An overview of progress on reducing second-hand smoke exposure in Northern Ireland and policy options for the future

A report to inform the end-of-term review of the Northern Ireland Tobacco Control Strategy 2012-2022

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Developed by Institute for Social Marketing and Health at the University of Stirling for the Institute of Public Health in Ireland and the Department of Health in Northern Ireland

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Executive Summary

Executive summary

Second-hand cigarette smoke (SHS) is known to cause a wide range of ill health and disease. The burden is likely to be greatest among our most vulnerable including those with pre-existing illness such as respiratory and heart disease. SHS can also cause acute and long-term consequences for children. Northern Ireland has been on a long journey to protect her population from the dangers of SHS exposure. Gone are the days of smoky pubs, cinemas and offices. The *Ten-Year Tobacco Control Strategy For Northern Ireland* looked to continue this journey with one of the three key aims of that policy being "protecting people from tobacco smoke". This report examines progress towards that aim over the past decade. It reviews evidence from policy documents, reports, survey data and primary research, in order to provide an overview of how exposure to SHS in different settings and among different populations has changed since 2012.

There has been progress in introducing policy and regulation to reduce the number of settings where non-smokers are exposed to SHS. Legislation to prohibit smoking in vehicles carrying children came into force in February 2022, while measures to ban smoking across all Health and Social Care (HSC) Trust sites were introduced in 2016. Awareness raising through national campaigns have focused on smoking cessation or prevention of initiation, with some local measures targeting smoking at school entrances and parks.

Compliance with the public space restrictions introduced in 2007 continues to be high and most exposure in the workplace and leisure settings has been reduced to passing or incidental SHS. There are a small number of exceptions, including workplace vehicles, outdoor hospitality settings where definitions of enclosed spaces continue to be stretched, and health care workers who visit patients at home. There is a need for a future strategy to continue to tackle these settings and work towards protecting the workforce from exposure to SHS. No-one should have to breathe SHS while at work.

Northern Ireland gathers world-leading, longitudinal survey data on smoking and smoking-related behaviours through the Health Survey Northern Ireland (HSNI) and the Young Persons' Behaviour and Attitudes Survey (YPBAS). These data show some marked changes in population level exposure to SHS. Over the past decade the proportion of homes where smoking is permitted indoors has fallen from 28% in 2011/2012 to 14% in 2018/2019. This is a significant achievement that should be celebrated. It represents approximately 114,000 homes where smoking is no longer viewed as the social norm within the space of just 7 years. However, these changes have disproportionately benefited those living in wealthier areas: children living in poorer areas are less likely to have experienced reductions in SHS exposure at home.

In terms of future focus, it is important that the next strategy recognises the need to continue to tackle smoking in the home. Those living in the remaining 1 in 7 smoking-permitted homes across Northern Ireland will breathe concentrations of SHS often much higher than those measured in the smoky pubs of a bygone era. They will do so for many hours of their day and, as a result, be at much higher risk of cancer, stroke, respiratory disease and heart disease. Future strategy should commit to setting bold targets to drive down both the prevalence of smoking and the proportion of children and adults who live in smoking-permitted homes. These include consideration of a tobacco endgame with policies that further restrict smoking in indoor spaces as well as investment in mass media

campaigns to continue to shift social norms and support people who smoke to make their homes smoke-free. Further, objective measures of SHS exposure such as collecting salivary cotinine in an annual nationally representative survey will bolster SHS data collection and policy evaluation data by establishing a monitoring system to track population levels of SHS exposure.

Policy Considerations

The following policy considerations are proposed for the next tobacco control strategy in Northern Ireland in relation to protecting the population from the harms of SHS.

Policy Targets

1. Set a target for Northern Ireland to become a tobacco-free generation (<5% prevalence) by 2035.
2. Create measures to protect home health care workers who are exposed to SHS when visiting patients' homes.

Smoking Cessation Programmes

3. Continue investment in provision and delivery of smoking cessation services, with particular targeting of support to smokers within socio-economically deprived communities, pregnant women and parents of children.
4. Generate local research capacity to develop and test interventions including enhanced NRT provision, very brief advice and financial incentives to help create smoke-free homes.

Data & Evidence

5. Continue to gather data on SHS exposure and public opinion related to possible control measures via longitudinal surveys (HSNI and YPBAS).
6. Develop a new, cross-sectional annual survey of children's salivary cotinine levels to provide objective measurement of SHS exposure.
7. Set targets (aligned with #1) for measured reductions in children's salivary cotinine (e.g. <1% of children with measurable cotinine by 2035).

Public Awareness Campaigns

8. Invest in mass media campaigns to educate, encourage and empower smokers and non-smokers to create a smoke-free home and to make smoking indoors socially unacceptable.

Figure 1. Second hand smoke exposures in Northern Ireland

People are exposed to second-hand smoke in different settings

Home

Between 2012 and 2019 around 114,000 homes moved from permitting smoking to being smoke-free; 6 out of every 7 homes are now smoke-free.

- Smoking indoors is twice as common in homes of people living in deprived areas and the inequality gap has widened over time.
- 11- to 17-year-olds in the most deprived areas were twice as likely to live with an adult smoker and over one third of these children indicated that adults smoked in the home.
- There was a less impressive decline in homes permitting unrestricted smoking 'anywhere' - from 11% in 2010-2012 to 7% by 2018/19.

Cars

9% in the most deprived areas permit smoking in the family car compared to 7% of those living in the least deprived areas.

- Smoking in the family car is more commonly allowed among people living in deprived areas. The inequality gap has fluctuated over time but has substantially reduced in the most recent year of data.

Outdoor settings (pubs, restaurants etc)

- Around one in five adults report regular exposure to SHS in "Outdoor smoking areas of pubs/restaurants/cafes", with little change over time.
- The proportion of those exposed to SHS who indicated that SHS 'bothered' them steadily rose from 36% in 2015/16 to 46% in 2019/20.

Workplaces

Offices, factories etc

- A recent job-exposure matrix for workers in the UK has highlighted that in 2020 approximately 1 million workers are likely to experience some degree of exposure to SHS while performing their job.
- Occupations with the highest frequency and intensity of exposure include those where workers carry out work tasks in private, domestic settings: including care workers and home carers.

Figure 2. Public attitudes and beliefs about SHS

Attitudes to second hand smoke in Northern Ireland are changing over time.

In 2019/2020, more than half (55%) of respondents strongly agreed that **children** are more at risk from passive smoking than adults', up from 36% in 2010/11.

One in 10 respondents (10%) in 2019/2020 responded that they didn't know/disagreed or strongly disagreed with this statement.

Around three-quarters (72%) of respondents either strongly agreed or agreed with the statement 'Babies exposed to passive smoking are more at risk to cot death' (up from 67% in 2010/11).

Around one-fifth (21%) said they didn't know.

In 2019/20 79% of adults in Northern Ireland either strongly agreed or agreed that "**Outdoor areas** commonly used by children, such as playgrounds and beaches, should be smoke free".

in 2019/20 almost all (98%) respondents either strongly agreed (81%) or agreed (17%) with the statement "I support a ban on smoking in **cars** when children are present". This level of support had been sustained since 2015/16 when 97% agreed with this statement.

