

Medicalisation of Vaping in the UK? E-cigarette users' perspectives on the merging of commercial and medical routes to vaping

Journal:	<i>Perspectives in Public Health</i>
Manuscript ID	RSH-22-0432.R2
Manuscript Type:	Original Research Paper
Keywords:	e-cigarettes, qualitative, Smoking, vaping industry, healthcare professionals, Public Health Policy
Abstract:	<p>Background: In the UK, most smokers choosing e-cigarettes to quit smoking will access vaping via commercial routes. In recent years, however, a shift towards medicalisation of vaping has become apparent, with public health guidance supporting e-cigarettes for smoking cessation and increased partnership working between healthcare professionals and the vaping industry. To achieve the UK's Smokefree 2030 target, the UK Government has set out measures to utilise e-cigarettes in NHS settings and to move towards streamlining processes to make e-cigarettes available to a million smokers. This paper aims to understand acceptability of different approaches by seeking perspectives of people with lived experience of e-cigarette use for smoking cessation.</p> <p>Methods: Mixed methods data, collected between March 2018 and March 2019 as part of a broader study of e-cigarette use trajectories (ECtra study). Data here relate to views of partnership working and medicalisation of vaping extracted from 136 interviews/extended surveys of people who had used e-cigarettes to try to stop smoking. Qualitative data were thematically analysed. Participant ratings of interventions were presented descriptively and differences in participant characteristics and ratings were reported.</p> <p>Results: Three qualitative themes were identified: pro-partnership, anti-partnership and medicalisation dissonance. Medicalisation was discussed for its potential to reassure smokers about e-cigarette harms and its potential to reach smokers from disadvantaged backgrounds. Concerns were raised about cost-effectiveness, quality of support, conflicts of interest, and limiting product choice. Most participants rated interventions involving partnership working as potentially helpful in switching from smoking to vaping. There were no statistically significant associations between age, gender and socio-economic status and helpfulness ratings.</p> <p>Conclusions: Both commercial and medical routes to vaping offer perceived benefits to vapers and may complement and reinforce each other to support smoking cessation.</p>

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 **Medicalisation of Vaping in the UK? E-cigarette users' perspectives on the merging of commercial and**
10 **medical routes to vaping**

11
12
13
14 Keywords: e-cigarettes, intervention, qualitative, smoking, vaping industry, healthcare professionals

15
16 **Abstract**

17
18 Background: In the UK, most smokers choosing e-cigarettes to quit smoking will access vaping via
19 commercial routes. In recent years, however, a shift towards medicalisation of vaping has become
20 apparent, with public health guidance supporting e-cigarettes for smoking cessation and increased
21 partnership working between healthcare professionals and the vaping industry. To achieve the UK's
22 Smokefree 2030 target, the UK Government has set out measures to utilise e-cigarettes in NHS settings
23 and to move towards streamlining processes to make e-cigarettes available to a million smokers. This
24 paper aims to understand acceptability of different approaches by seeking perspectives of people with
25 lived experience of e-cigarette use for smoking cessation.
26
27
28
29
30
31
32
33

34
35 Methods: Mixed methods data, collected between March 2018 and March 2019 as part of a broader
36 study of e-cigarette use trajectories (ECtra study). Data here relate to views of partnership working and
37 medicalisation of vaping extracted from 136 interviews/extended surveys of people who had used e-
38 cigarettes to try to stop smoking. Qualitative data were thematically analysed. Participant ratings of
39 interventions were presented descriptively and differences in participant characteristics and ratings
40 were reported.
41
42
43
44
45
46
47

48 Results: Three qualitative themes were identified: pro-partnership, anti-partnership and medicalisation
49 dissonance. Medicalisation was discussed for its potential to reassure smokers about e-cigarette harms
50 and its potential to reach smokers from disadvantaged backgrounds. Concerns were raised about cost-
51 effectiveness, quality of support, conflicts of interest, and limiting product choice. Most participants
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 rated interventions involving partnership working as potentially helpful in switching from smoking to
10 vaping. There were no statistically significant associations between age, gender and socio-economic
11 status and helpfulness ratings.
12

13
14
15
16 Conclusions: Both commercial and medical routes to vaping offer perceived benefits to vapers and may
17 complement and reinforce each other to support smoking cessation.
18
19

20 21 22 **Introduction**

23
24 Since e-cigarettes emerged as a 'disruptive' consumer technology,¹ two routes of access for people
25 wishing to quit smoking via vaping have materialised. Access via purchasing from commercial markets is
26 by far the most popular. Less common is access via healthcare professionals, and only Australia has
27 limited access to vaping products via this route, with recent legislation requiring all purchases of
28 nicotine vaping products to require a prescription.² In the UK, both medical and commercial approaches
29 have been embraced due to public health bodies acknowledging vaping's potential for assisting smoking
30 cessation and supporting e-cigarette use for this purpose.³ A Cochrane living systematic review⁴ of
31 randomised controlled trials suggests clear evidence that e-cigarettes are twice as effective compared to
32 other forms of smoking cessation support, such as nicotine replacement therapy.
33
34
35
36
37
38
39
40
41
42
43
44
45
46

47 Most smokers try vaping without seeking or receiving support from healthcare professionals. The UK
48 commercial vaping sector is the most popular place for the public to purchase e-cigarettes, with 94% of
49 vapers in 2021 accessing products via vape shops, online, garages, supermarkets, and convenience
50 stores.⁵ Whilst there is widespread accessibility to these products, it is important to recognise that the
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 industry has been regulated in the UK via European Union legislation for safety since 2014.⁶ Currently,
10 e-cigarettes thrive as a commercial product in the UK, but vaping has also been medicalised to an
11 extent, as evidenced by implementation of NICE guidelines⁷ recommending healthcare professionals
12 support patients' choice to use e-cigarettes for cessation; MHRA guidance⁸ to support licensing e-
13 cigarettes as medicines; increasing numbers of Stop Smoking Services (SSS) becoming 'e-cigarette
14 friendly'⁹ with 40% of SSS facilitating free access to e-cigarettes;¹⁰ targeted interventions based in
15 primary and secondary care including provision of e-cigarettes;⁴ and e-cigarettes being available for sale
16 in hospitals and pharmacies.

