INJURIES LEADING TO A HOSPITAL ADMISSION IN 0-14 YEAR OLDS IN WARWICKSHIRE – A REVIEW OF HOSPITAL EPISODE STATISTIC DATA

Warwickshire Joint Strategic Needs Assessment 2018

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EXECUTIVE SUMMARY

Warwickshire's Health and Wellbeing Board is committed to ensuring the best possible start to life for children, young people and their families, and this includes children being kept safe from harm. Indeed, Local Authorities have a responsibility to deliver on the Public Health Outcomes Framework indicator 2.7: to reduce hospital admissions from unintentional and deliberate injuries for children and young people.

In Warwickshire, hospital admissions following an injury amongst 0-4 year olds and 0-14 year olds are currently significantly higher than the national and regional averages, and higher than the majority of our statistical neighbours. There has been a notable rise in these admissions since 2012/13.

Over a five year period injuries of 0-14 year olds accounted for 44% of all Warwickshire's A&E attendances, and 16.4% of hospital admissions. Rates of A&E attendance for injuries were generally higher amongst 0-14 year old males. Contrary to national evidence, the data showed a weak correlation between A&E attendance for injuries and deprivation in Warwickshire.

The majority of A&E attendances for injuries occurred at home (77% 0-4 year olds, 57% 0-14 year olds). Six percent of 0-14 year olds were categorised as attending for a sports injury; these were more common during September to November and in March.

Head injuries accounted for over half of all under one year olds attending A&E for injury, followed by soft tissues injuries and burns/scalds. Amongst 0-4 year olds 29% had head injuries, followed by lacerations (18%) and soft tissue damage (17%). The main reason for attendance amongst 0-14 year olds was due to soft tissue inflammation (30%), dislocations/fracture (18%) and 15% for head injuries.

The main type of injury that resulted in admission to hospital in 0-14 year olds in Warwickshire was injuries to the head (31% of admissions), injuries to the elbow and forearm (16%) and poisoning (11%).

INTRODUCTION

This report uses the term injury to cover unintentional and deliberate injuries. Whilst this is a combined indicator, it is important to recognise that deliberate injuries have different causation and prevention strategies. Unintentional injuries occur as a result of an unexpected event which occurs at a specific time from an external cause. The term unintentional injury is used rather than accidents, as the latter suggests these events are inevitable and predictable, and therefore unavoidable. However, evidence suggests that most injuries and their precipitating events are predictable and avoidable.

This report examines the rise in hospital admissions following an injury in Warwickshire by providing an overview of admissions for childhood injuries in Warwickshire, and where available providing comparative rates between Warwickshire, our statistical peers, the West Midlands region and England. It includes comparative rates within the districts and boroughs in Warwickshire. The most common types of injury sustained are described.

The report also examines the pathways from injury to hospital admission. Accident and Emergency (A&E) departments are the main route to an admission in hospital following an injury. For this reason Hospital Episode Statistics (HES) data for A&E attendance following an injury is also examined, along with the characteristics of those attending A&E and those who are then admitted to hospital.

BACKGROUND

INJURIES IN CHILDREN

Unintentional injuries are a significant public health issue. They are one of the most common causes of death in children over one year of age. Every year they leave many thousands permanently disabled or disfigured. Over 40% of injuries happen in children less than 5 years of age[1].

Unintentional injuries for 0-4 year olds tend to happen in and around the home. The largest numbers of injuries happen in the living / dining room. However, the most serious injuries happen in the kitchen and on the stairs[1]. In a NIHR funded 'Keeping Children Safe' study (2009-14), babies aged 0 to 12 months who attended hospital following a fall from furniture were five times more likely to be left on raised surfaces compared to controls[2].

These injuries are linked to a number of factors including: child development, the physical environment in the home, the knowledge and behaviour of parents and other carers (including literacy), overcrowding or homelessness, the availability of safety equipment, and new consumer products in the home[3].

[1] https://www.rospa.com/home-safety/advice/child-safety/accidents-to-children/
[2] https://discover.dc.nihr.ac.uk/portal/article/4000877/simple-preventive-actions-by-parents-linked-to-fewer-child-injuries
[3] PHE, CATP RoSPRA (2014) Reducing unintentional injuries in and around the home among children under five years, London: PHE

Childhood injuries have a disproportionately large effect on those living in deprived communities. Nationally, the emergency hospital admission rate for injuries among 0-4 year olds is 45% higher in the most deprived areas compared with the least deprived. It is estimated that children from poorer backgrounds are at least five times more likely to die as a result of an unintentional injury than children from better off families - and this gap is widening[4].

Evidence suggests that most unintentional injuries are preventable through increased awareness, improvements in the home environment and greater product safety. Indeed, meta-analyses have found that home safety interventions and the use of injury prevention briefings increase the use of smoke alarms and stair gates, promoted safe hot tap water temperatures, fire escape planning and storage of medicines and household products, and reduced baby walker use[5]. This aligns well with Warwickshire's Making Every Contact Count[6] commitment.

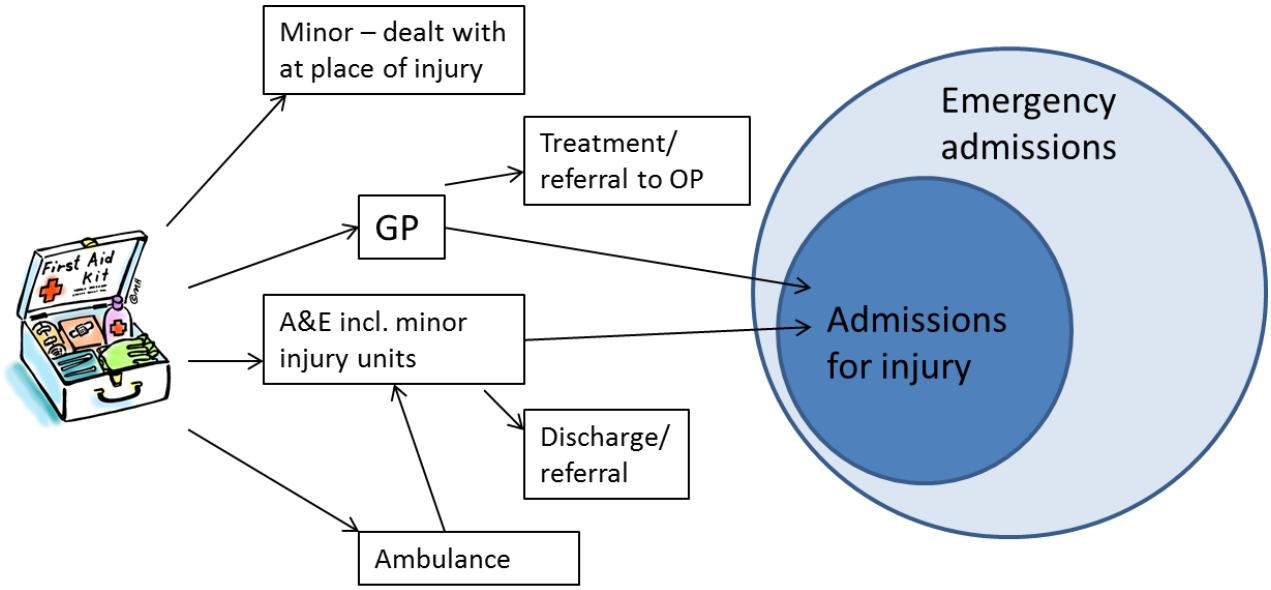
The economic cost of injury to children and their families can be high, as is the cost to health and social care services. The short-term average healthcare cost of an individual injury (all types) is £2,494. The wider cost of a serious home accident for a 0-4 year old child has been estimated at £33,200[3].

PATHWAYS TO HOSPITAL ADMISSIONS FOLLOWING AN INJURY

Injuries in childhood are common and minor and can be adequately managed in the home or at the setting of injury, however some are more serious, or there is uncertainty as to the severity and outcome, resulting in a visit to a health service and possible intervention. Figure 1 shows the main pathways that a child can take following an injury.

[4] www.rospra.com/home-safety/advice/child-safety/accidents-to-children
[5] https://www.journalslibrary.nihr.ac.uk/pgfar/pgfar05140/#/abstract
[6] MECC is about up-skilling frontline workers to making the most of everyday conversations to help people. MECC is an effective and evidence-based behaviour change technique. http://publichealth.warwickshire.gov.uk/making-every-contact-count/

Figure 1- Pathways to hospital admission following an injury



METHOD

The crude rate of hospital admissions caused by unintentional and deliberate injuries in children (0-4 years and 0-14 years) per 10,000 of the Warwickshire population are published by Public Health England (Public Health Outcomes Framework (PHOF) indicator 2.07i). The admissions are defined as finished emergency admissions with one or more codes for injuries and other adverse effects of external causes (ICD 10: S00-T79 and/or V01-Y36) in any diagnostic field position (see Annex 1).

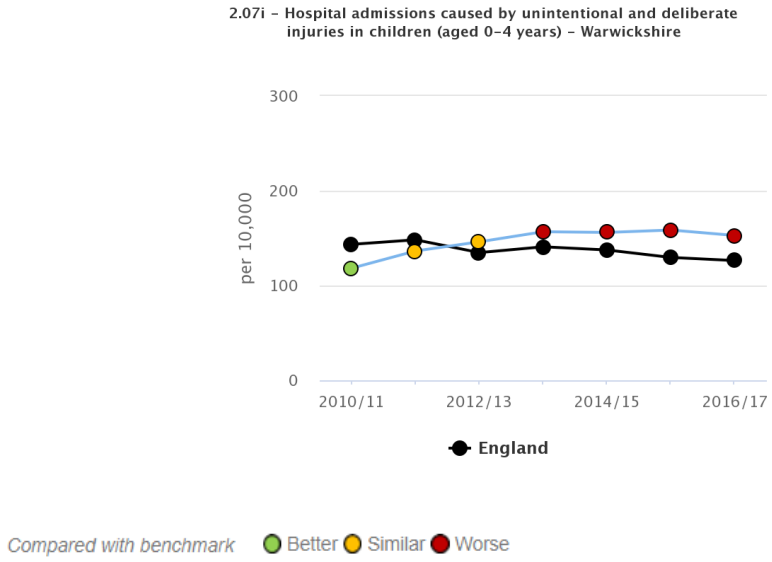
Hospital Episode Statistics (HES) data for England is provided to Warwickshire County Council by NHS Digital under a data sharing agreement. To enable analysis of this large dataset the Insight Service at WCC works with a subset of the England dataset that captures activity by Warwickshire residents. HES data were analysed to calculate the crude rate of accident and emergency (A&E) attendances due to an injury for children (0-4 years and 0-14 years) who presented at an A&E department in England and were recorded as being a resident in Warwickshire. Data is presented for attendances with A&E diagnosis codes 01-16 (see Annex 1).

