

**Therapeutic radiographers' perceptions of the barriers and enablers to effective smoking cessation support**

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Therapeutic Radiographers' perceptions of the barriers and enablers to effective smoking cessation support.

## **Abstract**

### ***Introduction***

Tobacco smoking during and post radiotherapy is associated with increased treatment toxicity and increased cancer related mortality. Routine delivery of smoking cessation advice is inconsistent in practice. This study identifies the key barriers and facilitators to the provision of effective smoking cessation conversations in radiotherapy practice.

### ***Methods***

A baseline questionnaire (n=43) was used to identify current practice, barriers and facilitators to smoking cessation in radiotherapy and to inform a topic guide for follow up focus groups (n=5). Ethical approval was obtained through the 4 NHS trusts and the Health Research Authority. Focus group transcription was coded by two researchers.

### ***Results***

Therapeutic Radiographers initiate health behaviour conversations with patients; there are a number of factors that facilitate the likelihood of a health behaviour conversation; indication that a patient smokes anatomical site and presence of acute effects. Key barriers to smoking cessation provision include; lack of training, limited knowledge, limitations as a result of poor clinical infrastructure, local culture and perceptions that patients do not prioritise smoking cessation during treatment.

### ***Conclusion***

Therapeutic Radiographers have the motivation to provide smoking cessation advice, however they require further training to develop knowledge and skills in relation to benefits of smoking cessation and cessation strategies. Therapeutic Radiographers also expect that patients will respond negatively to smoking cessation advice, and that this might be damaging to the therapeutic relationship. Departmental culture and trust infrastructure can also significantly inhibit the provision of smoking cessation in radiotherapy practice and further support to implement NICE guidance is required.

## **Highlights**

- Therapeutic Radiographers show desire for improvements within their practice
- Therapeutic Radiographers fear upsetting the patient during smoking cessation advice
- Therapeutic Radiographers worry about damaging the therapeutic relationship
- There is a clear need for a Therapeutic Radiographer specific training package

## **Keywords**

Smoking cessation

Therapeutic Radiographer

Health Behaviour

Facilitators

Barriers

Radiotherapy

## **Abbreviations**

Making every contact count (MECC)

Public Health England (PHE)

Five year forward view (FYFV)

Allied Health Professions (AHP)

Very brief advice (VBA)

National Health Service (NHS)

National Institute for Health and Care Excellence (NICE)

Higher Education Institutions (HEIs)

## **Introduction**

It is recognised that almost 4 in 10 cancers in the United Kingdom are attributable to known modifiable risk factors, of which tobacco smoking remains the largest contributor<sup>1</sup>. Tobacco remains the leading cause of cancer worldwide<sup>2</sup>.

The Government Public Health White Paper; Healthy Lives, Healthy People<sup>3</sup>, promotes smoking cessation through secondary care providers, such as Radiographers. The FYFV<sup>4</sup> states that the sustainability of the NHS urgently requires “a radical upgrade in prevention and public health”<sup>4</sup>. It is clear that public health needs to be integrated into the patient pathway. The role and contribution of the AHPs, including Radiographers, in improving the health and wellbeing of individuals and populations is identified in impact one of AHPs into action<sup>5</sup>. Despite a plethora of guidance, legislation and the ‘call to action’ of the FYFV there remains a gap between policy<sup>6</sup> and practice<sup>7</sup> in terms of smoking cessation provision for patients.

Despite the widespread knowledge of the causal link between tobacco and cancer, evidence shows patients continue to smoke after their diagnosis<sup>8</sup>. The radiobiological effects of continued smoking during radiotherapy treatment are hypoxia induced radioresistance<sup>9</sup>, leading to reduced local control of the tumour<sup>10</sup>. Furthermore, continued smoking during radiotherapy can increase the risk of long-term side effects<sup>11,12</sup>. Consequently, smoking can worsen the quality of life of patients as faecal incontinence (reported following tobacco smoking and radiotherapy for prostate cancer)<sup>12</sup> and severe acute skin reactions<sup>13</sup> can negatively impact social functioning and emotional health. Furthermore smoking cessation is associated with reduction in the incidence of further chronic disease<sup>14,15,16</sup>.

Therapeutic Radiographers have the opportunity to engage in health and wellbeing conversations with patients during a course of radiotherapy by use of the MECC directive and the use of the Very Brief Advice (VBA) model. The core of MECC<sup>17</sup> aligns with behaviour change guidance (NICE)<sup>18</sup> and the improving healthy lifestyles approach to prevention agreed by NHS England, Health Education England and PHE in the FYFV. The VBA model supports this opportunistic delivery of smoking cessation as it is structured to fit into healthcare interactions and enables individuals to engage in conversations around positive behaviour change<sup>19</sup>. It is recognised that there is a need to support patients with smoking cessation during radiotherapy treatment, this is related to both reduced toxicity during treatment and reduced cancer-related mortality. It is therefore important to understand the factors that encourage and discourage smoking cessation conversations in daily practice.

## **Literature Review**

The Healthy Conversations and Allied Health Professionals publication<sup>20</sup> highlighted that AHPs recognise their role in public health, with over 86% of participants accepting that the promotion of health is part of their role. However a recent audit of NHS trusts providing cancer therapies found that less than 20% of trusts are compliant with NICE smoking cessation guidance<sup>7</sup>. It is clear that despite practitioner support, barriers to implementation exist. Over 30% of participants sampled within the healthy conversations study identified that they would be uncomfortable delivering messages related to general health improvement. Potential barriers to the delivery of healthy conversations identified in the study<sup>20</sup> were; confidence, context, time and signposting. As this survey sampled 12 AHP groups it is difficult to fully establish those barriers specific to radiotherapy practice and further research specific to radiotherapy is limited. However similar results were identified in a study<sup>21</sup> conducted with Therapeutic Radiographers in which the key barriers to delivery of health improvement messages were identified as; lack of knowledge, time, signposting and worries around damaging the therapeutic relationship. Specific barriers to smoking cessation were; uncertainty regarding responsibility, knowledge of smoking cessation and signposting.