17
18
19
20
21
22
23
24
25
26
27
28 Despite the public health support of e-cigarettes as a cessation tool, many healthcare professionals
29 (HCPs) remain cautious about supporting patients who smoke to make a quit attempt using e-cigarettes
30 due to a lack of knowledge and confidence in discussing the effectiveness and relative harms of
31 vaping,¹¹⁻¹⁴ likely resulting in potential quitters not receiving the help they need.¹⁵ Conversely, other
32 HCPs have actively supported patients to use e-cigarettes, with some GPs and Stop Smoking Services
33 forming partnerships with the vaping industry, capitalising on their 'expertise by experience'.^{16, 17} These
34 partnerships include informal referrals and signposting to local vape shops by HCPs,¹⁶ vape shop staff
35 receiving smoking cessation training to deliver smoking cessation support in-house,¹⁸⁻²⁰ and HCPs
36 providing patients with a 'vaping starter kit'^{21, 22} or giving vouchers to redeem in local vape shops.²³
37
38 There is limited evaluation of the effectiveness of such partnerships (especially regarding informal
39 referrals and vape shop training). Examples include 1,022 residents in a deprived inner-city area given a
40 starter kit via pharmacies and SSS resulting in a 4-week quit rate of 37.4%,²¹ and 668 smokers
41 predominantly resident in a deprived English seaside town, who had previously failed to quit smoking
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 using traditional methods, provided with a vape shop voucher by the local SSS resulting in a 4-week quit
10 rate of 21%.²³ These studies of real-world practice reinforce randomised controlled trial results⁴ which
11 indicate that interventions that provide access to e-cigarettes may be effective in helping people to quit,
12 and suggest that e-cigarettes might be particularly effective for disadvantaged groups.
13
14
15
16
17
18
19

20 The UK Government hopes to achieve a national target of England being smokefree by 2030 (defined as
21 5% smoking prevalence or less). The recent independent Khan Review²⁴ recommended that to achieve
22 the Smokefree 2030 target the Government should accelerate the path to e-cigarettes being available
23 on prescription and provide free vape starter kits to people from deprived communities. The report also
24 recommended that brief smoking cessation advice should be delivered routinely in all NHS settings and
25 that healthcare professionals should be fully informed about the benefits for patients of switching to
26 vaping. Following these recommendations, in April 2023, the Department of Health and Social Care
27 (DHSC) announced a variety of measures including offering stop smoking support to all smokers
28 admitted to hospital and a 'swap to stop' vaping starter kit scheme targeting one million smokers with
29 the aim of reducing health inequalities.²⁵ The proposed measures mean that opportunities to access e-
30 cigarettes via medicalised routes such as via SSS will increase in the lead up to 2030. Equally, UK e-
31 cigarette market share is expected to increase by USD 1.20 billion from 2021 to 2027.²⁶ Given the likely
32 increase in both the medical and commercial routes to vaping, it is important that we seek the views of
33 people with lived experience of attempting to quit smoking using e-cigarettes to understand the
34 acceptability and potential cessation efficacy of the different approaches. This paper aims to answer the
35 research question: 'How helpful do UK vapers perceive partnership working between healthcare
36 professionals and the vaping industry in supporting people to stay stopped from smoking?'
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Methodology

The data drawn upon to answer the research question are taken from the second phase of a broader longitudinal study, the 'E-Cigarettes Trajectories Study' (ECTra), exploring patterns of e-cigarette use in preventing smoking relapse through longitudinal mixed methods data collection. The study received ethical approval from the UEA Faculty of Medicine and Health Sciences Research Ethics Committee (project reference: 2017/2018 – 106).

Sample

Between March 2018 and March 2019, 184 participants took part in the second phase of the ECTra study, 12 to 18 months after they initially participated in the first phase (2016-2017). The eligibility criteria included adults (18+ years) who had attempted to use an e-cigarette for smoking cessation. Participants were originally recruited into the first phase of the study through word of mouth, social media, local press articles, vape shops and university bulletins. The ECTra study was initially designed to be an interview study, but due to over recruitment, the research team offered an alternative online survey version of the interview. This was administered via a hyperlink using the Qualtrics survey platform to enquirers who were unable to participate in an interview. Participants gave informed consent before taking part in the confidential online survey (147) or telephone (25)/face-to-face (12) interview. To address the current research question, which focuses on perspectives of practice potentially facilitating UK policy changes, people resident outside of the UK were excluded from the analysis. Eleven UK participants who did not provide any data relating to the research question were also excluded, resulting in a final sample of 136 (37 interviewed and 99 surveyed).

Procedure

The Phase 2 online survey and interview topic guide were developed in consultation with lay consultants (supplementary material). The questions were derived from findings illuminated from the first phase of the ECtra study and explored practices identified since the first phase. Both data collection tools included a questionnaire listing 14 examples of interventions involving partnership working between the vaping industry and healthcare professionals. These examples were developed by the research team and included examples of practice already in existence, practice proposed by public health bodies or healthcare professionals, and ideas influenced by participants' responses to the first phase of the study [Appendix 2]. Participants were asked to rate how helpful each would have been for them, or someone else, to stay stopped from smoking using an e-cigarette on a five-point scale (not at all helpful to extremely helpful). This paper focuses on reporting the results for the three common partnership practices in the UK: 1) healthcare practitioner signposting to a vape shop; 2) vape shop voucher schemes; 3) in-house vape shop smoking cessation behavioural support; plus 4) the possible plans for e-cigarettes to be available on prescription. The questionnaire was followed by open-ended questions (text box in the questionnaire) inviting participants to explain their answers and offer their opinions. Both data collection tools included the same question phrasing (supplementary material).

Analysis

Interviews were recorded, transcribed verbatim, and anonymised. Survey data were downloaded once the survey closed. Participant responses to the open-ended questions were extracted from interview

1
2
3
4
5
6
7
8
9 transcripts and downloaded survey data, then were uploaded to NVivo 12 qualitative analysis software.

