Smoking in vehicles

November 2011 (updated November 2013)
**Introduction**

This briefing paper was originally published in response to a resolution from the British Medical Association's (BMA) 2011 Annual Representative Meeting (ARM) which supported a total ban on smoking in vehicles. It has been updated to reflect new developments and new research in this area since 2011.

The context to the 2011 resolution should be considered in light of the BMA’s desire for UK government to achieve a tobacco-free society by 2035. This ambitious target requires a comprehensive, adequately funded tobacco control strategy focussing on tough and progressive measures to reduce the demand for, and supply of, tobacco products. A ban on smoking in all vehicles is aligned with the BMA’s policies on tobacco control measures, and will strengthen the UK’s wider tobacco control strategy. Smokefree legislation in the UK, with respect to vehicles, only applies to public vehicles (eg buses, taxis and coaches – see section on UK legislation relating to smoking in vehicles for further information).

A number of other organisations have developed policies on smoking in private vehicles (see Appendix 1). Further information on BMA policies on tobacco control can be found in Appendix 2.

**Why is this important to doctors?**

Doctors witness first-hand the devastating effects of smoking-related harms on their patients. This includes secondhand smoke (SHS) and the adverse health effects it has on non-smokers and children. They also have a vital role in providing information to their patients about the risks of smoking and exposure to SHS, and in helping their patients to stop smoking. Smoking in vehicles is a source of concentrated SHS, and the act of smoking while driving is also a potential distraction with implications for road safety.

**Smoking prevalence and burden to the NHS**

In 2013, 20 per cent of the adult population in England were cigarette smokers. The overall prevalence is lower than 30 years ago (39 per cent in 1980), but has remained unchanged since the introduction of smokefree legislation in 2007. Prevalence continues to be higher among men than women, with smoking rates of 20 and 19 per cent respectively.\(^1\) Cancer Research UK estimates that more than 200,000 children aged 11-15 start smoking each year – 573 children per day. More than a quarter of 16 year olds (27%) have tried smoking cigarettes at some point.\(^2\)

The Department of Health (DH) estimate that more than 79,100 deaths are attributable to smoking each year in England.\(^1\) Among adults aged 35 and over, there were approximately 1.6 million hospital admissions in 2010/11 with a primary diagnosis of a disease that can be caused by smoking. Approximately 462,900 hospital admissions were thought to be attributable to smoking, accounting for five per cent of all hospital admissions in this age group.\(^1\)

In Scotland, smoking remains one of biggest contributory factors to its poor health record. In 2004, it was estimated that 13,473 deaths were attributed to smoking, equating to 24 per cent of all deaths in Scotland.\(^3\) The percentage of individuals aged 16 or over in Scotland who smoke has continued to fall,

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\(^1\) Secondhand smoke consists of a combination of mainstream smoke exhaled by the smoker and side-stream smoke from the burning of tobacco products.
from 25.4 per cent in 2006 to 23 per cent in 2011. According to the Welsh Health Survey, in Wales, 23 per cent of the adult population smoke and 48 per cent of smokers surveyed said that they smoked while driving in their vehicle. The 2009/10 Northern Ireland Continuous Household Survey reported that 24 per cent of adults currently smoke. Research carried out by Oxford University estimated that smoking cost the NHS £5.2 billion in 2005/06, approximately 5.5 per cent of all total healthcare costs in the UK.

**Tobacco smoke and health**

The adverse health effects of tobacco smoke are widely recognised (see Figure 1). Tobacco smoke contains 4,000 known chemicals, 69 of which are known or probable carcinogens and, when produced in enclosed spaces (e.g., a vehicle), exposes smokers and non-smokers to the harmful effects of SHS. Secondhand smoke contains several major classes of known carcinogens, including benzo[a]pyrenes, aromatic amines, and tobacco-specific nitrosamines. It also contains nicotine, toxins (e.g., carbon monoxide and hydrogen cyanide) and irritants such as acrolein.

**Figure 1 – the health consequences of causally linked to smoking and exposure to SHS**

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### Secondhand smoke and children's health

The US Surgeon General has stated that there is no safe level of exposure to SHS. In 2010, a World Health Organization (WHO) study found that around 603,000 people, including 165,000 children, die each year worldwide as a result of exposure to SHS. In the UK, an estimated 23 children and 4,000 adults die each year due to SHS.

The evidence for health effects of SHS on children is extensive and includes numerous systematic reviews and meta-analyses. In 2006, the US Surgeon General report on involuntary exposure to tobacco smoke concluded that the available evidence was sufficient to infer a causal association
between SHS and sudden infant death syndrome, lower respiratory tract illness, middle ear
diseases, asthma in school-aged children and impairment of lung infection. A 2010 Royal College
of Physicians (RCP) report on passive smoking and children\textsuperscript{10} provided an update of the evidence
which reaffirmed the association between these diseases and SHS. The report concluded that:

- 40 deaths from sudden infant death syndrome, 20,000 cases of lower respiratory tract
infections, 120,000 cases of middle ear disease, 22,000 new cases of wheeze and asthma and
200 cases of bacterial meningitis per year in children in the UK could be attributed to exposure
to SHS
- 300,000 GP consultations and 9,500 hospital admissions per year are attributed to exposure
to SHS, costing the NHS £23 million annually across the UK
- living in a household where one or more people smoke more than doubles the risk of sudden
infant death
- SHS increases the risk of lower respiratory tract infections in children. Smoking by the mother
or household increases the risk by 60 per cent and 50 per cent respectively
- SHS increases the risk of asthma in school aged children and is increased by 50 per cent where
a member of the household smokes
- SHS increases the risk of middle ear diseases by 35 per cent for household smoking and
46 per cent for smoking by the mother
- SHS results in modest impairment of lung function in infants and children.
- SHS appears to more than double the risk of bacterial meningitis.

