Provisional monthly topic of interest: admissions caused by dogs and other mammals

This topic examines hospital admissions due to bites and strikes by dogs and other mammals, as recorded in the Hospital Episode Statistics (HES) database, where they are identified by external cause codes. The focus of analysis is inpatient admissions (most of which likely followed an attendance at A&E) and will therefore represent the most severe injuries.

NHS Choices states that: “Young children are often bitten by dogs, particularly boys aged five to nine years old. Male dogs are usually responsible and are either family pets or dogs that belong to friends or neighbours. Bites from stray dogs are rarer because strays are often wary of humans and usually keep their distance.” Dog bites usually cause a deep, narrow hole in the skin (puncture wound). They can also cause a jagged wound or cut (laceration) and scrapes to the skin (abrasions). This is because dogs use their front teeth to “pin” their victim, and their other teeth to bite and pull at the surrounding skin. In adults, most animal bites are to the hands, arms, legs or feet. As children are smaller, most bites are to the face – usually their lips, nose or cheek.” “Minor bites can be treated by your GP or by staff at your local walk-in centre or minor injuries unit. For more severe bite wounds involving bones, joints or tendons, visit your local accident and emergency (A&E) department.”

Other mammals’ bites or strikes, which can only be identified collectively in HES might include farm animals, horses, foxes and cats. Bites by rats can be identified separately, but are not common, so unless otherwise specified, figures reported here as due to other mammals’ bites or strikes include rat bites.

**Key facts**

Provisional data for the period March 2014 to February 2015 show:

- Bites or strikes caused by dogs and other mammals (including rats) accounted for 10,574 finished admission episodes – an increase of 7.7% from the previous 12-month period when there were 9,817 admissions. There were 7,227 admissions specifically caused by dog bites, a 6.5% increase from the 6,783 finished admission episodes recorded in the previous 12 months. Contact with other mammals accounted for 3,347 admissions, a 10.3% increase from the 3,034 admissions in the previous 12 months.

- Rates of admissions due to bites and strikes both for dogs and other mammals have increased more rapidly than the overall rate of admissions for the ten-year period March 2005 to February 2015. In that time the number of admissions due to dog bites increased 76% from 4,110 to 7,227; admissions due to bites/strikes by other mammals increased 76% from 1,899 to 3,347; but total admissions increased 25% from 12.6 million to 15.8 million. Throughout this period the proportion of admissions which had an external cause recorded stayed relatively stable around 8%, so the increase in bite admission rates cannot simply be attributed to an increase in recording external causes.

- Admissions due to dog bites were generally higher in summer months and lower in winter, though there was a minor peak in December 2013. This pattern is not as pronounced for admissions due to other mammal bites.

- The rate of admission for dog bites or strikes was highest in the 0-9 age group (1,159 admissions, 17.6 per 100,000 population). For other mammals rates were highest in older age groups: the peak rate for females was 10.7 per 100,000 for ages 50-59 (365 admissions), and that for males was 7.1 per 100,000 for age 80 and over (69 admissions), with more admissions for females across all age groups except ages 0-9.

- The most common injuries from dogs were open wounds of wrists, hands, head and forearm. For other mammals the main injuries were also open wounds to the wrist and hand, however there were also more diagnoses of cellulitis (infection of the deeper layers of the skin and the underlying tissue) and more leg fractures.

- Rates of admission for dog bites or strikes showed the most regional variation, with the highest rates in Merseyside (322 admissions, 27.0 per 100,000 population), Durham, Darlington and Tees (294 admissions, 24.9 per 100,000), and Thames Valley (493 admissions, 23.9 per 100,000), and lowest in Kent and Medway (128 admissions, 7.3 per 100,000 population), London (689 admissions, 8.2 per 100,000), and Surrey and Sussex (227 admissions, 8.3 per 100,000). These figures could be influenced by a regional variation in the number of households that own a dog. Conversely, the highest admission rates due to other mammals were in Thames Valley (273 admissions, 13.2 per 100,000) and Bristol, North Somerset, Somerset and South Gloucestershire (164 admissions, 11.3 per 100,000), and lowest in Birmingham and the Black Country (63 admissions, 2.6 per 100,000) and London (249 admissions, 3.0 per 100,000).

