# TOBACCO HARM REDUCTION AND NICOTINE CONTAINING PRODUCTS

## Research Priorities and Policy Directions

May 2013

A report by Marisa de Andrade and Gerard Hastings
Commissioned by Cancer Research UK

# Contents

# 1.0  INTRODUCTION

Developments in tobacco harm reduction (HR) and the proliferation of nicotine containing products (NCPs) have important implications for tobacco control (TC).  This report sets out a research agenda which will help map and examine these implications.  It has been developed by:

- Expanding on existing research questions posed by various
  health bodies and TC experts.
- Identifying additional research questions in the HR debate.
- Outlining evidence gaps in the current knowledge base.
- Examining the academic and grey literature.
- Gathering insights from TC experts.

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## 2.0  BACKGROUND

## 2.1  Tobacco Harm Reduction

For the purpose of this report, tobacco harm reduction is defined as the long term use by smokers of less harmful non-tobacco nicotine products, with or without a quit attempt. In broad terms, it refers to any measure used to reduce illness and death caused by tobacco use.[1] As noted by the National Institute for Clinical Excellence (NICE) draft guidelines on HR approaches to smoking,[2] HR may help smokers with no intention or ability to quit to gradually wean themselves off cigarettes and be relevant to those who need to be abstinent in smoke-free environments, such as mental health units or prisons.

Various public health bodies, charities and members of the TC community in the UK have been striving to gain consensus on the concept of HR for more than ten years. Unresolved disputes over snus turned to debates on NCPs and by 2008, there was broad recognition for the approach as documented in *Beyond Smoking Kills*, a report funded by Cancer Research UK (CRUK) and the British Hearth Foundation (BHF), published by Action on Smoking and Health (ASH) and endorsed by more than 100 organisations.[3] A desire was expressed to 'develop a strategy and an appropriate regulatory structure to improve the acceptability, attractiveness and accessibility of pure nicotine products for use as an alternative to smoking for those smokers who are currently unable or unwilling to quit'.

In February 2010, the UK's health regulator, the Medicines and Healthcare products Regulatory Agency (MHRA), introduced an HR element as appropriate for the indications of licensed forms of nicotine replacement therapy (NRT) following a formal request from the manufacturer of the Nicorette inhalator for an extended application of its product. This raised the question of the regulation of other unlicensed NCPs on the market, such as topical gels and electronic cigarettes (e-cigarettes), which have not been tested for safety, quality and efficacy.[4]

In terms of pharmacological action, NCPs that significantly alter metabolism in normal usage could legally fall within medicines legislation.[5] An MHRA consultation was conducted to ascertain whether all NCPs – with the exception of tobacco and tobacco products – should fall within the medicines licensing system, which would necessitate an application to the regulator for medicines marketing authorisation.[6] While there was clear support for regulation from public health, National Health Service (NHS) and medical professional bodies, royal colleges and trading standards, the exercise highlighted several evidence gaps. An extended period of scientific and market research reaches completion in Spring 2013, when the regulator announces its final decision and NICE publishes HR guidance upon the recommendation of the Department of Health (DH).[7]

## 2.2  Electronic Cigarettes

E-cigarettes or electronic nicotine delivery systems (ENDS) are intended to appear and feel like real cigarettes, but deliver nicotine without the concentrated toxic compounds found in smoke. They are becoming increasingly popular: in the UK, usage appears to have increased at around 500% per year and the number of e-cigarette users is expected to reach a million by the end of 2013.[8]

While some models now function without a battery, most e-cigarettes have three components including a battery, atomiser and replaceable cartridge, which suspends nicotine in propylene glycol and water. Liquid in the cartridge is heated and evaporates when users draw on the e-cigarette – a process triggered by an air flow detecting sensor. Varying levels of nicotine are then delivered through a vapour, and some products light up at the tip at this point to resemble a lit cigarette.[9] [10]

Key distinctions between brands are: price; weight and size; colour; accessories (such as portable charging cases); number of cigarettes per cartridge; quality (including efficiency of nicotine delivery vehicle, battery life and reliability); product warranty; and likeness to combustible cigarettes.[11] E-cigarettes are also available in various flavours, and disposable versions called eshisha or shisha pens, which come in a range of fruit flavours and generally do not contain nicotine, have appeared on the market.[12]

As consumer products, e-cigarettes are currently regulated under the General Products Safety Directive (GPSD), which enforces general safety requirements and is monitored by local authority regulatory officers particularly through Trading Standards. Faulty products are reported through the EU's RAPEX system, which allows them to be withdrawn from the market. The MHRA consultation revealed that the Trading Standards Institute was in favour of removing all unlicensed NCPs and NCPs classified as medical products from the market in 21 days and called for these products to be regulated under the MHRA rather than GPSD.[13] It highlighted that e-cigarettes can currently be advertised and promoted 'to anyone, in any location and by any means', and raised concerns that the product could be legally sold to young people of any age.[14]

The regulation of NCPs has also been considered by the European Commission, which conducted a public consultation on the possible revision of the Tobacco Products Directive (TPD) in 2010. E-cigarette regulation divided member states, with some pushing for regulation as a pharmaceutical or medical device and others calling for e-cigarettes to be included in the TPD.[15] The proposed revised TPD[16] now extends to regulating NCPs including almost all e-cigarettes[17] under the framework for medicines regulation through Directive 2001/83/EC.[18]

It is anticipated that the proposed TPD will be adopted in 2014 and come into effect from 2015-2016.[19] This would mean that e-cigarettes would need to acquire marketing authorisation from a health regulator in order to prove safety and efficacy. If member states disagree on regulation, a resolution will be sought through the mutual recognition process or the issue will ultimately be referred to the European Medicines Agency's Committee for Medical products for Human Use.

