



UK Health
Security
Agency

Tuberculosis in England

2021 report

(Presenting data to end 2020)

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Executive summary

The UK Health Security Agency (UKHSA) is committed to meeting the World Health Organization (WHO) Tuberculosis (TB) elimination targets by 2035 as outlined in the TB Action Plan for England 2021 to 2026. The TB Action Plan builds on the work of Collaborative TB Strategy for England and will support a year-on-year reduction in TB incidence and in-UK TB transmission.

The number of TB cases reported declined from 4,725 in 2019 to 4,125 in 2020. This represents an overall decline in the rates of TB to 8.4 per 100,000 in 2019 to 7.3 per 100,000 in 2020. In England there has been a reduction in TB incidence after a peak in 2011 (8,280 notifications and a rate of 15.6 per 100,000 reported). Since 2011, the number and rate of TB notifications had fallen steadily until 2019, (an overall decline of approximately 43%) when a rise of 2.4% was reported. At a rate of 7.3 per 100,000 population, 2020 is the fourth year the rate is below the WHO definition of a low incidence country.

As with previous reports, rates of TB continue to be highest in people born outside the UK, those with social risk factors, and from our more deprived communities.

The data presented in this report include notifications to the end of 2020. During 2020, major impacts on healthcare, migration, and social interactions due to the ongoing coronavirus (COVID-19) pandemic will have affected TB notifications in complex ways. These are undergoing further exploration and findings will be published separately. It is important to note that the data and findings from 2020 are unlikely to represent the true burden of disease. As such their use in monitoring progress against both elimination goals and planning service provision will require careful consideration and further analysis of both 2020 and 2021 data.

TB notifications and incidence

In 2020, 4,125 people were notified with TB in England, with a rate of 7.3 per 100,000 population. This rate was an 13.1% decline compared to 2019 and remains below the 10 per 100,000 WHO definition of a low incidence country.

People born outside of the UK accounted for 72.8% of 2020 notifications. The rate in non-UK born individuals is 36.3 per 100,000; over 15-fold greater than the rate in the UK born population. Numbers and rates of TB notifications declined in UK-born and non-UK born individuals in 2020 compared to 2019.

This pattern differs in children, with two-thirds of paediatric cases reported in children born in the UK, reflecting potential transmission within the UK.

Laboratory confirmation of TB

In 2020, 60.7% of people notified with TB had their diagnosis confirmed by culture, which was a decrease from 2019 (61.6%), and the lowest rate since 2013. Some reduction in culture confirmation may be due to lack of access to healthcare and pathology facilities. Thirty per cent of people notified did not have any laboratory results reported (culture, microscopy, PCR, or histology) to confirm their TB diagnosis.

As in previous years, culture confirmation was higher for pulmonary (75.3% of cases) than non-pulmonary cases (44.2%).

Culture confirmation rates in children are much lower at 27% for pulmonary disease, and 32.7% for non-pulmonary cases.

The importance of culture for Whole Genome Sequencing (WGS) to evaluate drug resistance and understand transmission between cases cannot be overstated.

TB transmission

Whole Genome Sequencing (WGS) continues to be utilised routinely on all *M. tuberculosis* isolates to identify closely related strains of TB to inform possible transmission between patients. This information has been shared with Regional Health Protection Teams, and TB services during the pandemic. UKHSA is undertaking ongoing work to develop and improve reliable indicators of transmission to assist in efforts to reduce UK TB incidence in compliance with the Action Plan.

Delay from symptom onset to treatment start

Among people with pulmonary TB (pTB) in 2020, the median time between symptom onset and treatment start was 79 days. Almost a third (32.4%) of people with pTB experienced delays of 4 months or more between symptom onset and treatment start, similar to 2019 but higher than in 2018. As in previous years, the age group with the highest proportion of delay, over 4 months, was the over 65s, and higher in the UK-born (36.2%) than the non-UK-born (30.3%) cohort.

TB outcomes in the drug sensitive cohort (non-MDR/RR TB) are reported for the 2019 cohort as those starting treatment in 2020 will not have completed treatment at the time of this report. 82.0% of people notified with non-MDR/RR TB completed treatment within 12 months, a slight decrease from 2018 (84.8%). This decline was seen in all age groups and was most marked in the 45 to 64 years age group (85% to 80%).

Treatment completion rates declined with increasing age, with completion rates in children being the highest at 90.8%.

Drug resistance and outcomes in the drug resistant cohort

Of cases with laboratory-confirmed TB, 11.6% had resistance to at least one first-line drug, and 2.4% of cases were multi-drug resistant (MDR) or rifampicin-resistant (RR). This represents the highest recorded percentage of drug resistant cases since the current enhanced surveillance scheme started in 2000.

There was a higher number of MDR/RR cases in 2020 (n=58) compared with 2019 (n=53) despite the total number of reported TB cases overall being lower in 2020 than in 2019. The highest number of MDR/RR TB cases was in London and the highest rate in the East Midlands. Of people in the 2018 drug-resistant cohort, for whom outcomes are available for the 2020 report, 62% had completed treatment by 24 months, whereas 10.1% were lost to follow-up, and 8% had died by the last recorded outcome.

TB in under-served populations

In 2020, 12.7% of people notified with TB had a social risk factor (SRF), broadly comparable with previous years. 22% of UK-born cases had at least 1 SRF recorded, compared with 9.1% of non-UK born cases.

Cases with SRF were much more likely to have pulmonary disease (77% of cases) compared to those without SRF (49.5%), less likely to complete treatment (79% vs 89%) and more likely to die or be lost to follow-up.

HIV testing among TB cases

HIV testing information was known for 92.4% of people (3,885) with 91.4% of these both offered and undertaken a HIV test. Data on co-infection of TB and HIV is not reported in this annual report.

BCG vaccination

There are 5 local authorities, all in London, that offer a universal BCG programme in 2020 to 2021. Among these 5 areas, BCG coverage ranges from 20% in Hounslow to 79.2% in Newham. BCG vaccination coverage increased in one of 5 areas (Newham), and decreased or stayed the same in the other 4 compared to 2019 to 2020.

Latent TB infection and treatment

The Latent TB infection (LTBI) programme for migrants from high-incidence countries was heavily impacted by the COVID-19 pandemic. NHSE&I provided guidance on the provision of TB services in March 2020 which included pausing the national LTBI programme from April 2020. There was a significant fall in LTBI test and treatment activity with 2020 to 2021 LTBI test activity achieving approximately 31% of 2019 to 2020 activity.

United Kingdom tuberculosis pre-entry screening programme

Numbers of people participating in the pre-entry TB screening programme fell in 2020, with 340,623 pre-entry TB screening episodes in 2020 (a decrease of 5.5% against 2019). This may again reflect the impact of COVID. There were 385 cases of TB detected (113.0 per 100,000) in this group.

Preface

Intended audience

This report is aimed at healthcare professionals involved in the diagnosis and/or treatment of people with TB, commissioners involved in planning and financing TB services, public health professionals working in the control of TB or health of at-risk populations, researchers with an interest in TB, and government and non-governmental organisations working in the field of TB.

Aim of report

This report describes the recent epidemiology of TB in England at a national and subnational level and presents data on the implementation of the UK pre-entry TB screening programme, the national programme for systematic latent TB infection (LTBI) testing and treatment in new migrants, and BCG vaccination coverage estimates. The data presented is used to inform recommendations that support implementation of the 'Tuberculosis Action Plan for England, 2021 to 2026'.

The UK Health Security Agency (UKHSA) – launched on 1 October 2021

The UK Health Security Agency (UKHSA) is an executive agency of the Department of Health and Social Care. The UK Health Security Agency (UKHSA) is responsible for planning, preventing and responding to external health threats, and providing intellectual, scientific and operational leadership at national and local level, as well as on the global stage.

The UK Health Security Agency (UKHSA) – a global partner in TB Control

Tuberculosis (TB), remains a global health emergency affecting a quarter of the world's population (1). The UKHSA is committed as a global partner to meeting the WHO TB elimination targets by 2035 (2).

The [TB Action Plan for England, 2021 to 2026](#) was launched jointly by the UKHSA and NHS England in July 2021. The Action Plan sets out a programme of work that will enable a year-on-year reduction in TB incidence and transmission in England, and will provide a road map for a better recovery of TB services from the impact of the COVID-19 pandemic.

