E-cigarettes and harm reduction

An evidence review

Executive summary and recommendations

Royal College of Physicians

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The Royal College of Physicians

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1.Introduction

In 2007 the Royal College of Physicians (RCP) published a report on alternative nicotine products, covering their regulation and role as alternatives to smoking. This was at a time when e-cigarettes were first becoming available in Europe. The report concluded that there is a role for alternative nicotine products to support people to stop smoking tobacco and that regulation for those products should be formalised.

In the years following that publication, use of e-cigarettes rose considerably, primarily among people who typically used them as an aid to stopping smoking. The RCP went on to re-examine emerging data on the role of e-cigarettes and alternative nicotine products in its report *Nicotine without smoke* in 2016, which concluded that e-cigarettes were an effective aid to quitting smoking. That report recommended their promotion as a stop smoking tool but said that data should be reviewed at regular intervals to look for unintended consequences that may require policy adaptation.

Comprehensive evidence reviews on the role of e-cigarettes have been commissioned in the UK at regular intervals by Public Health England (PHE) and subsequently the Office for Health Improvement and Disparities (OHID). The most recent evidence review published in 2022 examined data on the effectiveness of e-cigarettes as a smoking cessation treatment, their health risks and benefits, their use by people who have never smoked including children and young people, and their role in UK tobacco control policy. The review, based on biomarkers of exposure to toxins and biomarkers of organ damage, concluded that vaping, over the short and medium term, poses a small fraction of the risk of smoking; that vaping is not, however, risk-free; and called for further research to increase precision about longer term risks and how these can be reduced or mitigated.

There is marked variation in international approaches to e-cigarettes. This may reflect local trends in tobacco and e-cigarette use, the availability of other nicotine-containing products, commercial opportunities for e-cigarette sales, the regulatory environment and its approach to balancing risk, the maturity of other tobacco control measures, and concern that the tobacco industry might use e-cigarettes to undermine the implementation of other tobacco control measures. The UK has a high level of compliance with the WHO Framework Convention on Tobacco Control (FCTC) and should continue to protect health policy from the vested commercial interests of the tobacco industry. Nevertheless, in endorsing and promoting vaping as part of a comprehensive national tobacco control programme the UK is an international outlier: few other countries have adopted this approach and none so consistently over the past 15 years.

This report looks again at the part e-cigarettes can play in preventing death, disability and inequalities from tobacco use. It examines the role of nicotine and the spectrum of nicotine-containing products, trends in tobacco use and vaping, the effectiveness of e-cigarettes to treat tobacco addiction, and the differences in health effects of vaping in people who smoke, vape or do neither. For those who currently smoke, the report reviews how e-cigarettes can be used to support more people to make quit attempts while discouraging young people and never-smokers from taking up e-cigarette use. The role of the tobacco industry in encouraging 'new entrants' (a term used by the industry to describe never-smokers) to the nicotine market while continuing to sell lethal tobacco products is also examined. Finally, the report considers the ethical dilemmas presented by e-cigarettes, such as managing risk messaging of uncertain long-term safety data, use in never-smokers, balancing the regulatory environment, industry interference, and the environmental impact. We conclude that:

- since the 2016 RCP report the evidence of the effectiveness of e-cigarettes as an aid to quitting has become much stronger
- use of e-cigarettes by young people and non-smokers has increased substantially in recent years
- prompt remedial measures are needed to curb youth vaping without undermining use by adult smokers as an aid to quitting
- the government should commission a series of regular evidence updates on the use and effects of nicotine products to guide policy.

