



Bristol JSNA Chapter 2018

Child Injury Prevention

Chapter information	
Chapter title	Child Injury Prevention
Chapter reference group	Joint Health Outcomes Group (sub-group of the Bristol Children and Families Partnership Board)
Chapter author(s)	Jessica Williams, Public Health Principal (Early Years)
Quality reviewed by who/date	Jo Williams, Consultant in Public Health, Dec 2018
Chapter endorsed by	Child Injury Health Integration Team (part of Bristol Health Partners)
Chapter approved by	Joint Health Outcomes Group, Dec 2018
Linked JSNA chapters	

Executive summary

Introduction

Children are a vulnerable group who are, to a large extent dependent on adults to articulate their needs and to fulfil their requirements for health, well-being and safety. Injury constitutes a major cause of death and disability for children in England, the majority of which are unintentional, defined by NICE as 'predictable and preventable'.

Unintentional injuries in and around home are a major cause of death and disability among children under five years in England. Health visitors and Children's Centres are critical workforce through the contacts they have with families of under-fives for raising parental awareness about how their developing child is at risk of different injuries as they develop new skills, and to support parents with practical and accurate safety advice for prevention. Among children and young 5-18 years injury risks and location of injuries change as children spend more time outside the home become increasingly independent. Injuries are more likely to be associated with travel and leisure. Road traffic injuries and sports related injuries are particularly important for this age group. There opportunities for prevention in settings and services including: schools and colleges, play and leisure services, youth groups and voluntary organisations.

Factors that contribute to accidental injury include: familial characteristics, such as single parenthood, low maternal education, low maternal age, large family size; environmental circumstances, such as poor housing; and behavioural factors, such as drug or alcohol misuse, much research, and consequently the evidence base, is organised around environmental factors. There is a persistent social gradient for all types of unintentional injuries and inequalities have widened over time. Children of never-employed or long-term unemployed parents are 13 times more likely to die from an unintentional injury than children whose parents are employed in higher managerial and professional occupations. Children from deprived backgrounds or living in urban areas are more likely to be injured than children from more affluent backgrounds or living in rural areas, and boys are more likely to suffer injury than girls. Children with behavioural difficulties such as ADHD or long term conditions such as cerebral palsy or epilepsy may increase the likelihood of injury.

In Bristol between 2014-1017 there were 40,426 children under five were admitted to hospital due to injury. Further analysis has showed that 54% of these admissions were for children living in the most deprived quintiles. The most common reason for admission for under -fives is falls, followed by burns. Admissions to hospital for under- fives due to an injury in Bristol are above the England average, and is ranked 3rd for the number admissions out of the eight core cities. In contrast to the under-fives, most occur at play or leisure away from the home rather than inside the home. The most common type of fall for primary age (5-10 years) and secondary age (11-18 years) involves playground equipment. Followed by slipping, tripping and stumbling and

then falls from ice-skates, skis, roller-skates or skateboards. For road traffic injuries the rate for children and young people 0-15 years in Bristol is 13.5 per 100,000 which is lower than the England average 17.9 per 100,000 for 2012-14 and all the other core cities. The most deprived areas continue to be affected the most by road traffic injuries. Cyclists, pedestrians and motorcyclists are the most vulnerable accounting for over three quarters of the casualties.

This JSNA considers unintentional injury for children and young people 0-18 years. The chapter does not include deliberate injuries in children and young people or injury in adulthood.

Key issues and gaps (summary of section 8)

There are weaknesses in the data available, with the cause of hospital admissions unknown for nearly 9% of hospital admissions for children 0-18 years. Also, little is known nationally about unintentional injuries that do not result in hospital admissions but are treated in other health care settings such as (A&E, minor injuries, pharmacists, GPs) or at home. Every year there are millions of non-fatal injuries in the UK. Figure (on left hand side) illustrates that deaths due to injury are just the tip of the iceberg. For each person who dies many more are admitted to hospital, attend Emergency Departments or visit their GP. Parents and carers in Bristol may access advice and treatment for unintentional injuries from:

- Self-care – online resources NHS Choices, administering first aid at home
- Pharmacists
- Early Years Setting/School
- GP Practice, Health Visitors, School Nurses
- Minor Injuries Unit
- Walk-in Centres
- 111/Out-of-hours
- Ambulance service
- Hospital Admissions
- A&E attendances
- Rehabilitation

Out of the above locations data is only reported routinely on hospital admissions to Public Health. Therefore there is potential to better understand the local burden of injuries from all advice and treatment services however work is required on making the data available for analysis and then improving the coding of the data to ensure that coding is consistently applied.

Recommendations (summary of section 10)

Home Safety

- Maximise use of existing evidence based resources to prevent child injury and work towards ensuring consistency of messaging by different practitioners

Outdoor Play and leisure – develop a partnership network of providers of play and leisure services to ensure policy and strategy:

- takes a balanced approach to assessing the risks and benefits of play and leisure environments and activities
- promotes the need for children and young people to develop skills to assess and manage risks, according to their age and ability
- takes into account children and young people’s preferences about the types of outdoor play and leisure activities they want to participate in
- takes account of the needs of all children and young people, including those from lower socioeconomic groups, those from minority ethnic groups with specific cultural requirements and those who have a disability

The Public Health Structure is changing the recommendation is that this is considered as a role for the Public Health Principals to business partner with other departments of the council and service providers.

Water Safety

- Use the data collected by schools on the percentage of children in Y6 who can meet the national swimming curriculum competencies to inform planning and accessibility of swimming interventions
- Promote safety around water to school age children – recommend delivery through schools, libraries, play and leisure services, voluntary organisations (scouts, guides)

Roads and transport

- Maintaining and managing road safety partnerships, policies, consultations

Improving data and intelligence on child injury

- Audit Home Safety Assessments of families eligible for Home Safety Equipment Scheme undertaken by Health Visitors
- Audit Incident/Accidents/Near Misses recorded by early years settings, schools and play settings Audit

Utilise national minimum emergency department datasets as they become available to better understand the burden of injury occurring locally and using A&E services

JSNA chapter report

A: What do we know?

1) Who is at risk and why?

Children are a vulnerable group who are, to a large extent dependent on adults to articulate their needs and to fulfil their requirements for health, well-being and safety. Injury constitutes a major cause of death and disability for children in England, the majority of which are unintentional, defined by NICE as 'predictable and preventable'. The causes of injury are diverse and risks vary with age: the main causes of unintentional injury are road traffic injury (RTI) - pedestrian injury in particular, drowning, poisoning, falls and burns (Fauth and Ellis, 2010). RTIs increase with age, while burns and scald injury are more prominent among the youngest children (Fauth and Ellis, 2010).

Factors that contribute to accidental injury include: familial characteristics, such as single parenthood, low maternal education, low maternal age, large family size; environmental circumstances, such as poor housing; and behavioural factors, such as drug or alcohol misuse, much research, and consequently the evidence base, is organised around environmental factors. These include the home, the road and the leisure environments (Towner et al., 2001). Children from deprived backgrounds or living in urban areas are more likely to be injured than children from more affluent backgrounds or living in rural areas, and boys are more likely to suffer injury than girls. Children with behavioural difficulties such as ADHD or long term conditions such as cerebral palsy or epilepsy may increase the likelihood of injury.

Severe injuries are associated with a range of health and psychosocial problems in both the short term and long term. These problems include post-traumatic stress (Martin-Herz et al, 2012), physical disability (Valadka S et al, 2000), cognitive or social impairment (Anderson et al, 2009) and lower educational attainment and employment prospects (Anderson et al, 2009). Severe paediatric injury may also place a significant psychological burden on families and carers (Sturms et al, 2000).