TB elimination targets and the impact of COVID-19

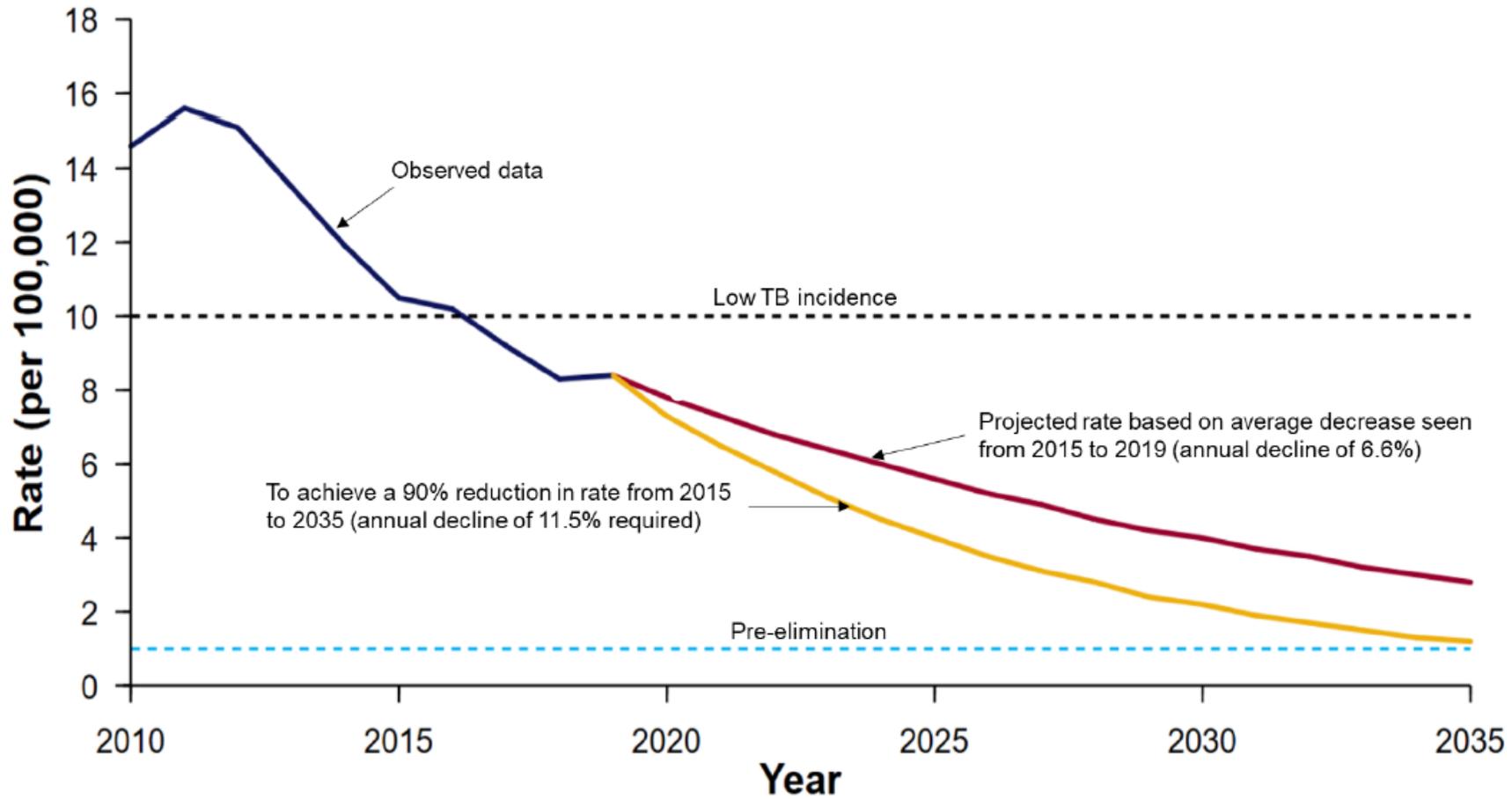
While the number and rate of TB notifications in England fell steadily between 2011 and 2019, a rise of 2.4% was observed in 2019. Over this time period (including the rise in 2019), the incidence trend in England fell by an average of 6.6% per year (dark blue line, fig A), short of

the 11.5% annual reduction (yellow line, fig A) required to meet the WHO's End TB Strategy notification target by 2035 (3). Figure A illustrates these figures and shows the projected trajectory towards the WHO 'End TB Strategy' notification target by 2035 – from the 2019 perspective.

The rise observed in the rate of TB notifications in England in 2019, raised concerns that the previous steady decline was faltering and there was much interest in what would follow in 2020, and how progress against elimination goals would be impacted.

With the emergence of the COVID-19 pandemic in 2020, the numbers of TB cases declined from 4,725 in 2019 to 4,125 in 2020. Overall, a 13.1% decline in the rates of TB. This represents the largest annual decline for 11 years but is unlikely to reflect a true reduction in the burden of disease. Caution is therefore required when monitoring 2020 data against WHO elimination targets for 2035.

Figure A. Observed and projected rate of TB notifications, UK, 2010 to 2035 (based on 2019 data)



World Health Organization warnings and next steps

In March 2021, WHO published analyses of data from 84 countries, showing the impact of COVID-19 on TB detection and TB mortality globally. Combined with survey results, WHO concluded there had been severe disruption to TB services and that an estimated 1.4 million fewer people received TB care in 2020 compared to 2019, a reduction of 21% across all countries examined. WHO concluded that the observed shortfall of 21% could lead to an additional 500,000 TB deaths globally, due to a potential accumulation of undetected and untreated cases (4).

While acknowledging WHO's concerns that the COVID-19 pandemic threatens to reverse recent progress in reducing the global burden of TB disease, the data currently available for England is limited and must be interpreted with caution.

The UKHSA TB Unit will undertake further analysis of data for both 2020 and 2021 on the impact of COVID-19 on TB case notification and treatment and will continue to monitor data against WHO elimination targets for 2035.

TB Action Plan 2021 to 2026, delivering a road map for COVID-19 recovery and elimination by 2035

The 'TB Action Plan for England 2021 to 2026' will provide a road map for the recovery of TB services from the significant impact of the COVID-19 pandemic, and will enable the UK to meet its commitment to the WHO elimination targets by supporting a year-on-year reduction in TB incidence and reducing health inequalities.

To achieve this, the strategy sets out main priority areas. The 5 main priorities of the TB Action Plan are:

- recovery from COVID-19 – understanding and reporting the impact and learning of the coronavirus (COVID-19) pandemic
- prevent TB
- detect TB
- control TB disease
- workforce

These priorities are underpinned by:

- actions for specific population groups, that is, under-served populations, new entrants, people with drug resistant TB and children with TB
- measurable outcomes and indicators

- systems wide actions, that is, communications, surveillance, research and ensuring TB is included on prevention and health inequalities agendas

The TB Action Plan will achieve these ambitious aims by bringing together a national multi-agency collaboration of partners to improve prevention, detection, treatment, and control of TB in England. Based on data presented in this report, recommendations are made across the health economy on the future work required to deliver the TB Action Plan priorities, address inequalities and to ultimately eliminate TB as a public health problem in England.

1. TB notifications and incidence

Important messages

In 2020, a total of 4,125 people were notified with TB, a rate of 7.3 per 100,000 population. Between 2019 and 2020, the number of people notified with TB decreased by 12.6% and the rate decreased by 13.1%. This decrease follows an increase in both the number and rate of the number of people notified with TB in 2019. The decrease in both number and rate of TB notifications in 2020 is the largest decrease since 2010. However, it must be cautiously interpreted against the potential impact of access to, and engagement with health services during the COVID-19 pandemic in 2020.

People born outside the UK accounted for 72.8% of TB notifications in 2020. The rate of TB among people born outside the UK in 2020 remains higher than among those born in the UK.

The number of people notified with TB where country of birth was known (n=4,039) and the rate declined among people born in the UK (number: -10.3%, rate: -11.5%), and in those born outside the UK (number: -13.8%, rate: -8.6). The changes amongst both those born inside and outside the UK may reflect the impact of COVID rather than be true reductions.

Overall numbers, rates, and geographical distribution

In 2020, 4,125 people were notified with TB, a rate of 7.3 per 100,000 population (95% confidence interval (CI) 7.1-7.5) (Figure 1.1, Appendix I Table Ai.1.1), below the 10 per 100,000 threshold which the World Health Organization defines for a low incidence country. Between 2019 and 2020, there was an decrease in the number of people notified with TB 12.6% (2019: 4,725) as well as in the rate of TB (2019: 8.4 per 100,000, 95% CI 8.2-8.6, -13.1%) (Table Ai.1.1).

The number of TB notifications and rate in each of the 7 TB Control Boards¹ in 2020 is shown in Figure 1.2.

The main burden of the disease remains concentrated in large urban areas; London PHE Centre (PHEC) accounted for 35.5% (1,464 out of 4,125) of notifications, with a rate of 16.3 per 100,000 (95% CI 15.4 – 17.1). The number of people with TB decreased across all PHECs

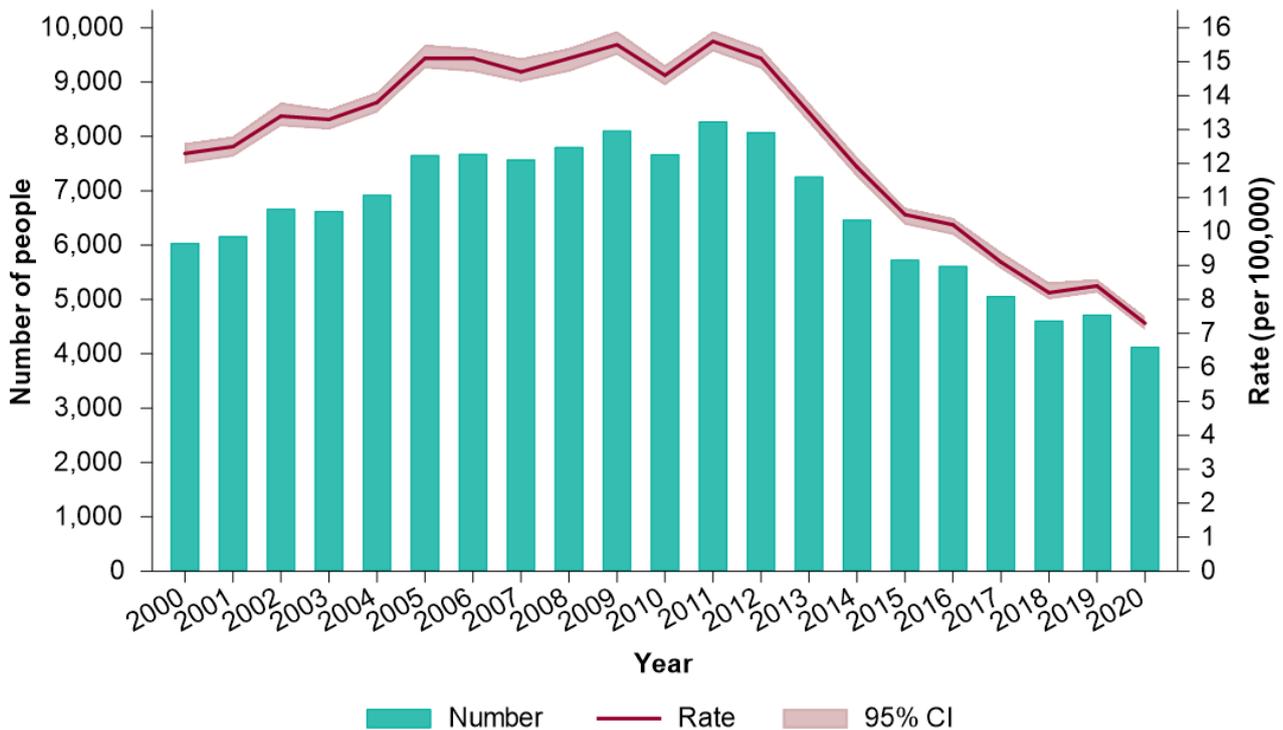
¹ The TB Control Boards (TBCBs) have been functioning since September 2015 and are aligned with PHEC boundaries other than the North East and Yorkshire and the Humber PHECs, which together form the North East, Yorkshire and Humber TBCB, and the South East and South West PHECs, which together form the South of England TBCB.

between 2019 and 2020, apart from the North East which increased by 7.7% (84 cases in 2020 vs 78 cases in 2020) (Figure 1.3).