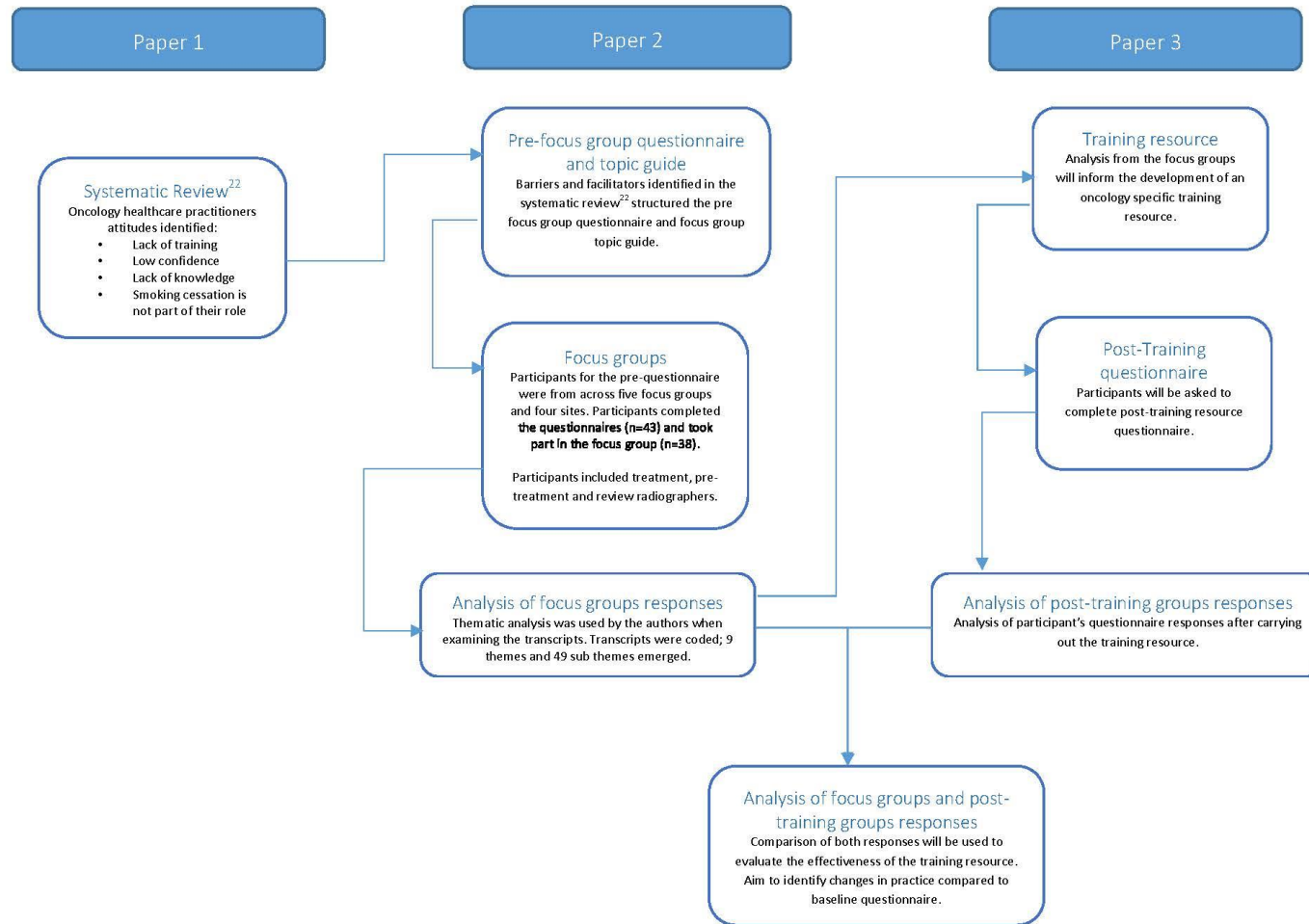
A recent systematic review<sup>22</sup> highlighted the attitudes of oncology practitioners towards smoking cessation. This review identified the key barriers to smoking cessation were; lack of training, perception that the intervention may be harmful through increased stress and guilt, lack of confidence in cessation, lack of knowledge and oncology practitioners do not associate smoking cessation to be part of their role. Facilitators to provision of smoking cessation were focused on practitioners' motivation to be trained, a belief that smoking cessation is worthwhile, receipt of smoking cessation training and a dedicated institutional programme.

The motivation of Therapeutic Radiographers to deliver brief interventions is evident<sup>20, 21</sup>. However there is a clear gap in the research to understand in detail the factors involved in the delivery of effective smoking cessation brief interventions in practice and how best to support Radiographers. This research aims to identify and address the training needs of Therapeutic Radiographers. This will lead to the development of a training resource and enable the testing of the training resource through further research and through dissemination will support wider implementation of smoking cessation brief interventions in radiotherapy practice.

## **Methods**

***Design Methodology*** This research paper (paper 2) is part of a series of papers related to the role of the Radiographer in public health and specifically smoking cessation (figure 1)

Figure 1. The role of each paper described as a part of this research.



The barriers and facilitators identified in paper 1, a recent systematic review<sup>22</sup> were used to structure the pre focus group questionnaires which subsequently informed the development of the focus group topic guide (Appendix A).

This work, paper 2, will inform part 3 and paper 3, the development of an oncology specific training resource to equip practitioners with the confidence and competence to deliver VBA.

The research consisted of two questionnaires and one focus group for each participant. The initial questionnaire content was informed by the systematic review<sup>22</sup> (Part 1) conducted prior to this phase of the research (Part 2). The online questionnaire was sent to the participants to identify baseline data about current smoking cessation practice, and to identify the factors that currently inhibit the delivery of smoking cessation advice. The baseline questionnaire also collected data on the participant's training needs in relation to routine provision of smoking cessation. The questionnaire consisted of a total of 12 questions: 5 closed questions (checkboxes to identify training needs), 6 open questions to understand rationale for answer selection to closed questions and 1 Likert question to assess confidence levels. The focus groups enabled exploration of the key barriers to provision of smoking cessation as identified in the questionnaire. Focus groups are an appropriate research method to enable further exploration; to examination how participants think and why they think that way, their understanding and identification of priorities<sup>23</sup>.

A total of five focus groups were conducted across four NHS trusts, until no new themes emerged. The focus groups were facilitated by researcher LC. Each discussion was recorded and transcribed verbatim. Total number of focus group participants n=38: Focus group 1 n= 8, focus group 2 n=6, focus group 3 n=6, focus group 4 n=12. focus group 5 n=6.

