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England

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# Reports of cases of tuberculosis to enhanced tuberculosis surveillance systems: UK, 2000 to 2017

## Official Statistics



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# Notes

## Tuberculosis definition

All new tuberculosis (TB) cases (including cases diagnosed post-mortem) that meet one of the two following case definitions should be notified:

- culture confirmed case: culture confirmed disease, with speciation confirming *Mycobacterium tuberculosis* complex (*M. tuberculosis*, *M. bovis*, *M. africanum* or *M. microti*)
- clinically diagnosed case: in the absence of culture confirmation, a case that meets the following criteria:
  - a clinician's judgement that the patient's clinical and/or radiological signs and/or symptoms are compatible with active TB, *and*
  - a clinician's decision to treat the patient with a full course of anti-TB therapy for active TB

## Enhanced surveillance of tuberculosis

Enhanced Tuberculosis Surveillance (ETS) was introduced in January 1999 in England and Wales and the following year in Northern Ireland. The equivalent scheme in Scotland, Enhanced Surveillance of Mycobacterial Infections (ESMI), was introduced in 2000. Data from the two systems is compiled for the purpose of UK reporting.

Clinical teams provide information on TB cases either directly through the web-based ETS system entered at the clinic, or on a case report form entered onto the system at the Health Protection Team level. Data includes notification details, demographic information, clinical and microbiological information.

Data from all TB isolates identified in UK Mycobacteria Reference Laboratories (excluding Scotland) is routinely imported into ETS and matched to case notifications using patient identifiers common to both the laboratory isolate and the case notification. In addition, external to the system, an annual probabilistic matching process based on the patient identifiers is undertaken to identify additional matches. Data for Scotland is not matched using this method.

## Data sources

All TB data presented in this report for England, Wales and Northern Ireland is from ETS, other than in London where cases are notified to the London TB Register (LTBR). Data from the LTBR is routinely imported to ETS. Data for Scotland is from ESMI.

Population data used in the calculation of rates is from the Office for National Statistics (ONS), incorporating data from the National Records of Scotland and Northern Ireland Statistics and Research Agency.

Data was extracted from ETS at the beginning of April 2018, then cleaned and validated by the end of July 2018. Data for Scotland in this report may differ slightly from data presented in Scottish reports as cases that have transferred from England to Scotland were deduplicated at UK level.

PHE has produced a detailed public health report with TB data for England to the end of 2017, which will be available at <https://www.gov.uk/government/collections/tuberculosis-and-other-mycobacterial-diseases-diagnosis-screening-management-and-data> from Tuesday 25 September 2018.

Reports produced by the Public Health Agency Northern Ireland are available at <http://www.publichealth.hscni.net/directorate-public-health/health-protection/tuberculosis>

Reports produced by Public Health Wales are available at <http://www.wales.nhs.uk/sitesplus/888/page/43877>

Reports produced by Health Protection Scotland are available at <http://www.hps.scot.nhs.uk/resp/resourcedetail.aspx?id=3077>

## Data type and methodology

TB case notifications were reported by area of residence and by calendar year.

Overall TB rates per 100,000 population, as well as those by area of reporting, were calculated using the mid-year population estimates provided by the ONS. Average annual rates per 100,000 for the three-year period were calculated by dividing the numerator (the number of TB notifications in the three-year period) by the denominator (the sum of the mid-year population estimates for the same three-year period) and multiplying by 100,000. A 95% confidence interval for incidence was obtained assuming a Poisson distribution.

For the purposes of TB outcome reporting, the drug sensitive cohort is defined as all TB cases, excluding those with multi-drug resistant/rifampicin resistant TB (MDR/RR-TB) (initial or acquired), and those treated with a second line regimen for MDR/RR-TB. TB outcomes are reported at 12 months for drug sensitive cases with an expected duration of treatment of less than 12 months. This group excludes cases with CNS disease, who have an expected duration of treatment of 12 months. In addition, those with spinal, cryptic disseminated or miliary disease are excluded from this group, as CNS

involvement cannot be reliably ruled out for the purposes of reporting. The last recorded outcome is reported for the entire drug sensitive cohort.

Rates are presented from 2000 to 2017; all other breakdowns are presented for the past ten years.

Statistical analysis was carried out using Stata 15.

## Glossary

**Acquired resistance:** resistance identified on repeat culture after three months of the first specimen date. Cases with a change from a sensitive to resistant result following treatment start are reclassified as acquired resistance, even if this is within the three month period

**CNS:** Central nervous system

**CI:** Confidence interval (95% confidence intervals used)

**DR cohort:** Drug resistant cohort is defined as cases that are culture confirmed with initial and/or acquired multi-drug resistant/rifampicin resistant TB (MDR/RR-TB), as well as those treated with a second line regimen for MDR/RR-TB without phenotypic DST results or WGS resistance predictions.

**ESMI:** Enhanced Surveillance of Mycobacterial Infections

**ETS:** Enhanced Tuberculosis Surveillance system

**Initial resistance:** a cultured isolate resistant to a particular drug within three months of the first specimen date

**Last recorded outcome:** Last known outcome, irrespective of when it occurred.

**LTBR:** London TB Register

**MDR-TB:** Multi-drug resistant TB is defined as resistance to at least isoniazid and rifampicin, with or without resistance to other drugs

**MDR/RR-TB:** Multi-drug resistant/Rifampicin resistant TB is defined as resistance to rifampicin including MDR-TB cases

**ONS:** Office for National Statistics

**XDR-TB:** Extensively-drug resistant TB is defined as resistance to isoniazid and rifampicin (MDR-TB), at least one injectable agent (capreomycin, kanamycin or amikacin) and at least one fluoroquinolone (moxifloxacin, ofloxacin, ciprofloxacin)

**Table 1: Number of TB case notifications, rates and annual percentage change, UK, 2000-2017**

| Year | Total           |                           | Annual change in case numbers (%) | Annual change in rate (%) |
|------|-----------------|---------------------------|-----------------------------------|---------------------------|
|      | Number of cases | Rate per 100,000 (95% CI) |                                   |                           |
| 2000 | 6,686           | 11.4 (11.1 - 11.6)        | -                                 | -                         |
| 2001 | 6,760           | 11.4 (11.2 - 11.7)        | 1.1%                              | 0.0%                      |
| 2002 | 7,291           | 12.3 (12.0 - 12.6)        | 7.9%                              | 7.9%                      |
| 2003 | 7,219           | 12.1 (11.8 - 12.4)        | -1.0%                             | -1.6%                     |
| 2004 | 7,590           | 12.7 (12.4 - 12.9)        | 5.1%                              | 5.0%                      |
| 2005 | 8,283           | 13.7 (13.4 - 14.0)        | 9.1%                              | 7.9%                      |
| 2006 | 8,307           | 13.7 (13.4 - 14.0)        | 0.3%                              | 0.0%                      |
| 2007 | 8,259           | 13.5 (13.2 - 13.8)        | -0.6%                             | -1.5%                     |
| 2008 | 8,491           | 13.7 (13.4 - 14.0)        | 2.8%                              | 1.5%                      |
| 2009 | 8,870           | 14.2 (14.0 - 14.5)        | 4.5%                              | 3.6%                      |
| 2010 | 8,397           | 13.4 (13.1 - 13.7)        | -5.3%                             | -5.6%                     |
| 2011 | 8,919           | 14.1 (13.8 - 14.4)        | 6.2%                              | 5.2%                      |
| 2012 | 8,712           | 13.7 (13.4 - 14.0)        | -2.3%                             | -2.8%                     |
| 2013 | 7,870           | 12.3 (12.0 - 12.6)        | -9.7%                             | -10.2%                    |
| 2014 | 7,029           | 10.9 (10.6 - 11.1)        | -10.7%                            | -11.4%                    |
| 2015 | 6,224           | 9.6 (9.3 - 9.8)           | -11.5%                            | -11.9%                    |
| 2016 | 6,116           | 9.3 (9.1 - 9.6)           | -1.7%                             | -3.1%                     |
| 2017 | 5,567           | 8.4 (8.2-8.7)             | -9.0%                             | -9.7%                     |

CI - confidence interval

Between 2000 and 2011, there was an overall increase in the number of cases and rate of TB in the UK. Since 2012, there have been annual declines in the number of cases each year of between 2.3% and 11.5%. Between 2016 and 2017 there was a 9.0% decline in the number of cases (2016: 6,116 versus 2017: 5,567). In 2017, the rate of TB was 8.4 per 100,000 (95% CI 8.2-8.7), compared with 9.3 per 100,000 (95% CI 9.1-9.6) in 2016. The number and rate of TB cases in 2017 was the lowest since data from enhanced TB surveillance was first available in 2000.