Figure 3. Harms from second hand smoke

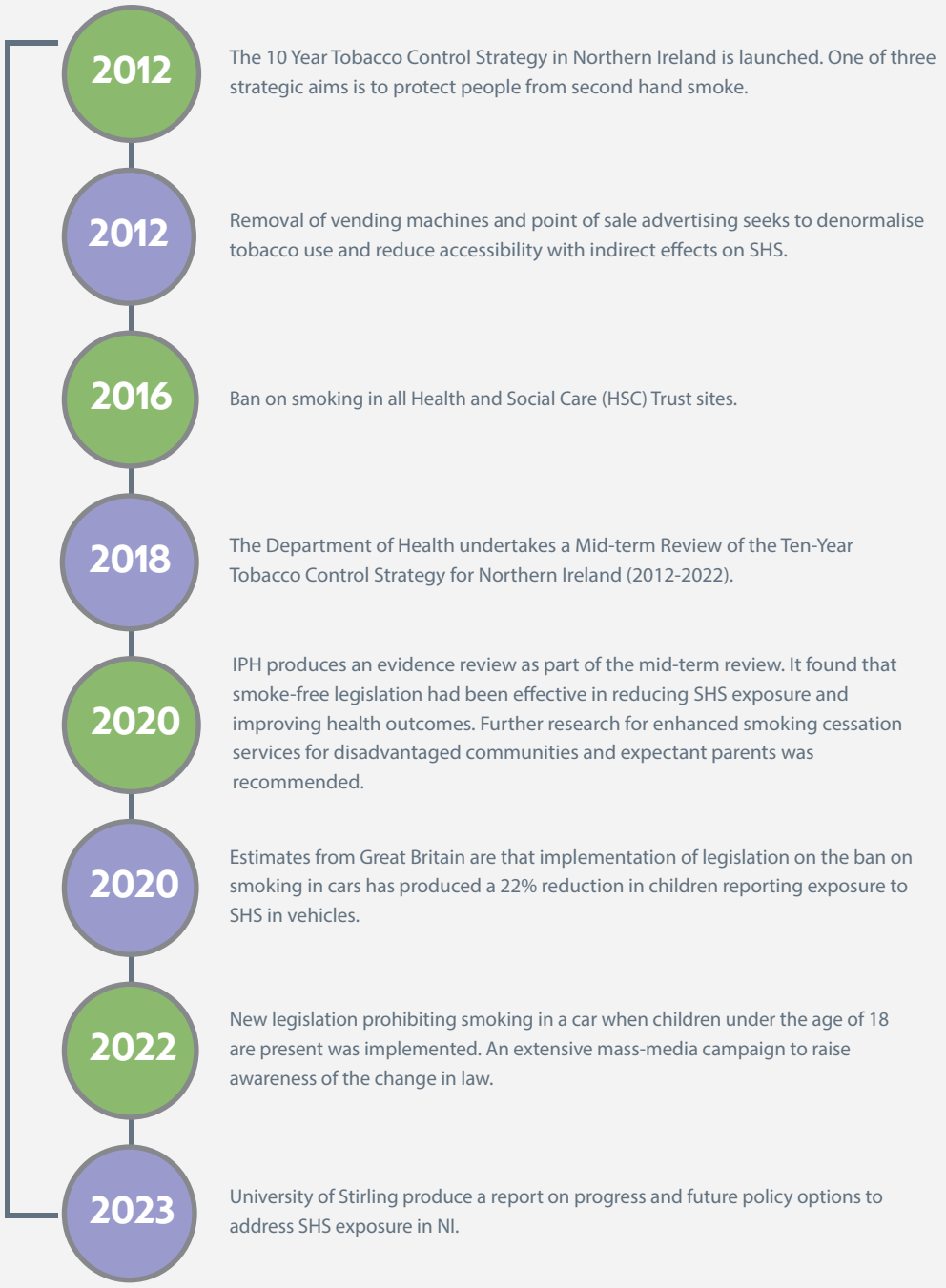
17% of the population aged 16 and over in Northern Ireland currently smoke

Second-hand smoke is harmful to health, but some groups are particularly vulnerable including babies and children, pregnant women and people with chronic disease like heart disease, lung disease and diabetes.

Around one-third (33%) of mothers in Northern Ireland reported living in a household where at least one person smoked during their pregnancy and 7% reported living with someone else who smoked in the home with their baby, but these estimates have not been updated since 2010.

Second hand smoke exposure contributes to respiratory infections and asthma in children and negatively effects the development of their lungs.

Figure 4. Key milestones on reducing secondhand smoke exposures in Northern Ireland within the current strategy period (2012- present)



1 Background

1. Background

Breathing second-hand cigarette smoke (SHS) is estimated to cause over 880,000 premature deaths each year globally,[1] with exposure more common in disadvantaged households.[2] Breathing other people's tobacco smoke increases the risk of heart disease, stroke, lung cancer and other cancers by about 20-40% for those who are regularly exposed.[3] Within Northern Ireland the health effects of SHS are largely unquantified, but the most recent evidence from UK-wide estimates[4] would suggest that, within Northern Ireland, 100-300 deaths per annum may be attributed to SHS. The burden of mortality and morbidity from SHS is likely to fall most heavily on non-smokers who have pre-existing respiratory and cardiovascular disease.

SHS also poses particular, long-term health problems for children who have smaller and still developing respiratory systems. Globally, deaths in childhood account for 28% of SHS-related deaths and 61% of the estimated 11 million disability-adjusted life-years lost per year.[5] Early life exposure to SHS is associated with impaired intra-uterine growth, smaller lungs, more respiratory infections, and exacerbations of asthma and illnesses such as glue ear.[6] A child exposed to SHS in the home is also more likely to grow up to become a teenage and adult smoker,[7] suffering many of the health risks associated with direct smoking. In 2010 the Royal College of Physicians estimated that children breathing SHS across the UK created over 300,000 primary care consultations and over 9,000 hospital admissions costing the NHS about £23.3 million[8] – assuming a similar impact in Northern Ireland on a population basis this suggests SHS leads to approximately 9,000 GP visits and 270 hospital admissions for children in Northern Ireland every year.

The World Health Organisation Framework Convention on Tobacco Control Article 8[9] calls for nation states to protect their populations from exposure to SHS and for "protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, as appropriate, other public places", and Northern Ireland has taken extensive measures to reduce exposure to SHS particularly since the introduction of smoke-free spaces in 2007. The most recent 10 Year Tobacco Control Strategy published by the Northern Ireland Department of Health, Social Services and Public Safety in 2012[10] included "protecting people from tobacco smoke" as one of the three key aims, and with that, a range of policies and proposals that aimed to help reduce non-smokers' exposure to SHS and drive down the burden of ill-health associated with breathing other people's smoke.

2 Methods

2. Methods

The aim of this work is to:

- provide expert reflections on progress made in Northern Ireland on reducing SHS exposure since publication of the 10 Year Tobacco Control Strategy for Northern Ireland 2012;
- propose priority actions for the future to support further reductions in SHS exposure in Northern Ireland.

This report draws on a range of data sources identified in October 2022 by Policy Team staff at the Institute of Public Health in Ireland. Details of this briefing document outlining relevant SHS policy and legislative measures in Northern Ireland, together with associated strategy review documents and other reports relevant to SHS exposure are provided in Appendix A.

This report provides a rapid, non-systematic, reflective review of these materials based on our current knowledge of the global policy and research agenda relating to population exposure to SHS, utilising the authors' experience of the topic area and scientific evidence across a combined total of over 30 years. This review was carried out during November 2022.

This report provides consideration of progress towards SHS exposure reduction made in Northern Ireland since the publication of the 2012 Tobacco Strategy in relation to the following themes:

- Regulation and policy;
- Government programmes and services;
- Public awareness and behaviour change campaigns;
- Data, targets and monitoring systems;
- Research and innovation.

The report provides observations and reflections on progress by environment type:

- Homes;
- Cars;
- Workplaces;
- Leisure settings;
- Outdoor spaces.

and also by **population group** focussing on:

- children;
- pregnant women;
- chronically ill;
- and routine & manual workers/disadvantaged groups.

Throughout these reflections, and where appropriate, we have included comparative observations in relation to progress and measures to reduce SHS exposure in England, Wales and Scotland, and EU countries.

The final section includes reflections on potential policy options for future actions to further reduce population exposure to SHS, and how these may be integrated to any tobacco end-game policy in the next 10 years.

3 Results

3. Results

3.1 Themes

3.1.1 Regulation and policy

The key regulatory measures that have been implemented during the period under consideration can be summarised as follows:

- Indirect policies to aid cessation and/or reduce initiation such as restrictions on sale of cigarettes at vending machines (2012); restrictions on the display and advertising at the point of sale (2012); standardised packaging and retail licensing of those permitted to sell cigarettes. All these measures are part of a policy framework to reduce consumption, minimise initiation of new smokers, encourage cessation and generally assist in lower population smoking prevalence. They are not directly targeted at reducing the SHS exposure experienced by non-smokers, but clearly reduced numbers of smokers and reduced consumption are likely to indirectly lower the frequency of contact with SHS.
- A ban on smoking on all Health and Social Care (HSC) Trust sites (2016). Smoking within indoor public spaces, including health and social care sites, was part of the 2007 restrictions but smoking continued to be permitted on the grounds of such sites at designated smoking shelters and around entrance ways until this was implemented across all HSC Trust sites in March 2016.
- Smoking in cars carrying children under the age of 18 (2022). This was implemented in February 2022 together with an extensive mass-media campaign[11] to raise awareness of the change in law.
- Northern Ireland has no direct policy measures to prohibit smoking in the home.

3.1.2 Government programmes and services

A number of government programmes and initiatives have helped deliver progress in relation to reducing population exposure to SHS since the publication of the previous strategy. A selection of measures and pathways are noted below.

- Smoking cessation services operate through Health Care Trusts and via the Public Health Agency's gateway site at www.stopsmokingni.info which have an indirect impact on SHS exposure in all settings and are particularly effective in reducing non-smokers' exposure to SHS at home (delivery of these cessation services are not considered in detail in this report). The latest 2021/22 data from the Health Survey of Northern Ireland[12] suggest an adult smoking prevalence of 17%, broadly similar to the 2019/20 rate,[13] and showing a marked reduction since 2010/11 when the figures stood at 24%. This level of smoking is slightly above the GB-wide smoking prevalence rate of 14.5% from ONS 2020 data[14] and the 15.2% level in Scotland in the most recent Smoking Toolkit Survey.[15]
- Voluntary encouragement of organisations to expand and provide signage about smoke-free areas.
- Enforcement of regulated areas such as workplaces and hospitality settings, and vehicles.