Between 2018 and 2020, almost half (47.6%, 50 out of 105) of clinical commissioning groups² had an average TB rate of less than 5.0 per 100,000, of which 4 had achieved the WHO global pre-elimination rate of less than 1.0 per 100,000 (Figure 1.4, Table Aii.1.2).

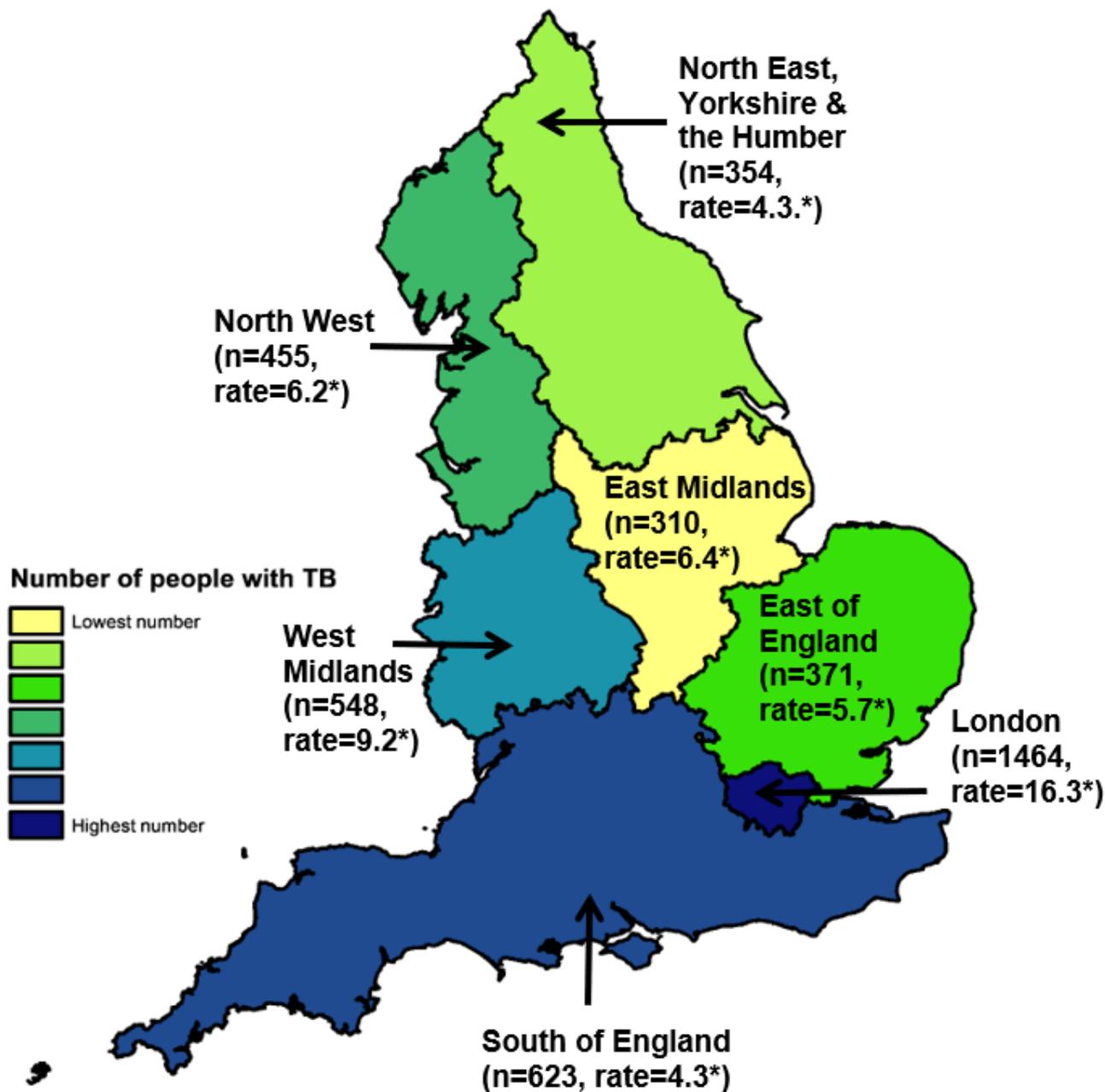
The proportion of local authority districts with a 3-year average rate of TB less than 5.0 per 100,000 increased from 43.9% (143 out of 326) in 2011 to 2013, to 58.3% (183 out of 314) in 2018 to 2020 (Figure 1.5, Appendix II Table Aii.1.1). Nine local authority districts had reached the pre-elimination rate (WHO target) of less than 1.0 per 100,000, 9 of which reported no notifications.

Figure 1.1. Number of TB notifications and rates, England, 2000 to 2020



² Clinical commissioning group boundaries as at April 2020

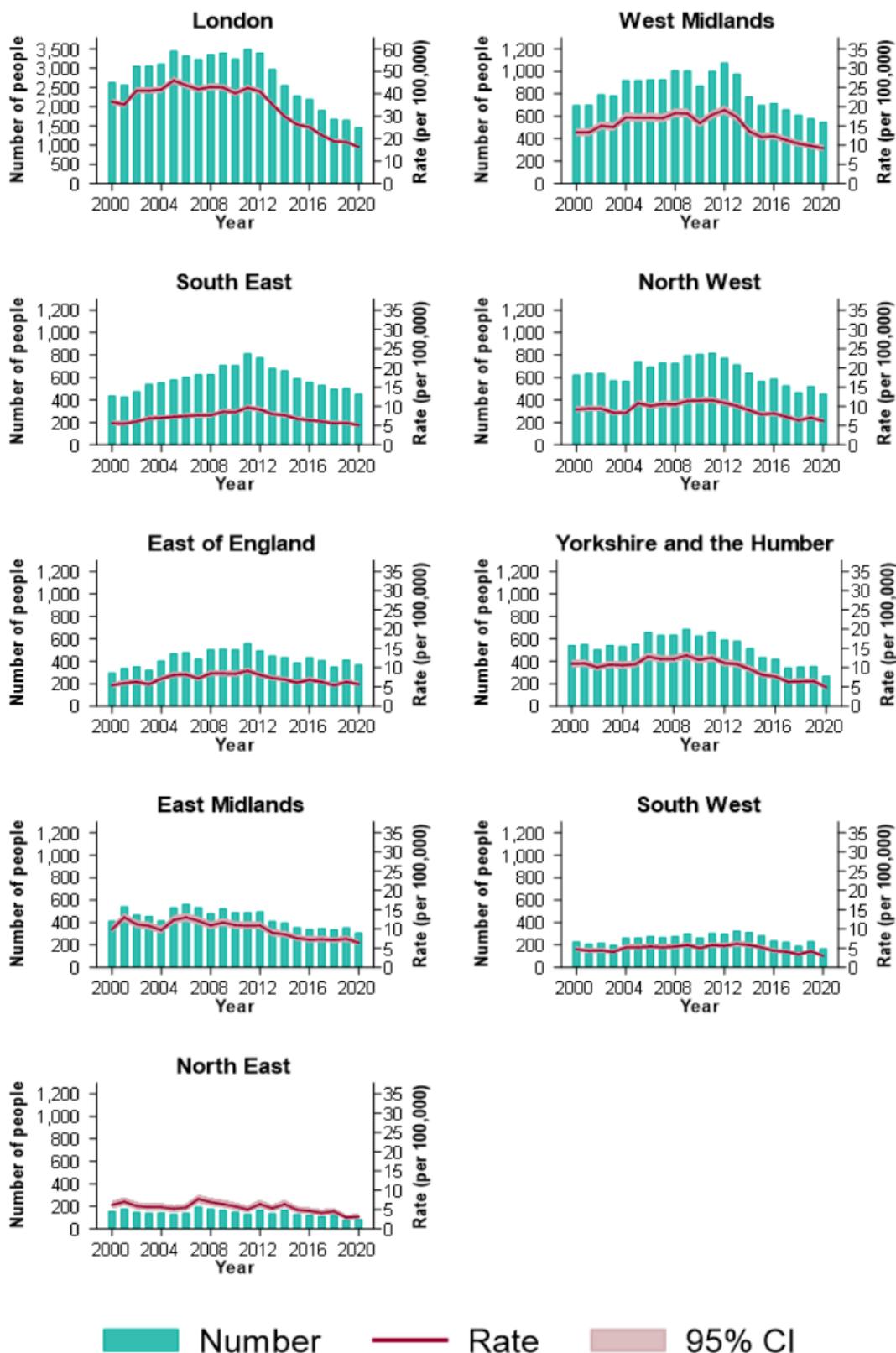
Figure 1.2. Number TB notifications and rates by TB Control Board, England, 2020