**Table 2: Number of TB case notifications and rates by country, UK, 2000-2017**

| Year | England         |                           | Scotland        |                           | Wales           |                           | Northern Ireland |                           | UK              |                           |
|------|-----------------|---------------------------|-----------------|---------------------------|-----------------|---------------------------|------------------|---------------------------|-----------------|---------------------------|
|      | Number of cases | Rate per 100,000 (95% CI) | Number of cases | Rate per 100,000 (95% CI) | Number of cases | Rate per 100,000 (95% CI) | Number of cases  | Rate per 100,000 (95% CI) | Number of cases | Rate per 100,000 (95% CI) |
| 2000 | 6,044           | 12.3 (12.0 - 12.6)        | 403             | 8.0 (7.2 - 8.8)           | 182             | 6.3 (5.4 - 7.2)           | 57               | 3.4 (2.6 - 4.4)           | 6,686           | 11.4 (11.1 - 11.6)        |
| 2001 | 6,169           | 12.5 (12.2 - 12.8)        | 351             | 6.9 (6.2 - 7.7)           | 183             | 6.3 (5.4 - 7.3)           | 57               | 3.4 (2.6 - 4.4)           | 6,760           | 11.4 (11.2 - 11.7)        |
| 2002 | 6,675           | 13.4 (13.1 - 13.8)        | 394             | 7.8 (7.0 - 8.6)           | 155             | 5.3 (4.5 - 6.2)           | 67               | 3.9 (3.1 - 5.0)           | 7,291           | 12.3 (12.0 - 12.6)        |
| 2003 | 6,631           | 13.3 (13.0 - 13.6)        | 367             | 7.2 (6.5 - 8.0)           | 164             | 5.6 (4.8 - 6.5)           | 57               | 3.3 (2.5 - 4.3)           | 7,219           | 12.1 (11.8 - 12.4)        |
| 2004 | 6,930           | 13.8 (13.5 - 14.1)        | 392             | 7.7 (7.0 - 8.5)           | 187             | 6.3 (5.4 - 7.3)           | 81               | 4.7 (3.8 - 5.9)           | 7,590           | 12.7 (12.4 - 12.9)        |
| 2005 | 7,658           | 15.1 (14.8 - 15.5)        | 365             | 7.1 (6.4 - 7.9)           | 185             | 6.2 (5.4 - 7.2)           | 75               | 4.3 (3.4 - 5.4)           | 8,283           | 13.7 (13.4 - 14.0)        |
| 2006 | 7,682           | 15.1 (14.7 - 15.4)        | 381             | 7.4 (6.7 - 8.2)           | 183             | 6.1 (5.3 - 7.1)           | 61               | 3.5 (2.7 - 4.5)           | 8,307           | 13.7 (13.4 - 14.0)        |
| 2007 | 7,577           | 14.7 (14.4 - 15.1)        | 409             | 7.9 (7.2 - 8.7)           | 204             | 6.8 (5.9 - 7.8)           | 69               | 3.9 (3.0 - 5.0)           | 8,259           | 13.5 (13.2 - 13.8)        |
| 2008 | 7,809           | 15.1 (14.7 - 15.4)        | 447             | 8.6 (7.8 - 9.4)           | 169             | 5.6 (4.8 - 6.5)           | 66               | 3.7 (2.9 - 4.7)           | 8,491           | 13.7 (13.4 - 14.0)        |
| 2009 | 8,112           | 15.5 (15.2 - 15.9)        | 486             | 9.3 (8.5 - 10.2)          | 213             | 7.0 (6.1 - 8.0)           | 59               | 3.3 (2.5 - 4.2)           | 8,870           | 14.2 (14.0 - 14.5)        |
| 2010 | 7,676           | 14.6 (14.3 - 14.9)        | 503             | 9.6 (8.7 - 10.4)          | 152             | 5.0 (4.2 - 5.8)           | 66               | 3.7 (2.8 - 4.7)           | 8,397           | 13.4 (13.1 - 13.7)        |
| 2011 | 8,280           | 15.6 (15.3 - 15.9)        | 447             | 8.4 (7.7 - 9.3)           | 131             | 4.3 (3.6 - 5.1)           | 61               | 3.4 (2.6 - 4.3)           | 8,919           | 14.1 (13.8 - 14.4)        |
| 2012 | 8,084           | 15.1 (14.8 - 15.4)        | 405             | 7.6 (6.9 - 8.4)           | 136             | 4.4 (3.7 - 5.2)           | 87               | 4.8 (3.8 - 5.9)           | 8,712           | 13.7 (13.4 - 14.0)        |
| 2013 | 7,265           | 13.5 (13.2 - 13.8)        | 390             | 7.3 (6.6 - 8.1)           | 142             | 4.6 (3.9 - 5.4)           | 73               | 4.0 (3.1 - 5.0)           | 7,870           | 12.3 (12.0 - 12.6)        |
| 2014 | 6,472           | 11.9 (11.6 - 12.2)        | 348             | 6.5 (5.8 - 7.2)           | 114             | 3.7 (3.0 - 4.4)           | 95               | 5.2 (4.2 - 6.3)           | 7,029           | 10.9 (10.6 - 11.1)        |
| 2015 | 5,731           | 10.5 (10.2 - 10.7)        | 316             | 5.9 (5.3 - 6.6)           | 116             | 3.7 (3.1 - 4.5)           | 61               | 3.3 (2.5 - 4.2)           | 6,224           | 9.6 (9.3 - 9.8)           |
| 2016 | 5,616           | 10.2 (9.9 - 10.4)         | 309             | 5.7 (5.1 - 6.4)           | 105             | 3.4 (2.8 - 4.1)           | 86               | 4.6 (3.7 - 5.7)           | 6,116           | 9.3 (9.1 - 9.6)           |
| 2017 | 5,102           | 9.2 (8.9 - 9.4)           | 286             | 5.3 (4.7 - 5.9)           | 106             | 3.4 (2.8 - 4.1)           | 73               | 3.9 (3.1 - 4.9)           | 5,567           | 8.4 (8.2-8.7)             |

CI - confidence interval



The majority of TB cases in the UK occurred in England, and the rate of TB in England was considerably higher than in the devolved administrations. In 2017, there were 5,102 cases in England, a decline of 38% since the peak of 8,280 in 2011. In 2017, the rate of TB in England was 9.2 per 100,000 (95% CI 8.9-9.4).

Similarly, in Scotland there was an overall increase in the number of cases and rate of TB between 2000 and 2010 after which there has been an annual decline. In 2017, the rate of TB in Scotland was 5.3 per 100,000 (95% CI 4.7-5.9).

In Wales, although the number of cases and rate of TB has fluctuated annually there has been an overall decrease, with the rate of TB almost halving between 2000 and 2016 (6.3 per 100,000 (95% CI 5.4-7.2) vs 3.4 per 100,000 (95% CI 2.8-4.1)). However, there was no change in the number of cases or rate in Wales between 2016 and 2017.

Northern Ireland has both a small number of cases and low rate of TB, with annual fluctuations. In 2017, there were 73 cases and a rate of 3.9 per 100,000 (95% CI 3.1-4.9).

**Table 3: Number of TB case notifications and rates by PHE Centre, England, 2017**

| <b>PHE Centre<sup>a</sup></b> | <b>Number of cases</b> | <b>Rate per 100,000 (95%CI)</b> |
|-------------------------------|------------------------|---------------------------------|
| London                        | 1,919                  | 21.7 (20.8 - 22.7)              |
| West Midlands                 | 663                    | 11.3 (10.5 - 12.2)              |
| South East                    | 539                    | 6.1 (5.6 - 6.7)                 |
| North West                    | 532                    | 7.3 (6.7 - 8.0)                 |
| East of England               | 409                    | 6.4 (5.8 - 7.0)                 |
| East Midlands                 | 351                    | 7.4 (6.6 - 8.2)                 |
| Yorkshire and the Humber      | 345                    | 6.3 (5.7 - 7.0)                 |
| South West                    | 234                    | 4.2 (3.7 - 4.8)                 |
| North East                    | 110                    | 4.2 (3.4 - 5.0)                 |

<sup>a</sup> Ordered by decreasing total number of cases

CI - confidence interval

In 2017, London PHE Centre (PHEC) accounted for the highest number of TB cases in England, followed by the West Midlands PHEC. The rate of TB per 100,000 population in London PHEC was over 5 times higher than the rates in the South West and North East PHECs, which had the lowest rates.

