to listen to regular updates or find all episodes on the University of Oxford Podcasts site. This podcast series is funded by Cancer Research UK (CRUK).

Cochrane Living Systematic Review of E-cigarettes for Smoking Cessation update

The latest update to the CRUK-funded Cochrane Living Systematic Review of E-cigarettes for Smoking Cessation was published in November 2025 and includes 14 new studies. A further update is currently underway.

New Cochrane Living Systematic Review of Interventions for Quitting Vaping

A new Cochrane Living Systematic Review of interventions for vaping cessation was published in November 2025. It includes 15 studies, with low certainty evidence of effectiveness of a text message-based intervention in young people and of varenicline; there wasn't enough evidence on other interventions to draw any conclusions. Searches for this review are now undertaken monthly, with the review updated any time new studies emerge that could change, strengthen or weaken the conclusions.

Visit the website (https://www.cebm.ox.ac.uk/research/electronic-cigarettes-for-smoking-cessation-cochrane-living-systematic-review-1) for full information on both living systematic reviews, including briefing documents, and new studies found since the latest versions.

You can find our previous research briefings at www.cruk.org/UKECRF.

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Commentary

This quarter, we see a wide range of studies with interlinking themes, one of them being risk and risk perceptions. In their cross-sectional study in pregnant people, **Ussher *et al*** found no clear differences in nicotine levels between people who exclusively smoked, people who exclusively vaped, those who smoked and used nicotine replacement therapy, and those who smoked and vaped. They tested levels of volatile organic compounds (VOCs), including some which are cancer-related, finding that people who exclusively vaped had lower levels than those who exclusively smoked. For some VOCs (13 out of the 14 measured), there was not a statistically significant difference between people who exclusively vaped compared to those who had never used tobacco. This is a relatively small, non-randomized study, but it is consistent with other literature showing similar trends – namely lower levels of harmful biomarkers in people who vape compared to those who smoke, and similar levels of some biomarkers in people who vape compared to people who have never smoked or vaped.

Despite the growing body of evidence supporting this pattern, misunderstandings and lack of knowledge about vaping risks continues to pose serious issues. For example, in **Najafi *et al's*** cross-sectional survey investigating GP preferences and perspectives in counselling young people about vaping, only 12.3% of GPs indicated they felt very confident about their knowledge of the health effects of vaping. Lack of understanding of health effects was one of the four highest ranked barriers to offering advice about vaping. In **Ford *et al's*** process evaluation of the SCeTCH trial, which provided an e-cigarette starter kit to people experiencing homelessness, barriers included inaccurate harm perceptions relative to smoking; facilitators included seeing lower exhaled carbon monoxide levels at follow-up.

Overcoming barriers is important, because we know vaping interventions can help people quit smoking – this month, **Pope *et al*** demonstrate that these effects persist over time. In their long term follow-up of the COSTED trial, in which an e-cigarette starter kit and referral to a local stop smoking service were tested as a stop smoking intervention in UK emergency departments, they found that though absolute abstinence rates declined over time in both groups (as would be expected), the relative effect of the intervention remained stable, with the chances of being abstinent from smoking approximately 50% higher in the intervention than control group at 18 months.

The continued challenge is how to communicate potential health risks of vaping whilst still communicating their reduced harm profile compared to smoking. **Taylor *et al*** illustrate one promising route towards this, testing the impacts of different packaging conditions on product appeal. Standardised packaging was consistently rated as less appealing than branded packaging, including among respondents who currently smoked, but no association was found between packaging condition and relative harm perceptions between vaping and smoking (of note, this outcome was only tested in adults).

As evidence continues to accumulate, consideration of how best to translate nuanced findings into clear messaging will remain a major research need.

Ussher *et al.* Toxicant and Nicotine Exposure in Pregnant Smokers, Vapers, and Nicotine-Replacement Users: Cross-Sectional Study

Study aims

This cross-sectional study investigated any association between use of different nicotine products during pregnancy and biomarkers of exposure to nicotine and toxicants. 140 pregnant participants aged 16+ were recruited from five UK hospitals. Participants provided urine samples which were tested for exposure to nicotine, tobacco and toxicants, including carcinogens. Levels of biomarkers were compared between participants who: exclusively smoked cigarettes (n=38); exclusively vaped (n=35); both smoked cigarettes and vaped (n=25); both smoked cigarettes and used nicotine replacement therapy (NRT) (n=10); and those who had never used tobacco or nicotine products (n=32). Analyses were adjusted for age, gestation period, exposure to second-hand smoke and vaping, biomarkers for use of alcohol or cannabis and occupational exposure to toxicants.