*per 100,000

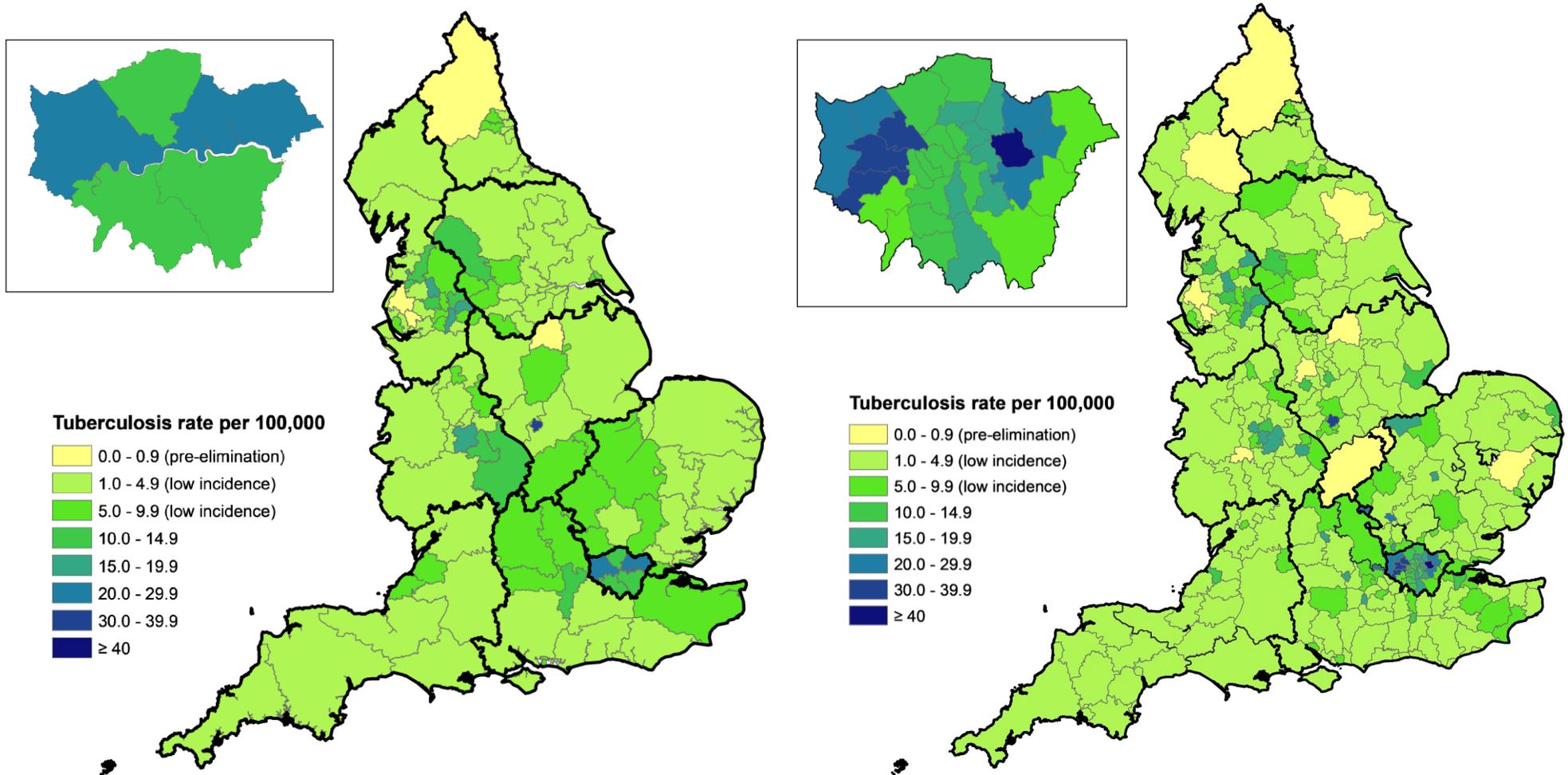
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Figure 1.3. Number of TB notifications and rates by PHE Centre, 2000 to 2020



Please note: the axes on the London figure are different to that of other PHECs due to the higher number of TB notifications and rate in London.

Figure 1.4. Three-year average TB rates by clinical commissioning group (CCG) (left) and by local authority district (right), England, 2018 to 2020 (box shows enlarged map of London area)



^a PHEC boundaries are outlined in black.

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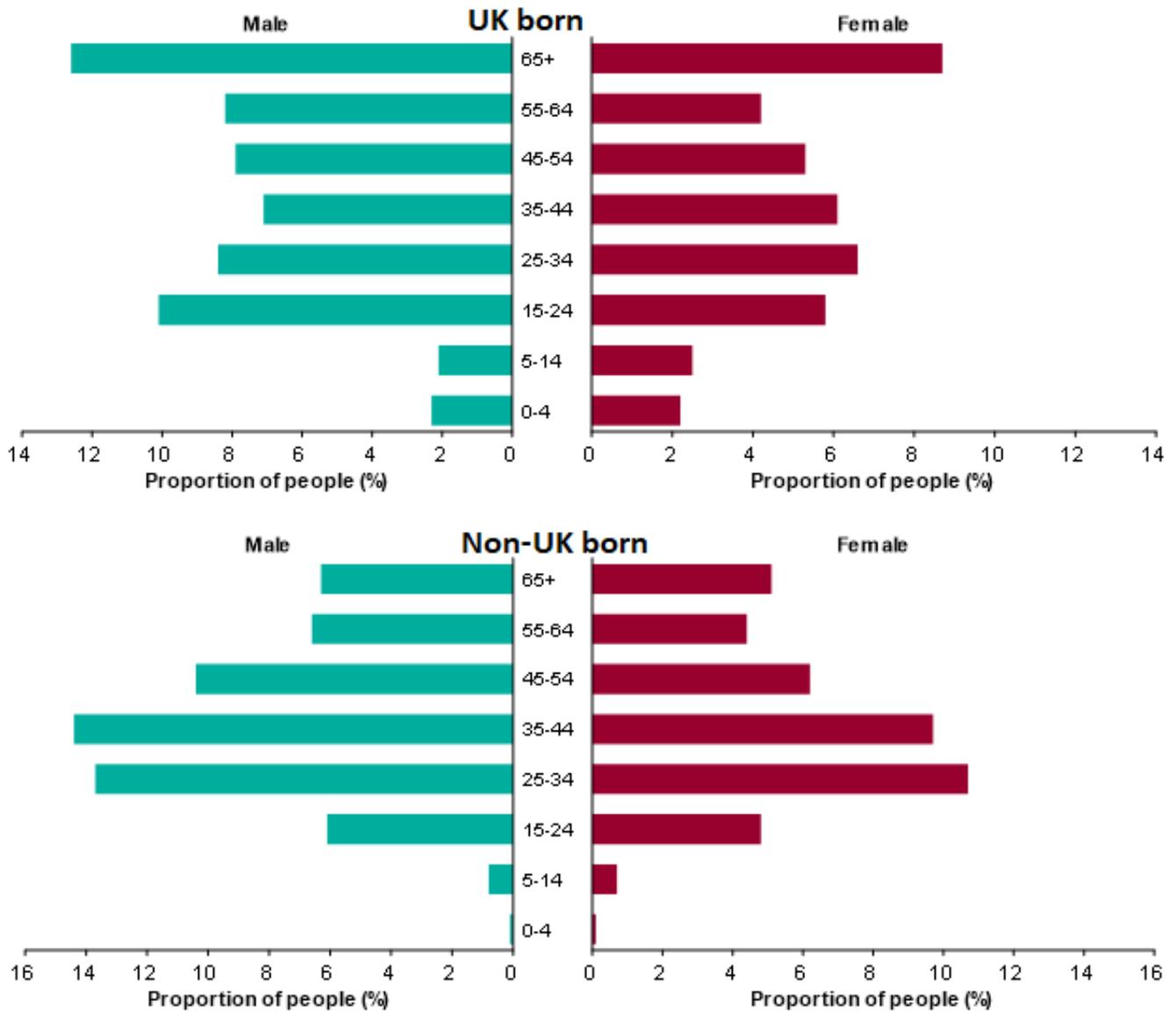
Demographic characteristics

Age and sex

In 2020, 59.1% (2,438 out of 4,125) of people with TB were male, with no difference seen between the UK born and non-UK born population. A total of 47 children were notified with TB (Table Ai.1.3). Detailed data on TB in children is presented in Chapter 5.

The largest proportion of cases among people born in the UK, was seen in those aged 65 years and older for both males and females (12.6% and 8.7% respectively) (Figure 1.6.i). Of people born outside the UK, the highest proportion of cases was seen in those aged 35 to 44 in males (14.4%), whereas for non-UK born females the highest proportion was seen in those aged 25 to 34 years (10.7%).

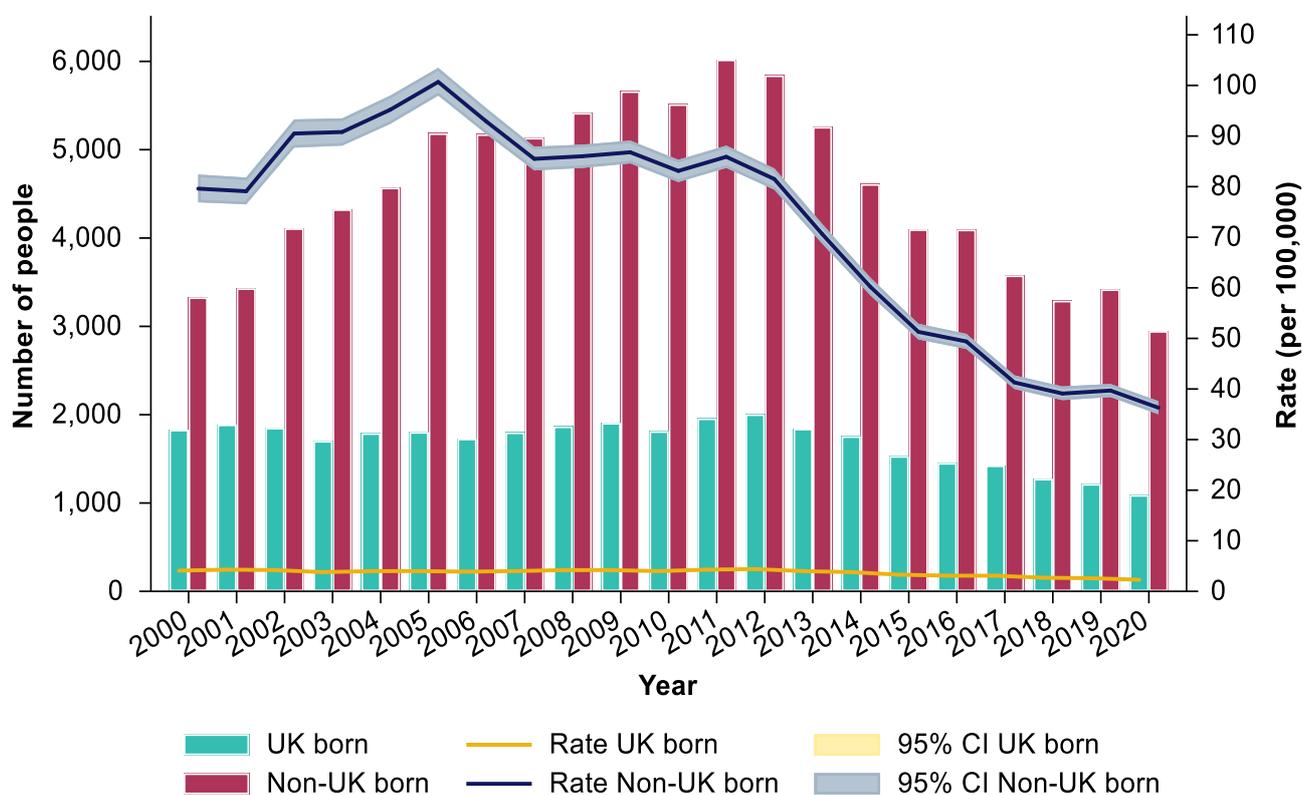
Figure 1.6.i. Proportion of people with TB by age group, sex, and place of birth, 2020