2. Nicotine – physiological effects and the characteristics of nicotine-containing products

Switching completely from tobacco smoking to alternative nicotine products such as e-cigarettes has been encouraged in UK health policy to reduce the damage caused by smoking to individuals who smoke and to the people around them exposed to passive smoke (especially children), as well as the broader societal costs of smoking. People who smoke are addicted primarily to the nicotine in tobacco, which drives sustained use of smoked tobacco products and the subsequent devastating harm to health caused primarily by non-nicotine constituents of tobacco smoke, including tar particles and carbon monoxide. Current evidence suggests nicotine itself confers little risk to health, though acute exposure at typical levels from consumer nicotine products can result in addiction, short-term enhanced cognitive effects, elevated heart rate and systolic blood pressure. It will, however, take several decades to accurately quantify any effects of long-term non-tobacco nicotine use.

Nicotine-containing products include combusted tobacco products, non-combusted tobacco products and non-tobacco nicotine products. There is a spectrum of potentially harmful exposures associated with the use of each product – combustible tobacco products generating the greatest toxic exposure and medicinal nicotine products the least. It is likely that e-cigarettes and oral nicotine products fall close to the lower end of this spectrum (see chapter 6, Fig 2.2).

Most of the harmful constituents of e-cigarette vapour are thermodegradation products generated by the vaporisation process. Levels of toxic substances are higher when high power devices are used to vaporise low nicotine concentration liquids, and lower with low power, high nicotine devices.

Recommendations

- More research should be undertaken to determine the long-term effects of nicotine exposure without confounding from long-term tobacco use.
- Regulations to ensure e-cigarette design minimises the generation of toxic thermodegradation products and exposure to other potentially harmful constituents should be introduced by the UK government.
- Advice should be provided to e-cigarette users on which devices provide lower exposures to thermodegradation products.

3. Trends in the use of e-cigarettes and tobacco products

Cigarette smoking among adults has declined steadily, although more slowly in recent years. In 2022, 12.7% of adults in England smoked, while use of vaping products jumped sharply to around 10% of adults in 2023. During the pandemic, rates of vaping rose especially among young adults, growing to over 20% of 18–24-year-olds in 2023. This age group has also shown a continued decline in smoking since 2021.

Smoking among children and young people aged 11–17 years has declined from 6.0% in 2013 to 3.6% in 2023 while vaping has increased to 7.6% in this age group in 2023. Most of the increase in use of vaping products took place after 2021 and coincides with a dramatic rise in use of disposable vapes. This increased use of disposable vaping devices has not displaced use of other types of devices, and so has led to an overall increase in vaping in this age group.

Vaping remains overwhelmingly an activity of smokers and ex-smokers, who represent around 93% of all people who use vaping products. The proportion of adult vapers in the 2023 Action on Smoking and Health (ASH) survey who were never-smokers was 6.7% and has been stable since 2019. The number of people in England using vaping products who have never smoked is uncertain but is likely to be between 320,000 and 840,000.

The rise in e-cigarette use in the UK mirrors that of most countries where data are available, despite the wide range of regulatory environments for e-cigarettes. Apart from New Zealand, which has one of the lowest smoking rates among rich countries, international data demonstrate e-cigarette use among adults remains lower than smoking. Past 30-day use of e-cigarettes among young people is generally higher than among older adults, and in some countries exceeds the prevalence of smoking among youth.

Recommendations

- Trends in the prevalence of vaping and smoking in time, place and person across the UK should be monitored.
- Longitudinal data should be collected to build on existing cross-sectional survey data and enable better overall understanding of trajectories in use and transitions from smoking to vaping, as well as from vaping to abstinence and use in never-smokers.
- Survey data on vaping in localities and regions, in combination with local sales data for tobacco, should be collected to inform local tobacco control.
- The UK should take part in standardised international comparative studies of smoking and vaping such as The European School Survey Project on Alcohol and Other Drugs (ESPAD) to ensure that we can assess UK vaping trends and tobacco control strategies reliably in an international context.