3.1.3 Public awareness and behaviour change campaigns

- Awareness raising campaigns have tended to focus on encouraging quitting and preventing initiation. These education and information campaigns have involved a range of stakeholders in Northern Ireland including the Department of Health, Cancer Focus (Northern Ireland), Roy Castle Lung Cancer Foundation, and other third-sector organisations.
- Smokebusters[16] is a continuing education scheme aimed at children aged 10-12 delivered through schools with the aim of equipping young people with the knowledge and skills to resist the temptation to smoke and remain smoke free throughout their lives.
- Dead Cool'[17] was a similar smoking prevention programme for children aged 13-14 years of age that was trialled in Belfast schools in 2014.
- Campaigns around quitting: A mass media campaign on TV, radio, outdoor, washroom and online advertising called "Things to do before you die"[18] ran during 2011. This was followed by the "Make them Proud" public campaign[19] in 2013 which focussed on the family impact of smoking, particularly around the emotional worry caused to children who have parents who smoke. The Public Health Agency also launched a campaign in 2015[20] highlighting the 'one in two' risk of dying from smoking and using the story of Gerry Collins to encourage smokers to make a quit attempt. Information provision to gateway cessation services through the website www.want2stop.info also provided a free 'Quit Kit' to help stop smoking for 28 days.
- The mass media campaign around the change in law in relation to smoking in cars carrying children in January-February 2022.[11]

3.1.4 Data targets and monitoring systems

The annual Health Survey Northern Ireland (HSNI) and the Young Persons' Behaviour and Attitudes Survey (YPBAS) data both provide high quality longitudinal data on SHS exposure. These surveys provide insights into the proportion of different population segments that experience SHS and detail how this exposure occurs and in which environments. The data rely on self-report and it is worth noting that there are no objective measures of SHS exposure in terms of, for example, salivary cotinine data that is collected in other countries. There is scope for establishing a monitoring system in future years to help objectively track population levels of SHS exposure.

3.1.5 Research and innovation

Prior to the current Tobacco Control Strategy there was a body of research activity that examined SHS exposure specifically within the Northern Ireland context. This was generally focussed on the introduction of smoke-free legislation in 2007 with several papers and reports considering changes in hospitality settings. [21,22] Since 2012 there is a much more limited amount of research specific to SHS exposure in Northern Ireland with this review identifying a single paper published in 2012 that considered children's exposure to SHS in Northern Ireland as part of a three nation study.[23] In addition, there have been a small number of 'grey literature' reports evaluating specific information campaigns in terms of population reach and recall (for example [17]). There is a need for greater collaboration with academic institutions to analyse and make full use of the Health Survey of Northern Ireland and YPBAS data that are generated and to develop research capacity on tobacco control work within Northern Ireland.

3.2 Progress by environment type

The Health Survey Northern Ireland: Smoking Trends 2010/11 to 2019/20[24] provides longitudinal data from 2015 onwards on the proportion of adults responding positively to the question: "Are you regularly exposed to other people's tobacco smoke?" This has remained static at about 37%, but with some changes in how commonly exposure is reported in different environments.

3.2.1 Homes

Data[24] showing marked changes in whether smoking is permitted in homes across Northern Ireland is available from 2010/11 through to 2018/19 via the question 'Is smoking allowed in your house?' The percentage replying 'No, not at all' has risen from a stable 72% in 2010-2012 to 86% in 2018/19. This is a major achievement over the life of the Tobacco Control Strategy. Given that there are an estimated 814,000 homes in Northern Ireland[25] this suggests that between 2012 and 2019 almost 114,000 homes moved from permitting smoking to being smoke-free, and means that 6 out of every 7 homes now classify as smoke-free. It appears that this shift has come from those households where smoking was previously restricted to certain places and/or special occasions which reduced from 17% in 2010-2012 to 7% by 2018/19. The fraction of homes permitting unrestricted smoking 'anywhere' saw a much smaller fall from 11% in 2010-2012 to 7% by 2018/19. Additional questions introduced by 2015 suggest that about half of those who report smoking is allowed in their house class their exposure as 'regular'. The proportion of adults indicating "regular exposure to SHS in their own home" fell from 9% in 2015/16 to 6% by 2019/20. A similar reduction is evident in terms of exposure occurring in other people's homes (from 15% in 2015/16 to 12% in 2019/20).

Permitting smoking within the home is highly patterned by deprivation. People living in poorer areas are more likely to permit smoking in the home. While there have been reductions in the proportion of homes where smoking is permitted across all deprivation quintiles over the past decade, the social patterning has become more evident. In 2011/12 those living in the most deprived quintile were approximately twice as likely to live in a home where smoking was allowed compared to those in the least deprived quintile (38% v 21%). By 2018/19 this gap had increased to more than 2.5 times (23% v 9%) suggested a widening of inequality around SHS exposure. The 2019 YPBAS data[26] show similar patterns with 47% of children in the most deprived quintile indicating that they live with adults who smoke compared to 22% of children in the least deprived quintile. For children who live with smoking adults 36% in the most deprived areas indicated that those smokers smoked inside the home, compared to 23% for children living with smokers in the least deprived quintile. The same survey shows a stark socio-economic gradient in relation to the question 'Are visitors allowed to smoke inside your home' with 20% for the most deprived quintile compared to less than 8% in the most affluent areas.

The HSNI[24] also provides data from smokers on where they typically smoke and this demonstrates a longitudinal pattern of reductions in smoking in the home, with 50% of smokers saying they smoked inside their home in 2015/16 dropping to 36% by 2019/20. Smokers who smoked inside other people's homes also reduced from 18% in 2015/16 to 8% by 2019/20. There has clearly been a major shift in how many smokers now smoke within the home setting and as this, together with the car, is likely to be the setting where smoking generates the highest concentrations of harmful pollutants this change in the social norm is welcome.

The benefits of reduced numbers of people exposed to SHS in the home are likely to feed through to improved respiratory health, fewer primary care and hospital consultations and general reductions in morbidity and mortality from SHS-related diseases: these benefits will be both immediate in terms of reduced acute illness (e.g. exacerbations of asthma and COPD)[25,26] and long-term (e.g. fewer cases of lung cancer)[27, 28].

Reduced smoking in the home also has the potential to reduce uptake of smoking in the next generation. Evidence suggests that children will model adult behaviours, particularly those associated with pleasure.[27,28] Smoking that involves the 'chore' of having to go outside to satisfy a habit is less likely to be seen as something that children will want to mimic and model.

The data available in Northern Ireland's surveys do not provide information on the frequency of smoking or the concentrations of SHS that non-smokers experience within the home setting but research from Scotland suggests that homes where smokers live and where smoking is permitted inside have fine particulate matter ($PM_{2.5}$) concentrations typically about ten times higher (31 µg/m^3) than those found in non-smoking homes (3 µg/m^3). Combining these data with the time periods that people spend within their home, research has suggested that the shift to a smoke-free home can reduce the amount of $PM_{2.5}$ that a non-smoking adult inhales by 74% and for young children and non-working adults the figure is likely to be closer to 80-90%.[29]

There have been no policy measures or specific campaigns targeting the harms of SHS exposure in the home or the benefits of adopting a smoke-free home in Northern Ireland during the time of the most recent Tobacco Control Strategy. This is in contrast to Scotland where a well-funded and comprehensive mass-media campaign (Take it Right Outside – TiRO)[30] was launched in 2014 alongside a ministerial target to reduce the proportion of children who were exposed to SHS at home from a 2012 baseline figure of 12% to 6% by 2020.

3.2.2 Cars

New legislation prohibiting smoking in a car when children under the age of 18 are present was implemented on 1st February 2022. There were already high levels of awareness of the benefits of providing children with a smoke-free environment in the car as indicated in HSNI data[24]: in 2019/20 almost all (98%) respondents either strongly agreed (81%) or agreed (17%) with the statement "I support a ban on smoking in cars when children are present". This level of support had been sustained since 2015/16 when 97% agreed with this statement. While it is encouraging that this measure has now been implemented, the data suggest that policy implementation was very much 'behind the curve' in terms of public opinion and the steps being taken elsewhere in the British Isles with England and Wales introducing this in October 2015, and Scotland bringing in measures in December 2016. Data gathered in 2020 in England, Wales and Scotland suggest that implementation of legislation has produced a 22% reduction in children reporting exposure to SHS in vehicles.[31]

Health survey data in Northern Ireland showed a socio-economic gradient in relation to smoking in the family car with those living in the most deprived neighbourhoods about twice as likely as those in the wealthiest areas to permit smoking until 2018/19 (13% v 7%).[32] At that point in time, this socio-economic gap had shown signs that it had increased from 2011/12 when those permitting smoking in the family car in the most deprived quintile numbered 22% compared to 15% in the least deprived quintile. The 2019/20 data

suggests that this gradient has markedly reduced with 9% in the most deprived areas permitting smoking in the family car compared to 7% of those living in the least deprived areas.[24]

There was an extensive mass media public awareness campaign[33] highlighting the change to the law on smoking in cars in Northern Ireland that ran from the 17th January to the 20th February 2022, and an evaluation of public awareness indicated high levels of reach (total campaign exposures: 22 million) and impact (64% of adults reported seeing/hearing at least one advert and 86% indicating the adverts were very or somewhat thought provoking).[34]

Smoking in workplace vehicles was prohibited as part of the 2007 smoke-free legislation but continues to be one of the key workplace environments where SHS exposure occurs and where there is considerable room for better communication and enforcement. The most recent data from 2019/20[24] indicates that about 7% of adults experience some degree of exposure to SHS at work and some of this is likely to occur when travelling in vehicles where someone smokes.