10 The qualitative extracts from both data collection tools were combined and coded by EW using a
11 standardised inductive thematic analysis method.²⁷ CN then coded 10% of extracts to ensure inter-coder
12 reliability.
13
14
15
16
17
18
19

20 Quantitative questionnaire data from both data collection tools were entered into SPSS. These data
21 were analysed descriptively. Exploratory analysis was undertaken by dichotomising helpfulness ratings
22 to investigate the characteristics of participants who stated that they would have most benefitted from
23 the different interventions: this was measured by collapsing 'very helpful' and 'extremely helpful' ratings
24 into one category, and 'not at all', 'slightly' and 'somewhat' helpfulness scores into another. Pearson's
25 chi-square analyses were used to investigate associations between helpfulness ratings of the four
26 practice examples and gender, and socioeconomic status (SES), measured by collapsing participants into
27 two groups: managerial/professional/technical (A-C1) vs. routine and
28 manual/students/retired/unemployed (other groups). Independent t-tests were used to investigate
29 differences in mean age between the helpfulness rating dyads. The variables were analysed together
30 using logistic regression for each of the interventions to predict characteristics of those rating the
31 intervention as 'very/extremely helpful'.
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

47 **Results**

48 The profile of participant characteristics is reported in Table 1. Just over a quarter were female (38,
49 27.9%), ages ranged from 22 to 79 years (mean 49.5, SD 12.6), three participants were from Black, Asian
50 and minority ethnicities (BAME), and 50% (68) were employed in managerial, professional or technical
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 occupations. Most participants were vaping and abstinent from tobacco (117, 86%), 10 participants had
10 relapsed (four dual using both tobacco and vaping), and nine were no longer using either e-cigarettes or
11 tobacco.
12
13
14

15
16 [Table 1]
17
18

19 **Qualitative findings**

20
21
22 Table 2 shows a summary of the inductive thematic analysis. Sub-themes were identified in the data,
23 centring around ethics, suitability, accessibility, impact on NHS and vaping industry. These were grouped
24 into three overarching themes; 'pro-partnership', 'anti-partnership', and 'medicalisation dissonance'.
25
26 They are discussed in turn below.
27
28
29

30
31 [Table 2]
32
33
34
35

36 *Pro-partnership*

37
38
39 Some participants expressed themes that supported partnership working, such as believing it would
40 offer smokers reassurances about vaping health risks, safety issues and the quality of advice given in
41 vape shops:
42
43
44

45 *Depending on the smoker, information given by a health professional helps to give them that*
46 *last push to convince them that this is an option for them. I believe training vape shop*
47 *employees in the basics of smoking cessation to give clients tips and support for identifying*
48 *triggers and helping them remain abstinent not only strengthens the relationship between the*
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 *(soon to be ex) smoker and their choices, but also helps boost confidence levels. (Survey*
10 *participant 115)*

11
12
13 They felt that the medicalisation of vaping could simplify the idea of vaping and reduce intimidation and
14 could make initiating vaping more affordable for lower socioeconomic groups. Comparisons were made
15 to NRT being available on prescription, and that partnership working had the potential to prevent more
16 disease and morbidity and was therefore cost effective:
17
18
19
20

21
22 *How would it affect the budget of the NHS? If it's helping people become more healthy, there*
23 *are fewer people who are going to need heart operations and help with lung problems. It would*
24 *help people in less advantageous financial conditions. (Interview participant 20)*
25
26
27
28

29 A few participants did raise concerns that there would need to be mechanisms for ensuring consistency
30 across services and interventions to ensure quality of support.
31
32
33
34
35
36
37
38

39 *Anti-partnership*

40
41
42 Some participants expressed themes that were against partnership working, such as concerns that
43 approaches could be open to fraud and abuse with people potentially taking advantage of prescriptions
44 or voucher schemes. A common view was that NHS budgets were under pressure and that e-cigarette
45 interventions would add to the financial burden:
46
47
48
49

50
51 *I suppose that could be quite a draining resource on the NHS if people just think "oh well that's*
52 *free, I'll have it, I'll try it" and then don't actually commit to it. (Interview participant 39)*
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 A few felt that people should be responsible for their own health and that vaping was a personal choice
10 rather than a medicalised treatment option. There were concerns around potential conflicts of interest
11 in involving an industry with commercial interests. Ethical arguments were put forward including
12 potential for vaping to normalise nicotine use in young people and not knowing the long-term health
13 impacts of e-cigarettes:
14
15
16
17
18

19
20 *If, in 20 years' time, all results around vaping suggests that, like it doesn't cause cancer, but it*
21 *causes aneurysms, then you know the industry has been built up and like supported by the NHS.*
22 *That's going to feel pretty uncomfortable, particularly when their lobbyists try to prevent*
23 *legislation being passed against it, in the same way that's happened with tobacco. (Interview*
24 *participant 27)*
25
26
27
28
29
30
31
32
33
34
35

36 *Medicalisation dissonance*

37
38 Some participants expressed themes centring around a belief that vaping should be predominantly
39 commercial and should not be medicalised, because vaping had proved itself to be affordable and
40 effective, and that support to help people quit was already being offered informally in vape shops:
41
42
43
44

45 *[Millions of] people are now using e-cigarettes in the UK and that this change came about with*
46 *no involvement of any health professionals whatever. My guess is that the best thing would be*
47 *for health professionals to leave things as they are, while doing everything they can to*
48 *counteract adverse media reportage and trumpet the benefits of switching from smoking to e-*
49 *cigarette use. (Survey participant 21)*
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 They commented that smoking should not be viewed as an illness and that e-cigarettes were 'more
10 than' smoking cessation devices. Fears were expressed that partnership working could lead to further
11 regulation which would stifle product development and reduce the pleasurable aspects of vaping (such
12 as flavours, modifying and collecting devices), alongside negatively impacting on small independent
13 vaping businesses and allowing vaping to be monopolised by the tobacco and pharmaceutical industries:

14
15
16
17
18
19
20 *It works because it's a consumer product. For a start [ecig prescription] would drastically reduce*
21 *the amount of products available, advances in equipment would stagnate and I believe it would*
22 *become less effective. (Survey participant 26)*
23
24

25
26 Some commented that it was unfair to expect the vaping industry to support delivery of health
27 interventions and that dialogue and knowledge transfer would be a better approach to take.
28
29
30
31
32
33
34

35 **Questionnaire findings**

36
37 Figure 1 reports the proportion and number of participants who endorsed each of the five categories of
38 helpfulness for each of the four practice examples. Informal referral from a healthcare practitioner to a
39 local vape shop was the most popular, with over three quarters (77.7%) stating it to be very or
40 extremely helpful in supporting themselves or others to stop smoking. Two thirds (66.5%) stated that
41 receiving a voucher from a healthcare professional to spend at a local vape shop would have been very
42 or extremely helpful. Over half (56%) stated that the availability of e-cigarettes on prescription would
43 have been very or extremely helpful, but e-cigarettes on prescription also had the largest proportion of
44 participants who stated that it would not have been at all helpful (17.2%). Smoking cessation support
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 being provided in-house by vape shops had a more mixed response with 38.1% stating very or extremely
10 helpful.
11

