

## 6. CHILDREN, YOUNG PEOPLE AND THEIR FAMILIES

### 6.13 Physical Health of Children and Young People

Improving the health of our children and young people is an essential investment in the future of our population, and failure to do this will increase the future burden of ill health. This highlights the importance of the life-course approach; early intervention in childhood and adolescence has the potential for profound impact throughout life. This section explores the common long term physical health conditions of children and young people. Communicable diseases are discussed in a separate section.

#### *6.13.1 The importance of physical health in children and young people*

While the majority of children and young people are healthy apart from short-term health problems which are treatable or are self-limiting, some are affected by long-term conditions which require ongoing management over a period of years. Children and young people who have a long-term condition can be at risk of missing out on educational opportunities due to prolonged absences from school, and ill-health can also affect their long-term growth and development. Therefore it is important that these conditions are identified early and managed appropriately.

More than a million children in the UK have a long-term, or even lifelong illness and may need medicines for the foreseeable future. However, there is evidence that the management of these conditions could be better than it currently is in this country. An estimated 5.4 million people in the UK are currently receiving treatment for asthma of whom 1.1 million are children, and the NHS spends around £1 billion a year treating and caring for people with asthma<sup>1</sup>. Asthma UK estimate that three-quarters of hospital admissions for asthma are avoidable and as many as 90% of the deaths from asthma are preventable. England is an extreme outlier with respect to asthma mortality in the under 14s, with almost 25 times higher mortality than the best performing country studied in a recent review<sup>2</sup>.

Long-term condition outcomes are poorer in adolescents than in adults. Around 70% of childhood type1 diabetes is diagnosed in adolescence but they have poorer diabetes control and more emergency hospital admissions than younger children or adults<sup>3</sup>. Health service use is higher among children aged up to 3 years and then in adolescence<sup>4</sup>.

### 6.13.2 Information on the physical health of children and young people in Buckinghamshire

#### 6.13.2.1 Prevalence of long-term conditions

A survey of 1,868 children aged 11,13 and 15 years in England published in 2011<sup>5</sup> reported that overall, 15% had a long-term medical condition or disability. Of those, 66% reported taking some kind of medication for their condition and 31% said that their condition affects their school attendance and/or participation.

The most common long-term physical health conditions among school age children are diabetes, asthma, epilepsy, allergies and some skin conditions like eczema. Data on the prevalence of these conditions among Buckinghamshire children are not readily available. However some data are available from the 'Lancaster Model' survey<sup>6</sup> which Buckinghamshire school nurses are commissioned to deliver among all children in Reception, Year 6 and year 9 in state schools.

In 2014/15, survey questionnaires were sent to 17,084 state school children in these three year groups, of whom 8,136 (47.6%) completed and returned them. The completion rate was comparable between Reception year (n=1,937; 31.6%) and Year 9 (n=1,729; 30.6%), but among Year 6 the completion rate was significantly higher (n=4,470; 84.3%). Table 1 shows the completion rate by year group and the self-reported prevalence of specified long-term conditions. The reported prevalence of asthma and allergies increased with age with an overall average prevalence of asthma of 9.9%, allergies 11.6%, eczema 10.8%, epilepsy 0.3% and diabetes 0.2%.

**Table 1 The Lancaster Model survey completion rates and reported prevalence of specified long-term conditions by Year Group in Buckinghamshire state schools, 2014/15**

	Reception year	Year 6	Year 9	All 3 years / average prevalence
<b>Total pupils</b>	6,129	5,300	5,655	17084
<b>Number (%) responding</b>	1,937 (31.6%)	4,470 (84.3%)	1,729 (30.6%)	8136 (47.6%)
<b>Number (%) reporting specified conditions</b>				
<b>Asthma</b>	103 (5.3%)	481 (10.8%)	234 (13.5%)	9.9%
<b>Epilepsy</b>	* (0.1%)	19 (0.4%)	6 (0.3%)	0.3%
<b>Diabetes</b>	* (0.1%)	13 (0.3%)	5 (0.3%)	0.2%
<b>Eczema</b>	246 (12.7%)	390 (8.7%)	192 (11.1%)	10.8%
<b>Allergies</b>	105 (5.4%)	597 (13.4%)	277 (16%)	11.6%

\*number less than 5.

Source: Lancaster Model Survey, Buckinghamshire 2014/15

According to the Office for National Statistics mid-2014 population estimates, there are around 97,623 children aged 5 to 19 years in Buckinghamshire. The total number and possible range of children aged 5-19 years with long-term conditions have been estimated using the 2014 ONS mid-year population estimates and the average prevalence and the lowest and highest prevalences from the local Lancaster Model survey (table 2). These suggest that as a very crude estimate, there may be around 9,600 5-19 year olds in Buckinghamshire with asthma, 316 with epilepsy, 195 with diabetes.

**Table 2 Estimated prevalence of selected Long Term Conditions among 5 – 19 year old children in Buckinghamshire, 2014/15**

<b>Conditions</b>	<b>Average estimated Prevalence* (Range)</b>	<b>Estimated number of children aged 5 – 19 years suffering from this condition in Bucks (estimated range)</b>
<b>Asthma</b>	9.8% (5.3% - 12.1%)	9,570 (5,191 - 11,793)
<b>Epilepsy</b>	0.3% (0.1%-0.4%)	316 (101 - 415)
<b>Diabetes</b>	0.2% (0.05%-1.4%)	195 (50 - 1,361)
<b>Eczema</b>	9.9% (8.7% - 12.7%)	9,687 (8,517 - 12,398)
<b>Allergies</b>	11.7% (5.4% - 14.3%)	11,454 (5,292 - 13,961)

\* Based on School Survey prevalence among Reception, Year 6 and Year 9 pupils across Bucks, 2014/15, sample size n=8,344 and Total 2014 ONS population projection of children aged 5-19 years  
Source: ONS, Census 2011 and TLM Bucks survey 2014/15

NICE estimated that the proportion of children and young people aged 17 years or younger with a diagnosis of epilepsy and receiving anti-epileptic drugs is 0.3%, which equates to approximately 34,000 in England<sup>7</sup>. This is the same prevalence as that derived from the local Lancaster Model which suggests the survey broadly reflects the true picture across Buckinghamshire. Asthma UK<sup>1</sup> estimate that 1 in 11 children (9.1%) has asthma in the UK which would be equivalent to around 8,875 children suffering from Asthma in Buckinghamshire, slightly lower than but comparable with the estimated numbers based on the Lancaster Model survey prevalence.

Diabetes UK has estimated that there are approximately 31,500 children and young people under the age of 19 with the condition in the UK based on surveys from England, Wales and Scotland. Of these, about 95.1% have Type 1 diabetes, 2% have Type 2 and the rest have other rare forms<sup>8</sup>. On this basis, Diabetes UK estimates that local authorities can expect between 100-150 young people under 18 to be living with diabetes in their area. The above estimates suggest that there are around 195 (50 to 1,361) children aged 5 to 19 years with diabetes in Buckinghamshire. The International Diabetes Federation<sup>9</sup> reported that the incidence of Type 1 diabetes in children is 24.5 per 100,000 a year in the UK, which would

equate to over 30 children newly diagnosed with diabetes every year in Buckinghamshire (Estimated 0 to 19 population: 130,406 2014).