- The proportion of admissions due to dog bites or strikes was 81% in urban areas and 19% in rural areas, similar to overall population proportions in England and Wales of 82% urban and 18% rural. The proportion of admissions due to rat bites was 88% for urban areas compared to 13% for rural areas. Over a third of admissions due to other mammals’ bites or strikes (i.e. not dogs or rats) were in rural areas (35%); the remaining 64% were in urban areas. Note that percentages may not sum to 100% due to rounding.

1. Provisional data for the period March 2014 to February 2015 show:
2. Rates of admissions due to bites and strikes both for dogs and other mammals have increased more rapidly than the overall rate of admissions for the ten-year period March 2005 to February 2015. In that time the number of admissions due to dog bites increased 76% from 4,110 to 7,227; admissions due to bites/strikes by other mammals increased 76% from 1,899 to 3,347; but total admissions increased 25% from 12.6 million to 15.8 million. Throughout this period the proportion of admissions which had an external cause recorded stayed relatively stable around 8%, so the increase in bite admission rates cannot simply be attributed to an increase in recording external causes.
3. Admissions due to dog bites were generally higher in summer months and lower in winter, though there was a minor peak in December 2013. This pattern is not as pronounced for admissions due to other mammal bites.
4. The rate of admission for dog bites or strikes was highest in the 0-9 age group (1,159 admissions, 17.6 per 100,000 population). For other mammals rates were highest in older age groups: the peak rate for females was 10.7 per 100,000 for ages 50-59 (365 admissions), and that for males was 7.1 per 100,000 for age 80 and over (69 admissions), with more admissions for females across all age groups except ages 0-9.
5. The most common injuries from dogs were open wounds of wrists, hands, head and forearm. For other mammals the main injuries were also open wounds to the wrist and hand, however there were also more diagnoses of cellulitis (infection of the deeper layers of the skin and the underlying tissue) and more leg fractures.
6. Rates of admission for dog bites or strikes showed the most regional variation, with the highest rates in Merseyside (322 admissions, 27.0 per 100,000 population), Durham, Darlington and Tees (294 admissions, 24.9 per 100,000), and Thames Valley (493 admissions, 23.9 per 100,000), and lowest in Kent and Medway (128 admissions, 7.3 per 100,000 population), London (689 admissions, 8.2 per 100,000), and Surrey and Sussex (227 admissions, 8.3 per 100,000). These figures could be influenced by a regional variation in the number of households that own a dog. Conversely, the highest admission rates due to other mammals were in Thames Valley (273 admissions, 13.2 per 100,000) and Bristol, North Somerset, Somerset and South Gloucestershire (164 admissions, 11.3 per 100,000), and lowest in Birmingham and the Black Country (63 admissions, 2.6 per 100,000) and London (249 admissions, 3.0 per 100,000).
7. The proportion of admissions due to dog bites or strikes was 81% in urban areas and 19% in rural areas, similar to overall population proportions in England and Wales of 82% urban and 18% rural. The proportion of admissions due to rat bites was 88% for urban areas compared to 13% for rural areas. Over a third of admissions due to other mammals’ bites or strikes (i.e. not dogs or rats) were in rural areas (35%); the remaining 64% were in urban areas. Note that percentages may not sum to 100% due to rounding.
Number of finished admission episodes for bites and strikes, by month, March 2013 - February 2015

Rate of finished admission episodes (per 100,000 population) for bites and strikes by type, age, and gender:
March 2014 - February 2015

Percentage increase in finished admission episodes over ten years:
Total and for bites/strikes for March 2005 - February 2015

