Electronic Cigarette Research Briefing – May & June 2021

This research briefing is part of a series of updates aiming to provide an overview of new studies on electronic 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 and further reading list do not cover every e-cigarette-related study published. 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.

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

If you would prefer not to receive this briefing in future, just let us know.

Let's talk e-cigarettes – University of Oxford podcasts

In this series Jamie Hartmann-Boyce and Nicola Lindson discuss emerging evidence in e-cigarette research and interview key researchers. The May and June editions are now available.

May 2021 – Jamie Hartmann-Boyce talks with Professor Tim Coleman from the University of Nottingham's Faculty of Medicine and Health Sciences. They discuss a study he is carrying out with colleagues from Queen Mary University of London which looks at helping pregnant women who smoke to stop.

June 2021 - Jamie Hartmann-Boyce talks with Professor Thomas Brandon from the University of Southern Florida and the Moffitt Cancer Center on his team's new study published in Lancet Public Health. This study is a randomised control trial investigating the effect of tailored advice to dual users of combustible and electronic cigarettes on how to use their electronic cigarette to quit combustible cigarettes.

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 CRUK.

1. The effectiveness of using e-cigarettes for quitting smoking compared to other cessation methods among adults in the United Kingdom

- **Study Aims**

  This UK study compared real-world effectiveness of different smoking cessation aids to no support and differences in the efficacy of e-cigarettes by device type and use frequency. Data were collected via five waves of an online survey between 2012 and 2017, from 1,155 adults (18+) who completed at least two consecutive waves, smoked cigarettes at baseline and reported a cessation attempt at follow up. Results were adjusted for several covariates including sociodemographic characteristics, smoking dependency and previous quit attempts.

- **Key Findings**

  Compared with no cessation aid, the odds of reporting abstinence for at least a month at follow-up were increased by using cartridge/disposable e-cigarettes daily (OR=3.31, 95%CI=1.32-8.26, p=0.010) and refillable/modular e-cigarettes daily (OR=5.47, 95%CI=2.70-11.11, P<0.001).

  Compared with no cessation aid, the odds of reporting abstinence for at least a month at follow-up were reduced by using cartridge/disposable e-cigarettes non-daily (OR=0.23, 9%%CI=0.08-0.63, p=0.005) and by using them in a cessation attempt but not at follow-up (OR=0.01, 95%CI=0.16-0.62, p=0.013).

  Compared with no cessation aid, there was no significant difference of reporting abstinence for at least one month at follow-up for participants using NRT (p=0.093), stop smoking medication (p=0.093) or a combination of stop smoking aids (p=0.561).

  In a secondary analysis examining at least one month of abstinence between baseline and follow up, results were largely consistent with the above. However, compared with no cessation aid, odds of reporting abstinence were greater in participants who used stop smoking medication (OR=4.15, 95%CI=1.79-9.62, p=0.001).

- **Limitations**

  Although participants were asked if they used e-cigarettes for smoking cessation, their recall may have been inaccurate. As temporality was not established, it is possible that e-cigarette use proceeded their cessation attempt.

  Sample sizes for some of the comparison groups were relatively small which may have limited statistical power to observe associations.

  The sample was not representative of the UK population, so the results may not be generalisable.

  Participants were not asked if they received behavioural support in their cessation attempt, so the effectiveness of e-cigarettes with behavioural support could not be determined.

  The primary outcome was abstinence at one month, so the effectiveness of e-cigarettes for long-term abstinence is less clear.

  Analysis were not pre-registered so should be considered exploratory.

McDermott MS, East KA, Brose LS, McNeill A, Hitchman SC, Partos TR. (2021). The effectiveness of using e-cigarettes for quitting smoking compared to other cessation methods among adults in the United Kingdom. *Addiction*. doi: 10.1111/add.15474.

2. Smokers' use of e-cigarettes in situations where smoking is not permitted in England: quarterly trends 2011-2020 and associations with sociodemographic and smoking characteristics

- **Study Aims**

  This English study reviewed data collected from 5,081 dual users of cigarettes and e-cigarettes from 2011-2020. Logistic regression was used to assess changes over time in using e-cigarettes in situations where smoking is not permitted. Differences in sociodemographic and smoking related characteristics were compared in respondents who did/did not use e-cigarettes in these situations and changes in the profile of these users over time was assessed.