Key findings

- There were no significant differences between the exclusive smoking, exclusive vaping, dual smoking and vaping and dual smoking and NRT groups in levels of nicotine and its biomarkers.
- Of the 14 biomarkers of exposure to volatile organic compounds ('VOCs') measured, 10 were significantly lower in participants who exclusively vaped than those who exclusively smoked.
- 13 biomarkers for VOCs were not significantly different between participants who exclusively vaped and those who had never used tobacco products.
- Eight VOC biomarkers were significantly lower in participants who exclusively vaped than those who both smoked and vaped.
- Seven VOC biomarkers were significantly lower in participants who both smoked and vaped than those who exclusively smoked and significantly higher than those who had never used nicotine or tobacco products.

Limitations

- As a cross-sectional study, it is unable to establish causality.
- Levels of several biomarkers were below the limit of detection.
- As an observational study, it did not randomise participants to groups and there were some between-group differences.
- Sample sizes were relatively small, not all groups met the target sample size and some results may be due to chance.
- Participants in the exclusive smoking group could have vaped in the past and vice versa, introducing potential confounding from historic product use.

Ussher M, Lewis S, Marczylo T, Blount B, Brown J, Bailey A, Coleman T, Cooper S, Marks J, George M, Bhandari D, Wang L, El Zein A, Laycock A, Oteng-Ntim E, Shahab L. Toxicant and Nicotine Exposure in

Pregnant Smokers, Vapers, and Nicotine-Replacement Users: Cross-Sectional Study. Nicotine Tob Res. 2025 Sep 23;27(10):1786-1794. doi: 10.1093/ntr/ntaf103. PMID: 40576585; PMCID: PMC12453684.

Najafi *et al.* Perceptions and practices of UK general practitioners towards youth vaping: a questionnaire-based study

Study aims

This cross-sectional study used an online survey to investigate the perspectives and practices of GPs in Britain (n=284) on screening and counselling young (aged up to 24) patients about vaping, which isn't specifically recommended in the NICE Guidelines, unlike tobacco use. The primary outcomes were how frequently respondents asked and counselled young patients about vaping. Secondary outcomes were identified barriers to screening and counselling and any variation in primary outcomes by respondents' years of experience and/or geographic location.

Key findings

- 45.4% of respondents reported asking young patients about vaping sometimes, 30.6% rarely or never doing so and 23.9% all or most of the time.
- The four highest-ranked barriers to screening for vaping were lack of time, lack of relevance to the presenting complaint and absence of methods for quantifying and recording vape use.
- 43.5% reported sometimes giving advice/information about the health effects of vaping, 27.5% doing so all or most of the time and 30% rarely or never.
- 46.8% of respondents reported feeling somewhat confident in their knowledge of the health effects of vaping, 40.9% not confident at all and 12.3% very confident.
- The four highest-ranked barriers to offering advice about vaping were lack of time, lack of understanding of health effects, lack of guidance and training on e-cigarette counselling and lack of availability of cessation services.
- There were no significant variations by years of experience or region.

Limitations

- The sample was relatively small and not representative of the UK GP population.
- Respondents may have disproportionately consisted of practitioners with a particular interest in the topic or the patient population.

Najafi E, Wasan D, Baker Y, Peters K, Vasooja D, Warnapala M, Martínez-Jiménez M. Perceptions and practices of UK general practitioners towards youth vaping: a questionnaire-based study. BJGP Open. 2025 Jul 30:BJGPO.2025.0080. doi: 10.3399/BJGPO.2025.0080. Epub ahead of print. PMID: 40738691.

Ford *et al.* Exploring how an e-cigarette intervention influenced tobacco smoking behaviour in people accessing homelessness services: Findings from the SCeTCH trial process evaluation

Study aims

This mixed methods study investigated mechanisms through which provision of an e-cigarette starter kit to participants (n=239) accessing 16 homelessness services in Great Britain through the 'SCeTCH' trial influenced smoking behaviour. Quantitative and qualitative analyses were carried out using data from case report forms completed at baseline and 4, 12 and 24 weeks and interviews conducted during the trial with 31 participants and 16 members of staff at eight of the services. Analyses used the 'COM-B' model of behaviour change and so investigated themes of 'capability,' 'opportunity' and 'motivation' to examine factors influencing reductions in smoking and short-term cessation observed in the trial.