People with TB born outside the UK

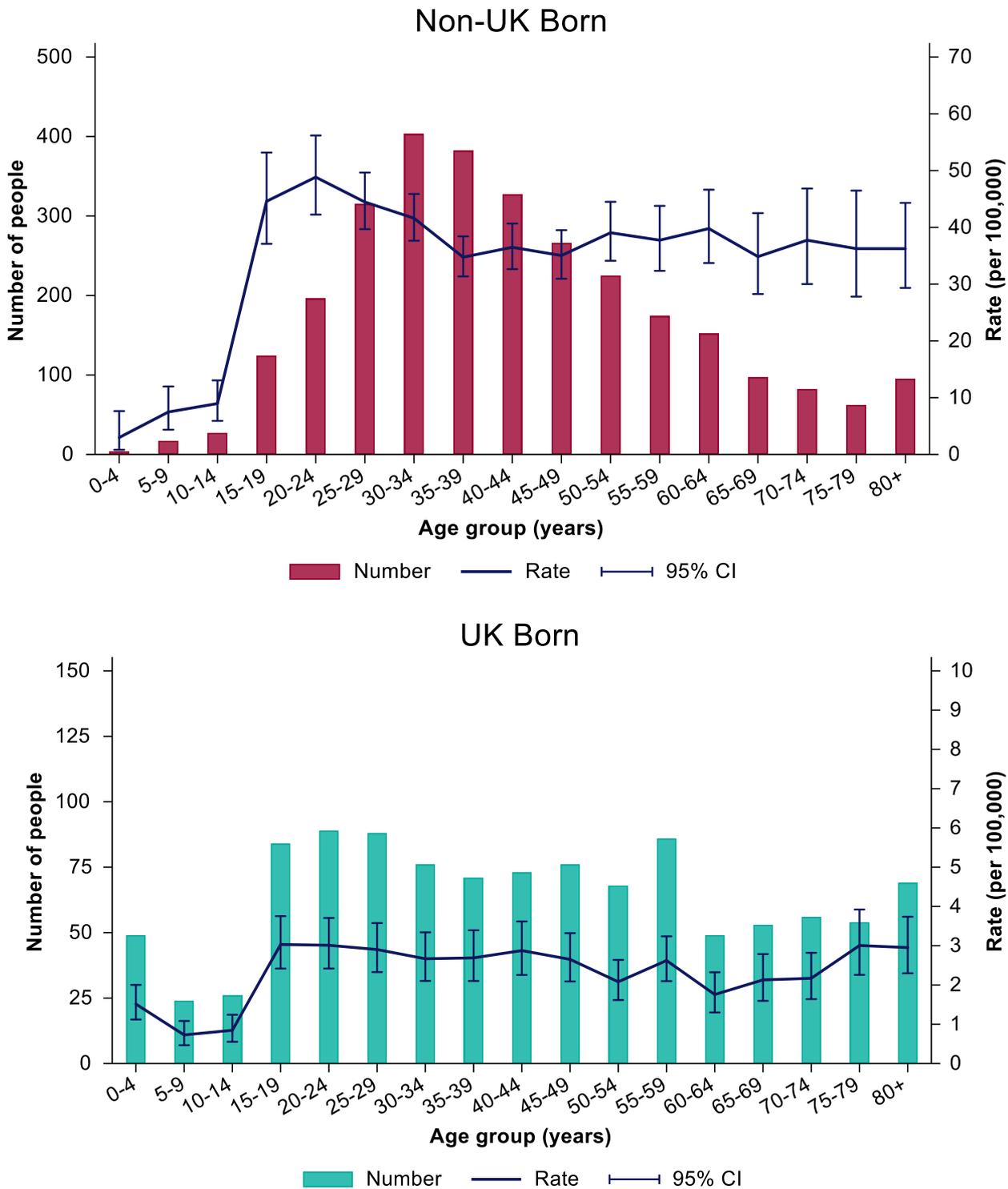
In 2020, the place of birth was known for 97.7% (4,039 out of 4,131) of TB cases. Of these, 73.0% (2,948 out of 4,039) of people with TB were born outside the UK. In comparison to 2019, there was a decrease in both the numbers of notifications and the rate for both non-UK and UK born individuals. For the non-UK born, the number of TB notifications decreased by 13.8% and the rate of TB decreased by 8.6% (Figure 1.6.ii, Table Ai.1.4). Although, the rate of TB among people born outside the UK decreased, it remains 15 times higher than in those born in the UK. The rate of TB was highest in all people aged 20 to 24 years (48.4 (CI 42.2 – 56.2) per 100,000), although the rate was much higher in the non-UK born at 49.8 per 100,000 people (CI 42.2-56.2) compared to the UK-born where the rate was 3.0 (CI 2.4-3.7) per 100,000 persons.

Figure 1.6.ii. Number of TB notifications and rates by place of birth, England, 2000 to 2020



Please note: the axes differ between UK and Non-UK born graphs due to differences in the number of notifications and rates between the 2 populations

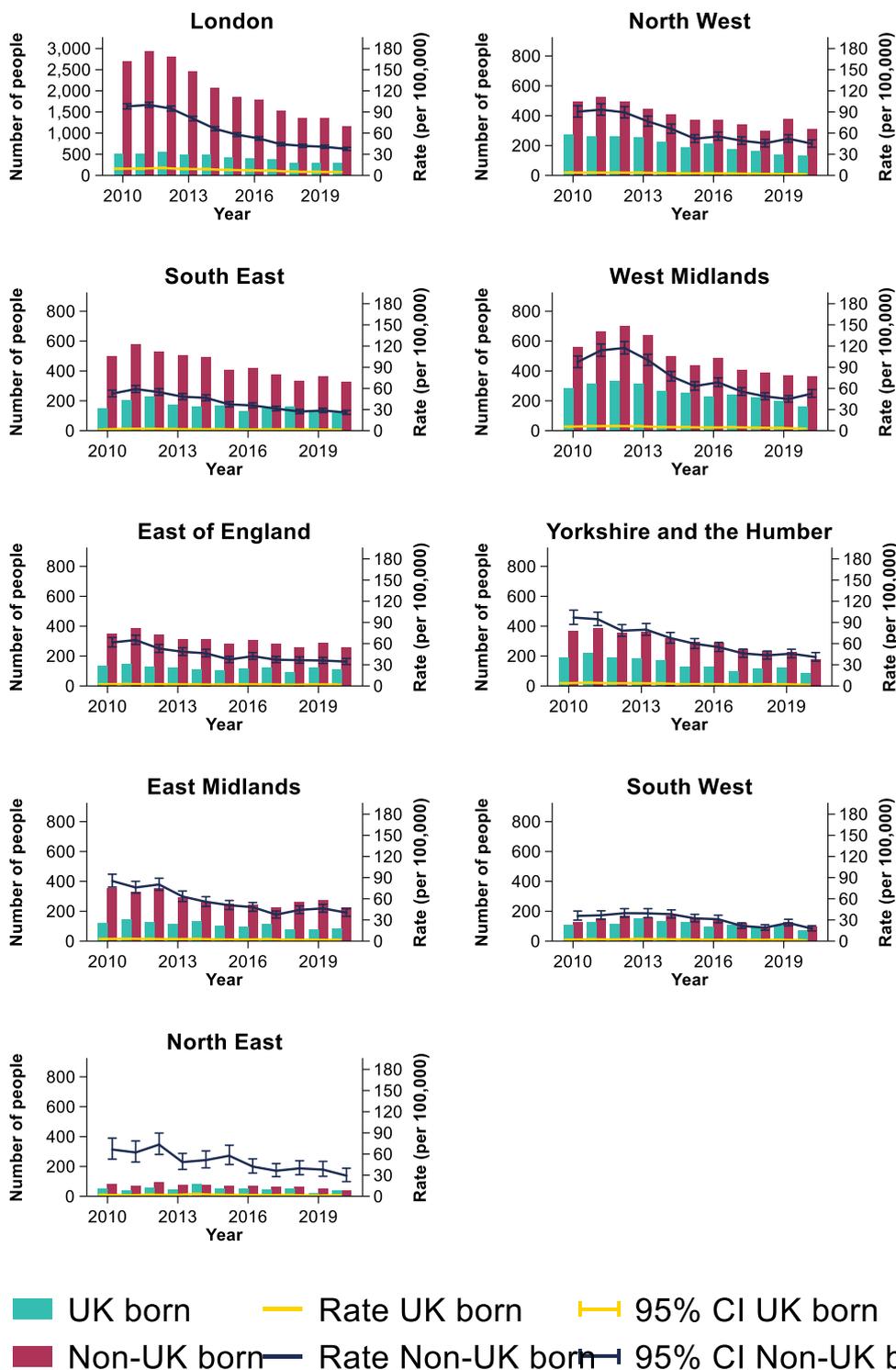
Figure 1.7. Number of TB notifications and rates by age group and place of birth, England, 2020



Between 2019 and 2020, the number of TB notifications and rates for people born outside the UK decreased across all PHECs, with the exception of the West Midlands which saw a 17.1% increase in the rate of TB in spite of the number of cases decreasing by 1.9% (Figure 1.8, Table Ai.1.5). Decreases in the rates ranged from 31.3% in the South West to 4.2% in the East of

England. In terms of numbers of cases, the North East saw the largest decrease with a 24.5% reduction.