Injuries in the home

Unintentional injuries around the home are a major cause of death and disability among children under five years in England (PHE, 2014). These injuries result in an estimated 452,200 visits to A&E departments and approximately 40,000 emergency hospital admissions among children of this age each year. The majority of these injuries are preventable and because children under five account for a disproportionately high number of deaths and a large number of hospital admissions, local authorities may want to treat this group as a priority for action within unintentional injury prevention strategies. The most common location for fatal injuries in children aged 1-4 years is in the home – 8% of deaths from all causes for children aged 1-4 years between 2008 and 2012 were due to injuries at home. There are a number of factors that are associated with unintentional injuries for the under-fives occurring in and around the home:

- child development (as children develop new abilities they are exposed to new injury risks)
- the physical environment in the home (poorer maintained homes are associated with higher injury risks)
- the knowledge and behaviour of parents and other carers (including literacy) – younger

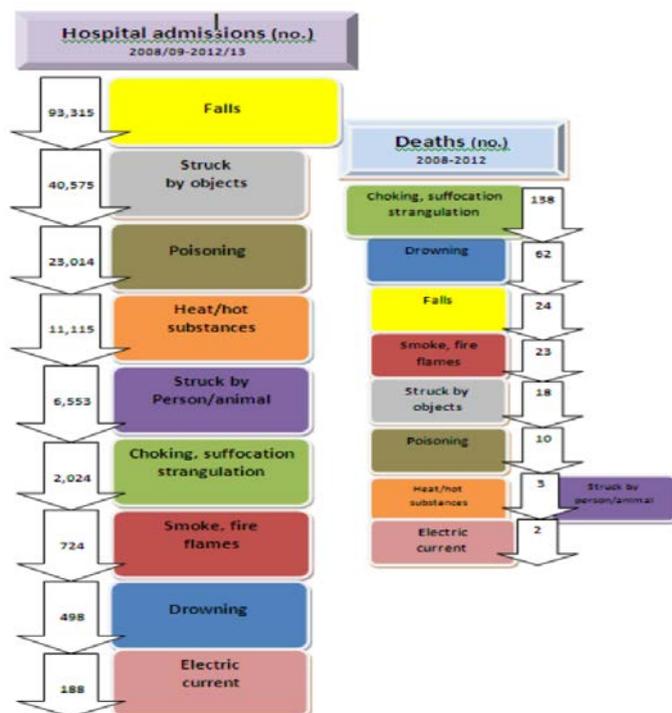
parents and those with lower levels of education are more likely to have children who experience injuries requiring medical care

- overcrowding or homelessness (children living in overcrowded homes or in temporary accommodation are at greater risk of injury)
- the availability of safety equipment (the presence of safety equipment, whether permanent (e.g. smoke alarms, thermostatic mixer valves) or temporary (e.g. safety gates) is associated with lower risk of child injury)
- new consumer products in the home (e.g. hair straighteners, button batteries)

There is a persistent social gradient for all types of unintentional injuries and inequalities have widened over time. Children of never-employed or long-term unemployed parents are 13 times more likely to die from an unintentional injury than children whose parents are employed in higher managerial and professional occupations. PHE analysis shows that the emergency hospital admission rate for unintentional injuries among the under-fives is 45% higher for children from the most deprived areas compared with children from the least deprived (Hippisley-Cox et al, 2002).

Emergency hospital admissions among the most deprived children under five in 2012-13 were close to 1,400 per 100,000. For the least deprived children the rates were under 1,000 per 100,000.

Previous research indicates that for some injury types this inequality may be much larger. For example, children living in the most disadvantaged areas have a 50% higher risk of being burned, scalded or poisoned resulting in primary or secondary care attendance than those in the most advantaged areas (Orton et al, 2012). Hospital Admissions data shows that boys have higher rates of death and hospital admissions than girls. Between 2008-09 and 2012-13 55% of admissions were for boys and 45% for girls. For deaths, the difference by sex is similar: 60:40.



Accident types have different profiles – some are more likely to be fatal, such as choking and strangulation and drowning. Others, such as burns and scalds, may result in hospitalisation and sometimes serious long-term acquired disability, but rarely death. Figure 1 (left hand side) shows the causes of emergency hospital admissions and deaths for the under-fives following unintentional injuries in England over the five-year period 2008-09 to 2012-13 with the number for each.

Figure 1: Shows the causes of emergency hospital admissions and deaths for the under-fives following unintentional injuries over a five year period

The injury and mortality data in figure 1 have led Public Health England to recommend that local authorities could prioritise action on five causes of unintentional injuries among the under-fives.

These are the injuries with the greatest risk of severe harm, hospital admission or death, that also have evidence based interventions to reduce injury risk. The five causes are:

Choking, suffocation and strangulation – these injuries result in the highest number of deaths for the under-fives. There are three main groups

- Inhalation of food and vomit – the injuries primarily affect children under the age of two
- Hanging and strangulation – in England there were at least 28 deaths to the under-fives between 2008 and 2012. Older style blind cords, not meeting current safety standards are a major hazard
- Suffocation in bed – 37 children died from this cause in England over the five-year period

Falls – injuries from falls lead to the greatest number of hospital admissions for under-fives. Falls can be grouped into:

- Falls from furniture
- Falls on and from stairs and steps
- Falls while being carried - these injuries primarily affect children under the age of one
- Falls from/out of buildings, such as from windows or balconies

Poisoning – the two main risks are medicines and household chemicals. These injuries lead to very high numbers of short hospital admissions but, thankfully, very few deaths. However, these admissions are on the increase. They peak when the child is age one for household chemicals and age two for medicines. Medicines are the cause of over 70% of poisoning admissions and household chemicals account for nearly 20% of the admissions.

Burns and scalds – are the fourth highest cause of hospital admissions for under-fives – but deaths are rare. In total, 12% of burns and scalds admissions are for more than three days compared with an average of 5% for all unintentional injuries. These injuries are expensive to treat and serious burns and scalds are disfiguring and disabling for young children. They come from five main sources:

- Scalds from hot drinks lead to moderate numbers of admissions, though with longer than average hospitalisations – admissions peak for children aged one year
- Contact with hot household appliances cover a range of hazards – in recent years the number of children being treated for burns from hair straighteners has doubled and they now account for up to one in ten burns injuries to children
- Contact with other hot fluids, including water heated on a stove remains a serious hazard
- Burns from hot heating appliances, including radiators and pipes
- Bath water scalds lead to relatively low numbers of admissions – they peak when children are about a year old and may be associated with neglect.

Drowning – the lethal nature of drowning (62 deaths) means the rate of deaths is very high in comparison to emergency hospital admissions (8 admissions for every death). For the under-fives the main risk is the bath or in ponds and swimming pools at home. For older children the risk is in open water in outdoor spaces. The circumstances of a third of deaths caused by drowning and submersion are unspecified.

Injuries in the road

Children and young people have the right to safe roads. However in England 1,712 children and young people under the age of 25 years died and 30,895 serious injuries on the roads between 2012 and 2016 according to police data (Department of Transport STATS19). There are significant inequalities in the distribution of traffic injuries among school age child pedestrians these are shown in graph below (figure 2).

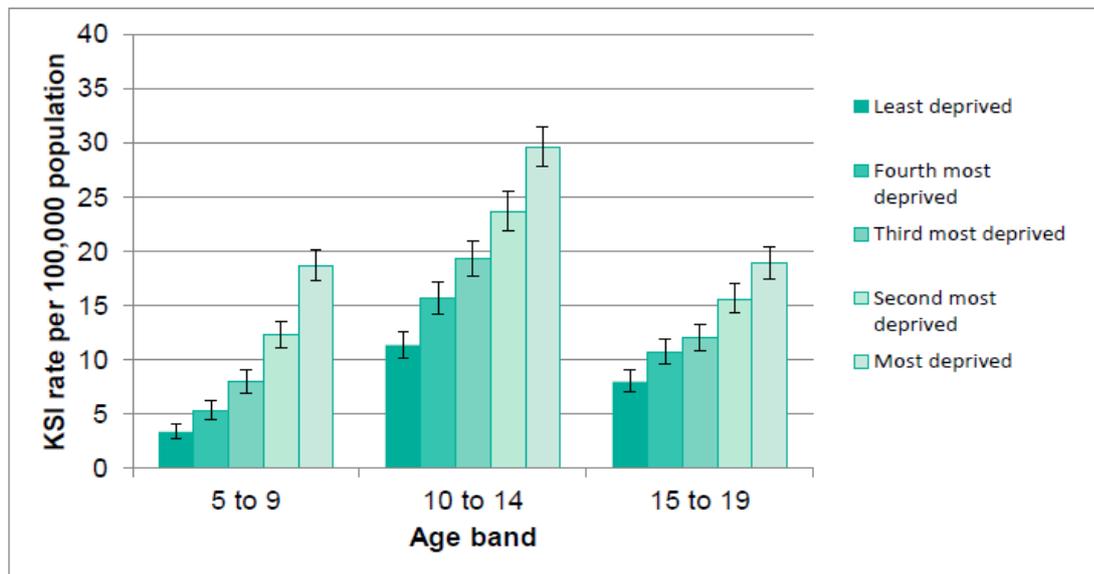


Figure 2: The graph above shows the rate of killed or seriously injured pedestrian casualties per 100,000 populations, by age band and Index of multiple deprivation 2010 quintile. England, 2012-16. Source: Reducing unintentional injuries on the roads among children and young people under 25 years: Public Health England (March 2018)