### ***Recruitment and Ethical Approval***

Radiotherapy departments were recruited using email invitations sent to all department managers via the Society and College of Radiographer's mailing list. From positive responses, purposive sampling, guided by the national audit of NICE guidance compliance (PH48)<sup>6</sup>, was employed. All participants received a participant information sheet and consent form prior to entering the study. Ethical approval was granted through the Integrated Research Application System (IRAS ID 221317) and the Sheffield Hallam University Research Ethics Committee. Additionally, support was gained from the participating NHS trusts. Data were securely held at all times.

### ***Credibility of data***

A number of approaches were used to maximise trustworthiness and credibility of the data. Firstly through focus group facilitation; a potential limitation with a focus group approach is capturing only collective group opinion<sup>24</sup> rather than individual participants' experiences<sup>25</sup>. To avoid this ground rules were established such as paraphrasing, encouraging elaboration and ensuring all members of the session contributed.

A topic guide (appendix A) was used to ensure consistency across the focus groups while enabling participants to explore their own views and experiences.

Focus groups were conducted until saturation occurred, the point at which no new themes emerged. The researchers ensured critical reflection throughout the research process by use of a reflective diary. This approach facilitated rigorous data analysis and adds strength to the research conclusions.

### ***Data Analysis***

Transcriptions were imported into qualitative data analysis software, Quirkos<sup>26</sup>. The analysis followed Braun and Clarke's<sup>27</sup> approach, consisting of examining the transcripts, generating initial codes, searching for themes, review and refinement of themes and defining and naming themes. Each transcript was primarily coded and checked and reviewed by the other authors. Once analysis and checking was complete, the themes were discussed and coding framework, themes, subordinate themes and supporting extracts agreed.



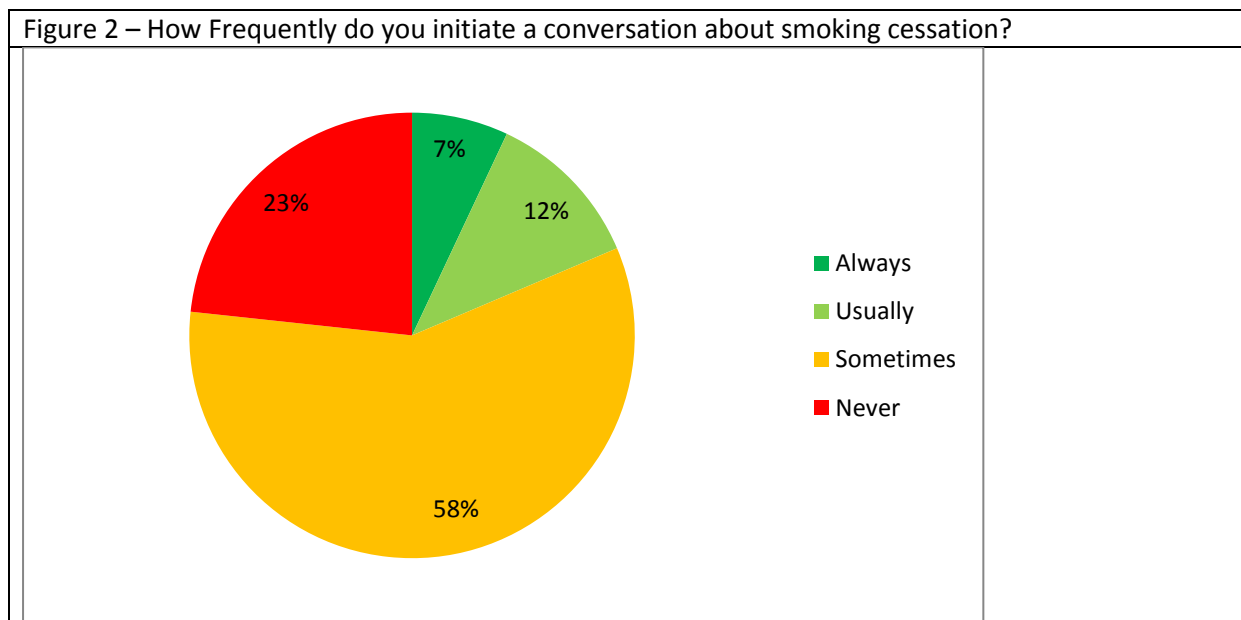
## Results

Results are shown below for two of the pre questionnaire responses and the codes, sub themes and overarching themes generated through the five focus groups. Several questions from the pre questionnaire are not reported in this section but were used to inform the topic guide (appendix A) used during the five focus groups.

### ***Pre Questionnaire***

A total of 43 participants completed the pre focus group questionnaire. These 43 participants were then invited to partake in the associated department focus group. The total number of focus group participants (n=38) was slightly reduced in comparison to the questionnaire completers due to availability of staff on the date of the focus group. Participants represented a range of experiences and views including treatment, pre-treatment and review radiographers.

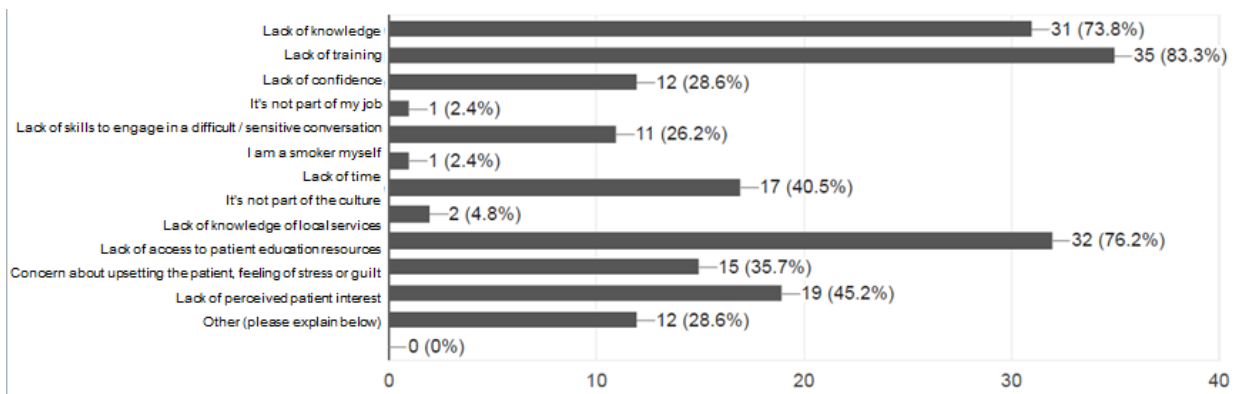
Participants (n=43) completed an initial online questionnaire prior to attending the focus group. Participants were asked how frequently they initiate a conversation about smoking cessation, 43 responses were received. Most participants stated that they "sometimes" initiate a conversation (Figure 2).