The legal status and regulation of e-cigarettes varies globally and is continuously changing. Figure 1 provides some international responses to e-cigarette use and regulation to date.

## Figure 1: A range of international responses to e-cigarette use and regulation[20]

| | |
|---|---|
| Australia | The Therapeutic Goods Administration does not support the use of e-cigarettes and has not assessed any of these products as therapeutic goods. |
| Austria, Denmark, Estonia, Germany, Hungary, Portugal, Romania, Slovakia, Sweden | In these EU Member States, e-cigarettes are medicinal products. |
| Belgium, Malta and Slovakia | These EU Member States have banned the use of e-cigarettes in enclosed bars, restaurants and other workplaces. |
| Brazil | There is a ban on the sale, import and advertising of e-cigarettes in Brazil. |
| Bulgaria, Cyprus, Czech Republic, Italy, Latvia, Slovenia, Spain | E-cigarettes are subject to existing product safety legislation in these EU Member States. |
| Canada | Health Canada issued an Advisory in 2009 telling Canadians not to use e-cigarettes because they had not been evaluated for safety, efficacy and quality. The regulator continues to monitor scientific and medical publications, as well as what is happening in other jurisdictions. |
| China | The sale and use of e-cigarettes is legal although this may vary between regions. |
| Finland | E-cigarettes are medicinal products in Finland, but advertising is banned. |
| Italy | While the use and sale of e-cigarettes is permitted under existing product safety legislation, one brand has been approved by the Italian Institute of Health. |
| Lithuania | E-cigarettes are banned as imitation tobacco products irrespective of nicotine content. |
| New Zealand | There is partial regulation depending on how an e-cigarette is presented for sale. This includes its intended use, as claimed by its supplier, and if this use has a therapeutic purpose according to the country's Medicines Act 1981. |
| Norway | Under the Norwegian Tobacco Act, the sale and import of e-cigarettes is banned. |

| | |
|---|---|
| Poland | There is an advertising ban for e-cigarettes. |
| Singapore | The use and sale of e-cigarettes is banned under the Tobacco (Control of Advertisements and Sale) Act enforced by the Health Sciences Authority. |
| United States | The use, sale and advertising of e-cigarettes is permitted and different states have varying regulations. The Food and Drug Administration (FDA) currently only regulates e-cigarettes that are marketed for therapeutic purposes. The FDA intends to issue a proposed rule that would extend the FDA's tobacco product authorities to other products that meet the legal definition of 'tobacco product'. E-cigarettes made or derived from tobacco would therefore be regulated under the Tobacco Control Act unless marketed for therapeutic purposes. |

## 3.0   LITERATURE COLLECTION, REVIEW AND APPROACH

This report consolidates fragmented issues pertaining to tobacco HR and NCPs, in particular e-cigarettes, and outlines key emergent themes and research questions. By outlining evidence gaps and gathering insights from experts in the field, the document presents a research agenda for the tobacco control and public health community and highlights priorities for research and policy.

The report was largely drawn from grey literature and used an iterative approach to address key research areas under identified and/or recurrent emergent themes. In the first instance, exploratory coding and a broad-based search strategy was employed[a] primarily to sift through grey literature on the subject. Background information was obtained from papers and editorials in the academic literature in the PubMed database. The indexed terms *Tobacco Use Cessation Products* (n=1072 references) and *Tobacco Harm Reduction* (n=339) was used as part of a snowball methodology,[21] which provided a secondary list of keywords.[b]

Other relevant sources of information included: the National Institute for Clinical Excellence HR draft guidance consultation;[22] reports and correspondence from the MHRA[23] and World Health Organisation (WHO) and Framework Convention on Tobacco Control (FCTC) secretariat;[24] position statements and correspondence with CRUK[25] and ASH;[26] and reports and correspondence with the European Parliament (EP) Policy Department A-Economy & Science for the Committee on the Environment, Public Health and Food Safety (ENVI) and a Member of the European Parliament. Twelve academics, who work in public health and tobacco control from the UK and abroad, were also consulted. Their expert opinions are included in the report.

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[a] The search terms *'harm reduction', 'HR', 'electronic cigarettes', 'e-cigarette', 'smoking cessation', 'nicotine containing products', 'NCPs', 'smokeless tobacco', 'ENDS'* and *'electronic nicotine delivery systems'* were used in the first instance.

[b] These included *'smoking cessation', 'electronic nicotine delivery systems', 'tobacco harm reduction', 'electronic cigarettes'* and *'e-cigarettes'.*

## 4.0 KEY THEMES

The emerging research questions fell into four broad areas: individual; tobacco control; political; and philosophical issues. These can be viewed as a series of concentric circles (Figure 2) with the research issues widening at each band. Whilst some research topics straddle the different bands, and additional research questions will surely emerge as HR moves forward, the taxonomy helps provide a map of the research terrain. In the interests of clarity the research questions specified in Figure 2 are illustrative rather than definitive.

