

|   |                                  |  |
|---|----------------------------------|--|
| <b>Institution:</b> Cardiff University  |                                  |  |
| <b>Unit of Assessment:</b> Allied Health Professions, Dentistry, Nursing and Pharmacy (3)   |                                  |  |
| <b>Title of case study:</b> Protecting children's health through new tobacco and e-cigarette laws   |                                  |  |
| <b>Period when the underpinning research was undertaken:</b> 2014 – 2019  |                                  |  |
| <b>Details of staff conducting the underpinning research from the submitting unit:</b>  |                                  |  |
| <b>Name(s):</b>   | <b>Role(s) (e.g. job title):</b> | <b>Period(s) employed by submitting HEI:</b> |
| Graham Moore  | Professor                        | 01/10/2010 – present                         |
| Britt Hallingberg   | Research Associate               | 01/09/2014 - 22/9/2019                       |
| Rachel Brown  | Research Associate               | 23/11/2015 – present                         |
| Hannah Littlecott   | Research Associate               | 01/01/2017 – present                         |
| <b>Period when the claimed impact occurred:</b> 2015 – 2020   |                                  |  |
| <b>Is this case study continued from a case study submitted in 2014?</b> No   |                                  |  |
| <b>1. Summary of the impact</b> (indicative maximum 100 words)<br><p>The significant risks to public health from smoking are well known. Following the ban on smoking in public places in Wales (2 April 2007), Cardiff research demonstrated that a substantial minority of children continued to report that smoking was allowed in their family car, particularly children with a parent who smoked, or who were from poorer families. Cardiff researchers also found that use of e-cigarettes was not resulting in increased tobacco usage in young people. These findings influenced legislation in Wales, both the Smoke-free Premises etc. (Wales) (Amendment) Regulations 2015, and the Public Health (Wales) Act 2017. Cardiff research also informed similar legislation enacted by the Flemish Parliament in 2018, and government strategy in New Zealand.</p>   |                                  |  |
| <b>2. Underpinning research</b> (indicative maximum 500 words)<br><p>Tobacco is the largest preventable cause of ill-health in the UK, causing 78,000 deaths each year. Following the ban on smoking in public places in Wales (2 April 2007), focus turned to the risks of smoking at home and in cars, especially for young people impacted by their parents' and caregivers' smoking. E-cigarettes are a further new development, with concern that the novel appeal of these devices to children may lead to 'renormalisation' of smoking amongst children and young people. Cardiff researchers addressed both these issues in a series of research studies in Wales, where their involvement in the School Health Research Network enabled extensive access to school-aged children across Wales.</p> <p><b>2.1 Smoking in cars carrying children</b></p> <p>In opposing the 2007 ban on smoking in public places, the tobacco industry was vocal about the risks of displacing smoking from public locations into the home, and thus increasing harm to children from second-hand smoke. To address this, the Cardiff team received funding from Welsh Government to carry out the Environmental Tobacco Smoke (CHETS) Wales study, based upon a similar CHETS study performed in Scotland. It analysed biochemical and survey data from approximately 1,750 10-11 year old children, drawn from 75 primary schools across Wales. Data were collected in the three months immediately prior to the ban (31 January 2007 - 30 March 2007), and one year later (31 January 2008 - 28 April 2008). The Cardiff findings contradicted tobacco industry concerns that the legislation would displace smoking into private spaces like homes, increasing children's overall second-hand smoke exposure. It found instead a reduction in child exposure to second-hand smoke. Nevertheless, many children continued to report exposure to second-hand smoke in homes and cars, with children from poorer families reporting the greatest continued exposure [3.1]. Hence, the team called for consideration of further action such as regulating smoking in cars carrying children [3.1].</p> <p>In 2014, with £92,750 additional funding from Welsh Government [G3.1], this survey was repeated, with 1,601 Welsh Year Six students surveyed in the CHETS Wales 2 study [3.2]. The Cardiff team demonstrated that, in the seven years following the ban on smoking in public places, there had been substantial overall decreases in children's exposure to smoke in cars and homes [3.2]. The</p> |                                  |  |

proportion of households where smoking parents prohibited smoking in their home increased from 32% before the ban, to 34% in 2008 and then 51% in 2014 [3.2]. Long-term trends in children's exposure to smoke in cars were as follows:

- the percentage of children reporting that smoking was allowed in their family car halved from 18% in 2008 to 9% in 2014 [3.2];
- nevertheless, 20% of children with a parent who smoked continued to report that smoking was allowed in their family car in 2014, while children from poorer families continued to report the greatest exposure to second-hand smoke [3.2].