3.2.3 Workplaces

There has been a widespread shift in social norms since the introduction of smoke-free public places and workplaces in April 2007 and these restrictions are now mostly self-enforcing for the majority of workplaces. There is evidence from elsewhere that smoking in and around building entrance areas leads to some SHS exposure and there is the recent added complexity of e-cigarette use being permitted in some settings that can make enforcement more difficult. There are also examples of confusion about where smoking is permitted particularly in relation to semi-enclosed outdoor spaces in hospitality settings, with data from other countries showing increased levels of fine particulate matter associated with smoking in these semi-outdoor spaces.[35]

A recent job-exposure matrix for workers in the UK[36] has highlighted that in 2020 approximately 1 million workers are likely to experience some degree of exposure to SHS while performing their job. Occupations with the highest frequency and intensity of exposure include those where workers carry out work tasks in private, domestic settings: including care workers and home carers. This workforce is likely to account for a considerable proportion of those non-smokers who do not live with a smoker but who continue to experience significant and regular SHS exposure. Policy measures to protect workers who provide care to our communities should be a priority within the next Tobacco Control Strategy.[37]

3.2.4 Leisure settings (indoors and hospitality outdoors)

Again, the shift in social norms means that exposure to SHS in most indoor leisure spaces is rare. Some restaurants and bars have outdoor spaces where smoking rules may be 'stretched' particularly around terraces and covered outdoor spaces and SHS exposure may occur in these contexts, at low concentrations. The data from the HSNI suggests a high and static (between 19 and 23% during 2015-2020) percentage of adults continue to report regular exposure to SHS in "Outdoor smoking areas of pubs/restaurants/cafes".[24] Recent data from across Europe has shown that measurable levels of nicotine are detectable in the air of 94% of outdoor spaces in 220 hospitality venues sampled. This included data from Ireland (95%) and the UK (90%).[38] A future strategy may wish to look at providing revised and clear guidance about the definition of enclosed areas in outdoor drinking areas and beer gardens, and to ensure that enforcement continues to be adequately resourced within the hospitality sector.

3.2.5 Outdoor spaces

The Smoke Free School Gates campaign[39] in 2015 sought to encourage parents and carers to not smoke around their children. This campaign installed smoke-free signage at over 100 primary schools in Northern Ireland.

A ban on smoking on all Health and Social Care Trust sites was implemented in March 2016. This measure aimed to reduce smoking in the grounds and around entrances of hospitals and other health and care facilities. This measure was implemented several years before similar national restrictions were put in place in Wales (March 2022) and Scotland (September 2022). Smoke-free NHS Trust grounds are the subject of local regulation and are more piece-meal in England: data from 2019 suggests about two-thirds of acute trusts in England prohibited smoking on site by that point.[40]

The increasing rarity of exposure to SHS for many non-smokers means that incidental or passing exposure is often noted in outdoor spaces and can then be perceived as being particularly annoying. The opposite of 'olfactory fatigue' occurs: the rarer the exposure becomes the more noticeable it is. The Health Survey of Northern Ireland[24] indicates that those reporting SHS exposure are less tolerant of the exposure and find the experience more annoying than previously. The proportion of those exposed to SHS who indicated that SHS 'bothered' them steadily rose from 36% in 2015/16 to 46% in 2019/20. It is possible that this can be explained by two factors: (a) increased awareness of the harms caused by SHS; and (b) less frequent exposure at lower concentrations making the smell of SHS more noticeable when exposure does occur.

Public opinion appears to be ahead of policy in relation to prohibiting children's exposure to SHS in parks, school entrances etc with strong levels of support for restrictions across most of these environments. In 2019/20 79% of adults in Northern Ireland either strongly agreed or agreed that "Outdoor areas commonly used by children, such as playgrounds and beaches, should be smoke free".[24] It is worth noting that exposure in these outdoor settings is typically brief and at very low/often unmeasurable concentrations (the odour threshold is much, much lower than measurable concentrations of nicotine and $PM_{2.5}$ using most measurement methods)[41,42]. These data do not determine if these strong public opinions are based on protecting children from breathing SHS or if they are centred on preventing children seeing (and consequently modelling) adult smoking behaviour in these settings. Qualitative research to understand the motivation behind public support for smoking restrictions would be beneficial.

3.3 Progress by population groups

3.3.1 Children

The main sources of children's exposure to SHS occur as a result of living with a carer or adult family member who smokes. By dose, most exposure is from: (a) the family home; (b) visiting others' homes; (c) and within vehicles.

Since the introduction of the Ten Year Tobacco Control Strategy for Northern Ireland[10] in 2012, the number of respondents in Northern Ireland stating that smoking is prohibited in the family home has increased, from 78% (2012/13) to 86% (2018/19).[24] Cessation support for parents combined with general reductions in population smoking prevalence have played a role. Changing social norms about smoking within indoor settings has increased the proportion of smokers who do not smoke within the home.

Whilst data from the YPBAS survey shows a significant decline in the number of 11-16 year old children living in a household with a smoker over a similar period, 32% of young people stated than an adult in their household smokes in 2019, compared to 42% in 2010.[26] Of those reporting they live with an adult who smokes almost a third (30%) stated that smoking takes place in the family home in 2019, compared to half (49.8%) in 2010. Fourteen percent of 11-16 years olds reported visitors are allowed to smoke in their home in 2019, compared to 36% in 2010. Analysis by deprivation quintile suggests substantial underlying inequalities in children's exposure levels. In 2019, nearly half (47%) of 11–16-year-old children in areas of highest deprivation report one or more adults in the family smoke, and 36% (of the 47%) report home smoking. In the most affluent areas, approximately 1 in 5 (22%) of children report one or more adults in the family smoke, and 23% (of the 22%) report smoking in the home.[26]

There are several possible reasons for the discrepancies observed between adult and 11-16 year olds reporting of the prevalence of smoking in the home, including the representativeness and size of both survey samples (and sub-samples), limitations of self-report and changing social norms which may increase bias towards reporting smoke-free home rules because of reduced acceptability of indoor smoking, and different interpretations of what constitutes a smoke-free home/fluidity of smoke-free home rules. We could not find published data on self-reported SHS exposure in the home by primary school aged children.

Of the 32% of 11–16-year-olds stating that an adult in their household smokes in 2019, 15% stated that the adult smokes in the family car, and 14% stated that the adult smokes in the family car when no children are present. Sixty percent of respondents stated the family car was smoke-free.[26] Again, adult reporting rates differ considerably. In 2019/2020, the proportion of HSNI respondents who had a family car and said that smoking was not allowed in the car was 91% in the most deprived areas and 93% in the least deprived areas, compared to 78% and 85% in 2011/12.[24]

The introduction of legislation in February 2022 making it illegal to smoke in a car with children present brings the country into line with other regions of the UK and the Republic of Ireland. Very few formal evaluations on smoking bans in private vehicles have been published to date. Whilst evaluating the efficacy of smoke-free vehicles legislation is difficult given the family car constitutes a (semi) private space, the potential impact of the legislation is about changing people's behaviour so that the number of children exposed to SHS is reduced. It remains uncertain if people will over time become less concerned with adhering to the legislation - particularly if there is a lack of enforcement, which could mean rates of exposure may subsequently revert to higher levels. It will therefore be important to continue to gather data from adults and children on children's reported exposure to SHS in the car in future YPBA surveys.

Recent data suggests that adult attitudes to children's exposure to SHS is also changing. In 2019/2020, more than half (55%) of respondents strongly agreed with the statement 'Children are more at risk from passive smoking than adults', up from 36% in 2010/11. However, one in 10 respondents (10%) in 2019/2020 responded that they didn't know/disagreed or strongly disagreed with this statement. Around three-quarters (72%) of respondents either strongly agreed or agreed with the statement 'Babies exposed to passive smoking are more at risk to cot death' (up from 67% in 2010/11), but around one-fifth (21%) said they didn't know.[24] Together, these findings suggest that public understanding regarding the health risks associated with children's SHS exposure has

increased, potentially in line with changing societal norms, however, there are still some gaps in knowledge.