### Figure 2: A taxonomy of HR research
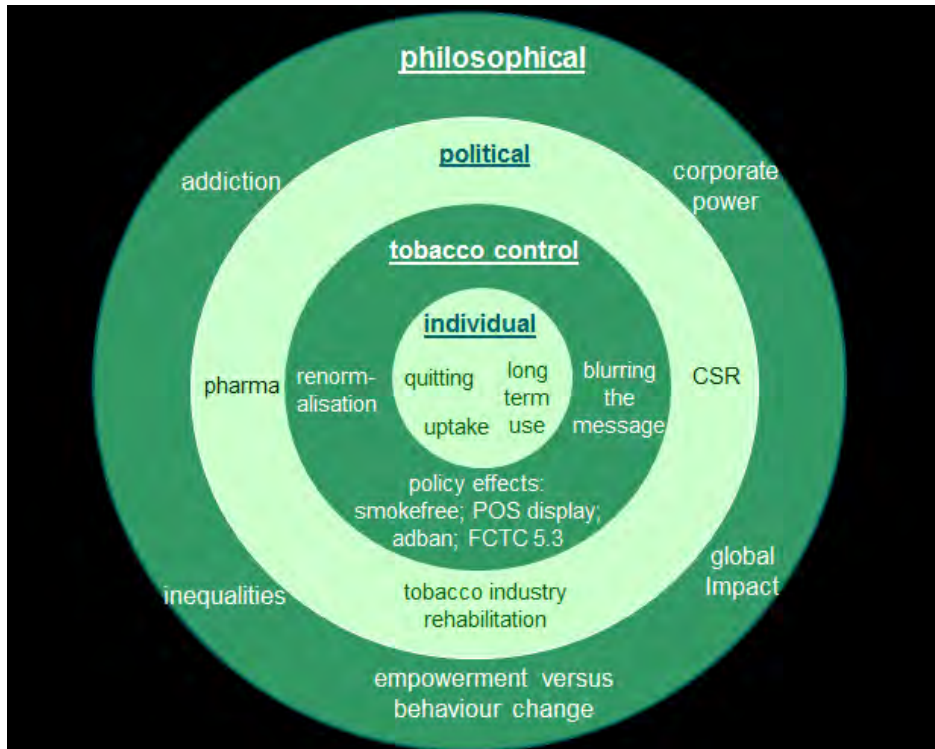
## 5.0 INDIVIDUAL ISSUES

## 5.1 Safety

It is generally accepted that e-cigarettes are less hazardous and toxic than traditional cigarettes and while the NICE draft HR guidance states that little is known about the safety of e-cigarettes at present, it emphasises that 'they are likely to be less harmful than cigarettes'.[27]

The accepted medical position is that while nicotine is highly addictive and comparable to drugs such as heroin or cocaine,[28] it poses little health risks except in certain vulnerable groups.[29] The e-cigarette has thus been described as an alternative, cleaner vehicle for the delivery of nicotine as 'the harm associated with cigarette smoking is almost entirely caused by the toxins and carcinogens found in tobacco smoke'.[30]

Nonetheless, several sources and experts raise the issue of safety[31] in relation to: (i) nicotine content and liquids, (ii) the technical safety of e-cigarettes, and (iii) long-term[32] use of licensed and currently unlicensed NCPs.[33] Potential health risks and safety concerns associated with e-cigarette use are covered extensively in a report prepared by the German Cancer Research Center[34] and were presented to the EP Policy Department ENVI in April 2013. Some key issues are highlighted below.

### (i) Nicotine content and liquids

Various academics commented on the limited evidence on the nicotine content and delivery mechanisms in e-cigarettes, as well as the scarcity of scientific research on the dangers of abusing the product leading to potential overdoses. NICE draft HR guidance[35] also highlights the lack of data on accidental intake of refill solutions by children and the extent of misuse and accidental use.

These views were echoed in the presentation to the EP,[36] where researchers reported an overview of e-cigarette characteristics and raised potential health effects of propylene glycol,[37] such as inhalation and irritation of the respiratory system.[38] They also referenced studies on 'cancerogenic substances in the vapour'[39] and in 'passive vaping',[40] suggesting that more research could be conducted in these areas.

### (ii) Technical safety of e-cigarettes

The technical safety of e-cigarettes was cited in evidence presented to the EP, which intimated that there may be leakages when drawing on the device or the liquid could come into contact with the skin when changing cartridges.[41] Other technical issues raised included inaccuracies and deficits in reporting the amount of nicotine delivery,[42 43] and differences in the effectiveness and consistency of nicotine vaporisation.[44] The EP Policy Department ENVI is also interested in knowing whether there have been any other safety issues, such as product recalls.

### (iii) Long-term use of currently unlicensed NCPs

This issue has been raised by most experts. The NICE draft guidance[45] on HR makes reference to the fact while there is currently little evidence on the effectiveness, safety[46] and quality of e-cigarettes, topical gels and other unlicensed NCPs, e-cigarettes are 'likely to be less harmful than cigarettes' and more evidence will emerge if the MHRA enforces regulation as products will need to undergo testing before acquiring marketing authorisation.

The guidance endorses the need for consistent information about e-cigarette safety so people can make informed choices.