4. Effectiveness of e-cigarettes for smoking cessation

Evidence from randomised controlled trials and from two Cochrane reviews shows e-cigarettes with nicotine are more effective at helping people quit at 6 months or longer than nicotine replacement therapy (NRT), with no clear difference in effectiveness between nicotine e-cigarettes and varenicline or cytisine. Among pregnant women who smoke, the largest randomised trial to date has shown equivalence of quit success for e-cigarettes and NRT and a lower frequency of low birthweight among those randomised to e-cigarettes.

There are signals that e-cigarettes may have a benefit in both stopping smoking and harm reduction in smokers with mental illness, including those who are not motivated to quit and have been unable to quit before. E-cigarettes that are easier to use, such as pod-based devices or disposables, may be more effective in this population. Evidence suggests that e-cigarettes are both acceptable and effective for smoking abstinence and cessation in settings such as prisons and for people experiencing homelessness. The provision of e-cigarette starter kits for smoking cessation has been effective in settings such as emergency departments and social housing. E-cigarette use for smoking cessation and harm reduction in these populations and settings with a high prevalence of smoking and socio-economic deprivation suggests they may have a positive role to play in reducing smoking-related health inequalities.

There is little evidence on vaping for smoking relapse prevention or on the best ways to support people to quit vaping.

Changes in the prevalence of e-cigarette use in England have been positively associated with the success rate of quit attempts. If the association is causal, then the use of e-cigarettes in quit attempts appears to have helped in the region of 30,000 to 50,000 additional smokers to successfully quit each year in England since 2013.

E-cigarettes represent a cost-effective smoking cessation intervention, with an incremental cost-effectiveness ratio of £1,100 per quality-adjusted life year (QALY) gained over the course of 12 months and of £65 per QALY over a lifetime. Implementing e-cigarette interventions could potentially reduce financial burdens on local government stop smoking services and the NHS without imposing additional costs on individuals trying to quit smoking.

Recommendations

- E-cigarettes should be promoted as an effective means of helping people who smoke to quit smoking tobacco.
- Campaigns recommending e-cigarettes for smoking cessation should include populations who are likely to experience the most benefit, including people with mental disorders, those who experience socio-economic disadvantage and people living in social housing.
- E-cigarettes should be offered as an effective treatment for smoking cessation across all NHS settings alongside established pharmacotherapy.
- Priorities for research include the role of e-cigarettes in smoking relapse prevention, cessation of e-cigarette use, and the effectiveness for smoking cessation of different e-cigarette device types and characteristics, including flavours.

5. Health effects of e-cigarettes

The harm of smoking to human health is beyond doubt, accounting for 8 million deaths globally each year and 76,000 deaths annually in the UK. 2 out of 3 people who continue to smoke will die from a smoking-related disease. Using e-cigarettes for harm reduction to reduce morbidity and mortality from combustible tobacco is based on clear evidence that e-cigarettes cause less harm to health than combustible tobacco. It is important to provide users of e-cigarettes with as much accurate data as possible on the relative and absolute health effects of e-cigarettes in comparison to use of combustible tobacco alone, dual use and never smoking.

For this report we have carried out a review of biomarkers of exposure to and harm from e-cigarettes using data published between 2021 and 2023 comparing people who vape, people who smoke, people who do both (dual use), and people who do neither (non-use).

Our overall findings were that:

- blood levels of nicotine and its metabolites in vapers are similar to or lower than those in smokers, and carbon monoxide levels are lower
- levels of tobacco-specific nitrosamines, volatile organic compounds and polycyclic-aromatic hydrocarbons are lower in vapers than in smokers and are higher or similar to non-vapers/non-smokers
- there is inconsistent evidence whether vapers have higher levels of lead, cadmium arsenic or mercury than smokers. Levels of lead and cadmium were higher, and levels of arsenic lower or equal between vapers than non-vapers/non-smokers
- vapers show similar or lower levels of markers of oxidative stress and inflammation to those in smokers and similar levels compared with non-vapers/non-smokers
- findings of research into disease-specific biomarkers has yielded mixed results
- there is some evidence that passive exposure to vaping aerosol results in some nicotine absorption, and in one study, evidence of inflammatory change in those exposed
- evidence on the effects of vaping in pregnancy remains mixed
- vaping nicotine is not associated with a high frequency of adverse health effects.