12
13 [Figure 1]
14

15
16 Gender, age and SES of the participants who stated that they would have most benefitted from the
17 different interventions were investigated. Chi-squared tests (Table 3) and *t*-tests (Table 4) demonstrated
18 that helpfulness ratings between those who rated interventions as 'very/extremely helpful' compared to
19 those who rated them as 'not at all/slightly/somewhat helpful' did not vary by age, gender and SES for
20 any of the four interventions. In line with the finding of no associations on bivariate analyses, when all
21 variables were analysed together using logistic regression (Table 5), again no single variable was found
22 to have a relationship with the outcome explored (e.g. whether informal referral to a vape shop by a
23 healthcare practitioner was considered very/extremely helpful or not) when adjusted for differences in
24 the other two variables.
25
26
27
28
29
30
31
32
33

34
35 [Tables 3, 4 & 5]
36
37

38 **Discussion**

39
40 The majority of e-cigarette users stated that interventions including informal referrals by HCP to vape
41 shops, and vape shop voucher schemes, would have been very/extremely helpful for them or someone
42 else to have stay stopped from smoking using an e-cigarette. This is perhaps unsurprising given it is likely
43 that the participants would have accessed vaping via a commercial route with most having achieved
44 tobacco abstinence. Even so, half of those surveyed stated that more medicalised interventions such as
45 e-cigarettes being available on prescription, and smoking cessation behavioural support offered in
46 shops, would have been very/extremely helpful. These findings were not related to gender, age or socio-
47 economic status, perhaps indicating a broad acceptability of such interventions. A range of views given
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 on the acceptability of commercial and medical routes were discussed. Common concerns were around
10 cost effectiveness, yet we know from trials that e-cigarettes can be a cost-effective treatment.⁴ There
11 were also concerns about conflicts of medical and commercial interests and the quality of support via
12 partnership working that could be offered as a result. Existing schemes, however, have been shown to
13 be feasible and potentially effective²¹⁻²³ and vape shops have been acknowledged to play an important
14 supportive role in helping people to stop smoking.^{16, 17}

21
22
23
24 Choice in vaping products is known to be important in switching success^{28, 29} and there were concerns
25 raised by participants that the interventions, especially provision of starter kit or e-cigs via prescription,
26 would stifle the sector and limit choice. Trials which are similar to the prescription model, where
27 healthcare professionals give participants one specific e-cigarette, have been shown to be effective.⁴ It
28 cannot be ignored, however, that thousands of people are estimated to quit using e-cigarettes bought in
29 the commercial sector each year³⁰ where they have an abundance of choice. Quitters often attribute
30 their success with vaping due to being able to experiment with different products to find the vaping set-
31 up that offers the most satisfaction.^{28, 31} For some smokers who may not want the pressure of a formal
32 quit attempt, vaping is appealing because it is a commercial product separate from medical
33 intervention. Indeed, some vapers are 'accidental' quitters who did not set out to stop smoking but
34 grew to prefer vaping.³² In addition, it is highly likely that those who start vaping being given a specific e-
35 cigarette by an HCP are going to have to engage with the vaping industry to buy consumables to
36 continue vaping and avoid relapse. However, nearly a third of smokers still believe that vaping is more
37 or equally harmful to health³³ and the potential health risks were raised as a concern even in this group
38 of predominantly successful switchers. As suggested by the participants, provision of e-cigarettes by
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 HCPs, alongside other forms of partnership working, could offer smokers reassurances about the safety
10 of e-cigarettes in comparison to tobacco. For the reasons outlined above, in order to maximise quitters'
11 chances of success, policy makers should carefully consider the impact of future regulations on limiting
12 or restricting choice to ensure there is a wide range of different approaches to meet different needs.
13
14

15
16
17 The education for healthcare professionals proposed in the Khan Report may benefit from including not
18 only the health benefits of switching, but outlining factors that could help quitters succeed, such as
19 seeking support from a reputable vape shop selling regulation compliant products.
20
21
22
23
24
25

26
27 Another concern raised by participants was that e-cigarettes available on prescription could
28 inadvertently allow the tobacco industry to monopolise the sector. This concern has also been raised by
29 policy makers and academics, who believe that only the tobacco companies will have the resources
30 available to successfully undertake the licensing process.³⁴⁻³⁶ The UK government is party to the WHO
31 Framework Convention on Tobacco Control (FCTC)³⁷ and is committed to preventing the tobacco
32 industry benefitting from tobacco control policies.³⁸ E-cigarettes provided in trials and existing SSS
33 practice are usually selected in part because they are produced by the independent vaping industry.
34
35 Identifying independent products can be challenging and to date researchers³⁹ and SSS have had to
36 undertake their own due diligence (such as consulting with the Independent British Vape Trade
37 Association⁴⁰ and established independent companies). In response to the new DHSC measures
38 including the 'swap to stop' scheme, a central procurement point has been set up allowing local
39 authorities and SSSs to buy e-cigarettes supplied by companies who have gone through extensive
40 processes to check compliance with existing regulations,⁶ that they are good value for money and will
41 state any conflicts of interest including tobacco company involvement.⁴¹ Using this route to purchase
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 starter kits will not be mandatory but will save individual local authorities doing their own compliance
10 checks and should ensure that FCTC is not breached.
11
12
13

16 *Limitations*

17
18
19 Although the sample can be considered large for a qualitative study, the sample size is relatively modest
20 for a survey, meaning quantitative analysis may be under-powered to detect effects and can therefore
21 only be considered exploratory. The findings derived from a convenience sample may not be
22 generalisable to the wider UK e-cigarette user population, and there was overrepresentation of white
23 men, although it is interesting that statistical results did not vary by age, gender, or SES. These
24 exploratory results are helpful in guiding further research to ascertain who would benefit most from the
25 different approaches.
26
27
28
29
30
31
32
33
34
35
36