Aside from the immediate health impacts, children exposed to SHS in the home are more likely to
become smokers in later life. According to the RCP report, an analysis of 14 studies showed that
adolescents and children (aged under 13) are 62 and 72 per cent more likely to smoke if a parent
was a smoker, respectively, and this increased if the parent smoker was the mother.\textsuperscript{10}

**Risk factors for exposure to secondhand smoke**

Parental smoking is the greatest risk factor for exposure to SHS in children. Children have greater
exposure to SHS, and are more likely to be exposed to regular smoking at home, if one or both of
their parents smoke (see Table 1).\textsuperscript{10} It is reasonable to assume that smoking by other types of primary
caregiver (legal guardians, step parents, other family members etc) could also be considered a risk
factor.

**Table 1 – Parental smoking and children’s exposure to SHS**

<table>
<thead>
<tr>
<th></th>
<th>Children’s exposure to SHS\textsuperscript{a}</th>
<th>Regular smoking at home (on most days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both parents are smokers</td>
<td>8.9 times greater</td>
<td>88%</td>
</tr>
<tr>
<td>Mother smokes</td>
<td>6.4 times greater</td>
<td>80%</td>
</tr>
<tr>
<td>Father smokes</td>
<td>2.9 times greater</td>
<td>66%</td>
</tr>
<tr>
<td>Neither parent smokes</td>
<td>N/A</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

\textsuperscript{a} compared to children of non-smoking parents

Smoking in vehicles
Children in the lowest socioeconomic classes are also more likely to be exposed to SHS; their parents are more likely to be smokers, and more likely to smoke in private spaces such as the home and car.

- Children from households of semi-skilled or unskilled manual workers have 3.1 times greater exposure to tobacco smoke than children from professional and managerial households.\(^\text{10}\)
- Regular smoking at home occurs in 50 per cent of households of semi-skilled or unskilled manual workers, compared to 17 per cent of professional and managerial households.\(^\text{10}\)
- Similar trends are observed for other social determinants of health such as education and unemployment, where children from unemployed households, or households where parents have no qualifications, have greater exposure to SHS.\(^\text{10}\)

**Smoking in vehicles: exposure to SHS and health impacts**

Due to their restrictive internal environment, smoking in vehicles can place drivers and passengers (including children) at a greater risk of exposure to SHS.\(^\text{11}\) More than half of all journeys made by children aged 16 and under are by private vehicle,\(^\text{12}\) and the majority of parent smokers do not have a strictly enforced smokefree policy in their cars.\(^\text{13}\) Smoking in private vehicles represents a significant source of SHS exposure in children whose parents or guardians smoke. Children exposed to SHS in vehicles are at greater risk of asthma and wheeze,\(^\text{14}\) and of initiating smoking in adolescence.\(^\text{10, 15}\)