Research on the health effects of vaping is limited by small sample sizes, a lack of research exploring absolute as well as relative risks, and on the longer-term health risks of vaping when accounting for past smoking history.

Recommendations

- Agreement needs to be reached on the methods for vaping health risks research, including which biomarkers are the most relevant to study regarding the relative and absolute risks of vaping.
- Large longitudinal cohort studies are needed: firstly, of people who vape and have never smoked, and secondly of former smokers who vape, and which adequately account for their smoking history.

6. Regulation of tobacco and nicotine products

E-cigarette policy varies substantially between countries, ranging from promotion to prohibition, with policy variation partly based on the degree to which countries focus policy on combustible tobacco or nicotine use, especially in youth populations. Formulating policy to maximise the public health benefit of vaping should be evidence-based, but predicting the magnitude of intended and unintended consequences of new policy can be difficult as policy decisions typically need to be made well before definitive long-term evidence on outcomes is available.

England is unusual in having actively promoted vaping for smoking cessation since the emergence of e-cigarettes. Canada and New Zealand have moved policy from relative prohibition to relative market freedom while Australia has taken a more and increasingly prohibitionist line, enforcing limited access via medicines regulation. Policies in other countries range from complete prohibition (India), medicines regulation (Japan and Hong Kong) and some restrictions on sales and use (mainland China). Those countries that have banned vapes have left far more harmful combusted tobacco products on general sale.

Nicotine product regulation in the UK has evolved to enable and encourage smokers to quit smoking, either by quitting all nicotine use or by switching to a less harmful nicotine product. Regulation of e-cigarettes should be designed to protect users from avoidable harm and to prevent, as far as possible, children who do not smoke from becoming vapers. It is illegal to purchase nicotine-containing e-cigarettes under the age of 18 and age verification is required by retailers in Scotland, but not in other UK nations.

The main levers for e-cigarette regulation are related to sales; product standards; including nicotine content; flavours; colours; added ingredients; packaging; labelling; advertising; promotion; product registration/notification; authorised use (eg if a prescription is required) and price. Current regulations have been insufficient to prohibit packaging and labelling, including bright colours, cartoon characters and sweet names, which increase the attractiveness of vaping products to children relative to standardised packaging. Compliance with advertising regulations appears to be high for adverts in traditional media, but significantly lower on social media sites. Point-of-sale advertising and display is not covered by the regulations and is not the responsibility of the Advertising Standards Authority.

The Medicines and Healthcare products Regulatory Agency (MHRA) notification of content and emissions is mandatory for all e-cigarettes sold in the UK, but the reporting system lacks standardisation and reports are not independently validated. Although data on safety vigilance and oversight by manufacturers are not readily available, Yellow Card reporting data and hospital admissions episodes suggest that adverse health effects from vaping in the UK are rare. Responsibility for investigating non-compliance and enforcing regulations rests with trading standards departments in local authorities; however, funding for trading standards work has been cut from £213 million in 2009 to £105 million in 2019, limiting their capacity for enforcement. Underage sale to children appears to be common. Since leaving the EU, the UK Parliament lacks legislative powers to amend the UK Tobacco and Related Products Regulations. The government must introduce legislation to take such powers as an urgent priority.

The extent to which illicit vapes (or their health effects) are used in the UK is unknown, although seizure data suggest that availability is growing, possibly because penalties for illicit sale are currently very low and therefore offer little disincentive to sellers. Experience from tackling illicit tobacco suggests that the illicit market is best addressed by targeting supply chains. It is important that research into the illicit market is carried out independently from commercial interests to prevent the generation of disinformation.

