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Use of age-specific hospital catchment populations to investigate geographical variation in inpatient admissions for children and young people in England: retrospective, cross-sectional study.

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Manuscripts

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3 **Use of age-specific hospital catchment populations to investigate geographical variation in**
4 **inpatient admissions for children and young people in England: retrospective, cross-**
5 **sectional study.**
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ABSTRACT

Objectives

- To develop a method for calculating age-specific hospital catchment populations for children and young people (CYP) in England.
- To show how these methods allow geographical variation in hospital activity to be investigated and addressed more effectively.

Design

Retrospective, secondary analysis of existing national datasets.

Setting

Inpatient care of children and young people (0-18 years) in England

Participants

Hospital Episode Statistics (HES) data were accessed for all inpatient admissions (elective and emergency) for CYP from birth to 18 years, 364 days, for 2011/12 – 2014/15. In 2014/15, 857112 admissions were analysed, from an eligible population of approximately 11.9 million CYP.

Outcome measures

For each hospital Trust, the catchment population of CYP was calculated; Trust-level admission rates per thousand per year were then calculated for admissions due to

- Any diagnostic code
- Primary diagnosis of epilepsy
- Epilepsy listed as primary diagnosis or comorbidity

Results

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3 Estimated 2014/15 hospital catchment populations for CYP ranged from 268,558 for Barts Health
4 NHS Trust to around 30,000 for the smallest acute general paediatric services and below 10,000 for
5 many Trusts providing specialist services. As expected, the composition of HCPs was fairly consistent
6 for age breakdown but levels of deprivation varied widely.
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11 After standardising for population characteristics, admission rates with a primary diagnosis of
12 epilepsy ranged from 14.3 to 157.7 per 100,000 per year (11.0-fold variation) for Trusts providing
13 acute general paediatric services. All-cause admission rates showed less variation, ranging from 4033
14 to 11681 per 100,000 per year (2.9-fold variation).
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20 21 **Conclusions**

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23 Use of age-specific catchment populations allows variation in hospital activity to be linked to specific
24 teams and care pathways. This provides an evidence base for initiatives to tackle unwarranted
25 variation in healthcare activity and health outcomes.
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Article Summary

Strengths and limitations of this study

- We adapt methodology for estimating hospital catchment populations, which has been validated and used extensively by Public Health England for adult and all-age populations.
- A strength of this study is the use of Hospital Episode Statistics, which contain high-quality data on the vast majority of hospital care for children and young people in England.
- Another strength is the ability to standardise for population differences, including age, sex and deprivation, so that fair comparisons can be made between services.
- Although there were very low levels of missing postcode overall (1.2%), a small number of Trusts reported missing postcode data on over 5% of patients, meaning that the catchment populations for these Trusts should be interpreted with caution.

Background

In 2012, the Chief Medical Officer expressed concern about the poor health outcomes experienced by children and young people (CYP) in England compared to other West European countries. She argued that one key route to improving these outcomes would be through understanding and addressing the wide geographical variation in health services and outcomes within England.⁽¹⁾ More recent evidence shows that this variation persists – for example, the rates of hospital admission for elective tonsillectomy in CYP by Clinical Commissioning Groups ranged from 84 to 485 per 100,000 population (5.7-fold variation) while asthma admission rates varied from 60 to 639 per 100,000 population (10.6-fold variation).⁽²⁾ However, with some exceptions, greater awareness has not resulted in effective action to tackle geographical variation, and there has been limited research to understand the causes of variation.

One important limitation of previous work has been that geographical analysis of healthcare activity has been restricted to Clinical Commissioning Groups (CCGs) or Local Authority areas (LAs). These geographical areas are defined by their responsibility for commissioning services within their designated population, whereas provision of most health services is by individual NHS Trust. Each area is often served by many different NHS Trusts, preventing variation being attributed to specific hospital services. A second important limitation has often been the inability of policy makers and researchers to adjust for population risk (i.e. to understand the proportion of variation that can be accounted for by population differences).

In the US, hospital service areas allow analysis of health outcomes in the population served by specific hospital or networks.⁽³⁾ In the UK, a number of different methods have been used to calculate hospital catchment populations (HCPs) for adults, ⁽¹⁵⁾ of which the most widely used is the proportionate flow method used by Public Health England (PHE).^(4, 5, 18) However, the marked differences in referral pathways, clinical networks and hospital activity between paediatric and adult services limits the application of published catchment populations to study variation in CYP.

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3 This article describes how we adapted the use of PHE methods to calculate age-specific hospital
4 catchment populations for paediatric services, both unadjusted and adjusted for population
5 characteristics (sex, age, deprivation). These represent estimates of the number of CYP who would
6 have been admitted to each Trust had they needed hospital care, disaggregated by age, sex and
7 deprivation. We analyse data on epilepsy admissions as a practical example to illustrate how these
8 methods may be useful to guide commissioning, operational and policy decisions. Potential
9 application of these methods to other conditions is also discussed.
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21 **Methods**

22 *Data*

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27 Hospital Episode Statistics (HES) data(6) were accessed for all inpatient admissions (elective and
28 emergency) for children and young people from birth to 18 years, 364 days, for 2011/12 – 2014/15.

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31 For each admission, we analysed:

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34 • geographic data on the admitting NHS Trust and the Lower Layer Super Output Area
35 (LSOA),(7) which is derived from the patient's postcode;
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37 • sociodemographic data on sex, age;
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39 • ICD10 codes of the primary diagnosis and any secondary diagnoses. For the second set of
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42 analyses, we focused on admissions for epilepsy (ICD10 codes G40, G41)
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46 HES data were then linked to Office of National Statistics (ONS) data on Index of Multiple
47 Deprivation (IMD) and the CYP population within each LSOA,(8) disaggregated by age and sex (based
48 on ONS 2012 mid-year estimates by age, sex).
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52 Note that the term 'hospital catchment population' (HCP) refers to the catchment population of an
53 NHS Trust – an administrative unit that may include more than one hospital site. We retained the
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3 term hospital catchment population as the term NHS Trust is not widely understood, especially by
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5 readers who are not familiar with the English NHS.
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10 *Derivation of hospital catchment populations*

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13 Derivation involved 5 steps – described below.
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16 1. HES data were used to count the number of patients in each age and sex group admitted from
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18 each LSOA to

- 19 a) any provider (NHS Trust) and
- 20 b) each individual provider.

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27 HESIDs (unique patient identifiers within the HES data) were used to ensure that each patient was
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29 only counted once; if a patient had multiple admissions while living at the same address, we selected
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31 only the first admission.
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35 2. Within each age and sex group, we calculated the proportion of patients from each Lower Layer
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37 Super Output Area (LSOA) that was admitted by each provider, as a proportion of patients who used
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39 any provider.
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44 For band i (age and sex), LSOA λ , the number admitted to provider a is denoted by $x_{ia\lambda}$. The total
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46 number admitted by LSOA and band i for each year is denoted by $\sum_b x_{ib\lambda}$ then,
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$$48 \quad p_{ia\lambda} = \frac{x_{ia\lambda}}{\sum_b x_{ib\lambda}}$$

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51 Where $p_{ia\lambda}$ represents the proportion of patients that went to each provider.
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3. For each LSOA, this proportion was multiplied by the LSOA resident population in that age-sex group $N_{i\lambda}$ to give the LSOA catchment population for each provider $n_{ia\lambda}$.

The catchment population of provider a for band i (age and sex) is then:

$$n_{ia\lambda} = p_{ia\lambda} N_{i\lambda}$$

4. The provider-specific catchment populations for each LSOA were summed to give the total catchment population for that provider.

Thus, the total catchment population C for provider a , band i (age and sex):

$$C_{ia} = \sum_{\lambda} n_{ia\lambda}$$

5. Adding in information on IMD decile, the total catchment population for provider a , band i (age and sex), IMD D is:

$$C_{iaD} = \sum_{\lambda} n_{ia\lambda} \delta_{Dd(\lambda)}$$

Where

$$\delta_{Dd(\lambda)} = \begin{cases} 1 & \text{if } d(\lambda) = D \\ 0 & \text{otherwise} \end{cases}$$

Notes:

We excluded patients with missing or invalid age at start of episodes (<0.1%) or with no valid English LSOA (1.2% of episodes; median proportion of episodes at Trust level = 0.6%). Nine Trusts (6.2%) had missing LSOA data on >5% of episodes (range 5.1% to 26.1%), reflecting either a high proportion of patients who live in Wales or incomplete coding. These Trusts are identified in Table 1 & 2 and their estimated HCPs should be interpreted with caution. See Appendix Table A5 for further details.

Some patients moved residence during the analysis period and had admissions to the same Trust from different postcodes of residence. We counted these patients once in each LSOA. Significant

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3 numbers of patients are treated in a region other than their region of residence and catchment areas
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5 of Trusts therefore cross regional boundaries.
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10 *Use of hospital catchment populations to investigate variation in epilepsy admission rates for CYP.*
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13 In order to illustrate the use of hospital catchment populations, we calculated unadjusted and
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15 adjusted admission rates for all-cause and epilepsy admissions per thousand CYP. The median,
16
17 interquartile range, range and ratio of highest: lowest Trust-level admission rates were calculated.
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19 Following previous studies(2), we then re-calculated the range and ratio of highest:lowest admission
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21 rates excluding the 5 highest and 5 lowest Trusts. This is a form of sensitivity analyses that is
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23 recommended in order to minimise distortion from a small number of outliers in the reliability of
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25 diagnostic coding.
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29 Next, the ratio of observed versus expected admissions were calculated for each Trust. To do this,
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31 the expected admission rates for each Trust (unadjusted) were calculated by multiplying the national
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33 epilepsy admission rate per thousand CYP by the total catchment population for that Trust. The
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35 adjusted values for expected admission rates used a similar approach, based on the national
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37 epilepsy admission rate per thousand and the Trust catchment population within each age-sex-IMD
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39 group. The expected total number of admissions for each Trust was the sum of expected admissions
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41 within each age-sex-IMD group.
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45 In each case, we then derived the ratio of observed versus expected epilepsy admissions,
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47 highlighting those Trusts with admission rates that differed by more than 2 or 3 standard deviations
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49 from the expected rate for the population served.
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52 All analyses were performed using SAS. No ethical approval was needed for these secondary
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54 analyses of anonymised, routinely-collected data.
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Patient involvement

Concerns about geographical variation in the quality, accessibility and capacity of NHS services for children and young people have been raised repeatedly in consultations in CYP and families.(1) No patients or families were directly involved in designing or performing these analyses.

Results

In 2014/15, 857,112 admissions were analysed, from an eligible population of approximately 11.9 million CYP. The Trust serving the largest number of CYP was Barts Health NHS Trust, with an estimated paediatric Hospital Catchment Population (HCP) of 268,558, compared to the national median HCP of 71,379. Sixteen Trusts had estimated catchment populations of <10,000. This may reflect the fact that they provide specialist services (e.g. Great Ormond Street Hospital, Papworth Hospital NHS Foundation Trust); or that only specific groups of CYP are admitted (for example, inpatient care for new born babies, or young people (usually aged 16 or over) who were admitted under the care of adult specialists (e.g. Birmingham Women's NHS Foundation Trust, Liverpool Women's Hospital NHS Trust). The smallest catchment populations for Trusts providing acute general paediatric services were around thirty thousand (e.g. Northern Devon Healthcare NHS Trust = 34,821 Sheffield Teaching Hospitals NHS Foundation Trust = 27,899).

Table 1 presents the standardised HCPs for each NHS Trust in London where CYP were admitted. These data illustrate the impact of reconfiguration and mergers of Trusts during the period 2011/12 to 2014/15 on the HCP for each Trust. For example, London North West Healthcare NHS Trust was newly formed in 2014, and took on the workload of North West London Hospitals NHS Trust. Similarly, Barnet and Chase Farm Hospitals NHS Trust merged with the Royal Free Hospital in 2014, with the result that much of Barnet's HCP was transferred across to the HCP of Royal Free Hospital. Standardised HCPs for all NHS Trusts in England are shown in Appendix Table A1.

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3 Appendix Table A2 presents the HCPs for each Trust in England where CYP were admitted in
4 2014/15, disaggregated by IMD quintile. In four cases, greater than 60% of the CYP population
5 served by a Trust lived in the most deprived quintile of areas (Homerton University Hospital NHS
6 Foundation Trust (77.4%); Sandwell and West Birmingham Hospitals NHS Trust (65.0%), Royal
7 Liverpool Broadgreen Hospitals NHS Trust (62.7%), Barts Health NHS Trust (60.4%)). In contrast, two
8 Trusts served a population where more than 60% lived in the least deprived quintile: Frimley Park
9 Hospital NHS Trust (61.1%), Royal Surrey County NHS Foundation Trust (60.3%).

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18 The age breakdown varied much less between Trusts. The proportion of all 0-18s who were in the 0-
19 3 age band varied from 27.9% in Chelsea & Westminster Hospital NHS Foundation Trust, to 19.2% at
20 the Robert Jones and Agnes Hunt Orthopaedic Trust. See Appendix Table A3.

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25 Excluding Trusts that do not provide acute general paediatrics services (see explanation above),
26 standardised admission rates with a primary diagnosis of epilepsy ranged from 14.3 to 157.7 per
27 100,000 per year (11.0-fold variation). The median value was 71.3 per 100 000, with an interquartile
28 range from 55.8 to 90.3. Excluding the five Trusts with the highest and lowest admission rates, the
29 range reduced to 30.9 to 124.9 vs. 30.9 per 100,000 per year (4.0-fold variation). All-cause admission
30 rates showed much less variation, with all-cause admissions in Trusts providing acute paediatric
31 services ranging from 4033 to 11681 per 100,000 per year (2.9-fold variation), with a median of
32 7,130 and an interquartile range from to 5,890 to 8,390 per 10,000 per year. Excluding the highest
33 and lowest five, the range was from 4439 to 10,200 to 4439 per 10,000 per year (2.3-fold variation).

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45 In Figure 1 (top panel), unadjusted epilepsy admission rates are presented for each Trust in a funnel
46 plot, illustrating that relatively little of the observed variation can be explained by random chance
47 among relatively small units. The lower panel presents both unadjusted and adjusted epilepsy
48 admission rates for each Trust, showing that only a small degree of the observed variation can be
49 explained by differences in the age, sex and deprivation of the population served by each Trust.
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Discussion

This study demonstrates the feasibility of estimating age-specific catchment populations for Trusts within the English NHS. We then show two ways in which these findings may be applied to inform planning of health services, and support quality improvement activities and research. First, we illustrate how catchment populations in London have changed following recent mergers and other service reconfigurations. Second, we use the catchment populations to calculate admission rates per 100 000 CYP for each NHS Trust. These data show that admission rates vary 11-fold between Trusts providing acute general paediatric services for epilepsy admissions (4 fold when excluding extremes) and 2.9-fold (2.3-fold) for all-cause admissions in this age group.

Strengths of this study are the use of robust methodology for estimating hospital catchment populations, which has been validated and used extensively by Public Health England for adult and all-age populations. Another strength of the study is the quality and completeness of Hospital Episode Statistics, which are subject to extensive cleaning and quality assurance processes, and cover 98-99% all hospital care in England.^(9, 10) This includes the vast majority of healthcare provided for CYP resident in the UK, making HES data the largest unified dataset of its kind in the world. These data may be particularly useful in performing national-level analyses of variation, where chance findings of very high or low admission rates due to small numbers of patients with a particular condition attending a specific hospital are likely to even out. Another strength is the ability to adjust or standardise for population differences, including age, sex and deprivation, so that fair comparisons can be made between services.

One important limitation of this study is that in order to maximise data in each LSOA (median CYP population is approximately 300), all inpatient activity within this age group is included. Our model does not account of the fact that parents or CYP who live a similar distance from two hospitals might (for example) choose to attend Hospital A if their child needed elective surgery by an Ear, Nose and Throat surgeon but attend Hospital B for acute abdominal pain. In adult populations, there is some

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3 evidence that patients are willing to travel further to access elective care compared to emergency
4 care.(11) As noted above, caution must be used in interpreting results for any specific hospital,
5 especially when looking at single conditions affecting a relatively small number of patients. Another
6 caveat is that these data will be most useful in comparing like with like – for example, all District
7 General Hospitals providing acute general paediatric care, or all tertiary children’s hospitals. As
8 illustrated in Table 2 and Appendix Table A4, calculated admission rates for specialist hospitals, or
9 those only providing care for neonates or CYP over the age of 16, may be very high or very low
10 compared to those of general hospitals. Finally, for the small number of hospitals where postcode
11 information is less than 95% complete, the HCPs and admission rates should be interpreted with
12 caution (see Methods section and Appendix Table A5 for further details).
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24 To our knowledge, this study is the first to report hospital catchment populations for paediatric care
25 in England. Previous studies in adult populations and other countries have described a range of
26 methods for estimating catchment populations, including proportionate flow or Norris-Bailey
27 methods (as used in this study),(5) k-means clustering of multivariate data,(13) kernel analyses,
28 (14)and ‘de facto service areas’ in which the population of each LSOA is allocated to the catchment
29 population of a single hospital using a Bayesian approach.(15) Further research using different
30 methodological approaches to calculate HCPs for CYP would be a useful way to investigate the
31 robustness of our model, and may allow clearer ways of presenting maps of HCPs.
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42 The most useful approaches to do this are likely to be based on further analyses of HES data.
43 Compared to hospital catchment populations based on survey data (as reported in early studies of
44 geographical variation)(12) use of HES data has the advantage of being efficient (as it is based on
45 existing, routinely-collected data that have already been extensively cleaned and quality assured),
46 robust (as it uses data collected at the time of use, rather than being based on retrospective
47 patient/family recall or on hypothetical questions about where care would be accessed if needed in
48 the future) and has high levels of completeness (as it is not limited by survey response rate).
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3 As in adult populations, we believe that age-specific hospital catchment populations for CYP will
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5 provide a useful evidence base to support operational decisions, quality improvement work and
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7 future research related to hospital services.(16) For example, data used to calculate each catchment
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9 population can be used to create a detailed map of all CYP served by any hospital. As well as tracking
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11 changes in the HCP following reconfiguration (as shown in Table 1), in the future HCP mapping data
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13 could be used to model the impact of service reconfiguration and merger plans, so reducing the
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15 uncertainty and disruption to services that often occurs at present. Regarding quality improvement
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17 projects, existing indicators are often published at Local Authority level, across a population that
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19 may be served by many different hospitals. Previous research has shown that indicators mapped
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21 directly to specific clinical teams promote clinical engagement and accountability.(17) Further, they
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23 can identify specific strengths or weaknesses of individual services and so inform tailored quality
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25 improvement initiatives. Lastly, HCPs have potential to open up exciting new avenues of research
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27 within paediatric services. For example, the national clinical audit for paediatric epilepsy (Epilepsy12)
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29 has collected detailed information on paediatric epilepsy services in England since 2011, but to date
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31 it has not been possible to link these data to admission rates, due to lack of an appropriate
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33 denominator. Such linkage would allow robust investigation of the impact on improving
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35 performance in different aspects of epilepsy care on unit-level admission rates. Similarly, attempts
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37 to study and reduce geographical variation by specialist networks such as those for paediatric
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39 surgery or gastroenterology services have been limited by lack of appropriate denominator data.
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41 HCPs will allow admission and activity rates to be compared between areas and facilitate study of
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43 unmet need and/or overuse of admissions or procedures.
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50 **Conclusions**

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53 This paper presents a method for calculating hospital catchment populations for the care of children
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55 and young people in the English NHS. We then show how this method allows comparison of
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3 paediatric admission rates between hospitals, adjusting for population characteristics including sex,
4 age, and deprivation. Lastly, we illustrate how these adjusted admission rates may be useful for the
5 purposes of commissioning and improving services, as well as for quality improvement and research
6 activities.
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19
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23 **Competing interest statement**

24
25 We declare no competing interests.
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28

29 **Author contributions**

30
31 All authors were involved in the design of this study and in revising the manuscript. SA and CSJ
32 performed all analyses. SA and DSH wrote the first draft of the manuscript.
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37 **Data sharing statement**

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39 SAS code used for all analyses is available from the authors on request.
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Table 1. Paediatric Hospital Catchment Populations in London by year, standardised for age, sex and deprivation

Trust code	Organisation name	2011/12	2012/13	2013/14	2014/15
R1H	Barts Health NHS Trust	12668	267307	270243	268558
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	197275	149765	149133	145366
RVL	Barnet and Chase Farm Hospitals NHS Trust	127294	127254	113094	.
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	90449	93355	88865	86439
RJ6	Croydon Health Services NHS Trust*	81355	78015	78090	77160
RC3	Ealing Hospital NHS Trust	58077	53775	52820	.
RVR	Epsom and St Helier University Hospitals NHS Trust	87348	83731	81162	85745
RP4	Great Ormond Street Hospital NHS Trust*	44418	17789	7456	6236
RJ1	Guy's and St Thomas' NHS Foundation Trust	85083	69753	71571	64902
RQX	Homerton University Hospital NHS Foundation Trust	89851	52951	52578	49332
RYJ	Imperial College Healthcare NHS Trust*	72424	67571	74510	75876
RJZ	King's College Hospital NHS Foundation Trust	88602	86947	148099	150224
RAX	Kingston Hospital NHS Trust	75380	68716	69583	70421
R1K	London North West Healthcare NHS Trust	.	.	486	166660
RP6	Moorfields Eye Hospital NHS Foundation Trust	1824	916	916	843
RAP	North Middlesex University Hospital NHS Trust	69610	59956	74570	96137
RV8	North West London Hospitals NHS Trust	124936	122553	120266	.
RT3	Royal Brompton and Harefield NHS	5283	4361	3825	3899

	Foundation Trust				
RAL	Royal Free Hampstead NHS Trust	52443	50068	48224	155113
RYQ	South London Healthcare NHS Trust	139032	147968	39830	.
RJ7	St George's Healthcare NHS Trust	103559	109089	113127	118041
RAS	The Hillingdon Hospital NHS Trust	65107	61012	61198	65195
RJ2	The Lewisham Healthcare NHS Trust	62637	61055	103280	151669
RPY	The Royal Marsden NHS Foundation Trust	382	216	348	104
RAN	The Royal National Orthopaedic Hospital NHS Trust	973	529	289	409
RRV	University College London Hospitals NHS Foundation Trust	52193	39854	42780	42106
RFW	West Middlesex University NHS Trust	59734	65428	67430	63584
RKE	Whittington Hospital NHS Trust	53355	50811	51311	50647

Notes.

1. Hospital Catchment Populations are estimated based on the proportion of children and young people (≤ 18 years) from each Lower Super Output Area (LSOA) who attend each NHS Trust in any given year for planned or unplanned care. See Methods section for full details.
2. Although all Trust are presented for completeness, the catchment population is more meaningful and useful when applied to Trusts that provide general paediatric services than to specialist Trusts (for example, Moorfields Eye Hospital, Great Ormond Street Hospital, The Royal Marsden Hospital, The Royal National Orthopaedic Hospital).
3. Where large changes occur between years, this typically reflects mergers or reconfiguration. For example, during the study period, Barnet and Chase Farm Hospitals NHS Trust merged with Royal Free Hampstead NHS Trust and there was extensive reconfiguration of services in North West London (North-West London Hospitals NHS Trust, Ealing Hospital NHS Trust and London North West Healthcare NHS Trust).
4. *denotes Trusts where LSOA data are missing on $\geq 5.0\%$ of hospital admissions (meaning that the catchment populations should be interpreted with more caution). The exact proportion of admissions with missing LSOA data in each Trust are presented in Appendix Table A5.

Table 2. Paediatric admission rates by Trust for primary diagnosis epilepsy, any diagnosis epilepsy, all-cause admissions, per 100,000, 2014/15, England.

	Primary diagnosis epilepsy	Any epilepsy diagnosis	All-cause admission
The Walton Centre NHS Foundation Trust*	355.7	1067.1	12094.0
Great Ormond Street Hospital NHS Trust*	256.6	513.1	9813.4
Royal Wolverhampton Hospital NHS Trust	157.7	305.3	10141.8
Newcastle Upon Tyne Hospitals NHS Foundation Trust	152.1	379.9	11426.3
Milton Keynes Hospital NHS Foundation Trust	144.0	328.8	9422.8
Burton Hospitals NHS Foundation Trust	143.0	255.0	7519.6
Birmingham Children's Hospital NHS Foundation Trust	129.6	325.0	8589.4
Medway NHS Trust	124.9	266.2	8812.1
East Cheshire NHS Trust	122.5	284.0	8843.7
North Lincolnshire and Goole Hosps NHS Foundation Trust	114.4	231.0	6257.7
East Sussex Hospitals NHS Trust	113.1	182.5	8106.3
South Tees Hospitals NHS Foundation Trust	112.0	297.4	10096.1
Guy's and St Thomas' NHS Foundation Trust	109.4	218.8	6577.6
Hereford Hospitals NHS Trust*	107.3	199.3	8188.1
Kettering General Hospital NHS Foundation Trust	106.8	195.7	7749.6
Hull and East Yorkshire Hospitals NHS Trust	105.4	216.4	6017.1
Blackpool Fylde and Wyre NHS Foundation Trust	104.3	258.3	10864.7
York Hospitals NHS Trust	102.6	179.3	7404.7
Isle of wight NHS Trust	100.3	183.2	8031.5
University Hospital Birmingham NHS Foundation Trust	100.2	264.2	6959.0
Northampton General Hospital NHS Trust	99.8	261.9	9309.2
The Mid Cheshire Hospitals NHS Trust	98.8	259.3	7949.0
Barnsley Dist Gen Hosp NHS Foundation Trust	98.2	196.4	8854.7
Basingstoke and North Hampshire Hospitals NHS Foundation Trust	97.6	180.0	6316.6
Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	96.4	251.1	9249.2
Southampton University Hospitals NHS Trust	96.2	190.7	8404.6
Wrightington, Wigan and Leigh NHS Foundation Trust	95.2	209.8	6028.8
Colchester Hospital University NHS Foundation Trust	94.6	269.2	9264.7
University Hospitals Coventry and Warwickshire NHS Trust	94.0	182.6	6563.3
University Hospitals Of Morecambe Bay NHS Foundation Trust	93.4	246.6	9887.3
University Hospital Of North Staffordshire Hospital NHS Trust	93.3	252.4	10355.7
Stockport NHS Foundation Trust	92.8	174.6	8713.0
Chesterfield Royal Hospital NHS Foundation Trust	91.9	187.3	7895.4
County Durham and Darlington NHS Foundation Trust	91.8	221.2	10262.4
Salford Royal NHS Foundation Trust	91.5	142.9	8400.8
North Cumbria University Hospitals NHS Trust	91.4	173.8	8744.8
Royal Berkshire Hospital NHS Foundation Trust	91.3	164.7	5453.0
Tameside Hospital NHS Foundation Trust	90.3	199.1	9045.9
Calderdale and Huddersfield NHS Foundation Trust	88.8	186.0	7870.2
East and North Hertfordshire NHS Trust	88.5	147.5	6795.2
Royal Devon and Exeter NHS Foundation Trust	86.8	190.2	7764.1
Royal Cornwall Hospitals NHS Trust	86.2	183.2	7558.5
Central Manchester University Hospitals NHS Foundation Trust	85.6	256.1	10200.2
Homerton University Hospital NHS Foundation Trust	85.1	137.8	5221.7
South Warwickshire NHS Foundation Trust*	83.6	173.7	7465.3
Norfolk and Norwich University Hospitals NHS Foundation Trust	83.6	213.7	7320.5
Portsmouth Hospitals NHS Trust	83.6	167.2	5949.4
King's College Hospital NHS Foundation Trust	83.2	132.5	5246.2
Plymouth Hospitals NHS Trust	83.1	174.8	7607.1
West Suffolk Hospital NHS Trust	82.5	173.9	7037.4
Northumbria Healthcare NHS Foundation Trust	82.5	165.1	8390.3

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3	Luton and Dunstable Hospital NHS Foundation Trust	82.0	195.2	8913.8
4	Taunton and Somerset NHS Foundation Trust	81.7	202.7	7129.9
5	Warrington and Halton Hospitals NHS Foundation Trust	81.4	131.9	8218.6
6	Peterborough and Stamford Hospitals NHS Foundation Trust	80.7	225.6	8728.8
7	Pennine Acute Hospitals NHS Trust	80.5	196.2	10147.4
8	North Tees and Hartlepool NHS Foundation Trust	80.2	217.8	8251.5
9	Walsall Hospitals NHS Trust	78.8	152.3	5444.2
10	North Middlesex University Hospital NHS Trust	78.0	145.6	7918.9
11	City Hospitals Sunderland NHS Foundation Trust	77.0	191.7	8367.6
12	The Hillingdon Hospital NHS Trust	76.7	162.6	6857.8
13	Frimley Park Hospital NHS Trust	75.8	158.4	6851.2
14	South Devon Health Care NHS Trust	75.1	181.9	5448.0
15	East Kent Hospitals University NHS Foundation Trust	74.7	166.2	7619.1
16	East Lancashire Hospitals NHS Trust	74.2	277.9	11681.2
17	Bradford Teaching Hospitals NHS Foundation Trust	73.9	222.5	6588.3
18	Nottingham University Hospitals NHS Trust	73.0	159.4	5107.2
19	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	72.8	142.7	9385.1
20	Basildon and Thurrock University Hospitals NHS Foundation Trust	72.3	117.4	4185.1
21	Sandwell and West Birmingham Hospitals NHS Trust	71.9	160.7	8798.9
22	Bedford Hospital NHS Trust	71.8	168.3	5739.2
23	Sheffield Children's NHS Foundation Trust	71.4	203.5	6942.5
24	Airedale NHS Foundation Trust	71.3	329.1	9150.7
25	Western Sussex Hospitals NHS Trust	71.2	176.5	7923.9
26	Imperial College Healthcare NHS Trust*	71.2	146.3	4707.7
27	Birmingham Heartlands and Solihull Trust	70.5	140.5	7708.0
28	Mid Yorkshire Hospitals NHS Trust	70.2	155.4	7419.2
29	Royal Bolton Hospital NHS Foundation Trust	70.0	179.1	8819.4
30	Dartford and Gravesham NHS Trust	69.4	149.2	7885.0
31	Barts Health NHS Trust	69.3	149.3	5890.0
32	Southport and Ormskirk Hospital NHS Trust	69.2	132.7	8094.0
33	Weston Area Health NHS Trust	69.0	122.7	6479.8
34	Poole Hospital NHS Foundation Trust	68.8	256.6	8106.0
35	Royal United Hospital Bath NHS Trust	68.5	193.4	6530.5
36	Wirral University Teaching Hospital NHS Foundation Trust	67.9	239.8	7375.9
37	University Hospitals Of Bristol NHS Foundation Trust	67.1	148.1	5637.4
38	Ashford and St Peter's Hospitals NHS Foundation Trust	67.1	107.4	5105.2
39	Shrewsbury and Telford Hospital NHS Trust*	66.4	162.2	7580.5
40	James Paget University Hospitals NHS Foundation Trust	66.1	116.3	6048.3
41	The Lewisham Healthcare NHS Trust	65.9	136.5	7769.5
42	Lancashire Teaching Hospitals NHS Trust	63.8	171.9	10193.4
43	Epsom and St Helier University Hospitals NHS Trust	63.0	178.4	5285.4
44	St George's Healthcare NHS Trust	62.7	127.1	5969.1
45	Cambridgeshire Community Services NHS Trust	62.5	185.0	9188.9
46	Royal Free Hampstead NHS Trust	62.5	136.0	5601.1
47	University Hospitals Of Leicester NHS Trust	62.4	144.0	4944.3
48	Cambridge University Hospitals NHS Foundation Trust	61.3	197.6	5058.8
49	Maidstone and Tunbridge Wells NHS Trust	61.3	93.8	4536.7
50	Worcestershire Acute Hospitals NHS Trust	60.6	144.5	6155.0
51	Ipswich Hospital NHS Trust	60.2	176.5	6566.3
52	Leeds Teaching Hospitals NHS Trust	60.1	165.8	6160.5
53	Hinchingbrooke Healthcare NHS Trust	59.4	89.0	6738.0
54	Oxford Radcliffe Hospital NHS Trust	58.5	156.0	6662.5
55	Countess Of Chester Hospital NHS Foundation Trust*	57.9	157.4	9156.6
56	Dorset County Hospital NHS Foundation Trust	56.8	144.5	6294.7
57	The Dudley Group Of Hospitals NHS Foundation Trust	56.4	143.6	8559.8
58	Gloucestershire Hospitals NHS Foundation Trust	56.1	164.8	6854.3
59	London North West Healthcare NHS Trust	55.8	124.8	5098.4
60	Whittington Hospital NHS Trust	55.3	116.5	6677.6
	The Rotherham NHS Foundation Trust	55.2	154.1	7337.8
	Royal Surrey County NHS Foundation Trust	54.7	106.4	5398.3
	Derby Hospitals NHS Foundation Trust	54.1	115.0	4096.0
	West Hertfordshire Hospitals NHS Trust	53.5	114.3	5621.5

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United Lincolnshire Hospitals NHS Trust	53.4	182.4	6992.8
Buckinghamshire Healthcare NHS Trust	53.2	137.6	7632.4
Croydon Health Services NHS Trust*	53.1	73.9	5373.3
Yeovil District Hospital NHS Foundation Trust	52.9	136.4	6074.1
West Middlesex University NHS Trust	51.9	166.7	4872.3
University Hospital Of South Manchester NHS Foundation Trust	51.8	126.0	8586.4
South Tyneside NHS Foundation Trust	50.8	88.9	6751.4
Royal Bournemouth and Christchurch Trust*	49.9	99.9	7041.3
Great Western Hospitals NHS Foundation Trust	49.9	141.2	7058.8
Barking, Havering and Redbridge University Hospitals NHS Trust	46.8	93.6	4662.0
Mid Staffordshire NHS Foundation Trust	45.7	99.1	9815.2
Alder Hey Childrens NHS Foundation Trust	45.4	188.4	7766.6
Princess Alexandra Hospital NHS Trust	45.2	85.6	4438.7
Gateshead Health NHS Foundation Trust	43.5	81.5	8388.4
Surrey and Sussex Healthcare NHS Trust	43.1	108.8	4767.3
St Helens and Knowsley Hospitals NHS Trust	41.2	126.5	9790.2
Northern Devon Healthcare NHS Trust	40.2	158.0	7260.0
Southend University Hospitals NHS Foundation Trust	37.9	116.6	4292.9
Brighton and Sussex University Hospitals NHS Trust	37.0	115.9	5926.0
Kingston Hospital NHS Trust	36.9	98.0	5332.2
Mid Essex Hospital Services NHS Trust	36.8	86.6	5326.2
Sherwood Forest Hospitals NHS Foundation Trust	36.7	138.5	6892.1
Salisbury NHS Foundation Trust	35.7	109.1	4912.0
Chelsea and Westminster Hospital NHS Foundation Trust	34.7	65.9	4932.9
North Bristol NHS Trust	30.9	87.5	5016.8
Harrogate and District NHS Foundation Trust	29.6	96.2	7761.3
University College London Hospitals NHS Foundation Trust	28.5	54.6	4032.6
Aintree University Hospitals NHS Foundation Trust	27.7	73.7	6240.5
Royal Liverpool Broadgreen Hospitals NHS Trust	24.8	74.3	5871.3
Sheffield Teaching Hospitals NHS Foundation Trust	14.3	28.7	4752.9
George Eliot Hospital NHS Trust	5.2	20.6	5717.0
The Royal Marsden NHS Foundation Trust	0.0	963.5	104056.3
Liverpool Heart and Chest NHS Foundation Trust	0.0	0.0	29608.9
Christie Hospital NHS Trust	0.0	0.0	26449.3
Papworth Hospital NHS Foundation Trust	0.0	1444.5	21666.9
Clatterbridge Centre For Oncology NHS Foundation Trust	0.0	0.0	15534.8
The Royal National Orthopaedic Hospital NHS Trust	0.0	489.4	11500.7
Royal Brompton and Harefield NHS Foundation Trust	0.0	153.9	8131.0
Liverpool Womens Hospital NHS Trust	0.0	0.0	6464.3
Royal Orthopaedic Hospital NHS Foundation Trust	0.0	246.8	6170.2
Moorfields Eye Hospital NHS Foundation Trust	0.0	0.0	5217.1
Birmingham Women's NHS Foundation Trust	0.0	0.0	4659.7
Robert Jones and Agnes Hunt Orthopaedic NHS Trust	0.0	0.0	4316.4
Queen Victoria Hospital NHS Foundation Trust	0.0	24.3	4251.8

*denotes Trusts where Lower Layer Super Output Area (LSOA) data are missing on $\geq 5.0\%$ of hospital admissions (meaning that the catchment populations and admission rates should be interpreted with more caution). The exact proportion of admissions with missing LSOA data by Trust are presented in Appendix Table A5.