37 The sample was not originally recruited to answer this specific research question on partnership
38 working. However, the research question around interventions was included in Phase 2 following Phase
39 1 analysis highlighting the importance of SSS and the vaping industry and developments in policy and
40 practice in this area since Phase 1. The qualitative data generated via verbal interview were generally
41 richer than data generated via the survey, although the same themes were identified through
42 triangulation. It was also beyond the scope of the study to obtain the views of smokers, although it
43 would be very helpful to explore the potential impact of medicalisation on this group given they would
44 be the targets of future interventions. Likewise, it would be helpful to explore the views of HCPs.
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 It should be noted that data were collected before widely publicised events which could have influenced
10 responses including the 'E-cigarette, or Vaping Product, Use Associated Lung Injury' (EVALI) outbreak in
11 the USA,⁴² the COVID 19 pandemic and publication of recent evidence.⁴³ In addition, data were collected
12 before the emergence of disposable vapes as a dominant presence in the UK e-cigarette market⁴⁴
13 leading to the recent concern about disposable e-cigarette use amongst young people,⁴⁵ and, therefore,
14 themes presented may not reflect current trends and discourses. However, discourses surrounding
15 vaping positioning 'harm reduction for smokers' arguments versus concerns about 'prevention of harm
16 from addiction for children/adolescents' were prevalent before disposables emerged,⁴⁶ and were
17 reflected in the themes presented in this paper.
18
19
20
21
22
23
24
25
26
27
28
29
30

31 *Conclusions*

32
33 This research suggests that, from e-cigarette users' perspectives, medical routes to vaping potentially
34 offer some benefits in terms of reassurance about safety and additional support, but the
35 implementation of interventions should not limit consumer choice as different approaches satisfy
36 different needs for adult smoking cessation and personal preferences. There are concerns, however,
37 about the increase of youth vaping and measures have been suggested to restrict marketing practices to
38 make the products less appealing to children.⁴⁷ Any future tobacco control measures involving e-
39 cigarettes need to be evaluated for both their impact on smoking cessation and prevention of youth
40 uptake of vaping. Medical routes to vaping were acceptable to this group of current, predominantly
41 exclusive vapers and were perceived to be potentially of help if they had been available when they were
42 attempting to quit smoking. This supports the implementation of the proposed 'swap to stop' scheme,
43 which will be the biggest partnership between the English healthcare sector and the vaping industry to
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1
2
3
4
5
6
7
8
9 date. Further evaluation is needed to establish how local authorities can best implement the scheme (in
10 terms of product choice and delivery methods) to target smokers from minority and disadvantaged
11 groups where there is the highest smoking prevalence.
12
13
14
15
16
17

18 **Acknowledgements**

19
20
21 This ECTra study was originally funded through a project grant from Cancer Research UK, grant ref
22 C54889/A22732. EW was supported to collect and analyse data in relation to this paper through an
23 internally funded research position within Norwich Medical School. Ethical approval for the study was
24 granted from UEA's Faculty of Medicine and Health Sciences Research ethics committee, March 2018
25 (Ref 106). All co-authors have not received funding from tobacco or e-cigarette companies. We attest
26 that we have herein disclosed all financial or other relationships that could be construed as a conflict of
27 interest. We wish to thank the study participants who generously gave up their time to participate in the
28 study. Thanks to Isabel Greaves, Divya Nelson and Claudia Anholt who assisted with the study whilst on
29 placement as medical students. Thanks also to Louise Ross, independent consultant to the National
30 Centre for Smoking Cessation Training (NCSCT), for her continued support of the study. Finally, thanks to
31 the two anonymous reviewers who kindly gave their time to review the paper.
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46

47 **References**

- 48 1. Fagerstrom K, Etter J-F, Unger JB. E-Cigarettes: A Disruptive Technology That Revolutionizes Our
49 Field? *Nicotine & Tobacco Research* 2015; 17: 125–126.
- 50 2. Therapeutic Goods Administration. Notice of final decision to amend the current Poisons
51 Standard – nicotine, [www.tga.gov.au/scheduling-decision-final/notice-final-decision-amend-](http://www.tga.gov.au/scheduling-decision-final/notice-final-decision-amend-current-poisons-standard-nicotine)
52 [current-poisons-standard-nicotine](http://www.tga.gov.au/scheduling-decision-final/notice-final-decision-amend-current-poisons-standard-nicotine) (2020, accessed 24 August 2022)
53
54
55
56
57
58
59
60

- 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10
 - 11
 - 12
 - 13
 - 14
 - 15
 - 16
 - 17
 - 18
 - 19
 - 20
 - 21
 - 22
 - 23
 - 24
 - 25
 - 26
 - 27
 - 28
 - 29
 - 30
 - 31
 - 32
 - 33
 - 34
 - 35
 - 36
 - 37
 - 38
 - 39
 - 40
 - 41
 - 42
 - 43
 - 44
 - 45
 - 46
 - 47
 - 48
 - 49
 - 50
 - 51
 - 52
 - 53
 - 54
 - 55
 - 56
 - 57
 - 58
 - 59
 - 60
3. McNeill A, Brose L, Calder, R, et al. Vaping in England: an evidence update including vaping for smoking cessation, February 2021. Public Health England.
 4. Cochrane Database of Systematic Reviews. DOI: 10.1002/14651858.
 5. Kock L, West R, Beard E, et al. Trends in electronic cigarette use in England, www.smokinginengland.info/graphs/e-cigarettes-latest-trends (21 July 2022, accessed 24 August 2022)
 6. European Commission. Tobacco Products Directive, https://ec.europa.eu/health/tobacco/products_en. (2014, accessed 24 August 2022)
 7. National Institute for Health and Care Excellence (NICE). Tobacco: preventing uptake, promoting quitting and treating dependence, NICE guideline [NG209], August 2022.
 8. Medicines and Healthcare products Regulatory Agency (MHRA). Guidance for licensing electronic cigarettes and other inhaled nicotine-containing products as medicines. October 2021.
 9. Farrimond H, Abraham C. Developing E-cigarette friendly smoking cessation services in England: staff perspectives. *Harm Reduction Journal*; 15. Epub ahead of print 3 August 2018. DOI: 10.1186/s12954-018-0244-8.
 10. Action on Smoking and Health (ASH). Reaching out: Tobacco control and stop smoking services in local authorities in England, 2021
 11. Brett J, Davies EL, Matley F, et al. Electronic cigarettes as a smoking cessation aid for patients with cancer: beliefs and behaviours of clinicians in the UK. *BMJ Open* 2020; 10: e037637
 12. Hunter A, Yargawa J, Notley C, et al. Healthcare Professionals' Beliefs, Attitudes, Knowledge, and Behavior Around Vaping in Pregnancy and Postpartum: A Qualitative Study. *Nicotine & Tobacco Research* 2020; 23: 471–478
 13. Selamoglu M, Erbas B, Kasiviswanathan K, et al. General practitioners' knowledge, attitudes, beliefs and practices surrounding the prescription of e-cigarettes for smoking cessation: a mixed-methods systematic review. *BMC Public Health*; 22. Epub ahead of print 23 December 2022. DOI: 10.1186/s12889-022-14696-3.
 14. Albury C, Barnes R, Ferrey A, et al. The old and familiar meets the new and unknown: patient and clinician perceptions on e-cigarettes for smoking reduction in UK general practice, a qualitative interview study. *Addiction* 2021; 117: 1427–1437.
 15. Gravely S, Thrasher JF, Cummings KM, et al. Discussions between health professionals and smokers about nicotine vaping products: results from the 2016 ITC Four Country Smoking and Vaping Survey. *Addiction* 2019; 114: 71–85.
 16. Ward E, Cox S, Dawkins L, et al. A Qualitative Exploration of the Role of Vape Shop Environments in Supporting Smoking Abstinence. *International Journal of Environmental Research and Public Health* 2018; 15: 297.
 17. Pattinson J, Lewis S, Bains M, et al. Vape shops: who uses them and what do they do? *BMC Public Health*; 18. Epub ahead of print 23 April 2018. DOI: 10.1186/s12889-018-5467-9.
 18. Public Health England. Essex County Council delivers stop smoking support via vape shops, www.gov.uk/government/case-studies/essex-county-council-delivers-stop-smoking-support-via-vape-shops, (25 September 2018, accessed 25 August 2022)