**Table 4: Three-year average number of TB case notifications and rates by upper tier local authority and local authority district, England, 2015-2017**

| PHE Centre <sup>a</sup> | Upper tier local authority and local authority district <sup>b</sup> | Average annual number of cases <sup>c</sup> | Average annual rate per 100,000 (95% CI) |
|-------------------------|--|---|--|
| London                  |  | <b>2131</b>                                 | <b>24.3 (23.7-24.9)</b>                  |
|                         | Barking and Dagenham   | 53  | 25.7 (21.9-30.0)                         |
|                         | Barnet   | 71  | 18.4 (16.0-21.1)                         |
|                         | Bexley   | 28  | 11.3 (9.0-14.0)                          |
|                         | Brent  | 169   | 51.7 (47.3-56.4)                         |
|                         | Bromley  | 23  | 7.0 (5.5-8.9)                            |
|                         | Camden   | 44  | 17.6 (14.7-20.8)                         |
|                         | City of London   | 1   | 13.9 (2.9-40.6)                          |
|                         | Croydon  | 82  | 21.3 (18.7-24.2)                         |
|                         | Ealing   | 136   | 39.4 (35.7-43.5)                         |
|                         | Enfield  | 63  | 19.1 (16.5-22.0)                         |
|                         | Greenwich  | 74  | 26.5 (23.2-30.3)                         |
|                         | Hackney  | 63  | 23.2 (20.0-26.8)                         |
|                         | Hammersmith and Fulham   | 35  | 19.4 (15.9-23.4)                         |
|                         | Haringey   | 65  | 24.2 (20.9-27.8)                         |
|                         | Harrow   | 86  | 34.7 (30.6-39.2)                         |
|                         | Havering   | 26  | 10.3 (8.1-12.8)                          |
|                         | Hillingdon   | 84  | 27.9 (24.6-31.6)                         |
|                         | Hounslow   | 106   | 39.7 (35.5-44.3)                         |
|                         | Islington  | 44  | 19.0 (15.9-22.5)                         |
|                         | Kensington and Chelsea   | 24  | 15.1 (11.8-19.0)                         |
|                         | Kingston upon Thames   | 13  | 7.3 (5.2-10.0)                           |
|                         | Lambeth  | 56  | 17.5 (14.9-20.3)                         |
|                         | Lewisham   | 58  | 19.5 (16.8-22.7)                         |
|                         | Merton   | 44  | 21.3 (17.9-25.3)                         |
|                         | Newham   | 200   | 58.2 (53.7-63.1)                         |
|                         | Redbridge  | 115   | 38.4 (34.5-42.7)                         |
|                         | Richmond upon Thames   | 12  | 6.0 (4.2-8.3)                            |
|                         | Southwark  | 75  | 24.2 (21.1-27.6)                         |
|                         | Sutton   | 21  | 10.4 (8.0-13.3)                          |
|                         | Tower Hamlets  | 79  | 26.4 (23.1-29.9)                         |
|                         | Waltham Forest   | 88  | 32.3 (28.5-36.4)                         |
|                         | Wandsworth   | 55  | 17.0 (14.5-19.8)                         |
| Westminster             | 38   | 15.6 (12.8-18.7)                            |  |

| <b>PHE Centre<sup>a</sup></b> | <b>Upper tier local authority and local authority district<sup>b</sup></b> | <b>Average annual number of cases<sup>c</sup></b> | <b>Average annual rate per 100,000 (95% CI)</b> |
|-------------------------------|--|---|---|
| <b>West Midlands</b>          |  | <b>693</b>  | <b>11.9 (11.4-12.5)</b>                         |
|                               | Birmingham   | 256   | 22.8 (21.2-24.4)                                |
|                               | Coventry   | 83  | 23.6 (20.8-26.8)                                |
|                               | Dudley   | 25  | 7.8 (6.1-9.7)                                   |
|                               | Herefordshire, County of   | 4   | 2.3 (1.2-3.9)                                   |
|                               | Sandwell   | 88  | 27.2 (24.0-30.7)                                |
|                               | Shropshire   | 5   | 1.6 (0.9-2.6)                                   |
|                               | Solihull   | 11  | 5.3 (3.7-7.5)                                   |
|                               | <b>Staffordshire</b>   | <b>37</b>   | <b>4.2 (3.5-5.1)</b>                            |
|                               | Cannock Chase  | 2   | 2.4 (1.0-4.9)                                   |
|                               | East Staffordshire   | 8   | 6.6 (4.2-9.8)                                   |
|                               | Lichfield  | 4   | 3.9 (2.0-6.8)                                   |
|                               | Newcastle-under-Lyme   | 6   | 4.7 (2.8-7.4)                                   |
|                               | South Staffordshire  | 6   | 5.1 (3.0-8.2)                                   |
|                               | Stafford   | 7   | 5.0 (3.0-7.7)                                   |
|                               | Staffordshire Moorlands  | 2   | 2.0 (0.7-4.4)                                   |
|                               | Tamworth   | 2   | 3.0 (1.2-6.3)                                   |
|                               | Stoke-on-Trent   | 27  | 10.8 (8.6-13.4)                                 |
|                               | Telford and Wrekin   | 6   | 3.6 (2.2-5.7)                                   |
|                               | Walsall  | 43  | 15.5 (13.0-18.5)                                |
|                               | <b>Warwickshire</b>  | <b>31</b>   | <b>5.5 (4.5-6.8)</b>                            |
|                               | North Warwickshire   | 1   | 2.1 (0.6-5.4)                                   |
|                               | Nuneaton and Bedworth  | 8   | 6.5 (4.2-9.6)                                   |
|                               | Rugby  | 7   | 7.0 (4.4-10.5)                                  |
|                               | Stratford-on-Avon  | 4   | 3.0 (1.5-5.3)                                   |
|                               | Warwick  | 10  | 7.4 (5.0-10.5)                                  |
|                               | Wolverhampton  | 57  | 22.2 (19.0-25.8)                                |
|                               | <b>Worcestershire</b>  | <b>18</b>   | <b>3.1 (2.4-4.1)</b>                            |
|                               | Bromsgrove   | 3   | 2.8 (1.2-5.4)                                   |
|                               | Malvern Hills  | 2   | 2.2 (0.7-5.1)                                   |
|                               | Redditch   | 4   | 4.7 (2.4-8.2)                                   |
|                               | Worcester  | 4   | 4.3 (2.3-7.3)                                   |
|                               | Wychavon   | 4   | 3.5 (1.9-6.0)                                   |
|                               | Wyre Forest  | 1   | 1.3 (0.4-3.4)                                   |

| PHE Centre <sup>a</sup> | Upper tier local authority and local authority district <sup>b</sup> | Average annual number of cases <sup>c</sup> | Average annual rate per 100,000 (95% CI) |
|-------------------------|--|---|--|
| <b>South East</b>       |  | <b>564</b>                                  | <b>6.4 (6.1-6.8)</b>                     |
|                         | Bracknell Forest   | 5   | 4.2 (2.3-6.9)                            |
|                         | Brighton and Hove  | 20  | 6.9 (5.2-8.9)                            |
|                         | <b>Buckinghamshire</b>   | 46  | 8.6 (7.3-10.2)                           |
|                         | Aylesbury Vale   | 12  | 6.1 (4.2-8.4)                            |
|                         | Chiltern   | 8   | 8.1 (5.1-12.1)                           |
|                         | South Bucks  | 5   | 6.7 (3.7-11.2)                           |
|                         | Wycombe  | 22  | 12.6 (9.7-16.0)                          |
|                         | <b>East Sussex</b>   | 20  | 3.6 (2.7-4.6)                            |
|                         | Eastbourne   | 6   | 5.8 (3.5-9.2)                            |
|                         | Hastings   | 5   | 5.0 (2.8-8.5)                            |
|                         | Lewes  | 3   | 3.3 (1.6-6.0)                            |
|                         | Rother   | 2   | 1.8 (0.6-4.1)                            |
|                         | Wealden  | 4   | 2.5 (1.3-4.4)                            |
|                         | <b>Hampshire</b>   | 58  | 4.3 (3.6-4.9)                            |
|                         | Basingstoke and Deane  | 10  | 5.9 (4.0-8.4)                            |
|                         | East Hampshire   | 3   | 2.5 (1.2-4.8)                            |
|                         | Eastleigh  | 4   | 2.8 (1.4-5.1)                            |
|                         | Fareham  | 2   | 1.7 (0.6-3.8)                            |
|                         | Gosport  | 1   | 1.2 (0.2-3.4)                            |
|                         | Hart   | 1   | 1.1 (0.2-3.1)                            |
|                         | Havant   | 3   | 2.4 (1.1-4.6)                            |
|                         | New Forest   | 4   | 2.0 (1.0-3.7)                            |
|                         | Rushmoor   | 21  | 21.9 (16.9-28.1)                         |
|                         | Test Valley  | 5   | 4.1 (2.3-6.7)                            |
|                         | Winchester   | 4   | 3.5 (1.9-6.0)                            |
|                         | Isle of Wight  | 2   | 1.2 (0.4-2.8)                            |
|                         | <b>Kent</b>  | 93  | 6.1 (5.4-6.8)                            |
|                         | Ashford  | 11  | 8.7 (6.0-12.3)                           |
|                         | Canterbury   | 9   | 5.3 (3.5-7.8)                            |
|                         | Dartford   | 9   | 8.5 (5.6-12.4)                           |
|                         | Dover  | 5   | 4.7 (2.7-7.6)                            |
|                         | Gravesham  | 17  | 16.3 (12.2-21.4)                         |
|                         | Maidstone  | 14  | 8.2 (5.9-11.2)                           |
|                         | Sevenoaks  | 4   | 3.4 (1.7-5.9)                            |
|                         | Shepway  | 4   | 3.6 (1.9-6.3)                            |
|                         | Swale  | 5   | 3.5 (1.9-5.7)                            |
|                         | Thanet   | 8   | 5.5 (3.5-8.2)                            |
|                         | Tonbridge and Malling  | 4   | 2.9 (1.4-5.2)                            |
|                         | Tunbridge Wells  | 4   | 3.4 (1.8-6.0)                            |
|                         | Medway   | 12  | 4.5 (3.1-6.1)                            |