Key findings

- In relation to the 'capability' aspect of the analytical framework, facilitators included increasing knowledge of how to use vapes for smoking reduction, for example vaping in between cigarettes and experimenting with different e-liquids and devices, and ability to use vaping to resist urges to smoke. Barriers included inaccurate harm perceptions of vaping relative to smoking and finding that vaping did not satisfy cravings.

- With regard to opportunity, facilitators included encouragement from friends and family, advice and support from local vape shops and decreases in smoking acceptability. Barriers included 'smoking culture' at homelessness services and low levels of staff engagement.

- With regard to motivation, facilitators included lived experience of using vapes to reduce smoking, saving money by spending less on tobacco and seeing lower exhaled carbon monoxide levels at follow-up. Barriers included adverse effects of vaping such as coughing and perceived reduced ability to stop during stressful periods or while using other substances.

Limitations

- The number of participants providing data declined during the course of the trial, and those remaining at later follow-up points may have had more positive perspectives on vaping than the starting population.

- Participants' interpretations of the questions may have varied, influencing their responses.

- Many of the measures used were developed specifically for this study and have not been validated elsewhere, so their validity and reliability are unconfirmed.

- The self-reported nature of the responses given introduces possible social desirability bias.

- The sample may not represent the wider UK population using homelessness services, for example over 80% of the sample were male and from white ethnic backgrounds.

Ford A, McMillan L, Soar K, Pesola F, Notley C, Brown R, Ward E, Gardner B, Varley A, Mair C, Lennon J, Brierley J, Edwards A, Mitchell D, Robson D, Hajek P, Tyler A, Parrott S, Li J, Bauld L, Cox S. Exploring how an e-cigarette intervention influenced tobacco smoking behaviour in people accessing homelessness services: Findings from the SCeTCH trial process evaluation. Int J Drug Policy. 2025 Sep;143:104901. doi: 10.1016/j.drugpo.2025.104901. Epub 2025 Jul 5. PMID: 40616874.

Pope *et al.* Cessation of Smoking Trial in the Emergency Department (COSTED): Long-Term Follow-Up of a Randomized Controlled Trial

Study aims

This study reports the results of long-term follow-up of participants in the 'COSTED' trial, in which adult (18+) who smoked daily were recruited from six UK emergency departments. Participants were randomised to receive either a brief smoking cessation intervention, an e-cigarette starter kit and a referral to a local stop smoking service (the intervention group) or the contact details of the local stop smoking service (the control group). As part of the trial, participants were followed up at 1, 3 and 6 months and smoking abstinence rates compared between groups. Those who consented to longer-term follow up were recontacted at approximately 18 months. Those who did not consent were assigned their 6-month smoking status. Participants who did not respond at approximately 18 months were assumed to be smoking.

Key findings

- Among participants who consented to long-term follow-up, 7-day smoking abstinence was significantly higher in the intervention group than the control group (RR= 1.56, 95% CI 1.04-2.32, p=0.031)

- While the relative risk of abstinence between the groups remained relatively stable at all time points (e.g. 2.03 at 1 month and 1.56 at 18 months), the proportion of respondents in the intervention group reporting 7-day abstinence decreased (e.g. 20.5% at 1 month and 12.8% at 18 months).

- In the 'all-participants' group (including those who responded at 6 months), abstinence was also significantly higher in the intervention group than in the control group (RR= 1.61, 95% CI 1.12-2.31, p=0.010).

Limitations

- 35% of the intervention group and 34% of the control group consented to longer-term follow-up, so sample sizes were relatively small.

- Abstinence was based on self-report and not biochemically verified.

- More women than men and more participants from white than other ethnic groups consented to long-term follow-up, so the sample may not reflect the wider UK population. Consent to long-term follow-up also varied between trial centres.

- Timing of follow-up in the long-term follow-up group varied from 13.8 to 22 months.

- Follow-up at 18 months was not planned when the trial was initiated and so was not included in the original analyses plan. Therefore, fewer contact attempts were made at the 18-month point than at earlier time points.

Pope I, Halicka Z, Clark L, Stirling S, Clark A, Notley C. Cessation of Smoking Trial in the Emergency Department (COSTED): Long-Term Follow-Up of a Randomized Controlled Trial. Nicotine Tob Res. 2025 Sep 29:ntaf200. doi: 10.1093/ntr/ntaf200. Epub ahead of print. PMID: 41017481.