- **Key Findings**

  The prevalence of using e-cigarettes among dual-users in situations where smoking is not permitted increased from 45.1% (95%CI =5.6-67.2%) in 2011 to 70.5% (95%CI=60.5-80.8%) in 2020.

  Odds of reporting using e-cigarettes in situations where smoking is not permitted were higher in participants from C2DE vs ABC1 social grade (OR=1.19, 95%CI=1.05-1.36, p=0.008), in those with stronger urges to smoke (OR=1.11, 95%CI=1.04-1.19, p=0.003) and in those who had made a quit attempt in the past year (OR=1.28, 95%CI=0.12-1.46, p<0.001).

  Odds of reporting using e-cigarettes in situations where smoking is not permitted were lower in participants aged ≥65 years (vs.16-24 years) (OR=0.75, 95%CI=0.59-0.97, p=0.25), from the south of England (vs the north) (OR=0.82, 95%CI=0.71-0.95, p=0.008), currently cutting down smoking (OR=0.27, 95%CI=0.23-0.33, p<0.001) and currently using NRT (OR=0.49, 95%CI=0.41-0.57, p<0.001).

  There was no significant interaction between survey year and use of e-cigarettes in situations where smoking is not permitted for any sociodemographic or smoking related characteristic.

- **Limitations**

  The measure of use of e-cigarettes in situations where smoking is not permitted was not context specific, so it is unclear whether use refers to public places or in the home.

  A relatively small proportion of e-cigarette users also smoke cigarettes meaning the sample size was limited. This may have affected the accuracy of some estimates.

The analysis did not examine differences in using e-cigarettes in places where smoking is not permitted by ethnicity.

The study did not examine success of smoking cessation attempts and use of e-cigarettes in places where smoking is not permitted. Therefore, it's implications on abstinence are unclear.

Jackson SE, Beard E, Brown J. (2021). Smokers' use of e-cigarettes in situations where smoking is not permitted in England: quarterly trends 2011-2020 and associations with sociodemographic and smoking characteristics. *Nicotine Tob Res*. doi: 10.1093/ntr/ntab119.

3. E-cigarette advertising in the UK: a content analysis of traditional and social media advertising to observe compliance with current regulations

- **Study Aims**

  This UK study assessed compliance of e-cigarette adverts from 2019 with each CAP code rule relating to e-cigarettes. A random sample of 100 e-cigarette adverts in traditional media (cinema, direct mail, door drops, internet, outdoor and press) were selected, as well as Instagram posts from the accounts of three popular e-cigarette brands (blu, Logic Vapes and Totally Wicked).

- **Key Findings**

  There were no ads that could be reasonably associated with a tobacco brand (rule 22.2), promoted the use of tobacco products (rule 22.3), confused e-cigarettes with tobacco products (rule 22.4) or used healthcare professionals to endorse e-cigarettes (rule 22.6).

  Overall, most ads complied with rule 22.7 and stated that the product contained nicotine. However, all Instagram ads by two brands (blu and Totally Wicked) and all press ads by retailer VPZ did not contain this warning.

  92% of ads were deemed unlikely to appeal to people under 18 (rule 22.9), 65% did not show people under 25 years old (rule 22.10) and 39% were deemed to not be targeted at people under 18 (rule 22.12) (62% had insufficient information to classify).

  63% of ads complied with rule 22.12 around placement in permitted channels, however all Instagram ads were in breach of this rule. Overall, ads for non-tobacco company owned brands were more likely than tobacco company owned brands to be in non-permitted channels (52% vs 32%, $p<0.05$).

  Some of the CAP code guidelines were difficult to interpret. For example, it was unclear whether liquid shortfill products should contain a nicotine content warning. Some messaging or imagery was considered to appeal to a broad range of people, so may have breached rule 22.8 in encouraging non-smokers to use the product.

- **Limitations**

Point of sale/display ads for e-cigarettes are a key marketing tool, however, were not included in the sample.