Various studies have found that smoking in vehicles is commonplace, including when children are present (see Table 2). In England, an estimated 30 per cent of smokers smoke in their vehicles.\(^\text{16}\) According to the 2010 RCP report, 26 per cent of adult non-smokers are often or sometimes exposed to SHS in vehicles, in particular young people (aged 18-24) and those from lower socio-economic groups.\(^\text{10}\)
<table>
<thead>
<tr>
<th>Author, date and country</th>
<th>Type of study</th>
<th>Driver characteristics</th>
<th>Passenger age group</th>
<th>Smoking behaviour/SHS exposure</th>
<th>Other key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Lung Foundation (2012)&lt;sup&gt;17&lt;/sup&gt; UK</td>
<td>Survey of 8-15 year olds</td>
<td>N/A</td>
<td>8-15 year olds</td>
<td>51% of children had been exposed to SHS in a car</td>
<td>–</td>
</tr>
<tr>
<td>Kabir et al (2009)&lt;sup&gt;14&lt;/sup&gt; Ireland</td>
<td>–</td>
<td>N/A</td>
<td>13-14 year olds</td>
<td>15% of children were regularly exposed to SHS in cars</td>
<td>Children exposed to SHS in cars were more likely to experience wheeze and hay fever symptoms</td>
</tr>
<tr>
<td>NHS Information Centre (2010)&lt;sup&gt;18&lt;/sup&gt; England</td>
<td>Survey of secondary school pupils</td>
<td>N/A</td>
<td>11-15 year olds</td>
<td>19% of pupils reported being exposed to SHS in cars</td>
<td>–</td>
</tr>
<tr>
<td>Chartered Institute of Environmental Health (2012)&lt;sup&gt;19&lt;/sup&gt; Northern Ireland</td>
<td>Survey of the general public</td>
<td>Smoker</td>
<td>Under 18 years old</td>
<td>16.9% of smokers smoke in the car when children are present</td>
<td>70% of smokers and &gt;90% of non-smokers believe children are at risk of health problems when the driver smokes</td>
</tr>
<tr>
<td>Fong et al (2006)&lt;sup&gt;16&lt;/sup&gt; UK and Ireland</td>
<td>Cohort study of adult smokers pre- and post-smokefree legislation in Ireland</td>
<td>Smoker</td>
<td>N/A</td>
<td>30% of UK smokers, and 45% of Irish smokers, reported regularly smoking in their car</td>
<td>Smoking in homes decreased, and smoking in cars remained the same, after smokefree legislation was implemented in Ireland. Smoking in the home and in cars decreased in the UK over the same period.</td>
</tr>
<tr>
<td>Patel et al (2011)&lt;sup&gt;20&lt;/sup&gt; New Zealand</td>
<td>Observational study, objective measurement of the prevalence of smoking in cars</td>
<td>Smoker</td>
<td>Under 12 years old</td>
<td>4.1% of vehicles with smokers had children present</td>
<td>Smoking occurred in 3.2% of vehicles</td>
</tr>
<tr>
<td>Nabi-Burza et al (2012)&lt;sup&gt;13&lt;/sup&gt; USA</td>
<td>Survey of parent smokers</td>
<td>Smoker (parent)</td>
<td>Children of parents in the study (age not stated)</td>
<td>48% of parent smokers reported smoking with children in the car</td>
<td>76% of parent smokers did not have a strictly enforced smokefree car policy</td>
</tr>
</tbody>
</table>
There is increasing evidence that the levels of SHS present in vehicles can contribute to a serious health hazard for adults and children. A number of studies have found that average levels of SHS in cars while a driver or passenger is smoking are high, even under ventilation conditions such as windows fully or partially open, or air conditioning switched on. Average levels of fine particulate matter (PM$_{2.5}$) ranged from 85-1,250 µg/m$^3$ under various ventilated conditions, and 695-3,800 µg/m$^3$ with windows closed. Peak levels of PM$_{2.5}$ have been found to be significantly higher, with studies reporting peaks of 385-8,000 µg/m$^3$ under various ventilated conditions, and 1,050-16,000 µg/m$^3$ with windows closed (see Appendix 3). One study demonstrated that the concentration of toxins in a smoke-filled vehicle could be up to 11 times greater than that of a typical smoky bar. Air nicotine levels are doubled in cars during smoking. It is worth noting that these reported levels exceed US Environmental Protection Agency (EPA) air quality index daily limits (35 µg/m$^3$), and World Health Organization guidelines (25 µg/m$^3$), for daily exposure to PM$_{2.5}$. While the EPA and WHO air quality guidelines were developed for exposure to environmental air pollution, SHS represents a greater harm to health because it contains a number of carcinogenic compounds.

Refraining from smoking while driving when children or passengers are present is not sufficient to prevent the harmful effects of tobacco smoke. Residual toxins from tobacco smoke – known as thirdhand smoke – remain in the interior materials of the vehicle long after a cigarette has burnt out. A total ban on smoking in any vehicle, regardless of who is present, would keep the interior of the vehicle free from residual smoke toxins.

In line with the BMA's policy on smoking in vehicles, the RCP report indicates that an extension of smokefree public places, including measures to prohibit smoking in private vehicles, should be considered. The report outlines three potential regulatory options:

- prohibition in private vehicles carrying children
- prohibition if any passenger is present (so that enforcement is not complicated by whether passengers are of the legally required age)
- prohibition of all smoking in any private vehicle.

The report concludes that prohibition of all smoking in private vehicles would be the simplest and most easily enforceable. It also suggests that this would have the advantage of helping to address the problem of persistent breaches of smokefree legislation by work vehicles.

**Smoking in vehicles: road safety**

Many of the dangers postulated for smoking in vehicles have been concerns relating to the adverse health effects associated with exposure to SHS. Additional evidence suggests that the physical act of smoking itself is also a risk to road safety as it can be a source of distraction.

There is some evidence that drivers who smoke are at greater risk of road traffic crashes than non-smokers. This risk is independent of other risk factors. A 2008 study showed that smoking was a risk factor for road traffic crashes, where smokers were twice as likely to have been a driver involved in a crash, independent of demographic factors and general health risk taking. The study determined that smokers were twice as likely to have had a crash as non-smokers, even after controlling for gender, race, ethnicity, geography, socio-economic status, and the length of licence held.
Elliot et al (2006) found cigarette use was positively and significantly associated with traffic incidences— including crash incidence— among young drivers. A 1996 study by Lang et al had shown cigarette use to be a key predictor of single vehicle crashes for young women.

**Driver distraction and smoking**

In 2007, the Driving Standards Authority (DSA) updated the UK Highway Code to include smoking under the list of distractions from safe driving. The list also includes, but is not limited to, listening to loud music, reading maps, and eating and drinking while driving. As a result, powers are already in place for police to issue Fixed Penalty Notices to any driver considered to be driving recklessly as a result of this behaviour. It is important to note that the Highway Code does not make it a specific offence to smoke while driving, any more than it is currently an offence to use audio or navigation systems, or eat while driving.

A driver, who loses control of a vehicle while smoking, can also be prosecuted under section 26(1a) of the Road Safety Act 2006. The Act makes it an offence to breach the requirement to control a vehicle by, “not driving a motor vehicle in a position which does not give proper control or a full view of the road and traffic ahead, or not causing or permitting the driving of a motor vehicle by another person in such a position”.

Alongside the evidence base highlighting that smoking and SHS in a vehicle is harmful to health, the BMA policy to ban smoking in vehicles would help to ensure that drivers are not distracted by the act of smoking while driving and this may reduce trauma, health service usage and deaths due to road traffic accidents, although further research is required.