Figure 1.8. Number of TB notifications and rates by PHE Centre and place of birth, 2010 to 2020

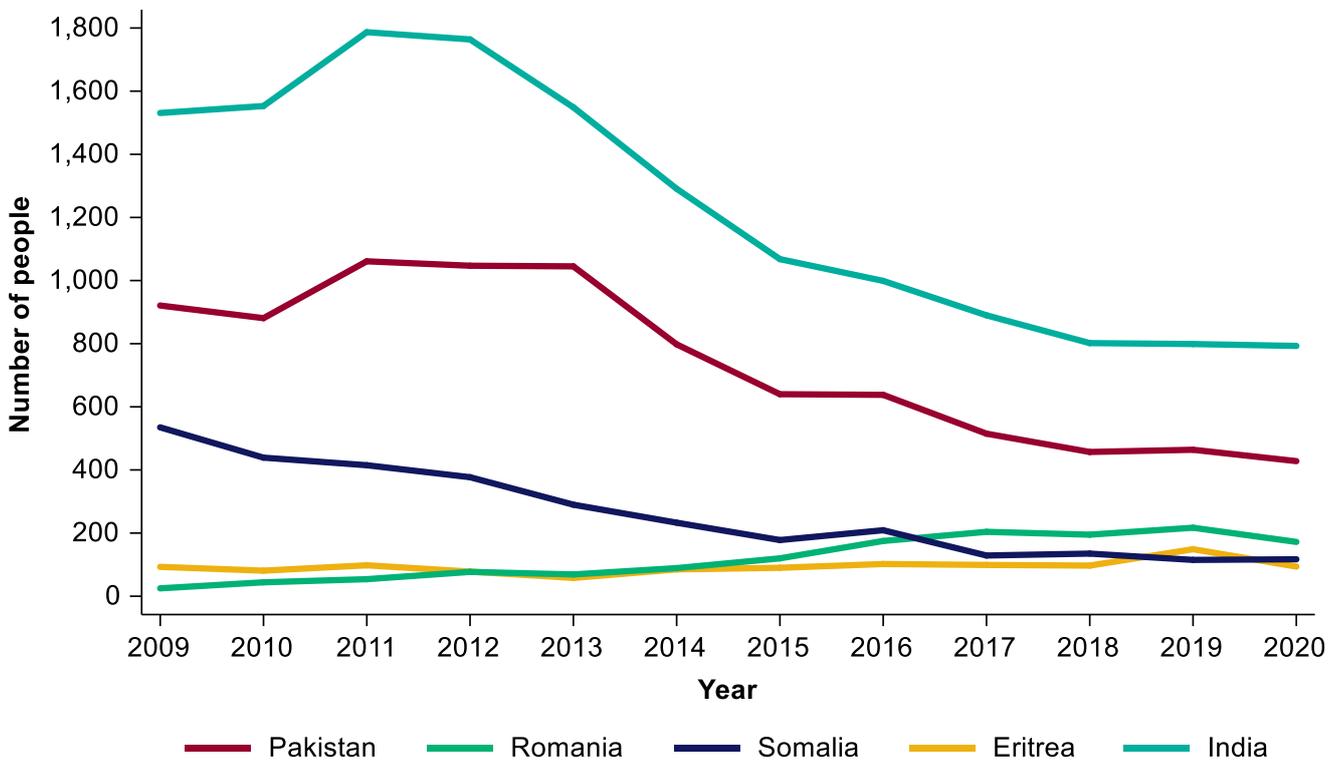


Please note: the axes on the London figure are different to that of other PHECs due to the higher number of TB notifications and rate in London

For those born outside the UK who were notified with TB in 2020, the most frequent countries of birth were India, Pakistan, Romania, Somalia and Eritrea (Table 1.1, Table Ai.1.6, Figure 1.9). The large increase in cases in the Eritrea-born seen in 2019 was not repeated this year. Between 2018 and 2020, the number of notifications declined among people born outside the UK in the 5 most frequent countries of birth; India by 1.1%, Pakistan by 6.3%, Romania by 11.8%, Somalia by 13.3% and Eritrea by 3.1%).

Possibly due to restrictions on travel and immigration, there was a decrease in TB cases from all persons born outside the UK, with the biggest decrease seen in those from Poland where the number of cases fell by 36%. A fall of over 30% in cases between 2018 and 2019 was also seen in those from the Sudan (a 34.4% decrease), Bangladesh and Nepal (both falling by 32.4%).

Figure 1.9. Trend in the number of people with TB for the top 5 countries of birth^a for those born outside the UK, England, 2010 to 2020



^a Five most frequent countries of birth in 2020

There was considerable variation by country of birth in the median time between a person’s first entry into the UK and the time of their TB notification (Table 1.1). For people³ born in Pakistan or Somalia the median time from entry to notification was over 10 years, if born in India, it was 8 years (a reduction from 2019 when it was 10 years) and for people born in Romania and Eritrea, the median time was 4 years and 2 years respectively.

³ Where time between entry to the UK and notification is known

Table 1.1. Most frequent countries of birth for people with TB and time between entry to the UK and TB notification, England, 2020

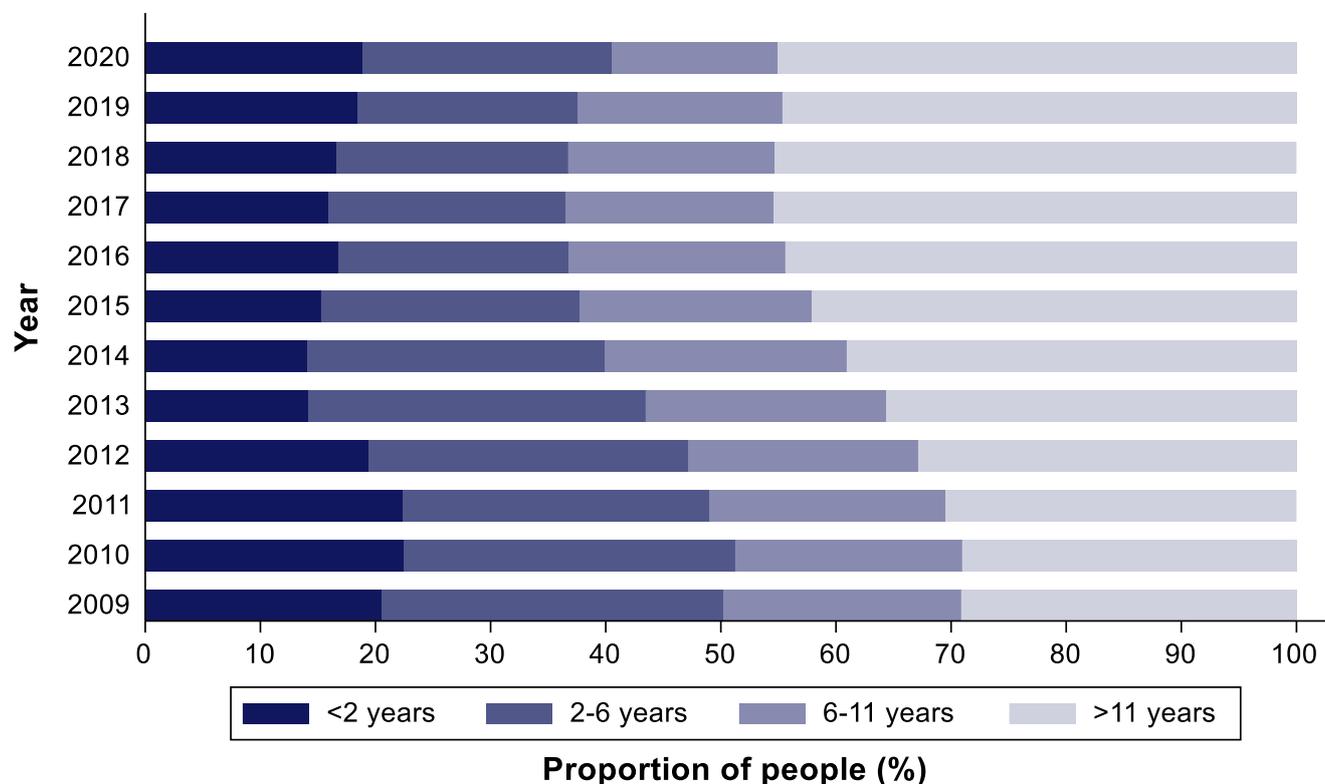
Country of birth	Number of people	Proportion of people (%) ^a	Median time since entry to UK (IQR) ^b
United Kingdom	1,091	27.2	
India	793	19.7	8 (2- 15)
Pakistan	428	10.7	14 (4-29)
Romania	172	4.3	4 (2-5)
Somalia	117	2.9	15 (5-21)
Eritrea	94	2.3	2 (0-5)
Bangladesh	94	2.3	11 (4-22)
Nepal	86	2.1	8 (3-12)
Philippines	82	2	15 (6-21)
Nigeria	75	1.9	10 (1-15)
Afghanistan	56	1.4	6 (1-13)
Zimbabwe	50	1.2	17 (14-20)
Poland	48	1.2	11 (5-14)
Kenya	46	1.1	17 (1-44)
Sudan	42	1	2 (0.5-4.5)
Sri Lanka	39	1	19 (10-29)
Lithuania	39	1	9 (7-13)
Other	666	16.7	9 (2-18)
Total^a	4018	100%	

^a Where country of birth was known

^b Years; IQR refers to interquartile range

Overall, in 2020, 40.6%% (1,098 out of 2,708) of people with TB born outside the UK were notified less than 6 years since entering the UK, with 18.9% (511 out of 2,098) being notified within 2 years (Figure 1.10, Table Ai.1.8). The proportion of people notified more than 11 years since entry to the UK was similar to previous years at 45.1% (2019: 44.8%; 2018: 45.3%), following an overall annual increase between 2010 and 2017.

Figure 1.10. Time between entry to the UK and TB notification for people born outside the UK, England, 2010 to 2020



People with TB born in the UK

In 2020, 1,091 people born in the UK were notified with TB, a rate of 2.3 per 100,000 (95% CI 2.1-2.4) (Figure 1.6, Table Ai.1.4). Both the number (-10.3) and rate (-11.5) of notifications fell in the UK born population as (Figure 1.6.ii, Table Ai.1.4). This decline is higher than both 2018 and 2019.