Social media content was assessed by analysis of Instagram ads. However, this may not reflect ads on other social media channels.

Appeal of the ads to young people was judged by adult researchers and so may not be reflective of the opinions of younger people.

Compliance was assessed by researchers rather than the Advertising Standards Authority, who may have judged compliance differently.

The sample of ads were from 2019. Since then, Instagram has introduced bans on influencers promoting vaping products which may have altered practice.

Stead M, Ford A, Angus K, MacKintosh AM, Purves R, Mitchell D. (2021). E-cigarette advertising in the UK: a content analysis of traditional and social media advertising to observe compliance with current regulations. *Nicotine Tob Res*. doi: 10.1093/ntr/ntab075.

4. High School Seniors Who Used E-Cigarettes May Have Otherwise Been Cigarette Smokers: Evidence From Monitoring the Future (United States, 2009–2018)

- **Study Aims**

  This US study used data from the 2009-2018 Monitoring the Future Survey to produce forecasts of past 30-day smoking rates in 17-18-year olds. Six models were produced based on data from rolling five-year periods between 2004-2013, including participant's sociodemographic characteristics. These predictions were compared to observed smoking rates before and after the widespread availability of e-cigarettes. For 2016 – 2018, e-cigarette use prevalence in non-smokers was assessed by smoking propensity scores.

- **Key Findings**

  Before 2014, there were negligible differences between forecasted and observed smoking rates (mean difference <-0.1%, range: -1.4, 1.4%).

  For the period 2014-2018, forecasted smoking rates were consistently higher than observed rates (mean difference -2.9%, range -5.5, -0.8%).

  Among non-smokers in 2016-2018, e-cigarette use was lowest among those with the lowest predicted probability of smoking (3.8%; 95% CI: 3.3, 4.4) and highest among those with the highest predicted probability of smoking (23.5%; 95% CI: 22.2, 24.9).

- **Limitations**

  The analysis was based on cross-sectional survey data so cannot establish causality.

  Statistical significance of differences between predicted and observed smoking rates was not calculated, so it is unclear whether there is a meaningful difference between these values.

External factors that may affect smoking rates including tobacco control policies and anti-tobacco campaigns were not considered in the models so may explain the observed differences.

Predicted/observed smoking rates were not directly compared to e-cigarette use rates, so it is unclear how these coincide.

Sokol NA, Feldman JM. High school seniors who used e-cigarettes may have otherwise been cigarette smokers: Evidence from Monitoring the Future (United States, 2009-2018). (2021). *Nicotine Tob Res*. doi: 10.1093/ntr/ntab102.

Overview

This month we include four articles from research teams in the UK and USA examining vaping for smoking cessation, use of e-cigarettes in areas where smoking is not permitted, e-cigarette marketing and comparing forecast and actual smoking rates among young people during the period when vaping became more prevalent.

Our first article looks at the effectiveness of vaping for smoking cessation compared to other cessation methods in the UK. Data were drawn from an online longitudinal survey of smokers, ex-smokers and vapers from 2012 to 2017. Some participants who had completed each of the annual surveys were included along with a booster (newly recruited) sample in 2016/17. The primary outcome was abstinence from smoking for one month at follow up. The researchers compared no assistance to quit with nicotine replacement only, other smoking cessation medications only, and six e-cigarette categories based on device type and use frequency (disposable/cartridge, reflll/modular, daily, non-daily, or no longer using). Findings were adjusted for demographics.

The study found that success rates for stopping smoking were higher when smokers had used e-cigarettes daily, particularly if the devices were refillable or modular, compared to those who used no aids to stop. Non daily use of disposable/cartridge devices resulted in lower odds of quitting smoking compared to no aids to stop. The key finding from the study (in relation to vaping specifically) was that at least daily use of e-cigarettes rather than less frequent use resulted in higher cessation rates, as other studies have found.

This month's second article is from the Smoking Toolkit study in England. In this paper, the researchers aimed to examine whether and to what extent the proportion of smokers who vape where smoking is not allowed had changed since e-cigarettes became popular (around 2011) through to early 2020 before Covid restrictions were applied.