The NICE Programme Development Group (PDG) recommends research into the safety and long-term use[47] of licensed NCPs among different subgroups, including potential drug interactions and contraindications. Ongoing evaluations of the safety and efficacy[48] of new NCPs and actual delivery systems used are also advocated, and there are calls for data on the toxicity[49] of NRT and NCPs using smoking as a comparator as well as placebo. Data on toxin accumulation in longer-term users are also needed, and an understanding of the pharmacokinetics of new NCPs such as e-cigarettes.

The Conference of the Parties (COP) to the WHO FCTC has stated that safety concerns about e-cigarettes have not been resolved. WHO is examining emerging evidence on the health impacts of ENDS use.[50]


## 5.2   Quitting, Uptake and Long-term Use

Most TC experts underlined the importance of knowing how NCPs are being used by those who buy the products – whether as a means of reducing consumption, to help them quit or in combination[51] with cigarettes. Furthermore, they are asking:

- For evidence that an HR approach and the use of NCPs contribute to complete cessation,[52] [53]reduced[54] or increased consumption.
- If there is any change in quitting behaviour by smokers or relapse[55] by ex-smokers following the national adoption of HR strategies.
- The extent to which smokers are adopting these HR approaches.
- What strategies smokers should use to optimise HR behaviours.
- Whether self-help materials improve the effectiveness of HR behaviours.

In particular, there are calls from several experts for more evidence that e-cigarettes are effective in helping smokers to quit.[56] The first published report of e-cigarette use among tobacco quitline participants in the US suggests that e-cigarette users were significantly less likely to be tobacco abstinent seven months after joining the programme compared to those who had never tried e-cigarettes, but the authors do acknowledge the study has limitations'.[57]

Similarly in the NICE draft HR guidance,[58] there are broad calls for more data on services providing HR approaches; smokers' level of compliance with various strategies; relapse rates after attempts to cut down, temporary abstinence and complete cessation[59] (and if smoking increases following a relapse); a combined HR approach using cigarettes and NRT; the long-term health and behavioural effects of nicotine use; and the use of alcohol and its association with the incentive to quit, cut down before stopping or smoking less.

Various research questions are posed in the NICE draft guidance specifically in relation to quitting, uptake and long-term use, including:[60]

- *How effective are licensed nicotine-containing products when used for more than 1 year?*
- *What is the impact of different doses and duration of use?*
- *What is the effect on health of long-term use?*
- *What impact does stopping smoking but continued use of licensed nicotine-containing products for over a year have on the onset and progression of smoking-related health conditions?*
- *How great are the health benefits of smoking less, by substituting some cigarettes with licensed nicotine-containing products, compared to stopping smoking?*
- *What proportion of people who smoke less go on to stop smoking?*
- *How soon after starting to reduce the amount they smoke do they stop completely?*

Some research questions identified in the NICE draft HR guidance in relation to quitting, uptake and long-term use focus on smokers' and practitioners' perceptions of HR and alternative approaches to quitting:[61]

- *What are smokers' and practitioners' views on the long-term use of licensed nicotine-containing products?*
- *How effective are self-help materials in helping people to cut down in order to stop smoking or to smoke less? This could include leaflets, books, resource packs, web-based and electronic aids and strategies to promote their use. The effectiveness and cost effectiveness of self-help materials.*
- *How effective are different behavioural strategies in helping people to cut down, either in order to stop smoking or to smoke less? This should include an evaluation of behavioural support used on its own and evaluations of specific components of such support (such as scheduling). It should also include evaluations of different types of behavioural support and follow-up, delivered within a clearly defined harm-reduction intervention. The effectiveness and cost effectiveness of different behavioural strategies to support different harm-reduction approaches.*
- *How effective are interventions to help people smoke less (without the intention of stopping)? Studies should focus on (and across) different subgroups including: black and minority ethnic groups, lesbian, gay, bisexual and trans-gender groups, people with mental health problems, prisoners and those who are disadvantaged. To what extent does effectiveness vary according to which professional group delivers the advice or the setting where it is delivered?*
- *Service users' and providers' views on offering free NRT and its potential impact on the success of tobacco harm-reduction strategies.*
- *The effectiveness and cost effectiveness of the following in relation to helping people cut down prior to stopping smoking or trying to smoke less: different combinations of licensed nicotine-containing products; other nicotine delivery systems; using products for more than a year; group support models as part of a 'cutting down prior to stopping smoking' approach; consumer-driven harm reduction, such as social norms and product demand; different initiatives to prevent relapse.*
- *The health benefits of smoking less, rates of relapse and progression to stopping smoking among people who have opted to smoke less.*
- *The long-term psychological effects of nicotine use in relation to smoking status and the harm-reduction approach used. (In relation to people who have not cut*

*down, those who have reduced the amount they smoke and people who have stopped smoking and switched to licensed nicotine products.)*

- *The extent to which compensatory smoking occurs when someone is trying to cut down prior to stopping smoking or trying to smoke less. (Compensatory smoking includes taking deeper inhalations or smoking more of the cigarette). For example, there is a lack of data on whether the behaviour persists over time, and whether the amount of compensation differs across groups. (It could differ by the degree of nicotine addiction, amount of cigarettes smoked and whether or not NRT is used.)*
- *Health professionals' and service users' views about the barriers to, and facilitators for, implementing tobacco harm-reduction strategies.*
- *GPs' and other prescribers' attitudes towards (and views on) the barriers to and facilitators for using licensed nicotine-containing products.*

There is also a recommendation for research into the impact of different marketing strategies on the number of people who adopt an HR approach, which could compare prices, placements and promotions for different NCPs.