HOSPITAL ADMISSIONS CAUSED BY UNINTENTIONAL & DELIBERATE INJURIES

TREND IN WARWICKSHIRE

The rate of hospital admission for childhood injury in 0-4 year olds has increased since 2010/11 when there were 118.3 admissions per 10,000 to 156.8 per 10,000 in 2013/14 (Figure 2). Since 2013/14 the rate has remained above 150 admissions per 10,000 and has been significantly higher than the rate in England.

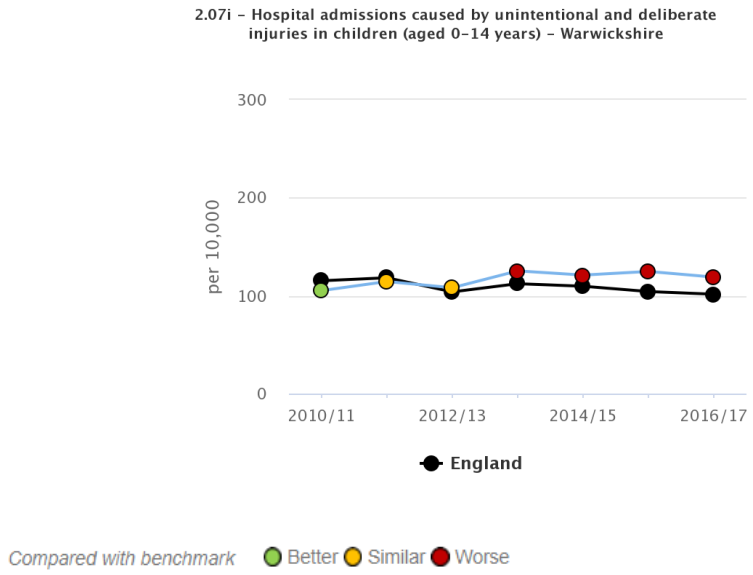
Figure 2



Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018

Similarly, the rate of hospital admission for childhood injuries in 0-14 year olds has been significantly higher in Warwickshire than England since 2013/14 increasing from 105.2 per 10,000 in 2010/11 to 125.3 per 10,000 in 2013/14, then down to 119.0 per 10,000 in 2016/17 (Figure 3).

Figure 3



Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018

COMPARISON WITH LOCAL AUTHORITIES IN THE WEST MIDLANDS

In 2016/17, Warwickshire had the fourth highest rate of hospital admissions caused by unintentional and deliberate injuries in 0-4 years across the West Midlands region (152.8 per 10,000), and was significantly higher than the England rate (126.3 per 10,000). The lowest rate, across the West Midlands, was in Walsall with 97.2 per 10,000 - See figure 4.

Figure 4

2.07i - Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-4 years) 2016/17

Crude rate - per 10,000

Area	Count	Value	95% Lower CI	95% Upper CI
England	43,322	126.3	125.2	127.5
West Midlands region	4,846	132.7	129.0	136.5
Coventry	625	265.1	244.8	286.8
Telford and Wrekin	188	169.0	145.7	194.9
Shropshire	248	165.0	145.1	186.9
Warwickshire	481	152.8	139.5	167.1
Sandwell	372	152.5	137.4	168.8
Herefordshire	134	139.1	116.5	164.7
Dudley	269	138.7	122.6	156.3
Wolverhampton	228	125.9	110.1	143.4
Solihull	152	122.0	103.4	143.0
Birmingham	955	111.3	104.3	118.6
Stoke-on-Trent	194	108.6	93.9	125.0
Staffordshire	481	106.9	97.6	116.9
Worcestershire	331	103.2	92.4	114.9
Walsall	188	97.2	83.8	112.2

Source: Hospital Episode Statistics (HES)Statistics (ONS) - Mid Year Population Estimates

Compared with benchmark Better Similar Worse

Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018

For 0-14 year olds Warwickshire also had the fourth highest rate of hospital admissions caused by unintentional and deliberate injuries across the West Midlands region at 119.0 per 10,000 population and was significantly higher than the England rate (101.5 per 10,000). The lowest rate in the region was Walsall (80.5 per 10,000) – See Figure 5.

Figure 5

2.07i - Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-14 years) 2016/17

Crude rate - per 10,000

Area	Count	Value	95% Lower CI	95% Upper CI
England	100,728	101.5	100.8	102.1
West Midlands region	11,395	106.7	104.7	108.7
Coventry	1,248	190.5	180.1	201.4
Telford and Wrekin	425	128.3	116.4	141.1
Sandwell	817	119.9	111.9	128.5
Warwickshire	1,124	119.0	112.1	126.1
Dudley	635	111.0	102.6	120.0
Herefordshire	331	110.9	99.3	123.6
Shropshire	535	110.3	101.1	120.1
Wolverhampton	529	105.4	96.6	114.8
Solihull	391	102.7	92.7	113.4
Birmingham	2,334	96.4	92.5	100.4
Stoke-on-Trent	459	94.7	86.2	103.8
Worcestershire	871	90.0	84.2	96.2
Staffordshire	1,247	89.1	84.2	94.2
Walsall	449	80.5	73.2	88.3

Source: Hospital Episode Statistics (HES)

Compared with benchmark Better Similar Worse

Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018

WARWICKSHIRE COMPARED TO STATISTICAL NEIGHBOURS

In 2016/17, Warwickshire had the fourth highest rate of hospital admissions for unintentional and deliberate injuries in the 0-4 years age group (152.8 per 10,000) and the 0-14 years age group (119.0 per 10,000) compared to its statistical neighbours. The lowest comparator rate is in Nottinghamshire (80.6 per 10,000 for 0-4 year olds and 74.3 per 10,000 for 0-14 year olds). See Figure 6 and 7

Figure 6

2.07i - Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-4 years) 2016/17

Crude rate - per 10,000

Area	Neighbour Rank	Count	Value	95% Lower CI	95% Upper CI
England	-	43,322	126.3	125.2	127.5
Cumbria	14	421	169.2	153.4	186.1
Somerset	10	489	165.4	151.1	180.8
North Yorkshire	11	489	160.8	146.8	175.7
Warwickshire	-	481	152.8	139.5	167.1
Oxfordshire	12	500	123.8	113.2	135.1
Northamptonshire	8	580	122.3	112.6	132.7
Buckinghamshire	9	375	113.2	102.0	125.2
Suffolk	4	459	110.2	100.4	120.8
Staffordshire	3	481	106.9	97.6	116.9
Hampshire	15	822	106.9	99.8	114.5
Derbyshire	7	434	105.4	95.7	115.8
Worcestershire	2	331	103.2	92.4	114.9
Essex	13	859	99.4	92.9	106.3
Gloucestershire	1	327	93.1	83.3	103.8
Leicestershire	5	297	80.6	71.7	90.3
Nottinghamshire	6	-	*	-	-

Source: Hospital Episode Statistics (HES)Statistics (ONS) - Mid Year Population Estimates

Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018

Figure 7

2.07i - Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-14 years) 2016/17

Crude rate - per 10,000

Area	Neighbour Rank	Count	Value	95% Lower CI	95% Upper CI
England	-	100,728	101.5	100.8	102.1
Cumbria	14	991	129.0	121.1	137.3
North Yorkshire	11	1,215	126.4	119.3	133.7
Somerset	10	1,096	121.0	114.0	128.4
Warwickshire	-	1,124	119.0	112.1	126.1
Oxfordshire	12	1,201	100.1	94.5	105.9
Northamptonshire	8	1,383	99.2	94.0	104.5
Hampshire	15	2,139	90.8	87.0	94.7
Worcestershire	2	871	90.0	84.2	96.2
Buckinghamshire	9	919	89.8	84.1	95.8
Staffordshire	3	1,247	89.1	84.2	94.2
Suffolk	4	1,120	88.1	83.0	93.4
Derbyshire	7	1,085	85.8	80.8	91.1
Essex	13	2,006	78.5	75.1	82.0
Leicestershire	5	850	74.8	69.9	80.0
Gloucestershire	1	778	74.3	69.2	79.7
Nottinghamshire	6	-	*	-	-

Source: Hospital Episode Statistics (HES)

Compared with benchmark Better Similar Worse

Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018

HOSPITAL ADMISSIONS WITHIN WARDS IN WARWICKSHIRE

Figures 8 & 9 show the wards in Warwickshire where the rates of hospital admissions for unintentional and deliberate injuries in 0-4 year olds and 0-14 year olds per 10,000 population were significantly higher than the rate in England (139 per 10,000) between 2013/14 and 2015/16. These wards are listed in Table 1. The maps also show the lower

super output areas (LSOAs) in Warwickshire that are in the 20% of most deprived LSOAs nationally. The proposed Children & Families Centres are marked on the maps for information.