**Public opinion**

Legislation creating smokefree public places in England has been popular since its introduction in 2007. Approximately 80 per cent of the English population, including 90 per cent of non-smokers, supported legislation to ban smoking in public places. In Scotland, 84 per cent of Scots aged 18-24 believed that a smokefree Scotland was ‘something to be proud of’. A survey by the Scottish Executive, three months after legislation was implemented, found 70 per cent in support of the law, with 77 per cent believing the law had been ‘very successful’ or ‘successful’.

In recent years, public support for a ban on smoking in private vehicles has increased, especially when children are considered. Examples of some opinion polls include:

- a YouGov poll for the Sunday Times in 2011 found 59 per cent support for banning smoking in cars when passengers are present
- a YouGov poll published by the Faculty of Public Health in 2010 found 74 per cent of adults in England supported a ban on smoking in vehicles with children
- an international survey of smokers found the majority support a smoking ban in cars when children are present, with 76 per cent support among a sample of 1,600 UK smokers
- the RCP’s report suggests that 56 per cent of people surveyed support a ban on smoking in vehicles regardless of who is present, and this rises with age from 45 per cent of 18 to 24 year olds to 63 per cent of adults over the age of 55.
- a study by the British Lung Foundation (BLF) showed that 86 per cent of UK children surveyed want to stop people smoking when they were present in the vehicle.
a 2012 survey for the DH found that 98 per cent of children said they wished their parents would stop smoking, and that 78 per cent wished their parents wouldn’t smoke in the car with them.

UK regulatory environment relating to smoking in vehicles
Smokefree legislation has been introduced throughout the UK: first in Scotland in March 2006, then in Wales and Northern Ireland in April 2007 and in England in July 2007. The principle measures of this legislation requires all enclosed premises where people work and/or where the public have access to be smokefree. This includes vehicles if they are used:

1. by members of the public or a section of the public (whether or not for reward or hire), or
2. in the course of paid or voluntary work by more than one person, even if those people use the vehicle at different times, or only intermittently.

There has been considerable evidence that smokefree legislation has realised benefits to health. It has lead to a decrease in SHS exposure, decrease in tobacco consumption among smokers, and in some instances, a decrease in smoking prevalence and increase in quit attempts. Smokefree legislation has not been found to result in an increase in smoking in the home, and in some countries re-enforces non-smoking behaviour in the home.

A number of UK studies have shown marked reductions in hospital admissions for myocardial infarction in England (2.4 %) and Scotland (17%), childhood asthma in England (3.4%) and Scotland (18.2%), and a decrease in premature births, low birth weights and prevalence of smoking among pregnant women following the smokefree legislation.

The extension of this legislation to include private vehicles would see these health benefits expand to a greater section of the population, particularly to children and other vulnerable groups.

England
In March 2011, the DH launched Healthy lives, Healthy people: Tobacco Control strategy for England. This stated that rather than extending smokefree legislation, the favoured policy was increasing public awareness of the risks of SHS, and for the public to decide voluntarily to keep their homes and vehicles smokefree. The DH launched a Smokefree homes and cars social marketing campaign in 2012 to raise awareness of the risks of SHS to children when smoking at home or in the car. The campaign cost £2.3 million.

There is growing interest in the Westminster Parliament for a ban on smoking in private vehicles. In June 2011, a Private Members’ Bill was presented to the House of Commons by Alex Cunningham, Labour MP for Stockton North, to ban smoking in private vehicles when children are present. The Bill was defeated at its second reading in November 2011. The All Party Parliamentary Group (APPG) on Smoking and Health conducted an inquiry into smoking in vehicles, and called on the DH to hold a public consultation on the issue. In July 2012, The House of Lords approved the Smokefree Private Vehicles Bill introduced by Lord Ribeiro. The Bill called for an amendment to the Health Act 2006 to make provision for a ban on smoking in private vehicles where children under the age of 18 are present, a £60 fine and requirement to attend a smoking awareness course. The Bill did not receive a second reading in the House of Commons.
Wales
In Wales, a report published in October 2010 by the Welsh Chief Medical Officer called for legal restrictions on smoking in vehicles carrying children. In February 2011, the Welsh Government announced a consultation on its tobacco control strategy and plans to create a ‘Smokefree Society’ in Wales. The consultation asked for a ‘debate’ on smoking in private vehicles carrying children. The Welsh Government has undertaken a three year education campaign highlighting the dangers of smoking in private vehicles, but has pledged to ban smoking in private vehicles when children are present if the campaign is not a success. This commitment was reiterated in its 2012 Tobacco control action plan. The success of the education campaign will be evaluated over the three year period using the annual Welsh Health Survey and the Health Behaviour in School-aged Children (HBSC) survey published by the WHO. A survey commissioned by ASH Wales, however, suggested 83 per cent of Welsh adults were in favour of laws being introduced now and not in three years time as had been suggested by the Welsh government.

Scotland
The Scottish Government’s Health Improvement Social Marketing Strategy includes tobacco-related issues and supports the development of a multi-faceted campaign to raise awareness and encourage a smokefree lifestyle, including within vehicles carrying children. The Scottish Government updated its tobacco control strategy in 2013, which stated it would undertake a social marketing campaign to increase awareness of the dangers of SHS to children in homes and private vehicles.