### 6.13.2.2 Accident and Emergency (A&E) Attendances

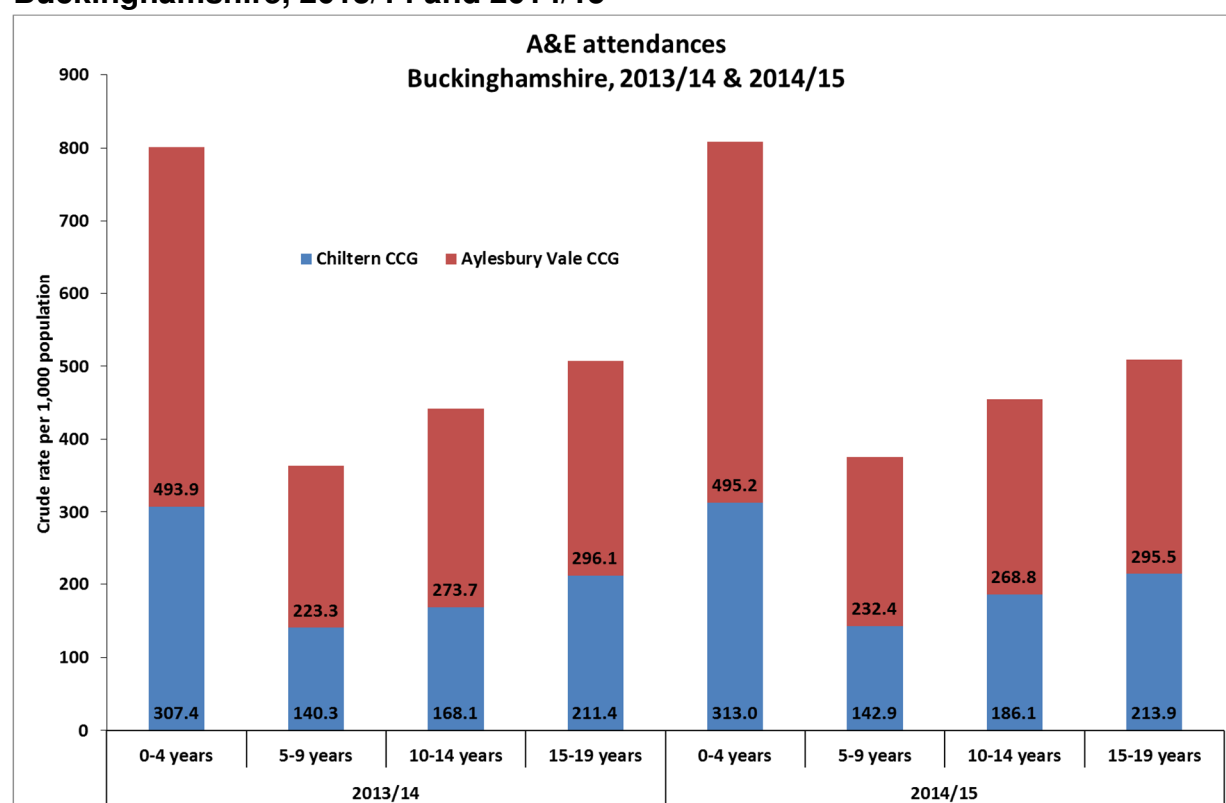
In 2014/15, there were 12,285 and 20,999 A&E attendances among children aged 0-4 and 5-19 years registered with a Buckinghamshire GP respectively, a small increase from 12,156 and 20,469 in 2013/14 (table 3). Figure 1 shows the rate of A&E attendances among 0-19 year olds split by age group and CCG. The rates are highest among 0-4 year olds and lowest in 5-9 year olds, after which they increase again with age. Attendance rates are similar in 2013/14 and 2014/15.

**Table 3 Number of A&E attendances, children aged 0-4 and 5-19 by CCG in Buckinghamshire, 2013/14 and 2014/15**

Financial Year	Age group	Chiltern CCG	Aylesbury Vale CCG	Total
2013/14	0-4	6,351	5,805	12,156
	5-19	10,784	9,685	20,469
2014/15	0-4	6,465	5,820	12,285
	5-19	11,267	9,732	20,999

Source: SUS Accident and Emergency (AAE) Minimum Data Set (MDS)

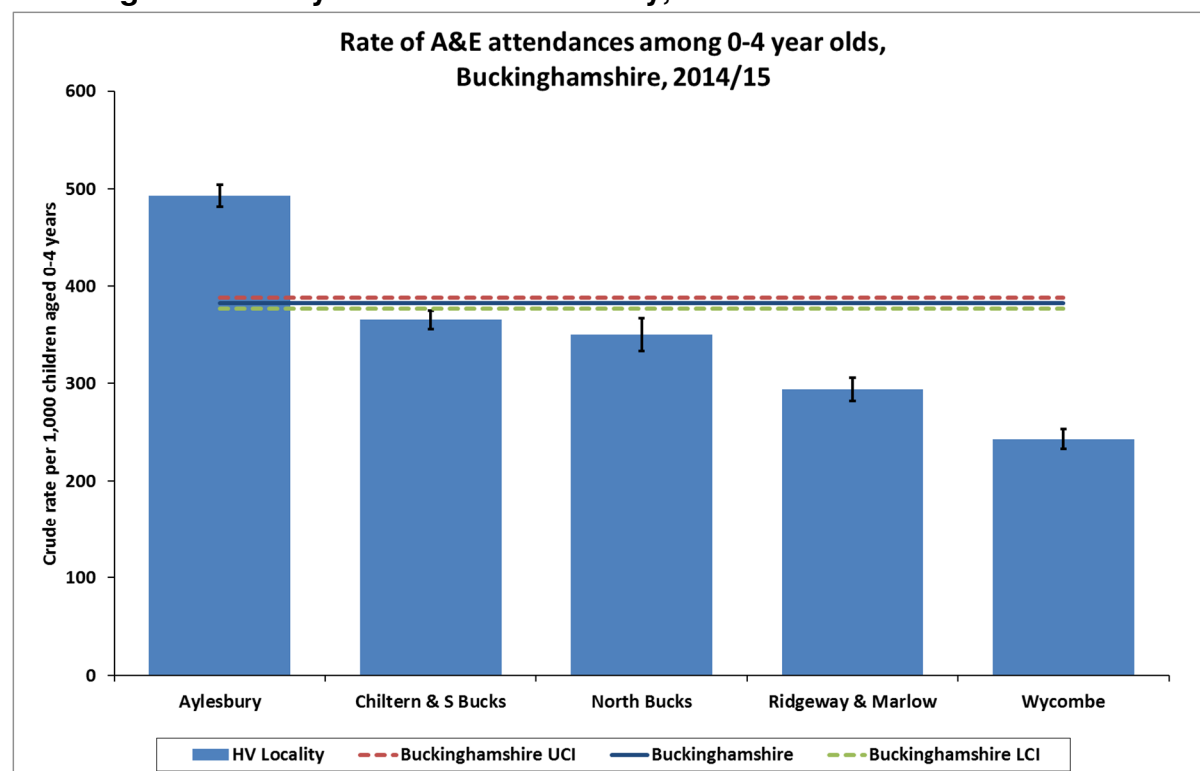
**Figure 1 Rate of A&E attendances among children by age group and CCGs in Buckinghamshire, 2013/14 and 2014/15**



Source: SUS Accident and Emergency (AAE) Minimum Data Set (MDS)

Figure 2 shows the rate of A&E attendances of 0-4 year old children by Health Visitor locality in Buckinghamshire in 2014/15. The average attendance rate across Buckinghamshire was 382.2 per 1,000 population (0-4 years), but there were significant differences between the localities, with Aylesbury significantly higher and the other areas significantly lower than the Buckinghamshire average. The attendance rate in Wycombe was less than half that in Aylesbury.

**Figure 2 Rate of A&E attendances among children aged 0-4 years in Buckinghamshire by Health Visitor locality, 2014/15**



Source: SUS Accident and Emergency (AAE) Minimum Data Set (MDS)

### 6.13.2.3 Hospital Admissions for long-term conditions

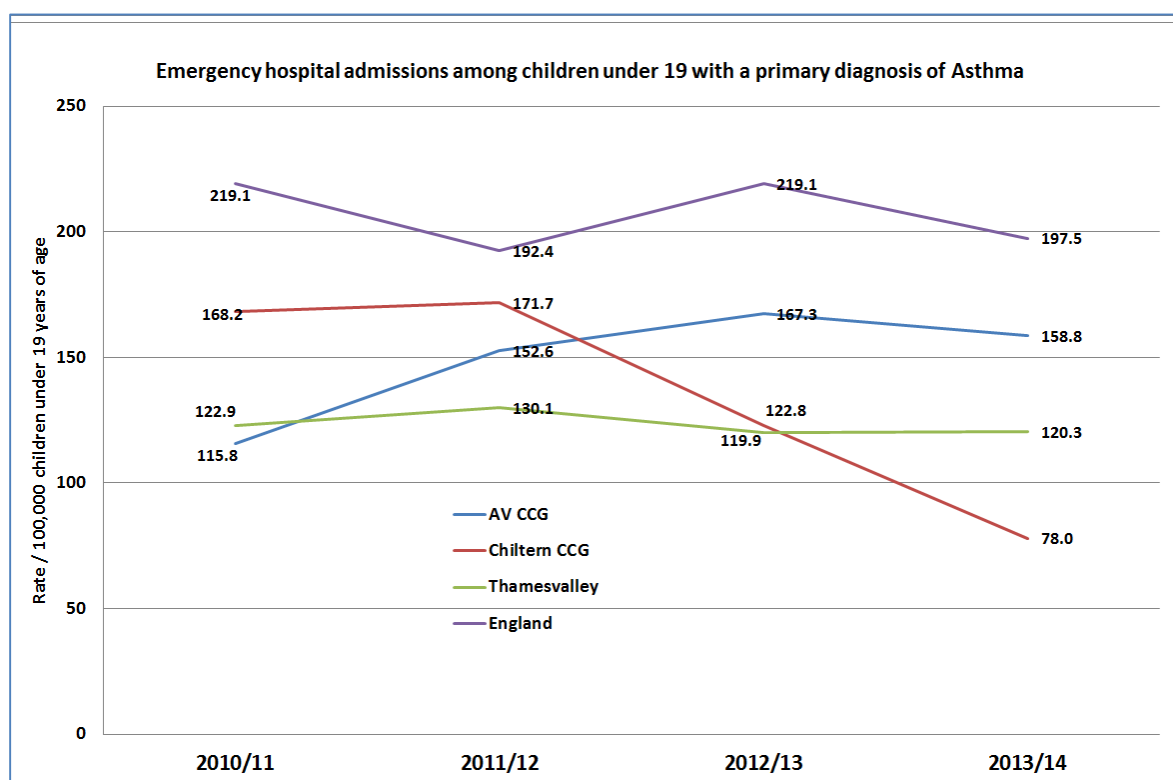
Emergency hospital admission rates can be utilised as an indicator of the quality of care of conditions where effective management can avoid the need for urgent care. This section shows data on emergency hospital admissions for three common long-term conditions in children.