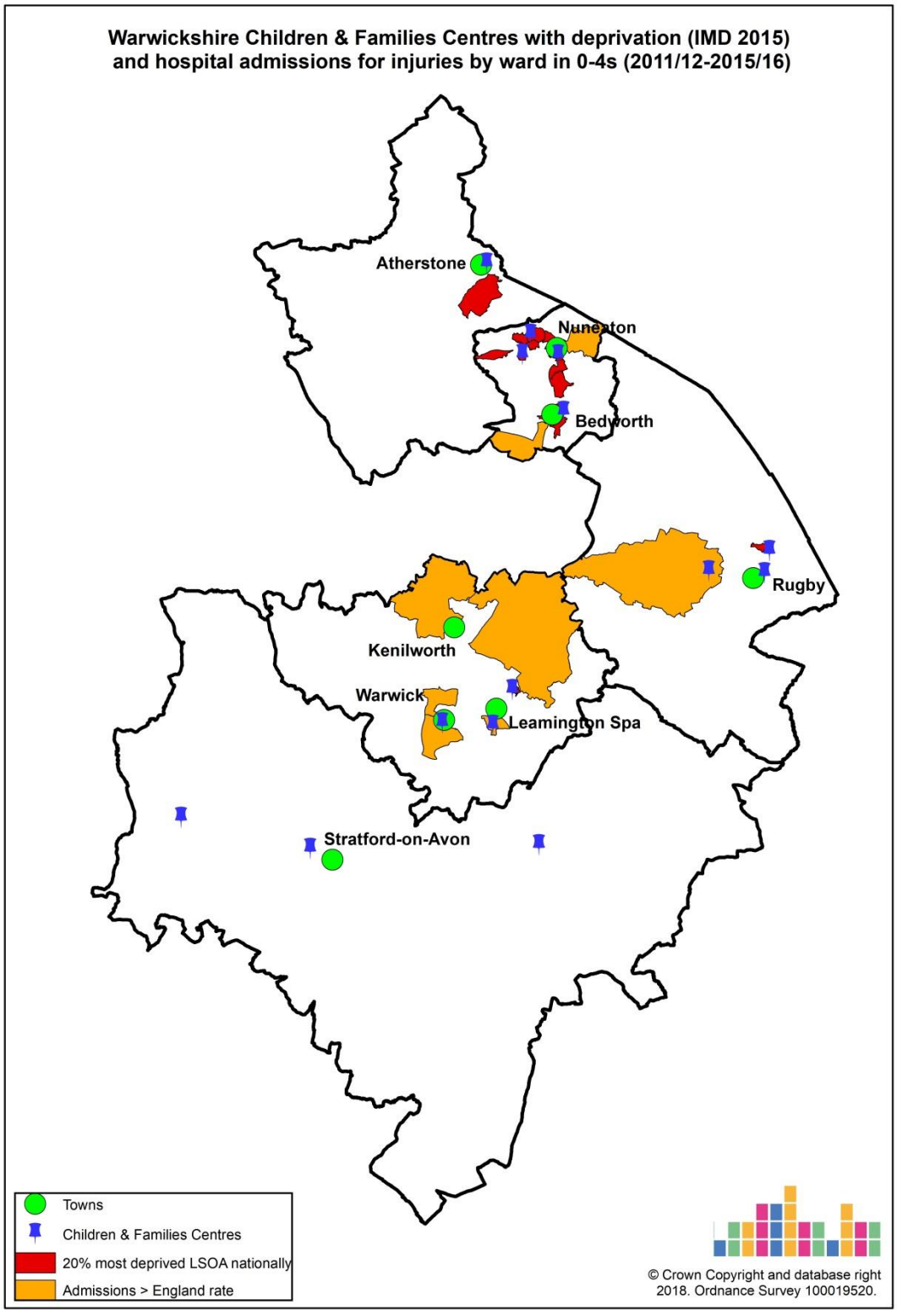
It should be noted that the ward rates have been produced by Public Health England and are estimated based on middle layer super output area (MSOA) level data for the three year period. They have been produced from relatively small numbers of events and hence should be interpreted with caution.

Table 1 – Wards with a significantly higher admission rate for unintentional and deliberate injuries than England (2013/14-2015/16)

0-4 yr olds			**0-14 yr olds**		
Ward	District/Borough	Rate per 10,000	Ward	District/Borough	Rate per 10,000
Abbey	Warwick	267.3	Camp Hill	Nuneaton & Bedworth	167.3
Stoneleigh & Cubbington	Warwick	220	Aylesford	Warwick	153.3
St. Nicolas	Nuneaton & Bedworth	216.3	Brunswick	Warwick	152.4
Brunswick	Warwick	210.2	Abbey	Warwick	149.3
Woodloes	Warwick	210.2	Saltisford	Warwick	149.1
Wolston & Lawfords	Rugby	201.1	Stoneleigh & Cubbington	Warwick	147.1
Exhall	Nuneaton & Bedworth	199.2	Woodloes	Warwick	147.1
Aylesford	Warwick	190.6	Exhall	Nuneaton & Bedworth	145.5
			Budbrooke	Warwick	143.5
			Wolston & Lawfords	Rugby	140.5
			Crown	Warwick	138.3
			Bar Pool	Nuneaton & Bedworth	134.2

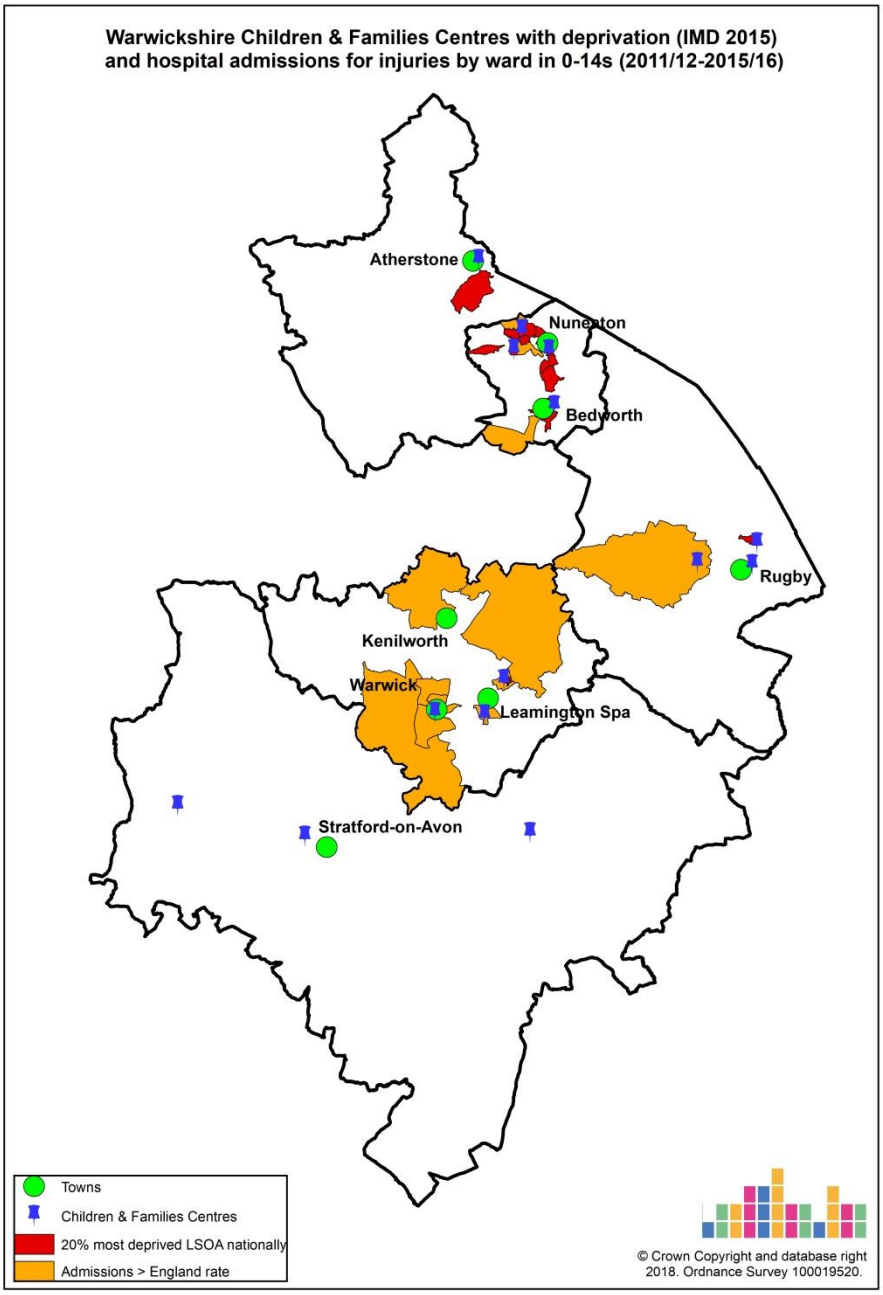
Source: PHE Local Health, http://www.localhealth.org.uk/

Figure 8



Source: PHE Local Health, http://www.localhealth.org.uk/

Figure 9



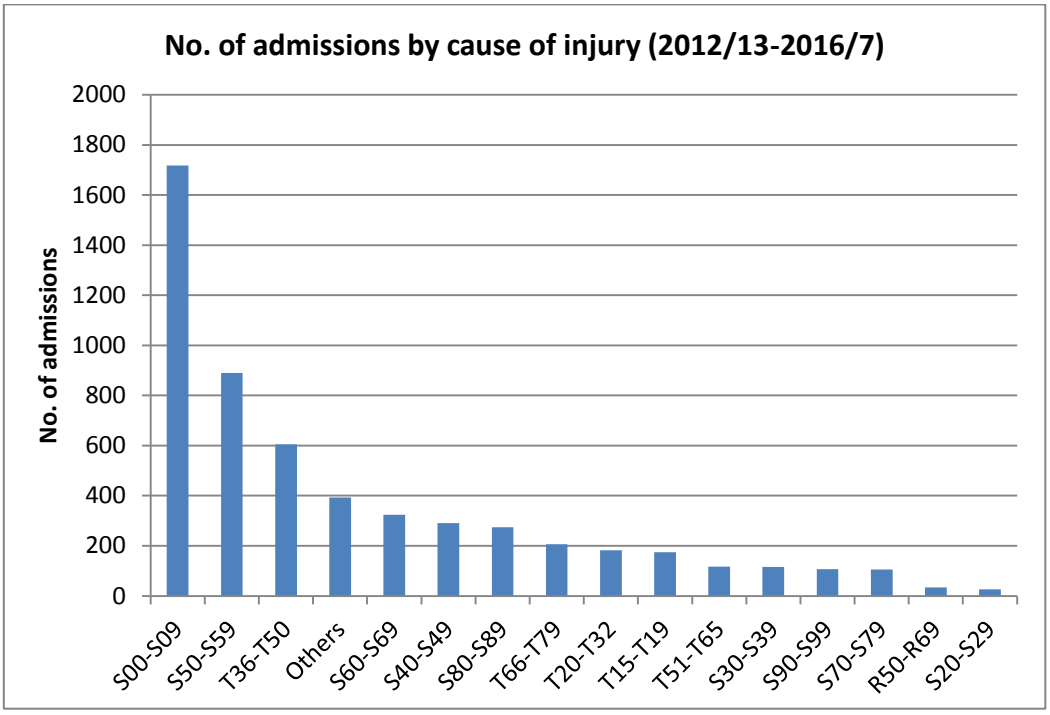
Source: PHE Local Health, http://www.localhealth.org.uk/