Participants were asked to provide rationale for their practice in relation to initiating a conversation on the topic of smoking cessation. In response to this question several participants identified

barriers to the initiation of conversations as a result of uncertainty regarding referral process, time limitations, lack of training, assumption that another health professional has already had the conversation. A reduction in side effects and a patient broaching the topic of smoking cessation were the most commonly cited facilitators to initiating a conversation. Key barriers identified that limit the delivery of brief interventions were lack of training, lack of knowledge of local support services and lack of knowledge in general (figure 3).

Figure 3 - Please state the factors that limit your delivery of smoking cessation brief interventions or the initiation of a conversation about smoking cessation. Please tick all that apply.



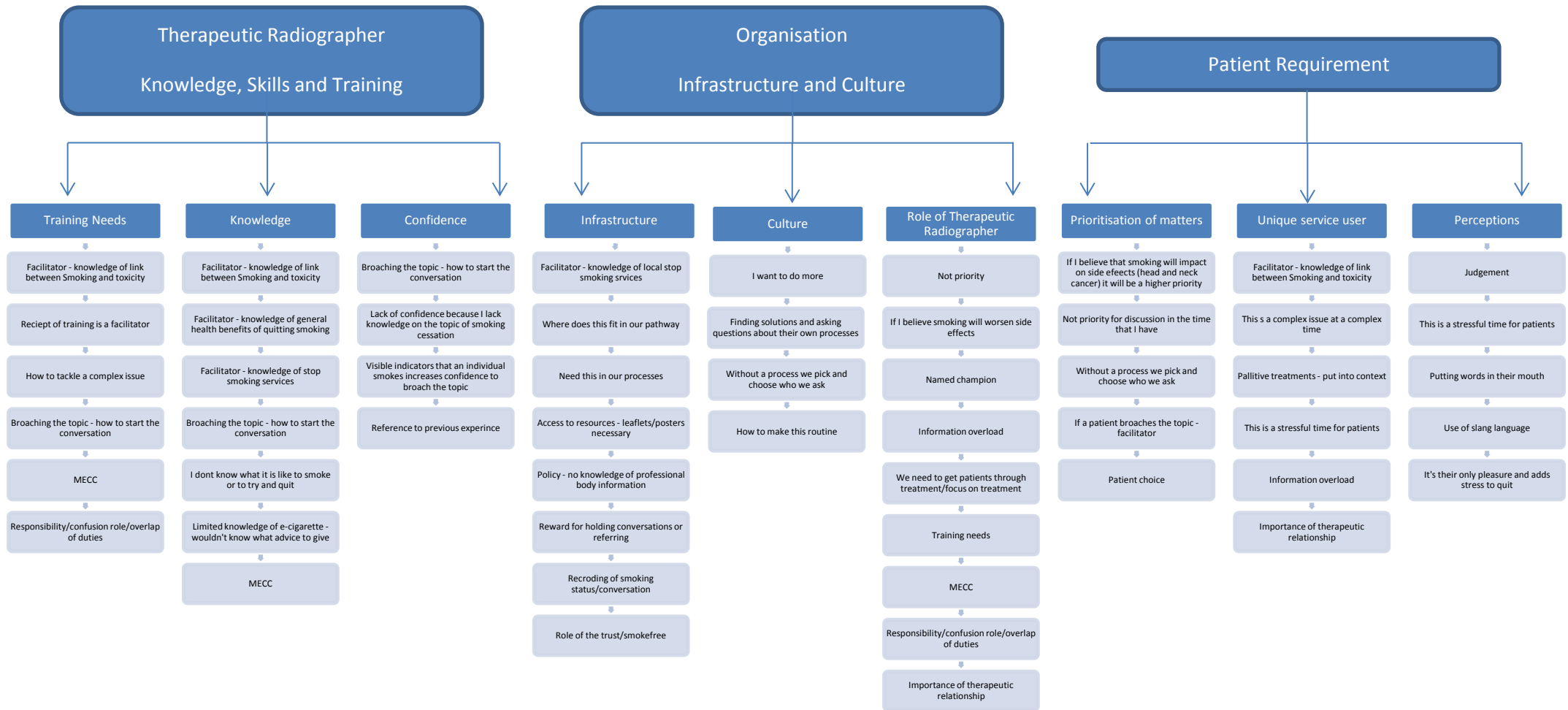
Participants were asked to add any further comments in relation to factors that inhibit delivery of smoking cessation. Lack of training, therefore inhibiting confidence and no standard procedure were key themes emerging from responses to this question.

### **Focus Groups**

Participants (n=38) ranged from Agenda for Change bands 5-8b. The mean time for the focus groups was 75minutes. All focus groups were audio recorded. Following verbatim transcription and initial coding of all data (completed by two researchers per focus group), duplicate codes were combined into 49 codes, 9 subthemes and 3 overarching themes (figure 4).



Figure 4 Themes, subthemes and codes derived from focus groups



## Discussion

The discussion will focus on the three key themes of;

- Knowledge, skills and training
- Organisation, infrastructure and culture
- Patient requirements

Themes are supported by extracts from the focus groups to add richness to the data.

### Knowledge, skills and training

Overwhelmingly Therapeutic Radiographers identified lack of knowledge and training as a key barrier to the provision of smoking cessation in practice. Lack of knowledge is multi-faceted, with reference to knowledge of the impact for smoking on health and outcomes, knowledge of products and processes regarding cessation and knowledge associated with the role of the Therapeutic Radiographers and smoking cessation.