3.3.2 Pregnant women (and their partners who smoke)

All pregnant women now have their exhaled breath carbon monoxide levels measured in their booking clinic/ante natal care, and whilst they can refuse, the programme has almost 100% compliance.[43] Smoking cessation support is also available. Carbon monoxide testing was to be extended from 2019, to test women prior to hospital discharge in order to improve postnatal smoke-free support. We have not been able to find any published information to confirm whether this extension has been implemented. Quitting smoking at any stage of pregnancy is associated with improved pregnancy outcomes, and also helps to prevent *in utero* exposure to SHS.

Smoking in pregnancy has one of the most notable inequality gaps across all areas of health. In 2020, the proportion of births where the mother reported smoking during pregnancy in the most deprived areas was over four and a half times the rate in the least deprived areas (21.9% v 4.7%, with the national average at 12%).[44]

Pregnant women and their partners who smoke were identified as one of three priority groups in the Strategy, for whom a range of services tailored to meet their specific requirements is necessary in order to reduce smoking prevalence. In addition, an aspirational target was included in the Strategy to reduce the proportion of pregnant women who smoke to 9% (from a baseline of 15%) by 2020. 13% of women reported they were smoking at the time of booking in 2018/19, which has fallen slightly from 15% in 2010/11,[45] but suggests action short of attaining the aspirational target outlined in the Tobacco Control Strategy.

Whilst a variety of actions were outlined through the Action Plan regarding pregnant women and smoking, no specific actions were identified in relation to SHS exposure. Data from The Infant Feeding Survey 2010 (since discontinued)[46] shows one-third (33%) of mothers reported living in a household where at least one person smoked during their pregnancy, indicating that 1 in 3 unborn babies were exposed to SHS during pregnancy. At Stages 2 and 3 of the survey (when babies were around four to six months old and eight to ten months old respectively), mothers were asked not only whether they or anyone else in the household smoked, but also whether anyone ever smoked inside the home, giving some indication of the proportion of young infants who are likely to be exposed to SHS in the home. Seven per cent of mothers reported smoking in the home at Stage 2, reducing to 3% at Stage 3, and 7% of mothers reported living with someone else who smoked in the home at Stage 2 and 3. For the first time in 2010, all mothers were asked at Stage 3 whether or not they had received any information about smoking after their baby was born. 36% of mothers said they had, with over a quarter (27%) saying they received information on the effects of smoking on their baby. Sixty-six percent had received information from a health visitor (62%) or a doctor or GP (22%).

In utero and early-life exposure to SHS is likely to have reduced over the past ten years given the downward trend in population-level smoking and increased awareness of the risks associated with SHS exposure in the home. However, we were unable to source more recent evidence on SHS exposure for mothers (and their partners), unborn babies and infants in Northern Ireland during pregnancy. It is not clear whether this information is currently sought or routinely recorded in hospital settings. Smoking cessation programmes in maternity care should include screening and documenting of SHS risks for women (and their partners) during pregnancy, and for their newborns at discharge, to improve health outcomes.

3.3.3 Chronically ill

There were no specific actions identified in the Tobacco Control Strategy for individuals with chronic illness in relation to SHS exposure. Rates of preventable and premature mortality, linked to a range of chronic illnesses, have increased in Northern Ireland. Large inequality gaps continue to persist, with the rate of respiratory mortality among under 75s in the most deprived areas over three and a half times that in the least deprived. The largest inequality gap was observed for admissions due to respiratory diseases, with the rate in the most deprived areas more than double that of the least deprived, for all ages and for those aged under 75 years. Cancer incidence has increased, but also in least deprived groups.[44]

We were unable to source data on SHS exposure in chronically ill groups, however given the higher proportion of chronic illness in more socially disadvantaged groups, and the detrimental impacts of SHS exposure on individuals with existing chronic health conditions, there are grounds for including the chronically ill as a priority group in the forthcoming Tobacco Control Strategy. Chronic illness is not always visible, and therefore smoking in the home, or in someone else's home, could impact unknowingly on individuals with chronic conditions.

There is some evidence to suggest that hospital may present a 'teachable moment' to provide parents with support to change their home smoking behaviours to reduce SHS exposure in children who are undergoing surgery and/or have a chronic illness.[47,48] There is an expectation among parents in hospital settings that healthcare professionals will enquire about their smoking, and they report that it is acceptable to do this.[48–50] Work is currently underway in England to collect evidence regarding parents and healthcare professionals views on how to successfully initiate behavioural change, to inform the development of a support package to help parents with chronically ill children change their home smoking behaviours.[51] Exploration of current practice in hospital settings regarding support to change home smoking practices to reduce SHS exposure in chronically ill children and adults would be valuable. This could then inform the development of future interventions to tackle SHS exposure in adults and children with chronic conditions.

3.3.4 Disadvantaged groups (routine and manual workers)

Smoking is one of the leading causes of health inequalities with more people dying of smoking-related illnesses in disadvantaged areas than in more affluent areas. Disadvantaged groups who smoke were identified as one of three priority groups in the Ten-Year Tobacco Control Strategy, for whom a range of services tailored to meet their specific requirements is necessary in order to reduce smoking prevalence. In addition, an aspirational target was included in the Strategy to reduce the proportion of smokers in manual groups to 20% (from a baseline of 31%) by 2020.

The latest Health Survey Northern Ireland data[12] show more than a quarter (29%) of those living in the most deprived areas smoke (down from 40% in 2010/11) compared with 10% of those living in the least deprived areas (down from 14% in 2010/11). Whilst a large self-reported decrease has been observed, only the least deprived quintile in Northern Ireland is predicted to achieve 5% average adult smoking prevalence by 2035, according to recent Cancer Research UK projections.[52] The most deprived quintile will not do so until 2050. A step change is required to achieve this.

The proportion of respondents indicating that smoking is not allowed in their home increased in all deprivation areas between 2010/11 and 2018/19. However, the proportion of respondents saying that smoking is not allowed in their home remained lower for respondents living in the most deprived areas (77%) than for those living in all other deprivation quintiles (85% up to 91% for those in the most affluent areas).[24]

The proportion of respondents indicating that smoking was allowed anywhere in their home remained unchanged in both the most and the least deprived areas between 2010/11 and 2018/19 (16-14% for the most deprived areas, and 5-4% for most affluent areas). However, it decreased more markedly for respondents living in all other deprivation quintiles.[24]

3.4. Objective monitoring of future progress

WHO FCTC Article 8[9] requires parties to monitor non-smokers' exposure to SHS. Current methods in Northern Ireland do provide some degree of data through surveys and questionnaires that gather self-report using questions such as "Are you regularly exposed to other people's tobacco smoke in any of these places?" (HSNI) and "Do the adults in your household smoke?" (YPBAS).[26] These are subject to reporting bias and likely influenced by the shifts in social norms around smoking. They also fail to integrate frequency and intensity of exposure – so incidental exposure outdoors for a couple of minutes per week may be categorised as equivalent to repeated, daily exposure to high concentrations in the home. In addition, there are discrepancies in reporting between children (11–16-year-olds) and adults surveyed – children often report being exposed to SHS in the family home, whereas adults more often indicate that no smoking takes place there. These discrepancies are also observed in survey data published in England and Scotland.

Objective measurement through the use of salivary cotinine is used to assess adult non-smokers' exposure in Scotland in the Scottish Health Survey; and for both adults and children in the Health Survey of England. The data gained from these biochemical analyses provide clear, objective information on how population exposure to SHS changes over time. Salivary cotinine avoids issues around responder bias and integrates frequency, duration and intensity to provide a value more reflective of the inhaled dose of SHS. Data from Scotland[53] has enabled comparison of adult non-smokers' salivary cotinine levels across 11 Scottish Health Surveys between 1998 and 2016, and has provided a picture of how non-smokers' exposure to SHS has reduced by 97% over that period. The percentage of non-smoking adults who had no measurable cotinine in their saliva was also shown to have increased by nearly sixfold between 1998 (12.5%) and 2016 (81.6%) and demonstrated that reductions in population exposure to SHS continued after smoke-free legislation in 2006.

Similarly, children's salivary cotinine data from the Health Survey for England[54] demonstrated that between 1998 and 2018, there was a ten-fold decline in salivary cotinine among non-smoking children, from 0.50 ng/ml to 0.05 ng/ml, and that 65.0% of children had undetectable cotinine in 2018, up from 14.3% in 1998. These type of objective measurements can provide concrete evidence of progress made in protecting non-smokers from SHS.

Cost, primarily in terms of sample administration and collection, has tended to be a barrier to gathering saliva samples at scale. Public health adaptations to Covid-19 have created new understanding of how to collect biological samples through Covid self-testing, and

there exists an opportunity to gather repeated representative data on population cotinine levels using similar low-cost, postal methods. Gathering and publicising longitudinal survey data on children's cotinine values could be combined with a mass media campaign to protect Northern Ireland's children from SHS in all settings, and to thus re-frame the tobacco endgame through the lens of protecting the next generation from the harms of tobacco smoke.