| PHE Centre <sup>a</sup>               | Upper tier local authority and local authority district <sup>b</sup> | Average annual number of cases <sup>c</sup> | Average annual rate per 100,000 (95% CI) |
|---------------------------------------|--|---|--|
| <b>South East</b><br><i>continued</i> | <b>Oxfordshire</b>   | 43  | 6.3 (5.2-7.5)                            |
|                                       | Cherwell   | 11  | 7.5 (5.2-10.5)                           |
|                                       | Oxford   | 23  | 14.6 (11.4-18.6)                         |
|                                       | South Oxfordshire  | 2   | 1.7 (0.7-3.5)                            |
|                                       | Vale of White Horse  | 3   | 2.6 (1.2-4.8)                            |
|                                       | West Oxfordshire   | 3   | 3.1 (1.5-5.6)                            |
|                                       | Portsmouth   | 13  | 6.3 (4.5-8.5)                            |
|                                       | Reading  | 34  | 20.9 (17.1-25.4)                         |
|                                       | Slough   | 56  | 37.7 (32.2-43.9)                         |
|                                       | Southampton  | 30  | 12.2 (9.8-14.9)                          |
|                                       | <b>Surrey</b>  | 64  | 5.4 (4.7-6.2)                            |
|                                       | Elmbridge  | 4   | 2.9 (1.5-5.1)                            |
|                                       | Epsom and Ewell  | 6   | 8.0 (4.8-12.5)                           |
|                                       | Guildford  | 7   | 4.5 (2.8-7.0)                            |
|                                       | Mole Valley  | 2   | 2.3 (0.8-5.0)                            |
|                                       | Reigate and Banstead   | 8   | 5.3 (3.3-7.9)                            |
|                                       | Runnymede  | 4   | 5.0 (2.7-8.6)                            |
|                                       | Spelthorne   | 9   | 9.1 (6.0-13.3)                           |
|                                       | Surrey Heath   | 5   | 5.6 (3.2-9.3)                            |
|                                       | Tandridge  | 3   | 3.9 (1.8-7.1)                            |
|                                       | Waverley   | 5   | 4.0 (2.2-6.6)                            |
|                                       | Woking   | 10  | 10.2 (6.9-14.5)                          |
|                                       | West Berkshire   | 6   | 4.0 (2.4-6.3)                            |
|                                       | <b>West Sussex</b>   | 38  | 4.5 (3.7-5.4)                            |
|                                       | Adur   | 1   | 2.1 (0.6-5.4)                            |
|                                       | Arun   | 5   | 3.0 (1.6-5.0)                            |
|                                       | Chichester   | 3   | 2.5 (1.2-4.8)                            |
|                                       | Crawley  | 18  | 15.9 (11.9-20.8)                         |
|                                       | Horsham  | 3   | 2.2 (1.0-4.1)                            |
|                                       | Mid Sussex   | 4   | 2.7 (1.4-4.7)                            |
|                                       | Worthing   | 5   | 4.3 (2.3-7.2)                            |
|                                       | Windsor and Maidenhead   | 10  | 6.9 (4.7-9.8)                            |
|                                       | Wokingham  | 13  | 8.2 (5.8-11.1)                           |

| PHE Centre <sup>a</sup> | Upper tier local authority and local authority district <sup>b</sup> | Average annual number of cases <sup>c</sup> | Average annual rate per 100,000 (95% CI) |
|-------------------------|--|---|--|
| <b>North West</b>       |  | <b>563</b>                                  | <b>7.8 (7.4-8.2)</b>                     |
|                         | Blackburn with Darwen  | 35  | 23.6 (19.3-28.6)                         |
|                         | Blackpool  | 11  | 8.1 (5.6-11.3)                           |
|                         | Bolton   | 46  | 16.1 (13.5-19.0)                         |
|                         | Bury   | 16  | 8.3 (6.1-11.0)                           |
|                         | Cheshire East  | 14  | 3.7 (2.7-5.0)                            |
|                         | Cheshire West and Chester  | 9   | 2.6 (1.7-3.8)                            |
|                         | <b>Cumbria</b>   | 7   | 1.4 (0.9-2.1)                            |
|                         | Allerdale  | 2   | 2.4 (1.0-5.0)                            |
|                         | Barrow-in-Furness  | 1   | 2.0 (0.5-5.1)                            |
|                         | Carlisle   | 1   | 1.2 (0.3-3.2)                            |
|                         | Copeland   | 1   | 1.0 (0.1-3.5)                            |
|                         | Eden   | 0   | 0.0 (0.0-0.0)                            |
|                         | South Lakeland   | 1   | 1.3 (0.3-3.3)                            |
|                         | Halton   | 1   | 1.0 (0.3-2.7)                            |
|                         | Knowsley   | 1   | 0.7 (0.1-2.0)                            |
|                         | <b>Lancashire</b>  | 65  | 5.4 (4.7-6.3)                            |
|                         | Burnley  | 6   | 7.2 (4.4-11.3)                           |
|                         | Chorley  | 3   | 2.3 (1.0-4.6)                            |
|                         | Fylde  | 0   | 0.4 (0.0-2.4)                            |
|                         | Hyndburn   | 7   | 8.3 (5.1-12.8)                           |
|                         | Lancaster  | 6   | 4.0 (2.3-6.4)                            |
|                         | Pendle   | 11  | 12.2 (8.4-17.1)                          |
|                         | Preston  | 21  | 14.7 (11.2-18.8)                         |
|                         | Ribble Valley  | 2   | 2.8 (0.9-6.6)                            |
|                         | Rossendale   | 3   | 4.3 (2.0-8.2)                            |
|                         | South Ribble   | 3   | 2.4 (1.0-4.8)                            |
|                         | West Lancashire  | 2   | 1.5 (0.5-3.4)                            |
|                         | Wyre   | 3   | 2.4 (1.0-4.8)                            |
|                         | Liverpool  | 38  | 7.8 (6.4-9.4)                            |
|                         | Manchester   | 126   | 23.4 (21.1-25.9)                         |
|                         | Oldham   | 43  | 18.7 (15.6-22.2)                         |
|                         | Rochdale   | 27  | 12.6 (10.0-15.7)                         |
|                         | Salford  | 27  | 11.0 (8.8-13.7)                          |
|                         | Sefton   | 6   | 2.3 (1.4-3.6)                            |
|                         | St. Helens   | 2   | 1.1 (0.4-2.4)                            |
|                         | Stockport  | 15  | 5.2 (3.8-6.9)                            |
|                         | Tameside   | 22  | 10.0 (7.8-12.7)                          |
|                         | Trafford   | 22  | 9.4 (7.3-11.9)                           |
|                         | Warrington   | 7   | 3.5 (2.2-5.3)                            |
|                         | Wigan  | 11  | 3.5 (2.4-4.9)                            |
|                         | Wirral   | 10  | 3.0 (2.0-4.3)                            |