In addition to understanding how smokers perceive HR and NCPs,[62] academics in public health are interested in the views of non-smokers, policymakers, primary healthcare staff, children and young people. They are also interested in general levels of awareness of HR and NCPs.

# 6.0   TOBACCO CONTROL ISSUES

## 6.1   Blurring the Message

As the HR debate develops in TC circles, a key question is what priority the TC community should dedicate to HR relative to other tobacco control policies. Several academics stated that rolling out an HR agenda puts public health in the position of having to highlight both the difficulties and attractions of quitting. There are also concerns that children will pick up on this and that the UK media, which has become a reliable supporter of comprehensive control measures, might also struggle with this more complex position.[63]

There is a general recognition that HR approaches have the potential to help reduce premature mortality and morbidity caused by smoking,[64] [65] but some experts raised concerns about the potential unintended negative consequences for tobacco control at both the individual and population level.

Some TC academics believe that there may be significant challenges in communicating HR messages in ways that do not undermine the clear avoidance and cessation message that has been at the core of TC tobacco control measures to date. A clear communication strategy is therefore endorsed in order to avoid confusion for potential and existing smokers as well as health professionals.

Other related themes for exploration that emerged through consultation include longitudinal research into the media coverage of direct, indirect and incidental media reporting and promotion of HR and NCPs, and the impact of these messages on quit attempts and smoking trends.

## 6.2   Regulation and Marketing

While regulation of NCPs by the MHRA is generally supported, experts have expressed some confusion about the regulator's responsibilities and remit in relation to NCPs (in particular e-cigarettes) if they are licensed as pharmaceutical products or medical devices. Some TC experts are unsure whether the products would fall under the Government's 'one in one out' rule for regulation, where a current piece of regulation would need to be removed for it to be introduced.

There is also uncertainty about the transition process should e-cigarette regulation be enforced: how long would it take for these products to be licensed and what would happen in the interim? Would these NCPs remain on the market unlicensed and regulated for a period of time, and what are the potential dangers of this?

Some TC experts believe that the MHRA would endeavour to regulate e-cigarettes and their promotion, but emphasise experiences from international counterparts that have had substantial difficulties in the regulation of the promotion of cigarettes and tobacco (with regard to the messages and images used in product promotion), and anticipate comparable challenges with e-cigarettes. The need to monitor this has been noted.

Other related research questions that emerged during consultation include:

- How would e-cigarette regulation have an impact on would be quitters and on quit attempts?
- How would NCPs be used if regulated, and how would this compare to use prior to regulation?
- How should regulation be monitored, researched and adjusted?
- How will the regulator verify that e-cigarettes are marketed as medicines rather than being promoted in other ways?

Various TC experts are questioning how NCPs and the concept of HR is being marketed generally,[66] particularly to young people, and how ex-smokers, current and/or never-smokers are being affected by this marketing.

If e-cigarettes are regulated, it is unclear how the MHRA's post-marketing surveillance would manage this. There are therefore calls for detailed and case specific clarification on the MHRA's post marketing surveillance procedures, especially on any uptake by young people, and how use of the product would be investigated in the real world. For example, how the regulator would establish who uses the product, for how long, and any safety concerns and adverse outcomes. In particular, there are requests for the regulator to detail how it would investigate whether children and young people are using e-cigarettes, and whether regulation would permit the use of flavourings in e-cigarettes and other NCPs.

There are requests for an overview of the MHRA's regulatory framework with regards to e-cigarette regulation, and a better understanding of how UK and EU regulation (in relation to the TPD) are/would be compatible in the future. The MHRA is also being asked to announce if any products, in addition to one proposed by Nicoventures, are being considered for licensing.

As it is anticipated that e-cigarettes may be subject to heavy marketing including promotion to young people and children, the need to monitor the marketing and advertising of the products has been highlighted in the US.[67] [68] Tobacco control researchers expect the situation to be similar in the UK and suggest that research is needed to check whether the current advertising regulations are effective, and to observe how e-cigarettes in particular are being marketed in the press; trade press; tobacco journals; through social media; television and other traditional and electronic communication channels and sources.

According to some experts, the extent to which the MHRA will oversee regulation of the marketing of NCPs is ambiguous, and there is a request for clear guidelines on the processes of reporting contraventions in advertising bans; how responsible parties will be sanctioned; and regulations for point of sale (POS) advertising and display.