#### **Asthma**

Evidence shows that asthma education aimed at children and carers can significantly reduce risk (by 21% in a 2009 Cochrane systematic review) of subsequent hospital admissions<sup>10</sup>. Figure 3 shows the rate of emergency hospital admissions in children aged under 19 with a primary diagnosis of asthma in Buckinghamshire CCGs compared with Thames Valley and England between 2010/11 and 2013/14. The national and Regional rates have remained fairly stable over this period while the

Aylesbury Vale CCG rate has increased, and the Chiltern CCG rate has declined in 2013/14 compared to 2010/11. However it is likely that local rates will fluctuate more due to small numbers. In 2013/14, the admission rate was significantly lower (better) in Chiltern CCG compared to the England average, and the rate in Aylesbury Vale CCG was lower but comparable with the England average.

**Figure 3 Emergency Hospital Admissions among children under 19 years of age with a primary diagnosis of asthma by CCGs, 2010/11 to 2013/14**



Source: Disease Management Information Tool (DMIT), PHE,  
<http://atlas.chimat.org.uk/IAS/ist/dmithelp>

In 2013/14 there were 133 emergency hospital admissions with a primary diagnosis of asthma among children under 19 years registered with a Buckinghamshire GP. Of these, 74 admissions were from Aylesbury Vale, 48 of which were children who had a single admission, and 26 were admissions of 12 children who each had more than one admission. During the same period there were 59 admissions from Chiltern CCG, 46 of which were children with a single admission, and 13 were admissions of 6 children who each had more than one admission.

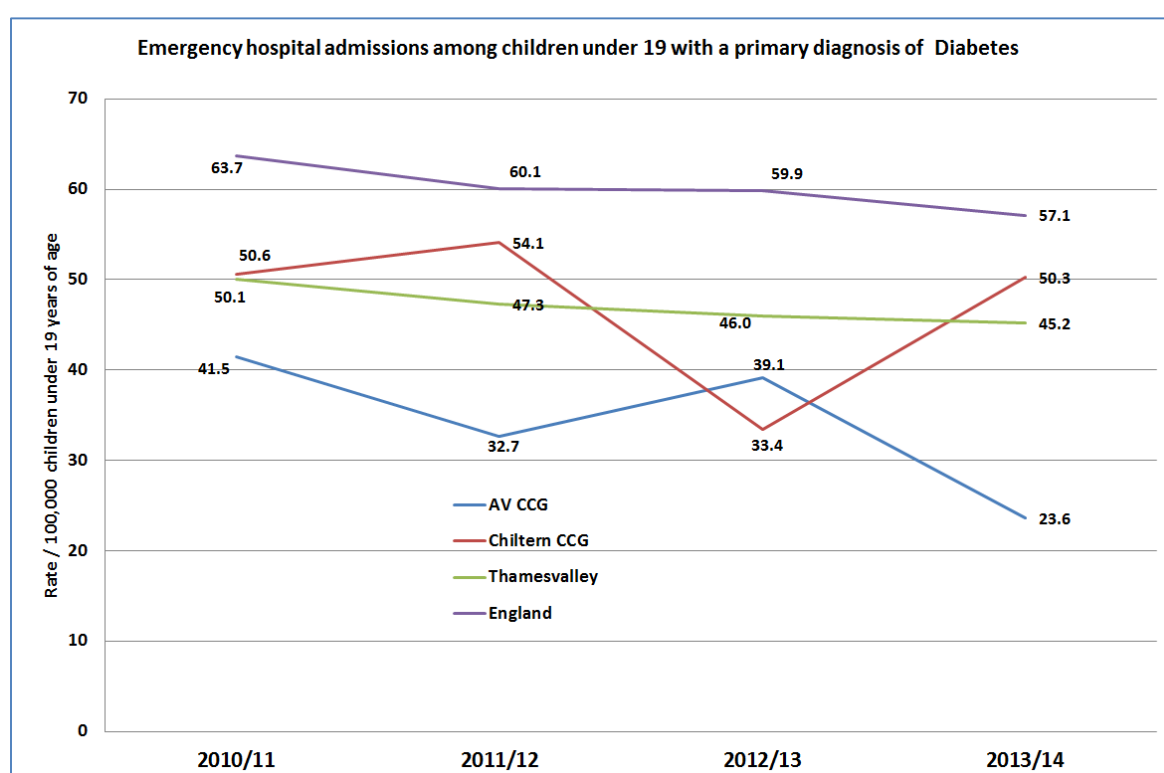
## Diabetes

In 2013/14, the National Diabetes Audit identified 26,500 children and young people with type 1 diabetes and 500 with type 2<sup>11</sup>. Diabetic ketoacidosis (DKA) is a condition which occurs when blood glucose levels are high (hyperglycaemia) and requires urgent hospital treatment; if left untreated, it may lead to coma. Diabetes UK

estimated that in 2009 there were around 3,300 cases of children in England admitted to accident and emergency departments with DKA<sup>12</sup>.

Figure 4 shows the rate of emergency hospital admissions in children aged under 19 with a primary diagnosis of diabetes in Buckinghamshire CCGs compared with the Thames Valley and England between 2010/11 and 2013/14. The rate in England was higher than the Thames Valley or Buckinghamshire rates, and the national and Regional rates have declined gradually over this time. The rates in both CCGs have fluctuated (due to small numbers) but both also have a downward trend, Aylesbury Vale being the lowest.

**Figure 4 Emergency Hospital Admissions among children under 19 years of age with a primary diagnosis of Diabetes by CCGs, 2010/11 to 2013/14**



Source: Disease Management Information Tool (DMIT), PHE,  
<http://atlas.chimat.org.uk/IAS/ist/dmithelp>

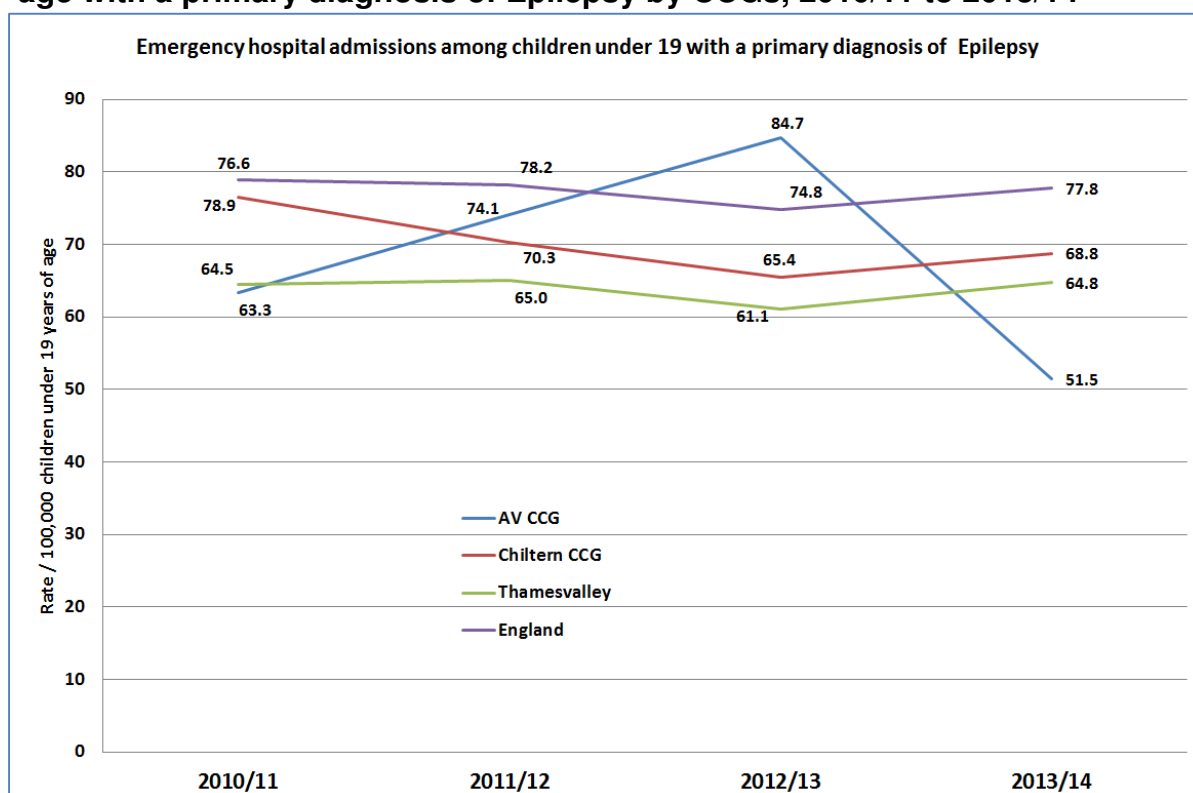
There were 49 emergency hospital admissions of children aged under 19 with a primary diagnosis of diabetes who were registered with a Buckinghamshire GP in 2013/14. Among them, 38 were from Chiltern CCG and 11 from Aylesbury Vale CCG, and most had a single admission.