| <b>PHE Centre<sup>a</sup></b> | <b>Upper tier local authority and local authority district<sup>b</sup></b> | <b>Average annual number of cases<sup>c</sup></b> | <b>Average annual rate per 100,000 (95% CI)</b> |
|-------------------------------|--|---|---|
| <b>East of England</b>        |  | <b>410</b>  | <b>6.4 (6.1-6.8)</b>                            |
|                               | Bedford  | 17  | 10.3 (7.7-13.5)                                 |
|                               | <b>Cambridgeshire</b>  | <b>37</b>   | <b>5.7 (4.7-6.9)</b>                            |
|                               | Cambridge  | 15  | 11.7 (8.5-15.8)                                 |
|                               | East Cambridgeshire  | 2   | 2.3 (0.8-4.9)                                   |
|                               | Fenland  | 3   | 3.3 (1.6-6.1)                                   |
|                               | Huntingdonshire  | 8   | 4.5 (2.9-6.8)                                   |
|                               | South Cambridgeshire   | 9   | 5.6 (3.6-8.2)                                   |
|                               | Central Bedfordshire   | 6   | 2.2 (1.3-3.4)                                   |
|                               | <b>Essex</b>   | <b>60</b>   | <b>4.1 (3.5-4.8)</b>                            |
|                               | Basildon   | 12  | 6.7 (4.7-9.3)                                   |
|                               | Braintree  | 2   | 1.5 (0.6-3.2)                                   |
|                               | Brentwood  | 4   | 5.2 (2.7-9.1)                                   |
|                               | Castle Point   | 2   | 2.2 (0.8-4.9)                                   |
|                               | Chelmsford   | 5   | 3.1 (1.7-5.0)                                   |
|                               | Colchester   | 8   | 4.1 (2.6-6.1)                                   |
|                               | Epping Forest  | 5   | 3.8 (2.2-6.3)                                   |
|                               | Harlow   | 11  | 12.4 (8.5-17.6)                                 |
|                               | Maldon   | 2   | 3.2 (1.2-6.9)                                   |
|                               | Rochford   | 2   | 1.9 (0.6-4.5)                                   |
|                               | Tendring   | 3   | 2.3 (1.1-4.3)                                   |
|                               | Uttlesford   | 4   | 4.2 (2.1-7.6)                                   |
|                               | <b>Hertfordshire</b>   | <b>85</b>   | <b>7.2 (6.4-8.2)</b>                            |
|                               | Broxbourne   | 8   | 8.3 (5.3-12.3)                                  |
|                               | Dacorum  | 7   | 4.8 (3.0-7.3)                                   |
|                               | East Hertfordshire   | 6   | 4.3 (2.6-6.8)                                   |
|                               | Hertsmere  | 11  | 10.6 (7.3-14.9)                                 |
|                               | North Hertfordshire  | 8   | 6.3 (4.1-9.3)                                   |
|                               | St Albans  | 6   | 4.3 (2.6-6.7)                                   |
|                               | Stevenage  | 7   | 8.0 (5.0-12.3)                                  |
|                               | Three Rivers   | 5   | 5.4 (3.0-8.9)                                   |
|                               | Watford  | 16  | 16.2 (11.9-21.6)                                |
|                               | Welwyn Hatfield  | 10  | 8.3 (5.6-11.9)                                  |
|                               | Luton  | 57  | 26.7 (22.9-31.0)                                |
|                               | Milton Keynes  | 24  | 9.2 (7.2-11.5)                                  |
|                               | <b>Norfolk</b>   | <b>35</b>   | <b>3.9 (3.2-4.8)</b>                            |
|                               | Breckland  | 3   | 1.9 (0.8-3.8)                                   |
|                               | Broadland  | 0   | 0.3 (0.0-1.5)                                   |
|                               | Great Yarmouth   | 11  | 11.4 (7.9-16.0)                                 |
|                               | King's Lynn and West Norfolk   | 6   | 4.2 (2.5-6.5)                                   |
|                               | North Norfolk  | 1   | 1.0 (0.2-2.8)                                   |
|                               | Norwich  | 11  | 7.9 (5.4-11.1)                                  |
|                               | South Norfolk  | 2   | 1.8 (0.7-3.6)                                   |



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|--|--|---|--|
| <b>East of England</b><br><i>continued</i> | Peterborough   | 38  | 19.3 (16.0-23.2)                         |
|  | Southend-on-Sea  | 12  | 6.5 (4.5-9.0)                            |
|  | <b>Suffolk</b>   | 26  | 3.4 (2.7-4.3)                            |
|  | Babergh  | 2   | 2.6 (1.0-5.3)                            |
|  | Forest Heath   | 3   | 4.2 (1.8-8.2)                            |
|  | Ipswich  | 8   | 5.5 (3.5-8.3)                            |
|  | Mid Suffolk  | 2   | 2.0 (0.7-4.3)                            |
|  | St Edmundsbury   | 4   | 3.5 (1.8-6.2)                            |
|  | Suffolk Coastal  | 2   | 1.6 (0.6-3.4)                            |
|  | Waveney  | 5   | 4.3 (2.4-7.0)                            |
|  | Thurrock   | 13  | 7.7 (5.5-10.6)                           |
| <b>East Midlands</b>                       |  | <b>350</b>                                  | <b>7.4 (7.0-7.9)</b>                     |
|  | Derby  | 31  | 12.0 (9.7-14.7)                          |
|  | <b>Derbyshire</b>  | 12  | 1.6 (1.1-2.2)                            |
|  | Amber Valley   | 2   | 1.3 (0.4-3.1)                            |
|  | Bolsover   | 0   | 0.0 (0.0-0.0)                            |
|  | Chesterfield   | 3   | 3.2 (1.5-5.9)                            |
|  | Derbyshire Dales   | 1   | 1.4 (0.3-4.1)                            |
|  | Erewash  | 3   | 2.9 (1.4-5.3)                            |
|  | High Peak  | 1   | 1.5 (0.4-3.7)                            |
|  | North East Derbyshire  | 1   | 1.0 (0.2-2.9)                            |
|  | South Derbyshire   | 1   | 0.7 (0.1-2.4)                            |
|  | Leicester  | 131   | 37.4 (33.8-41.3)                         |
|  | <b>Leicestershire</b>  | 25  | 3.7 (2.9-4.7)                            |
|  | Blaby  | 4   | 3.8 (1.9-6.7)                            |
|  | Charnwood  | 10  | 5.4 (3.6-7.8)                            |
|  | Harborough   | 3   | 3.3 (1.5-6.3)                            |
|  | Hinckley and Bosworth  | 2   | 1.8 (0.7-4.0)                            |
|  | Melton   | 0   | 0.7 (0.0-3.6)                            |
|  | North West Leicestershire  | 2   | 1.7 (0.5-3.9)                            |
|  | Oadby and Wigston  | 5   | 8.9 (5.0-14.6)                           |
|  | <b>Lincolnshire</b>  | 32  | 4.3 (3.4-5.2)                            |
|  | Boston   | 10  | 14.3 (9.6-20.5)                          |
|  | East Lindsey   | 5   | 3.6 (2.0-5.9)                            |
|  | Lincoln  | 4   | 4.1 (2.1-7.2)                            |
|  | North Kesteven   | 2   | 2.1 (0.8-4.2)                            |
|  | South Holland  | 4   | 4.7 (2.5-8.0)                            |
|  | South Kesteven   | 5   | 3.3 (1.8-5.6)                            |
|  | West Lindsey   | 2   | 1.8 (0.6-4.1)                            |

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|--|--|---|--|
| <b>East Midlands</b><br><i>continued</i> | <b>Northamptonshire</b>  | 45  | 6.2 (5.2-7.3)                            |
|  | Corby  | 3   | 4.4 (2.0-8.3)                            |
|  | Daventry   | 2   | 2.1 (0.7-4.8)                            |
|  | East Northamptonshire  | 3   | 2.9 (1.3-5.7)                            |
|  | Kettering  | 6   | 6.4 (3.9-10.0)                           |
|  | Northampton  | 24  | 10.6 (8.3-13.3)                          |
|  | South Northamptonshire   | 2   | 2.2 (0.8-4.8)                            |
|  | Wellingborough   | 6   | 7.7 (4.5-12.1)                           |
|  | Nottingham   | 48  | 14.8 (12.5-17.4)                         |
|  | <b>Nottinghamshire</b>   | 24  | 3.0 (2.3-3.8)                            |
|  | Ashfield   | 5   | 4.3 (2.4-6.9)                            |
|  | Bassetlaw  | 1   | 1.2 (0.3-3.0)                            |
|  | Broxtowe   | 4   | 3.6 (1.8-6.2)                            |
|  | Gedling  | 5   | 4.3 (2.4-7.1)                            |
|  | Mansfield  | 2   | 2.2 (0.9-4.5)                            |
|  | Newark and Sherwood  | 3   | 2.2 (1.0-4.4)                            |
|  | Rushcliffe   | 4   | 3.2 (1.6-5.7)                            |
|  | Rutland  | 1   | 3.4 (0.9-8.8)                            |
|  | <b>Yorkshire and the Humber</b>                                      | <b>401</b>                                  | <b>7.4 (7.0-7.8)</b>                     |
|  | Barnsley   | 7   | 3.0 (1.9-4.6)                            |
| Bradford                                 | 94   | 17.7 (15.7-19.8)                            |  |
| Calderdale                               | 12   | 5.9 (4.2-8.1)                               |  |
| Doncaster                                | 15   | 4.8 (3.5-6.4)                               |  |
| East Riding of Yorkshire                 | 5  | 1.6 (0.9-2.6)                               |  |
| Kingston upon Hull, City of              | 15   | 5.9 (4.3-7.9)                               |  |
| Kirklees                                 | 59   | 13.6 (11.6-15.7)                            |  |
| Leeds                                    | 79   | 10.1 (8.8-11.5)                             |  |
| North East Lincolnshire                  | 6  | 3.8 (2.2-5.9)                               |  |
| North Lincolnshire                       | 8  | 4.7 (3.0-7.0)                               |  |
| <b>North Yorkshire</b>                   | 15   | 2.4 (1.7-3.2)                               |  |
| Craven                                   | 1  | 1.2 (0.1-4.3)                               |  |
| Hambleton                                | 2  | 1.8 (0.6-4.3)                               |  |
| Harrogate                                | 3  | 2.1 (1.0-3.8)                               |  |
| Richmondshire                            | 3  | 6.2 (3.0-11.5)                              |  |
| Ryedale                                  | 1  | 1.2 (0.1-4.5)                               |  |
| Scarborough                              | 3  | 3.1 (1.5-5.7)                               |  |
| Selby                                    | 2  | 1.9 (0.6-4.5)                               |  |
| Rotherham                                | 13   | 4.8 (3.4-6.6)                               |  |
| Sheffield                                | 57   | 9.9 (8.5-11.5)                              |  |
| Wakefield                                | 13   | 3.9 (2.7-5.3)                               |  |
| York                                     | 3  | 1.3 (0.6-2.5)                               |  |