## 2.2 E-cigarettes

During this time, e-cigarettes began to emerge as a potential issue in tobacco control. E-cigarettes pose challenges in achieving a regulatory balance, specifically between minimising harm in adults via helping them to stop smoking versus concerns that e-cigarettes might provide a gateway to tobacco use and renormalisation of smoking in young people.

Findings from CHETS Wales 2 and the MRC-funded School Health Research Network study found that youth experimentation with e-cigarettes rarely translated into regular use, and that declines in youth smoking documented from the mid-1990s were not derailed by the emergence of these devices [3.3]. Regular use of e-cigarettes was concentrated among smokers; indeed, amongst children aged 10-16 years old, current weekly smokers had 100 times greater odds of reporting regular e-cigarette use than non-smokers [3.3]. Findings were replicated in cross-country studies, with the Cardiff team providing Welsh data for a paper combining Welsh data with datasets held by collaborators elsewhere in the UK [3.4].

The Cardiff team subsequently led an ongoing evaluation of EU Tobacco Products Directive regulations, funded by a £434,000 National Institute for Health Research (NIHR) grant [G3.2]. Their 2020 article from this study, was, at the time of writing, the most robust test to date of the renormalisation hypothesis, combining survey data from 250,000 young people across three UK nations. It found that declines in smoking and increases in anti-smoking attitudes were not disrupted by the emergence of e-cigarettes [3.5]. The Cardiff team's 2019 CRUK-funded survey, CHETS Wales 3 [G3.3, 3.6] further found that most children understand e-cigarettes to be a social display of an attempt to stop smoking, with parental use of e-cigarettes to quit smoking not associated with continued perception of smoking as 'normal'.

## 3. References to the research (indicative maximum of six references)

[3.1] Moore GF, Holliday JC & Moore LAR (2011). Socioeconomic patterning in changes in child exposure to secondhand smoke after implementation of smoke-free legislation in Wales. *Nicotine & Tobacco Research* 13(10) 903-910. doi: 10.1093/ntr/ntr093.

[3.2] Moore GF, Moore L, Littlecott HJ, Ahmed N, Lewis S, Sulley G, Jones E, Holliday J (2015). Prevalence of smoking restrictions and child exposure to secondhand smoke in cars and homes: a repeated cross-sectional survey of children aged 10-11 years in Wales. *BMJ Open* 5(1): e006914. doi: 10.1136/bmjopen-2014-006914.

[3.3] Moore GF, Hewitt G, Evans J, Littlecott HJ, Holliday J, Ahmed N, Moore L, Murphy S, Fletcher A (2015). Electronic-cigarette use among young people in Wales: evidence from two cross-sectional surveys. *BMJ Open* 5(4): e007072. doi: 10.1136/bmjopen-2014-007072.

[3.4] Bauld L, MacKintosh AM, Eastwood B, Ford A, Moore GF, Dockrell M, Arnott D, Cheeseman H, McNeill A (2017). Young people's use of e-cigarettes across the United Kingdom: findings from five surveys 2015-2017. *Int J Environ Res Public Health* 14(9): 973. doi: 10.3390/ijerph14090973.

[3.5] Hallingberg B, Maynard OM, Bauld L, Brown R, Gray L, Lowthian E, MacKintosh AM, Moore L, Munafo MR, & Moore GF (2020). Have e-cigarettes renormalised or displaced youth smoking? Results of a segmented regression analysis of repeated cross sectional survey data in England, Scotland and Wales. *Tobacco Control* 29(2): 207-216. doi: 10.1136/tobaccocontrol-2018-054584.

[3.6] Moore GF, Angel L, Gray L, Copeland L, Van Godwin J, Segrott J, Hallingberg B (2020). Associations of socioeconomic status, parental smoking and parental e-cigarette use with 10-11-

year-old children's perceptions of tobacco cigarettes and e-cigarettes: cross sectional analysis of the CHETS Wales 3 Survey. *Int J Environ Res Public Health* 17(3): 683. doi: 10.3390/ijerph17030683.

#### Selected grants:

**[G3.1] Moore GF** & Holliday J. Children's exposure to secondhand smoke in cars. Welsh Government. 27/02/2013-26/08/2014. £92,750

**[G3.2] Moore GF**, Bauld L, Munafo M, Murphy S, Gray L, **Hallingberg B**, Mackintosh AMM, Moore L. Impacts of e-cigarette regulation via the EU Tobacco Products Directive on young people's use of e-cigarettes: a natural experiment. NIHR Public Health Research funding board. Award ID: 16/57/01; February 2017 – April 2021; £434,000.