Northern Ireland
In Northern Ireland, the charitable organisation Action Cancer surveyed 1,000 homes which showed 88 per cent of people supported the idea of legislation restricting smoking in private vehicles carrying children. In February 2012, the Department of Health, Social Services and Public Safety (DHSSPS) launched a ten year tobacco control strategy for Northern Ireland, that highlighted the need to consider the protection of children from SHS including in vehicles, and committed to holding a public consultation on the issue.
**International comparisons**

A number of international regions have, in recent years, adopted legislation prohibiting the act of smoking in private vehicles. The international bans almost exclusively apply only when children or adolescents are present in the vehicle. Each region has applied its own age restriction and a wide range of maximum ages of children (from under-6 to under-18) are accompanied with varying degrees of penalties. **Table 3** highlights some of the countries and regions that already have bans on smoking in vehicles in place is listed below:

**Table 3**

<table>
<thead>
<tr>
<th>Country</th>
<th>Policies/proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States of America (USA)</td>
<td>A number of jurisdictions in the USA have banned smoking in private vehicles while a child is present. In 2008, the State of California banned smoking in vehicles when a person present is under the age of 18. Other States that have introduced similar legislation include: Arkansas, which banned smoking in vehicles when children under 6 were present (from March 2011); Maine, which banned smoking in vehicles when children under 16 were present; and Louisiana, which banned smoking in vehicles when children under 13 were present (in 2006) as well as a number of cities in other States.</td>
</tr>
<tr>
<td>Canada</td>
<td>In 2007, the Canadian Medical Association (CMA) called for a nationwide ban on smoking in vehicles that transport children. Since then, 9 out of 13 provinces and territories in Canada have introduced smokefree vehicle legislation when children are present. These include British Colombia, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, and Yukon Territory.</td>
</tr>
<tr>
<td>Australia</td>
<td>All but one state in Australia (Northern Territory) have now banned smoking in vehicles where children are present. Each state defines the prescribed maximum age of a ‘child’ should be: under 16 (New South Wales, South Australia, and Queensland), under 17 (Western Australia) and under 18 (Victoria and Tasmania).</td>
</tr>
<tr>
<td>South Africa</td>
<td>In 2009, new legislation came into force which makes it illegal for adults to smoke in a vehicle where there is a child under 12.</td>
</tr>
<tr>
<td>Cyprus</td>
<td>In 2004 Cyprus introduced smokefree legislation making it illegal for adults to smoke in a vehicle carrying a child under 16.</td>
</tr>
<tr>
<td>Bahrain</td>
<td>In 2009 Bahrain introduced smokefree legislation making it illegal for adults to smoke in a vehicle where there is a child present.</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>In 2010 the United Arab Emirates introduced smokefree legislation making it illegal for adults to smoke in a vehicle carrying a child under 12.</td>
</tr>
<tr>
<td>Mauritius</td>
<td>In 2009 Mauritius introduced smokefree legislation making it illegal for drivers to smoke in a vehicle carrying passengers.</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>In 2007 Puerto Rico introduced smokefree legislation making it illegal for adults to smoke in a vehicle carrying a child under 13.</td>
</tr>
</tbody>
</table>
Precedents for compliance and enforcing driving behaviour

Changing driver behaviour, achieving compliance and effective enforcement require public awareness of the health issues surrounding the behaviour, and public acceptance of the new legislation. The call for a ban on smoking in private vehicles has led to comparisons with similar legislation, including seat belt and mobile phone use.

Seat belts

The use of restraints by drivers and front seat passengers was made compulsory in January 1983. Seat belt use in the rear seats was made compulsory for children and then adults in 1989 and 1991 respectively. In 2009, a Department for Transport (DfT) survey showed that seat belt use had increased steadily since being enforced, and that the proportion of drivers observed wearing seat belts in 2009 was 95 per cent.

Public awareness of the safety benefits of seat belt use is high, and this is reflected in public compliance with seat belt legislation. According to a 2010 DfT Road safety research report, 87 per cent of adults surveyed, disagreed that if you drove carefully, seat belts were not necessary. A majority (91 per cent) also felt that it was the driver’s responsibility to make sure that everyone in their vehicle is wearing a seat belt. Only 12 per cent agreed that people should be free to choose to wear a belt or not.

Mobile phones

Unlike the largely positive attitudes towards the introduction of compulsory seat belt use, the ban on the use of mobile phones while driving was met with greater negative attitudes. In 2005, the BMA published an update to its 2001 report, Mobile phones and health and concluded that there were no definitive adverse health effects associated with mobile phone use. It concluded that the main proven adverse effect was the increased risk of road traffic crashes. In December 2003, legislation came into force making it illegal to use a hand-held mobile phone while driving a vehicle. In February 2007, the penalty for using a mobile phone while driving was increased from a £30 fine to three penalty points on the driving licence and a £60 fine.

A 2009 study by the DfT showed that the proportion of motorists using hand-held mobile phones while driving has increased by 27 per cent since legislation came in to force. In 2011/12, 116,114 Fixed Penalty Notices were issued for this offence. The legislation and enforcement of a ban on mobile phone use while driving has not been effective in curbing the number of law-breakers.