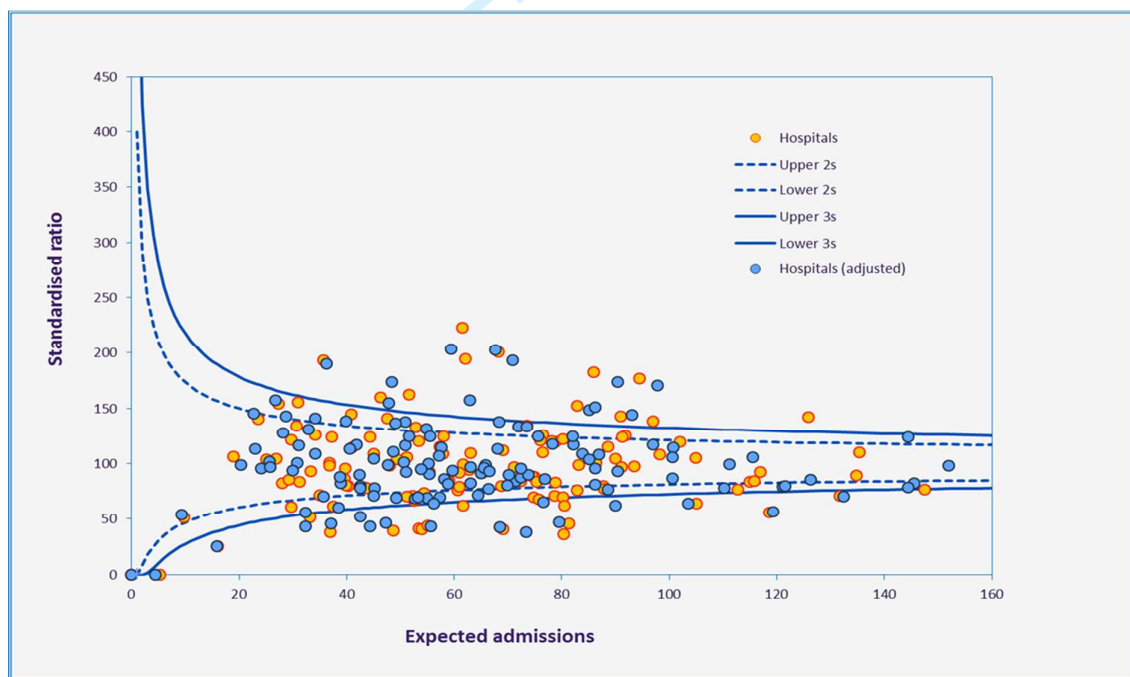
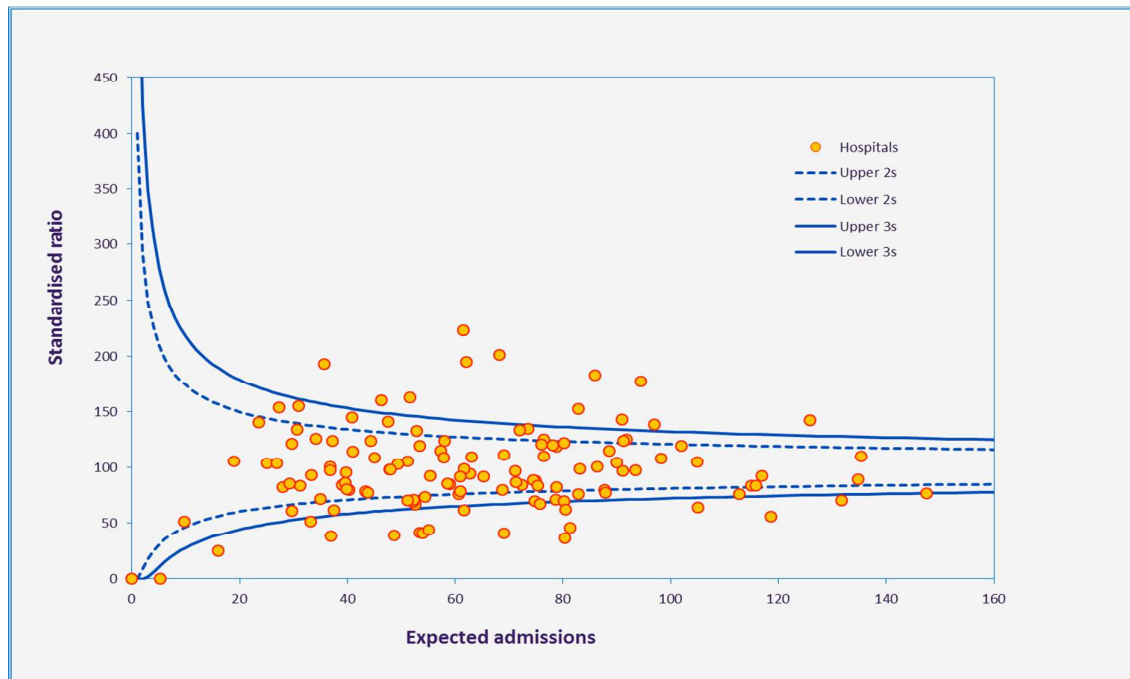


Figure 1. Funnel plot showing ratio of observed: expected paediatric epilepsy admissions in English Hospital Trusts, 2014/15.

Appendix Table A1

**Paediatric hospital catchment populations by Trust and year, English
Hospital Episode Statistics 2011/12-2014/15**

Trustcode	Trust name	Region	Catchment population, standardised for age, sex, Index of Multiple Deprivation			
			2011/12	2012/13	2013/14	2014/15
REM	Aintree University Hospitals NHS Foundation Trust	North West	10023	10327	8631	10848
RCF	Airedale NHS Foundation Trust	Yorkshire and The Humber	41949	39720	43968	43450
RBS	Alder Hey Childrens NHS Foundation Trust	North West	135592	135873	135226	134281
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	South East Coast	67507	66359	67714	67049
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	London	197275	149765	149133	145366
RVL	Barnet and Chase Farm Hospitals NHS Trust	London	127294	127254	113094	.
RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	Yorkshire and The Humber	50808	51686	51165	52966
R1H	Barts Health NHS Trust	London	12668	267307	270243	268558
RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	East of England	78568	72928	75975	77489
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	South Central	85695	102867	101435	99421
RC1	Bedford Hospital NHS Trust	East of England	47451	49333	32284	48718
RQ3	Birmingham Children's Hospital NHS Foundation Trust	West Midlands	167662	166577	162074	159686
RR1	Birmingham Heartlands and Solihull Trust	West Midlands	179182	175711	173618	180098
RLU	Birmingham Women's NHS Foundation Trust	West Midlands	2622	2783	2526	2897
RXL	Blackpool Fylde and Wyre NHS Foundation Trust	North West	58761	59309	59561	60397
RAE	Bradford Teaching Hospitals NHS Foundation Trust	Yorkshire and The Humber	113843	114617	111292	111030
RXH	Brighton and Sussex University Hospitals NHS Trust	South East Coast	95573	99438	103746	105282
RXQ	Buckinghamshire Healthcare NHS Trust	South Central	102622	99708	96197	99550
RJF	Burton Hospitals NHS Foundation Trust	West Midlands	58296	60052	62031	61559
RWY	Calderdale and Huddersfield NHS Foundation Trust	Yorkshire and The Humber	96587	95166	96430	95715
RGT	Cambridge University Hospitals NHS Foundation Trust	East of England	94724	93112	94595	94647
RYV	Cambridgeshire Community Services NHS Trust	East of England	36498	38274	38476	38372
RW3	Central Manchester University Hospitals NHS Foundation Trust	North West	129668	123097	131327	134340
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	London	90449	93355	88865	86439
RFS	Chesterfield Royal Hospital NHS Foundation Trust	East Midlands	55086	56540	55790	56603
RBV	Christie Hospital NHS Trust	North West	249	71	202	231
RLN	City Hospitals Sunderland NHS Foundation Trust	North East	61855	60998	63551	63650
REN	Clatterbridge Centre For Oncology NHS Foundation Trust	North West	61	17	.	45
RDE	Colchester Hospital University NHS Foundation Trust	East of England	72893	71762	74634	75048
RJR	Countess Of Chester Hospital NHS Foundation Trust	North West	43561	43650	42978	43204

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3		County Durham and Darlington NHS Foundation Trust	North East	107566	108332	107119	108941
4	RXP						
5	RJ6	Croydon Health Services NHS Trust	London	81355	78015	78090	77160
6	RN7	Dartford and Gravesham NHS Trust	South East Coast	76140	73911	78523	77768
7	RTG	Derby Hospitals NHS Foundation Trust	East Midlands	101760	103757	104768	101709
8		Doncaster and Bassetlaw Hospitals NHS Foundation Trust	Yorkshire and The Humber	102095	100803	98480	100244
9	RP5						
10	RBD	Dorset County Hospital NHS Foundation Trust	South West	40217	40655	39469	38763
11	RC3	Ealing Hospital NHS Trust	London	58077	53775	52820	.
12	RWH	East and North Hertfordshire NHS Trust	East of England	110674	104026	106784	105074
13	RJN	East Cheshire NHS Trust	North West	38204	36740	36029	35913
14		East Kent Hospitals University NHS Foundation Trust	South East Coast	137896	137059	138382	141973
15	RVV						
16	RXR	East Lancashire Hospitals NHS Trust	North West	116271	119014	118240	117300
17	RXC	East Sussex Hospitals NHS Trust	South East Coast	80445	77868	73828	73412
18		Epsom and St Helier University Hospitals NHS Trust	London	87348	83731	81162	85745
19	RVR						
20	RDU	Frimley Park Hospital NHS Trust	South East Coast	80008	85799	88597	190069
21	RR7	Gateshead Health NHS Foundation Trust	North East	43832	43763	38241	36789
22	RLT	George Eliot Hospital NHS Trust	West Midlands	30544	29618	20570	19381
23	RTE	Gloucestershire Hospitals NHS Foundation Trust	South West	120471	120927	120459	119516
24	RP4	Great Ormond Street Hospital NHS Trust	London	44418	17789	7456	6236
25	RN3	Great Western Hospitals NHS Foundation Trust	South West	79223	78668	79347	82167
26	RJ1	Guy's and St Thomas' NHS Foundation Trust	London	85083	69753	71571	64902
27	RCD	Harrogate and District NHS Foundation Trust	Yorkshire and The Humber	40531	40823	40145	40560
28		Heatherwood and Wexham Park Hosps NHS Foundation Trust	South Central	99093	99936	100829	.
29	RD7						
30	RLQ	Hereford Hospitals NHS Trust	West Midlands	38422	37728	38147	39130
31	RQQ	Hinchingbrooke Healthcare NHS Trust	East of England	7964	6273	6811	6738
32		Homerton University Hospital NHS Foundation Trust	London	89851	52951	52578	49332
33	RQX						
34	RWA	Hull and East Yorkshire Hospitals NHS Trust	Yorkshire and The Humber	105424	106722	106685	106281
35	RYJ	Imperial College Healthcare NHS Trust	London	72424	67571	74510	75876
36	RGQ	Ipswich Hospital NHS Trust	East of England	71307	71010	71234	71379
37	R1F	Isle of wight NHS Trust	South Central	.	31154	30292	28924
38		James Paget University Hospitals NHS Foundation Trust	East of England	46037	45337	44979	43863
39	RGP						
40		Kettering General Hospital NHS Foundation Trust	East Midlands	68698	69630	68806	67436
41	RNQ						
42	RJZ	King's College Hospital NHS Foundation Trust	London	88602	86947	148099	150224
43	RAX	Kingston Hospital NHS Trust	London	75380	68716	69583	70421
44	RXN	Lancashire Teaching Hospitals NHS Trust	North West	87179	87630	88836	87841
45	RR8	Leeds Teaching Hospitals NHS Trust	Yorkshire and The Humber	153920	148568	150597	151367
46	RBQ	Liverpool Heart and Chest NHS Foundation Trust	North West	106	20	47	64
47	REP	Liverpool Womens Hospital NHS Trust	North West	1656	1833	3561	2475
48		London North West Healthcare NHS Trust	London	.	.	486	166660
49	R1K						
50		Luton and Dunstable Hospital NHS Foundation Trust	East of England	96418	95475	95886	96289
51	RC9						
52	RWF	Maidstone and Tunbridge Wells NHS Trust	South East Coast	105941	102464	103455	104481
53	RPA	Medway NHS Trust	South East Coast	95192	94535	92696	92044
54	RQ8	Mid Essex Hospital Services NHS Trust	East of England	120888	107718	101410	100503
55	RJD	Mid Staffordshire NHS Foundation Trust	West Midlands	51662	48065	47435	26235
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RXF	Mid Yorkshire Hospitals NHS Trust	Yorkshire and The Humber	132650	133511	135039	133869
RD8	Milton Keynes Hospital NHS Foundation Trust	South Central	68637	69072	79382	68737
RP6	Moorfields Eye Hospital NHS Foundation Trust	London	1824	916	916	843
RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	North East	117233	117214	121658	124257
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	East of England	116286	114535	114161	118394
RVJ	North Bristol NHS Trust	South West	49997	45687	48493	19435
RNL	North Cumbria University Hospitals NHS Trust	North West	66588	66042	66633	66748
RJL	North Lincolnshire and Goole Hosps NHS Foundation Trust	Yorkshire and The Humber	87840	89727	87901	87428
RAP	North Middlesex University Hospital NHS Trust	London	69610	59956	74570	96137
RVW	North Tees and Hartlepool NHS Foundation Trust	North East	62654	62927	61569	61068
RV8	North West London Hospitals NHS Trust	London	124936	122553	120266	.
RNS	Northampton General Hospital NHS Trust	East Midlands	79616	79064	79996	80178
RBZ	Northern Devon Healthcare NHS Trust	South West	36726	36767	35147	34821
RTF	Northumbria Healthcare NHS Foundation Trust	North East	66237	66331	67151	65421
RX1	Nottingham University Hospitals NHS Trust	East Midlands	171690	169301	169578	172520
RTH	Oxford Radcliffe Hospital NHS Trust	South Central	150782	149553	152788	153875
RGM	Papworth Hospital NHS Foundation Trust	East of England	152	109	60	69
RW6	Pennine Acute Hospitals NHS Trust	North West	181461	177490	174316	172774
RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	East of England	76073	78570	78495	79335
RK9	Plymouth Hospitals NHS Trust	South West	94298	94886	93753	93846
RD3	Poole Hospital NHS Foundation Trust	South West	100557	97418	97080	97422
RHU	Portsmouth Hospitals NHS Trust	South Central	126870	123691	124823	118416
RQW	Princess Alexandra Hospital NHS Trust	East of England	65509	62257	62667	61910
RCX	Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	East of England	46079	45410	46035	44609
RPC	Queen Victoria Hospital NHS Foundation Trust	South East Coast	30623	31677	32219	28764
RL1	Robert Jones and Agnes Hunt Orthopaedic NHS Trust	West Midlands	386	179	68	93
RHW	Royal Berkshire Hospital NHS Foundation Trust	South Central	107907	103139	101569	100771
RMC	Royal Bolton Hospital NHS Foundation Trust	North West	82536	84113	84077	84314
RDZ	Royal Bournemouth and Christchurch Trust	South West	5939	7681	5662	6007
RT3	Royal Brompton and Harefield NHS Foundation Trust	London	5283	4361	3825	3899
REF	Royal Cornwall Hospitals NHS Trust	South West	94173	94210	91643	91698
RH8	Royal Devon and Exeter NHS Foundation Trust	South West	75572	76294	75519	78322
RAL	Royal Free Hampstead NHS Trust	London	52443	50068	48224	155113
RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	North West	12435	11431	12377	12110
RBB	Royal Nat Hosp Rheumatic Diseases NHS Trust	South West	24	24	.	.
RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	West Midlands	343	209	293	405
RA2	Royal Surrey County NHS Foundation Trust	South East Coast	69295	69069	68703	67670
RD1	Royal United Hospital Bath NHS Trust	South West	91687	92969	93205	92029
RL4	Royal Wolverhampton Hospital NHS Trust	West Midlands	76825	76809	79145	79276
RM3	Salford Royal NHS Foundation Trust	North West	36907	36818	34678	34985
RNZ	Salisbury NHS Foundation Trust	South West	53602	47693	47618	47659
RXK	Sandwell and West Birmingham Hospitals NHS Trust	West Midlands	94462	94120	98396	100183
RCC	Scarborough and North East Yorkshire NHS Trust	Yorkshire and The Humber	35573	.	.	.

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3	RCU	Sheffield Children's NHS Foundation Trust	Yorkshire and The Humber	115371	116009	117548	102197
4		Sheffield Teaching Hospitals NHS Foundation					
5	RHQ	Trust	Yorkshire and The Humber	18502	18740	19406	27899
6	RK5	Sherwood Forest Hospitals NHS Foundation	East Midlands	69176	70373	70109	70777
7	RXW	Trust					
8		Shrewsbury and Telford Hospital NHS Trust	West Midlands	100221	101232	100641	102368
9	RA9	South Devon Health Care NHS Trust	South West	49907	50574	50908	50569
10	RYQ	South London Healthcare NHS Trust	London	139032	147968	39830	.
11	RTR	South Tees Hospitals NHS Foundation Trust	North East	97604	97851	97981	98197
12	RE9	South Tyneside NHS Foundation Trust	North East	25878	25367	24299	23625
13	RJC	South Warwickshire NHS Foundation Trust	West Midlands	46900	47121	47468	46629
14	RHM	Southampton University Hospitals NHS Trust	South Central	134343	115636	117210	120636
15		Southend University Hospitals NHS Foundation					
16	RAJ	Trust	East of England	65574	66876	68295	66039
17	RVY	Southport and Ormskirk Hospital NHS Trust	North West	53815	53137	51841	53484
18	RJ7	St George's Healthcare NHS Trust	London	103559	109089	113127	118041
19	RBN	St Helens and Knowsley Hospitals NHS Trust	North West	61878	65500	65986	67966
20	RWJ	Stockport NHS Foundation Trust	North West	66698	68799	65856	63583
21	RTP	Surrey and Sussex Healthcare NHS Trust	South East Coast	95076	92811	93180	83612
22	RMP	Tameside Hospital NHS Foundation Trust	North West	47340	48784	47877	48707
23	RBA	Taunton and Somerset NHS Foundation Trust	South West	67189	67320	66528	66116
24		The Dudley Group Of Hospitals NHS Foundation					
25	RNA	Trust	West Midlands	82101	82900	80817	81498
26	RAS	The Hillingdon Hospital NHS Trust	London	65107	61012	61198	65195
27	RJ2	The Lewisham Healthcare NHS Trust	London	62637	61055	103280	151669
28	RBT	The Mid Cheshire Hospitals NHS Trust	North West	57013	54683	57962	56699
29	RFR	The Rotherham NHS Foundation Trust	Yorkshire and The Humber	53392	51784	50347	52577
30	RPY	The Royal Marsden NHS Foundation Trust	London	382	216	348	104
31		The Royal National Orthopaedic Hospital NHS					
32	RAN	Trust	London	973	529	289	409
33	RET	The Walton Centre NHS Foundation Trust	North West	440	263	255	281
34	RWD	United Lincolnshire Hospitals NHS Trust	East Midlands	118708	115559	115924	112401
35		University College London Hospitals NHS					
36	RRV	Foundation Trust	London	52193	39854	42780	42106
37	RRK	University Hospital Birmingham NHS Foundation	West Midlands	11362	10510	12108	10979
38		Trust					
39	RJE	University Hospital Of North Staffordshire	West Midlands	107959	108300	110705	127581
40		Hospital NHS Trust					
41	RM2	University Hospital Of South Manchester NHS	North West	70604	70443	70896	71403
42		Foundation Trust					
43	RKB	University Hospitals Coventry and Warwickshire	West Midlands	116634	116159	126521	126537
44		NHS Trust					
45	RA7	University Hospitals Of Bristol NHS Foundation	South West	145749	145288	145188	172827
46		Trust					
47	RWE	University Hospitals Of Leicester NHS Trust	East Midlands	188490	188424	189865	192382
48		University Hospitals Of Morecambe Bay NHS					
49	RTX	Foundation Trust	North West	69612	68370	67995	68522
50	RBK	Walsall Hospitals NHS Trust	West Midlands	56799	58354	56452	55821
51	RWW	Warrington and Halton Hospitals NHS	North West	64831	63822	61770	61421
52		Foundation Trust					
53	RWG	West Hertfordshire Hospitals NHS Trust	East of England	91480	91916	97486	95384
54	RFW	West Middlesex University NHS Trust	London	59734	65428	67430	63584
55	RGR	West Suffolk Hospital NHS Trust	East of England	57097	58326	57180	56939
56	RYR	Western Sussex Hospitals NHS Trust	South East Coast	96626	94666	91769	94045
57	RA3	Weston Area Health NHS Trust	South West	13122	11742	12538	13040
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3	RKE	Whittington Hospital NHS Trust	London	53355	50811	51311	50647
4		Wirral University Teaching Hospital NHS					
5	RBL	Foundation Trust	North West	71996	72292	72743	72140
6	RWP	Worcestershire Acute Hospitals NHS Trust	West Midlands	120307	118484	117303	115581
7		Wrightington, Wigan and Leigh NHS Foundation					
8	RRF	Trust	North West	52988	53106	52291	51486
9	RA4	Yeovil District Hospital NHS Foundation Trust	South West	37273	38748	37598	35923
10	RCB	York Hospitals NHS Trust	Yorkshire and The Humber	70501	105737	103237	104298
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Appendix Table A2

Paediatric hospital catchment populations by Trust, deprivation quintile,
English Hospital Episode Statistics, 2013/14

Trust code	Trust name	Catchment pop by Index of Multiple Deprivation quintile					Total	% in most deprived quintile	% in least deprived quintile
		1 (Most deprived)	2	3	4	5			
REM	Aintree University Hospitals NHS Foundation Trust	4330	1126	1903	891	381	8631	50.2%	4.4%
RCF	Airedale NHS Foundation Trust	9488	5421	8214	12856	7989	43968	21.6%	18.2%
RBS	Alder Hey Childrens NHS Foundation Trust	78577	18715	17336	12477	8121	135226	58.1%	6.0%
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	803	6579	10863	14707	34762	67714	1.2%	51.3%
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	35894	49190	31992	20717	11341	149133	24.1%	7.6%
RVL	Barnet and Chase Farm Hospitals NHS Trust	13252	24820	31417	28228	15377	113094	11.7%	13.6%
RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	16847	14899	9311	6467	3641	51165	32.9%	7.1%
R1H	Barts Health NHS Trust	163144	60604	24847	13148	8500	270243	60.4%	3.1%
RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	14521	20050	13825	11279	16300	75975	19.1%	21.5%
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	818	13145	13577	20675	53220	101435	0.8%	52.5%
RC1	Bedford Hospital NHS Trust	3233	5913	5603	7476	10060	32284	10.0%	31.2%
RQ3	Birmingham Children's Hospital NHS Foundation Trust	91604	28586	25106	9722	7055	162074	56.5%	4.4%
RR1	Birmingham Heartlands and Solihull Trust	82911	22330	23792	21020	23566	173618	47.8%	13.6%
RLU	Birmingham Women's NHS Foundation Trust	1146	576	459	271	74	2526	45.4%	2.9%
RXL	Blackpool Fylde and Wyre NHS Foundation Trust	19392	11532	11532	9706	7400	59561	32.6%	12.4%
RAE	Bradford Teaching Hospitals NHS Foundation Trust	66484	20131	13399	6629	4650	111292	59.7%	4.2%
RXH	Brighton and Sussex University Hospitals NHS Trust	12242	21734	24955	22064	22751	103746	11.8%	21.9%
RXQ	Buckinghamshire Healthcare NHS Trust	375	15533	13666	16674	49949	96197	0.4%	51.9%
RJF	Burton Hospitals NHS Foundation Trust	8028	10883	13795	16333	12992	62031	12.9%	20.9%
RWY	Calderdale and Huddersfield NHS Foundation Trust	26028	23462	15310	19005	12625	96430	27.0%	13.1%
RGT	Cambridge University Hospitals NHS Foundation Trust	1607	10992	14338	25244	42414	94595	1.7%	44.8%
RYV	Cambridgeshire Community Services NHS Trust	302	4165	10028	7652	16328	38476	0.8%	42.4%
RW3	Central Manchester University Hospitals NHS Foundation Trust	67086	27353	16708	11774	8406	131327	51.1%	6.4%
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	16640	26815	19308	19858	6244	88865	18.7%	7.0%
RFS	Chesterfield Royal Hospital NHS Foundation Trust	11262	14747	10348	11926	7507	55790	20.2%	13.5%

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RBV	Christie Hospital NHS Trust	86	50	0	27	39	202	42.5%	19.5%
RLN	City Hospitals Sunderland NHS Foundation Trust	26687	18178	8391	7604	2691	63551	42.0%	4.2%
RDE	Colchester Hospital University NHS Foundation Trust	7259	16058	17471	21094	12753	74634	9.7%	17.1%
RJR	Countess Of Chester Hospital NHS Foundation Trust	9307	3990	5177	9655	14849	42978	21.7%	34.6%
RXP	County Durham and Darlington NHS Foundation Trust	31670	30286	17175	15061	12927	107119	29.6%	12.1%
RJ6	Croydon Health Services NHS Trust	17433	28190	18334	9300	4833	78090	22.3%	6.2%
RN7	Dartford and Gravesham NHS Trust	9887	18819	16535	18000	15283	78523	12.6%	19.5%
RTG	Derby Hospitals NHS Foundation Trust	22327	19085	20936	18375	24044	104768	21.3%	23.0%
RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	37755	22141	18484	16150	3949	98480	38.3%	4.0%
RBD	Dorset County Hospital NHS Foundation Trust	3473	6672	15169	10100	4054	39469	8.8%	10.3%
RC3	Ealing Hospital NHS Trust	13677	19798	14306	3900	1139	52820	25.9%	2.2%
RWH	East and North Hertfordshire NHS Trust	1696	12240	25595	24728	42525	106784	1.6%	39.8%
RJN	East Cheshire NHS Trust	1827	4965	6152	6945	16141	36029	5.1%	44.8%
RVV	East Kent Hospitals University NHS Foundation Trust	26345	30829	35972	34287	10948	138382	19.0%	7.9%
RXR	East Lancashire Hospitals NHS Trust	54726	24499	11565	19053	8398	118240	46.3%	7.1%
RXC	East Sussex Hospitals NHS Trust	15541	20009	16409	14715	7152	73828	21.1%	9.7%
RVR	Epsom and St Helier University Hospitals NHS Trust	2557	14032	13354	18218	33002	81162	3.1%	40.7%
RDU	Frimley Park Hospital NHS Trust	826	5337	11567	16677	54189	88597	0.9%	61.2%
RR7	Gateshead Health NHS Foundation Trust	15875	10622	4335	5199	2210	38241	41.5%	5.8%
RLT	George Eliot Hospital NHS Trust	3223	6192	4042	4183	2931	20570	15.7%	14.2%
RTE	Gloucestershire Hospitals NHS Foundation Trust	10586	14006	26234	31926	37706	120459	8.8%	31.3%
RP4	Great Ormond Street Hospital NHS Trust	2151	1616	1447	1269	973	7456	28.8%	13.1%
RN3	Great Western Hospitals NHS Foundation Trust	8184	7123	12779	22039	29222	79347	10.3%	36.8%
RJ1	Guy's and St Thomas' NHS Foundation Trust	23701	29293	8915	6087	3576	71571	33.1%	5.0%
RCD	Harrogate and District NHS Foundation Trust	492	1933	7081	12804	17836	40145	1.2%	44.4%
RD7	Heatherwood and Wexham Park Hosps NHS Foundation Trust	6085	21541	23192	17741	32269	100829	6.0%	32.0%
RLQ	Hereford Hospitals NHS Trust	2934	4454	20545	7986	2228	38147	7.7%	5.8%
RQQ	Hinchingbrooke Healthcare NHS Trust	12	733	1351	1341	3375	6811	0.2%	49.5%
RQX	Homerton University Hospital NHS Foundation Trust	40697	10604	673	402	202	52578	77.4%	0.4%
RWA	Hull and East Yorkshire Hospitals NHS Trust	35876	15750	16931	18324	19804	106685	33.6%	18.6%
RYJ	Imperial College Healthcare NHS Trust	29567	23341	11461	8231	1911	74510	39.7%	2.6%
RGQ	Ipswich Hospital NHS Trust	8613	8943	14027	21209	18443	71234	12.1%	25.9%
R1F	Isle of wight NHS Trust	1970	10358	10936	4519	2509	30292	6.5%	8.3%
RGP	James Paget University Hospitals NHS Foundation Trust	10958	10713	11872	9138	2299	44979	24.4%	5.1%
RNQ	Kettering General Hospital NHS Foundation Trust	11303	15898	11852	12521	17233	68806	16.4%	25.0%
RJZ	King's College Hospital NHS Foundation Trust	42747	43266	19382	20404	22300	148099	28.9%	15.1%
RAX	Kingston Hospital NHS Trust	1675	5276	10568	21191	30872	69583	2.4%	44.4%
RXN	Lancashire Teaching Hospitals NHS Trust	21400	14101	15110	18870	19355	88836	24.1%	21.8%
RR8	Leeds Teaching Hospitals NHS Trust	59934	28280	20340	22620	19424	150597	39.8%	12.9%
RBQ	Liverpool Heart and Chest NHS	0	0	26	22	0	47	0.0%	0.0%