Pricing is an important component that can encourage smokers to transition to e-cigarettes to quit smoking. A gradation of taxes at levels that broadly relate to likely harm are imposed on nicotine products in the UK. In the UK, non-tobacco nicotine and e-cigarette products are currently subject to the standard rate of value added tax (VAT) at 20%. Medicinally regulated products that have been formally approved as therapies to help people stop smoking are subject to the reduced rate of VAT at 5%.

The price of e-cigarettes is a critical factor in determining consumption because higher prices are generally associated with lower use. Price regulation is therefore a potential means to reduce consumption of the disposable e-cigarettes that are most commonly used by young people and have the greatest negative environmental impact. However, the elasticity and cross-elasticity of e-cigarette purchasing are not well-defined in the UK, so it is difficult to predict the likely effect of price regulation on vaping in general, and on use of disposable vapes in particular. New price regulation on disposable e-cigarettes would likely have a partial effect on removing access to young people but would be likely to stimulate growth in the illicit market.

Vaping does not generate smoke and is therefore not subject to smoke-free laws. In places where occupants are likely otherwise to smoke, for example in some mental health settings or in prisons, vaping offers smokers a means by which they can adhere to smoke-free laws and enable smoke-free premises. Indoor vaping policies should be formulated in relation to the needs of the people subject to them and consider prohibition of vaping near others on the basis of courtesy, comfort and utility.

Disposable vapes present significant environmental and safety hazards, and recycling of these products has been widely neglected. More effective and accessible recycling schemes for vapes, particularly disposable vapes, are urgently needed. Registering with environment agencies via producer compliance schemes should be a mandatory component of MHRA notification. Creating a separate product category for vapes that falls within waste electrical and electronic equipment (WEEE) regulations to ensure that producers, importers and retailers are properly financing takeback is essential.

Recommendations

- Since leaving the EU, the UK parliament lacks legislative powers to amend the UK Tobacco and Related Products Regulations. The government must introduce legislation to take such powers as an urgent priority.
- Regulatory restrictions on the promotion, price and availability of all consumer nicotine products should be proportionate to the health risk they represent and designed to discourage uptake among young people and reduce, rather than perpetuate, tobacco smoking.
- The MHRA notification process should be revised to require a standardised system of content and emission reporting, and to require random sampling of products for independent validation of content and emission data.
- Regulations should be revised to enable competent authorities such as the MHRA to raise and use notification fees to carry out systematic validation of notified data, and to fund enforcement activity.
- Trading standards services should be sufficiently resourced to effectively enforce e-cigarette sales legislation and reduce underage sales.
- A register of tobacco and nicotine retailers should be established along with requiring age verification and meaningful sanctions for breaching the law, with the aim of limiting access to young people.
- Regulations on advertising and promotion of e-cigarettes should be introduced to restrict online platforms, content generators and point-of-sale advertising to limit advertising of e-cigarette products to young people.
- A gradation of taxes at levels in broad relation to likely harm should be imposed on nicotine products in the UK.
- E-cigarette price and taxation strategies should target the products that are the cheapest and most commonly used by youth vapers while ensuring that the products most likely to be used by adult smokers/quitters remain affordable.
- Consideration should be given to banning e-cigarette price promotions and discounts; and minimum pricing for e-cigarettes.

- The government should consider a range of policy options to address the challenges of vape recycling from an environmental perspective, including:
  - prohibiting disposable e-cigarettes
  - amending product standards, descriptors and notification to the MHRA to support recycling
  - registration with environment agencies via producer compliance schemes as a mandatory component of MHRA notification
  - amending electrical and battery waste regulations to include disposable vapes
  - ensuring vendors comply with recycling costs for vapes
  - providing accessible drop-off points.

7. Encouraging uptake of e-cigarettes for smoking cessation

E-cigarettes are an effective treatment for tobacco dependency, but despite being easily accessible via a wide range of retail settings in the UK, they are under-utilised by people who want to quit or reduce smoking. This represents a large, missed opportunity to reduce morbidity and premature mortality.