## Epilepsy

Hospital Episode Statistics (HES) data showed that in 2010/11 there were around 9,800 emergency hospital episodes for children and young people with a primary

diagnosis of epilepsy<sup>13</sup> (90 per 100,000) in England.<sup>14</sup> Figure 5 shows the trend in emergency hospital admissions due to epilepsy of children aged under 19 from 2010/11 to 2013/14. The national and Regional averages remained fairly stable over this time and the trend in Aylesbury Vale CCG was comparable, while that in Chiltern CCG fluctuated much more widely.

**Figure 5 Emergency Hospital Admissions among children under 19 years of age with a primary diagnosis of Epilepsy by CCGs, 2010/11 to 2013/14**



Source: Disease Management Information Tool (DMIT), PHE,  
<http://atlas.chimat.org.uk/IAS/ist/dmithelp>

There were 76 emergency hospital admissions with a primary diagnosis of epilepsy among children aged under 19 registered with a Buckinghamshire GP in 2013/14. Of these, 52 admissions were children from Chiltern CCG, 21 of which were for children who had a single admission, and 31 of which were for 11 children who each had more than 1 admission in the year. During the same period there were 24 admissions in Aylesbury Vale CCG, 9 of which were children who had a single admission, and 15 were for 6 children who each had more than 1 admission.

#### 6.13.2.4 Unintentional and deliberate injuries

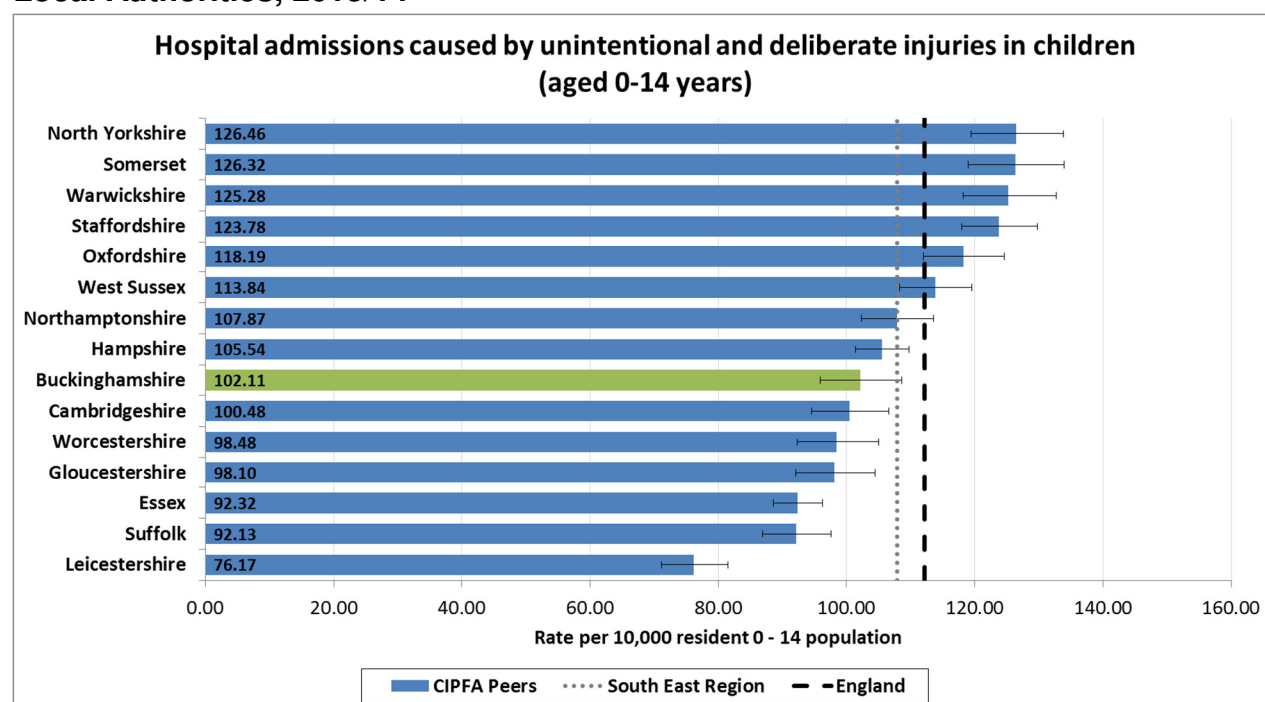
Injuries are a leading cause of hospitalisation and represent a major cause of premature mortality for children and young people. They can also be a cause of long-term health problems, including mental ill-health. The number of finished emergency admissions with one or more codes for injuries and other adverse effects



of external causes (ICD 10: S00-T79 and/or V01-Y36) in any diagnostic field position, and a valid Local Authority code, in children aged 0-14 and young people aged 15-24 years were extracted from Hospital Episode Statistics (HES). The rates of hospital admissions per 10,000 resident population were calculated using Office for National Statistics (ONS) mid-year population estimates.

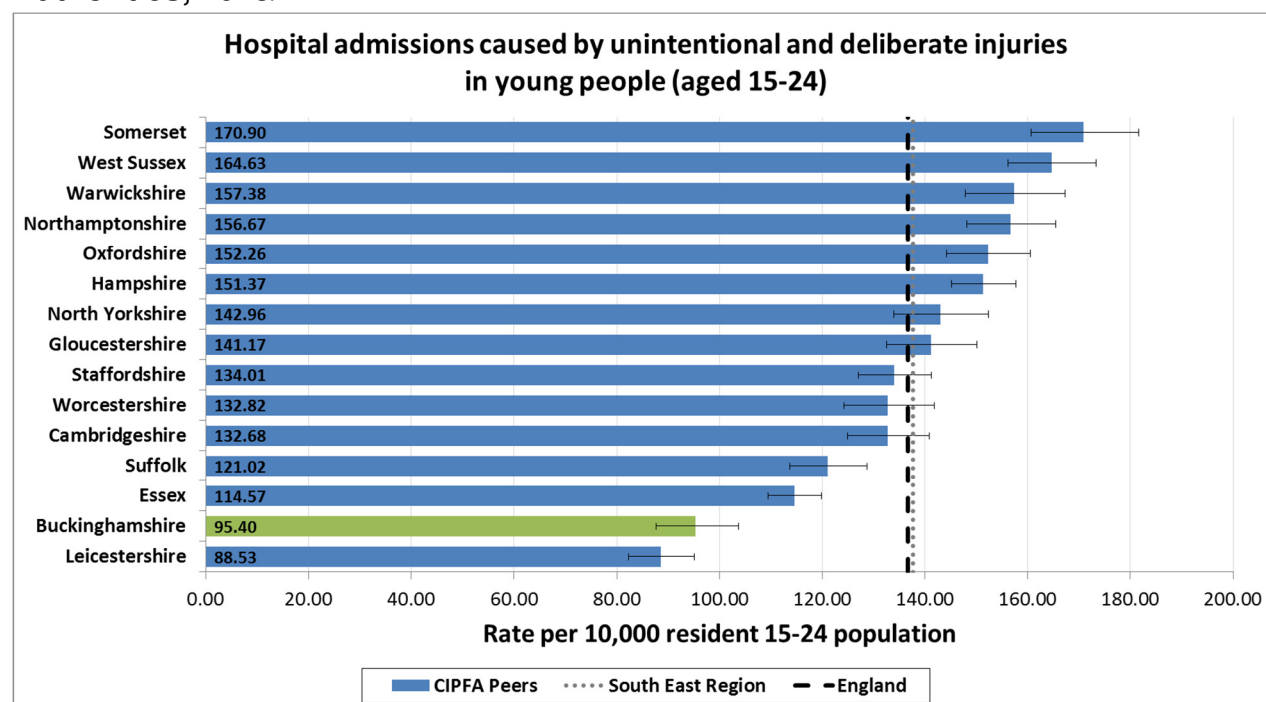
In Buckinghamshire in 2013/14, there were 1,000 (rate 102.1/10,000) hospital admissions caused by unintentional and deliberate injuries in children aged 0-14 years, and 553 (rate 95.4/10,000) among 15-24 year olds. Figures 6 and 7 show the rate of hospital admissions caused by unintentional and deliberate injuries in these 2 age groups compared to CIPFA peer Local Authorities, regional and national averages. Buckinghamshire admission rates were significantly better than the England average for both age groups, and were seventh lowest for 0–14 year olds and second lowest for 15-24 year olds among the 15 CIPFA peer areas in 2013/14.