INJURIES RESULTING IN HOSPITAL ADMISSION

The main type of injury that resulted in admission to hospital in 0-14 year olds in Warwickshire over the 5 year period from 2012/13 to 2016/17 was injuries to the head (Figure 10). This type of injury was responsible for 31% of admissions followed by injuries to the elbow and forearm (16%) and poisoning by drugs, medicaments and biological substances (11%). Of the 5,564 admissions to hospital, the place of injury was not specified

in 43% of admissions. Where a place was specified the home was the most common place (25%) followed by school, other institution and public administrative area (9%). Data for 0-4 year olds is not yet available.

Figure 10



Source: HES Data, supplied by LKIS, PHE, January 2018.

S00-S09: Injuries to the head, S50-S59: Injuries to the elbow and forearm, T36-T50: Poisoning by drugs, medicaments and biological substances, S60-S69: Injuries to the wrist and hand, S40-S49: Injuries to the shoulder and upper arm, S80-S89: Injuries to the knee and lower leg, T66-T79: Other and unspecified effects of external causes, T20-T32: Burns and corrosions, T15-T19: Effects of foreign body entering through natural orifice, T51-T65: Toxic effects of substances chiefly nonmedical as to source, S30-S39: Injuries to the abdomen, lower back, lumbar spine and pelvis, S90-S99: Injuries to the ankle and foot, S70-S79: Injuries to the hip and thigh, R50-R69: General symptoms and signs, S20-S29: Injuries to the thorax.

EMERGENCY HOSPITAL ADMISSIONS CAUSED BY INJURY AS A PROPORTION OF ALL HOSPITAL ADMISSIONS

During the five year period 2011/12 to 2015/16, hospital admissions caused by injury accounted for 10.6% of emergency admissions in 0-4 year olds and 16.4% of admissions in 0-14 year olds (Table 2). The rate of emergency admissions in Warwickshire in 0-4 year olds and 5-9 year old was significantly lower than the England rate between 2011/12 and 2014/15 but in 2015/16 was in line with the England average. In 10-14 year olds, the rate of emergency admissions was significantly lower than the England average during 2011/12 and 2012/13 but since 2013/14 has not been significantly different.

Table 2: **Number of emergency admissions and admissions caused by injury by 0-4 and 0-14 year olds**

	2011/12	2012/13	2013/14	2014/15	2015/16	Total
0-4						
Emergency admissions	4,133	4,408	4,410	4,418	5,013	22,382
Hospital admissions caused by injury	428	461	494	491	501	2,375
% of emergency admissions caused by injury	10.4%	10.5%	11.2%	11.1%	10.0%	10.6%
0-14						
Emergency admissions	6,092	6,431	6,607	6,734	7,563	33,427
Hospital admissions caused by injury	1050	994	1155	1,124	1,167	5,490
% of emergency admissions caused by injury	17.2%	15.5%	17.5%	16.7%	15.4%	16.4%

Source: Public Health England, https://fingertips.phe.org.uk/, accessed February 2018.

ATTENDANCE AT ACCIDENT & EMERGENCY DUE TO INJURY (0-14 YEAR OLDS)

The following analysis considers data on children (0-14 year olds) residing in Warwickshire who have attended an accident and emergency (A&E) department following an injury. In addition to major A&E departments, walk-in centres and minor injury units are covered by the A&E HES data and are included in the analysis.

RATES OF A&E ATTENDANCE DUE TO INJURY IN WARWICKSHIRE

In the five years analysed (2012/13 – 2016/17) there were on average 36,714 attendances at A&E by 0-14 year olds each year, of which on average 16,066 (44%) were for injuries – with this percentage decreasing in younger age groups (Table 3 & 4). Over the five years the rate of A&E attendance due to injury per 1,000 population increased from the rate in 2012/13 in all age groups.

Table 3 – number of A&E attendances by 0-14 year olds in Warwickshire 2012/2013 2016/17

Year	No. of A&E attendances 0-14 year olds
2012/13	35,339
2013/14	35,027
2014/15	36,039
2015/16	37,613
2016/17	39,554

Source: Hospital Episode Statistics, Copyright © 2018, re-used with the permission of The Health & Social Care Information Centre

Table 4 – No. and rate of A&E attendances due to injury by age group 2012/13-2016/17

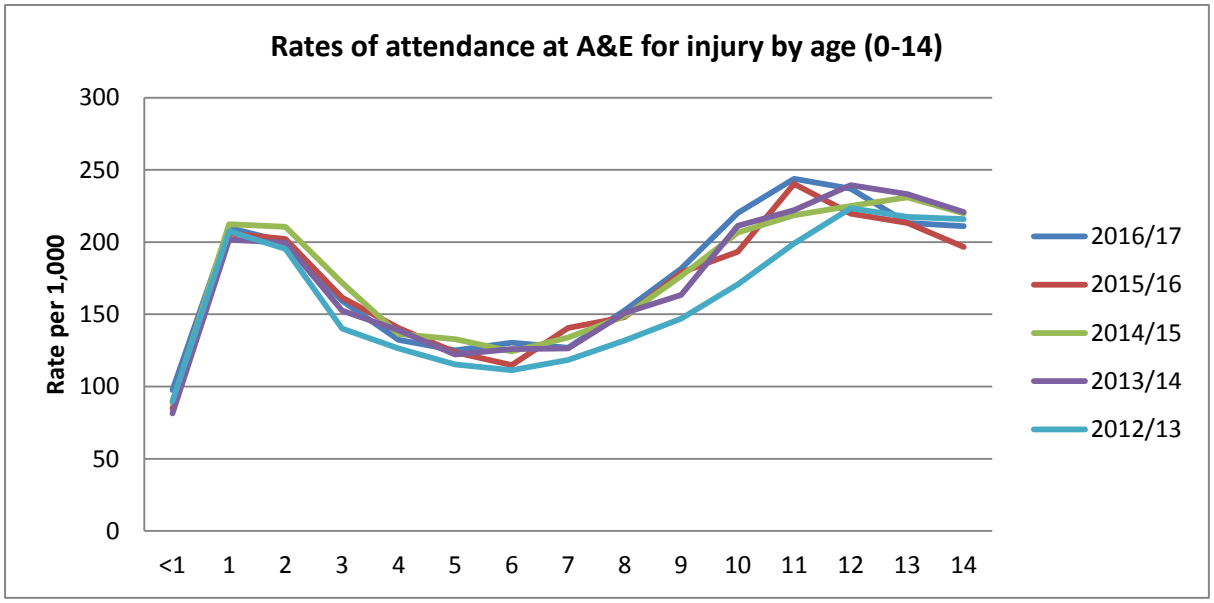
Age	2012/13			2013/14			2014/15			2015/16			2016/17		
	No.	% total A&E	Rate per 1,000	No.	% total A&E	Rate per 1,000	No.	% total A&E	Rate per 1,000	No.	% total A&E	Rate per 1,000	No.	% total A&E	Rate per 1,000
0-14	15,053	43%	159.3	16,192	46%	171.4	16,503	46%	174.7	16,058	43%	170.0	16,525	42%	174.9
0-4	4,762	13%	151.3	4,864	14%	154.5	5152	14%	163.7	4998	13%	158.8	5018	13%	159.4
0-1	550	2%	89.8	498	1%	81.3	544	3%	88.8	519	2%	84.7	598	3%	97.6

Source: Hospital Episode Statistics, Copyright © 2018, re-used with the permission of The Health & Social Care Information Centre. ONS mid-2016 population estimates

RATE OF A&E ATTENDANCE FOR INJURY BY AGE

From birth to aged one there is a general upward trend in attendance rate at A&E for injuries as age increases and babies become more mobile from 6 months (Figure 11). The rate of attendance at A&E increases steeply from children under one to children aged one. It then decreases gradually up to the age of six, when attendance rates begin to rise again, reaching their highest levels when young people are around 11-13 years of age.