19. Evapo. Evapo now has a stop smoking practitioner in every store, www.evapo.co.uk/blog/evapo-now-has-a-stop-smoking-practitioner-in-every-store, (18 March 2020, accessed 26 August 2022)
20. Eccles J. Totally Wicked Retail Staff are Being Given NCSCT Training. Totally Wicked, www.totallywicked-eliiquid.co.uk/vaped/totally-wicked-staff-to-be-given-ncsct-training, (18 April 2019, accessed 26 August 2022)
21. Coffey M, Cooper-Ryan A, Houston L, et al. Using e-cigarettes for smoking cessation: evaluation of a pilot project in the North West of England. *Perspectives in Public Health* 2020; 140: 351–361.
22. Cox S, Dawkins L, Doshi J, et al. Effects of e-cigarettes versus nicotine replacement therapy on short-term smoking abstinence when delivered at a community pharmacy. *Addictive Behaviors Reports* 2019; 10: 100202.
23. Notley C, Belderson P, Ward E, et al. A pilot e-cigarette voucher scheme in a rural county of the UK. *Nicotine and Tobacco Research* 2023; 9: 25(3)
24. Khan J. The Khan review: Making smoking obsolete. Office for Health Improvement and Disparities, 9 June 2022.
25. Department of Health and Social Care. Smokers urged to swap cigarettes for vapes in world first scheme, www.gov.uk/government/news/smokers-urged-to-swap-cigarettes-for-vapes-in-world-first-scheme, (11 April 2023, accessed 9 May 2023)
26. Statistical Revenue in the e-cigarette market in the United Kingdom from 2014 to 2027, www.statista.com/forecasts/1178470/united-kingdom-revenue-in-the-e-cigarette-market (2 August 2022, accessed 26 August 2022)
27. Braun V, Clarke V. *Thematic Analysis: A Practical Guide*. London: Sage, 2021.
28. Notley C, Ward E, Dawkins L, et al. The unique contribution of e-cigarettes for tobacco harm reduction in supporting smoking relapse prevention. *Harm Reduction Journal*; 15. Epub ahead of print 20 June 2018. DOI: 10.1186/s12954-018-0237-7.
29. Gentry SV, Ward E, Dawkins L, et al. Reported patterns of vaping to support long-term abstinence from smoking: a cross-sectional survey of a convenience sample of vapers. *Harm Reduction Journal*; 17. Epub ahead of print 6 October 2020. DOI: 10.1186/s12954-020-00418-8.
30. Beard E, West R, Michie S, et al. Association of prevalence of electronic cigarette use with smoking cessation and cigarette consumption in England: a time-series analysis between 2006 and 2017. *Addiction* 2019; 115: 961–974.
31. Zare S, Zheng Y. Consumer Preferences for E-cigarette Flavor, Nicotine Strength, and Type: Evidence from Nielsen Scanner Data. *Nicotine & Tobacco Research* 2020; 23: 823–828.
32. Notley C, Ward E, Dawkins L, et al. User pathways of e-cigarette use to support long term tobacco smoking relapse prevention: a qualitative analysis. *Addiction* 2020; 116: 596–605.
33. Action on Smoking and Health (ASH). Use of e-cigarettes (vapes) among adults in Great Britain, June 2021.
34. Hopkinson NS, Vestbo J, Bush A, et al. Should e-cigarettes be licensed as medicines? *BMJ* 2022; n2912.