Reasons for this under-utilisation include lack of awareness of the efficacy of these products for smoking cessation and harm reduction (chapter 4), and public perceptions of the risks of vaping relative to smoking which do not reflect current evidence (chapter 5). Misinformation in the media is likely to contribute to misperceptions about vaping. Nicotine warnings on e-cigarette packaging may affect harm and addictiveness perceptions and reduce intentions to vape among young people as well as adults who smoke.

Evidence suggests that providing information aimed at increasing accurate relative perceptions of vaping compared with smoking can be successful among adults. Reduced risk messages presented on e-cigarette packs alone (without an addiction message) may increase uptake among smokers but not non-smokers. Access to a variety of device types and flavours can encourage the uptake of e-cigarettes to quit. The price of e-cigarettes is likely to be an important determinant of their consumption; higher prices are generally associated with lower use.

A person's identity in relation to smoking and vaping may play an important role in smoking cessation, with vaping offering an identity that may be attractive to smokers who wish to quit or stay quit. Dual users who are predominantly vapers are more likely to reduce tobacco consumption compared to those who are predominantly smokers. Frequency of e-cigarette use is important in predicting subsequent smoking cessation; daily and frequent use are positively associated with quitting smoking.

Despite national guidelines that clinicians should offer e-cigarettes as a treatment for tobacco dependency to their patients who smoke, a high proportion of health professionals report that they would not advise their patients to use e-cigarettes due to concerns about addiction and uncertainty about long-term harms. Clear information and training on the efficacy and health effects of e-cigarettes may help correct this misapprehension. In addition, many commissioned stop smoking services do not utilise e-cigarettes as part of their treatment interventions. There is an opportunity to proactively support smoking cessation by promoting vaping as a treatment for tobacco dependency in all NHS settings.

Recommendations

- Measures that encourage e-cigarette use for smoking cessation encompassing policies that address availability, affordability, access to nicotine-containing e-cigarettes together with information and support to use these products should be expanded to improve smoking quit rates in the UK.
- Measures to encourage e-cigarette use by smokers should be used together with measures to discourage uptake of e-cigarettes by people who do not smoke, especially children and young people.
- Interventions to increase accurate perceptions of the risks of vaping, especially relative to smoking, are important, but more research is needed to identify the most effective ways of doing this.
- A range of flavours should be available to facilitate quitting among adults who are using e-cigarettes to quit smoking.
- More research is needed to directly explore the effects of device type, nicotine concentration and other features on smoking cessation.
- Messages on the relative risks of vaping and smoking should be required on cigarette packs and on package inserts, thus reaching smokers but not non-smokers.

- Reduced risk messages should be included on e-cigarette packs.
- More research is needed to explore how to maximise credibility of reduced risk messages; ensure that smokers notice and attend to them; and understand the extent to which message exposure can promote actual use behaviour.
- Detailed research is needed to understand how e-cigarette advertising can increase the uptake of e-cigarettes among people who smoke to support and maintain quit attempts.
- In all healthcare settings, trained specialists should offer support for smoking cessation using e-cigarettes and other evidence-based therapies.
- Smoking cessation interventions should support positive identity change in relation to vaping. Research is needed to identify the most effective ways to do this.
- Smokers who are trying to quit using e-cigarettes should be encouraged and supported to adopt patterns of e-cigarette use most likely to lead to successful smoking cessation.

8. Discouraging uptake of e-cigarettes in people who do not smoke

There has been a rise in e-cigarette use among people who do not smoke, particularly among children and young people in the UK. This represents a potential health risk as vaping products are not risk free. Factors that can increase uptake of e-cigarettes among non-smokers include the availability of attractive devices, easy retail access, widespread advertising that includes point of sale advertising and social media visibility, and affordable prices. Many of these factors mimic the conditions that encouraged youth uptake of smoking before tighter regulations were introduced.