Taylor *et al.* The effect of standardised packaging and limited flavour descriptors of vape pods among adults and youth in Great Britain: a cross-sectional between-subjects experimental study

Study aims

This cross-sectional study investigated any association between standardisation of vape pod packaging and limiting of flavour descriptions and product appeal in adults and young people in Great Britain. Participants were respondents to the 2024 Action on Smoking and Health Youth survey aged 11-18 (n=2,770) and the 2024 Prolific Academic survey aged 18+ (n=3,947). Participants were randomised to view examples of packages in one of four conditions: branded packs; standardised white with usual flavour descriptors (e.g. 'blue razz lemonade'); standardised white packs with limited flavour descriptors (e.g. 'blueberry, raspberry lemon'); and (for the adult sample only) standardised white packs with coded flavour descriptors (e.g. 'FR127'). Participants in the Youth survey were asked which product, if any, they thought people of their age would be interested in trying. Participants in the adult survey were asked which product, if any, they would be interested in trying and how harmful they thought the products were relative to smoking cigarettes. The primary outcome was reporting no interest/no peer interest in trying any of the products. The secondary outcome was relative harm perceptions in the adult sample only. Covariates adjusted for were: smoking status, vaping status and age (all respondents), sex and socioeconomic status (young people sample only), gender, ethnicity and perceived financial status (adult sample only). Stratified analyses by smoking and vaping status were also carried out.

Key findings

- Respondents in the young people group were significantly more likely to report that their peers would not be interested in trying any of the products in the standardised (aOR 1.85, 95% CI 1.47–2.32, $p < 0.001$) and standardised plus limited flavour descriptors (aOR 1.50, 95% CI 1.19–1.90, $p < 0.001$) conditions than in the branded condition.

- This association was also found among young people who had never vaped (aOR 1.93, 95% CI 1.50–2.47, $p < 0.001$ for standardised + usual flavour descriptors and aOR = 1.55, 95% CI = 1.21–1.99, $p < 0.001$ for standardised + limited flavour descriptors.

- Respondents in the adult group were significantly more likely to report no interest in trying any of the products in the standardised packaging + coded flavour descriptors condition than in the branded packaging condition (aOR 1.52, 95% CI 1.18–1.97, $p < 0.001$).

- Adult respondents who currently smoked were significantly more likely to respond that they had no interest in trying any of the products in the standardised packaging + usual flavour descriptors condition than in the branded condition (aOR = 1.59, 95% CI = 1.03–2.46, $p = 0.037$).

- Adults who had never smoked were significantly more likely to report no interest in trying any of the products in the standardised packaging + coded flavour descriptors condition than in the branded condition (aOR 2.00, 95% CI 1.28–3.12, $p = 0.002$).

- There was no association between packaging condition and relative harm perceptions of vaping and smoking among the adult group.

Limitations

- Both age groups included respondents aged 18.

- The sample may not reflect the wider UK population, for example most respondents in the young people group were in ABC1 socioeconomic groups, respondents who replied 'prefer not to say' in response to questions about gender, ethnicity and perceived financial status were excluded and current vaping in the adult sample was higher than is reported in other national surveys.

- 28.4% of respondents in the young people group said 'Don't know,' which could indicate uncertainty around interpretation of the question about peer interest in trying.

- The questions were phrased differently in the young people and adult groups, in that young people were asked about peer interest rather than own interest in trying any of the products.

- Some subsample sizes are small.

Taylor E, Ebdon M, Nottage M, Simonavicius E, Brose L, McNeill A, Arnott D, Cheeseman H, Bunce L, East K. The effect of standardised packaging and limited flavour descriptors of vape pods among adults and youth in Great Britain: a cross-sectional between-subjects experimental study. Lancet Reg Health Eur. 2025 Sep 8;58:101442. doi: 10.1016/j.lanepe.2025.101442. PMID: 40989559; PMCID: PMC12451370.

Search strategy

The Pubmed database is searched in the middle of every third month, for the previous three months using the following search terms: e-cigarette*[title/abstract] OR electronic cigarette*[title/abstract] OR e-cig[title/abstract] OR (nicotine AND (vaporizer OR vapourizer OR vaporiser OR vapouriser OR vaping)).

Based on the titles and abstracts new studies on e-cigarettes that may be relevant to health, the UK and the UKECRF, key questions are identified. Only peer-reviewed primary studies and systematic reviews are included – commentaries are not included. Please note studies funded by the tobacco industry are also excluded.

This briefing is produced by Julia Cotterill from Cancer Research UK with assistance from Associate Professor Jamie Hartmann-Boyce at the University of Massachusetts Amherst, primarily for the benefit of attendees of the CRUK UK E-Cigarette Research Forum. If you wish to circulate to external parties, do not make any alterations to the contents and provide a full acknowledgement. Kindly note Cancer Research UK cannot be responsible for the contents once externally circulated.