***"Lack of knowledge about the process of giving up smoking. So if a patient said to me I wish to give up smoking, how do I go about it" Focus group 5***

***" I don't know how to react, if someone that said they'd given up smoking but they're now on an e-cigarette. I personally don't know if that's maybe any better." Focus group 4***

***"How to actually tell them not to smoke. I'm no smoker, I don't know how you tell somebody, what are the process of stopping smoking, because they can have patches and all sorts... but I don't really know anything about it." Focus group 2***

Therapeutic Radiographers identify a lack of training as a key barrier to the provision of smoking cessation and conversely receipt of training has been identified as a facilitator to provision.

The clear gap in knowledge regarding smoking cessation should be addressed through post graduate education for the current workforce and the requirement to embed public health and prevention content in the pre-registration curricula. The role of HEIs and the need for guidance to support HEI's has been addressed through the recent publication of the AHP public health curriculum guidance<sup>28</sup>. The guidance provides a series of recommendations to enable HEI's to map public health content across pre-registration courses. It is pertinent that the guidance document not only makes reference to the need for integration of prevention and specific components of public health education but the document also highlights the need for education surrounding the need to support AHP learners with

knowledge and skills to facilitate conversations about behaviour change. With the future implementation of the AHP curricula guidance, it is expected that AHPs will be better equipped to deliver brief interventions and an increase in the competence and confidence of newly qualified AHPs. However there is a clear need to support the current post graduate workforce of Therapeutic Radiographers as indicated through this research.

***"I need training so that I can answer those questions." Focus group 2***

***". It's having, having the training to have that conversation to be able to refer them appropriately." Focus group 2***

***"No, I don't think it's our role, only because we've not been trained in it before. None of our training from university or anything has ever really advised on public health " Focus group 4***

The results of this study are similar to those identified in previous research<sup>20</sup>, and the Council of Deans embracing the challenge document<sup>28</sup>, in which Radiography were highlighted as a profession requiring support. There is little research surrounding the content of a post graduate training package focused on smoking cessation. However drawing on previous recommendations from the literature<sup>22</sup> and analysing the focus group data, the key components of a training package are identified as; harmful effects of smoking on health and for individuals receiving treatment for cancer, advanced communication skills to enable and empower Therapeutic Radiographers to broach the topic of smoking cessation and manage complex conversations, clear guidance regarding responsibility, job role and level of depth of the smoking cessation intervention when conducted by a Therapeutic Radiographer.

Therapeutic Radiographers recognise that supporting the overall health and wellbeing of patients is part of their professional role, and demonstrate a desire to improve the provision of smoking cessation within their practice, seeking to identify solutions to the barriers presented during the focus groups. The lack of structured training to improve knowledge clearly needs to be addressed in order to enable Therapeutic Radiographers to deliver brief interventions. A wide range of educational materials exist to provide education on this topic area; making every contact count e-learning, National Centre for Smoking Cessation Training very brief advice training, All Our Health framework are a few examples. However, without baseline knowledge or embedding of public health during the pre-registration training most Therapeutic Radiographers do not seek self-directed learning on this topic unless this specifically relates to a specialist job role, for example head and neck Radiographer review as identified in this study.

This study highlighted limited engagement with professional body guidance on the topic of public health, unanimously all participants in this population agreed that they were unaware of profession specific guidance on the topic of smoking cessation or the topic of public health.

### **Organisation; Infrastructure and Culture**

The focus groups revealed smoking cessation was not standard practice in any of the four radiotherapy departments investigated. A fact that resonates with a national audit of smoking cessation policy in 2017<sup>7</sup>.

### ***Policy and Practice***

Respondents identified a barrier to delivering smoking cessation support as a result of lack of policy and process. This issue resulted in a reactive or even a pick and mix approach to interventions that was prompted by the presence of a facilitating factor and may even be blocked by a barrier later in the pathway before an intervention was instigated<sup>22</sup>.

Facilitators include; anatomical site, acute sequelae, patient raising subject, physical trigger such as aroma or 'yellow fingers'

Radiotherapy is a sector of health care that has strong roots in protocol controlled environment. Successful implementation of policies requires individuals and team to consistently perform in a reliable and predictable manner. Robust and efficient systems, operating at all points of the patient pathway are required to promote and support healthier behaviours/behavioural change in patients.

The absence of a clear policy or a discord between policy and practice reduces the effectiveness of the intervention. It is therefore essential that when policies are developed the practicalities of delivery are considered, including clearly defined roles and responsibilities. The services identified in the policy also need to be appropriately resourced. Identification of resources should not be limited to the trust; appropriate delivery of public health interventions requires a systems approach that forges collaboration with local authority and third sector providers.

The regional nature of radiotherapy delivery means that referrals are required to multiple providers across a trust's catchment area. This contributed to the challenge and confusion for practitioners.

**"Our patients they're not all local" Focus group 1**

**"There's a huge (geographical) area that we'd need to know about" Focus group 1**

This makes a systems approach to service provision a fundamental requirement.

### ***Professional identity and deferment of responsibility***

In the absence of a clear protocol, some Radiographers reported deferring to consultant colleagues. The responses also raised queries also practitioners views of their own professional identify.

***“I suppose they rely probably a lot on the consultants really to cover the smoking bit.”*** Focus group 5

***“Patients don’t take it as seriously coming from (Therapeutic radiographers)”*** Focus group 1

***“How much difference would it make coming from (Therapeutic radiographers)?”*** Focus group 1

Some Radiographers self-perception is at odds with the patient's view, it is recognised that patients expect and value advice from health professionals about health behaviours<sup>20</sup>.

Practice appeared to be guided by individuals preferences rather than protocols and procedure informed by the evidence base and guidance. One respondent concluded that

***“it’s quite consultant specific”*** Focus group 2

Queries around role and duty of care were also raised.

***“Are we professionally obliged? Duty of care?”*** Focus group 1

### ***As well as concerns around autonomy and responsibly***

***“You don’t even know whether you’re meant to have that conversation”.*** Focus group 2

Multiple participants raised concerns around damaging the therapeutic relationship by inducing stress or feelings of guilt within the patient. This could be linked to lack of knowledge, training and confidence (Fig 4). There was a range of emotive language used when considering conversations with patients;

***“harassing them”*** Focus group 1, ***“been told off”*** Focus group 1, ***“lecturing about smoking”*** Focus group 5, ***“can of worms”*** Focus group 5

This perhaps links to confidence and competence of having behavioural change conversations.