Figure 11



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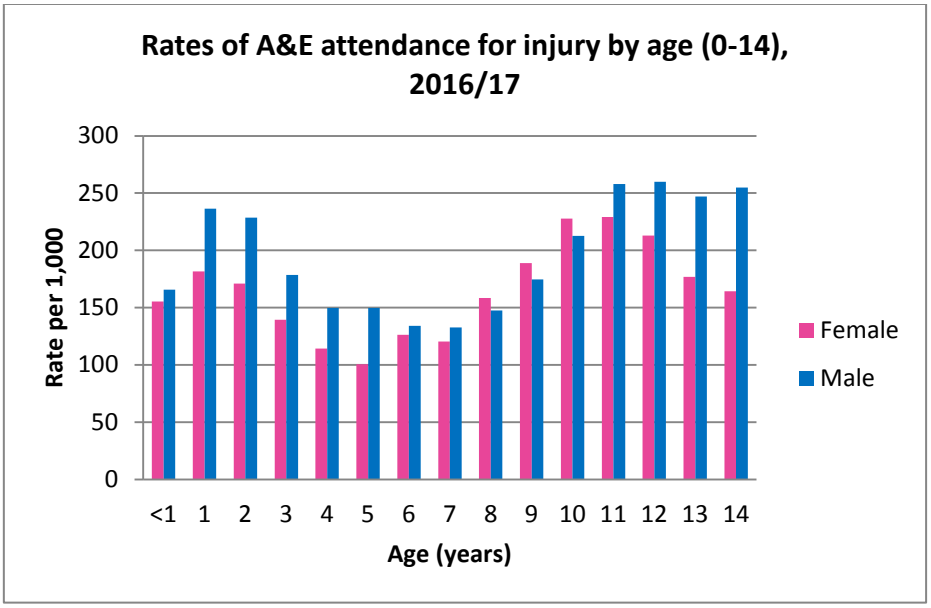
RATE OF A&E ATTENDANCE FOR INJURY BY GENDER

The rate of attendance at A&E for injuries is generally higher for males than females. In 2016/17 the rate of attendance was higher in males for all age groups but 8,9 and 10 year olds (Figure 12). The difference between males and females is wider between the ages of 1 to 5 and also 11 to 14, with the widest gap being at 14 where males account for 62% of A&E attendance due to injuries and females only 38%.

Figure 12



Source: Hospital Episode Statistics, Copyright © 2018, re-used with the permission of The Health & Social Care Information Centre. ONS mid-2016 population estimates

ATTENDANCE BY ETHNICITY

Of Warwickshire residents in 2016/17, 'white British' accounted for 82% of 0-14 year olds and 79% of 0-4 year olds attending A&E due to injuries. This was followed by a group categorised as 'white other' who represented 6% of 0-14 year olds and 8% of 0-4 year olds of those attending A&E for injury. The 2011 Census found that 3% of the population of Warwickshire aged 0-14 years were 'white other' suggesting this group are overrepresented in A&E attendance due to injury.

TYPES OF INJURY RESULTING IN A&E ATTENDANCE

For the three years, 2014/15- 2016/17, 6% of 0-14 year olds attending A&E for an injury were categorised as attending for a sports injury. This proportion is likely to be greater as coding for 'patient group description' was poor. Within those attending for a sports injury, the majority were aged 10 and above and over two thirds were male. Sports injuries were more common during September to November and in March.

The reasons that make up the majority of attendances at A&E due to injuries in 0-4 years are listed in table 5. In this age group, head injuries are the main reason for attendance at A&E due to an injury.

Table 5: Ranked types of injury resulting in attendance at A&E (0-4 year olds)

		Year					
Code	**Reason for attendance**	**2014-15**		**2015-16**		**2016-17**	
4	Head injury	1478	29%	1425	29%	1429	28%
1	Laceration	953	18%	992	20%	992	20%
3	Soft tissue inflammation	878	17%	870	17%	769	15%
5	Dislocation / fracture / joint injury / amputation	607	12%	502	10%	483	10%
12	Foreign body	308	6%	320	6%	333	7%
2	Contusion / abrasion	257	5%	228	5%	314	6%
10	Burns and scalds	239	5%	246	5%	261	5%
14	Poisoning (including overdose)	202	4%	196	4%	163	3%
6	Sprain / ligament injury	126	2%	115	2%	187	4%

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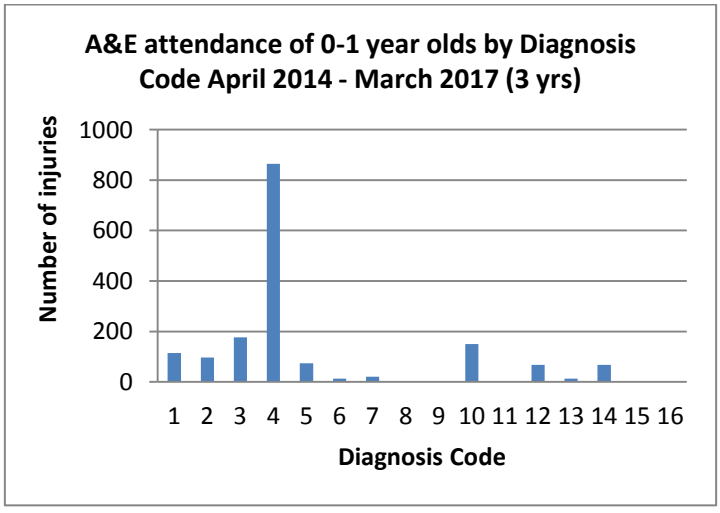
Looking at those aged under one, over half of all attendances were coded as head injuries (code 4) across the three year period. Other common injuries in this age group were soft tissue inflammation (code 3) and burns and scalds (code 10) (Figure 13).

Figure 13



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The reasons that make up the majority of attendances at A&E due to injuries in 0-14 years are listed in table 6. In this age group the main reason for attending A&E due to an injury was due to soft tissue inflammation followed by dislocation/fracture/joint injury/amputation and head injury.

Table 6 – Ranked types of injury resulting in attendance at A&E (0-14 year olds)

		Year					
Code	**Reason**	**2014/15**		**2015/16**		**2016/17**	
3	Soft tissue inflammation	4892	30%	5100	32%	4471	27%
5	Dislocation / fracture / joint injury / amputation	3001	18%	2710	17%	2724	16%
4	Head injury	2500	15%	2440	15%	2421	15%
1	Laceration	2044	12%	2150	13%	2175	13%
6	Sprain / ligament injury	1335	8%	1068	7%	1829	11%
2	Contusion / abrasion	1007	6%	898	6%	1218	7%
12	Foreign body	589	4%	590	4%	629	4%
14	Poisoning (including overdose)	324	2%	301	2%	271	2%

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A&E DEPARTMENT ATTENDED

Table 7 shows the hospital A&E departments (including minor injury and walk-in centres) attended by 0-14 year olds with injures residing in Warwickshire over a 3 year period; this pattern is similar for 0-4 year olds. The “other” category is all other hospitals, whether in neighbouring areas that may be closer to the home address, or if attending A&E whilst on holiday.

Table 7 – A&E Departments attended by Warwickshire residents (0-14 Years) with Injuries

	2014/15	**2015/16**	**2016/17**
George Eliot Hospital NHS Trust	32%	34%	34%
South Warwickshire NHS Foundation Trust (Warwick & Stratford Hospitals)	39%	34%	34%
University Hospitals Coventry and Warwickshire (University Hospital and Hospital of St Cross)	26%	27%	27%
Other	3%	5%	5%

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PLACE WHERE INJURY OCCURRED

The majority of injuries happened in the home. Between 2014/15 and 2016/17, for 0 to 14 year olds, 57% of incidents happened at home; this increased to 77% for 0-4 year olds and 89% for those under one. For 0-14 year olds 18% of injuries happened in an educational establishment and 15% in a public place.

AREA OF RESIDENCE OF 0-14 YEAR OLDS ATTENDING A&E WITH AN INJURY

Table 8 shows the district/borough of residence of 0-14 year olds attending A&E due to injury in Warwickshire. 0-14 year olds in Nuneaton and Bedworth account for 31% of reported 0-14 year olds attending A&E for injuries, yet make up 24% of 0-14 year olds in Warwickshire.

Table 8 – Area of residence of 0-14 year olds attending A&E due to injury

District of residence	% of A&E attendances 2014/15	% of A&E attendances 2015/16	% of A&E attendances 2016/17	% of the 0-14 population in Warwickshire
North Warwickshire	6%	8%	9%	11%
Nuneaton and Bedworth	30%	32%	32%	24%
Rugby	22%	24%	23%	21%
Stratford-on-Avon	18%	17%	17%	20%
Warwick	23%	20%	19%	24%

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A&E ATTENDANCE FOR INJURY AND RELATIONSHIP TO DEPRIVATION

The LSOAs with the highest number of attendances at A&E for injury between 2014/15 and 2016/17 as a proportion of the population of 0-14 year olds are shown in Table 9. It should be noted that some 0-14 year olds will have multiple attendances at A&E due to injury during the 3 year period so the number of attendances is unlikely to equal the number of unique individuals attending A&E.

Table 9 – LSOAs in Warwickshire with the highest proportion of 0-14 year olds attending A&E due to injury

LSOA name	Average no. of A&E attendances 2014/15-2016/17	% of population who have attended A&E with an injury	IMD decile
Nuneaton and Bedworth 007C	116	33%	2
Nuneaton and Bedworth 009D	83	32%	1
Stratford-on-Avon 011E	72	30%	9
Nuneaton and Bedworth 009B	114	30%	1
Stratford-on-Avon 009F	52	29%	4
Nuneaton and Bedworth 007A	104	29%	1
Nuneaton and Bedworth 004E	64	28%	6
Nuneaton and Bedworth 013E	81	28%	2
Nuneaton and Bedworth 012C	50	28%	6
Nuneaton and Bedworth 002E	134	27%	2
Rugby 010B	79	27%	8

Nuneaton and Bedworth 007D	50	27%	5
Nuneaton and Bedworth 012A	61	27%	5
Nuneaton and Bedworth 008A	58	27%	6
Nuneaton and Bedworth 002C	85	27%	4
Stratford-on-Avon 011B	59	27%	7

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Plotting the IMD percentile of the area of residence (LSOA) against the rate of 0-14 year olds attending A&E for injury, indicates that there is no clear correlation between the rate of attendance for injuries at A&E and deprivation (R^2=0.0552[7]), the same is true for 0-4 year olds (R^2=0.0342) (Figure 14 and 15). Each diamond on the chart represents a LSOA in Warwickshire.