They found a fluctuating picture over time. The study focused on dual users, 52% of whom reported using e-cigarettes where smoking was not allowed in mid-2011 to almost 73% towards the end of 2014. This was followed by a modest decline to 67% in 2018 and then an increase to 74% in 2020. Vaping where smoking was not permitted was more common among more disadvantaged groups, younger adults and those who reported stronger urges to smoke. It was also higher among those who had tried but failed to stop smoking or had not cut down their smoking in in the past year.

Our third article looked at e-cigarette advertising in the UK. The researchers were interested to find out to what extent existing advertising regulations were being complied with. The current regulatory framework follows the EU Tobacco Products Directive as it was transposed into UK law in the

Tobacco and Related Products Regulations 2016. This bans the advertising of nicotine containing e-cigarettes on TV, radio, print media, online and also sponsorship. Some forms of advertising (i.e. point of sale and outdoor, for example billboards) are still permitted as are websites that contain factual information about the products (for example for the purpose of online sales). The research team conducted a content analysis of 130 e-cigarette ads in traditional channels and one social media platform (Instagram) during 2019 to look at compliance with the regulations.

They found overall good compliance in traditional media channels (i.e. cinema, direct mail, leaflets, outdoor advertising) with fewer than 5% of the sample ads not following all aspects of the regulations. The pattern was not the same for Instagram, where all of the ads they looked at (n=30) breached Rule 22.12 of the regulations which states that ads should not contain any promotional language or imagery that goes beyond purely factual content, and that the ads are in an online space that is under the marketer's control. The researchers concluded that social media e-cigarette advertising was a focus of concern and that existing guidance was not easy to interpret or apply, and should be reviewed.

This month's final article aimed to examine whether young people who used e-cigarettes in the USA between 2014 to 2018 would have been smokers in the period before e-cigarettes became available. To look at this, the researchers analysed data from pupils in the final year of secondary school who took part in the Monitoring the Future survey from 2009-2018. They used statistical modelling techniques to predict smoking for future years taking into account a range of socio-demographic factors and time trends. They then compared predicted to actual smoking rates in the relevant age groups each year as well as the prevalence of vaping among non-smokers.

This modelling study found that their predicted (forecast) smoking prevalence was similar to actual smoking rates up to 2014, the year in which vaping started to become much more common in the USA. After that point, predicted rates were higher than actual prevalence. In other words, the decline in smoking among final year secondary school pupils accelerated since e-cigarettes became available. When looking at non-smoking young people who vaped, they had many common characteristics with smokers in the period before e-cigarettes became available in the USA. This provides some evidence that vaping may have replaced smoking in this age group, contributing to tobacco harm reduction. However the authors acknowledge that e-cigarettes are not risk free and that wider health effects in young people need to be better understood.

Other studies from May/June you might find of interest:

Patterns of use

Characteristics of electronic cigarette user and traditional smokers: 2017 Youth risk behavior surveillance system.

Smokers' use of e-cigarettes in situations where smoking is not permitted in England: quarterly trends 2011-2020 and associations with sociodemographic and smoking characteristics.

Electronic cigarette use (vaping) and patterns of tobacco cigarette smoking in pregnancy-evidence from a population-based maternity survey in England.

Nicotine delivery and relief of craving after consumption of European JUUL e-cigarettes prior and after pod modification.

Electronic cigarette use intensity measurement challenges and regulatory implications.

Transitions Between Electronic and Combustible Cigarettes: A Mixed Methods Analysis of Peer Interactions in an Online Community for Tobacco Cessation.

Young Adults' Vaping, Readiness to Quit, and Recent Quit Attempts: The Role of Co-use With Cigarettes and Marijuana.

E-Cigarette Use in Young Adult Never Cigarette Smokers with Disabilities: Results from the Behavioral Risk Factor Surveillance System Survey.

Characterizing symptoms of e-cigarette dependence: a qualitative study of young adults.

Longitudinal Examination of Prenatal Tobacco Switching Behaviors and Birth Outcomes, Including Electronic Nicotine Delivery System (ENDS) and Dual Use.