**Figure 6 Hospital admissions caused by unintentional and deliberate injuries in children (aged 0-14 years) in Buckinghamshire compared to CIPFA peer Local Authorities, 2013/14**



Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre and Office of National statistics

**Figure 7 Hospital admissions caused by unintentional and deliberate injuries in children (15-24 years) in Buckinghamshire compared to CIPFA peer Local Authorities, 2013/14**



Source: Hospital Episode Statistics, Health and Social Care Information Centre and ONS

### 6.13.3 Physical health in different groups of children and young people

#### 6.13.3.1 Gender

There are no local data available on gender differences in physical health among children in Buckinghamshire. Evidence<sup>15</sup> shows that boys are consistently reported to have more prevalent wheeze and asthma than girls. In adolescence, the pattern changes and onset of wheeze is more prevalent in females than males. Asthma, after childhood, is also more severe in females than in males, and is more often underdiagnosed and undertreated in female adolescents. Possible explanations for the change in gender susceptibility to asthma around puberty include hormonal changes and gender-specific differences in environmental exposures.<sup>16</sup>

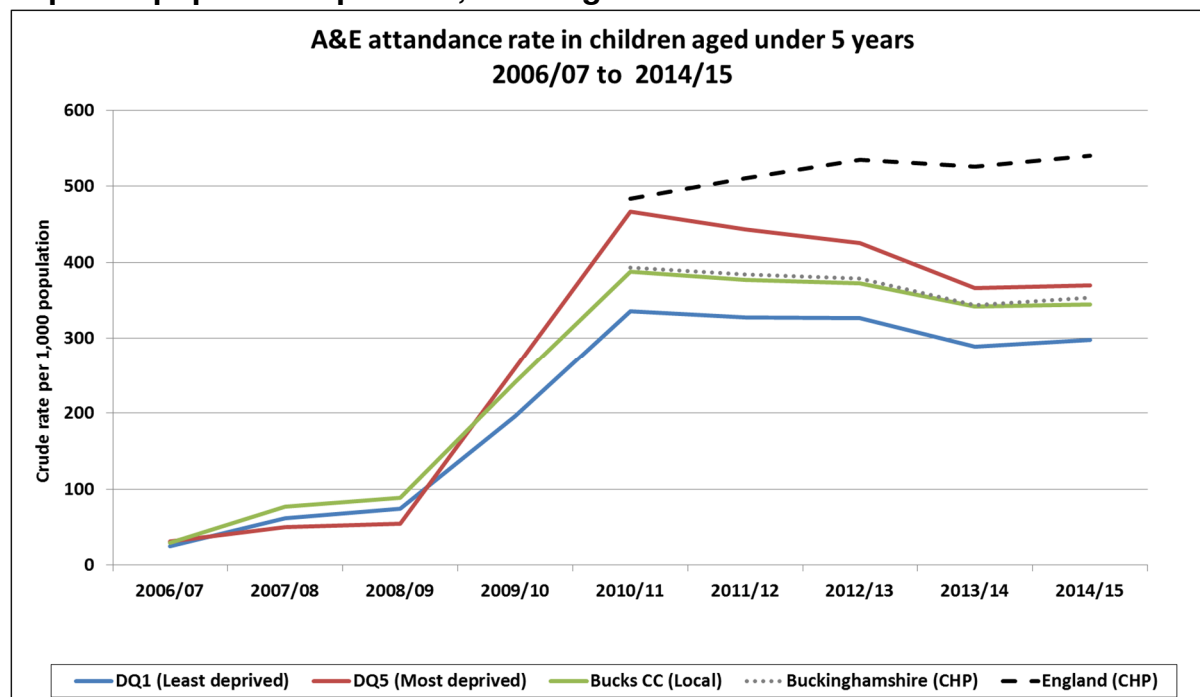
#### 6.13.3.2 Ethnicity

There are no local data available on ethnic variations in physical health among children in Buckinghamshire. A systematic review<sup>17</sup> found that south Asian children had a lower frequency of symptoms suggestive of asthma compared with children from Black and White ethnic groups, and clinician-diagnosed asthma in children followed a similar pattern. However, relative to White people, the risk of admission for asthma in both children and adults was higher for south Asians and Black people. These differences could relate to ethnic variations in asthma severity, differences in health-seeking behaviour, or difficulties in accessing high-quality primary care services.

### 6.13.3.3 Deprivation

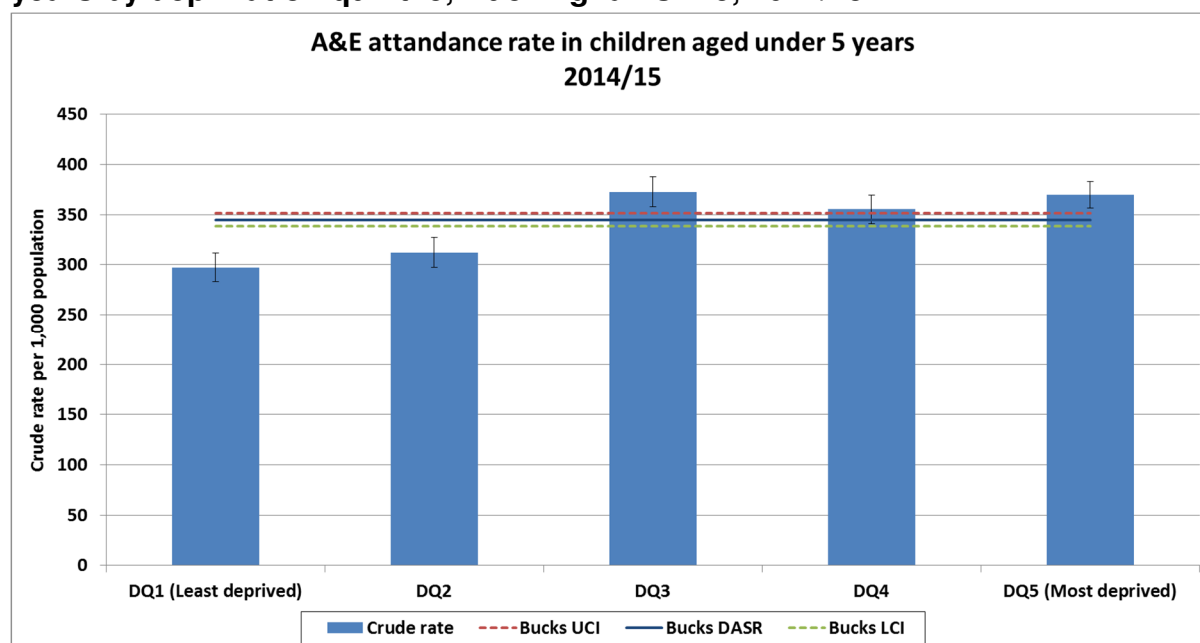
The Accident and Emergency attendance rate in children under 5 years of age in the most deprived population quintile in Buckinghamshire is statistically significantly higher than that in the least deprived population quintile (Figures 8 and 9).

**Figure 8 A&E attendance rate in children aged under 5 years, most and least deprived population quintiles, Buckinghamshire 2006/07 to 2014/15**



Source: SUS Accident & Emergency (AAE) Minimum Data Set (MDS)

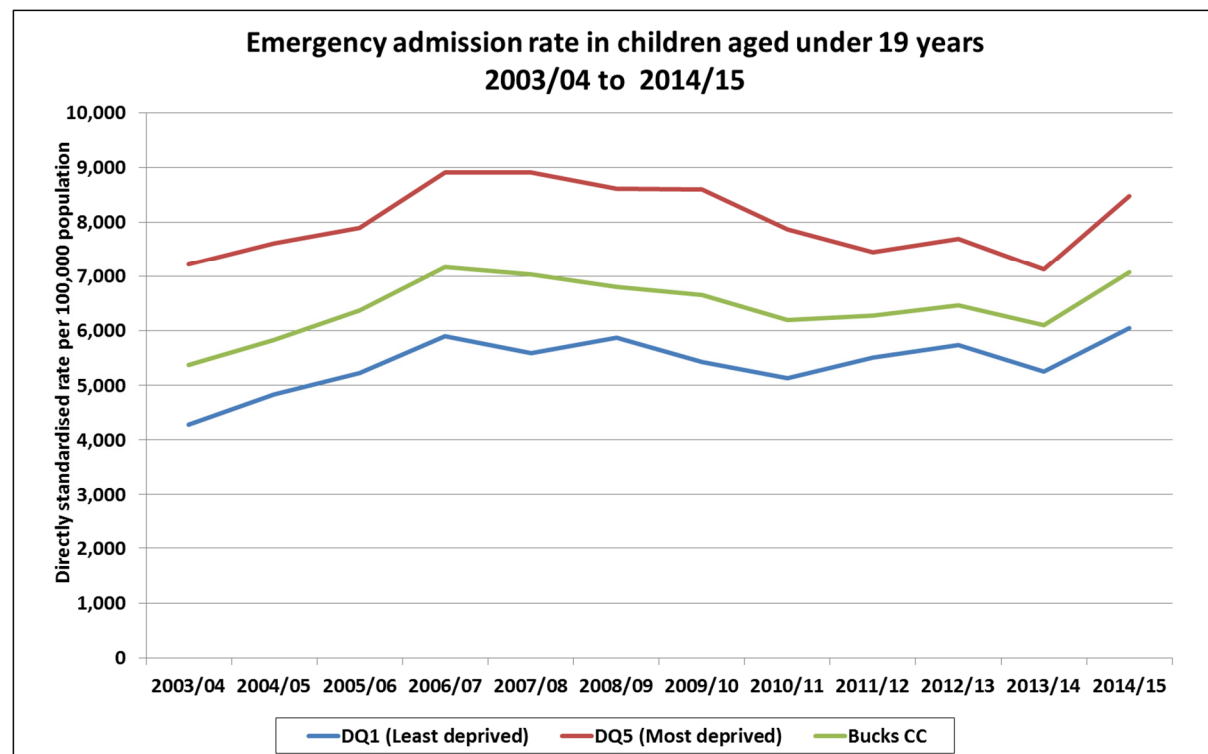
**Figure 9 Accident and Emergency attendance rate in children aged under 5 years by deprivation quintile, Buckinghamshire, 2014/15**