Rate of finished admission episodes (per 100,000 population) for bites and strikes by type, age, and gender:
March 2014 - February 2015
Finished admission episodes for bites and strikes, by type and top primary diagnoses\(^7\), March 2014 - February 2015

Rate of finished admission episodes (per 100,000 population) for bites and strikes, by Area Team of residence\(^8\), March 2014 - February 2015

Proportions of finished admission episodes due to dog, rat, or other mammal bites or strikes compared to population proportions by rural/urban area\(^9\) March 2014 - February 2015

Note: percentages may not sum to 100% due to rounding.
Further key facts for admissions from dog bites or strikes

Dog bites and strikes accounted for over two-thirds of admissions for mammal bites and strikes, and show the most variation by age and region. Therefore further analysis is included for these admissions.

Provisional data for the period March 2014 to February 2015 shows:

- Dog bites and strikes accounted for 7,227 admissions - an increase of 6.5% from the 6,783 admissions in the previous 12-month period.
- The age group with the highest number of admissions was 0-9 year olds. Admission rates for males aged between 10 and 39 were higher than for females but this is reversed for ages over 40 where there were higher rates of female admissions.
- A map of admission rates by Clinical Commissioning Group of residence shows the geographic variation for admissions resulting from dog bites or strikes.
- The rate of admissions for dog bites were between 2 and 3 times as high for the 10% most deprived areas (1,251 admissions, 24.4 per 100,000 population) than the 10% least deprived areas (448 admissions, 8.5 per 100,000). There was no such pattern in the rate of admissions for bites by other mammals.
- Children suffered more injuries to their head compared to other age groups where the main injuries were to the hands and wrists. Plastic surgery was the treatment specialty with the highest rate of admissions for all age groups; 40-49 and 50-59 year olds having the greatest number of admissions for this specialty. The 0 to 9 age group had the highest admissions for the Oral or Maxillo facial surgery treatment specialty and this is consistent with sustaining more facial injuries. Admission rates in the Trauma and Orthopaedics treatment specialty were generally higher in older age groups, and this is consistent with sustaining more injuries to the hands and body.

Age and sex directly standardised admission rates (per 100,000 population) for dog bites and strikes by Clinical Commissioning Group (CCG) of residence, March 2014 to February 2015
Rate of finished admission episodes (per 100,000 population) for dog bites and strikes by Indices of Multiple Deprivation 2010 decile, March 2014 - February 2015

Finished admission episodes for dog bites and strikes, by top primary diagnoses and age bands, March 2014 - February 2015

Finished admission episodes by treatment specialty for dog bites and strikes by age band, March 2014 to February 2015
Footnotes

1. External Cause Codes
A supplementary code that indicates the nature of any external cause of injury, poisoning or other adverse effects. Only the first external cause code which is coded within the episode is counted in HES.

ICD-10 codes used:
**Dog bites and strikes**
W54 - Bitten or struck by dog

**Other mammal bites and strikes**
W55 - Bitten or struck by other mammals
W53 - Bitten by rat

Please note that due to low numbers of admissions, figures presented in this report exclude the following animal related cause codes:
W56 - Contact with marine animal
W58 - Bitten or struck by crocodile or alligator
W59 - Bitten or crushed by other reptiles

2. NHS Choices

http://www.nhs.uk/conditions/Bites-human-and-animal/Pages/Introduction.aspx


(visited 3/3/15)

3. Provisional Data
The data are provisional and may be incomplete or contain errors for which no adjustments have yet been made. Counts produced from provisional data are likely to be lower than those generated for the same period in the final data set. This shortfall will be most pronounced in the final month of the latest period, i.e. November from the (month 9) April to November extract. It is also probable that clinical data are not complete, which may in particular affect the last two months of any given period. There may also be errors due to coding inconsistencies that have not yet been investigated and corrected.

4. Finished Admission Episodes
A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of patients, as a person may have more than one admission within the period.