Choice and Variety-Seeking of E-liquids and Flavor Categories by New Zealand Smokers Using an Electronic Cigarette: A Longitudinal Study.

Differences in JUUL Appeal Among Past and Current Youth JUUL Users.

The Genetic and Environmental Influences Contributing to the Association between Electronic and Conventional Cigarette Initiation.

Racial and Ethnic Differences in Marijuana Use in e-Cigarettes Among US Youth in 2017, 2018, and 2020.

Personal and perceptual factors associated with the use of electronic cigarettes among university students in northern Thailand.

E-Cigarette Flavors and Frequency of E-Cigarette Use among Adult Dual Users Who Attempt to Quit Cigarette Smoking in the United States: Longitudinal Findings from the PATH Study 2015/16-2016/17.

Vaping identity in adolescent e-cigarette users: A comparison of norms, attitudes, and behaviors.

E-Cigarette Use Among Youths and Young Adults During the COVID-19 Pandemic: United States, 2020.

Perception

Electronic Cigarettes Prevalence and Awareness Among Jordanian Individuals.

Knowledge and Beliefs of Jordanian Community Toward E-cigarettes: A National Survey.

Changes in E-Cigarette Perceptions Over Time: A National Youth Tobacco Survey Analysis.

Implementation of e-cigarette regulation through the EU Tobacco Products Directive (2016) in Wales, Scotland and England from the perspectives of stakeholders involved in policy introduction and enforcement.

Tackling Smoker Misperceptions about E-cigarettes using Expert Videos.

Modelling Public Sentiments about Juul Flavors on Twitter through Machine Learning.
Tetrahydrocannabinol (THC)-containing e-cigarette, or vaping, product use behaviors among adults after the onset of the 2019 outbreak of e-cigarette, or vaping, product use-associated lung injury (EVALI).

Knowledge and Attitudes Among Medical Students Toward the Clinical Usage of e-Cigarettes: A Cross-Sectional Study in a University Hospital in Saudi Arabia.

E-Cigarette Beliefs and Intentions Among U.S. Adults Before and After EVALI Outbreak.

Where There Is (No) Smoke, There Is Still Fire: a Review of Trends, Reasons for Use, Preferences and Harm Perceptions of Adolescent and Young Adult Electronic Cigarette Use.

Consumer Preferences for E-cigarette Flavor, Nicotine Strength, and Type: Evidence from Nielsen Scanner Data.

Cessation

Changes in dependence, withdrawal, and craving among adult smokers who switch to nicotine salt pod-based e-cigarettes.

Electronic Cigarette Use and Cigarette-Smoking Cessation Attempts Among Stroke Survivors in the US.

Effectiveness of a Vaping Cessation Text Message Program Among Young Adult e-Cigarette Users: A Randomized Clinical Trial.

Evaluation of a smoking cessation patient decision aid that integrates information about e-cigarettes.

Do Pain-Related Anxiety and Difficulties With Emotion Regulation Impact Abstinence Expectancies or Motivation to Quit E-Cigarette Use?

Electronic cigarettes for smoking cessation.

Youth

Trends in e-cigarette brands, devices and the nicotine profile of products used by youth in England, Canada and the USA: 2017-2019.

Racial and Ethnic Differences in E-Cigarette and Cigarette Use Among Adolescents.

Electronic cigarette use and suicidal behaviors among adolescents.

Association between electronic cigarette use and tobacco cigarette smoking initiation in adolescents: a systematic review and meta-analysis.

Characteristics of e-Cigarette Use Behaviors Among US Youth, 2020.

Longitudinal trajectories of E-cigarette use among adolescents: A 5-year, multiple cohort study of vaping with and without marijuana.

Modeling the effect of stress on vaping behavior among young adults: A randomized cross-over pilot study.

Racial/Ethnic Differences in Associations of Non-cigarette Tobacco Product Use With Subsequent Initiation of Cigarettes in US Youths.

High school seniors who used e-cigarettes may have otherwise been cigarette smokers: Evidence from Monitoring the Future (United States, 2009-2018).