**[G3.3] Moore GF**, **Brown R**, Macdonald S, Segrott J. Primary school children's exposure to e-cigarettes, tobacco smoke and perceived smoking norms in Wales: A mixed methods study. Cancer Research UK. 01/04/2018-30/09/2019. £126,892.

#### 4. Details of the impact (indicative maximum 750 words)

The Cardiff team's work contributed to Welsh legislative action to protect young people from tobacco smoke. The research findings from CHETS Wales and CHETS Wales 2 **[3.1, 3.2]** formed a key evidence base for Welsh Government's *Tobacco Control Delivery Plan for Wales 2017-2020* **[5.1]**. The delivery plan has four Action Areas, two of which - 'Preventing the Uptake of Smoking' and 'Reducing Exposure to Smoking' - cite research from the Cardiff team, either in the form of the CHETS Wales studies or research undertaken via the School Health Research Network **[3.1, 3.2]**.

##### 4.1 Second-hand smoke in cars

The CHETS Wales 2 study **[G3.1]** was commissioned by Welsh Government to inform the decision on whether to ban smoking in cars carrying children **[5.2]**. In the Explanatory Memorandum to the Smoke-free Premises etc. (Wales) Amendment Regulations 2015, Welsh Government made extensive use of Cardiff's research, citing both CHETS Wales studies, and devoting more than two pages of a nine-page memorandum to in-depth discussion of the research findings and their implications for the legislation **[3.1, 3.2; 5.3a, p.6-7]**. Talking to the BBC, (then) Health Minister Mark Drakeford stated: "*Although the research findings show that progress has been made in reducing children's exposure to second-hand smoke in cars, we now believe the introduction of regulations to prohibit smoking in private vehicles carrying under-18s is needed as the final piece in the jigsaw to eliminate the harm and end persistent inequalities in exposure*" **[5.3b]**.

A ban on smoking in cars where a passenger under 18 is present was introduced in Wales on 1 October 2015. The statutory instrument in Wales was the Smoke-free Premises etc. (Wales) (Amendment) Regulations 2015, which was an amendment to the 2007 Act banning smoking in public places in Wales.

Beyond the UK, the Cardiff research findings around the proportion of children exposed to secondhand smoke in cars **[3.2]** were also cited in the Decree on the Air Quality in the Indoor Environment of Vehicles (2018-19), which was adopted by the Flemish Parliament, and ratified in December 2018. The decree prohibits smoking in vehicles in the presence of under-16 year olds **[5.4]**.

##### 4.2 E-cigarette legislation

In May 2015, the Health Secretary for Wales tabled the Public Health (Wales) Bill, which included a range of public health measures including: "Restricting the use of nicotine inhaling devices such as electronic cigarettes in enclosed and substantially enclosed public and work places, bringing the use of these devices into line with existing provisions on smoking" **[5.5, p2]**.

This proposal was highly controversial, sparking considerable media interest. Welsh Government's position, which was supported by the British Medical Association and Public Health Wales, included the argument that e-cigarettes could lead to increased uptake of smoking amongst young people through "renormalisation" of smoking, or by acting as a gateway behaviour. The Cardiff team's work empirically challenged these assumptions, highlighting falls in overall youth smoking rates and

limited regular e-cigarette use amongst young non-smokers [3.3]. This research was cited in Public Health England's evidence update on e-cigarettes, published in 2015 [5.6].

Charities and third-sector organisations, including CRUK, Tenovus and Action on Smoking and Health (ASH) Wales, opposed the ban on e-cigarettes, citing Cardiff's research in written evidence to the Welsh Government during the consultation period for the bill [3.3, 5.7]. Suzanna Cass, CEO of ASH Wales, stated: *"Small surveys, including our own, suggested that regular youth e-cigarette use was rare and confined to smokers. Graham [Moore]'s 2015 paper was however the first large, peer-reviewed, nationally representative study of young people's e-cigarette use, and challenged policy-makers assumptions that e-cigarettes were re-normalizing smoking in the UK... Hence, this provided important and timely evidence for ASH Wales, and a broader consortium of third sector and other partners, in opposing this aspect of the bill"* [5.8].

Jon Antoniazzi, Policy Officer for Tenovus, summarised the Welsh cancer charity's position in a media statement to ITV Wales: *"We recognise the concerns raised around renormalisation of smoking and also the introduction of a new generation to nicotine addiction, however these concerns have not been borne out in evidence from leading experts from Cardiff University... Tenovus Cancer Care believes that Welsh Government should take this body of evidence into account and reconsider its position on legislating to ban the use of e-cigarettes in enclosed spaces"* [5.9].