- 1
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10
 - 11
 - 12
 - 13
 - 14
 - 15
 - 16
 - 17
 - 18
 - 19
 - 20
 - 21
 - 22
 - 23
 - 24
 - 25
 - 26
 - 27
 - 28
 - 29
 - 30
 - 31
 - 32
 - 33
 - 34
 - 35
 - 36
 - 37
 - 38
 - 39
 - 40
 - 41
 - 42
 - 43
 - 44
 - 45
 - 46
 - 47
 - 48
 - 49
 - 50
 - 51
 - 52
 - 53
 - 54
 - 55
 - 56
 - 57
 - 58
 - 59
 - 60
35. Browne G. E-Cigarettes Could Be the New Nicotine Patch. *Wired*, <https://www.wired.co.uk/article/e-cigarettes-smoking-prescription> (12 November 2021, accessed 25 August 2021)
36. Gallagher P. NHS e-cigarette prescriptions will prop up Big Tobacco, experts fear. *The Independent*, 13 November 2021
37. World Health Organisation (WHO). WHO Framework Convention on Tobacco Control, May 2003
38. His Majesty's Revenue and Customs (HMRC), The Tobacco Industry and HMRC Article 5.3: The Framework Convention on Tobacco Control (FCTC), https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844161/Article_5_3_guidance_v3_6_FINAL_External.pdf (accessed 9 May 2023)
39. Belderson P, Ward E, Pope I, et al. Selecting an e-cigarette for use in smoking cessation interventions and healthcare services: sharing learning from the PPI process for the COSTED trial. In submission May 2023
40. Independent British Vape Trade Association (IBVTA). Supporting Public Health, www.ibvta.org.uk/supporting-public-health/ (Accessed 9 May 2023)
41. National Centre for Smoking Cessation Training (NCSCT), Incorporating nicotine vaping products (e-cigarettes) into Stop Smoking Services: Making the case and addressing concerns, 2nd Ed, April 2023
42. Blount BC, Karwowski MP, Shields PG, et al. Vitamin E Acetate in Bronchoalveolar-Lavage Fluid Associated with EVALI. *New England Journal of Medicine* 2020; 382: 697–705.
43. Office for Health Improvement and Disparities (OHID). Research and analysis nicotine vaping in England: 2022 evidence update main findings, www.gov.uk/government/publications/nicotine-vaping-in-england-2022-evidence-update/nicotine-vaping-in-england-2022-evidence-update-main-findings, (September 2023, accessed 9 May 2023)
44. Tobacco & Vaping 2022: Disposable vapes drive stunning growth, Statistical Revenue in the e-cigarette market in the United Kingdom from 2014 to 2027, www.thegrocer.co.uk/top-products/tobacco-and-vaping-2022-disposable-vapes-drive-stunning-growth/674498.article (16 December 2022, accessed 9 May 2023)
45. Action on Smoking and Health (ASH), Use of e-cigarettes (vapes) among young people in Great Britain, <https://ash.org.uk/uploads/Use-of-e-cigarettes-among-young-people-in-Great-Britain-2022.pdf?v=1661866458> (July 2022, accessed 9 May 2023)
46. Ward E, Dawkins L, Holland R, et al. Responsibility, normalisation and negotiations of harm: E-cigarette users' opinions and experiences of vaping around children. *International Journal of Drug Policy* 2021; 88: 103016.
47. Action on Smoking and Health (ASH), Policy brief on vaping — February 2023, <https://ash.org.uk/uploads/ASH-Policy-brief-on-vaping-February-2023-Final.pdf?v=1676063818> (February 2023, accessed 9 May 2023)

Table 1: Profile of participant characteristics (n=136)

	Sample*
Gender:	
Male	72.1% (98)
Female	27.9% (38)
Age:	
Range (years)	57: 22-79
Mean (years)	49.5 (SD 12.6)
Ethnicity (n=133):	
White	97.7% (130)
BAME	1.5% (3)
Managerial, professional, or technical occupation:	
	50% (68)
T2 vaping status:	
Vaping and abstinent from tobacco	86% (117)
Abstinent from both vaping and tobacco	6.6% (9)
Relapsed to tobacco (dual using)	2.9% (4)
Relapsed to tobacco (not vaping)	4.4% (6)

* Participants identifying as resident in UK who answered the medicalisation questions

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 2: Thematic analysis of participants' responses to open ended questions about partnership working and medicalisation			
Subthemes	Pro-partnership	Anti-partnership	Medicalisation dissonance
Ethics	Provide reassurances about health impacts, device safety, and quality of advice	Concerns about e-cig long-term safety and normalisation of nicotine	Lead to further regulation to stifle product development, choice, and independent sector
Suitability	Could help disadvantaged groups	Personal choice to vape and health own responsibility	Vaping is pleasurable and not just for smoking cessation
Accessibility	Simplify vaping, reduce intimidation, and increase affordability	Open to fraud and abuse	Already effective and affordable
NHS impacts	Cost effective for NHS as preventative	Increase financial burden on NHS	NHS promotion of vaping, rather than intervention
Vaping industry impacts	Need for quality assurance	Commercial interests	Unfair responsibility

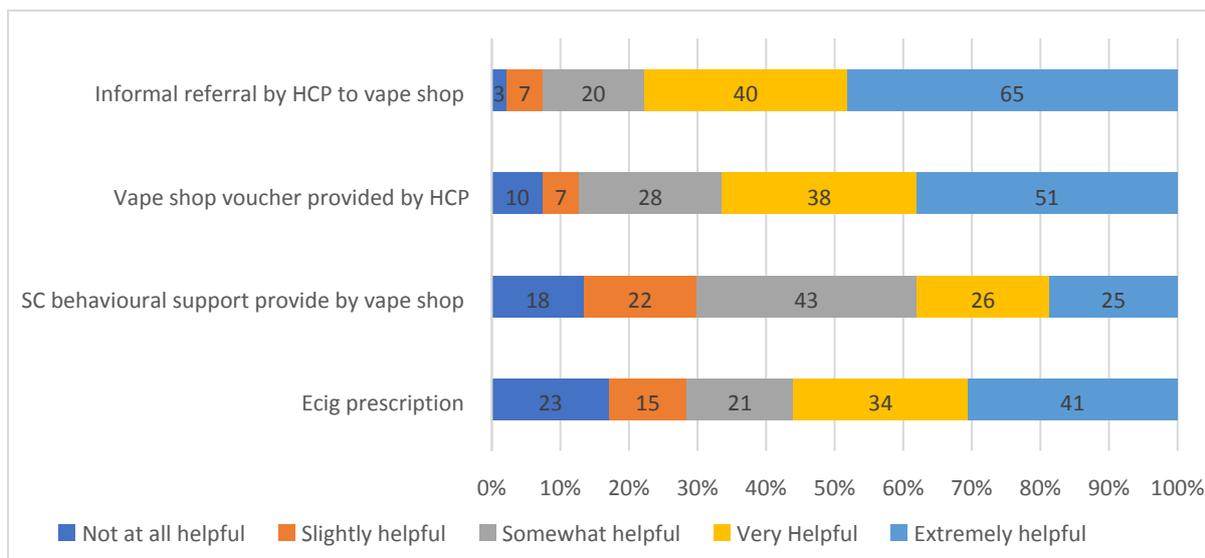


Figure 1: Proportion and number of participants rating each partnership approach on a 5-point scale of helpfulness for stopping smoking (n≈135)