Public attitudes to mobile phones may underlie the low compliance with the legislation. Below is some data from the British Social Attitudes survey on mobile phone use while driving, which compares 2007 and 2010:

<table>
<thead>
<tr>
<th>Statement</th>
<th>2007 (%)</th>
<th>2010 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed to statement that mobile phone use while driving was dangerous</td>
<td>58</td>
<td>55</td>
</tr>
<tr>
<td>Agreed to statement that all use of mobile phones including hands-free should be banned</td>
<td>45</td>
<td>44</td>
</tr>
<tr>
<td>Agreed to statement that current laws were properly enforced</td>
<td>74</td>
<td>69</td>
</tr>
</tbody>
</table>
**Enforcing smoking in vehicles legislation**

As the two examples of seat belt and mobile phone use illustrate, acceptance and compliance with a ban on smoking in vehicles would be dependent on public awareness of the health issues of SHS in vehicles. It is also worth noting that compliance with smokefree legislation in England was 98 per cent, with 76 per cent public support one year after implementation of the ban. In order for compliance with new legislation to be effective, it is also important that enforcement is visible and robust, and that the penalties for non-compliance are perceived to be sufficiently severe as to act as a suitable deterrent. Legislation should also be accompanied by country-wide media campaigns to inform the public about the health effects of exposure to SHS in vehicles, and the potential road safety issues.

**Discussion**

**Why not just voluntary measures?**

For tobacco control and a number of other public health measures, the UK Governments have indicated a preference for voluntary measures and non-regulatory approaches that emphasise the importance of personal responsibility.

Voluntary measures have limitations in achieving behaviour change and public health benefits. In a 2012 position statement on behaviour change, the BMA stated that voluntary measures alone are inadequate in many instances, and legislative options should be considered when evidence indicates that they would be effective. While promoting healthy lifestyles and personal responsibility are important aspects of public health strategies, the government has a duty to create an environment that enables a healthy life for everyone, including children and other vulnerable groups who are less able to make choices and control their personal circumstances. Evidence suggests that the public welcome restrictions and regulations designed to promote health, protect against unhealthy influences, and empower individuals to make healthy choices for themselves and their family.

A 2011 House of Lords Science and Technology Select Committee report on behaviour change examined the effectiveness of the current UK government approach to achieving public change in behaviour across a range of areas. The report concluded that voluntary measures or ‘nudge’ approaches were insufficient in themselves, and that a range of mechanisms including fiscal measures and regulation was likely to be needed if changes in behaviour were to be achieved.

Legislative measures are known to be effective and have significant health impacts. The WHO considers extending tobacco control measures, such as restricting tobacco use in public spaces, to be a ‘best buy’ policy to reduce the global burden of non-communicable diseases – considered to be “effective, feasible, and affordable in any resource setting.”

This is confirmed in a 2010 Cochrane review that assessed the extent to which legislation-based smoking restrictions reduced tobacco consumption and exposure to SHS. Fifty studies were included in the review, which concluded that the introduction of legislative smoking bans leads to a reduction in exposure to SHS.
What about freedom of choice?
Many believe that while a person's decision to smoke is unwise for their health, it is not an illegal activity and they should have the right to choose to smoke. Since smokefree legislation was introduced throughout the UK, there are now fewer places where smokers can ‘light up’. Of those, the home and private vehicle are considered the two most common places where smokers are still able to smoke freely.

Through smokefree legislation, the freedom of people to smoke is restricted for the benefit of those around them. While most adults have the freedom to leave a smoky vehicle, or ask a smoker to stop smoking, children and other vulnerable groups such as the elderly and disabled are dependent on their parents, guardians or carers. These groups are therefore not free to make the same choices and may be at greater risk of inhaling toxic fumes from SHS in vehicles.

Individual autonony and the freedom to smoke must be balanced against preventing harm to others, especially children and vulnerable people. Restrictions to smoking – for example a ban on smoking in vehicles when children are present – can be justified because the temporary restrictions to individual autonomy protect against the greater harm that SHS exposure causes to children.67 These restrictions on freedom can also be considered proportionate to the expected benefits, in terms of the prevention of mortality and morbidity. When considering the legality of smokefree legislation in the United States, the US Supreme Court judged that there is no fundamental ‘right to smoke’.67

A ban on smoking in private vehicles would prevent smokers from exposing passengers to SHS, in particular children and other vulnerable passengers, who may not have the choice to leave the vehicle.

Why not just ban smoking in vehicles when children are present?
Most jurisdictions that have introduced legislative measures have done so exclusively for when children are present. SHS exposure has a number of negative health impacts, and children are more susceptible to the harmful effects of SHS than adults. The government has a duty to protect vulnerable people including children. Adults who smoke in the presence of children are not acting in the children’s best interests, and the government should take action to protect them.64

As stated earlier, toxins in thirdhand smoke remain in vehicles long after a cigarette has been smoked. This could lead to a build up of harmful toxins in the vehicle where children and other passengers sit, even if the driver refrains from smoking while others are present in the vehicle. Other vulnerable passengers are affected by SHS. Legislation for a ban regardless of age would also protect these groups.

At the 2011 ARM, BMA members highlighted that an outright ban on smoking in private vehicles would help enforce any extension to current legislation, as there would be no need to differentiate whether a child, present in a vehicle, was above or below a prescribed age. This would eliminate any uncertainty for enforcers. An extension to the ban would also promote the message that tobacco smoke is harmful regardless of who is present in the vehicle at any time, and comprehensively address the issue of road safety.
Conclusion

Smokefree legislation in the UK has been highly effective in reducing exposure to SHS in work and in public places. Evidence also suggests it has realised a number of health benefits, including lower hospital admissions for myocardial infarction and asthma, and reduced exposure to SHS in the general population. There is also an increasing public awareness about the dangers of tobacco smoke, including SHS.