5. ONS Population Estimates
Population estimates are only currently available for mid-2013 from the Office of National Statistics and are therefore not concurrent with the period presented in this publication. Rate per 100,000 has been calculated using the total population within the same category, e.g. all females aged between 50-59. Please see footnote 8 for details of population data used for calculating deprivation decile rates.

The estimated resident population of an area includes all people who usually live there, whatever their nationality. People arriving into an area from outside the UK are only included in the population estimates if their total stay in the UK is 12 months or more. Visitors and short term migrants (those who enter the UK for 3 to 12 months for certain purposes) are not included. Similarly, people who leave the UK are only excluded from the population estimates if they remain outside the UK for 12 months or more. This is consistent with the United Nations recommended definition of an international long-term migrant. Members of UK and non-UK armed forces stationed in the UK are included in the population and UK forces stationed outside the UK are excluded. Students are taken to be resident at their term time address.

6. ONS Rural-Urban Classification

For the purposes of this report, the 2011 Lower Super Output Area (LSOA) recorded in HES data was used to categorise an admission episode as rural or urban. LSOAs are small area geographic groups defined by the ONS with average population size 1,500. Overall rural-urban population proportions for England and Wales were also calculated using 2011 LSOAs as reference, based on mid-2013 population estimates.
7. Primary Diagnosis
The primary diagnosis is the first of up to 20 (14 from 2002-03 to 2006-07 and 7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital.

8. Area Team / Clinical Commissioning Group of residence
The Clinical Commissioning Group (CCG) or Area Team (AT) containing the patient’s normal home address. This does not necessarily reflect where the patient was treated as they may have travelled to another CCG/AT for treatment.

In April 2013 changes to the structure of the NHS came into effect (http://www.nhs.uk/NHSEngland/thenhs/about/Pages/nhsstructure.aspx). Primary Care Trusts (PCTs) and Strategic Health Authorities (SHAs) were abolished and were replaced with organisations such as Clinical Commissioning Groups (CCGs) and NHS England Area Teams (ATs). In addition there are now four NHS England Regions above the Area Teams in the structural hierarchy.

9. Indices of Multiple Deprivation
The Indices of Multiple Deprivation (IMD) are a measure of multiple deprivation which ranks the relative deprivation of each area of England in a number of domains (such as health and income) and then combines the individual scores to produce a composite score for each area. The patient's residential postcode is then mapped to one of these areas and summarised into 10 groups (deciles) for presentation. The analysis in this topic uses IMD 2010 information. See https://www.gov.uk/government/publications/english-indices-of-deprivation-2010 for further details.

The population denominator is the population in each IMD decile. This was calculated by linking ONS 2010 population data to IMD 2010 data via Lower Super Output Area (LSOA) and aggregating to IMD deciles. Please note that population estimates for IMD deciles are linked to ONS population data from 2010 as this is the latest data available within HES that can be mapped to the corresponding LSOAs. Consequently, admission rates by IMD decile in this report cannot be directly compared with admission rates by IMD decile presented in the previous HES Topic of Interest: Admissions caused by dogs and other mammals (published April 2014) because it has not been possible to update the denominators with more recent population data. All other population estimates within this report are based on 2013 population data.

10. Treatment Specialty
Defines the specialty in which the consultant was working during the period of care.

Treatment specialty codes used:
110 - Trauma and Orthopaedics
214 - Paediatric trauma and Orthopaedics
160 - Plastic surgery
219 - Paediatric plastic surgery
144 - Maxillo facial surgery
217 - Paediatric Maxillo facial surgery
140 - Oral Surgery

For this publication admissions for related categories have been combined e.g. plastic surgery and paediatric plastic surgery have been combined as category 'plastic surgery'.

Source statement
Source: Hospital Episode Statistics (HES), Health and Social Care Information Centre

The responsible statistician for this publication is Jane Winter, Section Head, Hospital Episode Statistics
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