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Foundation Trust

REP	Liverpool Womens Hospital NHS Trust	1707	707	509	394	244	3561	48.0%	6.9%
R1K	London North West Healthcare NHS Trust	97	173	141	45	30	486	19.9%	6.2%
RC9	Luton and Dunstable Hospital NHS Foundation Trust	17852	24434	18167	14159	21275	95886	18.6%	22.2%
RWF	Maidstone and Tunbridge Wells NHS Trust	2895	8897	19271	33793	38600	103455	2.8%	37.3%
RPA	Medway NHS Trust	16699	28561	18476	15552	13409	92696	18.0%	14.5%
RQ8	Mid Essex Hospital Services NHS Trust	6685	14336	16855	29032	34503	101410	6.6%	34.0%
RJD	Mid Staffordshire NHS Foundation Trust	5032	9810	9988	11328	11277	47435	10.6%	23.8%
RXF	Mid Yorkshire Hospitals NHS Trust	43148	38161	23923	20426	9381	135040	32.0%	6.9%
RD8	Milton Keynes Hospital NHS Foundation Trust	10991	9702	10242	20047	28400	79382	13.8%	35.8%
RP6	Moorfields Eye Hospital NHS Foundation Trust	127	307	164	197	122	916	13.8%	13.3%
RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	40798	25120	18285	17807	19648	121658	33.5%	16.2%
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	9602	17400	32943	30205	24011	114161	8.4%	21.0%
RVJ	North Bristol NHS Trust	5764	8515	9992	9720	14502	48493	11.9%	29.9%
RNL	North Cumbria University Hospitals NHS Trust	12195	15376	17853	13491	7719	66633	18.3%	11.6%
RJL	North Lincolnshire and Goole Hosps NHS Foundation Trust	27606	16268	17235	18122	8671	87901	31.4%	9.9%
RAP	North Middlesex University Hospital NHS Trust	44361	20500	5193	3151	1365	74570	59.5%	1.8%
RVW	North Tees and Hartlepool NHS Foundation Trust	26629	10795	8422	6195	9527	61569	43.3%	15.5%
RV8	North West London Hospitals NHS Trust	16283	39133	36738	17588	10523	120266	13.5%	8.7%
RNS	Northampton General Hospital NHS Trust	13830	14358	12007	14485	25316	79996	17.3%	31.6%
RBZ	Northern Devon Healthcare NHS Trust	2620	10607	13149	7557	1214	35147	7.5%	3.5%
RTF	Northumbria Healthcare NHS Foundation Trust	17976	17426	10150	9092	12507	67151	26.8%	18.6%
RX1	Nottingham University Hospitals NHS Trust	46374	32241	27468	27039	36456	169578	27.3%	21.5%
RTH	Oxford Radcliffe Hospital NHS Trust	9278	14348	26218	36663	66280	152788	6.1%	43.4%
RGM	Papworth Hospital NHS Foundation Trust	.	26	9	25	0	60	.	0.0%
RW6	Pennine Acute Hospitals NHS Trust	88802	32682	23049	19382	10401	174316	50.9%	6.0%
RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	18004	12188	13929	18527	15847	78495	22.9%	20.2%
RK9	Plymouth Hospitals NHS Trust	16869	22361	23327	22143	9054	93753	18.0%	9.7%
RD3	Poole Hospital NHS Foundation Trust	7818	19911	24083	21328	23941	97080	8.1%	24.7%
RHU	Portsmouth Hospitals NHS Trust	23318	22744	22627	27470	28665	124823	18.7%	23.0%
RQW	Princess Alexandra Hospital NHS Trust	2053	16719	10267	13604	20024	62667	3.3%	32.0%
RCX	Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	6726	15266	15078	5765	3199	46035	14.6%	6.9%
RPC	Queen Victoria Hospital NHS Foundation Trust	2846	4759	6532	8203	9878	32219	8.8%	30.7%
RL1	Robert Jones and Agnes Hunt Orthopaedic NHS Trust	.	.	68	0	0	68	.	0.0%
RHW	Royal Berkshire Hospital NHS Foundation Trust	5565	12862	13701	18695	50746	101569	5.5%	50.0%
RMC	Royal Bolton Hospital NHS Foundation Trust	37825	16742	11573	9984	7953	84077	45.0%	9.5%
RDZ	Royal Bournemouth and Christchurch Trust	552	1221	1091	1222	1577	5662	9.7%	27.9%
RT3	Royal Brompton and Harefield NHS Foundation Trust	627	863	727	783	825	3825	16.4%	21.6%
REF	Royal Cornwall Hospitals NHS Trust	11834	35049	31587	10025	3147	91643	12.9%	3.4%

RH8	Royal Devon and Exeter NHS Foundation Trust	5002	14847	25290	21990	8391	75519	6.6%	11.1%
RAL	Royal Free Hampstead NHS Trust	7307	12331	11797	13302	3487	48224	15.2%	7.2%
RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	7758	1640	1285	1043	651	12377	62.7%	5.3%
RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	165	20	46	61	.	293	56.5%	#VALUE!
RA2	Royal Surrey County NHS Foundation Trust	130	3177	7736	16241	41419	68703	0.2%	60.3%
RD1	Royal United Hospital Bath NHS Trust	3564	10934	20295	24708	33703	93205	3.8%	36.2%
RL4	Royal Wolverhampton Hospital NHS Trust	38204	14598	10037	9724	6583	79145	48.3%	8.3%
RM3	Salford Royal NHS Foundation Trust	14387	8964	5303	3709	2317	34678	41.5%	6.7%
RNZ	Salisbury NHS Foundation Trust	1844	2912	12705	15200	14957	47618	3.9%	31.4%
RXK	Sandwell and West Birmingham Hospitals NHS Trust	63925	19339	10871	2795	1467	98396	65.0%	1.5%
RCU	Sheffield Children's NHS Foundation Trust	47093	18165	18857	16951	16482	117548	40.1%	14.0%
RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	7293	3134	2764	2585	3630	19406	37.6%	18.7%
RK5	Sherwood Forest Hospitals NHS Foundation Trust	22234	19767	13387	10059	4664	70109	31.7%	6.7%
RXW	Shrewsbury and Telford Hospital NHS Trust	13908	23151	27882	21270	14428	100641	13.8%	14.3%
RA9	South Devon Health Care NHS Trust	6256	14054	17329	10014	3256	50908	12.3%	6.4%
RYQ	South London Healthcare NHS Trust	15076	12342	5257	3938	3217	39830	37.8%	8.1%
RTR	South Tees Hospitals NHS Foundation Trust	35008	14193	11757	21000	16022	97981	35.7%	16.4%
RE9	South Tyneside NHS Foundation Trust	10715	5681	3984	1815	2105	24299	44.1%	8.7%
RJC	South Warwickshire NHS Foundation Trust	614	4058	7501	14302	20994	47468	1.3%	44.2%
RHM	Southampton University Hospitals NHS Trust	17134	19498	23922	23325	33332	117210	14.6%	28.4%
RAJ	Southend University Hospitals NHS Foundation Trust	10337	13071	12891	13934	18062	68295	15.1%	26.4%
RVY	Southport and Ormskirk Hospital NHS Trust	9752	9350	11853	12368	8518	51841	18.8%	16.4%
RJ7	St George's Healthcare NHS Trust	10665	35308	27079	18100	21974	113127	9.4%	19.4%
RBN	St Helens and Knowsley Hospitals NHS Trust	31345	11877	10356	6307	6100	65986	47.5%	9.2%
RWJ	Stockport NHS Foundation Trust	9769	12674	13387	13047	16979	65856	14.8%	25.8%
RTP	Surrey and Sussex Healthcare NHS Trust	1107	9346	21853	22473	38401	93180	1.2%	41.2%
RMP	Tameside Hospital NHS Foundation Trust	18817	12474	7684	5939	2963	47877	39.3%	6.2%
RBA	Taunton and Somerset NHS Foundation Trust	3979	15818	20692	15615	10424	66528	6.0%	15.7%
RNA	The Dudley Group Of Hospitals NHS Foundation Trust	26610	20047	10763	12208	11188	80817	32.9%	13.8%
RAS	The Hillingdon Hospital NHS Trust	7023	25504	15414	8142	5115	61198	11.5%	8.4%
RJ2	The Lewisham Healthcare NHS Trust	38471	37675	14761	7280	5094	103280	37.2%	4.9%
RBT	The Mid Cheshire Hospitals NHS Trust	9058	10142	9194	10396	19172	57962	15.6%	33.1%
RFR	The Rotherham NHS Foundation Trust	20623	13100	7143	7545	1935	50347	41.0%	3.8%
RPY	The Royal Marsden NHS Foundation Trust	0	107	53	42	147	348	0.0%	42.1%
RAN	The Royal National Orthopaedic Hospital NHS Trust	42	52	50	117	28	289	14.5%	9.7%
RET	The Walton Centre NHS Foundation Trust	83	36	50	56	31	255	32.7%	12.1%
RWD	United Lincolnshire Hospitals NHS Trust	18063	25037	28269	25315	19240	115924	15.6%	16.6%
RRV	University College London Hospitals NHS Foundation Trust	16229	15333	5927	3409	1882	42780	37.9%	4.4%
RRK	University Hospital Birmingham NHS Foundation Trust	5027	2439	2473	1089	1079	12108	41.5%	8.9%

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RJE	University Hospital Of North Staffordshire Hospital NHS Trust	39874	20414	19693	20464	10260	110705	36.0%	9.3%
RM2	University Hospital Of South Manchester NHS Foundation Trust	21407	9078	9600	13012	17798	70896	30.2%	25.1%
RKB	University Hospitals Coventry and Warwickshire NHS Trust	31965	29721	24664	22049	18122	126521	25.3%	14.3%
RA7	University Hospitals Of Bristol NHS Foundation Trust	26346	29029	24462	28807	36544	145188	18.1%	25.2%
RWE	University Hospitals Of Leicester NHS Trust	39869	40317	28191	33490	47997	189865	21.0%	25.3%
RTX	University Hospitals Of Morecambe Bay NHS Foundation Trust	13063	11495	15298	18906	9232	67995	19.2%	13.6%
RBK	Walsall Hospitals NHS Trust	29584	12247	5952	4564	4104	56452	52.4%	7.3%
RWW	Warrington and Halton Hospitals NHS Foundation Trust	18402	9610	6976	12122	14661	61770	29.8%	23.7%
RWG	West Hertfordshire Hospitals NHS Trust	909	13213	22267	19887	41210	97486	0.9%	42.3%
RFW	West Middlesex University NHS Trust	5688	22475	16883	13284	9100	67430	8.4%	13.5%
RGR	West Suffolk Hospital NHS Trust	1041	8425	12183	24686	10844	57180	1.8%	19.0%
RYR	Western Sussex Hospitals NHS Trust	6118	15486	30143	22225	17797	91769	6.7%	19.4%
RA3	Weston Area Health NHS Trust	2191	1714	2146	4229	2258	12538	17.5%	18.0%
RKE	Whittington Hospital NHS Trust	19614	18465	8121	4161	950	51311	38.2%	1.9%
RBL	Wirral University Teaching Hospital NHS Foundation Trust	25451	12912	10107	10590	13683	72743	35.0%	18.8%
RWP	Worcestershire Acute Hospitals NHS Trust	15580	17043	26647	31527	26507	117303	13.3%	22.6%
RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	18005	11544	7010	8788	6943	52291	34.4%	13.3%
RA4	Yeovil District Hospital NHS Foundation Trust	1302	4053	11256	15046	5942	37598	3.5%	15.8%
RCB	York Hospitals NHS Trust	12363	15726	20085	25537	29526	103237	12.0%	28.6%

Appendix

Table A3

Paediatric hospital catchment populations by Trust, age group,
English Hospital Episode Statistics, 2013/14

Trustcode	Trust name	Region	Catchment population by age group					Total	% 0-3s
			0-3	4-7	8-11	12-15	16-18		
REM	Aintree University Hospitals NHS Foundation Trust	North East Yorkshire and The Humber	1818	1744	1644	1883	1541	8631	21.1%
RCF	Airedale NHS Foundation Trust	North West	9281	9223	8924	9434	7106	43968	21.1%
RBS	Alder Hey Childrens NHS Foundation Trust	North West	30231	27712	25622	28417	23244	135226	22.4%
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	North East	16376	14965	13101	13060	10213	67714	24.2%
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	North West	34684	33081	28805	29641	22922	149133	23.3%
RVL	Barnet and Chase Farm Hospitals NHS Trust	North West	26673	24951	21694	22451	17325	113094	23.6%
RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	North West	11289	10815	9764	10761	8536	51165	22.1%
R1H	Barts Health NHS Trust	London	69552	60372	51954	50043	38322	270243	25.7%
RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	South Central	16850	16379	14775	15694	12277	75975	22.2%
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	North West	21759	21503	19827	21349	16999	101435	21.5%
RC1	Bedford Hospital NHS Trust	South West	7063	6759	6401	6780	5281	32284	21.9%
RQ3	Birmingham Children's Hospital NHS Foundation Trust	South East	37027	34991	31558	32992	25507	162074	22.8%
RR1	Birmingham Heartlands and Solihull Trust	East of England	37763	37085	34660	36620	27490	173618	21.8%
RLU	Birmingham Women's NHS Foundation Trust	North East Yorkshire and The Humber	587	548	496	509	386	2526	23.3%
RXL	Blackpool Fylde and Wyre NHS Foundation Trust	North East Yorkshire and The Humber	12381	12441	11440	12976	10323	59561	20.8%
RAE	Bradford Teaching Hospitals NHS Foundation Trust	North West	25750	24585	22183	22373	16401	111292	23.1%
RXH	Brighton and Sussex University Hospitals NHS Trust	East Midlands	22502	21982	20756	21621	16885	103746	21.7%
RXQ	Buckinghamshire Healthcare NHS Trust	North West	20687	20445	19419	20336	15309	96197	21.5%
RJF	Burton Hospitals NHS Foundation Trust	Midlands	13021	12902	12449	13285	10375	62031	21.0%
RWY	Calderdale and Huddersfield NHS Foundation Trust	North West	21300	20517	18846	20073	15695	96430	22.1%
RGT	Cambridge University Hospitals NHS Foundation Trust	East of England	20880	19974	18545	19299	15897	94595	22.1%
RYV	Cambridgeshire Community Services NHS Trust	London	8235	7965	7611	8290	6375	38476	21.4%
RW3	Central Manchester University Hospitals NHS Foundation Trust	South East Coast	31203	28764	24888	25753	20719	131327	23.8%
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	West Midlands	24795	20579	16881	15348	11263	88865	27.9%
RFS	Chesterfield Royal Hospital NHS Foundation Trust	London	11240	11335	10693	12389	10133	55790	20.1%
RBV	Christie Hospital NHS Trust	North West	45	46	39	41	31	202	22.5%
RLN	City Hospitals Sunderland NHS Foundation Trust	London	13729	13180	12033	13529	11081	63551	21.6%
RDE	Colchester Hospital University NHS Foundation Trust	South Central	15906	15463	14685	16014	12567	74634	21.3%

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RJR	Countess Of Chester Hospital NHS Foundation Trust	West Midlands	8830	9025	8486	9374	7263	42978	20.5%
RXP	County Durham and Darlington NHS Foundation Trust	West Midlands	23118	22459	20601	22955	17986	107119	21.6%
RJ6	Croydon Health Services NHS Trust	South Central	19036	17326	14621	15127	11979	78090	24.4%
RN7	Dartford and Gravesham NHS Trust	North West	17567	16621	15111	16282	12942	78523	22.4%
RTG	Derby Hospitals NHS Foundation Trust	North East	22804	22075	20463	22140	17286	104768	21.8%
RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	East Midlands	21433	20734	18777	20817	16720	98480	21.8%
RBD	Dorset County Hospital NHS Foundation Trust	South West	7730	7900	7822	9036	6981	39469	19.6%
RC3	Ealing Hospital NHS Trust	East of England	13404	11827	9917	9982	7690	52820	25.4%
RWH	East and North Hertfordshire NHS Trust	East Midlands	24087	22624	20756	21912	17405	106784	22.6%
RJN	East Cheshire NHS Trust	West Midlands	7386	7518	7181	8057	5886	36029	20.5%
RVV	East Kent Hospitals University NHS Foundation Trust	South West	28405	28069	27047	30898	23963	138382	20.5%
RXR	East Lancashire Hospitals NHS Trust	North West	26277	25355	23365	24195	19048	118240	22.2%
RXC	East Sussex Hospitals NHS Trust	North West	15344	14850	14236	16419	12978	73828	20.8%
RVR	Epsom and St Helier University Hospitals NHS Trust	London	18036	17199	15795	17055	13076	81162	22.2%
RDU	Frimley Park Hospital NHS Trust	East of England	19009	18998	17419	18685	14485	88597	21.5%
RR7	Gateshead Health NHS Foundation Trust	East of England	8547	7992	7290	7895	6517	38241	22.4%
RLT	George Eliot Hospital NHS Trust	West Midlands	4483	4249	3997	4351	3490	20570	21.8%
RTE	Gloucestershire Hospitals NHS Foundation Trust	London	25140	24496	23744	26056	21022	120459	20.9%
RP4	Great Ormond Street Hospital NHS Trust	East Midlands	1819	1658	1425	1443	1111	7456	24.4%
RN3	Great Western Hospitals NHS Foundation Trust	North West	16945	16583	15601	16993	13226	79347	21.4%
RJ1	Guy's and St Thomas' NHS Foundation Trust	Yorkshire and The Humber	18653	15903	13342	13289	10384	71571	26.1%
RCD	Harrogate and District NHS Foundation Trust	Yorkshire and The Humber	7954	8302	8076	8630	7183	40145	19.8%
RD7	Heatherwood and Wexham Park Hosps NHS Foundation Trust	South West	23647	22231	19614	20153	15184	100829	23.5%
RLQ	Hereford Hospitals NHS Trust	West Midlands	7844	7663	7492	8498	6650	38147	20.6%
RQQ	Hinchingbrooke Healthcare NHS Trust	North West	1413	1397	1349	1492	1160	6811	20.7%
RQX	Homerton University Hospital NHS Foundation Trust	London	13796	11963	10167	9635	7017	52578	26.2%
RWA	Hull and East Yorkshire Hospitals NHS Trust	North West	23323	22196	20393	22278	18495	106685	21.9%
RYJ	Imperial College Healthcare NHS Trust	South Central	19767	16580	14287	13669	10208	74510	26.5%
RGQ	Ipswich Hospital NHS Trust	East of England	14563	14705	13911	15774	12282	71234	20.4%
R1F	Isle of wight NHS Trust	South Central	5868	6025	5909	6954	5536	30292	19.4%
RGP	James Paget University Hospitals NHS Foundation Trust	London	9501	9074	8733	9664	8008	44979	21.1%
RNQ	Kettering General Hospital NHS Foundation Trust	South East Coast	15249	14782	13456	14226	11094	68806	22.2%
RJZ	King's College Hospital NHS Foundation Trust	Yorkshire and The Humber	36878	32843	28353	28515	21510	148099	24.9%
RAX	Kingston Hospital NHS Trust	London	17675	15747	13362	13077	9721	69583	25.4%
RXN	Lancashire Teaching Hospitals NHS Trust	South East Coast	19428	18873	17358	18576	14600	88836	21.9%

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3	RR8	Leeds Teaching Hospitals NHS Trust	London	36478	32264	28161	29234	24461	150597	24.2%
4		Liverpool Heart and Chest NHS								
5	RBQ	Foundation Trust	North West	11	9	9	11	8	47	22.8%
6	REP	Liverpool Womens Hospital NHS Trust	South West	801	730	673	757	600	3561	22.5%
7	R1K	London North West Healthcare NHS	London	123	107	93	92	72	486	25.4%
8		Trust								
9	RC9	Luton and Dunstable Hospital NHS	London	22229	21177	18857	18930	14694	95886	23.2%
10		Foundation Trust	London							
11	RWF	Maidstone and Tunbridge Wells NHS	Yorkshire							
12		Trust	and The							
13	RPA	Medway NHS Trust	Humber	20979	21734	20928	22499	17316	103455	20.3%
14	RQ8	Mid Essex Hospital Services NHS Trust	London	20258	19145	18099	19678	15517	92696	21.9%
15	RJD	Mid Staffordshire NHS Foundation Trust	London	21569	21406	20268	21536	16631	101410	21.3%
16			Yorkshire							
17	RXF	Mid Yorkshire Hospitals NHS Trust	and The							
18		Milton Keynes Hospital NHS Foundation	Humber							
19	RD8	Trust	South West	18353	17473	15472	15976	12108	79382	23.1%
20	RP6	Moorfields Eye Hospital NHS Foundation	South West	240	200	172	169	135	916	26.2%
21		Trust	West							
22	RTD	Newcastle Upon Tyne Hospitals NHS	Midlands	26463	25348	23593	25451	20803	121658	21.8%
23		Foundation Trust	West							
24	RM1	Norfolk and Norwich University	Midlands	24191	23315	21946	24782	19927	114161	21.2%
25		Hospitals NHS Foundation Trust								
26	RVJ	North Bristol NHS Trust	North East	10772	10160	9320	10168	8073	48493	22.2%
27	RNL	North Cumbria University Hospitals NHS	South							
28		Trust	Central							
29	RJL	North Lincolnshire and Goole Hosps NHS	West	13759	13640	13119	14489	11626	66633	20.6%
30		Foundation Trust	Midlands							
31	RAP	North Middlesex University Hospital NHS	London	19088	18665	16976	18374	14798	87901	21.7%
32		Trust								
33	RVW	North Tees and Hartlepool NHS	London	17728	16530	14485	14713	11114	74570	23.8%
34		Foundation Trust	South East							
35	RV8	North West London Hospitals NHS Trust	Coast	13438	13002	11697	12891	10540	61569	21.8%
36		Northampton General Hospital NHS	West							
37	RNS	Trust	Midlands	28440	25812	23032	24078	18904	120266	23.6%
38	RBZ	Northern Devon Healthcare NHS Trust	North West	18338	17443	15690	16008	12517	79996	22.9%
39		Northumbria Healthcare NHS								
40	RTF	Foundation Trust	London	7353	7094	6883	7687	6131	35147	20.9%
41		Nottingham University Hospitals NHS	West							
42	RX1	Trust	Midlands	14215	14128	13235	14280	11293	67151	21.2%
43	RTH	Oxford Radcliffe Hospital NHS Trust	South West	38032	36177	32352	34749	28267	169578	22.4%
44			Yorkshire							
45	RGM	Papworth Hospital NHS Foundation	and The							
46		Trust	Humber	16	13	12	12	8	60	26.0%
47	RW6	Pennine Acute Hospitals NHS Trust	North East	40044	38040	33963	35296	26974	174316	23.0%
48		Peterborough and Stamford Hospitals	East							
49	RGN	NHS Foundation Trust	Midlands	17474	16140	15033	16632	13216	78495	22.3%
50	RK9	Plymouth Hospitals NHS Trust	North West	20142	19268	17833	20227	16284	93753	21.5%
51	RD3	Poole Hospital NHS Foundation Trust	East of							
52			England							
53	RHU	Portsmouth Hospitals NHS Trust	South West	21138	20146	18714	20732	16350	97080	21.8%
54			East of							
55	RQW	Princess Alexandra Hospital NHS Trust	England	26999	26037	24156	26522	21110	124823	21.6%
56			Yorkshire							
57	RCX	Queen Elizabeth Hospital Kings Lynn	and The							
58		NHS Foundation Trust	Humber	9956	9404	8915	9806	7954	46035	21.6%
59			Yorkshire							
60	RPC	Queen Victoria Hospital NHS Foundation	and The							
		Trust	Humber	6726	6806	6428	6905	5354	32219	20.9%
	RL1	Robert Jones and Agnes Hunt	South West	13	15	14	17	10	68	19.2%
		Orthopaedic NHS Trust								

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RHW	Royal Berkshire Hospital NHS Foundation Trust	South Central	23542	22147	19591	20554	15735	101569	23.2%
RMC	Royal Bolton Hospital NHS Foundation Trust	East of England	19020	17844	16126	17514	13573	84077	22.6%
RDZ	Royal Bournemouth and Christchurch Trust	East of England	1184	1124	1104	1208	1042	5662	20.9%
RT3	Royal Brompton and Harefield NHS Foundation Trust	West Midlands	947	861	732	730	554	3825	24.8%
REF	Royal Cornwall Hospitals NHS Trust	South West	19261	18490	17834	20317	15741	91643	21.0%
RH8	Royal Devon and Exeter NHS Foundation Trust	East of England	15899	15614	14645	16187	13175	75519	21.1%
RAL	Royal Free Hampstead NHS Trust	London	12566	10985	9392	8837	6444	48224	26.1%
RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	South East Coast	2739	2435	2229	2558	2415	12377	22.1%
RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	North East	66	63	58	60	46	293	22.5%
RA2	Royal Surrey County NHS Foundation Trust	South East Coast	14365	14654	13725	14410	11549	68703	20.9%
RD1	Royal United Hospital Bath NHS Trust	Yorkshire and The Humber	19311	19120	18258	20436	16080	93205	20.7%
RL4	Royal Wolverhampton Hospital NHS Trust	West Midlands	17885	16607	14912	16480	13260	79145	22.6%
RM3	Salford Royal NHS Foundation Trust	West Midlands	8415	7550	6324	6878	5512	34678	24.3%
RNZ	Salisbury NHS Foundation Trust	North West	10069	9941	9456	10268	7884	47618	21.1%
RXK	Sandwell and West Birmingham Hospitals NHS Trust	South East Coast	22881	21606	19303	19471	15136	98396	23.3%
RCU	Sheffield Children's NHS Foundation Trust	Yorkshire and The Humber	26393	25357	22926	23981	18891	117548	22.5%
RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	East of England	4173	4072	3698	3959	3504	19406	21.5%
RK5	Sherwood Forest Hospitals NHS Foundation Trust	North West	15327	14463	13411	14988	11922	70109	21.9%
RXW	Shrewsbury and Telford Hospital NHS Trust	North East	20758	20636	19583	22029	17634	100640	20.6%
RA9	South Devon Health Care NHS Trust	South West	10266	10292	9849	11414	9087	50908	20.2%
RYQ	South London Healthcare NHS Trust	North West	9733	8978	7495	7661	5963	39830	24.4%
RTR	South Tees Hospitals NHS Foundation Trust	South Central	21107	20352	18832	20614	17076	97981	21.5%
RE9	South Tyneside NHS Foundation Trust	Central South East Coast	5167	4960	4605	5200	4367	24299	21.3%
RJC	South Warwickshire NHS Foundation Trust	London	9876	9961	9580	10252	7799	47468	20.8%
RHM	Southampton University Hospitals NHS Trust	East of England	26822	24691	22306	24038	19353	117210	22.9%
RAJ	Southend University Hospitals NHS Foundation Trust	East of England	14453	14083	13221	14890	11647	68295	21.2%
RVY	Southport and Ormskirk Hospital NHS Trust	London	10260	10611	10266	11640	9066	51841	19.8%
RJ7	St George's Healthcare NHS Trust	London	31284	25426	20910	20320	15187	113127	27.7%
RBN	St Helens and Knowsley Hospitals NHS Trust	North West	14440	13666	12525	14139	11216	65986	21.9%
RWJ	Stockport NHS Foundation Trust	South East Coast	14134	14058	12724	14042	10899	65856	21.5%
RTP	Surrey and Sussex Healthcare NHS Trust	East Midlands	20733	19727	18279	19669	14772	93180	22.3%
RMP	Tameside Hospital NHS Foundation Trust	North West	11004	10191	9117	9808	7758	47877	23.0%
RBA	Taunton and Somerset NHS Foundation Trust	South West	13532	13249	12818	14902	12026	66528	20.3%
RNA	The Dudley Group Of Hospitals NHS Foundation Trust	South West	17348	17061	15890	16886	13631	80817	21.5%
RAS	The Hillingdon Hospital NHS Trust	London	14886	13457	11438	12017	9399	61198	24.3%
RJ2	The Lewisham Healthcare NHS Trust	South Central	26515	23543	19021	19211	14991	103280	25.7%

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RBT	The Mid Cheshire Hospitals NHS Trust	North West	12002	12187	11324	12439	10011	57962	20.7%
RFR	The Rotherham NHS Foundation Trust	North West	10858	10519	9827	10678	8464	50347	21.6%
RPY	The Royal Marsden NHS Foundation Trust	London	82	81	70	67	49	348	23.4%
RAN	The Royal National Orthopaedic Hospital NHS Trust	London	72	61	56	58	43	289	24.7%
RET	The Walton Centre NHS Foundation Trust	North West	51	53	51	58	43	255	19.9%
RWD	United Lincolnshire Hospitals NHS Trust	North West	24615	23171	22206	25501	20431	115924	21.2%
RRV	University College London Hospitals NHS Foundation Trust	North West Yorkshire and The Humber	10842	9383	8334	7939	6283	42780	25.3%
RRK	University Hospital Birmingham NHS Foundation Trust	Humber	2588	2481	2271	2526	2242	12108	21.4%
RJE	University Hospital Of North Staffordshire Hospital NHS Trust	London	24197	23673	21218	23229	18389	110705	21.9%
RM2	University Hospital Of South Manchester NHS Foundation Trust	West Midlands	16366	15706	13856	14309	10658	70896	23.1%
RKB	University Hospitals Coventry and Warwickshire NHS Trust	London	29209	26892	24075	25340	21005	126521	23.1%
RA7	University Hospitals Of Bristol NHS Foundation Trust	South West	34426	31174	27560	29230	22798	145188	23.7%
RWE	University Hospitals Of Leicester NHS Trust	North West	41652	40105	36915	39238	31954	189865	21.9%
RTX	University Hospitals Of Morecambe Bay NHS Foundation Trust	South East Coast	13424	13509	13122	15302	12638	67995	19.7%
RBK	Walsall Hospitals NHS Trust	South West	12567	12034	11231	11654	8966	56452	22.3%
RWW	Warrington and Halton Hospitals NHS Foundation Trust	East of England	13354	13099	12099	13081	10137	61770	21.6%
RWG	West Hertfordshire Hospitals NHS Trust	East of England	22776	20977	19053	19683	14997	97486	23.4%
RFW	West Middlesex University NHS Trust	Midlands Yorkshire and The Humber	18219	15328	12170	12232	9481	67430	27.0%
RGR	West Suffolk Hospital NHS Trust	East of England	12376	12108	11246	12210	9241	57180	21.6%
RYR	Western Sussex Hospitals NHS Trust	West Midlands	19777	19254	18054	19539	15145	91769	21.6%
RA3	Weston Area Health NHS Trust	South West East	2682	2527	2462	2734	2132	12538	21.4%
RKE	Whittington Hospital NHS Trust	Midlands	13329	11370	10013	9702	6897	51311	26.0%
RBL	Wirral University Teaching Hospital NHS Foundation Trust	West Midlands	15335	15076	14312	15661	12359	72743	21.1%
RWP	Worcestershire Acute Hospitals NHS Trust	East of England	24382	24310	22996	25499	20116	117303	20.8%
RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	West Midlands	11380	11210	10239	10748	8714	52291	21.8%
RA4	Yeovil District Hospital NHS Foundation Trust	South West	7418	7357	7148	8704	6971	37598	19.7%
RCB	York Hospitals NHS Trust	East of England	21400	21300	19843	22308	18387	103238	20.7%