A fundamental feature of a health professional’s role is to provide patients with the best possible treatment and care. Negating to provide smoking cessation support in an oncology setting, regardless of benevolent intention or lack of clarity around policies and procedures contravenes this principle.



## ***E-cigarettes***

Hiscock et al reports over half of smoking cessation personnel would not recommend e-cigarettes to clients<sup>29</sup>. This study and previous work<sup>8</sup> revealed a similar level of scepticism amongst the Therapeutic Radiography community, although the rationale for this resistance is sometimes misinformed.

**“I don’t really understand the point of them. If you’re going to stop smoking stop**

**Smoking”**. *Focus group 5*

**“I’m not sure I would be comfortable recommending someone swapping from a**

**cigarette to an e-cigarette, I have no idea what is in an e-cigarette”**. *Focus group 5*

**“e-cigs are full of carcinogens as well”** *Focus group 1*

**“vaping and e-cigarettes are banned on the trust site as well”** *Focus group 5*

The health community has traditionally been resistant to engaging with the tobacco industry to develop “safer” products containing tobacco or nicotine alone. Although reluctance remains, there is now emerging evidence that e-cigarettes can assist in people cutting down or stopping smoking<sup>30</sup>. Current estimates, quantify that vaping is 95% safer than tobacco smoking<sup>31</sup>.

Professionals’ reluctance to explore vaping could be considered a moot point – as patients are using these devices. Over 2.9 million adults in the UK use e-cigarettes<sup>32</sup>, making it the most popular smoking cessation approach<sup>33</sup>. Given that practitioner–client interactions are driven by the client’s agenda coupled with the experiences from this study, there is a requirement for clear guidance for both practitioners and patients. Vaping could be a valuable tool in a multi-faceted approach to harm reduction and smoking cessation. Healthcare professionals (HCPs) have an important role to play in helping smokers understand the options available for them<sup>34</sup>.

## **Patient requirements**

### ***Facilitating factors vs damaging the therapeutic relationship***

Multiple participants displayed concerns about upsetting patients and expressing feelings of guilt and concern when approaching patients regarding smoking advice.

**“Do you really want to open up the can of worms of smoking when they’ve got all that other stress”** *Focus group 1*

**"if you perhaps tread on a sensitive issue and perhaps if you pushed it too far or they got upset by it you've lost that bond "** *Focus group 1*

Previous research supports the behaviour that healthcare professionals may be hesitant to broach the topic of smoking during cancer treatment as they feel they may be "asking too much" from the patient<sup>9</sup>. However, participants in this study identified that they are more likely to broach the topic more with patients diagnosed with head and neck, and lung cancers compared to all other sites. Participants made a distinction between radical and palliative intent; participants more commonly approached those with radical intent. Other common factors that "triggered" participants to engage in smoking cessation advice with their patients was when they could smell the remnants of tobacco smoke on the individual or when the patient struggled with side effects.

**"I probably bring it up in a new patient chat for a lung or a head and neck patient. But I'm not so sure I do for the other patients"**. *Focus group 5*

**"a lot of larynxes coming in smelling of smoke, which is what makes me start talking about it"**.  
*Focus group 1*

**"if someone was on the end of life pathway there is absolutely no way I'd be lecturing them about smoking, never"**. *Focus group 1*

Therefore, there appears to be an inconsistency in practice. These findings suggest that radiographers are less concerned with upsetting a patient with smoking advice/questions when there is a clear sign of continued smoking or are in direct contact of the consequences of continued smoking e.g. side effects.

### ***The diagnosis of cancer and the teachable moment***

According to the results of this study, the participants felt that encouraging smoking cessation was not a priority at the time as they felt that the patient was overwhelmed with their diagnosis and all that entails on the cancer journey.

**"But I don't really think that's the right time to talk about that"** *Focus group 4*

**"I think there's so much other stuff going on.... it's almost like low priority to some patients"** *Focus group 1*

In contrast, prior studies have shown that at the time of diagnosis, patients have an intention and desire to quit smoking; consequently smoking rates significantly dropped<sup>35, 36</sup>. Furthermore, when the motivation behind quitting were examined, the findings highlighted that health concerns such as

tolerating treatment better and fear related to their cancer diagnosis encouraged their decision<sup>37,38,39</sup>. The time around the diagnosis of cancer was found to be an opportune time to offer smoking cessation treatments<sup>8, 40</sup> as this demonstrates the effect of the “teachable moment”, often described in the literature<sup>41</sup>. In accordance with this study, one may suggest that therapeutic radiographer’s opinions and feelings overpower the momentum of the “teachable moment”. The nature of these findings supports the need for a Therapeutic Radiographer specific training package.

### **Limitations**

This research adds to a limited body of research in this field, however it should be noted that the sample size of this study is limited and therefore the views represented in this study might not reflect the national view of Therapeutic Radiographers. However, to support generalisability of this research, focus groups were conducted until no new themes emerged.

### **Conclusion**

Therapeutic Radiographers mostly recognise that they are well placed to support patients with smoking cessation during radiotherapy treatment. However there are a number of barriers that inhibit provision of smoking cessation in practice including; limited knowledge, skills and training, absence of policy related to smoking cessation, fear of damaging the therapeutic relationship and misconceptions surrounding patient perceptions of smoking cessation. Several of the identified barriers can be overcome with the introduction of a training package for Therapeutic Radiographers at a pre and post registration level, supporting departmental and trusts to implement relevant NICE guidance and capitalising on the unique relationship that Therapeutic Radiographers develop with their patients. Overwhelmingly the participants in this study demonstrated a desire to support and embed smoking cessation in routine practice, highlighting that with relevant support, Radiographers are motivated to make positive change in relation to their contribution to supporting the overall health and wellbeing of their patients.

### **Conflict of interest statement**

None

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### **References**

1. Brown K, Rumgay H, Dunlop C, Ryan M, Quartly F, Cox A et al. The fraction of cancer attributable to modifiable risk factors in England, Wales, Scotland, Northern Ireland, and the United Kingdom in 2015. *British Journal of Cancer*. 2018;118(8):1130-1141.