Figure 14

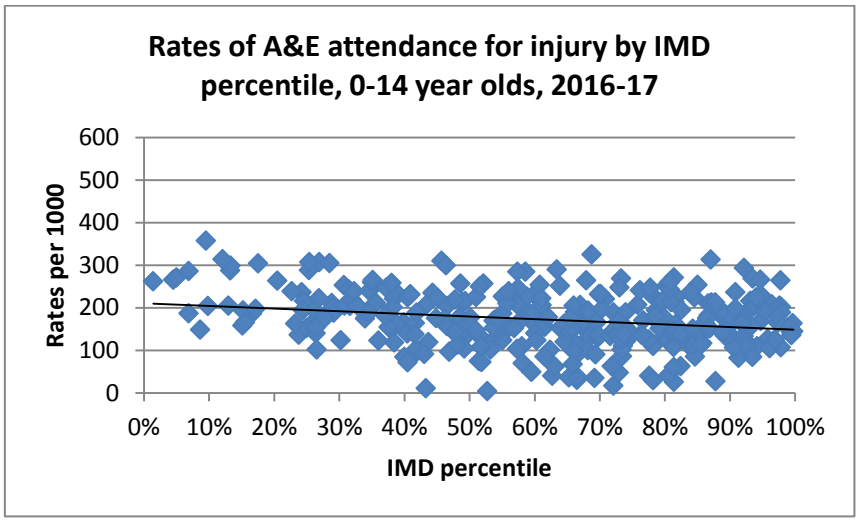
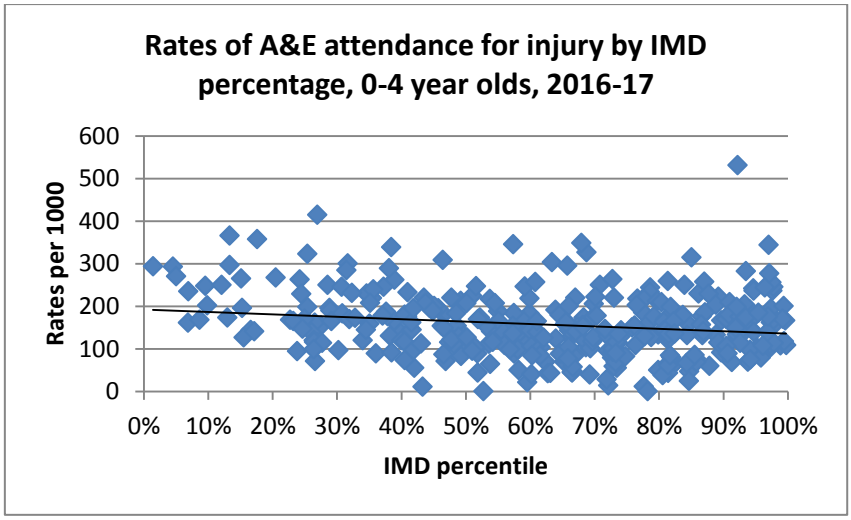


Figure 15



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[7] R-squared (R^2) is a statistical measure of how close the data are to the fitted regression line. In general, the higher the R-squared, the better the model fits the data.

'DISPOSAL' CODING: JOURNEY FOLLOWING A&E ATTENDANCE

In total, in the three years 2014/15 to 2016/17, 62% of all A&E attendances due to injuries by 0-14 year olds were discharged and did not require any follow up treatment. This rises to 68% when looking at the 0-4 year olds (Table 9).

Table 9- Disposal from A&E following attendance with an injury

Disposal Code	% of A&E attendance		
	2014-15	2015-16	2016-17
0-14 year olds			
Discharged and did not require any follow-up treatment	62	63	62
Referred to fracture clinic	14	13	14
Discharged and follow-up treatment to be provided by general practitioner	11	11	12
Admitted to hospital bed / became a lodged patient of the same health care provider	4	4	4
Referred to A and E clinic	3	3	3
Transferred to other healthcare provider	1	1	1
Other	3	4	4
0-4 year olds			
Discharged and did not require any follow-up treatment	68	68	67
Discharged and follow-up treatment to be provided by general practitioner	11	10	11
Admitted to hospital bed / became a lodged patient of the same health care provider	6	6	6
Referred to fracture clinic	6	5	5
Referred to A and E clinic	4	4	4
Transferred to other healthcare provider	2	2	2
Other	3	4	4

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Regarding hospital admissions, 4% of 0-14 year olds and 6% of 0-4 year olds attending A&E were coded as being *'admitted to a hospital bed' / 'became a lodged patient of the same health care provider'.* This proportion varied by provider with UHCW NHS Trust more likely to admit patients to a hospital bed particularly in 0-4 year olds (Table 10).

Table 10 – Percentage of 0-14 year olds admitted to hospital following A&E attendance with an injury by provider

Hospital (Provider)	% admitted following A&E		
	2014/15	2015/16	2016/17
0-14 year olds			
George Eliot Hospital NHS Trust	1.8%	2.2%	1.5%
South Warwickshire NHS Foundation Trust	4.3%	2.6%	2.1%
University Hospitals Coventry And Warwickshire NHS Trust	7.5%	7.7%	8.5%
0-4 year olds			
George Eliot Hospital NHS Trust	3.0%	4.0%	2.7%
South Warwickshire NHS Foundation Trust	6.9%	3.6%	3.8%
University Hospitals Coventry And Warwickshire NHS Trust	9.5%	11.5%	13.4%

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Further investigation is required to determine if there are 'other' relevant codes that might contribute to the total admissions for injury (especially transferred to other healthcare provider), as the number of admissions reported by PHE within the PHOF 2.07i indicator (see** total below) is higher than the number referred from A&E suggested by the Warwickshire data (see* total below- Table 11).

Table 11 – Number of admissions following attendance at A&E due to injury (0-14)

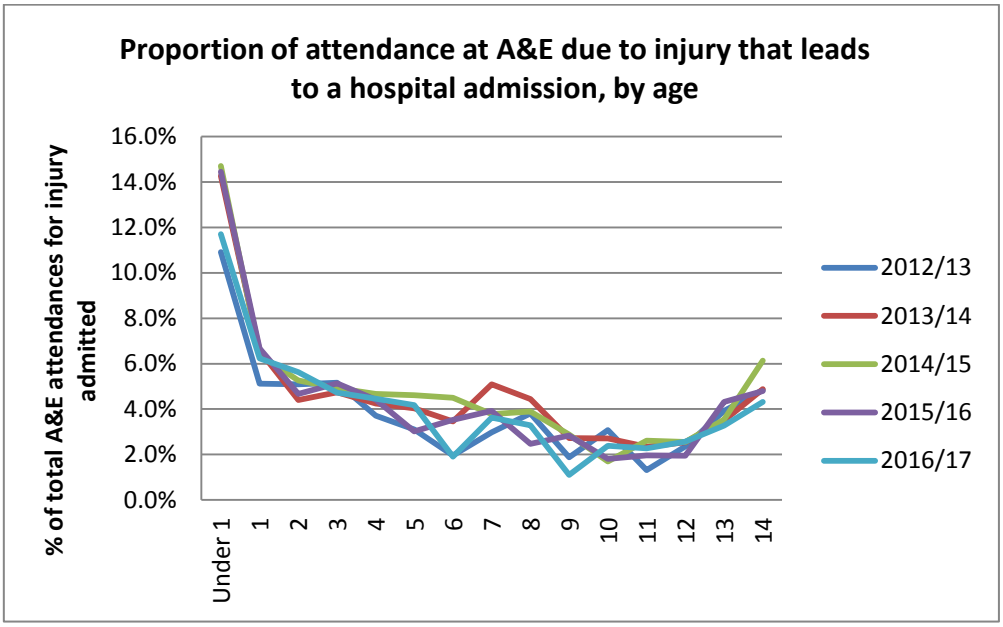
Age	2012/13	2013/14	2014/15	2015/16	2016/17
<1	60	71	80	75	70
1	65	81	83	84	80
2	61	54	68	58	69
3	47	47	55	54	49
4	31	39	42	41	39
5	24	33	41	25	35
6	14	28	36	26	16
7	23	42	33	36	30
8	33	44	38	24	33
9	18	29	33	33	13
10	33	36	22	22	33
11	16	32	35	29	34
12	32	37	35	26	37
13	50	48	48	54	41
14	62	64	80	56	54
Total*	**569**	**685**	**729**	**643**	**633**
Total admissions**	**994**	**1,155**	**1,124**	**1,167**	**1,124**

**Source: Hospital Episode Statistics, Copyright © 2018, re-used with the permission of The Health & Social Care Information Centre* ** The total number of hospital admissions caused by unintentional and deliberate injuries in children (aged 0-14 years) Source: PHE, https://fingertips.phe.org.uk/

Considering the proportions of those 0-14 years olds 'admitted to a hospital bed' / 'became a lodged patient of the same health care provider' following attendance at A&E due to an injury, the data suggests younger age groups are most likely to be admitted; over the 5 year

period 2012/13-2016/17 - 13% of under 1s, 6.2% of 1 year olds and 5% of 2 year olds (Figure 16). Admissions then start to increase in the older age groups (13 & 14 year olds).

Figure 16



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Further analysis of 0-14 years olds 'admitted to a hospital bed' / 'became a lodged patient of the same health care provider' following attendance at A&E due to an injury shows that 27% were due to dislocation/fracture/joint injury/amputation, 26% were due to a head injury, 18% were due to poisoning (including overdose), 9% due to soft tissue inflammation and 8% due to laceration. In 0-4 year olds admitted, 33.8% were due to a head injury, 17.8% due to poisoning and 16.8% due to dislocation / fracture / joint injury / amputation.

The injuries most likely to result in an admission to a hospital bed in 0-14 year olds were: poisoning (including overdose) - 70%; dislocation/fracture/joint injury/amputation – 35%; head injuries – 15%, soft tissue inflammation -7% and laceration - 6%.

In 0-4 year olds again poisoning (including overdose) was most likely to be responsible for admission – 29%, followed by dislocation / fracture / joint injury / amputation – 10%, burns and scalds – 9%, muscle/tendon injury – 8% and head injury – 7% (Figure 17).

There was variation in admission for different type of injury within the different trusts in Warwickshire. Figure 18 shows this variation in 0-4 year olds. This is likely to reflect the care provision for each trust but may reflect protocols.