Source: SUS Accident & Emergency (AAE) Minimum Data Set (MDS)

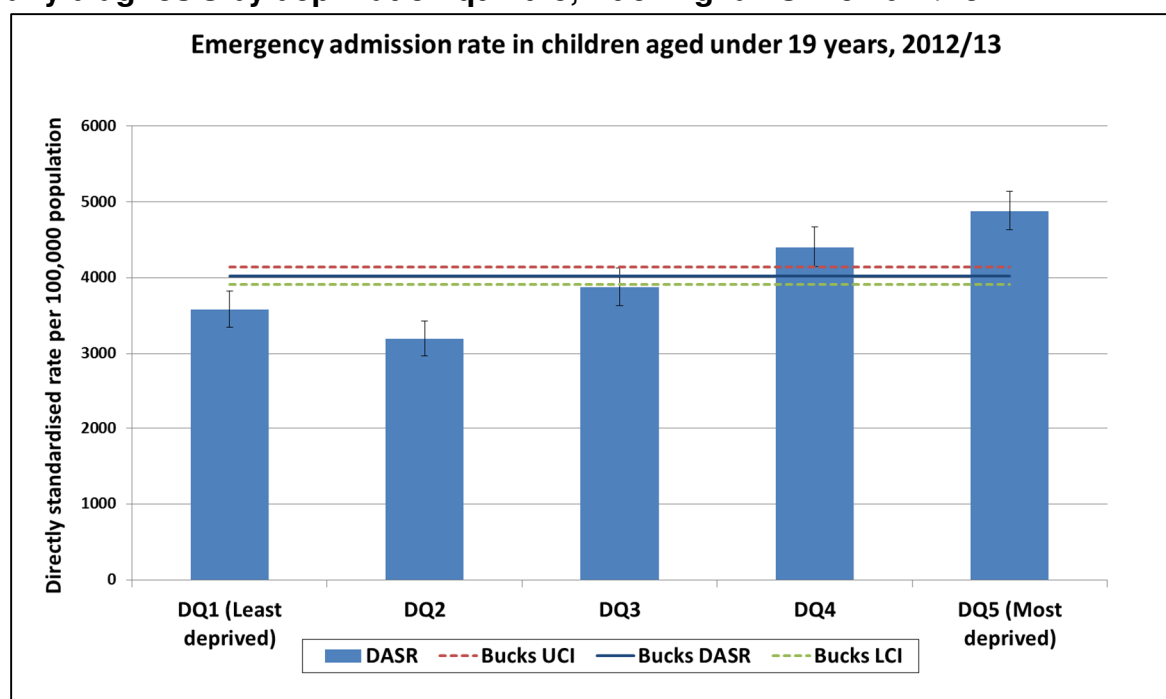
The rate of all emergency hospital admissions in 2012/13 for children registered with a Buckinghamshire GP, split by deprivation quintile (DQ), is shown in Figures 10 and 11. In the most deprived areas (DQ5) there was a significantly higher rate of emergency hospital admissions compared to the least deprived areas (DQ1) and the Buckinghamshire average.

**Figure 10 Emergency admission rate among children under 19 years of age for any diagnosis most and least deprived population quintiles, Buckinghamshire 2003/04 to 2014/15**



Source: SUS Admitted Patient Care (APC) Minimum Data Set

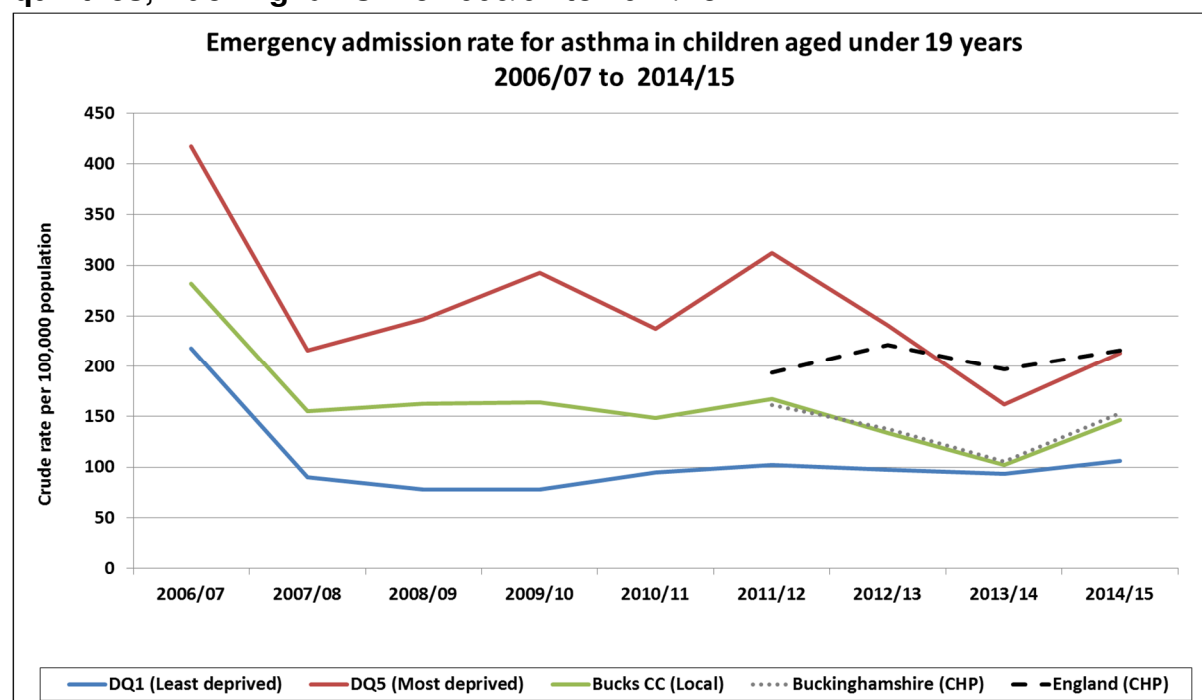
**Figure 11 Emergency admission rate among children under 19 years of age for any diagnosis by deprivation quintile, Buckinghamshire 2012/13**