4 Opportunities for future actions to further reduce population exposure to SHS

4. Opportunities for future actions to further reduce population exposure to SHS

There are a range of measures that could be considered for any future tobacco control Strategy in Northern Ireland. This section introduces and discusses a variety of potential options.

4.1. Incremental approach

Progressively continuing the shift in social norms to reduce the acceptability of behaviour and actions that expose non-smokers to SHS through a package of measures including:

- Reducing population prevalence of smoking;
- Increasing awareness of SHS harms among both smokers and non-smokers;
- Introducing policy measures to reduce the number of (public space) microenvironments where non-smokers are likely to be exposed to SHS (e.g. restrictions around parks, entrances, beaches etc).

This method combines the benefits of reduced prevalence (fewer smokers equates to a reduction in opportunities for non-smokers to be within an environment where SHS is generated) and a steady shift in social norms meaning that remaining smokers smoke less frequently around non-smokers. This twin-track approach is likely to benefit many but has the potential to 'leave behind' families and children who live with smokers who are unable to change their smoking behaviour within the home setting because of constraints including sole parenting and lack of access to private outdoor space – barriers which are more often associated with increased social disadvantage. There is also the risk that smoking behaviour is restricted in so many outdoor settings that the proportion of cigarettes smoked within the (unrestricted) home setting increases. As evidenced in this report, there is a high risk that continuing with this approach sees further increases in socio-economic inequalities in relation to SHS exposure with those living in more deprived circumstances experiencing less benefit than those in wealthier areas.

4.2 A population-dose centred approach

Risk from exposure to many harmful substances is a product of two factors: duration and concentration. These two factors form the basis of the 'dose' of SHS that a person inhales, and while the WHO declare that there is 'no safe limit for SHS' there is also clear evidence that increasing concentrations cause increasing harm. With this in mind, it is important to consider that SHS concentrations within different settings can span a large range: $PM_{2.5}$ from SHS experienced while walking close to a smoker in a park may be <5 $\mu g/m^3$, $PM_{2.5}$ exposure while sitting next to a smoker in a house living-room can be >1000 $\mu g/m^3$. The duration spent in different microenvironments also varies considerably with time spent in many leisure and outdoor settings typically brief and occasional compared to regular, prolonged time we spend in home and workplace environments. Combining these two factors and using 'total SHS inhaled at population level' as the indicator of harm, the overwhelming majority of SHS exposure is now likely to occur within the home setting.

Those living with smokers in smoking-permitted households suffer most of the exposure burden: a child living with a parent who smokes in the home will, over the course of a week, inhale much more SHS than a child who is only incidentally exposed to SHS by a smoker in a park, playground or at a building entrance.

Such a 'population-dose centred approach' could form the basis of a policy framework that aims to tackle the settings where the greatest numbers of the population are exposed to the highest concentrations for the longest durations. In 2022, and going forward, this involves tackling smoking in the home.

A policy that aims to provide all children with a safe home recognising their right to breathe air that is not contaminated by SHS would align with a recent UN resolution on providing everyone with a right to clean air.[55] There are likely to be significant overlap between policies that reduce SHS exposure in the home and environmental measures and strategies to help provide clean outdoor air, particularly as both can use $PM_{2.5}$ as an indicator of exposure to pollutants.

This approach could involve the following priority actions:

- A planned programme of awareness raising (similar to the 'Take it right outside (TiRO)[30] campaign previously deployed in Scotland) to highlight the harms to children from smoking indoors and the benefits of making the shift to a smoke-free home. This would run for a period of 2-3 years to help frame the issue of SHS in the home to one of child protection, the right to breathe clean air, and support available to smokers to create a smoke-free home.
- A highly publicised new annual scheme to measure salivary cotinine from a representative sample of children to objectively demonstrate the reductions that are being achieved in children's exposure to SHS through the next strategy period; these data would be coupled to a mass media campaign making clear the need to provide children with a smoke-free home and with a focus on 'protecting Northern Ireland's children/next generation from SHS'.
- Increased support through provision of NRT[56] and/or cessation services to smokers with the primary aim of making their home smoke-free; and with greater emphasis on smoke-free home interventions that do not require cessation while also acknowledging that creating a smoke-free home can be an important stepping-stone towards quitting.
- Tracking public support for a tobacco endgame that involves treating the home in the same way as the car and using legislation to prohibit smoking in homes where children stay. The Smoking Toolkit Study collects annual data on public views on a range of tobacco policy options, including prohibiting smoking in homes with children, in England, Scotland and Wales (public support sits at 68.2% in Scotland,[57] and 61% in England[58] and Wales[59]). Arguments around difficulties in enforcing such legislative change should not be viewed as an insurmountable barrier to implementation.

Our recommendation would be that the dose-centred approach offers the potential for greatest population benefit and is more likely to align with a tobacco endgame strategy that produces a tobacco-free generation in the lifetime of the next strategy document. Such an approach is also more likely to reduce socio-economic inequalities in relation to SHS exposure.

4.3 Developing research and service provision

Behaviours of smoking parents in relation to exposing children to SHS in Northern Ireland are poorly understood. Research should focus on identifying potentially effective motivations and supports for behaviour change including both quitting and exposure reduction.

There is no specific guidance from the review level literature on reducing exposure for socially disadvantaged groups. However, the following targeted approaches may offer benefits for reducing SHS exposure for socially disadvantaged groups:

- Investment in enhanced smoking cessation in disadvantaged communities
- Investment in smoking cessation and reducing SHS exposure in pregnancy, and further promotion of cessation services to parents and partners of pregnant women to help reduce SHS exposure within families and reduce smoking prevalence among parents
- The introduction of an annual survey/survey questions to provide accurate data on the proportion of pregnant women who are exposed to SHS in the home, and in the family car/other vehicles.
- Exploration of current practice in smoking cessation referral for parents of children from specialist paediatric services where child health outcomes are directly related to SHS exposure (e.g. respiratory and ear nose and throat).
- Preferential attention to drive legislative compliance on smoking in commercial vehicle fleets primarily operated by lower income workers
- Further development of exposure reduction messages through early years and parenting support services, particularly those serving disadvantaged communities and lone parent families
- Professionals should make use of free online training on delivering very brief advice to promote smoke free homes
- Exploration of current practice in hospital settings regarding support to change home smoking practices to reduce SHS exposure in chronically ill children and adults, to inform the development of tailored interventions
- Current evidence[60] suggests that the offer of financial voucher incentives to stop smoking during pregnancy as an addition to current UK stop smoking services is highly effective. This also supports new guidance from the UK National Institute for Health and Care Excellence, which includes the addition of financial incentives to support pregnant women to stop smoking. The Public Health Agency should consider making the scheme available to all eligible women in Northern Ireland, and review the outcomes of current research, once completed, continuing incentives to 12 months after birth to prevent relapse. There is a paucity of research on the use of incentives to support households to create a smoke-free home. Given the persisting social inequalities associated with children's SHS exposure and associated health harms, this approach warrants further exploration.
- Cessation services need to be properly targeted. For the priority groups which have been identified – children and young people; disadvantaged people who smoke; and pregnant women, and their partners who smoke - a range of services tailored to meet their specific requirements is necessary in order to reduce smoking prevalence. The benefits of creating a smoke-free home and protecting friends and family from SHS should be integrated within all cessation messaging.

4.4 Creating a tobacco endgame around SHS

The next tobacco strategy for Northern Ireland should look to present a tobacco endgame approach to bring about an end to SHS exposure.

- The Northern Ireland Executive should set a target to become a tobacco free generation (defined as a prevalence of <5%) in the successor Tobacco Control Strategy, when the current one expires in 2022. Ireland set out such an aim in 2013 and aims to achieve this by 2025. England currently has a target of achieving a tobacco-free generation by 2030 and Scotland by 2034.
- As part of this tobacco-free generation strategy, reductions in population exposure to SHS should also be targeted. The aim of protecting Northern Ireland's children from the harms of SHS is achievable and could provide a framework for encouraging both smoking cessation and changing how people smoke to make smoking indoors socially unacceptable. A target of <1% of children with measurable cotinine in their saliva by 2034 would align with a <5% smoking prevalence target.

4.5 Summary of recommendations

Drawing on the above considerations, the following key recommendations are made for the next Tobacco Control Strategy in Northern Ireland in relation to protecting the population from the harms of SHS.