In pedestrians 5 to 9 years, the rate of fatal and serious injuries to children living in the 20% most deprived areas is six times higher than to children in the 20% least deprived (18.6 killed or seriously injured (KSI) per 100,000 compared with 3.3 per 100,000 respectively). Among 10 to 14 year old pedestrians, there was a 2.6 times greater rate, with 30 KSI per 100,000 in the 20% most deprived areas compared with 11 KSI per 100,000 in the 20% least deprived areas. There are also inequalities among school age cyclists. Among those aged 10 to 14 years there were 4.2 fatal or serious injuries per 100,000 people in the least deprived 20% of areas, compared with 7.0 KSI per 100,000 in the 20% most deprived.

Injuries in leisure environments

Injuries that occur in leisure pursuits relate to a range of environments such as the school, playground, rivers and railways. Approaches to reduce/minimise fatalities/injuries in the leisure environment have focused on sports injuries, playground injuries, drowning injuries and injuries from firework (Towner et al., 2001).

Severe and fatal Injuries

Trauma Audit & Research Network (TARN) produced a report titled 'Two Years of severe Injury in Children January 2013 to December 2014' where they reviewed 1,511 severely injured children

treated in England & Wales. Road traffic incidents and resulting head injuries still predominate as the major causes of severe injury and mortality; however, as a proportion of injury mechanisms, asphyxia and drowning have the highest percentages for death. Severe traumatic brain injury is still the leading numeric cause associated with death, but new categories for the mechanism of trauma show that proportionately asphyxia and drowning have high relative risks for mortality. Males are more likely to be severely injured and non-accidental injury still makes up about 10% of the causes for severe injury (under the age of 2 years). Davies et al (2015) study highlights that major injury occurring as a result of severe child abuse has a typical demographic pattern. These children tend to be under 12 months of age, with more severe injury. Road traffic incidents are high on the list for causing severe injury too, accounting for about 40% consistently across the years. About half of the children are involved as pedestrians, and cyclists are recorded as being 20% of these road traffic incident figures.

Child Death Overview Panel – the Safeguarding Children’s Board is responsible for ensuring that a review takes place of each death of a child in the area by a Child Death Overview Panel (CDOP). In reviewing the death of each child, the CDOP should consider modifiable factors, for example, in the family environment, parenting capacity or service provision, and consider what action could be taken locally and what action could be taken at a regional or national level to prevent a future child death.

2) What is the size of the issue in Bristol?

Routinely collected data can be used to better understand the burden of child injuries in Bristol. The most complete and accurate data that is readily comparable with other statistical neighbours is that on hospital admissions for injuries. In 2015/16 the numbers and rates of admissions have increased by 22.1% in under 1s, by 5.2% in 1 to 4 years and by 20.7% in 11 to 18 age groups comparing to the previous year. However, these increases are not statistically significant as the numbers are small and are likely to be due to random year-on-year fluctuations in numbers of admissions. For children 5-10 years the admissions decreased by 9.1% in 2015/16.

Gender:

Similar to national statistics, there are gender differences in Bristol admissions to hospital in children. The rates of unintentional injury admissions are higher for boys than for girls by approximately 30% on average between 0 to 18 years. For children under 1 year the age the gender difference is smaller at 10.2%, rising to 27.2% in 1 to 4s, 15.3% in 5 to 10s and 46% in 11 to 18s age groups in 2015/16.

Age:

Children 0-4 years:

Between 2014-1017 there were 40,426 children were admitted to hospital in Bristol due to injury for children under five. Further analysis has showed that 54% of these admissions were for children living in the most deprived quintiles. The most common reason for admission for under -fives is falls, followed by burns. The tables below show the types of fall from children 0-1 year and 1-4 years.

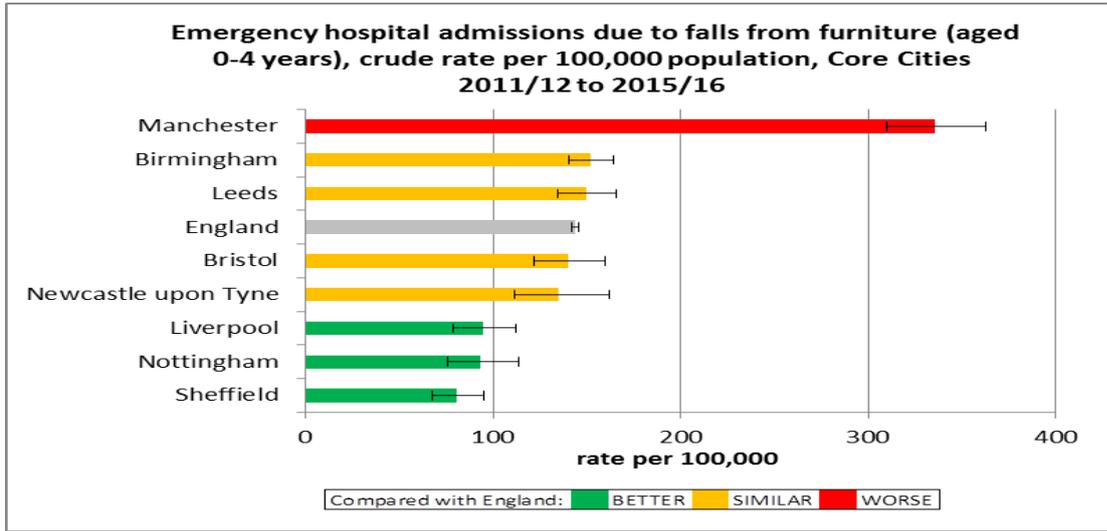
Types of falls 0-1 year:	Type of falls 1-4 years
<ul style="list-style-type: none"> • 40% occur whilst being carried/supported by another person • 37% were falls from furniture – beds were the most common item of furniture to fall from 	<ul style="list-style-type: none"> • 37% were falls from furniture – chairs were the most common item of furniture to fall from • 18% were falls following a slip, trip or stumble • 14% were falls on stairs or steps

Burns and Scalds Assessment Template (BASAT) is a locally developed burns surveillance tool that has been developed for use in the Children's Emergency Department and the Burns Unit at the Children's Hospital. From June 2015 to June 2017 there were 583 cases, equivalent to 5-6 a week, or almost one a day. Of these 440 cases were children under five years. The vast majority of these are potentially preventable injuries in young children, some of whom will end up with lifelong scarring. Hot drinks and hot appliances (hair straighteners, irons) were the two main causes that required a hospital admission for children under five.

How does Bristol compare to other core cities for unintentional and deliberate injuries in children under five?

The Figure 3 below shows how Bristol compares to the England average and other core cities on hospital admissions for injuries to children 0-4 years. Admissions to hospital in Bristol are above the England average, and is ranked 3rd for the number admissions out of the eight core cities.

Figure 3



Children and young people 5-18 years:

For these age groups falls remain the most common reason for a hospital admission. In contrast to the under-fives, most occur at play or leisure away from the home rather than inside the home. The most common type of fall for primary age (5-10 years) and secondary age (11-18 years) involves playground equipment. Followed by slipping, tripping and stumbling and then falls from ice-skates, skis, roller-skates or skateboards.