Figure 17

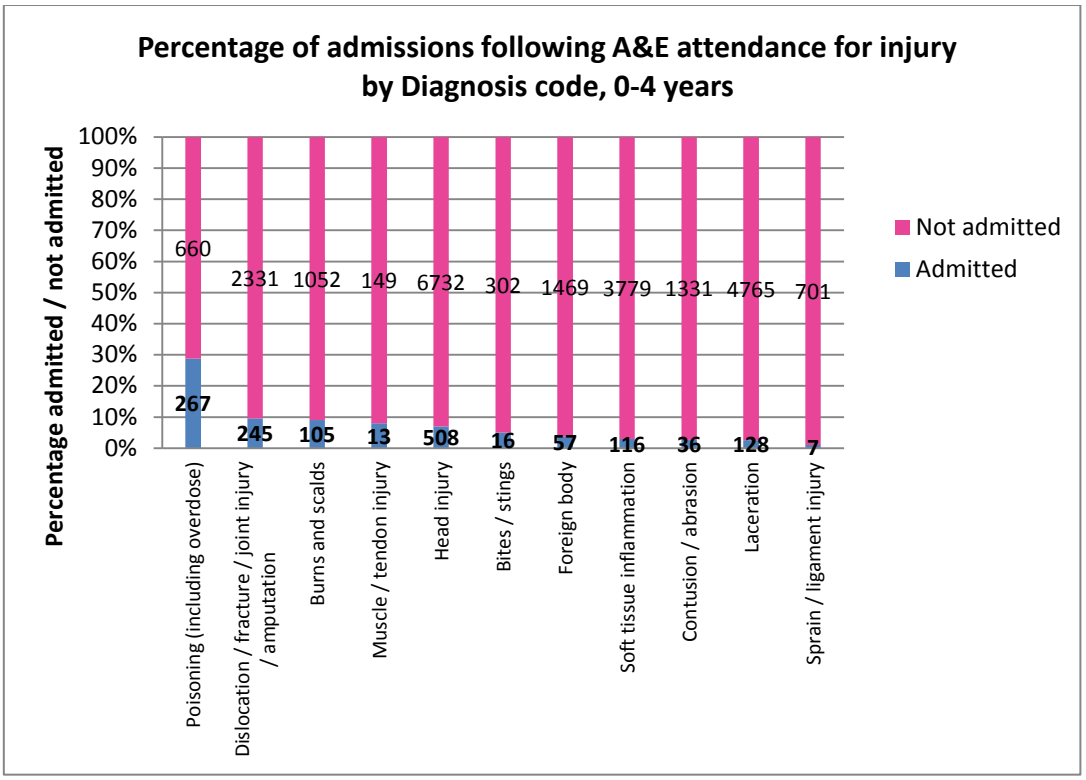
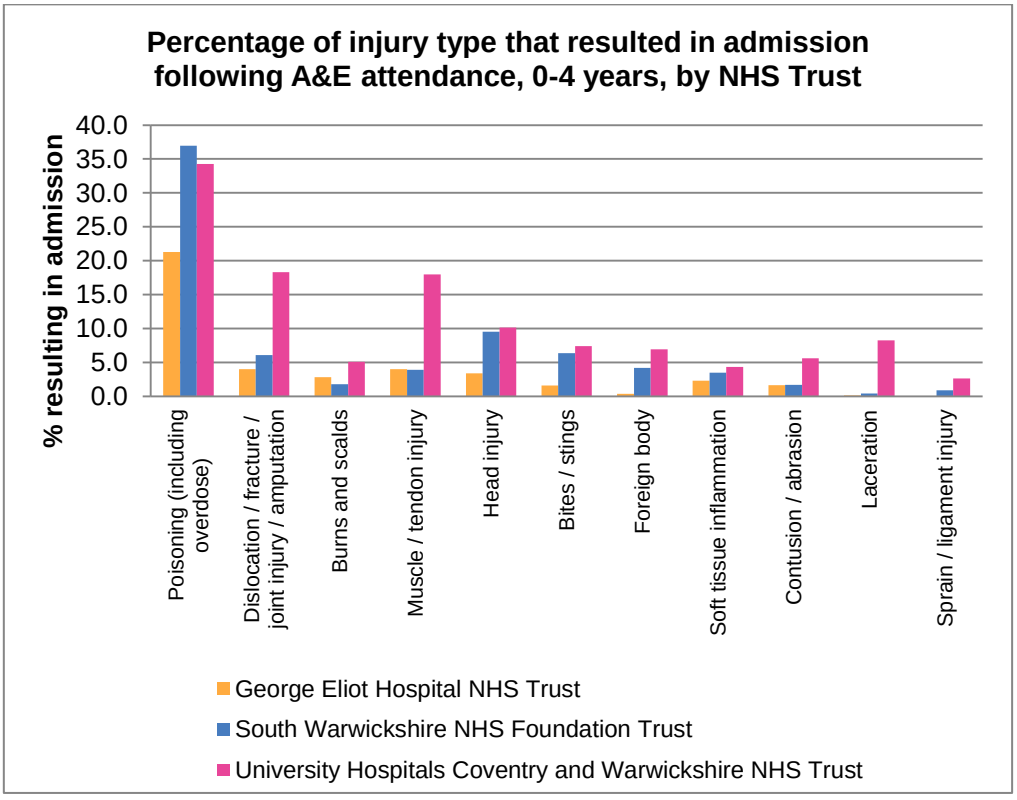


Figure 18



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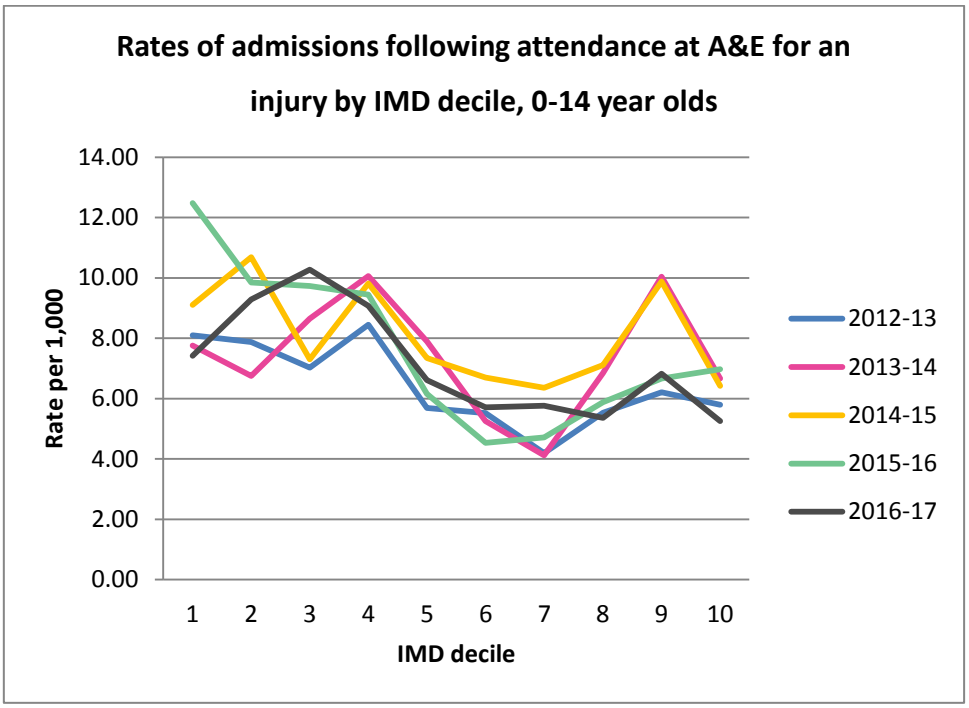
ADMISSIONS FOLLOWING A&E ATTENDANCE AND RELATIONSHIP TO DEPRIVATION

The rate of 0-14 years olds 'admitted to a hospital bed' / 'became a lodged patient of the same health care provider' following attendance at A&E due to an injury shows a mixed pattern when considering the index of multiple deprivation (IMD) of those children admitted (Figure 19) with higher rates in the more deprived areas (IMD 1-2 = 10-20% most deprived), but also in the least deprived areas (IMD decile 9).

Figure 19



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BENCHMARKING AND RECOMMENDATIONS FOR LOCAL ACTIONS

In November 2017, Warwickshire began to work closely with the Child Accident Prevention Trust (CAPT) - one of the national leads for accident prevention – as one their 'Improving Capacity and Collaboration' programme sites. This programme has been funded by the Department of Health with the aim of working with 8-10 sites identified as having poorer PHOF outcomes in relation to childhood admissions for injuries. Coventry is also one of these sites.

In January 2018, Warwickshire Public Health set up a small multi-disciplinary working group to begin to focus on local needs and early actions for unintentional injuries prevention. The working group agreed to initially prioritise accident prevention in children under 5 years.