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|-------------------------|--|---|--|
| <b>South West</b>       |  | <b>253</b>                                  | <b>4.6 (4.3-4.9)</b>                     |
|                         | Bath and North East Somerset   | 7   | 3.6 (2.2-5.5)                            |
|                         | Bournemouth  | 12  | 6.2 (4.3-8.6)                            |
|                         | Bristol, City of   | 69  | 15.2 (13.2-17.4)                         |
|                         | Cornwall   | 12  | 2.2 (1.5-3.0)                            |
|                         | <b>Devon</b>   | <b>24</b>                                   | <b>3.0 (2.4-3.8)</b>                     |
|                         | East Devon   | 2   | 1.7 (0.7-3.4)                            |
|                         | Exeter   | 6   | 4.7 (2.8-7.4)                            |
|                         | Mid Devon  | 3   | 3.3 (1.4-6.6)                            |
|                         | North Devon  | 2   | 2.5 (1.0-5.1)                            |
|                         | South Hams   | 2   | 2.4 (0.9-5.1)                            |
|                         | Teignbridge  | 8   | 5.9 (3.7-8.8)                            |
|                         | Torrige  | 0   | 0.5 (0.0-2.8)                            |
|                         | West Devon   | 0   | 0.6 (0.0-3.4)                            |
|                         | <b>Dorset</b>  | <b>9</b>                                    | <b>2.0 (1.3-3.0)</b>                     |
|                         | Christchurch   | 1   | 2.7 (0.7-6.9)                            |
|                         | East Dorset  | 3   | 3.7 (1.8-6.9)                            |
|                         | North Dorset   | 2   | 2.8 (1.0-6.1)                            |
|                         | Purbeck  | 1   | 1.4 (0.2-5.2)                            |
|                         | West Dorset  | 0   | 0.0 (0.0-0.0)                            |
|                         | Weymouth and Portland  | 1   | 2.0 (0.6-5.2)                            |
|                         | <b>Gloucestershire</b>   | <b>23</b>                                   | <b>3.6 (2.8-4.6)</b>                     |
|                         | Cheltenham   | 4   | 3.4 (1.8-6.0)                            |
|                         | Cotswold   | 1   | 1.2 (0.2-3.4)                            |
|                         | Forest of Dean   | 1   | 1.6 (0.4-4.0)                            |
|                         | Gloucester   | 9   | 6.8 (4.4-9.9)                            |
|                         | Stroud   | 3   | 2.8 (1.4-5.2)                            |
|                         | Tewkesbury   | 4   | 4.9 (2.6-8.4)                            |
|                         | Isles of Scilly  | 0   | 0.0 (0.0-0.0)                            |
|                         | North Somerset   | 7   | 3.5 (2.2-5.2)                            |
|                         | Plymouth   | 19  | 7.2 (5.5-9.4)                            |
|                         | Poole  | 6   | 4.2 (2.5-6.6)                            |
|                         | <b>Somerset</b>  | <b>8</b>                                    | <b>1.4 (0.9-2.1)</b>                     |
|                         | Mendip   | 3   | 2.4 (1.0-4.7)                            |
|                         | Sedgemoor  | 2   | 1.4 (0.4-3.2)                            |
|                         | South Somerset   | 1   | 0.8 (0.2-2.1)                            |
|                         | Taunton Deane  | 2   | 1.4 (0.5-3.4)                            |
|                         | West Somerset  | 0   | 1.0 (0.0-5.4)                            |
|                         | South Gloucestershire  | 14  | 5.2 (3.8-7.0)                            |
|                         | Swindon  | 26  | 11.7 (9.3-14.7)                          |
|                         | Torbay   | 6   | 4.2 (2.5-6.7)                            |
|                         | Wiltshire  | 12  | 2.4 (1.7-3.4)                            |

| <b>PHE Centre<sup>a</sup></b> | <b>Upper tier local authority and local authority district<sup>b</sup></b> | <b>Average annual number of cases<sup>c</sup></b> | <b>Average annual rate per 100,000 (95% CI)</b> |
|-------------------------------|--|---|---|
| <b>North East</b>             |  | <b>120</b>  | <b>4.5 (4.1-5.0)</b>                            |
|                               | County Durham  | 9   | 1.7 (1.1-2.4)                                   |
|                               | Darlington   | 5   | 4.4 (2.4-7.4)                                   |
|                               | Gateshead  | 11  | 5.4 (3.7-7.6)                                   |
|                               | Hartlepool   | 3   | 3.2 (1.5-6.1)                                   |
|                               | Middlesbrough  | 15  | 10.9 (8.0-14.6)                                 |
|                               | Newcastle upon Tyne  | 37  | 12.7 (10.5-15.3)                                |
|                               | North Tyneside   | 4   | 2.0 (1.0-3.4)                                   |
|                               | Northumberland   | 5   | 1.6 (0.9-2.6)                                   |
|                               | Redcar and Cleveland   | 3   | 2.2 (1.0-4.2)                                   |
|                               | South Tyneside   | 4   | 2.9 (1.5-5.0)                                   |
|                               | Stockton-on-Tees   | 10  | 5.3 (3.6-7.5)                                   |
|                               | Sunderland   | 13  | 4.7 (3.3-6.4)                                   |

<sup>a</sup> Ordered by decreasing total number of cases in 2017

<sup>b</sup> Those highlighted in bold are upper-tier local authority only, those indented are local authority district only, and those neither highlighted nor indented are both an upper tier local authority and a local authority district

<sup>c</sup> Average number of cases in a local authority district may not be the same as the sum of the average number of cases in the corresponding upper tier local authority due to rounding

CI - confidence intervals

**Table 5: Number and proportion of culture confirmed TB cases and pulmonary TB cases by country, UK, 2008-2017**

| Year | England                    |      |                                      |      | Scotland                   |      |                                      |      | Wales                      |      |                                      |      | Northern Ireland           |      |                                      |      | UK                         |      |                                      |      |
|------|----------------------------|------|--------------------------------------|------|----------------------------|------|--------------------------------------|------|----------------------------|------|--------------------------------------|------|----------------------------|------|--------------------------------------|------|----------------------------|------|--------------------------------------|------|
|      | Culture confirmed TB cases |      | Culture confirmed pulmonary TB cases |      | Culture confirmed TB cases |      | Culture confirmed pulmonary TB cases |      | Culture confirmed TB cases |      | Culture confirmed pulmonary TB cases |      | Culture confirmed TB cases |      | Culture confirmed pulmonary TB cases |      | Culture confirmed TB cases |      | Culture confirmed pulmonary TB cases |      |
|      | n                          | %    | n                                    | %    | n                          | %    | n                                    | %    | n                          | %    | n                                    | %    | n                          | %    | n                                    | %    | n                          | %    | n                                    | %    |
| 2008 | 4,537                      | 58.1 | 2,904                                | 67.8 | 317                        | 70.9 | 212                                  | 79.7 | 102                        | 60.4 | 73                                   | 71.6 | 50                         | 75.8 | 30                                   | 81.1 | 5,006                      | 59.0 | 3,219                                | 68.6 |
| 2009 | 4,669                      | 57.6 | 3,006                                | 68.1 | 325                        | 66.9 | 215                                  | 74.4 | 119                        | 55.9 | 80                                   | 63.5 | 49                         | 83.1 | 38                                   | 86.4 | 5,162                      | 58.2 | 3,339                                | 68.5 |
| 2010 | 4,609                      | 60.0 | 2,867                                | 70.5 | 325                        | 64.6 | 228                                  | 70.2 | 107                        | 70.4 | 72                                   | 77.4 | 54                         | 81.8 | 35                                   | 94.6 | 5,095                      | 60.7 | 3,202                                | 70.8 |
| 2011 | 5,032                      | 60.8 | 3,075                                | 71.7 | 295                        | 66.0 | 195                                  | 68.9 | 94                         | 71.8 | 56                                   | 78.9 | 47                         | 77.0 | 38                                   | 80.9 | 5,468                      | 61.3 | 3,364                                | 71.7 |
| 2012 | 4,897                      | 60.6 | 2,949                                | 70.4 | 276                        | 68.1 | 165                                  | 75.0 | 105                        | 77.2 | 63                                   | 80.8 | 53                         | 60.9 | 36                                   | 76.6 | 5,331                      | 61.2 | 3,213                                | 70.9 |
| 2013 | 4,393                      | 60.5 | 2,711                                | 72.9 | 241                        | 61.8 | 156                                  | 71.9 | 87                         | 61.3 | 62                                   | 73.8 | 45                         | 61.6 | 29                                   | 69.0 | 4,766                      | 60.6 | 2,958                                | 72.8 |
| 2014 | 3,923                      | 60.6 | 2,486                                | 73.1 | 236                        | 67.8 | 162                                  | 70.7 | 81                         | 71.1 | 55                                   | 85.9 | 64                         | 67.4 | 48                                   | 70.6 | 4,304                      | 61.2 | 2,751                                | 73.2 |
| 2015 | 3,492                      | 60.9 | 2,246                                | 74.1 | 209                        | 66.1 | 130                                  | 78.3 | 80                         | 69.0 | 59                                   | 90.8 | 39                         | 63.9 | 33                                   | 84.6 | 3,820                      | 61.4 | 2,468                                | 74.8 |
| 2016 | 3,586                      | 63.9 | 2,314                                | 76.9 | 211                        | 68.3 | 131                                  | 72.0 | 81                         | 77.1 | 62                                   | 86.1 | 56                         | 65.1 | 39                                   | 79.6 | 3,934                      | 64.3 | 2,546                                | 76.8 |
| 2017 | 3,153                      | 61.8 | 2,066                                | 74.7 | 189                        | 66.1 | 127                                  | 74.7 | 75                         | 70.8 | 51                                   | 82.3 | 47                         | 64.4 | 34                                   | 69.4 | 3,464                      | 62.2 | 2,278                                | 74.7 |