Types of falls 5-10 years:	Type of falls 11-18 years
<ul style="list-style-type: none"> • Fall involving playground equipment • Fall on same level from slipping, tripping and stumbling • Fall involving ice-skates, skis, roller-skates or skateboards 	<ul style="list-style-type: none"> • Fall on same level from slipping, tripping and stumbling • Fall same level due collision/pushing by another person • Fall involving ice-skates, skis, roller-skates or skateboards

Road Traffic Injuries

The graphs below (figure 4 and Figure 5) shows the crude rate of children and young people killed or seriously injured in road traffic accidents per 100,000 population in Bristol and how Bristol compares to the England average and other core cities. The rate for children and young people 0-15 years in Bristol is 13.5 per 100,000 which is lower than the England average 17.9 for 2012-14 and all the other core cities. Road Injuries for 11-15 years are the highest population group at 29.5 per 100,000

Figure 4

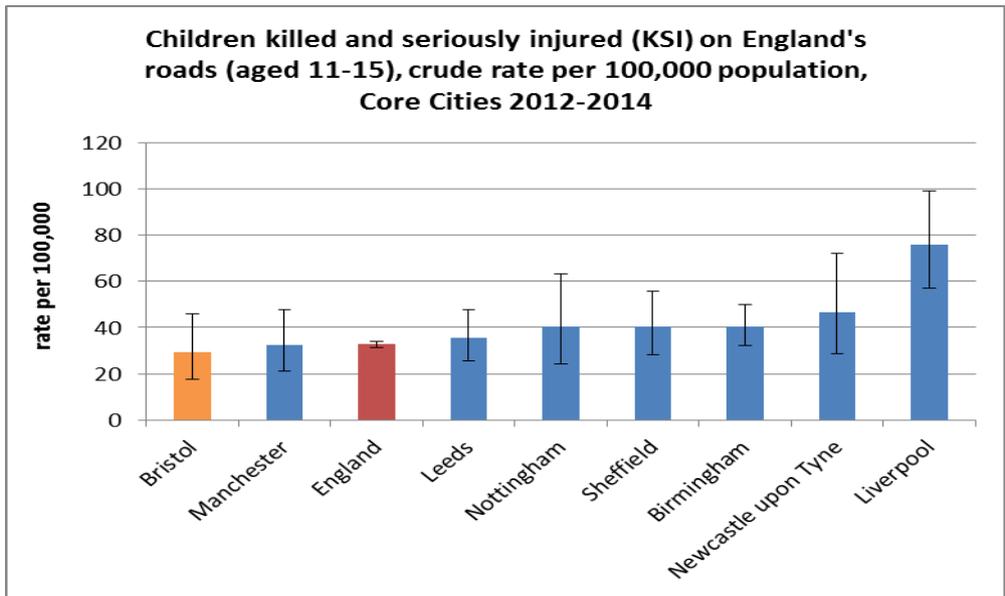
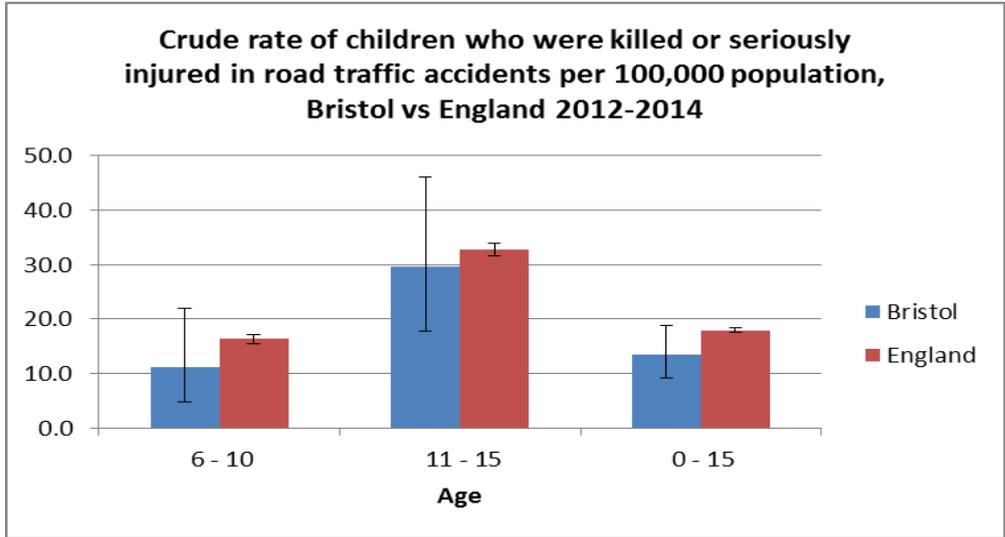


Figure 5

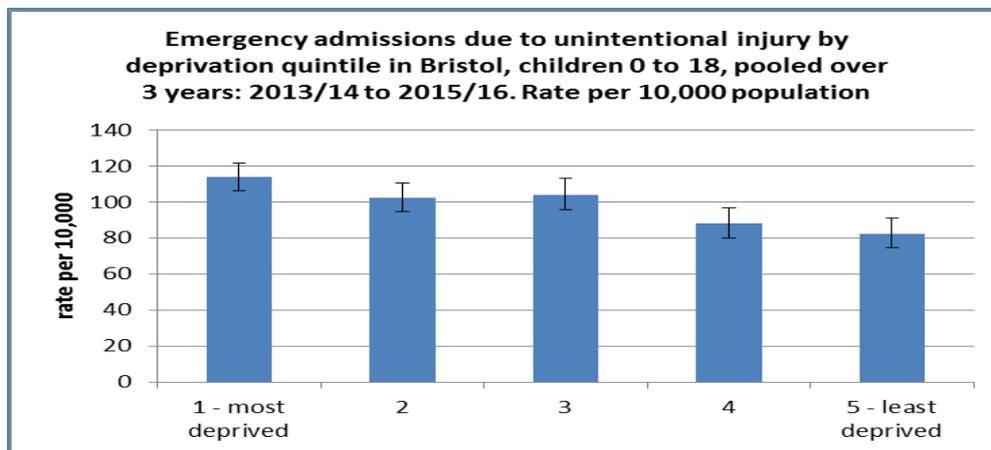


Health inequalities are seen in data on road traffic injuries. From 2011 to 2013 the 25 most deprived super output areas had 19% of pedestrian casualties and 18% of children casualties. Compared to the twenty five least deprived super output areas had 4% of pedestrian casualties and 3% casualties. There is a downward trend for all casualties over 10 years however there is still more to do. The most deprived areas continue to be affected the most. Cyclists, pedestrians and motorcyclists are the most vulnerable accounting for over three quarters of the casualties. Young men are the most vulnerable demographic.

Deprivation

Injuries occur inequitably across the cities with wards that have greater levels of deprivation as measured by the Index of Multiple Deprivation having greater rates of injuries in children. The rate of unintentional injury emergency admissions of 0-18s living in the most deprived quintile is statistically significantly higher than the rate among those living in the two least deprived quintiles of the city (quintile 4 and 5). The rate of unintentional injury emergency admissions of 0-18s living in the least deprived quintile is statistically significantly lower than the rate among those living in the three most deprived quintiles of the city (quintile 1-3).

Figure 6



Other factors known to affect hospital attendance are the perception of severity of the injury and the proximity of hospital from home address. Therefore knowing when it is necessary to attend for advice and having knowledge of first aid and confidence to use it. The map (figure 7) below shows the admission rates of injury for children 0-18 years by ward and the location of urgent care services in Bristol. Admission rates are highest in the Hotwells and Harbourside ward and this is within 2 miles of Bristol Royal Hospital for Children.