Source: SUS Admitted Patient Care (APC) Minimum Data Set

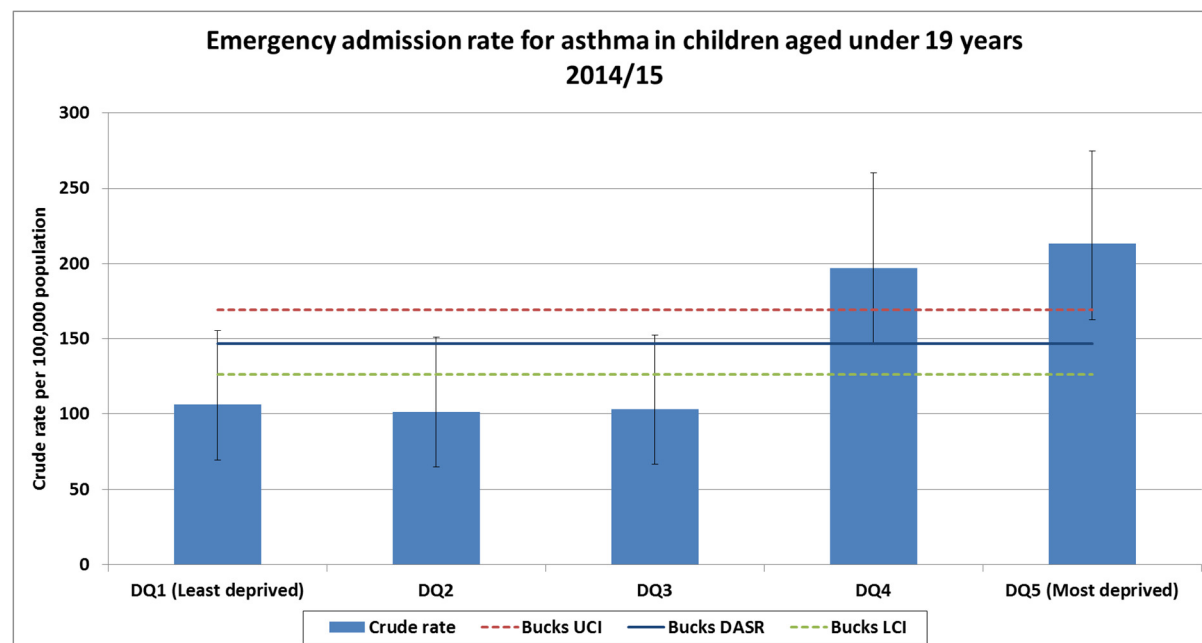
Emergency hospital admissions for asthma are likely to be related to how well the condition is managed in the community. The emergency admission rate among children under 19 years of age with a primary diagnosis of asthma in the most deprived population quintile in Buckinghamshire is statistically significantly higher than that in the least deprived population quintile (Figures 12). Figure 13 shows variations in the emergency admission rate among children under 19 years of age with a primary diagnosis of asthma by deprivation quintile. In 2014/15, the rate of emergency admissions was statistically significantly higher among children in the most deprived quintile (DQ5) compared to the least deprived (DQ1) and the Buckinghamshire average

**Figure 12 Emergency admission rate among children under 19 years of age with a primary diagnosis of asthma, most and least deprived population quintiles, Buckinghamshire 2006/07 to 2014/15**



Source: SUS Admitted Patient Care (APC) Minimum Data Set (MDS)

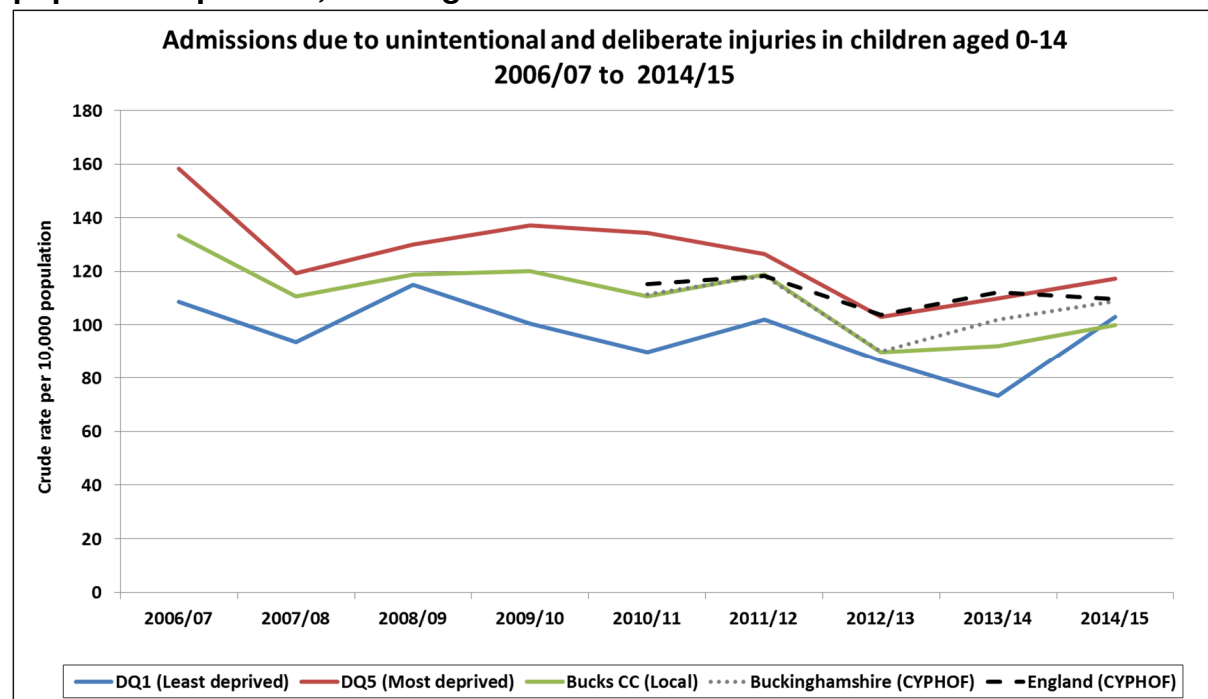
**Figure 13 Emergency admission rate among children under 19 years of age with a primary diagnosis of asthma by deprivation quintile, Buckinghamshire 2014/15**



Source: SUS Admitted Patient Care (APC) Minimum Data Set

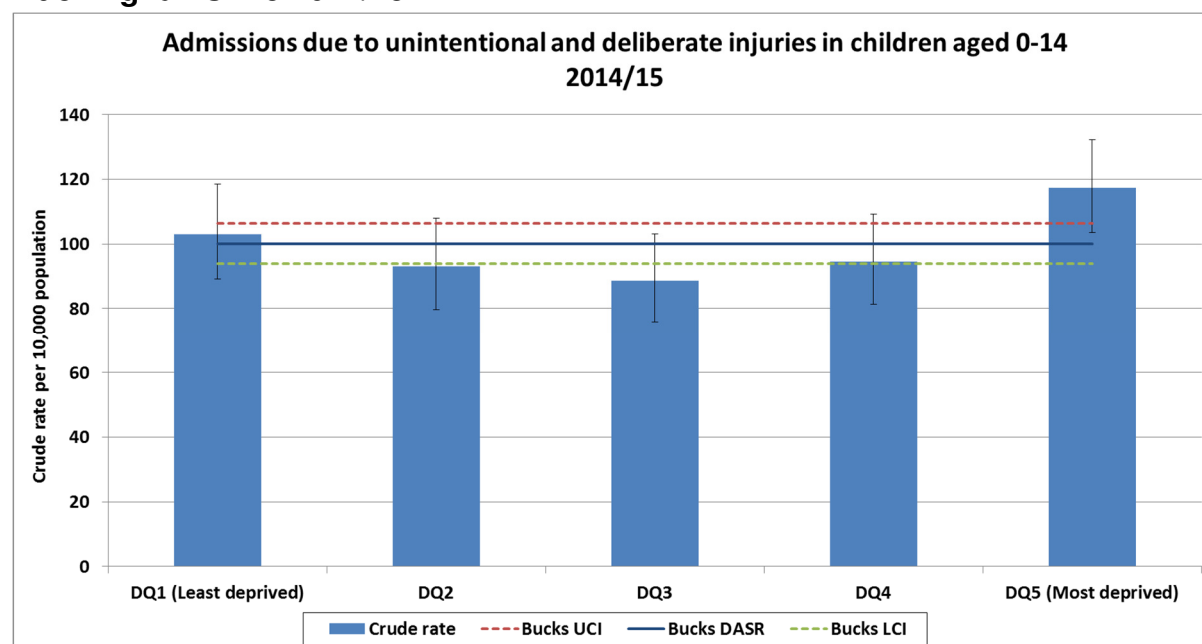
In contrast, the emergency admission rate due to unintentional and deliberate injuries among children under 14 years of age (Figures 14 and 15) and young people aged 15 to 24 years (Figures 16 and 17) in the most deprived population quintile in Buckinghamshire are not statistically significantly higher than that in the least deprived population quintile.