Table 3.
Comparison of participants rating the interventions as no to somewhat helpful with those who rated interventions very/extremely helpful

		No/slightly/ somewhat helpful rating		Very/Extremely helpful rating		Chi square	P
		n	%	n	%		
Informal referral by HCP to vape shop							
Gender	Male	17	17.5%	80	82.5%	.666	.414
	Female	9	23.7%	29	76.3%		
SES	A-C1	11	16.2%	57	83.8%	1.099	.294
	Other groups	15	23.4%	49	76.6%		
Vape shop voucher provided by HCP							
Gender	Male	32	33.3%	64	66.7%	.009	.923
	Female	13	34.2%	25	65.8%		
SES	A-C1	23	33.8%	45	66.2%	.004	.953
	Other groups	21	33.3%	42	66.7%		
E-cig available on prescription							
Gender	Male	45	46.4%	52	53.6%	.795	.373
	Female	14	37.8%	23	62.2%		
SES	A-C1	31	45.6%	37	54.4%	0.099	.753
	Other groups	27	42.9%	36	57.1%		
Smoking cessation behavioural support provide by vape shop							
Gender	Male	63	64.9%	34	35.1%	1.348	.246
	Female	20	54.1%	17	45.9%		
SES	A-C1	46	67.6%	22	32.4%	1.541	.241
	Other groups	36	57.1%	27	42.9%		

Table 4.
Comparison of mean age of participants rating the interventions as not at all/slightly/somewhat helpful with those who rated interventions very/extremely helpful

	n	df	Not to somewhat helpful		Very/extremely helpful		t	p	Cohen's d
			M	SD	M	SD			
Age (years) of participants rating:									
Informal referral by HCP to vape shop	135	133	47.9	13.842	49.8	12.369	-.675	.501	-.147
vape shop voucher provided by HCP	134	132	49.4	12.078	49.2	12.905	.081	.936	.051
E-cig available on prescription	134	132	51.6	11.927	47.6	12.959	1.830	.069	.318
Smoking cessation behavioural support provide by vape shop	134	132	50.04	12.391	48.2	13.082	.808	.420	.144

Table 5.
Predicting participants rating the interventions as very/extremely helpful

	<i>N</i>	<i>df</i>	<i>Chi Square</i>	<i>B (SE)</i>	<i>Adj odds ratio (95% CI)</i>	<i>p</i>	<i>R²</i> * ** ***
Informal referral by HCP to vape shop	132	3	2.435				*.12 **.02 ***.03
Constant				.99 (.88)	.2.701	.26	
Gender (Female)				-.27 (.48)	.590 (.297-1.948)	.57	
SES (A-C1)				-.53 (.46)	.590 (.240-1.447)	.25	
Age (years)				.02 (.02)	1.016 (.982-1.051)	.36	
Vape shop voucher provided by HCP	131	3	.159				*.90 **.00 ***.00
Constant				.92 (.78)	2.513	.24	
Gender (Female)				-.12 (.42)	.888 (.394-2.005)	.78	
SES (A-C1)				.06 (.39)	1.066 (.499-2.280)	.87	
Age (years)				-.01 (.02)	.995 (.966-1.026)	.76	
E-cig available on prescription	131	3	4.377				*.60 **.03 ***.04
Constant				1.31 (.78)	3.696	.09	
Gender (Female)				.36 (.41)	1.428 (.636-3.209)	.39	
SES (A-C1)				.26 (.38)	1.301 (.619-2.731)	.49	
Age (years)				-.03 (.02)	.974 (.945-1.004)	.09	
Smoking cessation behavioural support provide by vape shop	131	3	3.633				*.97 **.027 ***.037
Constant				-.04 (.76)	.962	.96	
Gender (Female)				.30 (.41)	1.345 (.603-3.001)	.47	
SES (A-C1)				.53 (.38)	1.706 (.808-3.602)	.16	
Age (years)				-.02 (.02)	.983 (.955-1.013)	.26	

*Hosmer & Lemeshow, **Cox & Snell, ***Nagelkerke

Supplementary material 1

We have some potential ideas of how the vaping community and health professionals could work together.

For each idea listed below, I would like you to rate on a scale of 1-5 how helpful the idea has been or would have been for you, or someone else, trying to stay stopped from smoking using an e-cigarette.

Please write the corresponding number in the box next to each statement:

- 1 = not at all helpful
- 2 = slightly helpful
- 3 = somewhat helpful
- 4 = very helpful
- 5 = extremely helpful

A peer-support scheme where a new user can seek advice from a more experienced vaper	
Receiving written information (e.g. leaflet, website) about the advantages and disadvantages about the different types of devices and information of how to use e-cigarettes from your doctor or stop smoking service	
Doctor, Stop Smoking Service advisor or other health professional referring a person looking to give up smoking using an e-cigarette to a reputable vape shop for advice on vaping products and using them effectively	
A voucher scheme – for example, being given a voucher by doctor to spend on e-cigarette products in a reputable vape shop	
Discounts for clear CO testing – for example, receiving a discount in shops by proving you have remained abstinent from smoking for a period	
Starter kits available on prescription	
Receiving free ongoing support from shops with vaping such as trouble shooting issues with devices, device maintenance, and changing consumables	
Vape shop staff outreach – for example, vape shop staff holding a session at a Stop Smoking Service to explain to staff and clients different vaping products and demonstrate how to use them	
Vape shop staff outreach to the public – for example, a mobile vape shop and Stop Smoking Service to visit deprived or remote areas of the country	
Being offered written health information (e.g. leaflet) about stopping smoking and vaping when purchasing an e-cigarette	
Receiving health information about up giving up smoking from a vape shop	
Receiving smoking cessation behavioural support from a vape shop such as goal setting or identifying lapse triggers	
Receiving information from shops about research into safety and health risks of vaping	
A 'kite mark' displayed in shops to show they have undergone smoking cessation training ensuring information given was evidence based	

What do you think about health professionals working with the vaping community, such as the ideas proposed above? What are the advantages? What are the disadvantages? What sort of information would you have liked from health professionals about vaping? What sort of information would you have liked from vape retailers about quitting smoking and staying stopped?

What do you think about further medicalisation of vaping (e.g. medicinal licences for vaping products, licences for retailers, production regulations, etc.)? What are the advantages? What are the disadvantages? How can the commercial interests of industry be balanced against the health promotion interests of health bodies?

Supplementary material 2