Unintentional injury admissions among children 0 to 18 - rates per 10,000 population, Bristol wards 2013/14 to 2015/16

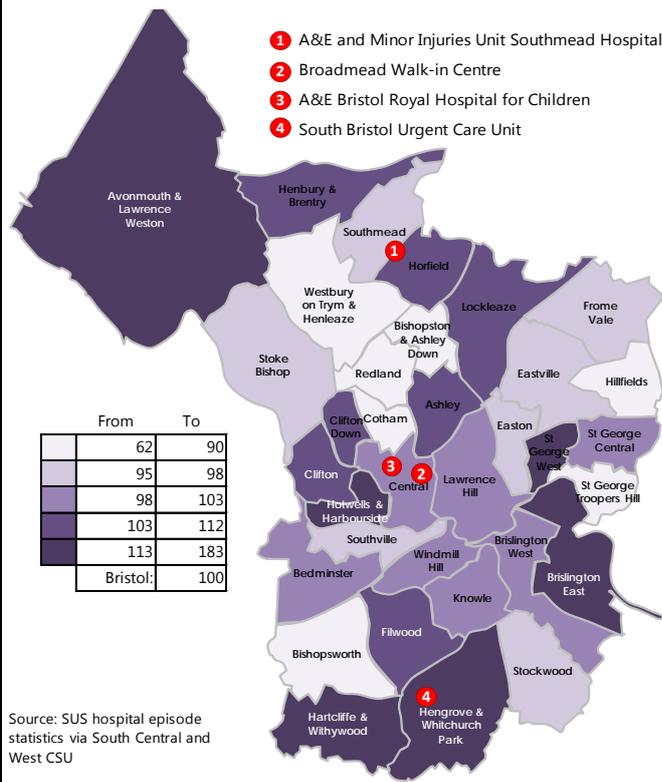


Figure 7

3) What are the relevant national outcome frameworks indicators and how do we perform?

Public Health Outcomes Framework Indicators Related to Injury Prevention include:

- Age-standardised rate of mortality from causes considered preventable per 100,000 population (Indicator 4.3)
- Number of people reported killed or seriously injured on the roads, all ages, per 100,000 resident population (Indicator 1.10)
- Crude rate of hospital emergency admissions caused by unintentional and deliberate injuries in children and young people aged 0-4 years, years by 10,000 resident population
- Crude rate of hospital emergency admissions caused by unintentional and deliberate injuries in children and young people aged 0-14 years, years by 10,000 resident population
- Crude rate of hospital emergency admissions caused by unintentional and deliberate injuries in children and young people aged 15-24 years, years by 10,000 resident population

The chart (figure 8) below shows PHOF indicators and how Bristol compares to the rest of England

Indicator	Period	Bristol		Region England		England		Best	
		Recent Trend	Count	Value	Value	Worst	Range		
Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-4 years)	2016/17	→	418	136.4	133.1	126.3	265.1	47.3	
Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-14 years)	2016/17	→	900	111.7	104.3	101.5	190.5	43.3	
Hospital admissions caused by unintentional and deliberate injuries in young people (aged 15-24 years)	2016/17	↓	1,124	150.2	147.9	129.2	254.8	64.0	
Emergency hospital admissions due to inhalation of food or vomit (aged 0-4 years)	2012/13 - 16/17	-	20	13.0	16.7	11.3	-	Insufficient number of values for a spine chart	-
Emergency hospital admissions due to falls from furniture (aged 0-4 years)	2012/13 - 16/17	-	197	127.9	134.4	138.2	453.6	55.9	
Emergency hospital admissions due to hot tap water scalds (aged 0-4 years)	2012/13 - 16/17	-	20	13.0	7.6	5.7	-	Insufficient number of values for a spine chart	-
Emergency hospital admissions due to hot water burns (aged 0-4 years)	2012/13 - 16/17	-	157	101.9	52.6	42.7	197.9	10.2	
Emergency hospital admissions due to poisoning from medicines (aged 0-4 years)	2012/13 - 16/17	-	174	112.9	121.9	101.5	227.9	15.7	

Figure 8

The trends show that hospital admissions following an an injury in the last year are similar for children 0-4 years in Bristol to the England average. However hospital admissions for children and young people 0-14 and 15-24 years in Bristol are performing worse than the England average. However something to note is that these data sets includes both unintentional injuries and deliberate injuries. In analysing the Bristol data further the impact of including deliberate injuries with unintentional injuries can be seen in the charts below.

Unintentional Injury including deliberate injury Unintentional injury excluding deliberate injury

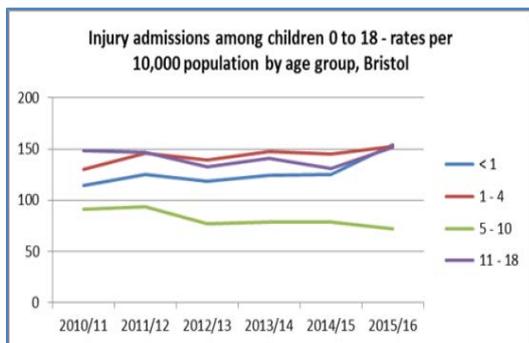


Figure 9

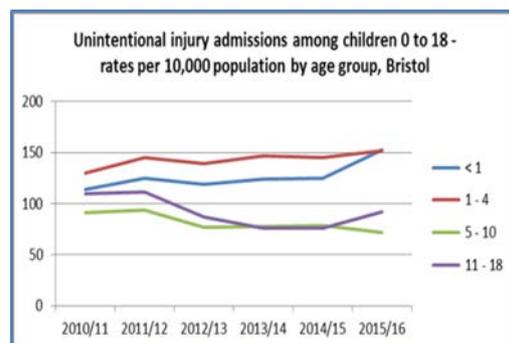


Figure 10

From the charts (figure 9 and 10) above including hospital admissions for deliberate with unintentional injuries for under 1s, 1-4 years and 5-10 years has very little impact to the curve. However the for children and young people 11-18 years (purple line) the impact of including deliberate injuries has a significantly increases the number of admissions for this age group. Please note that Deliberate injuries are out of scope for the Child Injury JSNA and are considered in the Children and Young People Emotional and Mental Health and Wellbeing JSNA.

4) What is the evidence of what works (including cost effectiveness)?

The key recommendations from NICE on preventing injuries in children and young people under 15 are:

- A co-ordinated approach is needed – NICE recommends that local partnerships nominate or employ an individual to perform a children and young people injury prevention co-ordinating role. This person should work to ensure that a co-ordinate injury prevention strategy exists locally and that activities undertaken are done so in partnership across agencies/departments.
- Identification of ‘at risk’ families – the guidance outlines ways in which children from families at higher risk are identified. This may be done through professionals who already access family homes or by using existing data from surveys, needs assessments and databases.
- Provision of home safety assessments – NICE recommends prioritising the households identified above for home safety assessments and the supply and installation of home safety equipment. ‘Priority households’ could include those with children aged under five, families living in rented or overcrowded conditions or families living on a low income.
- Provision of home safety equipment and advice with appropriate follow up – where appropriate, supply and install suitable, high quality home safety equipment. Where resources are limited, it may be necessary to narrow down further the households being prioritised. Ensure education, advice and information is given during a home safety assessment, and during the supply and installation of home safety equipment. Contact homes identified as being in need of an equipment maintenance check or follow-up.
- Ensure appropriate workforce development – staff working with families with young children should have access to appropriate training.
- Ensure appropriate road safety measures are implemented – a local road safety partnership or equivalent should be responsible for developing policies and strategies relating to road safety measures. They should promote and ensure the enforcement of speed reduction programmes and evaluate local road safety interventions.
- Ensure appropriate outdoor play and leisure facilities are available locally – children should have access to appropriate outdoor play facilities where the benefits of physical activity outweigh the risks of injury. In addition promote the use of cycle helmets, seasonally appropriate advice to parents/carers on the dangers of water and firework safety campaigns.

<https://www.nice.org.uk/guidance/ph29>

Reducing unintentional injuries in and around the home among children under 5 years: Public Health England (March 2018)

This document sets out three action areas for local authorities and their partners that will reduce the numbers of children injured and killed. It also describes four step plan local partnerships can take to build robust injury prevention strategies.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file

[/696646/Unintentional injuries under fives in home.pdf](#)

Reducing unintentional injuries on the roads among children and young people under 25 years: Public Health England (March 2018)

This document sets out three key actions that can be taken by local authorities and their partners to further reduce the numbers of children and young people injured and killed on the roads. Drawing on what currently works, a four-step model is described to help build robust injury prevention strategies.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/695781/Reducing_unintentional_injuries_on_the_roads_among_children_and_young_people_.pdf

Keeping Children Safe at Home

The Keeping Children Safe programme has enhanced the evidence base for preventing falls, poisoning and thermal injuries in the under-fives. The findings suggest that some falls, poisonings and scalds may be prevented by incorporating specific safety advice into child health contacts. Children's centres can increase some safety behaviours in families if provided with evidence-based resources. The findings, including evidence of effectiveness and activities for use with parents, are summarised in an Injury Prevention Briefing (see link below) covering the prevention of fire-related injuries, falls, poisonings and scalds.