The highest rate of TB among people born in the UK was in those aged 15 to 34 (3.0 per 100,000, 95% CI 2.4-3.8) and those aged 75 years and older (3.0 per 100,000, 95% CI 2.3-3.9), with the rate among the older age groups continuing to decline compared to previous years (among those aged 80 years and older, 2019: 3.2 per 100,000)(Figure 1.7, Table Ai.1.3). As with people born outside the UK, the lowest rates of TB were among the younger age groups (under 15 years).

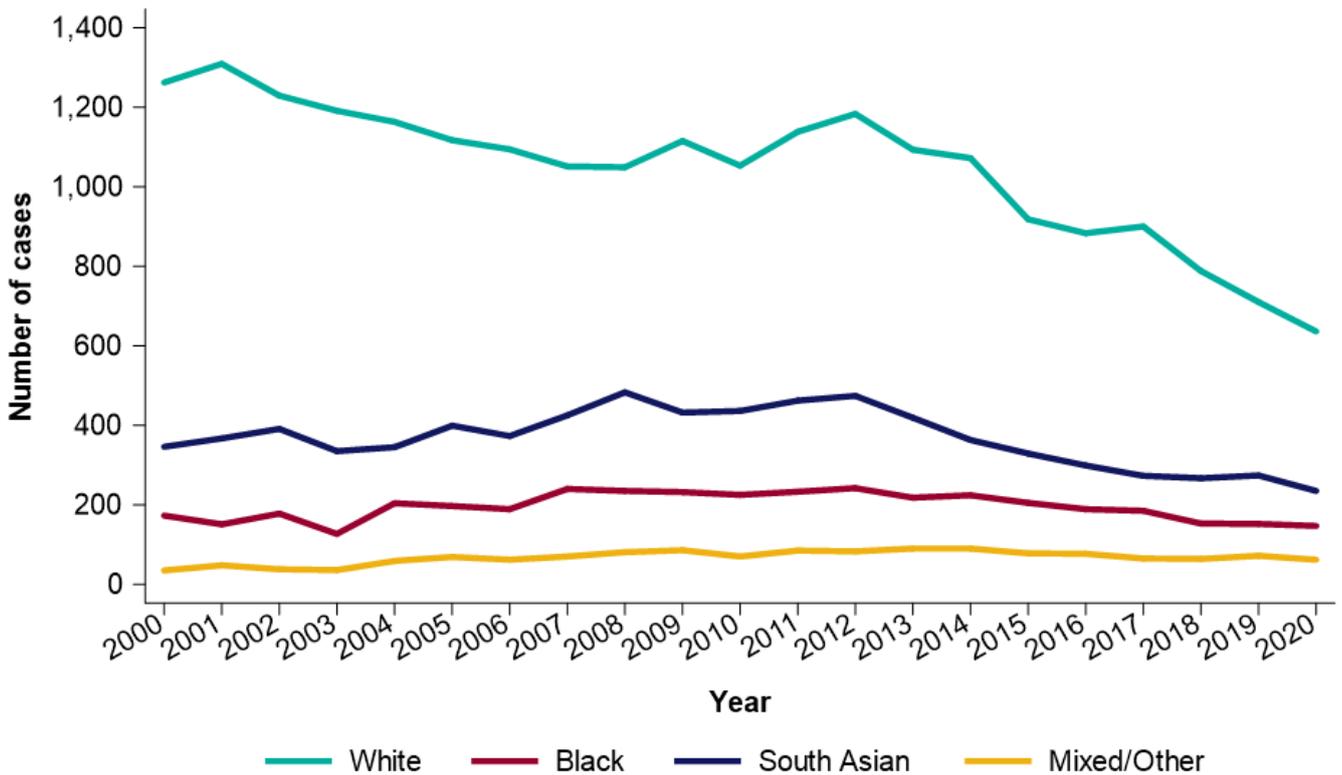
The number and rate decrease amongst the UK born was over 30% in both the South West and Yorkshire and Humber regions with increases seen in the North East and East Midlands (Figure 1.8, Table Ai.1.5). Where ethnic group was known, the majority of people with TB born in the UK were White (58.9%, 636 out of 1,080), followed by South Asian⁴ (21.8%, 235 out of 1,080) and Black⁵ (13.6%, 147 out of 1,1,080) ethnic groups (Figure 1.11).

⁴ Indian, Pakistani and Bangladeshi ethnic groups

⁵ Black-Caribbean, Black-African and Black-Other ethnic groups

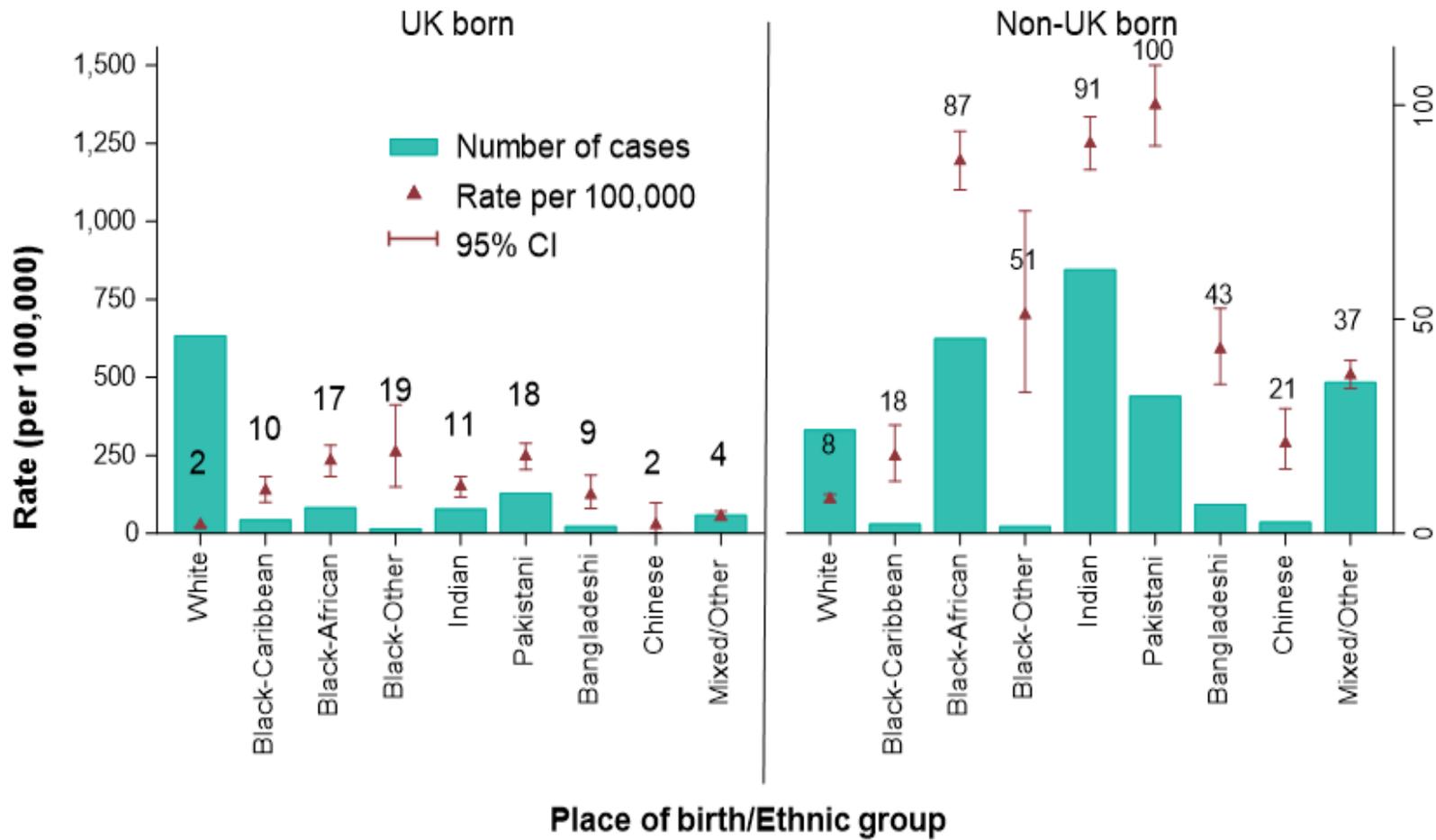
Rates, however, were highest among people from non-White ethnic groups, being up to 11 times higher than in the White ethnic group (1.5 per 100,000) (Figure 1.12, Table Ai.1.8). The number of people with TB born in the UK from South Asian ethnic groups remained fairly stable between 2018 and 2020. In contrast, the number from a Black (2018: 154 versus 2019: 147, -4.5%) or a White ethnic group (2018: 790 versus 2019: 720, -8.9%) decreased in the same time period, in line with recent trends (Figure 1.11, Table Ai.1.9).

Figure 1.11. Number of people with TB born in the UK by ethnic group^{a-c}, England, 2000 to 2020



^a People from Black-Caribbean, Black-African and Black-Other ethnic groups were grouped as ‘Black’.
^b People from Indian, Pakistani and Bangladeshi ethnic groups were grouped as ‘South Asian’.
^c People from Mixed/Other and Chinese ethnic groups were grouped as ‘Mixed/other’.

Figure 1.12. Number of TB notifications and rates by place of birth and ethnic group, England, 2020



Please note: rates by ethnic group are displayed as labels.

Occupation

Among people of working age⁶ notified in 2020, 42.0% (1,533 out of 3,650) were not in education or employment, 7.1% (258) were either studying or working in education, 7.2% (262) were healthcare workers, and the remaining individuals (1,597 out of 43.8%) were classed as working in other occupations.

Clinical characteristics

Site of disease

Slightly less than half of people with TB⁷ notified in 2020 had pulmonary disease (48.6%, 1,429 out of 2,943) (Table 1.2), a reduction of 4.3% from 2019. Of these, the proportion of the UK born cases with pulmonary disease was 67.4% compared to 48.6% in the non-UK born. Conversely, a much higher proportion of people with TB born outside the UK had extra-pulmonary disease only (51.4%, 1,514 out of 2,943) compared with those born in the UK (32.6%, 355 out of 1,090) (Table Ai.1.10).