The BMA believes that tobacco smoke, including SHS, is harmful to smokers and non-smokers, including children. Driver safety and distraction is an additional risk of smoking in vehicles. While public awareness and voluntary measures to promote smoking cessation and reduce exposure to SHS are welcome, legislative measures are known to be effective and have strong public support when implemented. The BMA policy for a ban on all smoking in vehicles regardless of who is present would be safest for children and other vulnerable groups, easiest to enforce, and the most effective option.

Extending smokefree legislation to a ban on smoking in all vehicles will strengthen the UK’s own tobacco control strategy while also being forerunner in tackling the harms of SHS and safeguarding the health of the population, including children and other vulnerable individuals.
Appendix 1

Overview of the policy position of other organisations

**Action on Smoke and Health (ASH)**
ASH is a charity that was set up in 1971 by the RCP to support action to tackle the harmful effects of tobacco. It has produced fact sheets on SHS and smoking in vehicles. ASH supports the view of the RCP report on passive smoking and children and also supports a ban on smoking in private vehicles.

This view is also shared by ASH Wales and ASH Scotland.

**Asthma UK**
Asthma UK has produced a policy briefing outlining their support for a ban on smoking in vehicles when children are present. They call for parents and other adults to take responsibility and avoid smoking in vehicles when children are present and they also support calls for Governments of the UK to protect children in two ways:
- by raising awareness through public health campaigns
- by extending smokefree legislation to include vehicles carrying children.

**British Heart Foundation**
The British Heart Foundation (BHF) recognises the harms to health from SHS exposure and has called on UK governments to introduce legislation to prevent smoking in cars when children are present.

**British Lung Foundation**
The British Lung Foundation (BLF) is campaigning through their Children's Charter to call on UK governments to introduce a ban on smoking in vehicles when children are present.

**Cancer Research UK**
Cancer Research UK has long campaigned for extensions to smokefree legislation and supports a ban on smoking in vehicles when children are present. They state that despite the progress that has been made since the introduction of the legislation, many people are still exposed to secondhand smoke in the home and in private vehicles.

**Medical Royal Colleges**
In a joint letter, published in The Times newspaper in 2010, the Medical Royal Colleges outline a number of ways to reduce the harmful effects of SHS to children including tobacco price rises, mass media campaigns, more effective health warnings, prohibition of point of sale display, generic packaging and better provision of smoking cessation services. They also reiterate that smokefree legislation should include public places visited by children and young people, and including prohibition of all smoking in private and other vehicles.
Royal College of Nursing
The Royal College of Nursing (RCN) recognises the serious harms caused by smoking in a confined space, such as smoking in vehicles.

Tobacco Manufacturers’ Association
The Tobacco Manufacturers’ Association represents the UK tobacco industry. Their current policies are to inform the public of the current UK legislation highlighting the dangers of distraction and loss of control while driving and smoking. They are against a complete ban on smoking in vehicles stating, “the proposal to ban smoking in what is a private space is a step too far and an unwarranted intrusion on individual freedom.”

UK Faculty of Public Health and Royal Society for Public Health
In 2010, the Faculty of Public Health and the Royal Society for Public Health set out 12 recommendations that, if adopted, will improve the UK’s health and well-being for the new decade. One of these recommendations was a ban on smoking in vehicles with children.
Appendix 2

BMA Policies on Smoking and tobacco

The BMA is working hard to achieve strong tobacco control measures for the benefit of the population. This includes:

- a call on UK governments to remove all branding on tobacco products
- a call to further raise tobacco taxes by a significant amount
- a call for legislative change to make illegal all tobacco advertising throughout the UK
- a call for a ban on cigarette vending machines
- a demand for legislation to ensure tobacco companies are held liable for the damage their products cause.

Further details of what the BMA is working to achieve are outlined on the following webpage:

http://bma.org.uk/working-for-change/improving-and-protecting-health/tobacco

Many of the BMA’s policies have successfully been implemented in UK legislation, including most recently, the introduction of smokefree public places in 2007, controls for tobacco advertising and point-of-sale displays, the banning of cigarettes for sale in vending machines, and the regulation of e-cigarettes. Information on the BMA’s impact and influence on tobacco control can be viewed here:

http://prezi.com/xd3kkd04bsxk/achieving-success-in-tobacco-control/

These policies have also resulted in a number of Board of Science (BoS) publications, including Forever cool: the influence of smoking imagery on young people (2008), Breaking the cycle of children’s exposure to tobacco smoke (2007) and Smoking and reproductive life: the impact of smoking on sexual, reproductive and child health (2004)

BMA Scotland has urged the Scottish Government to consider a ban on smoking in private vehicles when developing their new ten year tobacco control strategy. BMA Scotland believes that

“there is an increasing awareness among the general population of the risks of exposure to second hand smoke (SHS) and that this would be an important next step towards creating a smokefree Scotland”.