2. Tobacco [Internet]. World Health Organization. 2018 [cited 23 February 2018]. Available from: <http://www.who.int/en/news-room/fact-sheets/detail/tobacco>
3. Healthy lives, healthy people [Internet]. Assets.publishing.service.gov.uk. 2010 [cited 23 April 2018]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/216096/dh\\_127424.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/216096/dh_127424.pdf)
4. Making Every Contact Count (MECC): Consensus statement [Internet]. Assets.publishing.service.gov.uk. 2018 [cited 1 June 2018]. Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/515949/Making\\_Every\\_Contact\\_Count\\_Consensus\\_Statement.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/515949/Making_Every_Contact_Count_Consensus_Statement.pdf)
5. Five Year Forward View [Internet]. England.nhs.uk. 2018 [cited 1 June 2018]. Available from: <https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf>
6. Allied Health Professions into Action [Internet]. England.nhs.uk. 2018 [cited 25 May 2018]. Available from: <https://www.england.nhs.uk/wp-content/uploads/2017/01/ahp-action-transform-hlth.pdf>
7. Smoking: acute, maternity and mental health services | Guidance and guidelines | NICE [Internet]. Nice.org.uk. 2018 [cited 1 June 2018]. Available from: <https://www.nice.org.uk/Guidance/PH48>
8. Hutton D, Gee I, McGee C, Mellor R. No Ifs, No Butts: Compliance with Smoking Cessation in Secondary Care Guidance (NICE PH48) by Providers of Cancer Therapies (Radiotherapy and Chemotherapy) in the UK. *International Journal of Environmental Research and Public Health*. 2016;13(12):1244.
9. Duffy S, Louzon S, Gritz E. Why do cancer patients smoke and what can providers do about it?. *Community Oncology*. 2012;9(11):344-352.
10. Hoff C, Grau C, Overgaard J. Effect of smoking on oxygen delivery and outcome in patients treated with radiotherapy for head and neck squamous cell carcinoma – A prospective study. *Radiotherapy and Oncology*. 2012;103(1):38-44.
11. Nguyen S, Masson-Côté L, Fortin A, Dagnault A. Influence of smoking status on treatment outcomes after post-operative radiation therapy for non-small-cell lung cancer. *Radiotherapy and Oncology*. 2010;96(1):89-93.
12. Alsadius D, Hedelin M, Johansson K, Pettersson N, Wilderäng U, Lundstedt D et al. Tobacco smoking and long-lasting symptoms from the bowel and the anal-sphincter region after radiotherapy for prostate cancer. *Radiotherapy and Oncology*. 2011;101(3):495-501.
13. Bruheim K, Guren M, Skovlund E, Hjermstad M, Dahl O, Frykholm G et al. Late Side Effects and Quality of Life After Radiotherapy for Rectal Cancer. *International Journal of Radiation Oncology Biology Physics*. 2010;76(4):1005-1011.
14. Egestad H, Emaus N. Changes in health related quality of life in women and men undergoing radiation treatment for head and neck cancer and the impact of smoking status in the radiation treatment period. *European Journal of Oncology Nursing*. 2014;18(4):339-346.
15. Behaviour change: individual approaches | Guidance and guidelines | NICE [Internet]. Nice.org.uk. 2018 [cited 1 June 2018]. Available from: <https://www.nice.org.uk/guidance/ph49/chapter/What-is-this-guidance-about>
16. NCSCT VBA [Internet]. Elearning.ncsct.co.uk. 2018 [cited 15 February 2018]. Available from: [http://elearning.ncsct.co.uk/vba-stage\\_1](http://elearning.ncsct.co.uk/vba-stage_1)

17. Sharp L, Johansson H, Hatschek T, Bergenmar M. Smoking as an independent risk factor for severe skin reactions due to adjuvant radiotherapy for breast cancer. *The Breast*. 2013;22(5):634-638.
18. Chen A, Chen L, Vaughan A, Sreeraman R, Farwell D, Luu Q et al. Tobacco Smoking During Radiation Therapy for Head-and-Neck Cancer Is Associated With Unfavorable Outcome. *International Journal of Radiation Oncology\*Biophysics*. 2011;79(2):414-419.
19. Steinberger E, Kollmeier M, McBride S, Novak C, Pei X, Zelefsky M. Cigarette smoking during external beam radiation therapy for prostate cancer is associated with an increased risk of prostate cancer-specific mortality and treatment-related toxicity. *BJU International*. 2015;116(4):596-603.
20. Healthy conversations and the Allied Health Professionals [Internet]. Public Health England and Royal Society for Public Health. 2014 [cited 15 March 2018]. Available from: <https://www.rsph.org.uk/uploads/assets/uploaded/d1819509-05dd-4078-8d56423232d9b1da.pdf>
21. Pattinson L, Jessop A. The delivery of health improvement information during radiotherapy treatment: a survey of UK therapy radiographers. *Journal of Radiotherapy in Practice*. 2016;15(02):114-130.
22. Conlon K, Pattinson L, Hutton D. Attitudes of oncology healthcare practitioners towards smoking cessation: A systematic review of the facilitators, barriers and recommendations for delivery of advice and support to cancer patients. *Radiography*. 2017;23(3):256-263.
23. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101.
24. Bowling A. *Research methods in health: Investigating health and health services*. 3rd ed. Maidenhead, Berkshire, England: Open University Press; 2009.
25. Pranee Liamputtong. *Focus group methodology: principles and practice*. London: SAGE; 2011.
26. Bradbury-Jones C, Sambrook S, Irvine F. The phenomenological focus group: an oxymoron?. *Journal of Advanced Nursing*. 2009;65(3):663-671.
27. Quirkos Limited, Edinburgh (UK)
28. Consensus on public health content of AHP curricula | Council of Deans of Health [Internet]. Councilofdeans.org.uk. 2018 [cited 28 May 2018]. Available from: <https://councilofdeans.org.uk/2017/09/consensus-on-public-health-content-of-ahp-curricula/>
29. Hiscock R, Goniewicz M, McEwen A, Murray S, Arnott D, Dockrell M et al. E-cigarettes: online survey of UK smoking cessation practitioners. *Tobacco Induced Diseases*. 2014;12(1):13.
30. Beard E, West R, Michie S, Brown J. Association between electronic cigarette use and changes in quit attempts, success of quit attempts, use of smoking cessation pharmacotherapy, and use of stop smoking services in England: time series analysis of population trends. *BMJ*. 2016;;i4645.
31. Nutt D, Phillips L, Balfour D, Curran H, Dockrell M, Foulds J et al. Estimating the Harms of Nicotine-Containing Products Using the MCDA Approach. *European Addiction Research*. 2014;20(5):218-225.
32. Large national survey finds 2.9 million people now vape in Britain: For the first time over half don't smoke [Internet]. Ash.org.uk. 2018 [cited 29 May 2018]. Available from:

<http://ash.org.uk/media-and-news/press-releases-media-and-news/large-national-survey-finds-2-9-million-people-now-vape-in-britain-for-the-first-time-over-half-no-longer-smoke/>

33. Dockrell M. Seizing the opportunity: E-cigarettes and Stop Smoking Services - linking the most popular with the most effective - Public health matters [Internet]. Publichealthmatters.blog.gov.uk. 2018 [cited 29 May 2018]. Available from: <https://publichealthmatters.blog.gov.uk/2018/03/21/seizing-the-opportunity-e-cigarettes-and-stop-smoking-services-linking-the-most-popular-with-the-most-effective/>
34. Exploring the evidence: the role of e-cigarettes in smoking cessation [Internet]. Publications.cancerresearchuk.org. 2018 [cited 29 May 2018]. Available from: [https://publications.cancerresearchuk.org/sites/default/files/publication-files/AP1732%20CRUK%20Meeting%20Report\\_FINAL.pdf](https://publications.cancerresearchuk.org/sites/default/files/publication-files/AP1732%20CRUK%20Meeting%20Report_FINAL.pdf)
35. Coups E, Dhingra L, Heckman C, Manne S. Receipt of Provider Advice for Smoking Cessation and Use of Smoking Cessation Treatments Among Cancer Survivors. *Journal of General Internal Medicine*. 2009;24(S2):480-486.
36. Park E, Japuntich S, Rigotti N, Traeger L, He Y, Wallace R et al. A snapshot of smokers after lung and colorectal cancer diagnosis. *Cancer*. 2012;118(12):3153-3164.
37. Solberg L, Enstad C, Boyle R, Nelson W. Physician–Patient Interaction for Smoking Cessation Medications: A Dance of Mutual Accommodation?. *The Journal of the American Board of Family Medicine*. 2006;19(3):251-257.
38. Simmons V, Litvin E, Patel R, Jacobsen P, McCaffrey J, Bepler G et al. Patient–provider communication and perspectives on smoking cessation and relapse in the oncology setting. *Patient Education and Counseling*. 2009;77(3):398-403.
39. Hsu C, Kwan G, Chawla A, Mitina N, Christie D. Smoking habits of radiotherapy patients: Did the diagnosis of cancer make an impact and is there an opportunity to intervene?. *Journal of Medical Imaging and Radiation Oncology*. 2011;55(5):526-531.
40. Ozakinci G, Wells M, Williams B, Munro A, Donnelly P. Cancer diagnosis: An opportune time to help patients and their families stop smoking?. *Public Health*. 2010;124(8):479-482.
41. McBride C, Puleo E, Pollak K, Clipp E, Woolford S, Emmons K. Understanding the role of cancer worry in creating a “teachable moment” for multiple risk factor reduction. *Social Science & Medicine*. 2008;66(3):790-800.

## Appendix A

### Focus Group – Topic Guide

#### Introduction

Hello. My name is \_\_\_\_\_ and this is my colleague \_\_\_\_\_.

Thank you for attending today.

#### Present the purpose

We are here to get an insight into your views and experience of smoking cessation support for patients. The purpose is to get your perceptions of how smoking cessation is currently delivered, what are the barriers and enablers. This insight will allow us to inform the development of training package to support the specification requires of supporting patients in smoking cessation during radiotherapy.

I would really encourage you to speak openly and honestly. Your views are what matter. There are no right or wrong or desirable or undesirable answers.

#### Procedure

\_\_\_\_\_ (colleague) will be taking notes and recording the discussion, this will allow us to transcribe and analyse the focus group. As you know everything is confidential. No one will know who said what. I want this to be a group discussion, so feel free to respond to me and to other members in the group without waiting to be called on. However, I would appreciate it if only one person did talk at a time. The discussion will last approximately one hour.

#### Participant introduction

Let's do some quick introductions – please say your name and job role.

#### Interview

Section 1.) Overall views about role of therapeutic radiographers and smoking cessation

- a.) Do you consider public health messages, in particular smoking cessation to be the role of therapy radiographers?
- b.) How frequently do you initiate conversations with patients about smoking cessation?
- c.) What are people's experiences of discussing smoking with patients?
- d.) Are you aware of guidance from our professional body about public health/smoking cessation?

Section 2.) Facilitators to provision of smoking cessation

- a.) What supports you in delivering SC advice to patients?

b.) What would you need in order for SC to be routine in your practice

Section 3.) Barriers to provision of smoking cessation

a.) What inhibits you in delivering SC advice to patients?

b.) The following were cited as key barriers in the pre questionnaire; lack of knowledge of local support services, lack of knowledge, lack of training, lack of time, concern about upsetting patient, feeling of stress/guilt. I would like us to discuss each of these in more depth

i.) Lack of knowledge of local support services - why is lack of knowledge of local support services a barrier to provision? How might this be overcome?

ii.) Lack of knowledge - what specifically were you referring to? Why is lack of knowledge a barrier to provision? How might this be overcome?

iii.) Lack of training- what specifically were you referring to? Why is lack of training of a barrier to provision? How might this be overcome?

iv.) Lack of time - How long do you feel a conversation about smoking cessation should or does take? How might this be overcome?

v.) Concern about upsetting patient, feeling of stress/guilt - have you had negative experiences of this? Do you feel our patients expect us to ask? How could we approach the topic with sensitivity?

Is there anything from the pre-focus group questionnaire that anyone would like to comment on / discuss?

Are there any other factors that you feel facilitate or inhibit your confidence to deliver SC advice

Closure

Thank you all for your input to the session.

Summarise the key points from the discussion -

Anyone want to add or clarify an opinion on this?

Is there any other information regarding your experiences that you think would be useful for me to know?

Thank you all again, it is very much appreciated and your comments have been very helpful.