Appendix Table A4

Admission rates by Trust for primary diagnosis epilepsy, any diagnosis epilepsy, all-cause admissions, per 100,000, 2014/15, England

Trust code	Trust name	2014/15 Hospital Catchment Population	Number of admissions			Admission rate per 100,000		
			Primary diagnosis epilepsy	Any epilepsy diagnosis	All-cause	Primary diagnosis epilepsy	Any epilepsy diagnosis	All-cause
REM	Aintree University Hospitals NHS Foundation Trust	10848	3	8	677	27.7	73.7	6240.5
RCF	Airedale NHS Foundation Trust	43450	31	143	3976	71.3	329.1	9150.7
RBS	Alder Hey Childrens NHS Foundation Trust	134281	61	253	10429	45.4	188.4	7766.6
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	67049	45	72	3423	67.1	107.4	5105.2
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	145366	68	136	6777	46.8	93.6	4662.0
RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	52966	52	104	4690	98.2	196.4	8854.7
R1H	Barts Health NHS Trust	268558	186	401	15818	69.3	149.3	5890.0
RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	77489	56	91	3243	72.3	117.4	4185.1
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	99421	97	179	6280	97.6	180.0	6316.6
RC1	Bedford Hospital NHS Trust	48718	35	82	2796	71.8	168.3	5739.2
RQ3	Birmingham Children's Hospital NHS Foundation Trust	159686	207	519	13716	129.6	325.0	8589.4
RR1	Birmingham Heartlands and Solihull Trust	180098	127	253	13882	70.5	140.5	7708.0
RLU	Birmingham Women's NHS Foundation Trust	2897	0	0	135	0.0	0.0	4659.7
RXL	Blackpool Fylde and Wyre NHS Foundation Trust	60397	63	156	6562	104.3	258.3	10864.7
RAE	Bradford Teaching Hospitals NHS Foundation Trust	111030	82	247	7315	73.9	222.5	6588.3
RXH	Brighton and Sussex University Hospitals NHS Trust	105282	39	122	6239	37.0	115.9	5926.0
RXQ	Buckinghamshire Healthcare NHS Trust	99550	53	137	7598	53.2	137.6	7632.4
RJF	Burton Hospitals NHS Foundation Trust	61559	88	157	4629	143.0	255.0	7519.6
RWY	Calderdale and Huddersfield NHS Foundation Trust	95715	85	178	7533	88.8	186.0	7870.2
RGT	Cambridge University Hospitals NHS Foundation Trust	94647	58	187	4788	61.3	197.6	5058.8
RYV	Cambridgeshire Community Services NHS Trust	38372	24	71	3526	62.5	185.0	9188.9
RW3	Central Manchester University Hospitals NHS Foundation Trust	134340	115	344	13703	85.6	256.1	10200.2
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	86439	30	57	4264	34.7	65.9	4932.9
RFS	Chesterfield Royal Hospital NHS Foundation Trust	56603	52	106	4469	91.9	187.3	7895.4
RBV	Christie Hospital NHS Trust	231	0	0	61	0.0	0.0	26449.3
RLN	City Hospitals Sunderland NHS Foundation Trust	63650	49	122	5326	77.0	191.7	8367.6
REN	Clatterbridge Centre For Oncology NHS Foundation Trust	45	0	0	7	0.0	0.0	15534.8
RDE	Colchester Hospital University NHS Foundation Trust	75048	71	202	6953	94.6	269.2	9264.7
RJR	Countess Of Chester Hospital NHS Foundation Trust	43204	25	68	3956	57.9	157.4	9156.6
RXP	County Durham and Darlington NHS Foundation Trust	108941	100	241	11180	91.8	221.2	10262.4
RJ6	Croydon Health Services NHS Trust	77160	41	57	4146	53.1	73.9	5373.3
RN7	Dartford and Gravesham NHS Trust	77768	54	116	6132	69.4	149.2	7885.0
RTG	Derby Hospitals NHS Foundation Trust	101709	55	117	4166	54.1	115.0	4096.0
RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	100244	73	143	9408	72.8	142.7	9385.1
RBD	Dorset County Hospital NHS Foundation Trust	38763	22	56	2440	56.8	144.5	6294.7
RWH	East and North Hertfordshire NHS Trust	105074	93	155	7140	88.5	147.5	6795.2

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RJN	East Cheshire NHS Trust	35913	44	102	3176	122.5	284.0	8843.7
RVV	East Kent Hospitals University NHS Foundation Trust	141973	106	236	10817	74.7	166.2	7619.1
RXR	East Lancashire Hospitals NHS Trust	117300	87	326	13702	74.2	277.9	11681.2
RXC	East Sussex Hospitals NHS Trust	73412	83	134	5951	113.1	182.5	8106.3
RVR	Epsom and St Helier University Hospitals NHS Trust	85745	54	153	4532	63.0	178.4	5285.4
RDU	Frimley Park Hospital NHS Trust	190069	144	301	13022	75.8	158.4	6851.2
RR7	Gateshead Health NHS Foundation Trust	36789	16	30	3086	43.5	81.5	8388.4
RLT	George Eliot Hospital NHS Trust	19381	1	4	1108	5.2	20.6	5717.0
RTE	Gloucestershire Hospitals NHS Foundation Trust	119516	67	197	8192	56.1	164.8	6854.3
RP4	Great Ormond Street Hospital NHS Trust	6236	16	32	612	256.6	513.1	9813.4
RN3	Great Western Hospitals NHS Foundation Trust	82167	41	116	5800	49.9	141.2	7058.8
RJ1	Guy's and St Thomas' NHS Foundation Trust	64902	71	142	4269	109.4	218.8	6577.6
RCD	Harrogate and District NHS Foundation Trust	40560	12	39	3148	29.6	96.2	7761.3
RLQ	Hereford Hospitals NHS Trust	39130	42	78	3204	107.3	199.3	8188.1
RQQ	Hinchingbrooke Healthcare NHS Trust	6738	4	6	454	59.4	89.0	6738.0
RQX	Homerton University Hospital NHS Foundation Trust	49332	42	68	2576	85.1	137.8	5221.7
RWA	Hull and East Yorkshire Hospitals NHS Trust	106281	112	230	6395	105.4	216.4	6017.1
RYJ	Imperial College Healthcare NHS Trust	75876	54	111	3572	71.2	146.3	4707.7
RGQ	Ipswich Hospital NHS Trust	71379	43	126	4687	60.2	176.5	6566.3
R1F	Isle of wight NHS Trust	28924	29	53	2323	100.3	183.2	8031.5
RGP	James Paget University Hospitals NHS Foundation Trust	43863	29	51	2653	66.1	116.3	6048.3
RNQ	Kettering General Hospital NHS Foundation Trust	67436	72	132	5226	106.8	195.7	7749.6
RJZ	King's College Hospital NHS Foundation Trust	150224	125	199	7881	83.2	132.5	5246.2
RAX	Kingston Hospital NHS Trust	70421	26	69	3755	36.9	98.0	5332.2
RXN	Lancashire Teaching Hospitals NHS Trust	87841	56	151	8954	63.8	171.9	10193.4
RR8	Leeds Teaching Hospitals NHS Trust	151367	91	251	9325	60.1	165.8	6160.5
RBQ	Liverpool Heart and Chest NHS Foundation Trust	64	0	0	19	0.0	0.0	29608.9
REP	Liverpool Womens Hospital NHS Trust	2475	0	0	160	0.0	0.0	6464.3
R1K	London North West Healthcare NHS Trust	166660	93	208	8497	55.8	124.8	5098.4
RC9	Luton and Dunstable Hospital NHS Foundation Trust	96289	79	188	8583	82.0	195.2	8913.8
RWF	Maidstone and Tunbridge Wells NHS Trust	104481	64	98	4740	61.3	93.8	4536.7
RPA	Medway NHS Trust	92044	115	245	8111	124.9	266.2	8812.1
RQ8	Mid Essex Hospital Services NHS Trust	100503	37	87	5353	36.8	86.6	5326.2
RJD	Mid Staffordshire NHS Foundation Trust	26235	12	26	2575	45.7	99.1	9815.2
RXF	Mid Yorkshire Hospitals NHS Trust	133869	94	208	9932	70.2	155.4	7419.2
RD8	Milton Keynes Hospital NHS Foundation Trust	68737	99	226	6477	144.0	328.8	9422.8
RP6	Moorfields Eye Hospital NHS Foundation Trust	843	0	0	44	0.0	0.0	5217.1
RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	124257	189	472	14198	152.1	379.9	11426.3
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	118394	99	253	8667	83.6	213.7	7320.5
RVJ	North Bristol NHS Trust	19435	6	17	975	30.9	87.5	5016.8
RNL	North Cumbria University Hospitals NHS Trust	66748	61	116	5837	91.4	173.8	8744.8
RJL	North Lincolnshire and Goole Hosps NHS Foundation Trust	87428	100	202	5471	114.4	231.0	6257.7
RAP	North Middlesex University Hospital NHS Trust	96137	75	140	7613	78.0	145.6	7918.9
RVW	North Tees and Hartlepool NHS Foundation Trust	61068	49	133	5039	80.2	217.8	8251.5
RNS	Northampton General Hospital NHS Trust	80178	80	210	7464	99.8	261.9	9309.2
RBZ	Northern Devon Healthcare NHS Trust	34821	14	55	2528	40.2	158.0	7260.0
RTF	Northumbria Healthcare NHS Foundation Trust	65421	54	108	5489	82.5	165.1	8390.3
RX1	Nottingham University Hospitals NHS Trust	172520	126	275	8811	73.0	159.4	5107.2
RTH	Oxford Radcliffe Hospital NHS Trust	153875	90	240	10252	58.5	156.0	6662.5

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3	RGM	Papworth Hospital NHS Foundation Trust	69	0	1	15	0.0	1444.5	21666.9
4	RW6	Pennine Acute Hospitals NHS Trust	172774	139	339	17532	80.5	196.2	10147.4
5		Peterborough and Stamford Hospitals NHS Foundation							
6	RGN	Trust	79335	64	179	6925	80.7	225.6	8728.8
7	RK9	Plymouth Hospitals NHS Trust	93846	78	164	7139	83.1	174.8	7607.1
8	RD3	Poole Hospital NHS Foundation Trust	97422	67	250	7897	68.8	256.6	8106.0
9	RHU	Portsmouth Hospitals NHS Trust	118416	99	198	7045	83.6	167.2	5949.4
10	RQW	Princess Alexandra Hospital NHS Trust	61910	28	53	2748	45.2	85.6	4438.7
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13	RCX	Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	44609	43	112	6	96.4	251.1	.2
14	RPC	Queen Victoria Hospital NHS Foundation Trust	28764	0	7	1223	0.0	24.3	4251.8
15	RL1	Robert Jones and Agnes Hunt Orthopaedic NHS Trust	93	0	0	4	0.0	0.0	4316.4
16	RHW	Royal Berkshire Hospital NHS Foundation Trust	100771	92	166	5495	91.3	164.7	5453.0
17	RMC	Royal Bolton Hospital NHS Foundation Trust	84314	59	151	7436	70.0	179.1	8819.4
18	RDZ	Royal Bournemouth and Christchurch Trust	6007	3	6	423	49.9	99.9	7041.3
19	RT3	Royal Brompton and Harefield NHS Foundation Trust	3899	0	6	317	0.0	153.9	8131.0
20	REF	Royal Cornwall Hospitals NHS Trust	91698	79	168	6931	86.2	183.2	7558.5
21	RH8	Royal Devon and Exeter NHS Foundation Trust	78322	68	149	6081	86.8	190.2	7764.1
22	RAL	Royal Free Hampstead NHS Trust	155113	97	211	8688	62.5	136.0	5601.1
23	RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	12110	3	9	711	24.8	74.3	5871.3
24	RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	405	0	1	25	0.0	246.8	6170.2
25	RA2	Royal Surrey County NHS Foundation Trust	67670	37	72	3653	54.7	106.4	5398.3
26	RD1	Royal United Hospital Bath NHS Trust	92029	63	178	6010	68.5	193.4	6530.5
27	RL4	Royal Wolverhampton Hospital NHS Trust	79276	125	242	8040	157.7	305.3	10141.8
28	RM3	Salford Royal NHS Foundation Trust	34985	32	50	2939	91.5	142.9	8400.8
29	RNZ	Salisbury NHS Foundation Trust	47659	17	52	2341	35.7	109.1	4912.0
30	RXK	Sandwell and West Birmingham Hospitals NHS Trust	100183	72	161	8815	71.9	160.7	8798.9
31	RCU	Sheffield Children's NHS Foundation Trust	102197	73	208	7095	71.4	203.5	6942.5
32	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	27899	4	8	1326	14.3	28.7	4752.9
33	RK5	Sherwood Forest Hospitals NHS Foundation Trust	70777	26	98	4878	36.7	138.5	6892.1
34	RXW	Shrewsbury and Telford Hospital NHS Trust	102368	68	166	7760	66.4	162.2	7580.5
35	RA9	South Devon Health Care NHS Trust	50569	38	92	2755	75.1	181.9	5448.0
36	RTR	South Tees Hospitals NHS Foundation Trust	98197	110	292	9914	112.0	297.4	10096.1
37	RE9	South Tyneside NHS Foundation Trust	23625	12	21	1595	50.8	88.9	6751.4
38	RJC	South Warwickshire NHS Foundation Trust	46629	39	81	3481	83.6	173.7	7465.3
39	RHM	Southampton University Hospitals NHS Trust	120636	116	230	10139	96.2	190.7	8404.6
40	RAJ	Southend University Hospitals NHS Foundation Trust	66039	25	77	2835	37.9	116.6	4292.9
41	RVY	Southport and Ormskirk Hospital NHS Trust	53484	37	71	4329	69.2	132.7	8094.0
42	RJ7	St George's Healthcare NHS Trust	118041	74	150	7046	62.7	127.1	5969.1
43	RBN	St Helens and Knowsley Hospitals NHS Trust	67966	28	86	6654	41.2	126.5	9790.2
44	RWJ	Stockport NHS Foundation Trust	63583	59	111	5540	92.8	174.6	8713.0
45	RTP	Surrey and Sussex Healthcare NHS Trust	83612	36	91	3986	43.1	108.8	4767.3
46	RMP	Tameside Hospital NHS Foundation Trust	48707	44	97	4406	90.3	199.1	9045.9
47	RBA	Taunton and Somerset NHS Foundation Trust	66116	54	134	4714	81.7	202.7	7129.9
48	RNA	The Dudley Group Of Hospitals NHS Foundation Trust	81498	46	117	6976	56.4	143.6	8559.8
49	RAS	The Hillingdon Hospital NHS Trust	65195	50	106	4471	76.7	162.6	6857.8
50	RJ2	The Lewisham Healthcare NHS Trust	151669	100	207	11784	65.9	136.5	7769.5
51	RBT	The Mid Cheshire Hospitals NHS Trust	56699	56	147	4507	98.8	259.3	7949.0
52	RFR	The Rotherham NHS Foundation Trust	52577	29	81	3858	55.2	154.1	7337.8
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RPY	The Royal Marsden NHS Foundation Trust	104	0	1	108	0.0	963.5	104056.3
RAN	The Royal National Orthopaedic Hospital NHS Trust	409	0	2	47	0.0	489.4	11500.7
RET	The Walton Centre NHS Foundation Trust	281	1	3	34	355.7	1067.1	12094.0
RWD	United Lincolnshire Hospitals NHS Trust	112401	60	205	7860	53.4	182.4	6992.8
RRV	University College London Hospitals NHS Foundation Trust	42106	12	23	1698	28.5	54.6	4032.6
RRK	University Hospital Birmingham NHS Foundation Trust	10979	11	29	764	100.2	264.2	6959.0
RJE	University Hospital Of North Staffordshire Hospital NHS Trust	127581	119	322	13212	93.3	252.4	10355.7
RM2	University Hospital Of South Manchester NHS Foundation Trust	71403	37	90	6131	51.8	126.0	8586.4
RKB	University Hospitals Coventry and Warwickshire NHS Trust	126537	119	231	8305	94.0	182.6	6563.3
RA7	University Hospitals Of Bristol NHS Foundation Trust	172827	116	256	9743	67.1	148.1	5637.4
RWE	University Hospitals Of Leicester NHS Trust	192382	120	277	9512	62.4	144.0	4944.3
RTX	University Hospitals Of Morecambe Bay NHS Foundation Trust	68522	64	169	6775	93.4	246.6	9887.3
RBK	Walsall Hospitals NHS Trust	55821	44	85	3039	78.8	152.3	5444.2
RW								
W	Warrington and Halton Hospitals NHS Foundation Trust	61421	50	81	5048	81.4	131.9	8218.6
RWG	West Hertfordshire Hospitals NHS Trust	95384	51	109	5362	53.5	114.3	5621.5
RFW	West Middlesex University NHS Trust	63584	33	106	3098	51.9	166.7	4872.3
RGR	West Suffolk Hospital NHS Trust	56939	47	99	4007	82.5	173.9	7037.4
RYR	Western Sussex Hospitals NHS Trust	94045	67	166	7452	71.2	176.5	7923.9
RA3	Weston Area Health NHS Trust	13040	9	16	845	69.0	122.7	6479.8
RKE	Whittington Hospital NHS Trust	50647	28	59	3382	55.3	116.5	6677.6
RBL	Wirral University Teaching Hospital NHS Foundation Trust	72140	49	173	5321	67.9	239.8	7375.9
RWP	Worcestershire Acute Hospitals NHS Trust	115581	70	167	7114	60.6	144.5	6155.0
RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	51486	49	108	3104	95.2	209.8	6028.8
RA4	Yeovil District Hospital NHS Foundation Trust	35923	19	49	2182	52.9	136.4	6074.1
RCB	York Hospitals NHS Trust	104298	107	187	7723	102.6	179.3	7404.7

Appendix Table A5

Proportion of all-cause paediatric care episodes with missing Lower Super Output Area (LSOA), English Hospital Episode Statistics, 2014/15

		Invalid	Valid	Total	Missing
Aintree University Hospitals NHS Foundation Trust	REM	7	708	715	1.0%
Airedale NHS Foundation Trust	RCF	8	4128	4136	0.2%
Alder Hey Childrens NHS Foundation Trust	RBS	548	10429	10977	5.0%
Ashford and St Peter's Hospitals NHS Foundation Trust	RTK	17	3425	3442	0.5%
Barking, Havering and Redbridge University Hospitals NHS Trust	RF4	63	7061	7124	0.9%
Barnsley Dist Gen Hosp NHS Foundation Trust	RFF	8	4690	4698	0.2%
Barts Health NHS Trust	R1H	198	16161	16359	1.2%
Basildon and Thurrock University Hospitals NHS Foundation Trust	RDD	22	3265	3287	0.7%
Basingstoke and North Hampshire Hospitals NHS Foundation Trust	RN5	50	6349	6399	0.8%
Bedford Hospital NHS Trust	RC1	16	2796	2812	0.6%
Birmingham Children's Hospital NHS Foundation Trust	RQ3	56	13864	13920	0.4%
Birmingham Heartlands and Solihull Trust	RR1	178	14008	14186	1.3%
Blackpool Fylde and Wyre NHS Foundation Trust	RXL	63	6562	6625	1.0%
Bradford Teaching Hospitals NHS Foundation Trust	RAE	11	7878	7889	0.1%
Brighton and Sussex University Hospitals NHS Trust	RXH	63	6378	6441	1.0%
Buckinghamshire Healthcare NHS Trust	RXQ	22	7699	7721	0.3%
Burton Hospitals NHS Foundation Trust	RJF	8	4629	4637	0.2%
Calderdale and Huddersfield NHS Foundation Trust	RWY	11	7533	7544	0.1%
Cambridge University Hospitals NHS Foundation Trust	RGT	69	5012	5081	1.4%
Cambridgeshire Community Services NHS Trust	RYV	9	3526	3535	0.3%
Central Manchester University Hospitals NHS Foundation Trust	RW3	192	15181	15373	1.2%
Chelsea and Westminster Hospital NHS Foundation Trust	RQM	112	4264	4376	2.6%
Chesterfield Royal Hospital NHS Foundation Trust	RFS	27	4487	4514	0.6%
City Hospitals Sunderland NHS Foundation Trust	RLN	55	5637	5692	1.0%
Colchester Hospital University NHS Foundation Trust	RDE	22	7074	7096	0.3%
Countess Of Chester Hospital NHS Foundation Trust	RJR	1049	3956	5005	21.0%
County Durham and Darlington NHS Foundation Trust	RXP	37	11180	11217	0.3%
Croydon Health Services NHS Trust	RJ6	481	4194	4675	10.3%
Dartford and Gravesham NHS Trust	RN7	25	6426	6451	0.4%
Derby Hospitals NHS Foundation Trust	RTG	181	4166	4347	4.2%
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	RP5	10	9623	9633	0.1%
Dorset County Hospital NHS Foundation Trust	RBD	15	2963	2978	0.5%
East and North Hertfordshire NHS Trust	RWH	25	7372	7397	0.3%
East Cheshire NHS Trust	RJN	-	-	3179	<0.1%
East Kent Hospitals University NHS Foundation Trust	RVV	63	10829	10892	0.6%
East Lancashire Hospitals NHS Trust	RXR	15	13702	13717	0.1%
East Sussex Hospitals NHS Trust	RXC	33	5951	5984	0.6%
Epsom and St Helier University Hospitals NHS Trust	RVR	59	4658	4717	1.3%
Frimley Park Hospital NHS Trust	RDU	34	13022	13056	0.3%
Gateshead Health NHS Foundation Trust	RR7	17	3086	3103	0.5%

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George Eliot Hospital NHS Trust	RLT	-	-	1126	<0.1%
Gloucestershire Hospitals NHS Foundation Trust	RTE	49	8193	8242	0.6%
Great Ormond Street Hospital NHS Trust	RP4	216	612	828	26.1%
Great Western Hospitals NHS Foundation Trust	RN3	29	5800	5829	0.5%
Guy's and St Thomas' NHS Foundation Trust	RJ1	122	4269	4391	2.8%
Harrogate and District NHS Foundation Trust	RCD	10	3300	3310	0.3%
Hereford Hospitals NHS Trust	RLQ	347	3453	3800	9.1%
Hinchingbrooke Healthcare NHS Trust	RQQ	-	-	455	<0.1%
Homerton University Hospital NHS Foundation Trust	RQX	15	2576	2591	0.6%
Hull and East Yorkshire Hospitals NHS Trust	RWA	19	7910	7929	0.2%
Imperial College Healthcare NHS Trust	RYJ	207	3837	4044	5.1%
Ipswich Hospital NHS Trust	RGQ	30	5399	5429	0.6%
Isle of wight NHS Trust	R1F	10	2323	2333	0.4%
James Paget University Hospitals NHS Foundation Trust	RGP	10	2940	2950	0.3%
Kettering General Hospital NHS Foundation Trust	RNQ	-	-	5229	<0.1%
King's College Hospital NHS Foundation Trust	RJZ	96	7895	7991	1.2%
Kingston Hospital NHS Trust	RAX	49	3772	3821	1.3%
Lancashire Teaching Hospitals NHS Trust	RXN	58	8954	9012	0.6%
Leeds Teaching Hospitals NHS Trust	RR8	36	9409	9445	0.4%
London North West Healthcare NHS Trust	R1K	69	8792	8861	0.8%
Luton and Dunstable Hospital NHS Foundation Trust	RC9	41	9123	9164	0.4%
Maidstone and Tunbridge Wells NHS Trust	RWF	16	4750	4766	0.3%
Medway NHS Trust	RPA	34	8205	8239	0.4%
Mid Essex Hospital Services NHS Trust	RQ8	33	5353	5386	0.6%
Mid Staffordshire NHS Foundation Trust	RJD	18	2616	2634	0.7%
Mid Yorkshire Hospitals NHS Trust	RXF	32	10681	10713	0.3%
Milton Keynes Hospital NHS Foundation Trust	RD8	38	6523	6561	0.6%
Newcastle Upon Tyne Hospitals NHS Foundation Trust	RTD	141	14332	14473	1.0%
Norfolk and Norwich University Hospitals NHS Foundation Trust	RM1	25	8824	8849	0.3%
North Bristol NHS Trust	RVJ	19	996	1015	1.9%
North Cumbria University Hospitals NHS Trust	RNL	159	5837	5996	2.7%
North Lincolnshire and Goole Hosps NHS Foundation Trust	RJL	7	5531	5538	0.1%
North Middlesex University Hospital NHS Trust	RAP	58	7613	7671	0.8%
North Tees and Hartlepool NHS Foundation Trust	RVW	-	-	5043	<0.1%
Northampton General Hospital NHS Trust	RNS	16	7594	7610	0.2%
Northern Devon Healthcare NHS Trust	RBZ	13	2528	2541	0.5%
Northumbria Healthcare NHS Foundation Trust	RTF	15	6137	6152	0.2%
Nottingham University Hospitals NHS Trust	RX1	26	9005	9031	0.3%
Oxford Radcliffe Hospital NHS Trust	RTH	110	10408	10518	1.0%
Pennine Acute Hospitals NHS Trust	RW6	41	17532	17573	0.2%
Peterborough and Stamford Hospitals NHS Foundation Trust	RGN	17	6931	6948	0.2%
Plymouth Hospitals NHS Trust	RK9	16	7560	7576	0.2%
Poole Hospital NHS Foundation Trust	RD3	67	8293	8360	0.8%
Portsmouth Hospitals NHS Trust	RHU	21	7075	7096	0.3%
Princess Alexandra Hospital NHS Trust	RQW	32	2770	2802	1.1%
Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	RCX	9	4126	4135	0.2%
Royal Berkshire Hospital NHS Foundation Trust	RHW	73	5495	5568	1.3%
Royal Bolton Hospital NHS Foundation Trust	RMC	22	8272	8294	0.3%
Royal Bournemouth and Christchurch Trust	RDZ	34	479	513	6.6%

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3	Royal Cornwall Hospitals NHS Trust	REF	55	6932	6987	0.8%
4	Royal Devon and Exeter NHS Foundation Trust	RH8	39	6081	6120	0.6%
5	Royal Free Hampstead NHS Trust	RAL	116	8720	8836	1.3%
6	Royal Liverpool Broadgreen Hospitals NHS Trust	RQ6	19	857	876	2.2%
7	Royal Surrey County NHS Foundation Trust	RA2	70	3659	3729	1.9%
8	Royal United Hospital Bath NHS Trust	RD1	46	6146	6192	0.7%
9	Royal Wolverhampton Hospital NHS Trust	RL4	36	8040	8076	0.4%
10	Salford Royal NHS Foundation Trust	RM3	19	2939	2958	0.6%
11	Salisbury NHS Foundation Trust	RNZ	21	2359	2380	0.9%
12	Sandwell and West Birmingham Hospitals NHS Trust	RXK	75	8955	9030	0.8%
13	Sheffield Children's NHS Foundation Trust	RCU	16	7095	7111	0.2%
14	Sheffield Teaching Hospitals NHS Foundation Trust	RHQ	-	-	1438	<0.1%
15	Sherwood Forest Hospitals NHS Foundation Trust	RK5	39	5065	5104	0.8%
16	Shrewsbury and Telford Hospital NHS Trust	RXW	731	7873	8604	8.5%
17	South Devon Health Care NHS Trust	RA9	36	3242	3278	1.1%
18	South Tees Hospitals NHS Foundation Trust	RTR	36	10272	10308	0.3%
19	South Tyneside NHS Foundation Trust	RE9	-	-	1628	<0.1%
20	South Warwickshire NHS Foundation Trust	RJC	330	3488	3818	8.6%
21	Southampton University Hospitals NHS Trust	RHM	97	10154	10251	0.9%
22	Southend University Hospitals NHS Foundation Trust	RAJ	13	2857	2870	0.5%
23	Southport and Ormskirk Hospital NHS Trust	RVY	33	4397	4430	0.7%
24	St George's Healthcare NHS Trust	RJ7	79	7366	7445	1.1%
25	St Helens and Knowsley Hospitals NHS Trust	RBN	53	6657	6710	0.8%
26	Stockport NHS Foundation Trust	RWJ	13	5540	5553	0.2%
27	Surrey and Sussex Healthcare NHS Trust	RTP	64	4040	4104	1.6%
28	Tameside Hospital NHS Foundation Trust	RMP	33	4815	4848	0.7%
29	Taunton and Somerset NHS Foundation Trust	RBA	44	4730	4774	0.9%
30	The Dudley Group Of Hospitals NHS Foundation Trust	RNA	11	6993	7004	0.2%
31	The Hillingdon Hospital NHS Trust	RAS	65	4475	4540	1.4%
32	The Lewisham Healthcare NHS Trust	RJ2	601	11875	12476	4.8%
33	The Mid Cheshire Hospitals NHS Trust	RBT	27	5159	5186	0.5%
34	The Rotherham NHS Foundation Trust	RFR	-	-	3967	<0.1%
35	The Walton Centre NHS Foundation Trust	RET	7	34	41	17.1%
36	United Lincolnshire Hospitals NHS Trust	RWD	77	8350	8427	0.9%
37	University College London Hospitals NHS Foundation Trust	RRV	124	2406	2530	4.9%
38	University Hospital Birmingham NHS Foundation Trust	RRK	16	788	804	2.0%
39	University Hospital Of North Staffordshire Hospital NHS Trust	RJE	42	13351	13393	0.3%
40	University Hospital Of South Manchester NHS Foundation Trust	RM2	32	6607	6639	0.5%
41	University Hospitals Coventry and Warwickshire NHS Trust	RKB	39	8421	8460	0.5%
42	University Hospitals Of Bristol NHS Foundation Trust	RA7	120	9975	10095	1.2%
43	University Hospitals Of Leicester NHS Trust	RWE	403	9514	9917	4.1%
44	University Hospitals Of Morecambe Bay NHS Foundation Trust	RTX	62	6775	6837	0.9%
45	Walsall Hospitals NHS Trust	RBK	13	3350	3363	0.4%
46	Warrington and Halton Hospitals NHS Foundation Trust	RWW	60	5048	5108	1.2%
47	West Hertfordshire Hospitals NHS Trust	RWG	29	5521	5550	0.5%
48	West Middlesex University NHS Trust	RFW	34	3098	3132	1.1%
49	West Suffolk Hospital NHS Trust	RGR	25	4007	4032	0.6%
50	Western Sussex Hospitals NHS Trust	RYR	35	7452	7487	0.5%
51	Weston Area Health NHS Trust	RA3	17	852	869	2.0%
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Whittington Hospital NHS Trust	RKE	9	3518	3527	0.3%
Wirral University Teaching Hospital NHS Foundation Trust	RBL	97	6643	6740	1.4%
Worcestershire Acute Hospitals NHS Trust	RWP	24	7270	7294	0.3%
Wrightington, Wigan and Leigh NHS Foundation Trust	RRF	8	3106	3114	0.3%
Yeovil District Hospital NHS Foundation Trust	RA4	24	2182	2206	1.1%
York Hospitals NHS Trust	RCB	66	7723	7789	0.8%
Total		10564	854667	887296	1.2%

Notes. Where 5 or fewer invalid cases, number is suppressed

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1STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	1-2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5-7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	5-6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5
Bias	9	Describe any efforts to address potential sources of bias	7-8
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	N/A
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	6-8
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	7-8
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	N/A
		(b) Indicate number of participants with missing data for each variable of interest	8 (+ Appendix Table A5)
Outcome data	15*	Report numbers of outcome events or summary measures	9-10
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9-11
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
Discussion			
Key results	18	Summarise key results with reference to study objectives	11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	11-12
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-13
Generalisability	21	Discuss the generalisability (external validity) of the study results	13
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	15

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

Use of age-specific hospital catchment populations to investigate geographical variation in inpatient admissions for children and young people in England: retrospective, cross-sectional study.