There is also an interest in ENDS in relation to the WHO FCTC as they 'are products resembling cigarettes and could therefore undermine the denormalization of tobacco use upheld by the WHO FCTC'.[69] It was noted at the FCTC COP in November 2012 that: i) the tobacco industry is developing new smokeless tobacco (SLT) products and marketing strategies; ii) there are concerns that SLT use could be attractive to young people around the world, who could then turn to tobacco products; iii) problems with ENDS have been recognised globally; and iv) ENDS have been aggressively advertised and marketed around the world.[70] Researchers in health promotion have also pointed to recent e-cigarette advertisements in the UK, US and Europe, and raised concerns that promotional images and messages are very similar to cigarettes advertising used in the past. The need to monitor the

state of regulation in the EU and other countries such as the United States, Australia, New Zealand and Canada has also been noted in order to understand why wide-ranging and varying positions have been adopted.[71]

As e-cigarette use mimics the act of smoking, parties are also being asked to consider whether product promotion directly or indirectly promotes tobacco use with particular emphasis on Article 16.1 (c), which could also be relevant to ENDS as it recommends the prohibition of 'the manufacture and sale of ... any other objects in the form of tobacco products which appeal to minors.'[72]

In the global arena, it has been noted that the level of understanding and debate on e-cigarettes amongst the 175 Parties to the FCTC is somewhat problematic. Wide-ranging regulatory decisions have resulted in legal complexities and potential uncertainties. In countries where ENDS are not banned, it has been suggested that 'a two-pronged strategy' – regulating the products as tobacco and medical products could close potential loopholes in their regulation. This, however, has raised a philosophical issue – allowing the sale of new products that could sustain a nicotine addiction (this is discussed further below).[73]

## 6.3   Renormalisation of Smoking

Several academics questioned the impact of HR and the use of NCPs on the denormalisation of smoking – is there is any evidence to show that tobacco HR and use of NCPs are renormalising smoking? As ENDS resemble cigarettes, there are concerns that they undermine the denormalisation of tobacco use upheld by FCTC Article 12, which refers to 'norm change'.[74] Similarly research is needed into the normative impact of the advertising of these products.

Concerns have been raised that the renormalisation of smoking may be further reinforced by social events and clubs that are overtly being set up for 'vaping' online through social media networks.[75][76] Furthermore, there are queries about whether e-cigarettes serve as a gateway[77] to smoking conventional cigarettes – some reports suggest this may already be happening to some extent,[78] but these need to be substantiated.

## 6.4   Enforcement of Smoke-free Legislation

Various experts stated that widespread use of NCPs could undermine the positive effects of other tobacco control measures including smoke-free legislation[79] and renormalise smoking in work and social contexts. To this end, researchers are interested in investigating the extent to which those who buy the products are using them when other means are not available, and if they are being marketed for this purpose. It has been noted that dual use raises an extra layer of complexity for tobacco control advocates – to some extent, it is preferable for smokers to use NCPs instead of traditional cigarettes. However, a key benefit of smoke-free legislation is that people smoke less as a result of being unable to smoke in certain situations.

It has also been noted that e-cigarette use could be perceived as modelling smoking to young people through use in smoke-free places.

The issue of smoke-free legislation also been raised in the context of hampering the interpretation FCTC Article 8 – protecting exposure to tobacco smoke – as ENDs users in public places can claim that their e-cigarettes do not contain tobacco or produce second-hand smoke. Furthermore, the British Medical Association (BMA) is suggesting that smoke-free public places legislation should be extended to include second-hand vapours from e-cigarettes.[80]

## 6.5   FCTC Article 5.3

Although clearly a political theme, the implementation of FCTC Article 5.3 is a recurring issue in TC debates. While all stakeholders accept that it exists to protect 'public health policies with respect to tobacco control from commercial and other vested interests of the tobacco industry' in order 'to avoid the creation of any perception of a real or potential partnership or cooperation resulting from or on account of such interaction',[81] agreement on the interpretation of the guidelines is recommended. In particular, several TC academics have asked for clarity about potential exchanges with HR companies that are partially or wholly owned by the tobacco industry, and whether this constitutes a breach of Article 5.3.

# 7.0  POLITICAL AND PHILOSOPHICAL ISSUES

## 7.1  Tobacco Industry Rehabilitation

Some experts asked whether a focus on HR strategies may provide opportunities for the tobacco industry to engage in health policy via third party commercial actors thus undermining TC strategies. Furthermore, there are concerns that this could compromise the UK's commitment, as specified in Article 5.3, to excluding industry from policy developments. A key recurring question raised was:

- What is the position of commercial interests involved in producing or marketing an HR approach or NCPS when it comes to Article 5.3 of the FCTC?

To this end, experts are questioning if there are potential conflicts of interest (COI) in transnational tobacco companies (TTCs) investing in reduced risk products, and the need to investigate the tobacco industry's strategy with regard to NCPs is advocated.

Recent research suggests that TTC's HR discourse may be a strategy to influence policymaking and establish relations with scientists, public health experts and policymakers,[82] and some experts believe that the implementation of FCTC Article 5.3 has been narrowly interpreted in the UK and is therefore a defective means of minimising the impact of different types of industry political activity. A comprehensive research strategy on this political dimension of HR is therefore felt to be needed.

## 7.2  Corporate Social Responsibility (CSR)

Linked to this are concerns raised by some researchers that the tobacco industry is using HR as a CSR strategy to create a semblance of social responsibility[83] and some have framed this issue again in the context of Article 5.3, which notes that the TC community should recognise 'socially responsible' activities as a 'marketing and public relations strategy that falls within the Convention's definition of advertising, promotion and sponsorship'.[84]

## 7.3  Pharmaceutical Industry Interests

Some sources are advocating research into the pharmaceutical industry's interest in the HR market;[85] the medicalisation of smoking cessation; and the drug industry's active legitimisation of HR. This is particularly in light of the fact that NCPs are being considered as medium-term and lifelong substitutes for cigarettes. The question of whether the pharmaceutical and tobacco industries may collaborate on an HR agenda was also raised during consultation. It was also noted that the influence that their collective, transnational corporate power may have on influencing policymaking on a global level is unknown.