The working group undertook some benchmarking against national recommendations, and offered suggested early actions. This information can be viewed in Table 12:

Table 12 Translating National Drivers and recommendations into Actions for Warwickshire

National drivers	National Recommendations	Benchmarking and suggested local actions for Warwickshire
The Health and Social Care Act (2012) PHE/CAPT 2014[8] NICE QS107[9] NICE PH 29 & 30[10]	**1. Providing Leadership and a 'Call to Action'** a) Joint Commissioning Boards, Safeguarding Boards and Health and Wellbeing Boards need to position themselves to provide strategic leadership and co-ordination under the direction of the Director of Public Health and the Director of Children's Services. b) NICE recommends that local authority areas have a person responsible for coordinating action to prevent unintentional injuries in children and young people (under 15) in the home.	**i)** **Recommendation:** There is a need to clarify which strategic forum is to provide leadership and oversight on work to tackle unintentional injury prevention. **ii)** **Recommendation:** The above nominated forum to drive forward a 3-year strategic action plan for unintentional injuries prevention (see 2.ii below) **iii)** **Recommendation:** to ensure 0-14 injury prevention features within Coventry and Warwickshire's sustainability and transformation partnership (STP) dialogue and planning. **iv)** **Recommendation:** to

[8] **Note:** The 2014 PHE/CAPT 'Reducing unintentional injuries in and around the home among children under five years' is due for a national refresh

[9] National Institute of Clinical Excellence (2016) Quality Standard [QS107], Preventing unintentional injury in under 15s, https://www.nice.org.uk/guidance/qs107

[10] National Institute of Clinical Excellence (2010) Public health guideline [PH29] , Unintentional injuries: prevention strategies for under 15s and Public health guideline [PH30], Unintentional injuries in the home: interventions for under 15s.

		nominate an appropriate responsible officer to oversee: (a) consistent monitoring of injuries intelligence, (b) coordination of a multi-agency approach to injury prevention, and (c) integration of this agenda within relevant strategic plans and work streams. *Note:* Currently, there is no named person with responsibility for coordinating the injuries prevention agenda**.** However, there is a *small* multi-disciplinary working group which was set up in November 2017, with CAPT representation, tasked with beginning to focus on early steps to prevention work. See NEXT STEPS
PHE/CAPT 2014 NICE QS107 NICE PH 29 & 30	**2. Strategic oversight** a) Set out the local ambition to reduce injuries and prioritise vulnerable groups b) Align this agenda with local strategies such as the child poverty strategy and the local public health outcomes framework. **c)** NICE recommends the development of a local multi-agency injury prevention strategy with local partners that is integrated into all relevant local plans and strategies for children and young people's health and wellbeing.	Currently there is no injury prevention strategy for Warwickshire. i. **Recommendation:** To organise a multi-agency, multi-disciplinary workshop in June 2018 (to coincide with Child Safety Week) to: **(a)** raise the profile and ownership of this agenda, **(b)** examine national recommendations, **(c)** map local needs and assets, **(d)** help develop a 3-year strategic action plan for unintentional injuries prevention in Warwickshire. COMPLETED

PHE/CAPT 2014 NICE QS107 NICE PH 29 & 30	**3. Build local intelligence and monitoring processes** a) Ensure that the joint strategic needs assessment (JSNA) includes information about unintentional injuries b) Households in which children and young people (under 15) may be at greater risk of unintentional injury to be identified by using local injury and socioeconomic data. c) Audit the child injury prevention activities/potential of existing services and programmes locally (local authority, NHS, voluntary care sector (VCS)) d) Utilise data from Child Death Overview Panel (CDOP) reviews and coroners reports. e) Identify current resource levels (human, financial, "other") and gaps f) Monitoring progress made on the injury prevention commitments set out in local plans and strategies for children and young people's health and wellbeing. g) Ensure all prevention interventions adopted and promoted are evidence-based.	Access to hospital admission data has been problematic. However, the WCC Insights Team has developed a dashboard to access HES data that will enable us to drill-down further - to get a more accurate picture of the problem, needs and gaps. **i)** **Recommendation:** Warks Public Health and the Insight team to work with local A&E department/s and CCGs to strengthen the quality of code entries. **ii)** **Recommendation:** Warks Public Health will work with SWFT Paediatric Liaison Nurse to collect 3/12 months (from March 2018) of injuries data, including more detailed qualitative information to complement the HES data findings presented in this paper. Will then consider extending this exercise to GEH and UHCW, depending on learning. **iii)** **Recommendation:** Run the above workshop (see 2.i) in order to identify current multi-agency resources, assets and gaps for unintentional injuries prevention. **iv)** **Recommendation:** Warwickshire to work with CAPT to identify evidence based interventions for inclusion within a 3-year strategic action plan for unintentional injuries prevention (see 2.i)

PHE/CAPT 2014 NICE QS107 NICE PH 29 & 30	**4. Systematic mobilisation of multi-agency partners & services** a) Develop a programme of education for policy makers and professionals as well as for parents and carers. b) Strategic leads identify existing programmes and services that present the best opportunity to drive reductions in unintentional injuries among c) Commissioners include within the service specifications for commissioned services the need to identify households in which children and young people (under 15) may be at greater risk of unintentional injury in the home for structured home safety assessments. d) Health visitors service to lead and support delivery of universal injury prevention work for infants and young children through the Healthy Child Programme e) Embed injury prevention within the Family Nurse Partnership programme, and harness any existing learning for injury prevention f) Embed injury prevention within the new Children & Family Centres and integrated services g) Embed injury prevention within universal and targeted parent education programmes, parenting courses and groups and courses, including VCS groups (toddler groups).	i) **Recommendation:** Plan a programme of awareness education for local strategic forums, strategic leads, policy makers, commissioners and professionals. ii) **Recommendation:** Aim to include unintentional injuries prevention responsibilities within all relevant public sector commissioned/funded contracts and services. iii) **Recommendation:** Health visiting service to designate a clinical lead and geographical champions to proactively drive forward unintentional injuries prevention and skills development within all local early years services, including new Children & Family Centres, nurseries and in the home. iv) **Recommendation:** To work with relevant A&E teams to develop enhanced prevention information (linked to developmental stages) and exchange between professional and families within these settings.

	h) Ensure education, housing, environmental health, trading standards, road safety, planning involved injuries prevention interventions. i) Offer enhanced prevention information in A&E departments and minor injury units to prevent future injuries j) NICE recommends health, public health and social care practitioners (such as GPs, health visitors, community nurses and midwives, social workers and health promotion workers) use frameworks and protocols that are led by the person who is responsible for coordinating action in their local area to prevent unintentional injuries in children and young people (under 15) in the home.	
PHE/CAPT 2014	**5. Workforces development to Make Every Contact Count** a) Embed training on prevention of unintentional injuries into Warwickshire's MECC training. b) Health visitor staff should have appropriate specialist training that will enable them to identify home safety behaviours, make well-informed decisions and offer appropriate advice c) Children & Family Centres, and other early years professional (nurseries, child minders) trained to further develop confidence	i) **Recommendation:** undertake a county-level training needs assessment and multi-agency workforce development plan for unintentional injuries prevention in Warwickshire, with input from CAPT.

	and competence in this area.	
PHE/CAPT 2014	**6. Links to developmental assessment** a) Utilise Early Years Foundation Stage (EYFS) progress checks for EY settings and professionals to educate parents on injury prevention. b) Embed injury prevention within the integrated health and education review at 2-2.5 yrs. c) Households with children and young people (under 15) receive advice on home safety or are referred for a structured home safety assessment by practitioners providing family support on home visits. d) Structured home safety assessments are carried out by trained assessors and usually involve assessing the risk of the most common causes of unintentional injuries to children and young people (including burns, falls, poisoning, drowning, suffocation and choking) in each room. e) Households with children and young people (under 15) that have had a structured home safety assessment at which risks have been identified receive tailored advice or support to reduce the risks.	i. **Recommendation:** Develop/provide an evidence-based home safety checklist (online and hardcopy), linked to developmental stages, for self-help use by parents (and professionals). ii. **Recommendation:** Above checklist to be supported by safety assessment training for MECC brief interventions with 0-5 families.

PHE/CAPT 2014 NICE QS107 NICE PH 29 & 30	**7. Develop approaches that empower parents and carers to alter home safety behaviours.** a) Utilise evidence-based risk assessment tool related to developmental stages b) Equipping parents with an understanding of how a baby and young child develops and the injury risks at each stage; anticipating future injuries risks.	i. **Recommendation:** Building accessible online information for parents (within Warwickshire FIS) ii. **Recommendation:** Develop and reframe safety messages and information in co-production with local parents. iii. **Recommendation:** Develop 2018 (4-10 June) 'Child safety Week' campaign, in co-production with CAPT, multi-agency partners and parents. COMPLETED

NEXT STEPS

Following a large multi-agency, multi-disciplinary *'Safe children: together we've got this'* workshop held on 5 June 2018, it was agreed that the governance for this agenda should sit under the Warwickshire Health and Wellbeing Board, and be driven by an expanded multi-agency steering group. This steering group will finalise and implement a 3-year action plan - combining actions arising from the above recommendations and from the outputs of the 5 June 2018 workshop.

ANNEX 1

Accident and Emergency Diagnosis Codes

The following diagnosis conditions were used in this report to capture attendances for injuries:

Code	Diagnosis Condition
01	Laceration
02	Contusion / abrasion
03	Soft tissue inflammation
04	Head injury
05	Dislocation / fracture / joint injury / amputation
06	Sprain / ligament injury
07	Muscle / tendon injury
08	Nerve injury
09	Vascular injury
10	Burns and scalds
11	Electric shock
12	Foreign body
13	Bites / stings
14	Poisoning (including overdose)
15	Near drowning
16	Visceral injury

Hospital Admissions Diagnosis Codes (ICD 10)

Admissions for injuries depicted by the following ICD 10 codes are used in this report

ICD-10 Code	Condition
S00-S09	Injuries to the head
S10-S19	Injuries to the neck
S20-S29	Injuries to the thorax
S30-S39	Injuries to the abdomen, lower back, lumbar spine and pelvis
S40-S49	Injuries to the shoulder and upper arm
S50-S59	Injuries to the elbow and forearm
S60-S69	Injuries to the wrist and hand
S70-S79	Injuries to the hip and thigh
S80-S89	Injuries to the knee and lower leg
S90-S99	Injuries to the ankle and foot
T00-T07	Injuries involving multiple body regions
T08-T14	Injuries to unspecified part of trunk, limb or body region
T15-T19	Effects of foreign body entering through natural orifice
T20-T32	Burns and corrosions
T33-T35	Frost Bite
T36-T50	Poisoning by drugs, medicaments and biological substances
T51-T65	Toxic effects of substances chiefly nonmedicinal as to source
T66-T78	Other and unspecified effects of external causes
T79	Certain early complications of trauma
V01-V99	Transport accidents
W00-X59	Other external causes of accidental injury
X60-X84	Intentional self-harm
X85-Y09	Assault
Y10-Y34	Event of undetermined intent
Y35-Y36	Legal intervention and operations of war