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2018-022339.R1
Article Type:	Research
Date Submitted by the Author:	27-Apr-2018
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Primary Subject Heading:	Health services research
Secondary Subject Heading:	Paediatrics
Keywords:	Variation, PAEDIATRICS, Children and young people, Health services research, Hospital catchment population

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3 **Use of age-specific hospital catchment populations to investigate geographical variation in**
4 **inpatient admissions for children and young people in England: retrospective, cross-**
5 **sectional study.**
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48 **Word count: 3112**
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3 **Key words:**

4 Variation

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6 Paediatrics

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8 Children and young people

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10 Health services research

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12 Hospital catchment population

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ABSTRACT**Objectives**

- To develop a method for calculating age-specific hospital catchment populations for children and young people (CYP) in England.
- To show how these methods allow geographical variation in hospital activity to be investigated and addressed more effectively.

Design

Retrospective, secondary analysis of existing national datasets.

Setting

Inpatient care of children and young people (0-18 years) in England

Participants

Hospital Episode Statistics (HES) data were accessed for all inpatient admissions (elective and emergency) for CYP from birth to 18 years, 364 days, for 2011/12 – 2014/15. In 2014/15, 857112 admissions were analysed, from an eligible population of approximately 11.9 million CYP.

Outcome measures

For each hospital Trust, the catchment population of CYP was calculated; Trust-level admission rates per thousand per year were then calculated for admissions due to

- Any diagnostic code
- Primary diagnosis of epilepsy
- Epilepsy listed as primary diagnosis or comorbidity

Results

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2
3 Estimated 2014/15 hospital catchment populations for CYP ranged from 268,558 for Barts Health
4
5 NHS Trust to around 30,000 for the smallest acute general paediatric services and below 10,000 for
6
7 many Trusts providing specialist services. As expected, the composition of HCPs was fairly consistent
8
9 for age breakdown but levels of deprivation varied widely.
10

11
12 After standardising for population characteristics, admission rates with a primary diagnosis of
13
14 epilepsy ranged from 14.3 to 157.7 per 100,000 per year (11.0-fold variation) for Trusts providing
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16 acute general paediatric services. All-cause admission rates showed less variation, ranging from 4033
17
18 to 11681 per 100,000 per year (2.9-fold variation).
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20 21 **Conclusions**

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24 Use of age-specific catchment populations allows variation in hospital activity to be linked to specific
25
26 teams and care pathways. This provides an evidence base for initiatives to tackle unwarranted
27
28 variation in healthcare activity and health outcomes.
29

Article Summary

Strengths and limitations of this study

- We adapt methodology for estimating hospital catchment populations, which has been validated and used extensively by Public Health England for adult and all-age populations.
- A strength of this study is the use of Hospital Episode Statistics, which contain high-quality data on the vast majority of hospital care for children and young people in England.
- Another strength is the ability to standardise for population differences, including age, sex and deprivation, so that fair comparisons can be made between services.
- Although there were very low levels of missing postcode overall (1.2%), a small number of Trusts reported missing postcode data on over 5% of patients, meaning that the catchment populations for these Trusts should be interpreted with caution.

Background

In 2012, the Chief Medical Officer expressed concern about the poor health outcomes experienced by children and young people (CYP) in England compared to other West European countries. She argued that one key route to improving these outcomes would be through understanding and addressing the wide geographical variation in health services and outcomes within England.(1) More recent evidence shows that this variation persists – for example, the rates of hospital admission for elective tonsillectomy in CYP by Clinical Commissioning Groups ranged from 84 to 485 per 100,000 population (5.7-fold variation) while asthma admission rates varied from 60 to 639 per 100,000 population (10.6-fold variation).(2) However, with some exceptions, greater awareness has not resulted in effective action to tackle geographical variation, and there has been limited research to understand the causes of variation.

One important limitation of previous work has been that geographical analysis of healthcare activity has been restricted to Clinical Commissioning Groups (CCGs) or Local Authority areas (LAs). These geographical areas are defined by their responsibility for commissioning services within their designated population, whereas provision of most health services is by individual NHS Trust. Each area is often served by many different NHS Trusts, preventing variation being attributed to specific hospital services. A second important limitation has often been the inability of policy makers and researchers to adjust for population risk (i.e. to understand the proportion of variation that can be accounted for by population differences).

In the US, hospital service areas allow analysis of health outcomes in the population served by specific hospital or networks.(3) In the UK, a number of different methods have been used to calculate hospital catchment populations (HCPs) for adults, (15) of which the most widely used is the proportionate flow method used by Public Health England (PHE).(4, 5) However, the marked differences in referral pathways, clinical networks and hospital activity between paediatric and adult services limits the application of published catchment populations to study variation in CYP.

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3 This article describes how we adapted the use of PHE methods to calculate age-specific hospital
4 catchment populations for paediatric services, both unadjusted and adjusted for population
5 characteristics (sex, age, deprivation). These represent estimates of the number of CYP who would
6 have been admitted to each Trust had they needed hospital care, disaggregated by age, sex and
7 deprivation. We analyse data on epilepsy admissions as a practical example to illustrate how these
8 methods may be useful to guide commissioning, operational and policy decisions. Potential
9 application of these methods to other conditions is also discussed.
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21 **Methods**

22 *Data*

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27 Hospital Episode Statistics (HES) data(6) were accessed for all inpatient admissions (elective and
28 emergency) for children and young people from birth to 18 years, 364 days, for 2011/12 – 2014/15.

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31 For each admission, we analysed:

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34 • geographic data on the admitting NHS Trust and the Lower Layer Super Output Area
35 (LSOA).(7) These are the smallest geographical unit for which Census data are available and
36 can be derived from the patient's postcode;
- 37
38 • sociodemographic data on sex, age (by single year). Adjustment for these variables is needed
39 as inpatient activity during childhood is known to vary markedly with age and between
40 males and females;(8)
- 41
42 • ICD10 codes of the primary diagnosis and any secondary diagnoses. For the second set of
43 analyses, we focused on admissions for epilepsy (ICD10 codes G40, G41)
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52 HES data were then linked to Office of National Statistics (ONS) data on Index of Multiple
53 Deprivation (IMD) and the CYP population within each LSOA,(9) disaggregated by single year of age
54 and sex (based on ONS 2012 mid-year estimates by age, sex).
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Note that the term ‘hospital catchment population’ (HCP) refers to the catchment population of an NHS Trust – an administrative unit that may include more than one hospital site. We retained the term hospital catchment population as the term NHS Trust is not widely understood, especially by readers who are not familiar with the English NHS.

Derivation of hospital catchment populations

Derivation involved 5 steps – described below.

1. HES data were used to count the number of patients in each age and sex group admitted from each LSOA to
 - a) any provider (NHS Trust) and
 - b) each individual provider.

HESIDs (unique patient identifiers within the HES data) were used to ensure that each patient was only counted once; if a patient had multiple admissions while living at the same address, we selected only the first admission.

2. Within each age and sex group, we calculated the proportion of patients from each Lower Layer Super Output Area (LSOA) that was admitted by each provider, as a proportion of patients who used any provider.

For band i (age and sex), LSOA j , the number admitted to provider a is denoted by m_{iaj} . The total number admitted by LSOA and band i for each year is denoted by $\sum_b m_{ibj}$ then,

$$p_{iaj} = \frac{m_{iaj}}{\sum_b m_{ibj}}$$

Where p_{iaj} represents the proportion of patients that went to each provider.

3. For each LSOA, this proportion was multiplied by the LSOA resident population in that age-sex group N_{ij} to give the LSOA catchment population for each provider n_{iaj} .

The catchment population of provider a for band i (age and sex) is then:

$$n_{iaj} = p_{iaj}N_{ij}$$

4. The provider-specific catchment populations for each LSOA were summed to give the total catchment population for that provider.

Thus, the total catchment population C for provider a , band i (age and sex):

$$C_{ia} = \sum_j n_{iaj}$$

5. Adding in information on IMD decile, the total catchment population for provider a , band i (age and sex), IMD D is:

$$C_{iaD} = \sum_j n_{iaj}\delta_{Dd(j)}$$

Where

$$\delta_{Dd(j)} = \begin{cases} 1 & \text{if } d(j) = D \\ 0 & \text{otherwise} \end{cases}$$

Notes:

We excluded patients with missing or invalid age at start of episodes (<0.1%) or with no valid English LSOA (1.2% of episodes; median proportion of episodes at Trust level = 0.6%). Nine Trusts (6.2%) had missing LSOA data on >5% of episodes (range 5.1% to 26.1%), reflecting either a high proportion of patients who live in Wales or incomplete coding. These Trusts are identified in Table 1 & 2 and their estimated HCPs should be interpreted with caution. See Appendix Table A1 for further details.

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3 Some patients moved residence during the analysis period and had admissions to the same Trust
4 from different postcodes of residence. We counted these patients once in each LSOA. Significant
5 numbers of patients are treated in a region other than their region of residence and catchment areas
6 of Trusts therefore cross regional boundaries.
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10 11 12 13 14 *Use of hospital catchment populations to investigate variation in epilepsy admission rates for CYP.*

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17 In order to illustrate the use of hospital catchment populations, we calculated unadjusted and
18 adjusted admission rates for all-cause and epilepsy admissions per thousand CYP. The median,
19 interquartile range, range and ratio of highest: lowest Trust-level admission rates were calculated.
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21 Following previous studies(2), we then re-calculated the range and ratio of highest:lowest admission
22 rates excluding the 5 highest and 5 lowest Trusts. This is a form of sensitivity analyses that is
23 recommended in order to minimise distortion from a small number of outliers in the reliability of
24 diagnostic coding.
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33 Next, the ratio of observed versus expected admissions were calculated for each Trust. To do this,
34 the expected admission rates for each Trust (unadjusted) were calculated by multiplying the national
35 epilepsy admission rate per thousand CYP by the total catchment population for that Trust. The
36 adjusted values for expected admission rates used a similar approach, based on the national
37 epilepsy admission rate per thousand and the Trust catchment population within each age-sex-IMD
38 group. The expected total number of admissions for each Trust was the sum of expected admissions
39 within each age-sex-IMD group.
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48 In each case, we then derived the ratio of observed versus expected epilepsy admissions,
49 highlighting those Trusts with admission rates that differed by more than 2 or 3 standard deviations
50 from the expected rate for the population served.
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3 All analyses were performed using SAS. No ethical approval was needed for these secondary
4 analyses of anonymised, routinely-collected data.
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7 *Patient involvement*

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9 Concerns about geographical variation in the quality, accessibility and capacity of NHS services for
10 children and young people have been raised repeatedly in consultations in CYP and families.(1) No
11 patients or families were directly involved in designing or performing these analyses.
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16 **Results**

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20 In 2014/15, 857,112 admissions were analysed, from an eligible population of approximately 11.9
21 million CYP. The Trust serving the largest number of CYP was Barts Health NHS Trust, with an
22 estimated paediatric Hospital Catchment Population (HCP) of 268,558, compared to the national
23 median HCP of 71,379. Sixteen Trusts had estimated catchment populations of <10,000. This may
24 reflect the fact that they provide specialist services (e.g. Great Ormond Street Hospital, Papworth
25 Hospital NHS Foundation Trust); or that only specific groups of CYP are admitted (for example,
26 inpatient care for new born babies, or young people (usually aged 16 or over) who were admitted
27 under the care of adult specialists (e.g. Birmingham Women's NHS Foundation Trust, Liverpool
28 Women's Hospital NHS Trust). The smallest catchment populations for Trusts providing acute
29 general paediatric services were around thirty thousand (e.g. Northern Devon Healthcare NHS Trust
30 = 34,821 Sheffield Teaching Hospitals NHS Foundation Trust = 27,899).
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46 Table 1 presents the standardised HCPs for each NHS Trust in London where CYP were admitted.

47 These data illustrate the impact of reconfiguration and mergers of Trusts during the period 2011/12
48 to 2014/15 on the HCP for each Trust. For example, London North West Healthcare NHS Trust was
49 newly formed in 2014, and took on the workload of North West London Hospitals NHS Trust.
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54 Similarly, Barnet and Chase Farm Hospitals NHS Trust merged with the Royal Free Hospital in 2014,
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3 with the result that much of Barnet's HCP was transferred across to the HCP of Royal Free Hospital.
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5 Standardised HCPs for all NHS Trusts in England are shown in Appendix Table A2.
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8 Appendix Table A3 presents the HCPs for each Trust in England where CYP were admitted in
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10 2013/14, disaggregated by IMD quintile. In four cases, greater than 60% of the CYP population
11
12 served by a Trust lived in the most deprived quintile of areas (Homerton University Hospital NHS
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14 Foundation Trust (77.4%); Sandwell and West Birmingham Hospitals NHS Trust (65.0%), Royal
15
16 Liverpool Broadgreen Hospitals NHS Trust (62.7%), Barts Health NHS Trust (60.4%). In contrast, two
17
18 Trusts served a population where more than 60% lived in the least deprived quintile: Frimley Park
19
20 Hospital NHS Trust (61.1%), Royal Surrey County NHS Foundation Trust (60.3%).
21

22
23 The age breakdown varied much less between Trusts. The proportion of all 0-18s who were in the 0-
24
25 3 age band varied from 27.9% in Chelsea & Westminster Hospital NHS Foundation Trust, to 19.2% at
26
27 the Robert Jones and Agnes Hunt Orthopaedic Trust. See Appendix Table A4.
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29
30 Excluding Trusts that do not provide acute general paediatrics services (see explanation above),
31
32 standardised admission rates with a primary diagnosis of epilepsy ranged from 14.3 to 157.7 per
33
34 100,000 per year (11.0-fold variation). The median value was 71.3 per 100 000, with an interquartile
35
36 range from 55.8 to 90.3. Excluding the five Trusts with the highest and lowest admission rates, the
37
38 range reduced to 30.9 to 124.9 vs. 30.9 per 100,000 per year (4.0-fold variation). All-cause admission
39
40 rates showed much less variation, with all-cause admissions in Trusts providing acute paediatric
41
42 services ranging from 4033 to 11681 per 100,000 per year (2.9-fold variation), with a median of
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44 7,130 and an interquartile range from to 5,890 to 8,390 per 10,000 per year. Excluding the highest
45
46 and lowest five, the range was from 4439 to 10,200 to 4439 per 10,000 per year (2.3-fold variation).
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48 Moderate agreement was observed between all-cause and epilepsy-specific admission rates ($r^2 =$
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50 0.25).
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3 In Figure 1, unadjusted and adjusted epilepsy admission rates for each Trust are presented. This
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5 Figure illustrates, firstly, that relatively little of the observed variation can be explained by random
6
7 chance among relatively small units; secondly, it shows that only a small degree of the observed
8
9 variation can be explained by differences in the age, sex and deprivation of the population served by
10
11 each Trust.
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13 14 **Discussion**

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17 This study demonstrates the feasibility of estimating age-specific catchment populations for Trusts
18
19 within the English NHS. We then show two ways in which these findings may be applied to inform
20
21 planning of health services, and support quality improvement activities and research. First, we
22
23 illustrate how catchment populations in London have changed following recent mergers and other
24
25 service reconfigurations. Second, we use the catchment populations to calculate admission rates per
26
27 100 000 CYP for each NHS Trust. These data show that admission rates vary 11-fold between Trusts
28
29 providing acute general paediatric services for epilepsy admissions (4 fold when excluding extremes)
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31 and 2.9-fold (2.3-fold) for all-cause admissions in this age group.
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33
34 Strengths of this study are the use of robust methodology for estimating hospital catchment
35
36 populations, which has been validated and used extensively by Public Health England for adult and
37
38 all-age populations. Another strength of the study is the quality and completeness of Hospital
39
40 Episode Statistics, which are subject to extensive cleaning and quality assurance processes, and
41
42 cover 98-99% all hospital care in England.(10, 11) This includes the vast majority of healthcare
43
44 provided for CYP resident in the UK, making HES data the largest unified dataset of its kind in the
45
46 world. These data may be particularly useful in performing national-level analyses of variation,
47
48 where chance findings of very high or low admission rates due to small numbers of patients with a
49
50 particular condition attending a specific hospital are likely to even out. Another strength is the ability
51
52 to adjust or standardise for population differences, including age, sex and deprivation, so that fair
53
54 comparisons can be made between services.
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3 One important limitation of this study is that in order to maximise data in each LSOA (median CYP
4 population is approximately 300), all inpatient activity within this age group is included. Our model
5 does not account of the fact that parents or CYP who live a similar distance from two hospitals might
6 (for example) choose to attend Hospital A if their child needed elective surgery by an Ear, Nose and
7 Throat surgeon but attend Hospital B for acute abdominal pain. In adult populations, there is some
8 evidence that patients are willing to travel further to access elective care compared to emergency
9 care.⁽¹²⁾ As noted above, caution must be used in interpreting results for any specific hospital,
10 especially when looking at single conditions affecting a relatively small number of patients. Another
11 caveat is that these data will be most useful in comparing like with like – for example, all District
12 General Hospitals providing acute general paediatric care, or all tertiary children’s hospitals. As
13 illustrated in Table 2 and Appendix Table A4, calculated admission rates for specialist hospitals, or
14 those only providing care for neonates or CYP over the age of 16, may be very high or very low
15 compared to those of general hospitals. Finally, for the small number of hospitals where postcode
16 information is less than 95% complete, the HCPs and admission rates should be interpreted with
17 caution (see Methods section and Appendix Table A5 for further details).

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35 To our knowledge, this study is the first to report hospital catchment populations for paediatric care
36 in England. Previous studies in adult populations and other countries have described a range of
37 methods for estimating catchment populations, including proportionate flow or Norris-Bailey
38 methods (as used in this study),⁽⁵⁾ k-means clustering of multivariate data,⁽¹³⁾ kernel analyses,
39 (14) and ‘de facto service areas’ in which the population of each LSOA is allocated to the catchment
40 population of a single hospital using a Bayesian approach.⁽¹⁵⁾ Advanced versions of these
41 techniques are being increasingly used to study variation in preventable hospitalisations.^(16, 17)
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Further research using different methodological approaches to calculate HCPs for CYP would be a
useful way to investigate the robustness of our model, and may allow clearer ways of presenting
maps of HCPs.

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3 The most useful approaches to do this are likely to be based on further analyses of HES data.
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5 Compared to hospital catchment populations based on survey data (as reported in early studies of
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7 geographical variation)(18) use of HES data has the advantage of being efficient (as it is based on
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9 existing, routinely-collected data that have already been extensively cleaned and quality assured),
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11 robust (as it uses data collected at the time of use, rather than being based on retrospective
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13 patient/family recall or on hypothetical questions about where care would be accessed if needed in
14
15 the future) and has high levels of completeness (as it is not limited by survey response rate).
16

17
18 As in adult populations, we believe that age-specific hospital catchment populations for CYP will
19
20 provide a useful evidence base to support operational decisions, quality improvement work and
21
22 future research related to hospital services.(19) For example, data used to calculate each catchment
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24 population can be used to create a detailed map (for example, a choropleth map) of all CYP served
25
26 by any hospital. As well as tracking changes in the HCP following reconfiguration (as shown in Table
27
28 1), in the future HCP mapping data could be used to model the impact of service reconfiguration and
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30 merger plans, so reducing the uncertainty and disruption to services that often occurs at present.
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33 Regarding quality improvement projects, existing indicators are often published at Local Authority
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35 level, across a population that may be served by many different hospitals. Previous research has
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37 shown that indicators mapped directly to specific clinical teams promote clinical engagement and
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39 accountability.(20) Further, they can identify specific strengths or weaknesses of individual services
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41 and so inform tailored quality improvement initiatives. Lastly, HCPs have potential to open up
42
43 exciting new avenues of research within paediatric services. For example, the national clinical audit
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45 for paediatric epilepsy (Epilepsy12) has collected detailed information on paediatric epilepsy services
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47 in England since 2011, but to date it has not been possible to link these data to admission rates, due
48
49 to lack of an appropriate denominator. Such linkage would allow robust investigation of the impact
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51 on improving performance in different aspects of epilepsy care on unit-level admission rates (i.e. the
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53 degree to which performance in the Epilepsy12 audit accounts for the unexplained variation shown
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55 in Figure 1). Similarly, attempts to study and reduce geographical variation by specialist networks
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3 such as those for paediatric surgery or gastroenterology services have been limited by lack of
4
5 appropriate denominator data. HCPs will allow admission and activity rates to be compared between
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7 areas and facilitate study of unmet need and/or overuse of admissions or procedures.
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12 **Conclusions**

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15 This paper presents a method for calculating hospital catchment populations for the care of children
16
17 and young people in the English NHS. We then show how this method allows comparison of
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19 paediatric admission rates between hospitals, adjusting for population characteristics including sex,
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21 age, and deprivation. Lastly, we illustrate how these adjusted admission rates may be useful for the
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23 purposes of commissioning and improving services, as well as for quality improvement and research
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25 activities.
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Figure legend

Figure 1. Funnel plot showing ratio of observed: expected paediatric epilepsy admissions in English Hospital Trusts, 2014/15

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Competing interest statement

We declare no competing interests.

Author contributions

SA, CSJ, RC and DSH were involved in the design of this study and in revising the manuscript. SA and CSJ performed all analyses. SA and DSH wrote the first draft of the manuscript.

Data sharing statement

SAS code used for all analyses is available from the authors on request.

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Table 1. Paediatric Hospital Catchment Populations in London by year, standardised for age, sex and deprivation

Trust code	Trust name	Region	Catchment populations, standardised for age, sex, Index of Multiple Deprivation			
			2011/12	2012/13	2013/14	2014/15
RKB	University Hospitals Coventry and Warwickshire NHS Trust	West Midlands	116,634	116,159	126,521	126,537
RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	North East	117,233	117,214	121,658	124,257
RHM	Southampton University Hospitals NHS Trust	South Central	134,343	115,636	117,210	120,636
RTE	Gloucestershire Hospitals NHS Foundation Trust	South West	120,471	120,927	120,459	119,516
RHU	Portsmouth Hospitals NHS Trust	South Central	126,870	123,691	124,823	118,416
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	East of England	116,286	114,535	114,161	118,394
RJ7	St George's Healthcare NHS Trust	London	103,559	109,089	113,127	118,041
RXR	East Lancashire Hospitals NHS Trust	North West	116,271	119,014	118,240	117,300
RWP	Worcestershire Acute Hospitals NHS Trust	West Midlands	120,307	118,484	117,303	115,581
RWD	United Lincolnshire Hospitals NHS Trust	East Midlands	118,708	115,559	115,924	112,401
RAE	Bradford Teaching Hospitals NHS Foundation Trust	Yorkshire and The Humber	113,843	114,617	111,292	111,030
RXP	County Durham and Darlington NHS Foundation Trust	North East	107,566	108,332	107,119	108,941
RWA	Hull and East Yorkshire Hospitals NHS Trust	Yorkshire and The Humber	105,424	106,722	106,685	106,281
RXH	Brighton and Sussex University Hospitals NHS Trust	South East Coast	95,573	99,438	103,746	105,282

RWH	East and North Hertfordshire NHS Trust	East of England	110,674	104,026	106,784	105,074
RWF	Maidstone and Tunbridge Wells NHS Trust	South East Coast	105,941	102,464	103,455	104,481
RCB	York Hospitals NHS Trust	Yorkshire and The Humber	70,501	105,737	103,237	104,298
RXW	Shrewsbury and Telford Hospital NHS Trust	West Midlands	100,221	101,232	100,641	102,368
RCU	Sheffield Children's NHS Foundation Trust	Yorkshire and The Humber	115,371	116,009	117,548	102,197
RTG	Derby Hospitals NHS Foundation Trust	East Midlands	101,760	103,757	104,768	101,709
RHW	Royal Berkshire Hospital NHS Foundation Trust	South Central	107,907	103,139	101,569	100,771
RQ8	Mid Essex Hospital Services NHS Trust	East of England	120,888	107,718	101,410	100,503
RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	Yorkshire and The Humber	102,095	100,803	98,480	100,244
RXK	Sandwell and West Birmingham Hospitals NHS Trust	West Midlands	94,462	94,120	98,396	100,183
RXQ	Buckinghamshire Healthcare NHS Trust	South Central	102,622	99,708	96,197	99,550
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	South Central	85,695	102,867	101,435	99,421
RTR	South Tees Hospitals NHS Foundation Trust	North East	97,604	97,851	97,981	98,197
RD3	Poole Hospital NHS Foundation Trust	South West	100,557	97,418	97,080	97,422

Notes.

1. Hospital Catchment Populations are estimated based on the proportion of children and young people (≤ 18 years) from each Lower Super Output Area (LSOA) who attend each NHS Trust in any given year for planned or unplanned care. See Methods section for full details.
2. Although all Trust are presented for completeness, the catchment population is more meaningful and useful when applied to Trusts that provide general paediatric services than to specialist Trusts (for example, Moorfields Eye Hospital, Great Ormond Street Hospital, The Royal Marsden Hospital, The Royal National Orthopaedic Hospital).

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3. Where large changes occur between years, this typically reflects mergers or reconfiguration. For example, during the study period, Barnet and Chase Farm Hospitals NHS Trust merged with Royal Free Hampstead NHS Trust and there was extensive reconfiguration of services in North West London (North-West London Hospitals NHS Trust, Ealing Hospital NHS Trust and London North West Healthcare NHS Trust).
4. *denotes Trusts where LSOA data are missing on $\geq 5.0\%$ of hospital admissions (meaning that the catchment populations should be interpreted with more caution). The exact proportion of admissions with missing LSOA data in each Trust are presented in Appendix Table A5.

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Table 2. Paediatric admission rates by Trust for primary diagnosis epilepsy, any diagnosis epilepsy, all-cause admissions, per 100,000, 2014/15, England.

	Primary diagnosis epilepsy	Any epilepsy diagnosis	All-cause admission
The Walton Centre NHS Foundation Trust	355.7	1067.1	12094.0
Great Ormond Street Hospital NHS Trust	256.6	513.1	9813.4
Royal Wolverhampton Hospital NHS Trust	157.7	305.3	10141.8
Newcastle Upon Tyne Hospitals NHS Foundation Trust	152.1	379.9	11426.3
Milton Keynes Hospital NHS Foundation Trust	144.0	328.8	9422.8
Burton Hospitals NHS Foundation Trust	143.0	255.0	7519.6
Birmingham Children's Hospital NHS Foundation Trust	129.6	325.0	8589.4
Medway NHS Trust	124.9	266.2	8812.1
East Cheshire NHS Trust	122.5	284.0	8843.7
North Lincolnshire and Goole Hosps NHS Foundation Trust	114.4	231.0	6257.7
East Sussex Hospitals NHS Trust	113.1	182.5	8106.3
South Tees Hospitals NHS Foundation Trust	112.0	297.4	10096.1
Guy's and St Thomas' NHS Foundation Trust	109.4	218.8	6577.6
Hereford Hospitals NHS Trust	107.3	199.3	8188.1
Kettering General Hospital NHS Foundation Trust	106.8	195.7	7749.6
Hull and East Yorkshire Hospitals NHS Trust	105.4	216.4	6017.1
Blackpool Fylde and Wyre NHS Foundation Trust	104.3	258.3	10864.7
York Hospitals NHS Trust	102.6	179.3	7404.7
Isle of Wight NHS Trust	100.3	183.2	8031.5
University Hospital Birmingham NHS Foundation Trust	100.2	264.2	6959.0
Northampton General Hospital NHS Trust	99.8	261.9	9309.2
The Mid Cheshire Hospitals NHS Trust	98.8	259.3	7949.0
Barnsley Dist Gen Hosp NHS Foundation Trust	98.2	196.4	8854.7
Basingstoke and North Hampshire Hospitals NHS Foundation Trust	97.6	180.0	6316.6
Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	96.4	251.1	9249.2
Southampton University Hospitals NHS Trust	96.2	190.7	8404.6
Wrightington, Wigan and Leigh NHS Foundation Trust	95.2	209.8	6028.8
Colchester Hospital University NHS Foundation Trust	94.6	269.2	9264.7
University Hospitals Coventry and Warwickshire NHS Trust	94.0	182.6	6563.3
University Hospitals Of Morecambe Bay NHS Foundation Trust	93.4	246.6	9887.3
University Hospital Of North Staffordshire Hospital NHS Trust	93.3	252.4	10355.7
Stockport NHS Foundation Trust	92.8	174.6	8713.0
Chesterfield Royal Hospital NHS Foundation Trust	91.9	187.3	7895.4
County Durham and Darlington NHS Foundation Trust	91.8	221.2	10262.4
Salford Royal NHS Foundation Trust	91.5	142.9	8400.8
North Cumbria University Hospitals NHS Trust	91.4	173.8	8744.8
Royal Berkshire Hospital NHS Foundation Trust	91.3	164.7	5453.0
Tameside Hospital NHS Foundation Trust	90.3	199.1	9045.9
Calderdale and Huddersfield NHS Foundation Trust	88.8	186.0	7870.2
East and North Hertfordshire NHS Trust	88.5	147.5	6795.2
Royal Devon and Exeter NHS Foundation Trust	86.8	190.2	7764.1
Royal Cornwall Hospitals NHS Trust	86.2	183.2	7558.5
Central Manchester University Hospitals NHS Foundation Trust	85.6	256.1	10200.2
Homerton University Hospital NHS Foundation Trust	85.1	137.8	5221.7
South Warwickshire NHS Foundation Trust	83.6	173.7	7465.3
Norfolk and Norwich University Hospitals NHS Foundation Trust	83.6	213.7	7320.5
Portsmouth Hospitals NHS Trust	83.6	167.2	5949.4
King's College Hospital NHS Foundation Trust	83.2	132.5	5246.2
Plymouth Hospitals NHS Trust	83.1	174.8	7607.1
West Suffolk Hospital NHS Trust	82.5	173.9	7037.4
Northumbria Healthcare NHS Foundation Trust	82.5	165.1	8390.3

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3	Luton and Dunstable Hospital NHS Foundation Trust	82.0	195.2	8913.8
4	Taunton and Somerset NHS Foundation Trust	81.7	202.7	7129.9
5	Warrington and Halton Hospitals NHS Foundation Trust	81.4	131.9	8218.6
6	Peterborough and Stamford Hospitals NHS Foundation Trust	80.7	225.6	8728.8
7	Pennine Acute Hospitals NHS Trust	80.5	196.2	10147.4
8	North Tees and Hartlepool NHS Foundation Trust	80.2	217.8	8251.5
9	Walsall Hospitals NHS Trust	78.8	152.3	5444.2
10	North Middlesex University Hospital NHS Trust	78.0	145.6	7918.9
11	City Hospitals Sunderland NHS Foundation Trust	77.0	191.7	8367.6
12	The Hillingdon Hospital NHS Trust	76.7	162.6	6857.8
13	Frimley Park Hospital NHS Trust	75.8	158.4	6851.2
14	South Devon Health Care NHS Trust	75.1	181.9	5448.0
15	East Kent Hospitals University NHS Foundation Trust	74.7	166.2	7619.1
16	East Lancashire Hospitals NHS Trust	74.2	277.9	11681.2
17	Bradford Teaching Hospitals NHS Foundation Trust	73.9	222.5	6588.3
18	Nottingham University Hospitals NHS Trust	73.0	159.4	5107.2
19	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	72.8	142.7	9385.1
20	Basildon and Thurrock University Hospitals NHS Foundation Trust	72.3	117.4	4185.1
21	Sandwell and West Birmingham Hospitals NHS Trust	71.9	160.7	8798.9
22	Bedford Hospital NHS Trust	71.8	168.3	5739.2
23	Sheffield Children's NHS Foundation Trust	71.4	203.5	6942.5
24	Airedale NHS Foundation Trust	71.3	329.1	9150.7
25	Western Sussex Hospitals NHS Trust	71.2	176.5	7923.9
26	Imperial College Healthcare NHS Trust	71.2	146.3	4707.7
27	Birmingham Heartlands and Solihull Trust	70.5	140.5	7708.0
28	Mid Yorkshire Hospitals NHS Trust	70.2	155.4	7419.2
29	Royal Bolton Hospital NHS Foundation Trust	70.0	179.1	8819.4
30	Dartford and Gravesham NHS Trust	69.4	149.2	7885.0
31	Barts Health NHS Trust	69.3	149.3	5890.0
32	Southport and Ormskirk Hospital NHS Trust	69.2	132.7	8094.0
33	Weston Area Health NHS Trust	69.0	122.7	6479.8
34	Poole Hospital NHS Foundation Trust	68.8	256.6	8106.0
35	Royal United Hospital Bath NHS Trust	68.5	193.4	6530.5
36	Wirral University Teaching Hospital NHS Foundation Trust	67.9	239.8	7375.9
37	University Hospitals Of Bristol NHS Foundation Trust	67.1	148.1	5637.4
38	Ashford and St Peter's Hospitals NHS Foundation Trust	67.1	107.4	5105.2
39	Shrewsbury and Telford Hospital NHS Trust	66.4	162.2	7580.5
40	James Paget University Hospitals NHS Foundation Trust	66.1	116.3	6048.3
41	The Lewisham Healthcare NHS Trust	65.9	136.5	7769.5
42	Lancashire Teaching Hospitals NHS Trust	63.8	171.9	10193.4
43	Epsom and St Helier University Hospitals NHS Trust	63.0	178.4	5285.4
44	St George's Healthcare NHS Trust	62.7	127.1	5969.1
45	Cambridgeshire Community Services NHS Trust	62.5	185.0	9188.9
46	Royal Free Hampstead NHS Trust	62.5	136.0	5601.1
47	University Hospitals Of Leicester NHS Trust	62.4	144.0	4944.3
48	Cambridge University Hospitals NHS Foundation Trust	61.3	197.6	5058.8
49	Maidstone and Tunbridge Wells NHS Trust	61.3	93.8	4536.7
50	Worcestershire Acute Hospitals NHS Trust	60.6	144.5	6155.0
51	Ipswich Hospital NHS Trust	60.2	176.5	6566.3
52	Leeds Teaching Hospitals NHS Trust	60.1	165.8	6160.5
53	Hinchingbrooke Healthcare NHS Trust	59.4	89.0	6738.0
54	Oxford Radcliffe Hospital NHS Trust	58.5	156.0	6662.5
55	Countess Of Chester Hospital NHS Foundation Trust	57.9	157.4	9156.6
56	Dorset County Hospital NHS Foundation Trust	56.8	144.5	6294.7
57	The Dudley Group Of Hospitals NHS Foundation Trust	56.4	143.6	8559.8
58	Gloucestershire Hospitals NHS Foundation Trust	56.1	164.8	6854.3
59	London North West Healthcare NHS Trust	55.8	124.8	5098.4
60	Whittington Hospital NHS Trust	55.3	116.5	6677.6
	The Rotherham NHS Foundation Trust	55.2	154.1	7337.8
	Royal Surrey County NHS Foundation Trust	54.7	106.4	5398.3
	Derby Hospitals NHS Foundation Trust	54.1	115.0	4096.0
	West Hertfordshire Hospitals NHS Trust	53.5	114.3	5621.5