In the last 10 years there has been an overall increase in the proportion of TB cases that were culture confirmed in the UK, with some annual fluctuations. The proportion of TB cases culture confirmed was generally higher in Wales (range 56-77%), Northern Ireland (range 61-83%) and Scotland (62-71%) compared with England (range 58%-64%). Overall, culture confirmation was higher in pulmonary TB cases, and in 2017, almost three-quarters of pulmonary TB cases were culture confirmed in the UK.

**Table 6: Number and proportion of TB cases<sup>a</sup> with drug resistance by country, UK, 2000-2017**

| Year | England                                   |     |                 |     | Scotland                                  |     |                 |     | Wales                                     |     |                 |     | Northern Ireland                          |      |                 |     | UK  |     |                 |     |                           |      |                        |  |
|------|---|-----|-----------------|-----|---|-----|-----------------|-----|---|-----|-----------------|-----|---|------|-----------------|-----|---|-----|-----------------|-----|---------------------------|------|------------------------|--|
|      | Isoniazid resistance without MDR-TB cases |     | MDR/RR-TB cases |     | Isoniazid resistance without MDR-TB cases |     | MDR/RR-TB cases |     | Isoniazid resistance without MDR-TB cases |     | MDR/RR-TB cases |     | Isoniazid resistance without MDR-TB cases |      | MDR/RR-TB cases |     | Isoniazid resistance without MDR-TB cases |     | MDR/RR-TB cases |     | XDR-TB cases <sup>b</sup> |      | DR cohort <sup>c</sup> |  |
|      | n   | %   | n               | %   | n   | %   | n               | %   | n   | %   | n               | %   | n   | %    | n               | %   | n   | %   | n               | %   | n                         | %    | N                      |  |
| 2000 | 150                                       | 5.4 | 41              | 1.5 | 11  | 3.8 | 0               | 0.0 | 2   | 1.9 | 0               | 0.0 | 0   | 0.0  | 0               | 0.0 | 163                                       | 5.1 | 41              | 1.3 | 0                         | 0.00 | <b>41</b>              |  |
| 2001 | 184                                       | 5.9 | 32              | 1.0 | 7   | 2.8 | 2               | 0.8 | 2   | 2.6 | 3               | 3.9 | 0   | 0.0  | 1               | 2.7 | 193                                       | 5.5 | 38              | 1.1 | 0                         | 0.00 | <b>41</b>              |  |
| 2002 | 239                                       | 6.3 | 45              | 1.2 | 9   | 3.5 | 1               | 0.4 | 6   | 7.5 | 1               | 1.3 | 2   | 5.6  | 0               | 0.0 | 256                                       | 6.1 | 47              | 1.1 | 0                         | 0.00 | <b>51</b>              |  |
| 2003 | 233                                       | 6.1 | 68              | 1.8 | 8   | 3   | 1               | 0.4 | 6   | 5.5 | 3               | 2.8 | 1   | 3.2  | 0               | 0.0 | 248                                       | 5.9 | 72              | 1.7 | 1                         | 0.02 | <b>74</b>              |  |
| 2004 | 251                                       | 6.2 | 61              | 1.5 | 14  | 4.6 | 1               | 0.3 | 6   | 5.9 | 2               | 2   | 1   | 1.6  | 1               | 1.6 | 272                                       | 6.0 | 65              | 1.4 | 0                         | 0.00 | <b>75</b>              |  |
| 2005 | 281                                       | 6.2 | 56              | 1.2 | 11  | 4.1 | 0               | 0.0 | 1   | 0.8 | 2               | 1.7 | 0   | 0.0  | 1               | 2.2 | 293                                       | 5.9 | 59              | 1.2 | 0                         | 0.00 | <b>65</b>              |  |
| 2006 | 283                                       | 6.1 | 74              | 1.6 | 12  | 4.2 | 2               | 0.7 | 5   | 3.9 | 1               | 0.8 | 1   | 2.2  | 2               | 4.4 | 301                                       | 5.9 | 79              | 1.6 | 0                         | 0.00 | <b>86</b>              |  |
| 2007 | 256                                       | 5.8 | 62              | 1.4 | 8   | 2.8 | 5               | 1.7 | 10  | 7.8 | 4               | 3.1 | 2   | 3.5  | 3               | 5.3 | 276                                       | 5.7 | 74              | 1.5 | 0                         | 0.00 | <b>83</b>              |  |
| 2008 | 216                                       | 4.8 | 68              | 1.5 | 12  | 3.8 | 3               | 1.0 | 3   | 3.0 | 3               | 3.0 | 2   | 4.0  | 1               | 2.0 | 233                                       | 4.7 | 75              | 1.5 | 2                         | 0.04 | <b>85</b>              |  |
| 2009 | 268                                       | 5.8 | 70              | 1.5 | 18  | 5.6 | 2               | 0.6 | 7   | 5.9 | 1               | 0.8 | 0   | 0.0  | 0               | 0.0 | 293                                       | 5.8 | 73              | 1.4 | 2                         | 0.04 | <b>80</b>              |  |
| 2010 | 227                                       | 5.0 | 75              | 1.6 | 15  | 4.6 | 1               | 0.3 | 6   | 5.7 | 0               | 0.0 | 2   | 3.9  | 1               | 2.0 | 250                                       | 5.0 | 77              | 1.5 | 3                         | 0.06 | <b>81</b>              |  |
| 2011 | 295                                       | 5.9 | 89              | 1.8 | 18  | 6.1 | 2               | 0.7 | 1   | 1.1 | 2               | 2.1 | 1   | 2.3  | 2               | 4.5 | 315                                       | 5.8 | 95              | 1.8 | 6                         | 0.11 | <b>101</b>             |  |
| 2012 | 253                                       | 5.2 | 87              | 1.8 | 13  | 4.7 | 2               | 0.7 | 9   | 8.7 | 1               | 1.0 | 3   | 5.7  | 0               | 0.0 | 278                                       | 5.3 | 90              | 1.7 | 2                         | 0.04 | <b>97</b>              |  |
| 2013 | 237                                       | 5.5 | 78              | 1.8 | 11  | 4.7 | 5               | 2.1 | 6   | 6.9 | 2               | 2.3 | 6   | 13.3 | 0               | 0.0 | 260                                       | 5.5 | 85              | 1.8 | 3                         | 0.06 | <b>93</b>              |  |
| 2014 | 215                                       | 5.5 | 56              | 1.4 | 17  | 7.2 | 2               | 0.9 | 7   | 8.6 | 3               | 3.7 | 3   | 4.7  | 1               | 1.6 | 242                                       | 5.7 | 62              | 1.4 | 3                         | 0.07 | <b>75</b>              |  |
| 2015 | 191                                       | 5.5 | 53              | 1.5 | 9   | 4.3 | 2               | 1.0 | 5   | 6.3 | 1               | 1.3 | 3   | 7.7  | 0               | 0.0 | 208                                       | 5.5 | 56              | 1.5 | 10                        | 0.26 | <b>70</b>              |  |
| 2016 | 192                                       | 5.4 | 60              | 1.7 | 7   | 3.3 | 1               | 0.5 | 2   | 2.5 | 2               | 2.5 | 2   | 3.6  | 3               | 5.5 | 203                                       | 5.2 | 66              | 1.7 | 7                         | 0.18 | <b>76</b>              |  |
| 2017 | 177                                       | 5.7 | 55              | 1.8 | 12  | 6.4 | 3               | 1.6 | 7   | 9.6 | 3               | 4.1 | 1   | 2.1  | 0               | 0.0 | 197                                       | 5.8 | 61              | 1.8 | 3                         | 0.09 | <b>68</b>              |  |

<sup>a</sup> Culture-confirmed TB cases with results for at least isoniazid and rifampicin. For cases from all countries, results are from phenotypic drug susceptibility testing, with some cases in England having whole genome sequencing resistance predictions.