While higher nicotine concentrations do not appear to be part of the initial appeal of vaping, higher nicotine content may be associated with continued use and/or more frequent use among young people. Surveys suggest the appeal of flavours is not the main reason why young people who have never smoked start vaping, but the names or 'descriptors' of flavours may be a factor. Modelling suggests that restricting flavours could disproportionately lead to more people continuing to smoke or relapsing to smoking than preventing uptake of vaping or uptake of smoking.

Perceiving vaping as less harmful than smoking predicts subsequent vaping uptake among young people and adults who do and do not smoke, while perceiving vaping as harmful is associated with not starting vaping. Evidence suggests that campaigns aiming to deter youth from trying smoking can increase perceptions of vaping as harmful.

Exposure to vaping prevention messages can increase risk perceptions among non-smokers but effects on use intentions are unclear. Research among young people aged 11–18 in England has found that compared to branded and standardised packaging, youth interest in trying e-cigarettes is lowest when standardised packaging is combined with reduced flavour and brand descriptions.

Evidence suggests that e-cigarettes are widely advertised to young people. There is evidence that in the UK advertising via non-traditional channels such as social media often breaches advertising standards rules and that exposure to advertisements of e-cigarettes on television and in movies may increase uptake of e-cigarettes by 36% in adolescents. There has been a significant increase in awareness of e-cigarette promotion predominantly from local shops and online sources among 11–17-year-olds.

Even though it is prohibited to sell e-cigarettes to people under the age of 18 a significant proportion of young people who vape report that they purchase their e-cigarettes, most commonly from newsagents, corner shops and off-licences. Limiting access could be achieved by using retail licensing schemes which require retailers to be licensed to sell e-cigarettes and e-liquid. Licences can be revoked if they sell to underage customers. Higher e-cigarette prices are likely to reduce youth vaping and could be used to limit their uptake in this age group.

Recommendations

- Measures should be adopted to discourage people who do not smoke from taking up vaping.
- Policy changes to reduce the uptake of vaping among people who have never smoked needs to be carefully focused to minimise their impact on the uptake of vaping for smoking cessation. The shared goal must be to reduce death, disease and disparities.
- Information should be provided to young people and never smokers on the health risks of vaping, but such information should be carefully designed so as not to misinform people about the relative harms of smoking and vaping, and deter people who smoke from switching to vaping.
- More research is needed on the aspects of product design that a) facilitate smoking cessation in people who smoke and b) reduce appeal among those who do not smoke.
- Standardised plain packaging combined with reduced flavour and brand descriptions together with retail display bans should be introduced to decrease youth interest in trying vaping.
- E-cigarette price and taxation strategies should reduce the affordability of the cheapest products most commonly used by youth vapers (ie disposable e-cigarettes), while ensuring that the products most likely to be used by adults who smoke/quitters (ie rechargeable and refillable products), which are also less damaging to the environment, remain affordable.
- A review of current advertising regulation of e-cigarettes, including social media and retail product placement is required to ensure it adequately protects young people and never smokers.
- Policies and regulations should be introduced to reduce access to e-cigarettes for young people, particularly in retail settings, including retail licensing schemes and age verification at the point of purchase.
- Research is needed to test school-based interventions for preventing e-cigarette uptake.

9. Tobacco industry interests, recent conduct and claims around harm reduction

E-cigarettes first emerged in 2003 and in the following years came to represent a significant threat to the major tobacco companies and their uniquely profitable primary product, the cigarette. From 2012, the major tobacco companies responded by rapidly acquiring existing e-cigarette brands and launching their own. From 2013, they also began to launch new heated tobacco products (HTPs) and a variety of new oral tobacco and nicotine-only products.