<https://www.nottingham.ac.uk/research/groups/injuryresearch/documents/ipb2-final.pdf>

A Safe Systems Approach to Road Safety in Bristol

Safe mobility around Bristol is central to the quality of life of all. A Safe Systems approach to road safety is based on the principle that life and health should not be compromised to meet the demands of mobility. Bristol should be a city where it is safe for a 10 year old child to walk independently to school.

www.bristol.gov.uk/documents/20182/34140/A%20Safe%20System%20Approach%20to%20Road%20Safety%20in%20Bristol.pdf/ca0c58b3-2e14-4325-88dd-fd12f4627a02

The Bristol Twenty Miles Per Hour Limit Evaluation (BRITE) Study

This study aimed to evaluate the impact of the roll-out of 20mph speed limits across the city of Bristol and found statistically significant reductions in average traffic speeds of 2.7mph across the city of Bristol. Annual rates of fatal, serious, and slight injuries following the introduction of the 20mph speed limits are lower than the respective pre-20mph limit rate, thus showing a reduction in the number of injuries. More children in Bristol now walk or cycle to school following the introduction of the 20mph speed limits. <http://info.uwe.ac.uk/news/uwenews/news.aspx?id=3766>

RCPCH report: Why children die (2014)

In 2012 over 3,000 babies died before age one, and over 2,000 children and young people died between the ages of one and nineteen. Infant, child and adolescent death rates in the UK have declined substantially and continue to fall. However, there are significant areas of concern:

- The overall UK childhood mortality rate is higher than in some other European countries.

- The key areas where the UK rates appear to be relatively high are infant deaths and deaths among children and young people who have chronic conditions.
- Injuries are the most frequent cause of death in children after their first year of life and although unintentional injuries are the most common, the failure to reduce intentional injury deaths among young people recently is also a pressing concern.
- Several reports have shown that health services do not always deliver optimal care for children and young people and lives may be lost as a result.
- There are marked social inequalities in death rates. Many of the causes and determinants of childhood deaths are preventable.

<https://www.rcpch.ac.uk/resources/why-children-die-research-recommendations-2012>

Return on Investment

The average cost for Accident & Emergency treatments leading to admission is £146 per patient, and £66 for minor injury services leading to an admission. This would correspond to a minimum total Accident & Emergency cost of about £9 million for unintentional child injury per year in England.

In addition, the total hospital costs for treating severe childhood injuries requiring inpatient stay is estimated at between £16 million and £87 million (estimates of average injury cost range from £2,494 per case for an average injury (Polinder et al, 2008) to £14,000 per case for an RTI injury. RTIs alone were estimated to cost about £31 million in short-term medical costs in 2012 (Department for Transport, 2011). The personal costs of an injury can be devastating. For example, a toddler's severe bathwater scald will require years of painful skin grafts. A fall at home can result in permanent brain damage. The injuries can have major effects on education, employment, emotional wellbeing and family relationships. There are also high financial costs. For example, a traumatic brain injury (TBI) to a child under five from a serious fall may result in acquired disabilities which lead to high education and social care costs as well as loss of earnings to families and benefit costs to the state. The approximate lifetime costs for a three-year-old child who suffers a severe TBI is £4.89m. Injury reductions can be achieved at low cost.

5) What services / assets do we have to prevent and meet this need?

Surveillance of injury - admissions data for local NHS Trusts, which forms the basis of the national HES database, is routinely collected. Some hospitals have facilities to collect A&E data that can inform prevention activities.

Injury prevention activity was co-ordinated by Avonsafe until 2013 which was a network of stakeholders across four local authorities including Bristol. However due to organisational change and variation between and within the local authority districts - they have different populations, and levels of deprivation and disadvantage each authority took back responsibility for injury the delivery within each area. Co-ordination of injury prevention in Bristol is provided by the Joint Health Outcomes Group of the Children and Families Partnership Board.

In Bristol there are Health Integration Teams which function by a focused approach which will deliver healthier lives, earlier prevention of illness and disease, and better integration of healthcare across Bristol. The Child Injury Health Integration Team (HIT)

<http://www.bristolhealthpartners.org.uk/health-integration-teams/child-injury-hit/> is a multi-agency partnership of nurses, doctors, practitioners and scientists, working together to better understand the burden and causes of injuries occurring to children and young people across the wider Bristol area. CIPIC programme of work has involved data intelligence, advocacy and identifying potential prevention interventions.

Prevention Activity

Intervention	Brief Outline	Outcome
Health Visitors and Children's Centres	Health visitors and Children Centre's work collaboratively have an important role in preventing injuries. Injury prevention is one of the high impact areas for health visiting and there are opportunities to promote injury prevention at each of the universal contacts, target activities and through the drop-in health clinics. Children's Centres who identify injury prevention as a priority for their reach area raise awareness of home safety by running campaigns and activities in groups for parents that inform parents of hazards and how to reduce to the risk of harm.	Health Visitors and Childrens Centres will give advice to families on keeping children safe
Home Safety Equipment Scheme	Children from the most disadvantaged families are far most risk of an unintentional injury in the home. The Home Safety Equipment Scheme is a public health funded intervention that supplies and fits safety equipment such as blind cord cleats, safety gates, fireguards, cupboard and drawer locks, window locks/restrictors and carbon monoxide alarms. The scheme is targeted to families in receipt of means tested benefits who have a least one child aged under 5 years.	235 eligible families have had safety equipment fitted in homes 2016-17
Family Outcomes Plan	The Family Outcomes Plan aims to achieve better outcomes for families at the same time reducing risk, harm and vulnerability. Outcome 6.4 focuses on measure that could contribute to a reduction in unintentional injuries and improvement in living conditions. Measures include: <ul style="list-style-type: none"> • Home fire safety visit completed and actions followed up. • A smoke alarm or other safety equipment is installed and working (e.g. blind cord cleat, window latches, Co2 monitoring) • Medicines and poisons are kept locked away • Small objects that could choke a child under 3 kept away from reach • Actions have been taken to keep children safe from hot drinks and hair straighteners 	
Teeny Explorers	Avon Fire and Rescue Service and Children's Centres have been working with public health on developing a training programme for practitioners working with parents and carers with babies around 6 month of age that includes injury prevention, first aid and weaning advice called Teeny Explores.	The programme has been developed to train practitioners to deliver an intervention to parents and carers and will be

		piloted 2019.
Lifeskills	<p>Lifeskills provides unique theatrical scenarios which provide a realistic learning environment. These include houses, a road, shop, electricity substation, dark alleyway, building site and railway line. Participants make their way through the scenarios learning and demonstrating safety skills and experiencing emergency situations, including practising emergency 999 calls, discovering and reacting to a house fire, carrying out first aid and experiencing the consequences of trespassing on a railway line - all made very realistic with the use of light, sound and wind effects.</p> <p><u>Children's Year 6 Programme</u> - pupils learn how to take personal responsibility for their own safety, assess risks and cope with potentially difficult or dangerous situations. These children will move on to secondary school the following year where they will be expected to take more responsibility for their safety and the choices they make</p> <p><u>Special Educational Needs Programme (SEN)</u> - young people from the age of 11 who have learning disabilities are encouraged to take control of, and responsibility for, their own behaviour and safety. Lifeskills offers a programme for students to receive guidance on keeping safe from either our volunteer guides or school staff who have been trained to use the centre.</p>	<p>In academic year 2016-17 the activity was as follows: 3423 Y6 children from Bristol have completed the programme of these 777 were eligible for free-school meals</p> <p>28 young people of participated in SEN programme</p> <p>3 young parents living in supported accommodation attended with a Health Visitor</p>
Handi App	The HANDiApp aims to provide advice and support to parents and carers when their child is unwell. The app takes you through a series of questions about the symptoms your child is experiencing and then advises on the best course of action, whether that's to treat at home, to make a GP appointment, or to head to Accident and Emergency.	Total unique uses of the App: 16119 September 2016 – August 2017
Bristol Standard for Health – Unintentional Injury	<p>The Bristol Standard is a self-evaluation framework which helps Early Years settings, Childminders and Play settings to develop and improve the quality of their early years provision through an annual cycle of reflection.</p> <p>https://www.bristol.gov.uk/resources-professionals/bristol-standard</p> <p>Bristol Standard for Health – Unintentional Injury Framework supports early years settings with injury prevention activity</p>	<p>Stage 1 pilot – 12 settings participated</p> <p>Stage 2 pilot – childminders and play settings included</p>
Healthy Schools	In Bristol the majority of work with young people of school age is delivered through the Bristol Healthy Schools programme. All schools participating in the healthy Schools programme receive a school health profile which includes data on injury for their pupil population. When the national Healthy School programme finished in 2013 it gave us an opportunity to use the original structure and amend it to meet our needs. In consultation with our schools, we have developed a series of 'badges' or standards of best practice that we encourage schools to achieve in various areas of health and wellbeing. Injury prevention work is firmly embedded into the programme and mainly covered by the	<p>87/112 Primary Schools are engaged in Healthy Schools</p> <p>23/36 Secondary Schools are engaged in Healthy Schools</p>