<sup>b</sup> One of the XDR-TB cases was notified in Northern Ireland in 2010, all others were notified in England

<sup>c</sup> The drug resistant (DR) cohort includes cases with confirmed initial or acquired MDR/RR-TB, as well as those treated with a second line regimen for MDR/RR-TB (without phenotypic DST results or WGS resistance predictions).

The proportion of culture confirmed TB cases with isoniazid resistance without MDR-TB and those with MDR/RR-TB have remained relatively stable in the UK since 2000. The majority of MDR/RR-TB cases in the UK were from England. Three confirmed cases of XDR-TB were notified in the UK has in 2017, all of which were notified in England.

**Table 7: TB outcome at 12 months for drug sensitive TB cases with expected treatment duration of <12 months<sup>a</sup> by country, UK, 2016**

| Country          | Completed    |             | Died       |            | Lost to follow-up |            | Still on treatment |            | Stopped   |            | Not evaluated <sup>b</sup> |            | Total<br>n   |
|------------------|--------------|-------------|------------|------------|-------------------|------------|--------------------|------------|-----------|------------|----------------------------|------------|--------------|
|                  | n            | %           | n          | %          | n                 | %          | n                  | %          | n         | %          | n                          | %          |              |
| England          | 4,201        | 84.4        | 248        | 5.0        | 196               | 3.9        | 219                | 4.4        | 47        | 0.9        | 64                         | 1.3        | 4,975        |
| Scotland         | 192          | 67.4        | 28         | 9.8        | 5                 | 1.8        | 2                  | 0.7        | 1         | 0.4        | 57                         | 20.0       | 285          |
| Wales            | 77           | 81.9        | 7          | 7.4        | 1                 | 1.1        | 6                  | 6.4        | 0         | 0.0        | 3                          | 3.2        | 94           |
| Northern Ireland | 48           | 64.0        | 5          | 6.7        | 2                 | 2.7        | 4                  | 5.3        | 1         | 1.3        | 15                         | 20.0       | 75           |
| <b>UK</b>        | <b>4,518</b> | <b>83.2</b> | <b>288</b> | <b>5.3</b> | <b>204</b>        | <b>3.8</b> | <b>231</b>         | <b>4.3</b> | <b>49</b> | <b>0.9</b> | <b>139</b>                 | <b>2.6</b> | <b>5,429</b> |

<sup>a</sup> Excludes initial and acquired resistance to rifampicin and MDR-TB cases and those treated with an MDR-TB regimen. Also excludes those with CNS, spinal, miliary or cryptic disseminated TB

<sup>b</sup> Not evaluated includes unknown and transferred out

For drug sensitive TB cases notified in 2016 with an expected treatment duration of less than 12 months, treatment completion at 12 months varied by country; the highest proportion being in England although Scotland, Wales and Northern Ireland each had low case numbers. It should be noted that the high proportion of cases in Scotland and Northern Ireland who did not have an outcome reported ('not evaluated' in Table 7) likely accounts for the low proportion of cases reported as having completed treatment. Overall, 5.3% of TB cases died in the UK, and 4% were lost to follow up. The highest number of deaths was in England (248) although the greatest proportion of deaths was recorded in Scotland (9.8%).



**Table 8: Treatment completion at 12 months for drug sensitive TB cases with expected treatment duration of <12 months<sup>a</sup> by country, UK, 2007-2016**

| Country          | 2007         |             | 2008         |             | 2009         |             | 2010         |             | 2011         |             | 2012         |             | 2013         |             | 2014         |             | 2015         |             | 2016         |             |
|------------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
|                  | n            | %           | n            | %           | n            | %           | n            | %           | n            | %           | n            | %           | n            | %           | n            | %           | n            | %           | n            | %           |
| England          | 5,296        | 78.2        | 5,605        | 80.3        | 5,920        | 81.9        | 5,652        | 82.9        | 6,031        | 82.1        | 6,022        | 83.8        | 5,511        | 85.6        | 4,855        | 84.9        | 4,189        | 83.7        | 4,201        | 84.4        |
| Scotland         | 281          | 72.4        | 284          | 67.9        | 318          | 69.9        | 362          | 77.0        | 322          | 75.9        | 303          | 79.3        | 287          | 81.5        | 258          | 80.1        | 225          | 80.6        | 192          | 67.4        |
| Wales            | 113          | 60.8        | 118          | 78.1        | 148          | 77.5        | 107          | 77.5        | 90           | 76.3        | 90           | 75.0        | 102          | 83.6        | 76           | 82.6        | 85           | 84.2        | 77           | 81.9        |
| Northern Ireland | 46           | 73.0        | 36           | 61.0        | 41           | 75.9        | 39           | 67.2        | 42           | 79.2        | 55           | 70.5        | 43           | 74.1        | 74           | 85.1        | 42           | 87.5        | 48           | 64.0        |
| <b>UK</b>        | <b>5,736</b> | <b>77.4</b> | <b>6,043</b> | <b>79.4</b> | <b>6,427</b> | <b>81.0</b> | <b>6,160</b> | <b>82.3</b> | <b>6,485</b> | <b>81.7</b> | <b>6,470</b> | <b>83.3</b> | <b>5,943</b> | <b>85.3</b> | <b>5,263</b> | <b>84.6</b> | <b>4,541</b> | <b>83.6</b> | <b>4,518</b> | <b>83.2</b> |

<sup>a</sup> Excludes initial and acquired resistance to rifampicin and MDR-TB cases and those treated with an MDR-TB regimen. Also excludes those with CNS, spinal, miliary or cryptic disseminated TB

In the UK, the proportion of drug sensitive TB cases with an expected treatment duration of less than 12 months who completed treatment by 12 months improved between 2007 and 2013, with some annual fluctuations. Since the peak in 2013 (85.3%), there has been a slight decline in this proportion. Due to small numbers of cases in Northern Ireland, Scotland and Wales, there are larger annual fluctuations in the proportion of cases completing treatment. It should be noted that in 2016 the low proportions of cases completing treatment may be due to missing outcomes (see explanation in text below Table 7).

**Table 9: Last recorded TB outcome for the entire drug sensitive TB cohort<sup>a</sup> by country, UK, 2016**

| Country          | Completed    |             | Died       |            | Lost to follow-up |            | Still on treatment |            | Stopped   |            | Not evaluated <sup>b</sup> |            | Total        |
|------------------|--------------|-------------|------------|------------|-------------------|------------|--------------------|------------|-----------|------------|----------------------------|------------|--------------|
|                  | n            | %           | n          | %          | n                 | %          | n                  | %          | n         | %          | n                          | %          | n            |
| England          | 4,756        | 85.7        | 304        | 5.5        | 219               | 3.9        | 129                | 2.3        | 51        | 0.9        | 89                         | 1.6        | 5,548        |
| Scotland         | 202          | 65.6        | 30         | 9.7        | 5                 | 1.6        | 2                  | 0.6        | 1         | 0.3        | 68                         | 22.1       | 308          |
| Wales            | 84           | 83.2        | 8          | 7.9        | 1                 | 1.0        | 4                  | 4.0        | 0         | 0.0        | 4                          | 4.0        | 101          |
| Northern Ireland | 54           | 65.1        | 5          | 6.0        | 3                 | 3.6        | 3                  | 3.6        | 1         | 1.2        | 17                         | 20.5       | 83           |
| <b>UK</b>        | <b>5,096</b> | <b>84.4</b> | <b>347</b> | <b>5.7</b> | <b>228</b>        | <b>3.8</b> | <b>138</b>         | <b>2.3</b> | <b>53</b> | <b>0.9</b> | <b>178</b>                 | <b>2.9</b> | <b>6,040</b> |

<sup>a</sup> Excludes initial and acquired resistance to rifampicin and MDR-TB cases and those treated with an MDR-TB regimen

<sup>b</sup> Not evaluated includes unknown and transferred out

Eighty four percent of drug sensitive TB cases notified in the UK in 2016 completed treatment at their last recorded outcome, with 2.3% reported to still be on treatment. Overall, 347 (5.7%) cases had died, and 228 (3.8%) cases were lost to follow-up.