1. Continued investment in provision and delivery of smoking cessation services, with particular targeting of support to smokers within socio-economically deprived communities, pregnant women and parents of children.
2. Setting a target for Northern Ireland to become a tobacco-free generation (<5% prevalence) by 2035.
3. Continuation of longitudinal survey measures (HSNI and YPBAS) to gather data on SHS exposure and public opinion related to possible control measures.
4. Development of a new, cross-sectional annual survey of children's salivary cotinine levels to provide objective measurement of SHS exposure.
5. Setting targets (aligned with #2) for measured reductions in children's salivary cotinine (e.g. <1% of children with measurable cotinine by 2035).
6. Measures to protect home health care workers who are exposed to SHS when visiting patients' homes.
7. Investment in mass media campaigns to educate, encourage and empower smokers and non-smokers to create a smoke-free home and to make smoking indoors socially unacceptable.
8. Generation of local research capacity to develop and test interventions including NRT provision, very brief advice and financial incentives to help create smoke-free homes.

5 Conclusions

5. Conclusions

Since the publication of the Ten-Year Tobacco Control Strategy for Northern Ireland (2012-2022) there has been significant progress in reducing the proportion of non-smokers in Northern Ireland who are exposed to SHS. It is likely that many of those who encounter SHS now experience exposure for shorter periods and at lower concentrations. Northern Ireland has implemented a range of excellent, global leading policies and practices designed to reduce the harm of SHS exposure that have built on the protection delivered by the restrictions on smoking in enclosed public spaces implemented in 2007. In addition, Northern Ireland has comprehensive systems that gather unique longitudinal population data around population exposure to SHS that provide valuable insight on progress made. Exposure to SHS within the home has reduced during the past decade and this should be welcomed. Since 2012, almost 114,000 homes in Northern Ireland have moved to stop any smoking within the home setting meaning that 6 out of 7 homes are smoke-free spaces. However, smoking-permitted homes are likely to now represent the setting where exposure occurs for longest and at the highest concentrations and are responsible for much of the health inequality still apparent around SHS exposure. There is a need for priority action and policies to tackle smoking in the home, particularly where children are living. There is an opportunity to adopt bold, global-leading measures around SHS exposure reduction that could change smoking norms within all indoors spaces and help drive a tobacco end-game that focusses on protecting the health of the next generation.

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Appendix

Appendix A

Second-hand smoke policy and legislative measures in Northern Ireland

Briefing Document provided by IPH

Report	Description	Year	Publication owner
Strategies and Action Plans			
Ten Year Tobacco Control Strategy for Northern Ireland	The overall aim of the Strategy is to create a tobacco-free society. The key objectives, which have been carried forward from the Tobacco Action Plan 2003-2008, are: • fewer people starting to smoke • more smokers quitting • protecting people from tobacco smoke In order to ensure that more focused action is directed to where it is needed the most, three priority groups have been identified: • children and young people; • disadvantaged people who smoke • pregnant women, and their partners, who smoke.	2012	Department of Health
A five year tobacco action plan 2003-2008 (PDF attached)	This 5 year Action Plan, which builds upon "Smoking Kills - A White Paper on Tobacco", published in 1998, provides a framework for collaborative working across Government departments, the statutory and voluntary sectors, as well as with business and in local communities. It does not aim to provide a comprehensive analysis of the complex issues surrounding the use of tobacco. Rather, it seeks to combine an overview of the background, scale and nature of the problem with a comprehensive programme of action to reduce the harm caused by tobacco use.	2003	Department of Health

Strategy Review Documents			
Mid-Term Review of the Ten Year Tobacco Control Strategy for Northern Ireland	The aim of this review is to ensure that the remaining term of the strategy takes account of the latest evidence and developments. The review is intended to examine progress made to date in relation to the achievement of the objectives of the tobacco control strategy. It also considers the relevance of the strategy, going forward, in the context of the latest developments in terms of research, evidence and the political/ policy landscape. The review makes recommendations for the way forward taking account of the need for new actions, objectives, priority groups and/or targets. Only areas of tobacco control which are within the remit of the Department are considered for further action.	2020	Department of Health
Mid Term Review Tobacco Control Report - Appendix 3	Progress to Date / Further Detail on Objective 1 – Fewer people starting to smoke	2020	Department of Health
Mid Term Review Tobacco Control Report - Appendix 5	Smoking cessation statistics	2020	Department of Health
Mid Term Review Tobacco Control Report - Appendix 6	Age of Sale Summary of enforcement activity	2020	Department of Health
Mid Term Review Tobacco Control Report - Appendix 7	Offences under Tobacco Retailers Act (NI) 2014. Fixed Penalty Notices for each offence, by financial year.	2020	Department of Health

Mid Term Review Tobacco Control Report - Appendix 8	Number of Fixed Penalty Notices issued for Smoking in a smoke-free vehicle	2020	Department of Health
Mid-Term Review of the Ten-Year Tobacco Strategy for Northern Ireland. Stakeholder Engagement Report	The Department of Health undertook a mid-term review of the Strategy with a view to making recommendations for its remaining term. There were three strands to the review including progress reporting on strategy actions, an evidence review, and stakeholder engagement. This report presents findings relating to stakeholder engagement. The stakeholder component of the report was based on three data sources: • A workshop with lead implementation stakeholders which included policy and programme leads from the Department of Health and the Public Health Agency (PHA) as well as those with lead roles in service commissioning, management and service provision as well as advocacy and research sectors. • An online survey of a wider group of implementation stakeholders. • An overview of stakeholder engagement reports developed by the Public Health Agency during the term of the Strategy.	2020	Institute of Public Health
Mid-Term Review of the Ten Year Tobacco Strategy for Northern Ireland. Evidence Review	This evidence review forms part of the mid-term review of the Ten Year Tobacco Control Strategy for Northern Ireland (2012-2022). This report aims to shape the future delivery of the Strategy in line with certain review level evidence. Evidence is presented relating to existing approaches set out in the Strategy and its action plans, as well as on potential new approaches.	2020	Institute of Public Health

Smoke-Free Legislation in Northern Ireland. A One Year Review	The Department of Health, Social Services and Public Safety has developed a research framework to evaluate the impact of the legislation, and this is the publication of the first results from the work. The report looks at results of various surveys carried out in Northern Ireland before and after the introduction of the smoking legislation. It also uses monitoring data to assess the impact of the legislation in terms of prevalence of and attitudes to smoking among adults and young people, quitting smoking, compliance with the new legislation and its economic impact.	2009	Department of Health
Smoke-Free Legislation in Northern Ireland. A Three Year Review	In order to evaluate the impact of smokefree legislation, the Department of Health, Social Services and Public Safety developed a research framework. A one-year review of the legislation was published in March 2009, and this is now being followed up by a three-year review. The three-year review report includes the results of various surveys carried out in Northern Ireland before and after the introduction of the smoking legislation, as well as the use of monitoring data to assess the impact of the legislation in terms of prevalence of and attitudes to smoking among adults and young people, quitting smoking, compliance with the new legislation and its economic impact.	2013	Department of Health

Smoke-free spaces: Progress in reducing exposure to second-hand smoke in Northern Ireland incorporating the five-year review of smoke-free legislation	This report provides an overview of progress in reducing SHS exposure in Northern Ireland that incorporates the five-year review of smoke-free legislation, but also extends to a consideration of SHS exposure in non-work environments. The report occurs in the context of: • New policy frameworks including The Ten Year Tobacco Control Strategy for Northern Ireland and Making Life Better - A Whole System Strategic Framework for Public Health. • Significant expansion in smoke-free areas beyond the smoke-free legislation with Northern Ireland Executive support for further consideration of legislation to protect children from SHS exposure in the car • Significant developments in the evidence relating to health outcomes associated with SHS and the effects of restrictions • Increases in the use of e-cigarettes and indoor vaping.	2015	Institute of Public Health
Review of legislation banning the sale of tobacco products from vending machines in the north of Ireland (2016)	Legislation banning the sale of tobacco products from vending machines in the north of Ireland came into force from 1 March 2012. The main aim of the ban is to reduce youth smoking prevalence by making it more difficult for children and young people to access tobacco products.	2016	Department of Health

Adult non-smokers' exposure to second-hand smoke	This quantitative study was commissioned by the DHSSPS as part of their smoke-free monitoring and evaluation strategy after the introduction of smoke-free legislation in Northern Ireland in April 2007. The research was undertaken to determine the impact of smoke-free legislation on non-smoking adults who live with a smoker. Using research carried out both before and after the introduction of smoke-free legislation, this study details for the first time the attitudes and knowledge of non-smoking adults living with smokers in Northern Ireland, in relation to second-hand smoke. The study also reports non-smokers' exposure to second-hand smoke in a range of environments.	2009	Public Health Agency
Smoking in private vehicles carrying children	This paper explores: • Health risks associated with exposure of children to SHS, and the dangers posed by smoke toxins in private vehicles • Use of legislation and policy to change people's behaviour • Arguments for and against the introduction of a ban • Position in NI compared with the rest of the UK and Ireland • If there is any evidence from elsewhere regarding the efficacy of smoking bans in private vehicles carrying children.	2016	Northern Ireland Assembly Research and Information Service