Following the consultations, the original Public Health (Wales) Bill was not passed into law. The contentious rules relating to banning e-cigarettes in enclosed public spaces were removed from a new draft of the Bill, demonstrated by the Marshalled List of Amendments to the Public Health (Wales) Bill, which included several instructions to "leave out" reference to "nicotine inhaling devices in workplaces and public places" [5.5, p344-347]. This new draft of the Bill passed into law and became the Public Health (Wales) Act 2017 [5.5]. Dr Chris Roberts, Deputy Chief Social Research Officer, Welsh Government, commented: *"At the time of the Bill's initial introduction, this [CHETS Wales 2] was an important piece of evidence to fill a key knowledge gap. The availability of well conducted research and a robust national dataset shouldn't be underestimated, with the findings being influential in discussions involving Welsh Government officials, Ministers and Assembly Members"* [5.10].

Outside Wales, collaborative research on e-cigarettes from the Cardiff team [3.4] was cited in a strategy document jointly produced by ASH New Zealand and End Smoking New Zealand in 2019, designed as a lobbying document to increase momentum aligned to the New Zealand Government's aim to reduce smoking prevalence to <5% by 2025. *A Surge Strategy for Smokefree Aotearoa 2025* focusses specifically on the benefits of e-cigarettes in supporting smokers to quit, and uses the Cardiff research to allay fears that e-cigarettes lead to renormalisation of smoking and encourage smoking uptake amongst young people [5.11, p.48]. The New Zealand Government subsequently noted the importance of "supporting smokers to switch to significantly less harmful alternatives" [5.11, p.66], and in November 2020 passed the Smokefree Environments and Regulated Products (Vaping) Amendment Act 2020 [5.11, p.78]. The New Zealand Ministry of Health Manatu Hauora website describes how *"The Act strikes a balance between ensuring vaping products are available for smokers who want to switch to a less harmful alternative and ensuring these products aren't marketed or sold to young people"* [5.11, p.149]. The 2015 Public Health England report on e-cigarettes, which cited the Cardiff evidence [5.6], is referred to specifically in the Cabinet documents discussing the amendments. This report formed a key part of the evidence base showing that vaping does not act as a gateway to smoking for young people [5.11, p.69].

Cardiff's repeated national surveys of school age children in Wales provided robust datasets that informed two key pieces of public health legislation in Wales, as well as similar policies in Belgium and New Zealand.

## 5. Sources to corroborate the impact (indicative maximum of 10 references)

[5.1] Welsh Government (2017), *Tobacco Control Delivery Plan for Wales 2017-2020*

[5.2] Moore G, Moore L, Ahmed N, Littlecott H and Holliday J. (2014). *Exposure to Secondhand Smoke In Cars and E-Cigarette Use Among 10-11 Year Old Children in Wales: CHETS Wales 2 - Key Findings Report*. Welsh Government analysis for policy 71/2014



- [5.3]** Evidence of Cardiff research being influential in the Smoke-free Premises etc. (Wales) Amendment Regulations 2015: **a.** Explanatory Memorandum, **b.** Mark Drakeford quoted in: 'Smoking in cars with children will be banned in Wales', BBC News, 15 July 2014
- [5.4]** Flemish Government decree on the air quality in the indoor environment of vehicles
- [5.5]** Public Health (Wales) Act 2017 research briefing, with the Explanatory Memorandum for the Public Health (Wales) Bill 2015 including the original intention to restrict e-cigarettes in line with tobacco cigarettes, paragraphs 49 and 50. Also includes the Marshalled List of Amendments.
- [5.6]** Public Health England (August 2015), *E-cigarettes: an evidence update*
- [5.7]** Consultation responses from ASH Wales, Cancer Research UK and Tenovus
- [5.8]** Testimonial from Suzanna Cass, CEO, Action on Smoking and Health (ASH) Wales
- [5.9]** Jon Antoniazzi, Policy Officer, Tenovus quoted in 'Cancer charity calls for Welsh Government U-turn on e-cigs', ITV Wales News, 19 August 2015
- [5.10]** Testimonial from Deputy Chief Social Research Officer, Welsh Government
- [5.11]** Smokefree Aotearoa 2025: including Bates C, Beaglehole R, Laking G, Sweanor D, Youdan B. (2019). *A Surge Strategy for Smokefree Aotearoa 2025: The role and regulation of vaping and other low-risk smokefree nicotine products*. Auckland: ASH New Zealand and End Smoking New Zealand; and the Smokefree Environments and Regulated Products (Vaping) Amendment Act.