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United Lincolnshire Hospitals NHS Trust	53.4	182.4	6992.8
Buckinghamshire Healthcare NHS Trust	53.2	137.6	7632.4
Croydon Health Services NHS Trust	53.1	73.9	5373.3
Yeovil District Hospital NHS Foundation Trust	52.9	136.4	6074.1
West Middlesex University NHS Trust	51.9	166.7	4872.3
University Hospital Of South Manchester NHS Foundation Trust	51.8	126.0	8586.4
South Tyneside NHS Foundation Trust	50.8	88.9	6751.4
Royal Bournemouth and Christchurch Trust	49.9	99.9	7041.3
Great Western Hospitals NHS Foundation Trust	49.9	141.2	7058.8
Barking, Havering and Redbridge University Hospitals NHS Trust	46.8	93.6	4662.0
Mid Staffordshire NHS Foundation Trust	45.7	99.1	9815.2
Alder Hey Childrens NHS Foundation Trust	45.4	188.4	7766.6
Princess Alexandra Hospital NHS Trust	45.2	85.6	4438.7
Gateshead Health NHS Foundation Trust	43.5	81.5	8388.4
Surrey and Sussex Healthcare NHS Trust	43.1	108.8	4767.3
St Helens and Knowsley Hospitals NHS Trust	41.2	126.5	9790.2
Northern Devon Healthcare NHS Trust	40.2	158.0	7260.0
Southend University Hospitals NHS Foundation Trust	37.9	116.6	4292.9
Brighton and Sussex University Hospitals NHS Trust	37.0	115.9	5926.0
Kingston Hospital NHS Trust	36.9	98.0	5332.2
Mid Essex Hospital Services NHS Trust	36.8	86.6	5326.2
Sherwood Forest Hospitals NHS Foundation Trust	36.7	138.5	6892.1
Salisbury NHS Foundation Trust	35.7	109.1	4912.0
Chelsea and Westminster Hospital NHS Foundation Trust	34.7	65.9	4932.9
North Bristol NHS Trust	30.9	87.5	5016.8
Harrogate and District NHS Foundation Trust	29.6	96.2	7761.3
University College London Hospitals NHS Foundation Trust	28.5	54.6	4032.6
Aintree University Hospitals NHS Foundation Trust	27.7	73.7	6240.5
Royal Liverpool Broadgreen Hospitals NHS Trust	24.8	74.3	5871.3
Sheffield Teaching Hospitals NHS Foundation Trust	14.3	28.7	4752.9
George Eliot Hospital NHS Trust	5.2	20.6	5717.0
The Royal Marsden NHS Foundation Trust	0.0	963.5	104056.3
Liverpool Heart and Chest NHS Foundation Trust	0.0	0.0	29608.9
Christie Hospital NHS Trust	0.0	0.0	26449.3
Papworth Hospital NHS Foundation Trust	0.0	1444.5	21666.9
Clatterbridge Centre For Oncology NHS Foundation Trust	0.0	0.0	15534.8
The Royal National Orthopaedic Hospital NHS Trust	0.0	489.4	11500.7
Royal Brompton and Harefield NHS Foundation Trust	0.0	153.9	8131.0
Liverpool Womens Hospital NHS Trust	0.0	0.0	6464.3
Royal Orthopaedic Hospital NHS Foundation Trust	0.0	246.8	6170.2
Moorfields Eye Hospital NHS Foundation Trust	0.0	0.0	5217.1
Birmingham Women's NHS Foundation Trust	0.0	0.0	4659.7
Robert Jones and Agnes Hunt Orthopaedic NHS Trust	0.0	0.0	4316.4
Queen Victoria Hospital NHS Foundation Trust	0.0	24.3	4251.8

*denotes Trusts where Lower Layer Super Output Area (LSOA) data are missing on $\geq 5.0\%$ of hospital admissions (meaning that the catchment populations and admission rates should be interpreted with more caution). The exact proportion of admissions with missing LSOA data by Trust are presented in Appendix Table A5.

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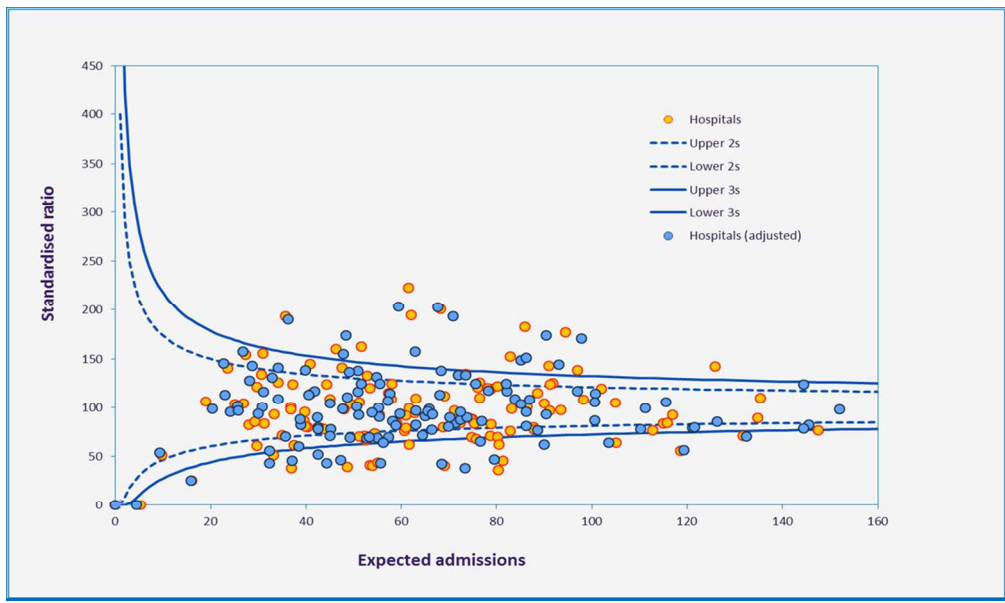


Figure 1. Funnel plot showing ratio of observed: expected paediatric epilepsy admissions in English Hospital Trusts, 2014/15.

Appendix Table A1
Proportion of all-cause paediatric care episodes with missing Lower Super Output Area (LSOA), English Hospital Episode Statistics, 2014/15

		Invalid	Valid	Total	
Aintree University Hospitals NHS Foundation Trust	REM	7	708	715	1.0%
Airedale NHS Foundation Trust	RCF	8	4128	4136	0.2%
Alder Hey Childrens NHS Foundation Trust	RBS	548	10429	10977	5.0%
Ashford and St Peter's Hospitals NHS Foundation Trust	RTK	17	3425	3442	0.5%
Barking, Havering and Redbridge University Hospitals NHS Trust	RF4	63	7061	7124	0.9%
Barnsley Dist Gen Hosp NHS Foundation Trust	RFF	8	4690	4698	0.2%
Barts Health NHS Trust	R1H	198	16161	16359	1.2%
Basilston and Thurrock University Hospitals NHS Foundation Trust	RDD	22	3265	3287	0.7%
Basingstoke and North Hampshire Hospitals NHS Foundation Trust	RN5	50	6349	6399	0.8%
Bedford Hospital NHS Trust	RC1	16	2796	2812	0.6%
Birmingham Children's Hospital NHS Foundation Trust	RQ3	56	13864	13920	0.4%
Birmingham Heartlands and Solihull Trust	RR1	178	14008	14186	1.3%
Blackpool Fylde and Wyre NHS Foundation Trust	RXL	63	6562	6625	1.0%
Bradford Teaching Hospitals NHS Foundation Trust	RAE	11	7878	7889	0.1%
Brighton and Sussex University Hospitals NHS Trust	RXH	63	6378	6441	1.0%
Buckinghamshire Healthcare NHS Trust	RXQ	22	7699	7721	0.3%
Burton Hospitals NHS Foundation Trust	RJF	8	4629	4637	0.2%
Calderdale and Huddersfield NHS Foundation Trust	RWY	11	7533	7544	0.1%
Cambridge University Hospitals NHS Foundation Trust	RGT	69	5012	5081	1.4%
Cambridgeshire Community Services NHS Trust	RYV	9	3526	3535	0.3%
Central Manchester University Hospitals NHS Foundation Trust	RW3	192	15181	15373	1.2%
Chelsea and Westminster Hospital NHS Foundation Trust	RQM	112	4264	4376	2.6%
Chesterfield Royal Hospital NHS Foundation Trust	RFS	27	4487	4514	0.6%
City Hospitals Sunderland NHS Foundation Trust	RLN	55	5637	5692	1.0%
Colchester Hospital University NHS Foundation Trust	RDE	22	7074	7096	0.3%
Countess Of Chester Hospital NHS Foundation Trust	RJR	1049	3956	5005	####
County Durham and Darlington NHS Foundation Trust	RXP	37	11180	11217	0.3%
Croydon Health Services NHS Trust	RJ6	481	4194	4675	####
Dartford and Gravesham NHS Trust	RN7	25	6426	6451	0.4%
Derby Hospitals NHS Foundation Trust	RTG	181	4166	4347	4.2%
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	RP5	10	9623	9633	0.1%
Dorset County Hospital NHS Foundation Trust	RBD	15	2963	2978	0.5%
East and North Hertfordshire NHS Trust	RWH	25	7372	7397	0.3%
East Cheshire NHS Trust	RJN	-	-	3179	<0.1%
East Kent Hospitals University NHS Foundation Trust	RVV	63	10829	10892	0.6%
East Lancashire Hospitals NHS Trust	RXR	15	13702	13717	0.1%
East Sussex Hospitals NHS Trust	RXC	33	5951	5984	0.6%

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4	Epsom and St Helier University Hospitals NHS Trust	RVR	59	4658	4717	1.3%
5	Frimley Park Hospital NHS Trust	RDU	34	13022	13056	0.3%
6	Gateshead Health NHS Foundation Trust	RR7	17	3086	3103	0.5%
7	George Eliot Hospital NHS Trust	RLT	-	-	1126	<0.1%
8	Gloucestershire Hospitals NHS Foundation Trust	RTE	49	8193	8242	0.6%
9						
10	Great Ormond Street Hospital NHS Trust	RP4	216	612	828	####
11	Great Western Hospitals NHS Foundation Trust	RN3	29	5800	5829	0.5%
12	Guy's and St Thomas' NHS Foundation Trust	RJ1	122	4269	4391	2.8%
13	Harrogate and District NHS Foundation Trust	RCD	10	3300	3310	0.3%
14						
15	Hereford Hospitals NHS Trust	RLQ	347	3453	3800	9.1%
16	Hinchingbrooke Healthcare NHS Trust	RQQ	-	-	455	<0.1%
17	Homerton University Hospital NHS Foundation Trust	RQX	15	2576	2591	0.6%
18	Hull and East Yorkshire Hospitals NHS Trust	RWA	19	7910	7929	0.2%
19						
20	Imperial College Healthcare NHS Trust	RYJ	207	3837	4044	5.1%
21	Ipswich Hospital NHS Trust	RGQ	30	5399	5429	0.6%
22	Isle of wight NHS Trust	R1F	10	2323	2333	0.4%
23						
24	James Paget University Hospitals NHS Foundation Trust	RGP	10	2940	2950	0.3%
25	Kettering General Hospital NHS Foundation Trust	RNQ	-	-	5229	<0.1%
26	King's College Hospital NHS Foundation Trust	RJZ	96	7895	7991	1.2%
27	Kingston Hospital NHS Trust	RAX	49	3772	3821	1.3%
28						
29	Lancashire Teaching Hospitals NHS Trust	RXN	58	8954	9012	0.6%
30	Leeds Teaching Hospitals NHS Trust	RR8	36	9409	9445	0.4%
31	London North West Healthcare NHS Trust	R1K	69	8792	8861	0.8%
32	Luton and Dunstable Hospital NHS Foundation Trust	RC9	41	9123	9164	0.4%
33						
34	Maidstone and Tunbridge Wells NHS Trust	RWF	16	4750	4766	0.3%
35	Medway NHS Trust	RPA	34	8205	8239	0.4%
36	Mid Essex Hospital Services NHS Trust	RQ8	33	5353	5386	0.6%
37	Mid Staffordshire NHS Foundation Trust	RJD	18	2616	2634	0.7%
38						
39	Mid Yorkshire Hospitals NHS Trust	RXF	32	10681	10713	0.3%
40	Milton Keynes Hospital NHS Foundation Trust	RD8	38	6523	6561	0.6%
41	Newcastle Upon Tyne Hospitals NHS Foundation Trust	RTD	141	14332	14473	1.0%
42	Norfolk and Norwich University Hospitals NHS Foundation Trust	RM1	25	8824	8849	0.3%
43						
44	North Bristol NHS Trust	RVJ	19	996	1015	1.9%
45	North Cumbria University Hospitals NHS Trust	RNL	159	5837	5996	2.7%
46	North Lincolnshire and Goole Hosps NHS Foundation Trust	RJL	7	5531	5538	0.1%
47						
48	North Middlesex University Hospital NHS Trust	RAP	58	7613	7671	0.8%
49	North Tees and Hartlepool NHS Foundation Trust	RVW	-	-	5043	<0.1%
50	Northampton General Hospital NHS Trust	RNS	16	7594	7610	0.2%
51	Northern Devon Healthcare NHS Trust	RBZ	13	2528	2541	0.5%
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53	Northumbria Healthcare NHS Foundation Trust	RTF	15	6137	6152	0.2%
54	Nottingham University Hospitals NHS Trust	RX1	26	9005	9031	0.3%
55	Oxford Radcliffe Hospital NHS Trust	RTH	110	10408	10518	1.0%
56	Pennine Acute Hospitals NHS Trust	RW6	41	17532	17573	0.2%
57						
58	Peterborough and Stamford Hospitals NHS Foundation Trust	RGN	17	6931	6948	0.2%
59	Plymouth Hospitals NHS Trust	RK9	16	7560	7576	0.2%
60	Poole Hospital NHS Foundation Trust	RD3	67	8293	8360	0.8%

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Portsmouth Hospitals NHS Trust	RHU	21	7075	7096	0.3%
Princess Alexandra Hospital NHSTrust	RQW	32	2770	2802	1.1%
Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	RCX	9	4126	4135	0.2%
Royal Berkshire Hospital NHS Foundation Trust	RHW	73	5495	5568	1.3%
Royal Bolton Hospital NHS Foundation Trust	RMC	22	8272	8294	0.3%
Royal Bournemouth and Christchurch Trust	RDZ	34	479	513	6.6%
Royal Cornwall Hospitals NHS Trust	REF	55	6932	6987	0.8%
Royal Devon and Exeter NHS Foundation Trust	RH8	39	6081	6120	0.6%
Royal Free Hampstead NHSTrust	RAL	116	8720	8836	1.3%
Royal Liverpool Broadgreen Hospitals NHS Trust	RQ6	19	857	876	2.2%
Royal Surrey County NHS Foundation Trust	RA2	70	3659	3729	1.9%
Royal United Hospital Bath NHS Trust	RD1	46	6146	6192	0.7%
Royal Wolverhampton Hospital NHS Trust	RL4	36	8040	8076	0.4%
Salford Royal NHS Foundation Trust	RM3	19	2939	2958	0.6%
Salisbury NHS Foundation Trust	RNZ	21	2359	2380	0.9%
Sandwell and West Birmingham Hospitals NHS Trust	RXK	75	8955	9030	0.8%
Sheffield Children's NHS Foundation Trust	RCU	16	7095	7111	0.2%
Sheffield Teaching Hospitals NHS Foundation Trust	RHQ	-	-	1438	<0.1%
Sherwood Forest Hospitals NHS Foundation Trust	RK5	39	5065	5104	0.8%
Shrewsbury and Telford Hospital NHS Trust	RXW	731	7873	8604	8.5%
South Devon Health Care NHS Trust	RA9	36	3242	3278	1.1%
South Tees Hospitals NHS Foundation Trust	RTR	36	10272	10308	0.3%
South Tyneside NHS Foundation Trust	RE9	-	-	1628	<0.1%
South Warwickshire NHS Foundation Trust	RJC	330	3488	3818	8.6%
Southampton University Hospitals NHS Trust	RHM	97	10154	10251	0.9%
Southend University Hospitals NHS Foundation Trust	RAJ	13	2857	2870	0.5%
Southport and Ormskirk Hospital NHS Trust	RVY	33	4397	4430	0.7%
St George's Healthcare NHS Trust	RJ7	79	7366	7445	1.1%
St Helens and Knowsley Hospitals NHS Trust	RBN	53	6657	6710	0.8%
Stockport NHS Foundation Trust	RWJ	13	5540	5553	0.2%
Surrey and Sussex Healthcare NHS Trust	RTP	64	4040	4104	1.6%
Tameside Hospital NHS Foundation Trust	RMP	33	4815	4848	0.7%
Taunton and Somerset NHS Foundation Trust	RBA	44	4730	4774	0.9%
The Dudley Group Of Hospitals NHS Foundation Trust	RNA	11	6993	7004	0.2%
The Hillingdon Hospital NHS Trust	RAS	65	4475	4540	1.4%
The Lewisham Healthcare NHSTrust	RJ2	601	11875	12476	4.8%
The Mid Cheshire Hospitals NHS Trust	RBT	27	5159	5186	0.5%
The Rotherham NHS Foundation Trust	RFR	-	-	3967	<0.1%
The Walton Centre NHS Foundation Trust	RET	7	34	41	####
United Lincolnshire Hospitals NHS Trust	RWD	77	8350	8427	0.9%
University College London Hospitals NHS Foundation Trust	RRV	124	2406	2530	4.9%
University Hospital Birmingham NHS Foundation Trust	RRK	16	788	804	2.0%
University Hospital Of North Staffordshire Hospital NHS Trust	RJE	42	13351	13393	0.3%
University Hospital Of South Manchester NHS Foundation Trust	RM2	32	6607	6639	0.5%
University Hospitals Coventry and Warwickshire NHS Trust	RKB	39	8421	8460	0.5%
University Hospitals Of Bristol NHS Foundation Trust	RA7	120	9975	10095	1.2%

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University Hospitals Of Leicester NHS Trust	RWE	403	9514	9917	4.1%
University Hospitals Of Morecambe Bay NHS Foundation Trust	RTX	62	6775	6837	0.9%
Walsall Hospitals NHS Trust	RBK	13	3350	3363	0.4%
Warrington and Halton Hospitals NHS Foundation Trust	RWW	60	5048	5108	1.2%
West Hertfordshire Hospitals NHS Trust	RWG	29	5521	5550	0.5%
West Middlesex University NHS Trust	RFW	34	3098	3132	1.1%
West Suffolk Hospital NHS Trust	RGR	25	4007	4032	0.6%
Western Sussex Hospitals NHS Trust	RYR	35	7452	7487	0.5%
Weston Area Health NHS Trust	RA3	17	852	869	2.0%
Whittington Hospital NHS Trust	RKE	9	3518	3527	0.3%
Wirral University Teaching Hospital NHS Foundation Trust	RBL	97	6643	6740	1.4%
Worcestershire Acute Hospitals NHS Trust	RWP	24	7270	7294	0.3%
Wrightington, Wigan and Leigh NHS Foundation Trust	RRF	8	3106	3114	0.3%
Yeovil District Hospital NHS Foundation Trust	RA4	24	2182	2206	1.1%
York Hospitals NHS Trust	RCB	66	7723	7789	0.8%
Total		10564	854667	887296	1.2%
Notes. Where 5 or fewer invalid cases, number is suppressed					

Appendix Table A2: Paediatric hospital catchment populations by Trust and year, English Hospital Episode Statistics 2011/12-2014/15

			2011/12	2012/13	2013/14	2014/15	
1							
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10	REM	Aintree University Hospitals NHS Foundation Trust	North West	10023	10327	8631	10848
11			Yorkshire and				
12	RCF	Airedale NHS Foundation Trust	The Humber	41949	39720	43968	43450
13	RBS	Alder Hey Childrens NHS Foundation Trust	North West	135592	135873	135226	134281
14		Ashford and St Peter's Hospitals NHS Foundation	South East				
15	RTK	Trust	Coast	67507	66359	67714	67049
16	RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	London	197275	149765	149133	145366
17							
18	RVL	Barnet and Chase Farm Hospitals NHS Trust	London	127294	127254	113094	.
19	RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	Yorkshire and				
20			The Humber	50808	51686	51165	52966
21	R1H	Barts Health NHS Trust	London	12668	267307	270243	268558
22	RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	East of England	78568	72928	75975	77489
23		Basingstoke and North Hampshire Hospitals NHS					
24	RN5	Foundation Trust	South Central	85695	102867	101435	99421
25	RC1	Bedford Hospital NHS Trust	East of England	47451	49333	32284	48718
26	RQ3	Birmingham Children's Hospital NHS Foundation Trust	West Midlands	167662	166577	162074	159686
27	RR1	Birmingham Heartlands and Solihull Trust	West Midlands	179182	175711	173618	180098
28	RLU	Birmingham Women's NHS Foundation Trust	West Midlands	2622	2783	2526	2897
29	RXL	Blackpool Fylde and Wyre NHS Foundation Trust	North West	58761	59309	59561	60397
30			Yorkshire and				
31	RAE	Bradford Teaching Hospitals NHS Foundation Trust	The Humber	113843	114617	111292	111030
32			South East				
33	RXH	Brighton and Sussex University Hospitals NHS Trust	Coast	95573	99438	103746	105282
34	RXQ	Buckinghamshire Healthcare NHS Trust	South Central	102622	99708	96197	99550
35	RJF	Burton Hospitals NHS Foundation Trust	West Midlands	58296	60052	62031	61559
36			Yorkshire and				
37	RWY	Calderdale and Huddersfield NHS Foundation Trust	The Humber	96587	95166	96430	95715
38	RGT	Cambridge University Hospitals NHS Foundation Trust	East of England	94724	93112	94595	94647
39	RYV	Cambridgeshire Community Services NHS Trust	East of England	36498	38274	38476	38372
40		Central Manchester University Hospitals NHS					
41	RW3	Foundation Trust	North West	129668	123097	131327	134340
42		Chelsea and Westminster Hospital NHS Foundation					
43	RQM	Trust	London	90449	93355	88865	86439
44	RFS	Chesterfield Royal Hospital NHS Foundation Trust	East Midlands	55086	56540	55790	56603
45	RBV	Christie Hospital NHS Trust	North West	249	71	202	231
46	RLN	City Hospitals Sunderland NHS Foundation Trust	North East	61855	60998	63551	63650
47		Clatterbridge Centre For Oncology NHS Foundation					
48	REN	Trust	North West	61	17	.	45
49	RDE	Colchester Hospital University NHS Foundation Trust	East of England	72893	71762	74634	75048
50	RJR	Countess Of Chester Hospital NHS Foundation Trust	North West	43561	43650	42978	43204
51	RXP	County Durham and Darlington NHS Foundation Trust	North East	107566	108332	107119	108941
52							
53	RJ6	Croydon Health Services NHS Trust	London	81355	78015	78090	77160
54			South East				
55	RN7	Dartford and Gravesham NHS Trust	Coast	76140	73911	78523	77768
56	RTG	Derby Hospitals NHS Foundation Trust	East Midlands	101760	103757	104768	101709
57		Doncaster and Bassetlaw Hospitals NHS Foundation	Yorkshire and				
58	RP5	Trust	The Humber	102095	100803	98480	100244
59	RBD	Dorset County Hospital NHS Foundation Trust	South West	40217	40655	39469	38763
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4	RC3	Ealing Hospital NHS Trust	London	58077	53775	52820	.
5	RWH	East and North Hertfordshire NHS Trust	East of England	110674	104026	106784	105074
6	RJN	East Cheshire NHS Trust	North West	38204	36740	36029	35913
7			South East				
8	RVV	East Kent Hospitals University NHS Foundation Trust	Coast	137896	137059	138382	141973
9	RXR	East Lancashire Hospitals NHS Trust	North West	116271	119014	118240	117300
10			South East				
11	RXC	East Sussex Hospitals NHS Trust	Coast	80445	77868	73828	73412
12	RVR	Epsom and St Helier University Hospitals NHS Trust	London	87348	83731	81162	85745
13			South East				
14	RDU	Frimley Park Hospital NHS Trust	Coast	80008	85799	88597	190069
15	RR7	Gateshead Health NHS Foundation Trust	North East	43832	43763	38241	36789
16	RLT	George Eliot Hospital NHS Trust	West Midlands	30544	29618	20570	19381
17	RTE	Gloucestershire Hospitals NHS Foundation Trust	South West	120471	120927	120459	119516
18	RP4	Great Ormond Street Hospital NHS Trust	London	44418	17789	7456	6236
19							
20	RN3	Great Western Hospitals NHS Foundation Trust	South West	79223	78668	79347	82167
21	RJ1	Guy's and St Thomas' NHS Foundation Trust	London	85083	69753	71571	64902
22			Yorkshire and				
23	RCD	Harrogate and District NHS Foundation Trust	The Humber	40531	40823	40145	40560
24		Heatherwood and Wexham Park Hosps NHS					
25	RD7	Foundation Trust	South Central	99093	99936	100829	.
26	RLQ	Hereford Hospitals NHS Trust	West Midlands	38422	37728	38147	39130
27	RQQ	Hinchingbrooke Healthcare NHS Trust	East of England	7964	6273	6811	6738
28	RQX	Homerton University Hospital NHS Foundation Trust	London	89851	52951	52578	49332
29			Yorkshire and				
30	RWA	Hull and East Yorkshire Hospitals NHS Trust	The Humber	105424	106722	106685	106281
31	RYJ	Imperial College Healthcare NHS Trust	London	72424	67571	74510	75876
32	RGQ	Ipswich Hospital NHS Trust	East of England	71307	71010	71234	71379
33	R1F	Isle of wight NHS Trust	South Central	.	31154	30292	28924
34		James Paget University Hospitals NHS Foundation					
35	RGP	Trust	East of England	46037	45337	44979	43863
36	RNQ	Kettering General Hospital NHS Foundation Trust	East Midlands	68698	69630	68806	67436
37	RJZ	King's College Hospital NHS Foundation Trust	London	88602	86947	148099	150224
38							
39	RAX	Kingston Hospital NHS Trust	London	75380	68716	69583	70421
40	RXN	Lancashire Teaching Hospitals NHSTrust	North West	87179	87630	88836	87841
41			Yorkshire and				
42	RR8	Leeds Teaching Hospitals NHS Trust	The Humber	153920	148568	150597	151367
43	RBQ	Liverpool Heart and Chest NHS Foundation Trust	North West	106	20	47	64
44	REP	Liverpool Womens Hospital NHS Trust	North West	1656	1833	3561	2475
45	R1K	London North West Healthcare NHS Trust	London	.	.	486	166660
46	RC9	Luton and Dunstable Hospital NHS Foundation Trust	East of England	96418	95475	95886	96289
47			South East				
48	RWF	Maidstone and Tunbridge Wells NHS Trust	Coast	105941	102464	103455	104481
49			South East				
50	RPA	Medway NHS Trust	Coast	95192	94535	92696	92044
51	RQ8	Mid Essex Hospital Services NHS Trust	East of England	120888	107718	101410	100503
52	RJD	Mid Staffordshire NHS Foundation Trust	West Midlands	51662	48065	47435	26235
53			Yorkshire and				
54	RXF	Mid Yorkshire Hospitals NHS Trust	The Humber	132650	133511	135039	133869
55	RD8	Milton Keynes Hospital NHS Foundation Trust	South Central	68637	69072	79382	68737
56	RP6	Moorfields Eye Hospital NHS Foundation Trust	London	1824	916	916	843
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58	RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	North East	117233	117214	121658	124257
59		Norfolk and Norwich University Hospitals NHS					
60	RM1	Foundation Trust	East of England	116286	114535	114161	118394

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4	RVJ	North Bristol NHS Trust	South West	49997	45687	48493	19435
5	RNL	North Cumbria University Hospitals NHS Trust	North West	66588	66042	66633	66748
6	RJL	North Lincolnshire and Goole Hosps NHS Foundation Trust	Yorkshire and The Humber	87840	89727	87901	87428
7	RAP	North Middlesex University Hospital NHS Trust	London	69610	59956	74570	96137
8	RVW	North Tees and Hartlepool NHS Foundation Trust	North East	62654	62927	61569	61068
9	RV8	North West London Hospitals NHS Trust	London	124936	122553	120266	.
10	RNS	Northampton General Hospital NHS Trust	East Midlands	79616	79064	79996	80178
11	RBZ	Northern Devon Healthcare NHS Trust	South West	36726	36767	35147	34821
12	RTF	Northumbria Healthcare NHS Foundation Trust	North East	66237	66331	67151	65421
13	RX1	Nottingham University Hospitals NHS Trust	East Midlands	171690	169301	169578	172520
14	RTH	Oxford Radcliffe Hospital NHS Trust	South Central	150782	149553	152788	153875
15	RGM	Papworth Hospital NHS Foundation Trust	East of England	152	109	60	69
16	RW6	Pennine Acute Hospitals NHS Trust	North West	181461	177490	174316	172774
17	RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	East of England	76073	78570	78495	79335
18	RK9	Plymouth Hospitals NHS Trust	South West	94298	94886	93753	93846
19	RD3	Poole Hospital NHS Foundation Trust	South West	100557	97418	97080	97422
20	RHU	Portsmouth Hospitals NHS Trust	South Central	126870	123691	124823	118416
21	RQW	Princess Alexandra Hospital NHS Trust	East of England	65509	62257	62667	61910
22	RCX	Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	East of England South East	46079	45410	46035	44609
23	RPC	Queen Victoria Hospital NHS Foundation Trust	Coast	30623	31677	32219	28764
24	RL1	Robert Jones and Agnes Hunt Orthopaedic NHS Trust	West Midlands	386	179	68	93
25	RHW	Royal Berkshire Hospital NHS Foundation Trust	South Central	107907	103139	101569	100771
26	RMC	Royal Bolton Hospital NHS Foundation Trust	North West	82536	84113	84077	84314
27	RDZ	Royal Bournemouth and Christchurch Trust	South West	5939	7681	5662	6007
28	RT3	Royal Brompton and Harefield NHS Foundation Trust	London	5283	4361	3825	3899
29	REF	Royal Cornwall Hospitals NHS Trust	South West	94173	94210	91643	91698
30	RH8	Royal Devon and Exeter NHS Foundation Trust	South West	75572	76294	75519	78322
31	RAL	Royal Free Hampstead NHS Trust	London	52443	50068	48224	155113
32	RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	North West	12435	11431	12377	12110
33	RBB	Royal Nat Hosp Rheumatic Diseases NHS Trust	South West	24	24	.	.
34	RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	West Midlands South East	343	209	293	405
35	RA2	Royal Surrey County NHS Foundation Trust	Coast	69295	69069	68703	67670
36	RD1	Royal United Hospital Bath NHS Trust	South West	91687	92969	93205	92029
37	RL4	Royal Wolverhampton Hospital NHS Trust	West Midlands	76825	76809	79145	79276
38	RM3	Salford Royal NHS Foundation Trust	North West	36907	36818	34678	34985
39	RNZ	Salisbury NHS Foundation Trust	South West	53602	47693	47618	47659
40	RXK	Sandwell and West Birmingham Hospitals NHS Trust	West Midlands	94462	94120	98396	100183
41	RCC	Scarborough and North East Yorkshire NHS Trust	Yorkshire and The Humber	35573	.	.	.
42	RCU	Sheffield Children's NHS Foundation Trust	Yorkshire and The Humber	115371	116009	117548	102197
43	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	Yorkshire and The Humber	18502	18740	19406	27899
44	RK5	Sherwood Forest Hospitals NHS Foundation Trust	East Midlands	69176	70373	70109	70777
45	RXW	Shrewsbury and Telford Hospital NHS Trust	West Midlands	100221	101232	100641	102368
46	RA9	South Devon Health Care NHS Trust	South West	49907	50574	50908	50569
47	RYQ	South London Healthcare NHS Trust	London	139032	147968	39830	.