	<p>PSHE Badge. Teaching about personal safety, preventing injury, road safety, sea safety, sun safety, first aid and responding in an emergency are all important topics covered in PSHE lessons from Key Stage 1-4 (PSHE Association PSHE Curriculum framework 2014-updated 2017). In some secondary schools pupils are offered the opportunity to gain First Aid certification.</p>	
Jigsaw PSHE Programme	<p>In Bristol to ensure provision of a fully comprehensive PSHE programme of study in our primary schools, Public Health has supported primary schools with purchasing the Jigsaw PSHE programme where safety is covered in an age appropriate and progressive way.</p>	<p>106 out of 112 Bristol Primary schools have purchased the Jigsaw curriculum materials.</p>
Avon Fire and Rescue Service	<p>Work with children and young people with the aim of reducing the risk of fire and water related incidents and road traffic injuries through education and raising awareness. The programmes they offer for practitioners and teachers to deliver in their settings include:</p> <ul style="list-style-type: none"> • Elfs (Early Years Foundation Stage) • Fire Awareness Delivery Park (KS1) • Fire and Risk education (KS3) • Water Safety Pack (KS3) • Wrecked - Road Safety Resource (KS4) <p><u>Firesetter Intervention Scheme</u> – this is targeted programme for children and young people who have shown an interest in fire play or firesetting</p> <p><u>Home Fire Safety Visits</u> – provide practical advice and education to prevent fires starting in the first place, escape routes, cooking and electrical safety and fit smoke alarms if required</p>	
Citizens Advice Bureau and Trading Standards Bristol City Council	<p>Trading Standards enforce consumer protection legislation. If residents of Bristol are sold unsafe or dangerous products these should be initially reported to the Citizens Advice consumer helpline. The consumer helpline assess the issue and pass it on to Trading Standards if it's appropriate. Trading Standards will decide whether to investigate your problem and where indicated take action to stop the trader from acting unfairly. For example they might educate the trader about the law or take legal action against them to stop them from trading completely.</p>	
Buy Wise Be Safe	<p>'Buy Wise Be Safe' is a resource to support an informed purchase on appropriate equipment for the under 5's and its safe use. It also fills an important gap in providing education and support to prospective parents and carers who need advice about what to look for, and promote its safe use, BEFORE buying expensive equipment – either second hand or new www.buywisebesafe.org.uk</p>	
Road Safety Interventions	<p>Bristol has a Road Safety Partnership and a Road Safety Strategy but currently limited implementation due to staff and budget constraints</p> <p><u>Bikeability scheme</u> in Bristol provides three levels of cycle</p>	

	<p>training and is accessible to all. Includes on- and off-road. Lessons are subsidised by Bristol City Council.</p> <p><u>Bristol Family Cycling Centre</u> provide subsidised off road cycling courses for all ages and abilities - including to schools and special schools</p> <p><u>Modeshift STARS</u> is a national schools award scheme that has been established to recognise schools that demonstrate excellence in supporting cycling, walking and other forms of sustainable travel. www.modeshiftstars.org</p>	
Water Safety	<p>There is sufficient provision for all schools to access swimming sessions for their pupils (at a cost) from the leisure provider in their reach area. Bristol Leisure Centres with swimming pools offer swimming lessons for children of all age groups. However these are at a cost to the family and therefore not accessible to all.</p> <p>Schools are required by Ofsted from academic year 2018-19 to publish the percentage of pupils in Y6 who met the national curriculum requirement to:</p> <ul style="list-style-type: none"> • swim competently, confidently and proficiently over a distance of at least 25 metres • use a range of strokes effectively • perform safe self-rescue in different water-based situations 	<p>Following publication of the national curriculum competencies schools percentages it will enable swimming interventions to be targeted.</p>
20mph Zones	<p>In Bristol there has been roll-out of 20 miles an hour signage in residential areas. The aims of 20mph speed limits in Bristol have been to reduce road casualties, increase levels of walking and cycling locally, and improve social cohesion in communities.</p>	<p>This will lead to a reduction in the number of fatal or serious traffic casualties and an increase in the number of children walking and cycling to school</p>

These activities should be informed, and where necessary/appropriate, commissioned on the basis of local and national data from child injury surveillance, and interventions should be chosen where an evidence base exists or evaluated where an evidence base is limited or lacking. Consistency of messaging for parents and carers by providers of injury prevention is essential. Whilst the focus of activities will be on primary prevention and the prevention of the injury event, injuries do still occur. Limiting harm through the administration of appropriate first aid following an injury and emergency treatment can be considered secondary prevention.

Children and young people requiring treatment for an intentional injury can access primary care support via their GP, Walk-in Centres and Minor Injuries. The Royal Bristol Hospital for Children (University Hospitals Bristol NHS Trust) provides an emergency care service for local resident children and a tertiary referral service for injured children across the South West. The hospital has Intensive Care, Burns, Head Injuries and Orthopaedic Services for children experiencing trauma. Where injuries have been sustained, activities to help the child resume their usual education and

social activities and limit the impact of their injuries can be considered tertiary prevention. A Children's Burns Outreach team provides out of hospital rehabilitation for children suffering burns and scalds. Children experiencing head injuries may be supported by specialised support to enable them to reintegrate to school.

6) What is on the horizon?

- There have been national reductions to the Public Health budgets, resulting in a review of all spending on public health programmes.
- Bristol has seen changes in the child population. Bristol has 83,800 children under 16 and 70,500 young people 16-24. We have seen increases of around 11,700 children in the last decade and 900 children in the last year. The increase has been largely amongst the under 8 year olds and in particular in children 2-5 years.
- A National Accident Prevention Strategy Advisory Group, Chaired by the Royal Society for the Prevention of Accidents (ROSPA) launched a national accident prevention strategy in October 2018.
- The new Emergency Department (ED) Minimum Clinical Dataset was introduced in all EDs from October 2017. This should improve the ability to capture injury data more accurately and more consistently across different EDs in the future, though it is likely to take some time for the quality of the data to be good enough for monitoring changes in ED attendances for different injury types.
- National Digital Child Health Transformation Programme – aims to transform child health information services allowing better monitoring of every child's health and providing access to information for all those that are involved in the child's care, where appropriate, to ensure that all children get the best possible start in life. Professionals will have access to key health information at the point of care to improve decision making. Public health professionals will have access to more comprehensive, more up to date datasets to be better informed.
- Housing stock – demand for housing in Bristol far exceeds the number of properties that are available. With so many more applicants for social housing than vacancies, many households assessed are unlikely to ever get an offer of accommodation. Therefore seek property in the private rented sector where property condition in the private rented sector is improving year on year.

7) Local views

Early Years Children's Centre Survey - Bristol City Council is dedicated to giving all children a good start in life and in 2016 undertook to find out more about families with children under five. 10,000 questionnaires were distributed and 1056 were completed. The questions of relevance included - do you feel safe walking with your child in your local area? 92% of respondents answered yes. For those who did not feel safe walking in their local area the two main reasons given were road traffic and antisocial behaviour. Participants were also asked which Children's Centre services they would be interested in using in future. Advice on keeping children safe at home and first aid was in the top

three interventions along with stay and play groups and parenting courses.