## 7.4 Corporate Power

Industry analysts predict that in 2050, a third of the tobacco market excluding cigarettes will be comprised of tobacco-less nicotine delivery devices, almost certainly dominated by cigarette mimicking products.[86] It is also noted that the e-cigarette market will be controlled by the major tobacco companies as only they have the marketing force to create a real competitor to other tobacco product sectors.[87] During consultation, several TC experts expressed concerns about these developments and the tobacco industry's control of the e-cigarette market through mergers and acquisitions of SLT companies or by setting up company divisions for these cigarette alternatives.[88]

British American Tobacco (BAT) established Nicoventures in 2011 and has plans to launch its nicotine inhaler by the end of 2014.[89] [90] It also acquired CN Creative in December 2012 'as a natural extension of BAT's approach to tobacco harm reduction that has been evolving over a number of years'.[91] In 2012, Kind Consumer, a healthcare company developing innovative inhalation technologies for the consumer and medical markets, was backed by BAT and sought a multi-million pound investment from private sponsors to research and develop cigarette substitutes for launch around 2015.[92]

The tobacco company, Lorillard, paid £90 million for the e-cigarette company Blu in 2012; RJ Reynolds has created its own e-cigarette brand;[93] Imperial Tobacco set up a Fontem Ventures to develop e-cigarettes and is considering other acquisitions following a decline in profits;[94] Japan Tobacco International has agreed to commercialise nicotine 'vaporisers'; and the Altria Group, the parent company to Philip Morris USA and owner of the Malboro brand, will introduce its e-cigarette in the second half of 2013.[95]

A forthcoming study illustrates that by investing in snus and nicotine, TTCs have eliminated competition between cigarettes and NCPs, thereby limiting the potential for HR for public health benefits.[96]

These developments have prompted questions into how research on tobacco HR and NCPs is being funded and the impact of this on tobacco control.

HR has also featured in debates on corporate power in relation to tobacco companies using it in stakeholder marketing – the efforts they put into building links with powerful subgroups, such as regulators, scientists and public health community in society.[97] In this context, HR is viewed as the foothold to develop industry-friendly scientific and regulatory frameworks.

Other related research questions emerged, including:

- Who are the NCP manufacturers and distributors and what is their ownership structure?
- Who are the commercial interests involved in producing and marketing HR products?
- What other products do these commercial interests profit from?
- How are various NCPs and HR products compatible?
- Is it possible to discern long-term likely marketing strategies based on this information, and do the interests of those marketing NCPs and those marketing more traditional tobacco products seem compatible or in conflict? To this end, it may be relevant to examine how different tobacco companies have various interests in the concepts of HR generally and NCPs specifically.

Academics are also interested in understanding how commercial interests involved in HR and NCPs are perceived by public health researchers. Some feel it would be a useful exercise to map out some of the tensions in this debate to identify differences in opinions and examine the bases for these differences in order to seek consensus.

There are also calls for research to investigate how these commercial interests are interpreted and presented by other key stakeholders, such as journalists and policymakers; and document how, if at all, tobacco industry front groups are contributing to these debates.

It was noted that the tobacco industry's commitment to the HR agenda will offer a long-term insurance policy in the event that the cigarette market further deteriorates, thereby maintaining rather than removing harm. Furthermore, the extent to which HR will be used as a public relations exercise by the tobacco industry emerged as an important research issue.

Some academics commented on an apparent lack of awareness of the history of HR in relation to tobacco and the ways in which this has been interpreted, used and misused by tobacco companies and their allies, and drew comparisons with the tobacco industry's previous attempts to build a marketing strategy around low-tar, 'safer' cigarettes and tobacco substitutes.

## 7.5   Addiction, Behaviour Change and Empowerment

One of the philosophical debates in relation to tobacco HR, raised by the Fifth Session COP to the FCTC and some TC academics, questions the ethics of public health experts promoting recreational and pharmaceutical products that keep users addicted to nicotine. Some academics are asking whether recreational drugs that do not pose significantly higher health risks should be accepted, and how it should be decided what degree of risk to health is acceptable in which circumstances. There are reports that some people are not using e-cigarettes once they have quit, but some tobacco control experts believe that more monitoring is needed especially as it is possible that newer products may become more addictive.

Experts have also framed the issue of addiction in the context of corporate power: if both the tobacco and pharmaceutical industries aim to stimulate and grow the market in nicotine and immense marketing effort is used to further this strategy, is indefinite addiction inevitable?

Tobacco HR has also raised more fundamental questions about the role of public health, specifically if it exists to encourage behaviour change or to empower. There are calls to consider HR within the broader health promoting perspectives such as diet, exercise and alcohol use.

## 7.6   Global Impact

Academics are aware that the UK's tobacco HR strategy is being observed by other nations, particularly those in the developing world, and are querying how decisions made in the UK will have an impact on the rest of the world. There are calls to monitor how international

health regulators are responding to the issue of e-cigarette regulation (for example, if they are being licensed as medicines or banned), and to monitor whether smoking rates continue to decrease without these products.