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4	RTR	South Tees Hospitals NHS Foundation Trust	North East	97604	97851	97981	98197
5	RE9	South Tyneside NHS Foundation Trust	North East	25878	25367	24299	23625
6	RJC	South Warwickshire NHS Foundation Trust	West Midlands	46900	47121	47468	46629
7	RHM	Southampton University Hospitals NHS Trust	South Central	134343	115636	117210	120636
8	RAJ	Southend University Hospitals NHS Foundation Trust	East of England	65574	66876	68295	66039
9	RVY	Southport and Ormskirk Hospital NHS Trust	North West	53815	53137	51841	53484
10	RJ7	St George's Healthcare NHS Trust	London	103559	109089	113127	118041
11	RBN	St Helens and Knowsley Hospitals NHS Trust	North West	61878	65500	65986	67966
12	RWJ	Stockport NHS Foundation Trust	North West	66698	68799	65856	63583
13			South East				
14	RTP	Surrey and Sussex Healthcare NHS Trust	Coast	95076	92811	93180	83612
15	RMP	Tameside Hospital NHS Foundation Trust	North West	47340	48784	47877	48707
16	RBA	Taunton and Somerset NHS Foundation Trust	South West	67189	67320	66528	66116
17	RNA	The Dudley Group Of Hospitals NHS Foundation Trust	West Midlands	82101	82900	80817	81498
18	RAS	The Hillingdon Hospital NHS Trust	London	65107	61012	61198	65195
19	RJ2	The Lewisham Healthcare NHS Trust	London	62637	61055	103280	151669
20	RBT	The Mid Cheshire Hospitals NHS Trust	North West	57013	54683	57962	56699
21			Yorkshire and				
22	RFR	The Rotherham NHS Foundation Trust	The Humber	53392	51784	50347	52577
23	RPY	The Royal Marsden NHS Foundation Trust	London	382	216	348	104
24	RAN	The Royal National Orthopaedic Hospital NHS Trust	London	973	529	289	409
25	RET	The Walton Centre NHS Foundation Trust	North West	440	263	255	281
26	RWD	United Lincolnshire Hospitals NHS Trust	East Midlands	118708	115559	115924	112401
27	RRV	University College London Hospitals NHS Foundation Trust	London	52193	39854	42780	42106
28	RRK	University Hospital Birmingham NHS Foundation Trust	West Midlands	11362	10510	12108	10979
29		University Hospital Of North Staffordshire Hospital NHS Trust	West Midlands	107959	108300	110705	127581
30	RJE	University Hospital Of South Manchester NHS Foundation Trust	North West	70604	70443	70896	71403
31	RM2	University Hospitals Coventry and Warwickshire NHS Trust	West Midlands	116634	116159	126521	126537
32	RKB	University Hospitals Of Bristol NHS Foundation Trust	South West	145749	145288	145188	172827
33	RA7	University Hospitals Of Leicester NHS Trust	East Midlands	188490	188424	189865	192382
34	RWE	University Hospitals Of Morecambe Bay NHS Foundation Trust	North West	69612	68370	67995	68522
35	RTX	Walsall Hospitals NHS Trust	West Midlands	56799	58354	56452	55821
36	RBK	Warrington and Halton Hospitals NHS Foundation Trust	North West	64831	63822	61770	61421
37	RWW	West Hertfordshire Hospitals NHS Trust	East of England	91480	91916	97486	95384
38	RWG	West Middlesex University NHS Trust	London	59734	65428	67430	63584
39	RFW	West Suffolk Hospital NHS Trust	East of England	57097	58326	57180	56939
40	RGR	Western Sussex Hospitals NHS Trust	South East Coast	96626	94666	91769	94045
41	RYR	Weston Area Health NHS Trust	South West	13122	11742	12538	13040
42	RA3	Whittington Hospital NHS Trust	London	53355	50811	51311	50647
43	RKE	Wirral University Teaching Hospital NHS Foundation Trust	North West	71996	72292	72743	72140
44	RBL	Worcestershire Acute Hospitals NHS Trust	West Midlands	120307	118484	117303	115581
45	RWP	Wrightington, Wigan and Leigh NHS Foundation Trust	North West	52988	53106	52291	51486
46	RRF	Yeovil District Hospital NHS Foundation Trust	South West	37273	38748	37598	35923
47	RA4	York Hospitals NHS Trust	Yorkshire and The Humber	70501	105737	103237	104298
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Appendix Table A3. Paediatric hospital catchment populations by Trust, deprivation quintile, English Hospital Episode Statistics, 2013/14

		Deprivation quintile					Total	% in most deprived quintile	% in least deprived quintile
		1 (Most deprived)	2	3	4	5			
REM	Aintree University Hospitals NHS Foundation Trust	4330	1126	1903	891	381	8631	50.2%	4.4%
RCF	Airedale NHS Foundation Trust	9488	5421	8214	12856	7989	43968	21.6%	18.2%
RBS	Alder Hey Childrens NHS Foundation Trust	78577	18715	17336	12477	8121	135226	58.1%	6.0%
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	803	6579	10863	14707	34762	67714	1.2%	51.3%
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	35894	49190	31992	20717	11341	149133	24.1%	7.6%
RVL	Barnet and Chase Farm Hospitals NHS Trust	13252	24820	31417	28228	15377	113094	11.7%	13.6%
RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	16847	14899	9311	6467	3641	51165	32.9%	7.1%
R1H	Barts Health NHS Trust	163144	60604	24847	13148	8500	270243	60.4%	3.1%
RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	14521	20050	13825	11279	16300	75975	19.1%	21.5%
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	818	13145	13577	20675	53220	101435	0.8%	52.5%
RC1	Bedford Hospital NHS Trust	3233	5913	5603	7476	10060	32284	10.0%	31.2%
RQ3	Birmingham Children's Hospital NHS Foundation Trust	91604	28586	25106	9722	7055	162074	56.5%	4.4%
RR1	Birmingham Heartlands and Solihull Trust	82911	22330	23792	21020	23566	173618	47.8%	13.6%
RLU	Birmingham Women's NHS Foundation Trust	1146	576	459	271	74	2526	45.4%	2.9%
RXL	Blackpool Fylde and Wyre NHS Foundation Trust	19392	11532	11532	9706	7400	59561	32.6%	12.4%
RAE	Bradford Teaching Hospitals NHS Foundation Trust	66484	20131	13399	6629	4650	111292	59.7%	4.2%
RXH	Brighton and Sussex University Hospitals NHS Trust	12242	21734	24955	22064	22751	103746	11.8%	21.9%
RXQ	Buckinghamshire Healthcare NHS Trust	375	15533	13666	16674	49949	96197	0.4%	51.9%
RJF	Burton Hospitals NHS Foundation Trust	8028	10883	13795	16333	12992	62031	12.9%	20.9%
RWY	Calderdale and Huddersfield NHS Foundation Trust	26028	23462	15310	19005	12625	96430	27.0%	13.1%
RGT	Cambridge University Hospitals NHS Foundation Trust	1607	10992	14338	25244	42414	94595	1.7%	44.8%
RYV	Cambridgeshire Community Services NHS Trust	302	4165	10028	7652	16328	38476	0.8%	42.4%
RW3	Central Manchester University Hospitals NHS Foundation Trust	67086	27353	16708	11774	8406	131327	51.1%	6.4%
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	16640	26815	19308	19858	6244	88865	18.7%	7.0%
RFS	Chesterfield Royal Hospital NHS Foundation Trust	11262	14747	10348	11926	7507	55790	20.2%	13.5%
RBV	Christie Hospital NHS Trust	86	50	0	27	39	202	42.5%	19.5%
RLN	City Hospitals Sunderland NHS Foundation Trust	26687	18178	8391	7604	2691	63551	42.0%	4.2%
RDE	Colchester Hospital University NHS Foundation Trust	7259	16058	17471	21094	12753	74634	9.7%	17.1%
RJR	Countess Of Chester Hospital NHS Foundation Trust	9307	3990	5177	9655	14849	42978	21.7%	34.6%
RXP	County Durham and Darlington NHS Foundation Trust	31670	30286	17175	15061	12927	107119	29.6%	12.1%

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RJ6	Croydon Health Services NHS Trust	17433	28190	18334	9300	4833	78090	22.3%	6.2%
RN7	Dartford and Gravesham NHS Trust	9887	18819	16535	18000	15283	78523	12.6%	19.5%
RTG	Derby Hospitals NHS Foundation Trust	22327	19085	20936	18375	24044	104768	21.3%	23.0%
RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	37755	22141	18484	16150	3949	98480	38.3%	4.0%
RBD	Dorset County Hospital NHS Foundation Trust	3473	6672	15169	10100	4054	39469	8.8%	10.3%
RC3	Ealing Hospital NHS Trust	13677	19798	14306	3900	1139	52820	25.9%	2.2%
RWH	East and North Hertfordshire NHS Trust	1696	12240	25595	24728	42525	106784	1.6%	39.8%
RJN	East Cheshire NHS Trust	1827	4965	6152	6945	16141	36029	5.1%	44.8%
RVV	East Kent Hospitals University NHS Foundation Trust	26345	30829	35972	34287	10948	138382	19.0%	7.9%
RXR	East Lancashire Hospitals NHS Trust	54726	24499	11565	19053	8398	118240	46.3%	7.1%
RXC	East Sussex Hospitals NHS Trust	15541	20009	16409	14715	7152	73828	21.1%	9.7%
RVR	Epsom and St Helier University Hospitals NHS Trust	2557	14032	13354	18218	33002	81162	3.1%	40.7%
RDU	Frimley Park Hospital NHS Trust	826	5337	11567	16677	54189	88597	0.9%	61.2%
RR7	Gateshead Health NHS Foundation Trust	15875	10622	4335	5199	2210	38241	41.5%	5.8%
RLT	George Eliot Hospital NHS Trust	3223	6192	4042	4183	2931	20570	15.7%	14.2%
RTE	Gloucestershire Hospitals NHS Foundation Trust	10586	14006	26234	31926	37706	120459	8.8%	31.3%
RP4	Great Ormond Street Hospital NHS Trust	2151	1616	1447	1269	973	7456	28.8%	13.1%
RN3	Great Western Hospitals NHS Foundation Trust	8184	7123	12779	22039	29222	79347	10.3%	36.8%
RJ1	Guy's and St Thomas' NHS Foundation Trust	23701	29293	8915	6087	3576	71571	33.1%	5.0%
RCD	Harrogate and District NHS Foundation Trust	492	1933	7081	12804	17836	40145	1.2%	44.4%
RD7	Heatherwood and Wexham Park Hosps NHS Foundation Trust	6085	21541	23192	17741	32269	100829	6.0%	32.0%
RLQ	Hereford Hospitals NHS Trust	2934	4454	20545	7986	2228	38147	7.7%	5.8%
RQQ	Hinchingbrooke Healthcare NHS Trust	12	733	1351	1341	3375	6811	0.2%	49.5%
RQX	Homerton University Hospital NHS Foundation Trust	40697	10604	673	402	202	52578	77.4%	0.4%
RWA	Hull and East Yorkshire Hospitals NHS Trust	35876	15750	16931	18324	19804	106685	33.6%	18.6%
RYJ	Imperial College Healthcare NHS Trust	29567	23341	11461	8231	1911	74510	39.7%	2.6%
RGQ	Ipswich Hospital NHS Trust	8613	8943	14027	21209	18443	71234	12.1%	25.9%
R1F	Isle of wight NHSTrust	1970	10358	10936	4519	2509	30292	6.5%	8.3%
RGP	James Paget University Hospitals NHS Foundation Trust	10958	10713	11872	9138	2299	44979	24.4%	5.1%
RNQ	Kettering General Hospital NHS Foundation Trust	11303	15898	11852	12521	17233	68806	16.4%	25.0%
RJZ	King's College Hospital NHS Foundation Trust	42747	43266	19382	20404	22300	148099	28.9%	15.1%
RAX	Kingston Hospital NHS Trust	1675	5276	10568	21191	30872	69583	2.4%	44.4%
RXN	Lancashire Teaching Hospitals NHS Trust	21400	14101	15110	18870	19355	88836	24.1%	21.8%
RR8	Leeds Teaching Hospitals NHS Trust	59934	28280	20340	22620	19424	150597	39.8%	12.9%
RBQ	Liverpool Heart and Chest NHS Foundation Trust	0	0	26	22	0	47	0.0%	0.0%
REP	Liverpool Womens Hospital NHS Trust	1707	707	509	394	244	3561	48.0%	6.9%
R1K	London North West Healthcare NHS Trust	97	173	141	45	30	486	19.9%	6.2%
RC9	Luton and Dunstable Hospital NHS Foundation Trust	17852	24434	18167	14159	21275	95886	18.6%	22.2%
RWF	Maidstone and Tunbridge Wells NHS Trust	2895	8897	19271	33793	38600	103455	2.8%	37.3%

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RPA	Medway NHS Trust	16699	28561	18476	15552	13409	92696	18.0%	14.5%
RQ8	Mid Essex Hospital Services NHS Trust	6685	14336	16855	29032	34503	101410	6.6%	34.0%
RJD	Mid Staffordshire NHS Foundation Trust	5032	9810	9988	11328	11277	47435	10.6%	23.8%
RXF	Mid Yorkshire Hospitals NHS Trust	43148	38161	23923	20426	9381	135040	32.0%	6.9%
RD8	Milton Keynes Hospital NHS Foundation Trust	10991	9702	10242	20047	28400	79382	13.8%	35.8%
RP6	Moorfields Eye Hospital NHS Foundation Trust	127	307	164	197	122	916	13.8%	13.3%
RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	40798	25120	18285	17807	19648	121658	33.5%	16.2%
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	9602	17400	32943	30205	24011	114161	8.4%	21.0%
RVJ	North Bristol NHS Trust	5764	8515	9992	9720	14502	48493	11.9%	29.9%
RNL	North Cumbria University Hospitals NHS Trust	12195	15376	17853	13491	7719	66633	18.3%	11.6%
RJL	North Lincolnshire and Goole Hospitals NHS Foundation Trust	27606	16268	17235	18122	8671	87901	31.4%	9.9%
RAP	North Middlesex University Hospital NHS Trust	44361	20500	5193	3151	1365	74570	59.5%	1.8%
RVW	North Tees and Hartlepool NHS Foundation Trust	26629	10795	8422	6195	9527	61569	43.3%	15.5%
RV8	North West London Hospitals NHS Trust	16283	39133	36738	17588	10523	120266	13.5%	8.7%
RNS	Northampton General Hospital NHS Trust	13830	14358	12007	14485	25316	79996	17.3%	31.6%
RBZ	Northern Devon Healthcare NHS Trust	2620	10607	13149	7557	1214	35147	7.5%	3.5%
RTF	Northumbria Healthcare NHS Foundation Trust	17976	17426	10150	9092	12507	67151	26.8%	18.6%
RX1	Nottingham University Hospitals NHS Trust	46374	32241	27468	27039	36456	169578	27.3%	21.5%
RTH	Oxford Radcliffe Hospital NHS Trust	9278	14348	26218	36663	66280	152788	6.1%	43.4%
RGM	Papworth Hospital NHS Foundation Trust	.	26	9	25	0	60	.	0.0%
RW6	Pennine Acute Hospitals NHS Trust	88802	32682	23049	19382	10401	174316	50.9%	6.0%
RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	18004	12188	13929	18527	15847	78495	22.9%	20.2%
RK9	Plymouth Hospitals NHS Trust	16869	22361	23327	22143	9054	93753	18.0%	9.7%
RD3	Poole Hospital NHS Foundation Trust	7818	19911	24083	21328	23941	97080	8.1%	24.7%
RHU	Portsmouth Hospitals NHS Trust	23318	22744	22627	27470	28665	124823	18.7%	23.0%
RQW	Princess Alexandra Hospital NHS Trust	2053	16719	10267	13604	20024	62667	3.3%	32.0%
RCX	Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	6726	15266	15078	5765	3199	46035	14.6%	6.9%
RPC	Queen Victoria Hospital NHS Foundation Trust	2846	4759	6532	8203	9878	32219	8.8%	30.7%
RL1	Robert Jones and Agnes Hunt Orthopaedic NHS Trust	.	.	68	0	0	68	.	0.0%
RHW	Royal Berkshire Hospital NHS Foundation Trust	5565	12862	13701	18695	50746	101569	5.5%	50.0%
RMC	Royal Bolton Hospital NHS Foundation Trust	37825	16742	11573	9984	7953	84077	45.0%	9.5%
RDZ	Royal Bournemouth and Christchurch Trust	552	1221	1091	1222	1577	5662	9.7%	27.9%
RT3	Royal Brompton and Harefield NHS Foundation Trust	627	863	727	783	825	3825	16.4%	21.6%
REF	Royal Cornwall Hospitals NHS Trust	11834	35049	31587	10025	3147	91643	12.9%	3.4%
RH8	Royal Devon and Exeter NHS Foundation Trust	5002	14847	25290	21990	8391	75519	6.6%	11.1%
RAL	Royal Free Hampstead NHS Trust	7307	12331	11797	13302	3487	48224	15.2%	7.2%
RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	7758	1640	1285	1043	651	12377	62.7%	5.3%
RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	165	20	46	61	.	293	56.5%	#VALUE!

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3	RA2	Royal Surrey County NHS Foundation Trust	130	3177	7736	16241	41419	68703	0.2%	60.3%
4	RD1	Royal United Hospital Bath NHS Trust	3564	10934	20295	24708	33703	93205	3.8%	36.2%
5	RL4	Royal Wolverhampton Hospital NHS Trust	38204	14598	10037	9724	6583	79145	48.3%	8.3%
6										
7	RM3	Salford Royal NHS Foundation Trust	14387	8964	5303	3709	2317	34678	41.5%	6.7%
8	RNZ	Salisbury NHS Foundation Trust	1844	2912	12705	15200	14957	47618	3.9%	31.4%
9	RXK	Sandwell and West Birmingham Hospitals NHS Trust	63925	19339	10871	2795	1467	98396	65.0%	1.5%
10										
11	RCU	Sheffield Children's NHS Foundation Trust	47093	18165	18857	16951	16482	117548	40.1%	14.0%
12	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	7293	3134	2764	2585	3630	19406	37.6%	18.7%
13										
14	RK5	Sherwood Forest Hospitals NHS Foundation Trust	22234	19767	13387	10059	4664	70109	31.7%	6.7%
15	RXW	Shrewsbury and Telford Hospital NHS Trust	13908	23151	27882	21270	14428	100641	13.8%	14.3%
16										
17	RA9	South Devon Health Care NHS Trust	6256	14054	17329	10014	3256	50908	12.3%	6.4%
18	RYQ	South London Healthcare NHS Trust	15076	12342	5257	3938	3217	39830	37.8%	8.1%
19	RTR	South Tees Hospitals NHS Foundation Trust	35008	14193	11757	21000	16022	97981	35.7%	16.4%
20										
21	RE9	South Tyneside NHS Foundation Trust	10715	5681	3984	1815	2105	24299	44.1%	8.7%
22	RJC	South Warwickshire NHS Foundation Trust	614	4058	7501	14302	20994	47468	1.3%	44.2%
23										
24	RHM	Southampton University Hospitals NHS Trust	17134	19498	23922	23325	33332	117210	14.6%	28.4%
25	RAJ	Southend University Hospitals NHS Foundation Trust	10337	13071	12891	13934	18062	68295	15.1%	26.4%
26										
27	RVY	Southport and Ormskirk Hospital NHS Trust	9752	9350	11853	12368	8518	51841	18.8%	16.4%
28	RJ7	St George's Healthcare NHS Trust	10665	35308	27079	18100	21974	113127	9.4%	19.4%
29	RBN	St Helens and Knowsley Hospitals NHS Trust	31345	11877	10356	6307	6100	65986	47.5%	9.2%
30										
31	RWJ	Stockport NHS Foundation Trust	9769	12674	13387	13047	16979	65856	14.8%	25.8%
32	RTP	Surrey and Sussex Healthcare NHS Trust	1107	9346	21853	22473	38401	93180	1.2%	41.2%
33										
34	RMP	Tameside Hospital NHS Foundation Trust	18817	12474	7684	5939	2963	47877	39.3%	6.2%
35	RBA	Taunton and Somerset NHS Foundation Trust	3979	15818	20692	15615	10424	66528	6.0%	15.7%
36										
37	RNA	The Dudley Group Of Hospitals NHS Foundation Trust	26610	20047	10763	12208	11188	80817	32.9%	13.8%
38	RAS	The Hillingdon Hospital NHS Trust	7023	25504	15414	8142	5115	61198	11.5%	8.4%
39	RJ2	The Lewisham Healthcare NHS Trust	38471	37675	14761	7280	5094	103280	37.2%	4.9%
40										
41	RBT	The Mid Cheshire Hospitals NHS Trust	9058	10142	9194	10396	19172	57962	15.6%	33.1%
42	RFR	The Rotherham NHS Foundation Trust	20623	13100	7143	7545	1935	50347	41.0%	3.8%
43										
44	RPY	The Royal Marsden NHS Foundation Trust	0	107	53	42	147	348	0.0%	42.1%
45	RAN	The Royal National Orthopaedic Hospital NHS Trust	42	52	50	117	28	289	14.5%	9.7%
46	RET	The Walton Centre NHS Foundation Trust	83	36	50	56	31	255	32.7%	12.1%
47										
48	RWD	United Lincolnshire Hospitals NHS Trust	18063	25037	28269	25315	19240	115924	15.6%	16.6%
49	RRV	University College London Hospitals NHS Foundation Trust	16229	15333	5927	3409	1882	42780	37.9%	4.4%
50										
51	RRK	University Hospital Birmingham NHS Foundation Trust	5027	2439	2473	1089	1079	12108	41.5%	8.9%
52										
53	RJE	University Hospital Of North Staffordshire Hospital NHS Trust	39874	20414	19693	20464	10260	110705	36.0%	9.3%
54	RM2	University Hospital Of South Manchester NHS Foundation Trust	21407	9078	9600	13012	17798	70896	30.2%	25.1%
55										
56	RKB	University Hospitals Coventry and Warwickshire NHS Trust	31965	29721	24664	22049	18122	126521	25.3%	14.3%
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3	RA7	University Hospitals Of Bristol NHS Foundation Trust	26346	29029	24462	28807	36544	145188	18.1%	25.2%
4	RWE	University Hospitals Of Leicester NHS Trust	39869	40317	28191	33490	47997	189865	21.0%	25.3%
5										
6	RTX	University Hospitals Of Morecambe Bay NHS Foundation Trust	13063	11495	15298	18906	9232	67995	19.2%	13.6%
7	RBK	Walsall Hospitals NHS Trust	29584	12247	5952	4564	4104	56452	52.4%	7.3%
8	RWW	Warrington and Halton Hospitals NHS Foundation Trust	18402	9610	6976	12122	14661	61770	29.8%	23.7%
9										
10	RWG	West Hertfordshire Hospitals NHS Trust	909	13213	22267	19887	41210	97486	0.9%	42.3%
11	RFW	West Middlesex University NHS Trust	5688	22475	16883	13284	9100	67430	8.4%	13.5%
12	RGR	West Suffolk Hospital NHS Trust	1041	8425	12183	24686	10844	57180	1.8%	19.0%
13										
14	RYR	WesternSussexHospitals NHS Trust	6118	15486	30143	22225	17797	91769	6.7%	19.4%
15	RA3	Weston Area Health NHSTrust	2191	1714	2146	4229	2258	12538	17.5%	18.0%
16	RKE	Whittington Hospital NHSTrust	19614	18465	8121	4161	950	51311	38.2%	1.9%
17	RBL	Wirral University Teaching Hospital NHS Foundation Trust	25451	12912	10107	10590	13683	72743	35.0%	18.8%
18	RWP	Worcestershire Acute Hospitals NHS Trust	15580	17043	26647	31527	26507	117303	13.3%	22.6%
19										
20	RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	18005	11544	7010	8788	6943	52291	34.4%	13.3%
21										
22	RA4	Yeovil District Hospital NHS Foundation Trust	1302	4053	11256	15046	5942	37598	3.5%	15.8%
23	RCB	York Hospitals NHSTrust	12363	15726	20085	25537	29526	103237	12.0%	28.6%
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Appendix Table A4

Paediatric hospital catchment populations by Trust, age group, English Hospital Episode Statistics, 2013/14

Trustcode	Trust name	Region	Catchment population by age group					Total	% 0-3s
			0-3	4-7	8-11	12-15	16-18		
REM	Aintree University Hospitals NHS Foundation Trust	North East Yorkshire and	1818	1744	1644	1883	1541	8631	21.1%
RCF	Airedale NHS Foundation Trust	The Humber	9281	9223	8924	9434	7106	43968	21.1%
RBS	Alder Hey Childrens NHS Foundation Trust	North West	30231	27712	25622	28417	23244	135226	22.4%
RTK	Ashford and St Peter's Hospitals NHS Foundation Trust	North East	16376	14965	13101	13060	10213	67714	24.2%
RF4	Barking, Havering and Redbridge University Hospitals NHS Trust	North West	34684	33081	28805	29641	22922	149133	23.3%
RVL	Barnet and Chase Farm Hospitals NHS Trust	North West	26673	24951	21694	22451	17325	113094	23.6%
RFF	Barnsley Dist Gen Hosp NHS Foundation Trust	North West	11289	10815	9764	10761	8536	51165	22.1%
R1H	Barts Health NHS Trust	London	69552	60372	51954	50043	38322	270243	25.7%
RDD	Basildon and Thurrock University Hospitals NHS Foundation Trust	South Central	16850	16379	14775	15694	12277	75975	22.2%
RN5	Basingstoke and North Hampshire Hospitals NHS Foundation Trust	North West	21759	21503	19827	21349	16999	101435	21.5%
RC1	Bedford Hospital NHS Trust	South West	7063	6759	6401	6780	5281	32284	21.9%
RQ3	Birmingham Children's Hospital NHS Foundation Trust	South East Coast	37027	34991	31558	32992	25507	162074	22.8%
RR1	Birmingham Heartlands and Solihull Trust	East of England	37763	37085	34660	36620	27490	173618	21.8%
RLU	Birmingham Women's NHS Foundation Trust	North East	587	548	496	509	386	2526	23.3%
RXL	Blackpool Fylde and Wyre NHS Foundation Trust	Yorkshire and The Humber	12381	12441	11440	12976	10323	59561	20.8%
RAE	Bradford Teaching Hospitals NHS Foundation Trust	Yorkshire and The Humber	25750	24585	22183	22373	16401	111292	23.1%
RXH	Brighton and Sussex University Hospitals NHS Trust	East Midlands	22502	21982	20756	21621	16885	103746	21.7%
RXQ	Buckinghamshire Healthcare NHS Trust	North West	20687	20445	19419	20336	15309	96197	21.5%
RJF	Burton Hospitals NHS Foundation Trust	West Midlands	13021	12902	12449	13285	10375	62031	21.0%
RWY	Calderdale and Huddersfield NHS Foundation Trust	North West	21300	20517	18846	20073	15695	96430	22.1%
RGT	Cambridge University Hospitals NHS Foundation Trust	East of England	20880	19974	18545	19299	15897	94595	22.1%
RYV	Cambridgeshire Community Services NHS Trust	London	8235	7965	7611	8290	6375	38476	21.4%
RW3	Central Manchester University Hospitals NHS Foundation Trust	South East Coast	31203	28764	24888	25753	20719	131327	23.8%
RQM	Chelsea and Westminster Hospital NHS Foundation Trust	West Midlands	24795	20579	16881	15348	11263	88865	27.9%
RFS	Chesterfield Royal Hospital NHS Foundation Trust	London	11240	11335	10693	12389	10133	55790	20.1%
RBV	Christie Hospital NHS Trust	North West	45	46	39	41	31	202	22.5%
RLN	City Hospitals Sunderland NHS Foundation Trust	London	13729	13180	12033	13529	11081	63551	21.6%
RDE	Colchester Hospital University NHS Foundation Trust	South Central	15906	15463	14685	16014	12567	74634	21.3%
RJR	Countess Of Chester Hospital NHS Foundation Trust	West Midlands	8830	9025	8486	9374	7263	42978	20.5%
RXP	County Durham and Darlington NHS Foundation Trust	West Midlands	23118	22459	20601	22955	17986	107119	21.6%
RJ6	Croydon Health Services NHS Trust	South Central	19036	17326	14621	15127	11979	78090	24.4%
RN7	Dartford and Gravesham NHS Trust	North West	17567	16621	15111	16282	12942	78523	22.4%
RTG	Derby Hospitals NHS Foundation Trust	North East	22804	22075	20463	22140	17286	104768	21.8%