Red Cross SAFE Study the Red Cross commissioned a study to explore how, when and why people use urgent and emergency care services, and whether any groups could be supported in their decision to attend accident and emergency (A&E) departments through first aid education. The study surveyed people using urgent care services and found that falls, pain and other types of accident were the most common reasons in the sample for attending. The conclusion of the study was that first aid education could support the public with greater knowledge and confidence to use over-the-counter medicines and provide self-care, and to successfully navigate the complex range of urgent care services available.

Pupil Voice Survey - all primary and secondary schools in the city are invited to take part in the survey. About a third of all children in each year group (Years 4, 6, 8 and 10) pupils complete the survey. The survey provides detailed insight into the behaviours, attitudes and concerns of young people on a range of topics relating to health and wellbeing – including unintentional injury. 40% of primary pupils reported they had an unintentional injury in the last 12 months that was treated by a doctor or nurse. 35% secondary pupils said they were treated for an unintentional injury by a doctor or at a hospital within the last year. In all year groups, males are more likely to have reported such an injury. The most common cause of unintentional injury reported by primary and secondary school pupils were sports injuries. Sports injuries were the most prevalent among secondary school pupils, while falls, trips and slips were more often reported as the cause of injury for primary school pupils. Sport injuries were twice as common amongst male respondents in primary and secondary schools. 40% of Year 6 pupils reported that they had an unintentional injury in the last 12 months that was treated by a doctor or nurse, which is higher than the national reference sample statistic (36%).

Bristol Royal Hospital for Children Emergency Department Patient Reported Outcomes Measures (PROMs) – issue a PROMs questionnaire at discharge (PedQL) and Trauma and Audit Research Network (TARN) send one out again at 6 months post discharge. Between October 2016 and September 2017, 36 questionnaires were completed at prior to discharge and of these 6 completed the 6 month follow-up questionnaire.

B: What does this tell us?

8) Key issues and gaps

Key issues in Bristol:

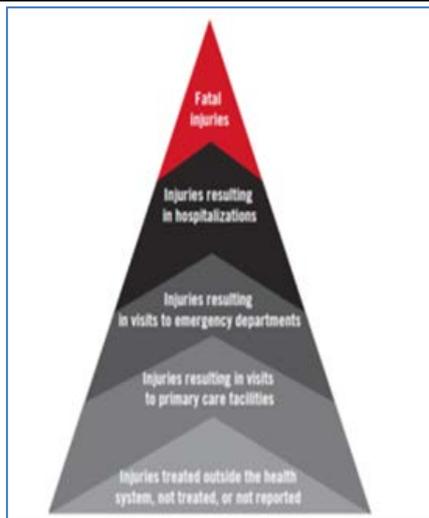
- Housing – shortage of, quality of housing available and number of families living in temporary accommodation
- Outdoor facilities – cuts in BCC budgets for play facilities, parks, and libraries which impacts the opportunities for children to explore and develop so they learn to manage risk. Increasing physical activity will have a positive impact on childhood obesity but important to avoid preventable sport/activity related injuries.

- Burden of injury on the healthcare system
- Safe routes to schools so children and young people can walk or cycle – barriers are traffic and cuts to crossing patrols

Gaps:

- Admissions data tells us that children under five are still getting injured and we need to improve access to injury prevention support for parents and carers
- Partnership to co-ordinate injury prevention activity for children and young people in play and leisure services

9) Knowledge gaps



National gaps in the data collected

There are weaknesses in the data available, with the cause of hospital admissions unknown for nearly 9% of hospital admissions for children 0-18 years. Also, little is known nationally about unintentional injuries that do not result in hospital admissions but are treated in other health care settings such as (A&E, minor injuries, pharmacists, GPs) or at home. Every year there are millions of non-fatal injuries in the UK. Figure (on left hand side) illustrates that deaths due to injury are just the tip of the iceberg. For each person who dies many more are admitted to hospital, attend Emergency Departments or visit their GP. Parents and carers in Bristol may access advice and treatment for unintentional injuries

from:

- Self-care – online resources NHS Choices, administering first aid at home
- Pharmacists
- Early Years Setting/School
- GP Practice, Health Visitors, School Nurses
- Minor Injuries Unit
- Walk-in Centres
- 111/Out-of-hours
- Ambulance service
- A&E attendances
- Hospital Admissions
- Rehabilitation

Out of the above locations data is only reported routinely on hospital admissions to Public Health. Therefore there is potential to better understand the local burden of injuries from all advice and treatment services however work is required on making the data available for analysis and then improving the coding of the data to ensure that coding is consistently applied.

C: What should we do next?

10) Recommendations for consideration

Home Safety

- Maximise use of existing evidence based resources to prevent child injury and work towards ensuring consistency of messaging by different practitioners

Outdoor Play and leisure – develop a partnership network of providers of play and leisure services to ensure policy and strategy:

- takes a balanced approach to assessing the risks and benefits of play and leisure environments and activities
- counters excessive risk aversion
- promotes the need for children and young people to develop skills to assess and manage risks, according to their age and ability
- takes into account children and young people's preferences about the types of outdoor play and leisure activities they want to participate in
- takes account of the needs of all children and young people, including those from lower socioeconomic groups, those from minority ethnic groups with specific cultural requirements and those who have a disability

The Public Health Structure is changing therefore recommend that is considered as a role for the staff to business partner with other departments of the council and service providers to achieve this recommendation.

Water Safety

- Use the data collected by schools on the percentage of children in Y6 who can meet the national swimming curriculum competencies to inform planning and accessibility of swimming interventions
- Promote safety around water to school age children – recommend delivery through schools, libraries, play and leisure services, voluntary organisations (scouts, guides)

Roads and transport

- Maintaining and managing road safety partnerships, policies, consultations

Improving data and intelligence on child injury

- Audit Home Safety Assessments of families eligible for Home Safety Equipment Scheme undertaken by Health Visitors
- Audit Incident/Accidents/Near Misses recorded by early years settings, schools and play settings Audit
- Utilise national minimum emergency department datasets as they become available to better understand the burden of injury occurring locally and using A&E services

11) Key contacts

Authors:

Jessica Williams, Public Health Principal, Bristol City Council

Dr Jo Williams, Public Health Consultant, Bristol City Council

Dr Julie Mytton, Professor of Child Health, University of the West of England

This chapter is owned by the Joint Health Outcomes Group of the Children and Families Partnership Board.

Further comments and support were provided by the [Child Injury Health Integration Team](#) (part of Bristol Health Partners)

Bristol JSNA process – website: www.bristol.gov.uk/jsna email: jsna@bristol.gov.uk

References

Anderson V, et al. (2009). Educational, vocational, psychosocial, and quality-of-life outcomes for adult survivors of childhood traumatic brain injury. *J Head Trauma Rehabil* 24(5): 303–312.

Davies FC, Coats TJ, Fisher R, et al (2015). A profile of suspected child abuse as a subgroup of major trauma patients. *Emerg Med J* 32:921-925.

Fauth, R and Ellis A (2010). Reducing unintentional injuries in childhood: A research review, London. National Children's Bureau.

Hippisley-Cox J, Groom C, Kendrick D, et al (2002). Cross sectional survey of socioeconomic variations in severity and mechanism of childhood injuries in Trent 1992-7. *BMJ* 324:1132-1134.

Martin-Herz SP et al (2012). Health-related quality of life in children and adolescents following traumatic injury: a review. *Clin Child Fam Psychol Rev* 15(3): 192–214.

Orton E, Kendrick D, West J et al, (2012) Independent risk factors for injury in pre-school children: three population-based nested case-control studies using routine primary care data

Polinder S, et al. (2008). APOLLO: The economic consequences of injury – Final report. Amsterdam, Consumer Safety Institute.

Sturms LM, et al. (2000). A prospective study on paediatric traffic injuries: health-related quality of life and posttraumatic stress. *Clin Rehabil* 19(3): 312–322.

Towner E et al.(2001). Injuries in children aged 0–14 years and inequalities: A report prepared for the Health Development Agency, London, Health Development Agency.

Valadka S (2000) et al. Long-term disability after trauma in children. *J Pediatr Surg* 35(5): 684–687.