Although all four transnational tobacco companies (TTCs) now sell e-cigarettes, HTPs and tobacco and nicotine-only pouches for oral consumption, cigarettes remain their primary product. While TTCs dominate the global HTP market, they hold only 26% of the e-cigarette market, which consists largely of other companies. More recently, three TTCs have expanded beyond tobacco and nicotine products to pharmaceutical inhaler, vaccines and cannabis products, which raises ethical issues when they sell medicines used to treat diseases caused by their primary tobacco products.

TTC interests are in profit maximisation and their presentations to investors emphasise that e-cigarettes and HTPs expand rather than substitute lost revenues from cigarette sales and that a significant proportion of growth is being driven by 'new entrants' to the market. Harm reduction involves reducing the health and social risks associated with addictive behaviour at both individual and population level. In the context of tobacco control, this would involve shifting current smokers to lower-risk products (if unable to quit) while not increasing harmful product use among others, notably new users. It is not, therefore, a sustainable business model.

TTCs have been using investments in e-cigarettes and HTPs to claim a commitment to what they label 'harm reduction' via 'transformation' away from cigarettes. Evidence shows that such claims are highly misleading and that, instead, TTCs have strategically co-opted harm reduction and used it against public health. Specifically, they have sought to use 'harm reduction' to:

- rehabilitate their image, increase their policy access and influence
- split and undermine the public health community

- position themselves as the solution to the tobacco epidemic they created
- push against population-level tobacco control measures of proven effectiveness (which reduce their sales) in favour of harm reduction approaches (which increase their product sales), ultimately seeking to amplify their ability to undermine progress in tobacco control.

Simultaneously, TTCs have continued to heavily market and increase the attractiveness of their cigarettes, buy up new cigarette companies and lobby against policies that would reduce smoking.

TTC-funded research accounts for a significant proportion of the science on new products and harm reduction approaches; yet evidence indicates that they may be engaging in many of the problematic scientific practices of the past, raising concerns about the quality and veracity of that research.

While e-cigarettes represent a potential opportunity for tobacco control in countries with strong institutional, regulatory and scientific capacity, this may not be the case in jurisdictions where capacity is more limited.

Recommendations

- If potential public health benefits from e-cigarettes are to be realised, it is essential to take account of the conduct of TTCs. This requires strong and well-enforced regulation to ensure that companies that profit from the manufacture and sale of tobacco play no role in policy development.
- The impacts of harm reduction approaches will be context specific, varying with regulatory and enforcement capacity such that what works in one jurisdiction may not work elsewhere. Protecting national policy space must therefore be respected.
- The need to de-normalise the tobacco industry and protect public policy from tobacco industry interference in line with Article 5.3 of the Framework Convention on Tobacco Control (FCTC) is more important than ever; the decline in the UK's position in the Global Tobacco Industry Interference Index indicates that this is a key issue in the UK.

10. Ethics

As the RCP has consistently argued since 2007, e-cigarettes are not harmless but from an ethical standpoint the significant issue is that they are demonstrably *less* harmful than smoked tobacco to user and bystander alike.

What has changed between 2007 and 2024 is the nature of the market for e-cigarettes. On the supply side, the e-cigarette market has arguably been partly captured by the tobacco industry and on the demand side there is evidence of e-cigarettes being taken up by a currently small but significant number of individuals who have never smoked tobacco.

The RCP's position has been that a risk-based approach to harm reduction is ethically and scientifically more sound than a precautionary approach, especially given the known serious harms of tobacco and the known difficulties in driving tobacco smoking and its associated harms down further without new tools to assist.

However, that precautionary approach may prove to have merit in contexts where e-cigarettes are taken up by individuals who were previously non-smokers.

The ethical arguments for e-cigarettes as a harm reduction tool in the context of a comprehensive tobacco control and smoking cessation strategy are still sound. But the imperative for collection of reliable evidence, including controlled trials, remains.

The need for careful monitoring of the e-cigarette market and industry behaviour in that context continues to be paramount. And the need for caution about the risks and unanticipated harms of interventions, such as e-cigarettes, which may assist in tackling the harms of smoking, is as strong as ever.

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