In addition, BMA Wales has supported a ban on smoking in vehicles since 2010 stating that

“anything that can be done to reduce exposure to environmental tobacco smoke and ill-health as a result of smoking must be given serious consideration”.
### Appendix 3

**Summary of studies monitoring SHS exposure in cars during cigarette smoking**

<table>
<thead>
<tr>
<th>Author, date and country</th>
<th>Study details</th>
<th>Ventilation conditions</th>
<th>SHS exposure – peak (PM$_{2.5}$ µg ml$^{-3}$)</th>
<th>SHS exposure – average (PM$_{2.5}$ µg ml$^{-3}$)</th>
</tr>
</thead>
</table>
| Chartered Institute for Environmental Health (2012)$^{19}$ Northern Ireland | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
Study participants smoked as they normally would to reflect normal smoking behaviour  
PM$_{2.5}$ levels were recorded using a TSI Sidepak AM510 Personal Aerosol Monitor located at the position of a child car seat | High ventilation | 716 | 19 |
| Clark et al. (2011)$^{70}$ Wales | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
Study participants smoked as they normally would to reflect normal smoking behaviour  
PM$_{2.5}$ levels were recorded using a TSI Sidepak AM510 Personal Aerosol Monitor located at the position of a child car seat | High ventilation | 4,800  
3,400  
16,000 | Not reported |
| Edwards et al. (2006)$^{22}$ New Zealand | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
PM$_{1.5}$ levels were measured under different ventilation conditions (windows open/closed, ventilation on/off)  
PM$_{2.5}$ levels were recorded using a TSI Sidepak AM510 Personal Aerosol Monitor located at the position of a child car seat | High ventilation | 217 | 199 |
<table>
<thead>
<tr>
<th>Author, date and country</th>
<th>Study details</th>
<th>Ventilation conditions</th>
<th>SHS exposure – peak (PM$_{2.5}$ µg ml$^{-3}$)</th>
<th>SHS exposure – average (PM$_{2.5}$ µg ml$^{-3}$)</th>
</tr>
</thead>
</table>
| Sendzik et al. (2009)$^{19}$
Canada                      | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
PM$_{2.5}$ levels were measured under different ventilation conditions (windows open/closed, ventilation on/off)  
PM$_{2.5}$ levels were recorded using a TSI Dustrak Aerosol Monitor located at the position of a child car seat | High ventilation | 142 | 60 |
| Chartered Institute for Environmental Health (2012)$^{19}$
Northern Ireland | See above | Partial ventilation | 1911 | 114 |
| Edwards et al. (2006)$^{22}$
New Zealand | See above | Partial ventilation | 181 | 162 |
| Liu et al. (2010)$^{23}$
USA | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
PM$_{2.5}$ levels were measured under different ventilation conditions (windows open/closed, ventilation on/off)  
PM$_{2.5}$ levels were recorded using a TSI Scanning Mobility Particle Sizer located at the position of a child car seat | Partial ventilation | 277 1,095 | 34 120 100 158 563 981 47 97 108 |
| Ott et al. (2008)$^{24}$
USA | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
PM$_{2.5}$ levels were measured under different ventilation conditions (windows open/closed, ventilation on/off)  
PM$_{2.5}$ levels were recorded using a TSI Sidepak AM510 Personal Aerosol Monitor located at the position of a child car seat | Partial ventilation | 705 685 371 608 | 82 119 96 119 |
<table>
<thead>
<tr>
<th>Author, date and country</th>
<th>Study details</th>
<th>Ventilation conditions</th>
<th>SHS exposure – peak (PM$_{2.5}$ µg ml$^{-3}$)</th>
<th>SHS exposure – average (PM$_{2.5}$ µg ml$^{-3}$)</th>
</tr>
</thead>
</table>
| Rees et al. (2006)$^a$  | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
Study participants smoked as they normally would to reflect normal smoking behaviour  
PM$_{2.5}$ levels were recorded using a TSI Sidepak AM510 Personal Aerosol Monitor located at the position of a child car seat | Partial ventilation | Not reported | 271 |
| Semple et al. (2012)$^a$  | Measurement of PM$_{2.5}$ levels in vehicles while smoking is taking place  
Study participants smoked as they normally would to reflect normal smoking behaviour  
PM$_{2.5}$ levels were recorded using a TSI Sidepak AM510 Personal Aerosol Monitor located at the position of a child car seat | Partial ventilation | 385 | 85 |
| Sendzik et al. (2009)$^a$  | See above | Partial ventilation | 1,249  
382 | 844  
222 |
| Clark et al. (2011)$^a$  | See above | Low ventilation | 16,000  
9,500  
2,900  
14,400  
15,800 | Not reported |
| Edwards et al. (2006)$^a$  | See above | Low ventilation | 3,645 | 2,926 |
| Liu et al. (2010)$^a$  | See above | Low ventilation | 2,875  
490  
303  
659  
860  
778  
1,670  
1,741 |
<table>
<thead>
<tr>
<th>Author, date and country</th>
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<th>SHS exposure – peak (PM$_{2.5}$ µg ml$^{-3}$)</th>
<th>SHS exposure – average (PM$_{2.5}$ µg ml$^{-3}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ott et al. (2008)$^{10}$ USA</td>
<td>See above</td>
<td>Low ventilation</td>
<td>3,184 2,389 1,394 3,808 3,212 2,828 1,138 1,051 3,104</td>
<td>1,113 529 465 688 1,150 1,060 420 203 627</td>
</tr>
<tr>
<td>Sendzik et al. (2009)$^{11}$ Canada</td>
<td>See above</td>
<td>Low ventilation</td>
<td>3,781 6,590</td>
<td>3,850 2,412</td>
</tr>
</tbody>
</table>
References


38. www.direct.gov.uk/highwaycode.


56. www.cma.ca.