Some experts raised concerns that if the UK government appears to be collaborating directly or indirectly with the tobacco industry on HR that this will present an acceptability that will be exploited in other countries with less advanced tobacco control policies and undermine Article 5.3 of the FCTC. Furthermore, there is interest in what the UK can learn from other countries where lower smoking rates have been achieved without an emphasis on HR.

## 7.7   Inequalities

According to the NICE draft HR guidance and several TC experts, we currently do not know if some HR approaches have a differential impact on different groups of smokers according to age; socio-economic status; gender; or ethnicity. However, the May 2013 ASH survey reports that adult ex-smokers in the UK have used e-cigarettes to help a quit attempt and prevent relapse to tobacco use, and that e-cigarette use is constant across ages and socio-economic groups.[98] The March 2013 Smoking Toolkit Study also notes that e-cigarettes are increasingly being used in quit attempts in England.[99]

There are calls for studies to measure the impact of additional HR approaches (in particular e-cigarette use) on smoking and quitting behaviour and how this varies, if at all, by levels of disadvantage in order to understand more about tobacco related inequalities.

Questions are also being raised about whether less successful quitters, who are more likely to come from poorer backgrounds, would be pushed more energetically towards HR strategies than cessation services.

# 8.0   SUMMARY

- Tobacco HR is seen as an important tobacco control issue on which consensus is urgently needed, not least because the rest of the world, in particular developing nations, will be monitoring the UK's position.

- Nonetheless it is evident from the literature reviewed and correspondence with academics in the tobacco control community that tobacco harm reduction has caused divisions.

- It has also been noted that this situation could easily worsen and potentially undermine the key priority of quitting and distract efforts away from other measures of proven effectiveness.

- Many questions remain unanswered and these fall into four broad, sometimes overlapping, areas: individual; tobacco control; political; and philosophical issues. Key research questions include:

## Individual Issues

- What are the potential health gains from a HR strategy?
- How effective are NCPs and e-cigarettes as smoking cessation aids?
- How effective are they at helping smokers to cut down and what impact does this have on smokers quitting?
- How safe are NCPs and especially e-cigarettes, with particular reference to nicotine content and liquids used, the technical safety and long-term use?
- How are NCPs generally being used (dual use, temporary abstinence, long term tobacco substitute and/or as part of quit attempts)?
- Are there any trends in NCP use by age, socio-economic status, gender or ethnicity?
- How are smokers, non-smokers, policymakers, primary healthcare staff, journalists, children and young people perceiving HR, NCPs and all the related commercial and social marketing activity?

## Tobacco Control Issues

- What priority should the TC community give to HR relative to other tobacco control approaches?
- How, if at all, does HR interact with these other approaches and specifically with complete cessation?
- Similarly, how does HR sit with prevention?  Could NCPs and/or e-cigarettes act as a gateway to smoking?
- How is the media (traditional and digital) presenting or promoting NCPs and HR?
- How are NCPs being regulated in the UK, EU and globally? Why is regulation so varied, and what is the impact of this on TC efforts?
- How are NCPs and the concept of HR being marketed, particularly to young people? How are ex-smokers, current and/or never-smokers being affected by this marketing? If regulated, how would post-marketing surveillance manage this?
- If e-cigarettes are regulated:
    - How should this regulation be monitored and adjusted?
    - How will the MHRA oversee the marketing of e-cigarettes, and ensure that licensed NCPs are not breaching advertising controls?

- What are the official channels for reporting potential breaches?
- How will this fit within the MHRA's remit?

- How, if at all, would regulated e-cigarettes affect would be quitters and quit attempts? How would NCPs be used and how would this compare to use prior to regulation?
- What, if any, is the impact of HR and the use of NCPs on the denormalisation of smoking?
- Would an HR agenda undermine smoke-free legislation in the UK and the global arena? To what extent is this happening?
- Is the packaging and POS display of e-cigarettes undermining tobacco packaging and POS display controls?
- How should WHO FCTC Article 5.3 guidelines be interpreted in the context of HR if TTCs are invested in this market?

## Political and Philosophical Issues

- Is the tobacco industry using HR to engage in health policy via third party commercial actors thus undermining TC strategies? If so, to what extent is this happening?
- What, if any, COIs does TTCs' investment in reduced risk products present? Could it, for instance, undermine or remove public health gains from HR?
- What is the tobacco industry's business strategy with regard to NCPs? What are the implications for tobacco control?
- Under what circumstances could the TI come to be seen as a legitimate stakeholder?
- Is the tobacco industry using HR as a CSR/stakeholder marketing strategy? If so, how is this happening and what are the potential dangers?
- Is it an acceptable and effective public health practice to promote an addictive product?
- How is research on HR and NCPs being funded, and what impact will this have on TC?
- Will decisions made in the UK have an impact on the rest of the world?
- Can we learn from other countries where smoking rates are lower and HR less prominent?
- What is the potential impact of an HR agenda on tobacco related individual and population level inequalities?
- What impact does HR have on the individual's sense of agency and on wider health behaviours?
- What, if any, similarities are there between the TTCs' interest in HR and their past activities around filtered, safe and low tar, cigarettes?
- What, if any, links will develop between TTCs and the pharmaceutical industry and what are the implications for TC?
- Does the resulting accumulation of corporate power present any threats to TC or public health more generally?

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