**Figure 14 Emergency admission rate due to unintentional and deliberate injuries among children under 14 years of age, most and least deprived population quintiles, Buckinghamshire 2006/07 to 2014/15**



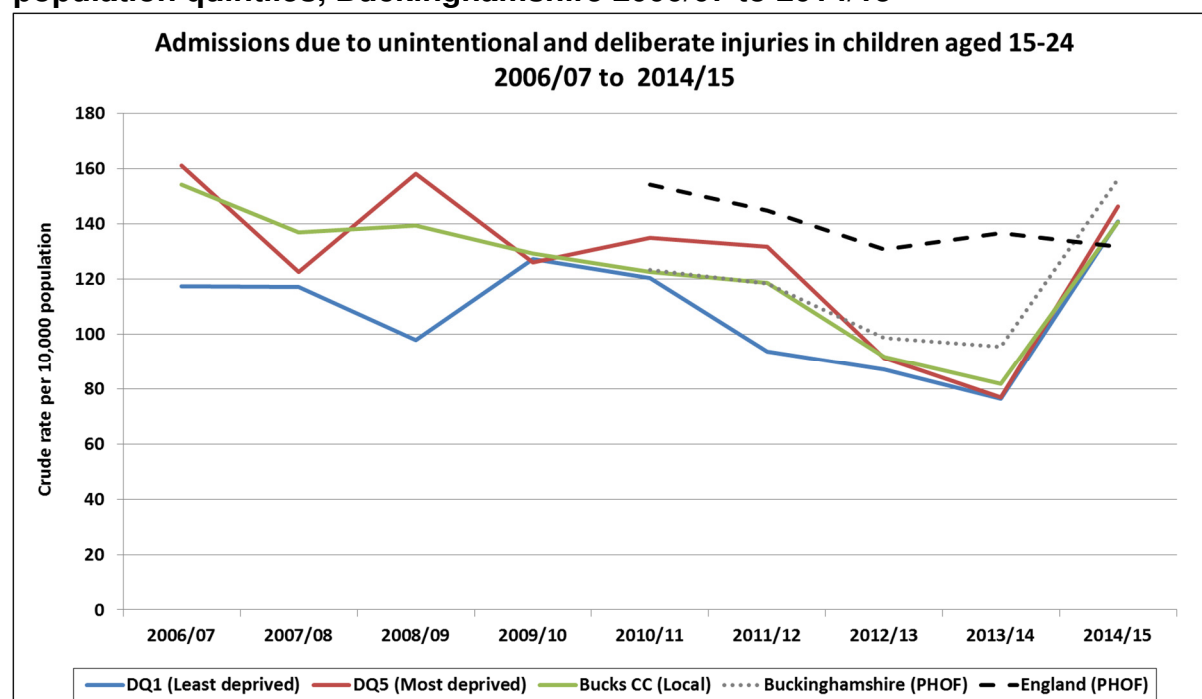
Source: SUS Admitted Patient Care (APC) Minimum Data Set (MDS)

**Figure 15 Emergency admission rate due to unintentional and deliberate injuries among children under 14 years of age, by deprivation quintile, Buckinghamshire 2014/15**



Source: SUS Admitted Patient Care (APC) Minimum Data Set (MDS)

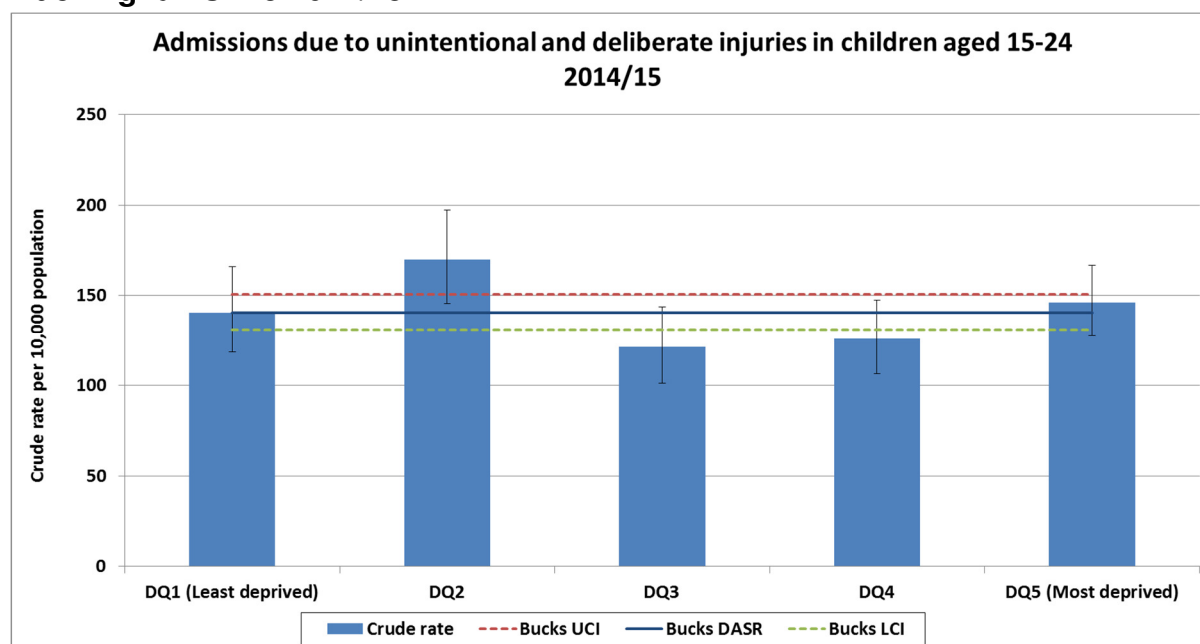
**Figure 16 Emergency admission rate due to unintentional and deliberate injuries among children aged 15 to 24 years, most and least deprived population quintiles, Buckinghamshire 2006/07 to 2014/15**



Source: SUS Admitted Patient Care (APC) Minimum Data Set (MDS)



**Figure 17 Emergency admission rate due to unintentional and deliberate injuries among children aged 15 to 24 years, by deprivation quintile, Buckinghamshire 2014/15**



Source: SUS Admitted Patient Care (APC) Minimum Data Set (MDS)

#### 6.13.4 Demand

Population growth, the rise in childhood obesity and other adverse lifestyle factors, and environmental pollution could have an adverse impact on the number of children and young people with long-term conditions. Increase in demand and financial pressures on all sectors could affect the management of long-term conditions among children with an impact on the local health and care system in the future.

#### 6.13.5 Horizon scanning

The appropriate care for a child with a long-term health condition is to manage it in such a way that they are able to enjoy and achieve fully in their lives and make a positive contribution without being stigmatised or adversely affected by their condition. Schools and early years settings are legally obliged to ensure that all children with health needs are properly supported and have full access to education, including school trips and PE. There is a need for schools, local authorities, health professionals and other support services to work together to ensure that children with medical conditions achieve their full potential.

### 6.13.6 Conclusions

It is estimated that around 15% of children aged 11,13 and 15 years in England have a long-term medical condition or disability. The most common long-term physical health problems among school age children are diabetes, asthma, epilepsy, allergies and some skin conditions like eczema. It is estimated that in Buckinghamshire around 9,600 children aged 5–19 years (approximately 1 in 10) suffer from asthma and around the same number from eczema, around 200 from diabetes and 300 from epilepsy.

In 2014/15 there were 33,284 Accident and Emergency (A&E) attendances of children aged 0-19 years registered with a Buckinghamshire GP, with the highest attendance rate among 0–4 year olds followed by 15-19 year olds, then 10-14 year olds and the lowest in 5-9 year olds. A&E attendance rates are significantly higher in Aylesbury Health Visitor locality compared to other localities.

Among children and young people aged under 19 in Buckinghamshire in 2013/14, there were 133 emergency hospital admissions with a primary diagnosis of asthma, which included 18 children who each had more than one admission during the year. There were 76 emergency admissions with a primary diagnosis of epilepsy, including 17 children who between them had 46 admissions during the year. There were also 49 emergency admissions with a primary diagnosis of diabetes. There were 1,000 hospital admissions caused by unintentional and deliberate injuries in children aged 0-14 years, and 553 among 15-24 year olds. The rates of both of these were significantly lower than the England average.

Children in the most deprived quintile of the Buckinghamshire population had significantly higher rates of emergency hospital admissions for all conditions and for asthma than children in the least deprived three quintiles of the population.

Ravi Balakrishnan  
*Public Health Consultant*  
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### References

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<sup>1</sup> Asthma UK; Asthma facts and statistics <http://www.asthma.org.uk/asthma-facts-and-statistics> (accessed on 12/02/2015)

<sup>2</sup> RCPCH. Turning the Tide: Harnessing the power of child health research. <http://www.rcpch.ac.uk/child-health/research-and-surveillance/research-guidance/turning-tide/turning-tide-harnessing-power> (accessed 25 Feb 2014).

<sup>3</sup> National Paediatric Diabetes Audit Report 2010-11. London: Royal College of Paediatrics and Child Health & HQIP (Healthcare Quality Improvement Partnership) UK, 2012

<sup>4</sup> Public Health England, Child and Maternal Health Intelligence Network, HES Data

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- <sup>5</sup> Brook F et al (2011) HBSC England National Report: Health Behaviour in School Aged Children (HBSC) World Health Organisation Collaborative Cross National Study. Hatfield: University of Hertfordshire
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- <sup>9</sup> [https://www.diabetes.org.uk/About\\_us/News\\_Landing\\_Page/UK-has-worlds-5th-highest-rate-of-Type-1-diabetes-in-children/List-of-countries-by-incidence-of-Type-1-diabetes-ages-0-to-14/](https://www.diabetes.org.uk/About_us/News_Landing_Page/UK-has-worlds-5th-highest-rate-of-Type-1-diabetes-in-children/List-of-countries-by-incidence-of-Type-1-diabetes-ages-0-to-14/) accessed on 12/02/2015
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- <sup>13</sup> ICD-10 diagnosis codes G40 and G41 have been used here to classify epilepsy. ICD-10 is the 10th revision of the International Statistical Classification of Diseases (ICD) and Related Health Problems, a medical classification list by the World Health Organization.
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