Accessing Vaping Products When Underage: A Qualitative Study of Young Adults in Southern California.

Adolescent Use and Perceptions of JUUL and Other Pod-Style e-Cigarettes: A Qualitative Study to Inform Prevention.

Marketing

Negative Perceptions of Young People Using E-cigarettes on Instagram: An Experiment with Adolescents.

Association Between Social Media Use and Vaping Among Florida Adolescents, 2019.

Exposure to e-cigarette TV advertisements among U.S. youth and adults, 2013-2019.

Harms and harm reduction

Dysregulated Metabolites Serve as Novel Biomarkers for Metabolic Diseases Caused by E-Cigarette Vaping and Cigarette Smoking.

Nicotine-free vapor inhalation produces behavioral disruptions and anxiety-like behaviors in mice: Effects of puff duration, session length, sex, and flavor.

A randomized controlled study in healthy participants to explore the exposure continuum when smokers switch to a tobacco heating product or an E-cigarette relative to cessation.

The impact of E-cigarette vaping and vapour constituents on bone health.

Exposure to Nicotine and Toxicants Among Dual Users of Tobacco Cigarettes and E-Cigarettes: Population Assessment of Tobacco and Health (PATH) Study, 2013-2014.

US Nicotine Vaping Product SimSmoke Simulation Model: The Effect of Vaping and Tobacco Control Policies on Smoking Prevalence and Smoking-Attributable Deaths.

Firsthand and secondhand exposure levels of maltol-flavored electronic nicotine delivery system (ENDS) vapors disrupt amino acid metabolism.

Nicotine Exposure Via Electronic Cigarettes Significantly Impedes Biomechanical Healing Properties of Tendon Healing in a Rat Model.

A 6-month inhalation toxicology study in Apoe(-/-) mice demonstrates substantially lower effects of e-vapor aerosol compared with cigarette smoke in the respiratory tract.

Use of electronic nicotine delivery systems (ENDS) among U.S. women of reproductive age: Prevalence, reported reasons for use, and toxin exposure.

Risk of smoking relapse with the use of electronic cigarettes: A systematic review with meta-analysis of longitudinal studies.

Particulate matter in aerosols produced by two last generation electronic cigarettes: a comparison in a real-world environment.

E-cigarette advertising in the UK: a content analysis of traditional and social media advertising to observe compliance with current regulations.

Misc

Evidence from an fMRI study that dessert-flavored e-cigarettes engage taste-related, but not smoking-related, brain circuitry for female daily smokers.

Dynamic Imaging and Characterization of Volatile Aerosols in E-Cigarette Emissions Using Deep Learning-Based Holographic Microscopy.

Objective assessment of nasal resistance among electronic cigarette users.

E-cigarette Use in Prisons With Recently Established Smokefree Policies: A Qualitative Interview Study With People in Custody in Scotland.

A Rapid and Sensitive Chemical Screening Method for E-Cigarette Aerosols Based on Runtime Cavity Ringdown Spectroscopy.

Understanding potential mechanisms of harm: the drivers of electronic cigarette-induced changes in alveolar macrophages, neutrophils and lung epithelial cells.

A numerical study on capillary-evaporation behavior of porous wick in electronic cigarettes.

Nicotine delivery and user ratings of IQOS heated tobacco system compared to cigarettes, Juul and refillable e-cigarettes.

Electrical features, liquid composition and toxicant emissions from 'pod-mod'-like disposable electronic cigarettes.

The Illegal Experimental Tobacco Marketplace I: Effects of VapingProduct Bans.

Effect of Massachusetts House Bill No. 4196 on electronic cigarette use: a mixed-methods study.

Effects of Manufacturing Variation in Electronic Cigarette Coil Resistance and Initial Pod Mass on Coil Lifetime and Aerosol Generation.

Search strategy

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

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 will not be included. Please note studies funded by the tobacco industry will be excluded.

This briefing is produced by Alice Davies from Cancer Research UK with assistance from Professor Linda Bauld at the University of Edinburgh and the UK Centre for Tobacco and Alcohol Studies, primarily for the benefit of attendees of the CRUK & PHE 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.