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RP5	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	East Midlands	21433	20734	18777	20817	16720	98480	21.8%
RBD	Dorset County Hospital NHS Foundation Trust	South West	7730	7900	7822	9036	6981	39469	19.6%
RC3	Ealing Hospital NHS Trust	East of England	13404	11827	9917	9982	7690	52820	25.4%
RWH	East and North Hertfordshire NHS Trust	East Midlands	24087	22624	20756	21912	17405	106784	22.6%
RJN	East Cheshire NHS Trust	West Midlands	7386	7518	7181	8057	5886	36029	20.5%
RVV	East Kent Hospitals University NHS Foundation Trust	South West	28405	28069	27047	30898	23963	138382	20.5%
RXR	East Lancashire Hospitals NHS Trust	North West	26277	25355	23365	24195	19048	118240	22.2%
RXC	East Sussex Hospitals NHS Trust	North West	15344	14850	14236	16419	12978	73828	20.8%
RVR	Epsom and St Helier University Hospitals NHS Trust	London	18036	17199	15795	17055	13076	81162	22.2%
RDU	Frimley Park Hospital NHS Trust	East of England	19009	18998	17419	18685	14485	88597	21.5%
RR7	Gateshead Health NHS Foundation Trust	East of England	8547	7992	7290	7895	6517	38241	22.4%
RLT	George Eliot Hospital NHS Trust	West Midlands	4483	4249	3997	4351	3490	20570	21.8%
RTE	Gloucestershire Hospitals NHS Foundation Trust	London	25140	24496	23744	26056	21022	120459	20.9%
RP4	Great Ormond Street Hospital NHS Trust	East Midlands	1819	1658	1425	1443	1111	7456	24.4%
RN3	Great Western Hospitals NHS Foundation Trust	North West	16945	16583	15601	16993	13226	79347	21.4%
RJ1	Guy's and St Thomas' NHS Foundation Trust	Yorkshire and The Humber	18653	15903	13342	13289	10384	71571	26.1%
RCD	Harrogate and District NHS Foundation Trust	Yorkshire and The Humber	7954	8302	8076	8630	7183	40145	19.8%
RD7	Heatherwood and Wexham Park Hosps NHS Foundation Trust	South West	23647	22231	19614	20153	15184	100829	23.5%
RLQ	Hereford Hospitals NHS Trust	West Midlands	7844	7663	7492	8498	6650	38147	20.6%
RQQ	Hinchingbrooke Healthcare NHS Trust	North West	1413	1397	1349	1492	1160	6811	20.7%
RQX	Homerton University Hospital NHS Foundation Trust	London	13796	11963	10167	9635	7017	52578	26.2%
RWA	Hull and East Yorkshire Hospitals NHS Trust	North West	23323	22196	20393	22278	18495	106685	21.9%
RJY	Imperial College Healthcare NHS Trust	South Central	19767	16580	14287	13669	10208	74510	26.5%
RGQ	Ipswich Hospital NHS Trust	East of England	14563	14705	13911	15774	12282	71234	20.4%
R1F	Isle of wight NHSTrust	South Central	5868	6025	5909	6954	5536	30292	19.4%
RGP	James Paget University Hospitals NHS Foundation Trust	London	9501	9074	8733	9664	8008	44979	21.1%
RNQ	Kettering General Hospital NHS Foundation Trust	South East Coast	15249	14782	13456	14226	11094	68806	22.2%
RJZ	King's College Hospital NHS Foundation Trust	Yorkshire and The Humber	36878	32843	28353	28515	21510	148099	24.9%
RAX	Kingston Hospital NHS Trust	London	17675	15747	13362	13077	9721	69583	25.4%
RXN	Lancashire Teaching Hospitals NHS Trust	South East Coast	19428	18873	17358	18576	14600	88836	21.9%
RR8	Leeds Teaching Hospitals NHS Trust	London	36478	32264	28161	29234	24461	150597	24.2%
RBQ	Liverpool Heart and Chest NHS Foundation Trust	North West	11	9	9	11	8	47	22.8%
REP	Liverpool Womens Hospital NHS Trust	South West	801	730	673	757	600	3561	22.5%
R1K	London North West Healthcare NHS Trust	London	123	107	93	92	72	486	25.4%
RC9	Luton and Dunstable Hospital NHS Foundation Trust	London	22229	21177	18857	18930	14694	95886	23.2%
RWF	Maidstone and Tunbridge Wells NHS Trust	Yorkshire and The Humber	20979	21734	20928	22499	17316	103455	20.3%
RPA	Medway NHS Trust	London	20258	19145	18099	19678	15517	92696	21.9%
RQ8	Mid Essex Hospital Services NHS Trust	London	21569	21406	20268	21536	16631	101410	21.3%
RJD	Mid Staffordshire NHS Foundation Trust	London	9750	9928	9232	10356	8170	47435	20.6%
RXF	Mid Yorkshire Hospitals NHS Trust	Yorkshire and The Humber	30208	28588	26432	28005	21806	135039	22.4%

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RD8	Milton Keynes Hospital NHS Foundation Trust	South West	18353	17473	15472	15976	12108	79382	23.1%
RP6	Moorfields Eye Hospital NHS Foundation Trust	South West	240	200	172	169	135	916	26.2%
RTD	Newcastle Upon Tyne Hospitals NHS Foundation Trust	West Midlands	26463	25348	23593	25451	20803	121658	21.8%
RM1	Norfolk and Norwich University Hospitals NHS Foundation Trust	West Midlands	24191	23315	21946	24782	19927	114161	21.2%
RVJ	North Bristol NHSTrust	North East	10772	10160	9320	10168	8073	48493	22.2%
RNL	North Cumbria University Hospitals NHS Trust	South Central	13759	13640	13119	14489	11626	66633	20.6%
RJL	North Lincolnshire and Goole Hosps NHS Foundation Trust	West Midlands	19088	18665	16976	18374	14798	87901	21.7%
RAP	North Middlesex University Hospital NHS Trust	London	17728	16530	14485	14713	11114	74570	23.8%
RVW	North Tees and Hartlepool NHS Foundation Trust	London South East Coast	13438	13002	11697	12891	10540	61569	21.8%
RV8	North West London Hospitals NHSTrust	Coast	28440	25812	23032	24078	18904	120266	23.6%
RNS	Northampton General Hospital NHS Trust	West Midlands	18338	17443	15690	16008	12517	79996	22.9%
RBZ	Northern Devon Healthcare NHS Trust	North West	7353	7094	6883	7687	6131	35147	20.9%
RTF	Northumbria Healthcare NHS Foundation Trust	London	14215	14128	13235	14280	11293	67151	21.2%
RX1	Nottingham University Hospitals NHS Trust	West Midlands	38032	36177	32352	34749	28267	169578	22.4%
RTH	Oxford Radcliffe Hospital NHS Trust	South West Yorkshire and The Humber	34060	32439	29623	31839	24828	152788	22.3%
RGM	Papworth Hospital NHS Foundation Trust	The Humber	16	13	12	12	8	60	26.0%
RW6	Pennine Acute Hospitals NHS Trust	North East	40044	38040	33963	35296	26974	174316	23.0%
RGN	Peterborough and Stamford Hospitals NHS Foundation Trust	East Midlands	17474	16140	15033	16632	13216	78495	22.3%
RK9	Plymouth Hospitals NHS Trust	North West	20142	19268	17833	20227	16284	93753	21.5%
RD3	Poole Hospital NHS Foundation Trust	East of England	21138	20146	18714	20732	16350	97080	21.8%
RHU	Portsmouth Hospitals NHS Trust	South West	26999	26037	24156	26522	21110	124823	21.6%
RQW	Princess Alexandra Hospital NHSTrust	East of England	14023	13172	12245	13114	10113	62667	22.4%
RCX	Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	Yorkshire and The Humber	9956	9404	8915	9806	7954	46035	21.6%
RPC	Queen Victoria Hospital NHS Foundation Trust	Yorkshire and The Humber	6726	6806	6428	6905	5354	32219	20.9%
RL1	Robert Jones and Agnes Hunt Orthopaedic NHS Trust	South West	13	15	14	17	10	68	19.2%
RHW	Royal Berkshire Hospital NHS Foundation Trust	South Central	23542	22147	19591	20554	15735	101569	23.2%
RMC	Royal Bolton Hospital NHS Foundation Trust	East of England	19020	17844	16126	17514	13573	84077	22.6%
RDZ	Royal Bournemouth and Christchurch Trust	East of England	1184	1124	1104	1208	1042	5662	20.9%
RT3	Royal Brompton and Harefield NHS Foundation Trust	West Midlands	947	861	732	730	554	3825	24.8%
REF	Royal Cornwall Hospitals NHS Trust	South West	19261	18490	17834	20317	15741	91643	21.0%
RH8	Royal Devon and Exeter NHS Foundation Trust	East of England	15899	15614	14645	16187	13175	75519	21.1%
RAL	Royal Free Hampstead NHSTrust	London	12566	10985	9392	8837	6444	48224	26.1%
RQ6	Royal Liverpool Broadgreen Hospitals NHS Trust	South East Coast	2739	2435	2229	2558	2415	12377	22.1%
RRJ	Royal Orthopaedic Hospital NHS Foundation Trust	North East South East	66	63	58	60	46	293	22.5%
RA2	Royal Surrey County NHS Foundation Trust	Coast Yorkshire and The Humber	14365	14654	13725	14410	11549	68703	20.9%
RD1	Royal United Hospital Bath NHS Trust	The Humber	19311	19120	18258	20436	16080	93205	20.7%
RL4	Royal Wolverhampton Hospital NHS Trust	West Midlands	17885	16607	14912	16480	13260	79145	22.6%
RM3	Salford Royal NHS Foundation Trust	West Midlands	8415	7550	6324	6878	5512	34678	24.3%
RNZ	Salisbury NHS Foundation Trust	North West	10069	9941	9456	10268	7884	47618	21.1%

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3		Sandwell and West Birmingham Hospitals NHS Trust	South East Coast	22881	21606	19303	19471	15136	98396	23.3%	
4	RXK		Yorkshire and The Humber								
5	RCU	Sheffield Children's NHS Foundation Trust		26393	25357	22926	23981	18891	117548	22.5%	
6	RHQ	Sheffield Teaching Hospitals NHS Foundation Trust	East of England	4173	4072	3698	3959	3504	19406	21.5%	
7		Sherwood Forest Hospitals NHS Foundation Trust									
8	RK5		North West	15327	14463	13411	14988	11922	70109	21.9%	
9	RXW	Shrewsbury and Telford Hospital NHS Trust	North East	20758	20636	19583	22029	17634	100640	20.6%	
10	RA9	South Devon Health Care NHS Trust	South West	10266	10292	9849	11414	9087	50908	20.2%	
11	RYQ	South London Healthcare NHS Trust	North West	9733	8978	7495	7661	5963	39830	24.4%	
12	RTR	South Tees Hospitals NHS Foundation Trust	South Central	21107	20352	18832	20614	17076	97981	21.5%	
13			South East Coast								
14	RE9	South Tyneside NHS Foundation Trust		5167	4960	4605	5200	4367	24299	21.3%	
15	RJC	South Warwickshire NHS Foundation Trust	London	9876	9961	9580	10252	7799	47468	20.8%	
16		Southampton University Hospitals NHS Trust									
17	RHM		East of England	26822	24691	22306	24038	19353	117210	22.9%	
18		Southeast University Hospitals NHS Foundation Trust									
19	RAJ		East of England	14453	14083	13221	14890	11647	68295	21.2%	
20		Southport and Ormskirk Hospital NHS Trust									
21	RVY		London	10260	10611	10266	11640	9066	51841	19.8%	
22	RJ7	St George's Healthcare NHS Trust	London	31284	25426	20910	20320	15187	113127	27.7%	
23		St Helens and Knowsley Hospitals NHS Trust									
24	RBN		North West	14440	13666	12525	14139	11216	65986	21.9%	
25			South East Coast								
26	RWJ	Stockport NHS Foundation Trust		14134	14058	12724	14042	10899	65856	21.5%	
27	RTP	Surrey and Sussex Healthcare NHS Trust	East Midlands	20733	19727	18279	19669	14772	93180	22.3%	
28	RMP	Tameside Hospital NHS Foundation Trust	North West	11004	10191	9117	9808	7758	47877	23.0%	
29		Taunton and Somerset NHS Foundation Trust									
30	RBA		South West	13532	13249	12818	14902	12026	66528	20.3%	
31		The Dudley Group Of Hospitals NHS Foundation Trust									
32	RNA		South West	17348	17061	15890	16886	13631	80817	21.5%	
33	RAS	The Hillingdon Hospital NHS Trust	London	14886	13457	11438	12017	9399	61198	24.3%	
34	RJ2	The Lewisham Healthcare NHS Trust	South Central	26515	23543	19021	19211	14991	103280	25.7%	
35	RBT	The Mid Cheshire Hospitals NHS Trust	North West	12002	12187	11324	12439	10011	57962	20.7%	
36	RFR	The Rotherham NHS Foundation Trust	North West	10858	10519	9827	10678	8464	50347	21.6%	
37	RPY	The Royal Marsden NHS Foundation Trust	London	82	81	70	67	49	348	23.4%	
38		The Royal National Orthopaedic Hospital NHS Trust									
39	RAN		London	72	61	56	58	43	289	24.7%	
40	RET	The Walton Centre NHS Foundation Trust	North West	51	53	51	58	43	255	19.9%	
41	RWD	United Lincolnshire Hospitals NHS Trust	North West	24615	23171	22206	25501	20431	115924	21.2%	
42		University College London Hospitals NHS Foundation Trust									
43	RRV		North West	10842	9383	8334	7939	6283	42780	25.3%	
44		University Hospital Birmingham NHS Foundation Trust	Yorkshire and The Humber	2588	2481	2271	2526	2242	12108	21.4%	
45	RRK										
46	RJE	University Hospital Of North Staffordshire Hospital NHS Trust	London	24197	23673	21218	23229	18389	110705	21.9%	
47		University Hospital Of South Manchester NHS Foundation Trust									
48	RM2		West Midlands	16366	15706	13856	14309	10658	70896	23.1%	
49		University Hospitals Coventry and Warwickshire NHS Trust									
50	RKB		London	29209	26892	24075	25340	21005	126521	23.1%	
51	RA7	University Hospitals Of Bristol NHS Foundation Trust	South West	34426	31174	27560	29230	22798	145188	23.7%	
52	RWE	University Hospitals Of Leicester NHS Trust	North West	41652	40105	36915	39238	31954	189865	21.9%	
53		University Hospitals Of Morecambe Bay NHS Foundation Trust	South East Coast								
54	RTX			13424	13509	13122	15302	12638	67995	19.7%	
55	RBK	Walsall Hospitals NHS Trust	South West	12567	12034	11231	11654	8966	56452	22.3%	
56		Warrington and Halton Hospitals NHS Foundation Trust									
57	RWW		East of England	13354	13099	12099	13081	10137	61770	21.6%	
58	RWG	West Hertfordshire Hospitals NHS Trust	East Midlands	22776	20977	19053	19683	14997	97486	23.4%	
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			Yorkshire and								
	RFW	West Middlesex University NHS Trust	The Humber	18219	15328	12170	12232	9481	67430	27.0%	
	RGR	West Suffolk Hospital NHS Trust	East of England	12376	12108	11246	12210	9241	57180	21.6%	
	RYR	WesternSussexHospitals NHSTrust	West Midlands	19777	19254	18054	19539	15145	91769	21.6%	
	RA3	Weston Area Health NHSTrust	South West	2682	2527	2462	2734	2132	12538	21.4%	
	RKE	Whittington Hospital NHSTrust	East Midlands	13329	11370	10013	9702	6897	51311	26.0%	
	RBL	Wirral University Teaching Hospital NHS Foundation Trust	West Midlands	15335	15076	14312	15661	12359	72743	21.1%	
	RWP	Worcestershire Acute Hospitals NHS Trust	East of England	24382	24310	22996	25499	20116	117303	20.8%	
	RRF	Wrightington, Wigan and Leigh NHS Foundation Trust	West Midlands	11380	11210	10239	10748	8714	52291	21.8%	
	RA4	Yeovil District Hospital NHS Foundation Trust	South West	7418	7357	7148	8704	6971	37598	19.7%	
	RCB	York Hospitals NHSTrust	East of England	21400	21300	19843	22308	18387	103238	20.7%	

Appendix Table A5
Admission rates by Trust for primary diagnosis epilepsy, any diagnosis epilepsy, all-cause admissions, per 100,000, 2014/15, England

Trust name	Number of admissions			Admission rate per 100,000			
	2014/15 Hospital Catchment Population	Primary diagnosis epilepsy	Any epilepsy diagnosis	All-cause	Primary diagnosis epilepsy	Any epilepsy diagnosis	All-cause
Aintree UniversityHospitals NHSFoundation Trust	10848	3	8	677	27.7	73.7	6240.5
Airedale NHS Foundation Trust	43450	31	143	3976	71.3	329.1	9150.7
Alder Hey Childrens NHS Foundation Trust	134281	61	253	10429	45.4	188.4	7766.6
Ashford and St Peter's Hospitals NHS Foundation Trust	67049	45	72	3423	67.1	107.4	5105.2
Barking, Havering and Redbridge University Hospitals NHS Trust	145366	68	136	6777	46.8	93.6	4662.0
Barnsley Dist Gen Hosp NHS Foundation Trust	52966	52	104	4690	98.2	196.4	8854.7
Barts Health NHS Trust	268558	186	401	15818	69.3	149.3	5890.0
Basildon and Thurrock University Hospitals NHS Foundation Trust	77489	56	91	3243	72.3	117.4	4185.1
Basingstoke and North Hampshire Hospitals NHS Foundation Trust	99421	97	179	6280	97.6	180.0	6316.6
Bedford Hospital NHS Trust	48718	35	82	2796	71.8	168.3	5739.2
Birmingham Children's Hospital NHS Foundation Trust	159686	207	519	13716	129.6	325.0	8589.4
Birmingham Heartlands and Solihull Trust	180098	127	253	13882	70.5	140.5	7708.0
Birmingham Women's NHS Foundation Trust	2897	0	0	135	0.0	0.0	4659.7
Blackpool Fylde and Wyre NHS Foundation Trust	60397	63	156	6562	104.3	258.3	10864.7
Bradford Teaching Hospitals NHS Foundation Trust	111030	82	247	7315	73.9	222.5	6588.3
Brighton and Sussex University Hospitals NHS Trust	105282	39	122	6239	37.0	115.9	5926.0
Buckinghamshire Healthcare NHS Trust	99550	53	137	7598	53.2	137.6	7632.4
Burton Hospitals NHS Foundation Trust	61559	88	157	4629	143.0	255.0	7519.6
Calderdale and Huddersfield NHS Foundation Trust	95715	85	178	7533	88.8	186.0	7870.2
Cambridge University Hospitals NHS Foundation Trust	94647	58	187	4788	61.3	197.6	5058.8
Cambridgeshire Community Services NHS Trust	38372	24	71	3526	62.5	185.0	9188.9
Central Manchester University Hospitals NHS Foundation Trust	134340	115	344	13703	85.6	256.1	10200.2
Chelsea and Westminster Hospital NHS Foundation Trust	86439	30	57	4264	34.7	65.9	4932.9
Chesterfield Royal Hospital NHS Foundation Trust	56603	52	106	4469	91.9	187.3	7895.4
Christie Hospital NHS Trust	231	0	0	61	0.0	0.0	26449.3
City Hospitals Sunderland NHS Foundation Trust	63650	49	122	5326	77.0	191.7	8367.6
Clatterbridge Centre For Oncology NHS Foundation Trust	45	0	0	7	0.0	0.0	15534.8
Colchester Hospital University NHS Foundation Trust	75048	71	202	6953	94.6	269.2	9264.7
Countess Of Chester Hospital NHS Foundation Trust	43204	25	68	3956	57.9	157.4	9156.6
County Durham and Darlington NHS Foundation Trust	108941	100	241	11180	91.8	221.2	10262.4
Croydon Health Services NHS Trust	77160	41	57	4146	53.1	73.9	5373.3

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4	Dartford and Gravesham NHS Trust	77768	54	116	6132	69.4	149.2	7885.0
5	Derby Hospitals NHS Foundation Trust	101709	55	117	4166	54.1	115.0	4096.0
6	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	100244	73	143	9408	72.8	142.7	9385.1
7								
8	Dorset County Hospital NHS Foundation Trust	38763	22	56	2440	56.8	144.5	6294.7
9	East and North Hertfordshire NHS Trust	105074	93	155	7140	88.5	147.5	6795.2
10	East Cheshire NHS Trust	35913	44	102	3176	122.5	284.0	8843.7
11	East Kent Hospitals University NHS Foundation Trust	141973	106	236	10817	74.7	166.2	7619.1
12								
13	East Lancashire Hospitals NHS Trust	117300	87	326	13702	74.2	277.9	11681.2
14	East Sussex Hospitals NHS Trust	73412	83	134	5951	113.1	182.5	8106.3
15	Epsom and St Helier University Hospitals NHS Trust	85745	54	153	4532	63.0	178.4	5285.4
16								
17	Frimley Park Hospital NHS Trust	190069	144	301	13022	75.8	158.4	6851.2
18	Gateshead Health NHS Foundation Trust	36789	16	30	3086	43.5	81.5	8388.4
19								
20	George Eliot Hospital NHS Trust	19381	1	4	1108	5.2	20.6	5717.0
21	Gloucestershire Hospitals NHS Foundation Trust	119516	67	197	8192	56.1	164.8	6854.3
22								
23	Great Ormond Street Hospital NHS Trust	6236	16	32	612	256.6	513.1	9813.4
24	Great Western Hospitals NHS Foundation Trust	82167	41	116	5800	49.9	141.2	7058.8
25								
26	Guy's and St Thomas' NHS Foundation Trust	64902	71	142	4269	109.4	218.8	6577.6
27	Harrogate and District NHS Foundation Trust	40560	12	39	3148	29.6	96.2	7761.3
28	Hereford Hospitals NHS Trust	39130	42	78	3204	107.3	199.3	8188.1
29	Hinchingbrooke Healthcare NHS Trust	6738	4	6	454	59.4	89.0	6738.0
30	Homerton University Hospital NHS Foundation Trust	49332	42	68	2576	85.1	137.8	5221.7
31								
32	Hull and East Yorkshire Hospitals NHS Trust	106281	112	230	6395	105.4	216.4	6017.1
33	Imperial College Healthcare NHS Trust	75876	54	111	3572	71.2	146.3	4707.7
34								
35	Ipswich Hospital NHS Trust	71379	43	126	4687	60.2	176.5	6566.3
36	Isle of Wight NHS Trust	28924	29	53	2323	100.3	183.2	8031.5
37	James Paget University Hospitals NHS Foundation Trust	43863	29	51	2653	66.1	116.3	6048.3
38	Kettering General Hospital NHS Foundation Trust	67436	72	132	5226	106.8	195.7	7749.6
39								
40	King's College Hospital NHS Foundation Trust	150224	125	199	7881	83.2	132.5	5246.2
41	Kingston Hospital NHS Trust	70421	26	69	3755	36.9	98.0	5332.2
42								
43	Lancashire Teaching Hospitals NHS Trust	87841	56	151	8954	63.8	171.9	10193.4
44	Leeds Teaching Hospitals NHS Trust	151367	91	251	9325	60.1	165.8	6160.5
45	Liverpool Heart and Chest NHS Foundation Trust	64	0	0	19	0.0	0.0	29608.9
46								
47	Liverpool Womens Hospital NHS Trust	2475	0	0	160	0.0	0.0	6464.3
48	London North West Healthcare NHS Trust	166660	93	208	8497	55.8	124.8	5098.4
49	Luton and Dunstable Hospital NHS Foundation Trust	96289	79	188	8583	82.0	195.2	8913.8
50								
51	Maidstone and Tunbridge Wells NHS Trust	104481	64	98	4740	61.3	93.8	4536.7
52	Medway NHS Trust	92044	115	245	8111	124.9	266.2	8812.1
53								
54	Mid Essex Hospital Services NHS Trust	100503	37	87	5353	36.8	86.6	5326.2
55	Mid Staffordshire NHS Foundation Trust	26235	12	26	2575	45.7	99.1	9815.2
56	Mid Yorkshire Hospitals NHS Trust	133869	94	208	9932	70.2	155.4	7419.2
57	Milton Keynes Hospital NHS Foundation Trust	68737	99	226	6477	144.0	328.8	9422.8
58	Moorfields Eye Hospital NHS Foundation Trust	843	0	0	44	0.0	0.0	5217.1
59	Newcastle Upon Tyne Hospitals NHS Foundation Trust	124257	189	472	14198	152.1	379.9	11426.3
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Norfolk and Norwich University Hospitals NHS Foundation Trust	118394	99	253	8667	83.6	213.7	7320.5
North Bristol NHS Trust	19435	6	17	975	30.9	87.5	5016.8
North Cumbria University Hospitals NHS Trust	66748	61	116	5837	91.4	173.8	8744.8
North Lincolnshire and Goole Hosps NHS Foundation Trust	87428	100	202	5471	114.4	231.0	6257.7
North Middlesex University Hospital NHS Trust	96137	75	140	7613	78.0	145.6	7918.9
North Tees and Hartlepool NHS Foundation Trust	61068	49	133	5039	80.2	217.8	8251.5
Northampton General Hospital NHS Trust	80178	80	210	7464	99.8	261.9	9309.2
Northern Devon Healthcare NHS Trust	34821	14	55	2528	40.2	158.0	7260.0
Northumbria Healthcare NHS Foundation Trust	65421	54	108	5489	82.5	165.1	8390.3
Nottingham University Hospitals NHS Trust	172520	126	275	8811	73.0	159.4	5107.2
Oxford Radcliffe Hospital NHS Trust	153875	90	240	10252	58.5	156.0	6662.5
Papworth Hospital NHS Foundation Trust	69	0	1	15	0.0	1444.5	21666.9
Pennine Acute Hospitals NHS Trust	172774	139	339	17532	80.5	196.2	10147.4
Peterborough and Stamford Hospitals NHS Foundation Trust	79335	64	179	6925	80.7	225.6	8728.8
Plymouth Hospitals NHS Trust	93846	78	164	7139	83.1	174.8	7607.1
Poole Hospital NHS Foundation Trust	97422	67	250	7897	68.8	256.6	8106.0
Portsmouth Hospitals NHS Trust	118416	99	198	7045	83.6	167.2	5949.4
Princess Alexandra Hospital NHS Trust	61910	28	53	2748	45.2	85.6	4438.7
Queen Elizabeth Hospital Kings Lynn NHS Foundation Trust	44609	43	112	4126	96.4	251.1	9249.2
Queen Victoria Hospital NHS Foundation Trust	28764	0	7	1223	0.0	24.3	4251.8
Robert Jones and Agnes Hunt Orthopaedic NHS Trust	93	0	0	4	0.0	0.0	4316.4
Royal Berkshire Hospital NHS Foundation Trust	100771	92	166	5495	91.3	164.7	5453.0
Royal Bolton Hospital NHS Foundation Trust	84314	59	151	7436	70.0	179.1	8819.4
Royal Bournemouth and Christchurch Trust	6007	3	6	423	49.9	99.9	7041.3
Royal Brompton and Harefield NHS Foundation Trust	3899	0	6	317	0.0	153.9	8131.0
Royal Cornwall Hospitals NHS Trust	91698	79	168	6931	86.2	183.2	7558.5
Royal Devon and Exeter NHS Foundation Trust	78322	68	149	6081	86.8	190.2	7764.1
Royal Free Hampstead NHS Trust	155113	97	211	8688	62.5	136.0	5601.1
Royal Liverpool Broadgreen Hospitals NHS Trust	12110	3	9	711	24.8	74.3	5871.3
Royal Orthopaedic Hospital NHS Foundation Trust	405	0	1	25	0.0	246.8	6170.2
Royal Surrey County NHS Foundation Trust	67670	37	72	3653	54.7	106.4	5398.3
Royal United Hospital Bath NHS Trust	92029	63	178	6010	68.5	193.4	6530.5
Royal Wolverhampton Hospital NHS Trust	79276	125	242	8040	157.7	305.3	10141.8
Salford Royal NHS Foundation Trust	34985	32	50	2939	91.5	142.9	8400.8
Salisbury NHS Foundation Trust	47659	17	52	2341	35.7	109.1	4912.0
Sandwell and West Birmingham Hospitals NHS Trust	100183	72	161	8815	71.9	160.7	8798.9
Sheffield Children's NHS Foundation Trust	102197	73	208	7095	71.4	203.5	6942.5
Sheffield Teaching Hospitals NHS Foundation Trust	27899	4	8	1326	14.3	28.7	4752.9
Sherwood Forest Hospitals NHS Foundation Trust	70777	26	98	4878	36.7	138.5	6892.1
Shrewsbury and Telford Hospital NHS Trust	102368	68	166	7760	66.4	162.2	7580.5
South Devon Health Care NHS Trust	50569	38	92	2755	75.1	181.9	5448.0
South Tees Hospitals NHS Foundation Trust	98197	110	292	9914	112.0	297.4	10096.1

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4	South Tyneside NHS Foundation Trust	23625	12	21	1595	50.8	88.9	6751.4
5	South Warwickshire NHS Foundation Trust	46629	39	81	3481	83.6	173.7	7465.3
6	Southampton University Hospitals NHS Trust	120636	116	230	10139	96.2	190.7	8404.6
7	Southend University Hospitals NHS							
8	Foundation Trust	66039	25	77	2835	37.9	116.6	4292.9
9	Southport and Ormskirk Hospital NHS Trust	53484	37	71	4329	69.2	132.7	8094.0
10	St George's Healthcare NHS Trust	118041	74	150	7046	62.7	127.1	5969.1
11	St Helens and Knowsley Hospitals NHS Trust	67966	28	86	6654	41.2	126.5	9790.2
12	Stockport NHS Foundation Trust	63583	59	111	5540	92.8	174.6	8713.0
13	Surrey and Sussex Healthcare NHS Trust	83612	36	91	3986	43.1	108.8	4767.3
14	Tameside Hospital NHS Foundation Trust	48707	44	97	4406	90.3	199.1	9045.9
15	Taunton and Somerset NHS Foundation Trust	66116	54	134	4714	81.7	202.7	7129.9
16	The Dudley Group Of Hospitals NHS							
17	Foundation Trust	81498	46	117	6976	56.4	143.6	8559.8
18	The Hillingdon Hospital NHS Trust	65195	50	106	4471	76.7	162.6	6857.8
19	The Lewisham Healthcare NHS Trust	151669	100	207	11784	65.9	136.5	7769.5
20	The Mid Cheshire Hospitals NHS Trust	56699	56	147	4507	98.8	259.3	7949.0
21	The Rotherham NHS Foundation Trust	52577	29	81	3858	55.2	154.1	7337.8
22	The Royal Marsden NHS Foundation Trust	104	0	1	108	0.0	963.5	104056.3
23	The Royal National Orthopaedic Hospital NHS							
24	Trust	409	0	2	47	0.0	489.4	11500.7
25	The Walton Centre NHS Foundation Trust	281	1	3	34	355.7	1067.1	12094.0
26	United Lincolnshire Hospitals NHS Trust	112401	60	205	7860	53.4	182.4	6992.8
27	University College London Hospitals NHS							
28	Foundation Trust	42106	12	23	1698	28.5	54.6	4032.6
29	University Hospital Birmingham NHS							
30	Foundation Trust	10979	11	29	764	100.2	264.2	6959.0
31	University Hospital Of North Staffordshire							
32	Hospital NHS Trust	127581	119	322	13212	93.3	252.4	10355.7
33	University Hospital Of South Manchester NHS							
34	Foundation Trust	71403	37	90	6131	51.8	126.0	8586.4
35	University Hospitals Coventry and							
36	Warwickshire NHS Trust	126537	119	231	8305	94.0	182.6	6563.3
37	University Hospitals Of Bristol NHS Foundation							
38	Trust	172827	116	256	9743	67.1	148.1	5637.4
39	University Hospitals Of Leicester NHS Trust	192382	120	277	9512	62.4	144.0	4944.3
40	University Hospitals Of Morecambe Bay NHS							
41	Foundation Trust	68522	64	169	6775	93.4	246.6	9887.3
42	Walsall Hospitals NHS Trust	55821	44	85	3039	78.8	152.3	5444.2
43	Warrington and Halton Hospitals NHS							
44	Foundation Trust	61421	50	81	5048	81.4	131.9	8218.6
45	West Hertfordshire Hospitals NHS Trust	95384	51	109	5362	53.5	114.3	5621.5
46	West Middlesex University NHS Trust	63584	33	106	3098	51.9	166.7	4872.3
47	West Suffolk Hospital NHS Trust	56939	47	99	4007	82.5	173.9	7037.4
48	Western Sussex Hospitals NHS Trust	94045	67	166	7452	71.2	176.5	7923.9
49	Weston Area Health NHS Trust	13040	9	16	845	69.0	122.7	6479.8
50	Whittington Hospital NHS Trust	50647	28	59	3382	55.3	116.5	6677.6
51	Wirral University Teaching Hospital NHS							
52	Foundation Trust	72140	49	173	5321	67.9	239.8	7375.9
53	Worcestershire Acute Hospitals NHS Trust	115581	70	167	7114	60.6	144.5	6155.0
54	Wrightington, Wigan and Leigh NHS							
55	Foundation Trust	51486	49	108	3104	95.2	209.8	6028.8
56	Yeovil District Hospital NHS Foundation Trust	35923	19	49	2182	52.9	136.4	6074.1
57	York Hospitals NHS Trust	104298	107	187	7723	102.6	179.3	7404.7
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1STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	1-2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5-7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	5-6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	5
Bias	9	Describe any efforts to address potential sources of bias	7-8
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	N/A
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	6-8
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	7-8
		(d) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(e) Describe any sensitivity analyses	N/A
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	9
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	N/A
		(b) Indicate number of participants with missing data for each variable of interest	8 (+ Appendix Table A5)
Outcome data	15*	Report numbers of outcome events or summary measures	9-10
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	9-11
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
Discussion			
Key results	18	Summarise key results with reference to study objectives	11
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	11-12
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	12-13
Generalisability	21	Discuss the generalisability (external validity) of the study results	13
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	15

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.