Other reports relevant to second-hand smoke exposure in Northern Ireland

Report	Description	Year	Publication owner
Smoke-free spaces on the island of Ireland	This snapshot report presents a brief overview of progress on the development of smoke-free spaces on the island of Ireland. The report includes data on smoking in the workplace, private home and comment on smoke-free spaces such as government buildings, health and social care facilities, public transport, school and education facilities, playgrounds and sports stadia.	2017	Institute of Public Health
A Tobacco-Free Future – An all-island report on tobacco, inequalities and childhood	The central aim of the report is to contribute to knowledge on the exposure of children to the harmful effects of tobacco smoke at various stages of their development. The findings of the report can support policy makers and service providers in their efforts to make tobacco-free childhoods a reality on the island of Ireland.	2013	Institute of Public Health
A Clean Air Strategy for Northern Ireland – Public Discussion Document	The Department of Agriculture, Environment and Rural Affairs (DAERA) has launched a Discussion Document in advance of developing the first Clean Air Strategy for Northern Ireland. The Discussion Document presents evidence and research on a range of ambient air pollutants. It also outlines the current policy and legislation and the measures currently in place to control air pollution. The Discussion Document poses questions around pollutant source activities, with the aim of promoting discussion and the exchange of ideas. We are seeking your views.	2021	Department of Agriculture, Environment and Rural Affairs

IPH response to the Consultation on the draft Clean Air Strategy for Ireland	This submission was made to the Department of Environment, Climate, and Communications in response to a public consultation on developing a Clean Air Strategy for Ireland. Air pollution and health are inextricably linked and require consideration in the development of a Clean Air Strategy for Ireland and any crosscutting policies.	2022	Institute of Public Health
Smoking in private vehicles carrying children	This paper explores: • Health risks associated with exposure of children to SHS and the dangers posed by smoke toxins in private vehicles • Use of legislation and policy to change people's behaviour • Arguments for and against the introduction of a ban • Position in NI compared with the rest of the UK and Ireland • If there is any evidence from elsewhere regarding the efficacy of smoking bans in private vehicles carrying children.	2016	Northern Ireland Assembly Research and Information Service

Data sources

Survey	Questions and Survey Results	Year	Publication owner
Health Survey Northern Ireland	Health Survey Questionnaires By way of example, listed below are the questions used in the 2018/19 HSNI In which of these places, if any, did you smoke in during the last 7 days ending yesterday? (1) Inside my home (2) Outside my home (e.g., in garden or on doorstep) (3) Outside (other than at home) (4) Inside other people's homes (5) Whilst travelling by car (6) Inside other places (7) None of these places To what extent did each of the following things on this card lead you to stop smoking - not at all, somewhat or very much? a. Concern for your personal health b. Concern for the effect of your cigarette smoke on non-smokers c. That society disapproves of smoking d. The price of cigarettes e. Smoking restrictions at work f. Smoking restrictions in public places like restaurants or bars (cafes or pubs) g. Advice from doctor, dentist, or other health professional to quit h. Free or lower-cost stop-smoking medication i. Standardised/plain packaging j. Health warnings on tobacco packs k. Setting an example for children	2020/21	Institute of Public Health

Legislation

Legislation	Description
The Smoking (Northern Ireland) Order 2006	The Smoking (Northern Ireland) Order 2006 regulates smoking in public places, workplaces, and public transport and authorizes regulations regarding the same.
The Smoking (2006 Order) (Commencement) Order (Northern Ireland) 2007	The Smoking (2006 Order) (Commencement) Order (Northern Ireland) 2007 provides that the smoking ban, set forth in the Smoking Order 2006, comes into effect on April 30, 2007.
Smoke- free (Exemptions, Vehicles, Penalties and Discounted Amounts) Regulations (NI) 2007	The Smoke-free (Premises, Vehicle Operators and Penalty Notices) Regulations (Northern Ireland) 2007 provide definitions of “enclosed” and “substantially enclosed” for purposes of the prohibition on smoking, impose a duty on vehicle operators to prohibit smoking in public vehicles, and provide penalty forms.
The Smoke-free (Premises, Vehicle Operators and Penalty Notices) Regulations (Northern Ireland) 2007	The Smoke-free (Exemptions, Vehicles, Penalties and Discounted Amounts) Regulations (Northern Ireland) 2007 set out exemptions to the smoking ban, regulate smoking in vehicles, and provide penalties for violations of the Smoking Order 2006.
The Smoke-Free (Signs) Regulations (Northern Ireland) 2007	The Smoke-Free (Signs) Regulations (Northern Ireland) 2007 regulate the content, form, and display of no-smoking signs.
The Smoke-free (Exemptions, Vehicles, Penalties and Discounted Amounts) (Amendment) Regulations (Northern Ireland) 2008 The Children and Young Persons (Sale of Tobacco etc.) Regulations (Northern Ireland) 2008	The Smoke-free (Exemptions, Vehicles, Penalties and Discounted Amounts) (Amendment) Regulations (Northern Ireland) 2008 amend the Smoke-free (Exemptions, Vehicles, Penalties and Discounted Amounts) Regulations (Northern Ireland) 2007, changing the age for designated smoking rooms in residential care and other accommodations from 16 to 18 years.

Smoke-free (Private Vehicles) Regulations (NI) 2021	The Smoke-free (Private Vehicles) Regulations (NI) 2021 requires all private vehicles to be smoke-free when they are enclosed, contain more than one person and a person under 18 is present in the vehicle.
CIEH Guidance for enforcement officers on the prohibition on smoking in private vehicles carrying children	The Chartered Institute of Environmental Health (CIEH) in consultation with the Department of Health (DoH), the Police Service of Northern Ireland (PSNI), the Public Health Agency (PHA) and Environmental Health Northern Ireland (EHNI), have developed this guidance to help enforcement officers to use the new requirements to best effect.
"Give up smoking once and for all" – **Statement from Health Minister on the introduction of the Smoke-free (Private Vehicles) Regulations (NI) 2021**	Health Minister's statement on introduction of legislation banning smoking in cars where children are present.

Published articles on second-hand smoke exposure in Northern Ireland (accessed from PubMed)

Title	Brief description	Year of publication
Tobacco smoke exposure in children and adolescents with diabetes mellitus	A study to examine active and passive tobacco smoke exposure in children and adolescents attending a diabetic clinic.	1999
Legislation for smoke-free workplaces and health of bar workers in Ireland: Before and after study	To compare exposure to second-hand smoke and respiratory health in bar staff in the Republic of Ireland and Northern Ireland before and after the introduction of legislation for smoke-free workplaces in the Republic.	2005
A failure of leadership? Why Northern Ireland must introduce a total ban on workplace smoking	Opinion piece by Dr Martin McKee, London School of Hygiene and Tropical Medicine.	2005

Legislation for smoke-free workplaces and health of bar workers in Ireland: Before and after study	To compare exposure to second-hand smoke and respiratory health in bar staff in the Republic of Ireland and Northern Ireland before and after the introduction of legislation for smoke-free workplaces in the Republic.	2005
Greater gains from smoke-free legislation for non-smoking bar staff in Belfast	Self-reported respiratory symptoms among both smoker and non-smoker bar workers in Northern Ireland.	2009
Socioeconomic inequalities in childhood exposure to secondhand smoke before and after smoke-free legislation in three UK countries	This paper reports data from the Scottish, Welsh and Northern Irish studies of changes in Child Exposure to Environmental Tobacco Smoke (CHETS), repeated cross-sectional studies examining associations of smoke-free legislation with children's SHS exposure.	2012
Smoke-free legislation and the incidence of paediatric respiratory infections and wheezing/asthma: interrupted time series analyses in the four UK nations	Researchers investigated the association between introduction of smoke-free legislation in the UK (March 2006 for Scotland, April 2007 for Wales and Northern Ireland, and July 2007 for England) and the incidence of respiratory diseases among children.	2015
Second-hand smoke exposure among children and young people in Northern Ireland - progress and challenges (Presentation)	To report on current patterns and trends over time in children's exposure to second-hand smoke in Northern Ireland.	2015
Electronic cigarette vapour increases virulence and inflammatory potential of respiratory pathogens	This study compared the effect of e-cig vapour (ECV) and cigarette smoke (CSE) on the virulence and inflammatory potential of key lung pathogens (Haemophilus influenzae, Streptococcus pneumoniae, Staphylococcus aureus and Pseudomonas aeruginosa).	2019

The impact of changing cigarette smoking habits and smoke-free legislation on orofacial cleft incidence in the United Kingdom: Evidence from two time-series studies	Researchers aimed to analyse the impact of declining active smoking prevalence and the implementation of smoke-free legislation on the incidence of children born with a cleft lip and/or palate within the United Kingdom.	2021

Public information campaigns in Northern Ireland

Space to Breathe public information campaign delivered by the Public Health Agency. Included information on:

- Second-hand smoke and health
- Guidance on smoke-free legislation
- Research and facts
- Giving up smokingDistrict Councils

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