Table 1.2. Number of people with TB by site of disease, England, 2020

Site of disease ^a	Number of cases	Percentage ^b
Pulmonary	1,429	48.6
Miliary	114	3.9
Laryngeal	4	0.1
Extra-pulmonary	2,072	70.4
Extra-thoracic lymph nodes	817	27.8
Intra-thoracic lymph nodes	477	16.2
Unknown extra-pulmonary	492	16.7
Pleural	278	9.4
Other extra-pulmonary	296	10.1
Gastrointestinal	178	6.0
Bone – spine	134	4.6
Bone – not spine	67	2.3
CNS – meningitis	65	2.2
Genitourinary	63	2.1
CNS – other	71	2.4
Cryptic disseminated	26	0.9

CNS = Central Nervous System

^a With or without disease at another site.

^b Proportion of people with TB for which sites of disease were known (n=2943); total exceeds 100% due to disease at more than one site

⁶ Aged 16 to 64 years where occupation was known

⁷ Where site of disease was known

Directly observed therapy (DOT)

Information on whether a person received DOT⁸ was known for 93.9% (3,875 out of 4,125) of people notified with TB in 2020, compared to 94% in 2019. Of these, 13.0% (536) were reported to have received DOT, with 26.8% (n=38) of children (<15 years) having received DOT (Table Ai.1.11).

Previous history of TB

In 2020, 6.2% (258 out of 4,125) of people with TB⁹ had a previous TB diagnosis more than 12 months before their current notification. Of these with previous TB diagnosis where treatment was known, 93.3% (196 out of 210) were known to have previously been treated for TB and 29.6% (55 out of 186) received DOT during their current notification.

Co-morbidities¹⁰

Overall, in 2020, where information on co-morbidity status was known, 32.3% (1,332 out of 4,125) of all people with TB were known to have at least one co-morbidity. Of these, the most frequent co-morbidity that was reported was diabetes (11.9%, 466 out of 3,920) (Table 1.3).

Information on whether a person was offered HIV testing was known for 94.2% (3,885 out of 4,125) of people notified with TB in 2020. Of these, 91.4% (3,551 out of 3,885) were reported to have been offered a HIV test that was undertaken and 2.7% (105) were not offered a test and in 2.2% (84) cases, a HIV test was offered but not done or offered and the patient refused. HIV status was already known in 3.7% (145) of cases.

Table 1.3. Number of people with TB by co-morbidity status, England, 2020

Co-morbidity	n	%	Total ^a
Diabetes	466	11.9	3,920
Hep B	69	1.9	3,582
Hep C	58	1.6	3,568
Chronic liver disease	61	1.6	3,843
Chronic renal disease	134	3.5	3,867
Immunosuppression	234	6.1	3,843
Biological therapy	43	1.0	4,107
Transplantation	18	0.4	4,082
Cancer	26	19.7	132

⁸ In the Enhanced TB Surveillance system (ETS), the relevant variable is "Patient to begin a course of treatment under direct observation"; in the London TB Register (LTBR) the relevant variable is "Patient was taking Directly Observed Therapy at any time during the episode of care".

⁹ With known previous history of TB.

¹⁰ Information on co-morbidity status has been collected on ETS since mid-2015 and on LTBR since mid-2016 for London.

Co-morbidity	n	%	Total ^a
Steroids	13	9.9	132
Auto-immune disease	2	1.5	132
Other	91	68.9	132
Unknown	117	70.1	234

^a Where information on co-morbidity status was known

Travel and visitor risk factors¹¹

Information on history of travel to, and visitors received from a country¹² outside the UK in the 2 years prior to TB diagnosis was known for 51.1% (2,134 out of 4,111) and 48.1% (1,977 out of 4,111) of people notified in 2020, respectively. Of these, 18.1% (387 out of 2,134) had travelled outside the UK and 3.7% (128 out of 2,243) had received a visitor from outside the UK (Table 1.4). Note that data on travel and risk factors is recorded on notifications in ETS, but not the London TB registry.

Less than one-quarter (23.4%, 336 out of 1,433) of people born outside the UK had travelled abroad for more than a month in the 2 years prior to diagnosis, compared with only 6.6% (45 out of 683) of those born in the UK.

Table 1.4. Number and proportion of people with TB with history of travel to and visitors received from a country^a outside the UK in the past 2 years prior to diagnosis, England^b, 2020

Place of birth ^c	Travel to a country outside the UK			Visitor received from outside the UK		
	n	%	Total	n	%	Total
UK born	45	6.6	683	14	2.1	665
Non-UK born	336	23.4	1,433	60	4.6	1,297
Total^d	387	18.1	2,134	74	3.7	1,977

^a Excludes countries in Western Europe, US, Canada, New Zealand, and Australia.

^b Excludes people with TB notified in London.

^c Where place of birth was known.

^d Total includes those with unknown place of birth.

¹¹ Excludes people with TB notified in London, as these data fields were not available in LTBR in 2020

¹² Excludes countries in Western Europe, US, Canada, New Zealand and Australia

2. Microbiology and drug resistance

Important messages

In 2020, 60.7% of people notified with TB had their diagnosis confirmed by culture, which was a slight decrease from 2019 (61.6%). Thirty percent of people notified did not have any laboratory results reported (culture, microscopy, PCR or histology) to confirm their TB diagnosis.

In 2020, 97.8% of people with culture confirmed TB had genotypic prediction of susceptibility to first line agents including isoniazid (INH) and rifampicin (RIF), using whole genome sequencing in the reference laboratory.

In 2020, 1.7% of all TB cases had confirmed initial MDR (n=41), compared to 1.3% in 2019 (n=37).

Laboratory tests data collection

Data for all culture confirmed TB isolates from the National Mycobacterium Reference Service (NMRS) were matched to TB notifications, and the results were used to report culture confirmation. Results for microscopy, PCR and histology were manually recorded in ETS (see [Appendix III: Methods](#)).

Culture confirmation

In 2020, 60.7% (2,505 out of 4,125) of people notified with TB had their diagnosis confirmed by culture, the lowest proportion since 2013 (60.6%, 4,402 out of 7,265; Table Ai.2.2). Of those with culture confirmed TB in 2020, 97.7% (2,448) had *Mycobacterium tuberculosis* (*M. tuberculosis*) identified in their sample, 0.7% (18) *Mycobacterium bovis* (*M. bovis*) and 1.6% (39) *Mycobacterium africanum* (*M. africanum*). There were no samples identified with *Mycobacterium microti* (*M. microti*) or not further differentiated from *Mycobacterium tuberculosis* complex (MTBC; Table Ai.2.1).

As in previous years, culture confirmation was much higher among people with pulmonary TB compared to those with extra-pulmonary TB (75.3%, 1,659 out of 2,204 versus 44.2%, 845 out of 1,913). Culture confirmation also varied by PHEC; the highest being in the North East (79.8%, 67 out of 84) and the lowest in the South East (53.9%, 246 out of 456; Table Ai.2.2).

As in previous years, the lowest proportion of culture confirmation was among children <15 years (28.9%, 43 out of 149) and the highest among people aged 15 to 44 years (65.5%, 1,479 out of 2,259). These proportions are comparable to the previous year, although there was a 2.5-3.0% decrease in culture confirmation across the older age groups (≥45 years). Among children, the proportion of culture confirmation was low for both pulmonary and extra-pulmonary TB (27.1%, 26 out of 96 and 32.7%, 17 out of 52, respectively).

Other laboratory test results

In 2020, 65.9% (1,739 out of 2,204) of all people with pulmonary TB had a sputum smear (microscopy) result recorded in ETS. This proportion was substantially lower among children (under 15 years; 40.2%, 45 out of 112) compared to other age groups and varied by region. The highest proportion was in the South East (40.1%, 116 out of 289) and the lowest in the East of England (28.3%, 75 out of 265). For further information on data completeness, see Appendix IV: Surveillance data quality.

Of those with a recorded sputum smear result, 46.3% (828 out of 1,789) were positive. TB diagnosis was confirmed by culture in 91.6% of these (758 out of 828). For those with a negative sputum smear result, 59.4% (573 out of 965) were confirmed by culture.

Of the 1,550 people with TB without a positive culture result to confirm their diagnosis, only 19.2% (298 out of 1,550) had an alternative positive laboratory result (microscopy, PCR or histology) indicative of TB (Table 2.1). Overall, 30.4% (1,252 out of 4,125) of all TB cases did not have any laboratory confirmation.

Table 2.1. Number and proportion of people without culture confirmed TB by alternative method of confirmation, England, 2020

Laboratory test results ^a	Pulmonary		Extra-pulmonary		All ^b	
	n (545) ^c	%	n (1,068) ^c	%	n (1,620) ^c	%
Sputum smear positive	70	12.8	N/A	N/A	70	4.3
Smear positive (not sputum)	8	1.5	16	1.4	24	1.5
Histology positive	48	8.8	157	13.6	205	12.7
PCR positive	33	6.1	49	4.3	82	5.1
No known positive lab result	396	72.7	849	73.8	1,252	77.3

^a Some people may have more than one test result therefore the total percentage may exceed 100%.

^b Total number of people including those with an unknown site of disease.

^c Total number of people without culture confirmed TB, used as the denominator in proportion of laboratory test results shown.

Identification and classification of drug resistance

Susceptibility testing is conducted for all people with culture confirmed TB. Whole genome sequencing (WGS) provides resistance predictions for first line drugs (isoniazid, rifampicin, ethambutol and pyrazinamide), aminoglycosides and fluoroquinolones, whilst also determining species and strain relatedness. Recognition and reporting of drug resistance using WGS is more rapid than conventional phenotypic drug susceptibility testing (DST). DST is still performed for first line drugs with additional testing for second line drugs, if first line resistance is detected (5).

Drug resistance may be classified as initial resistance if identified early during the diagnosis and treatment phase (on isolates within one month of the first specimen date). Drug resistance is classed as acquired if identified on repeat culture one or more months after the first specimen date.

Initial first line drug resistance

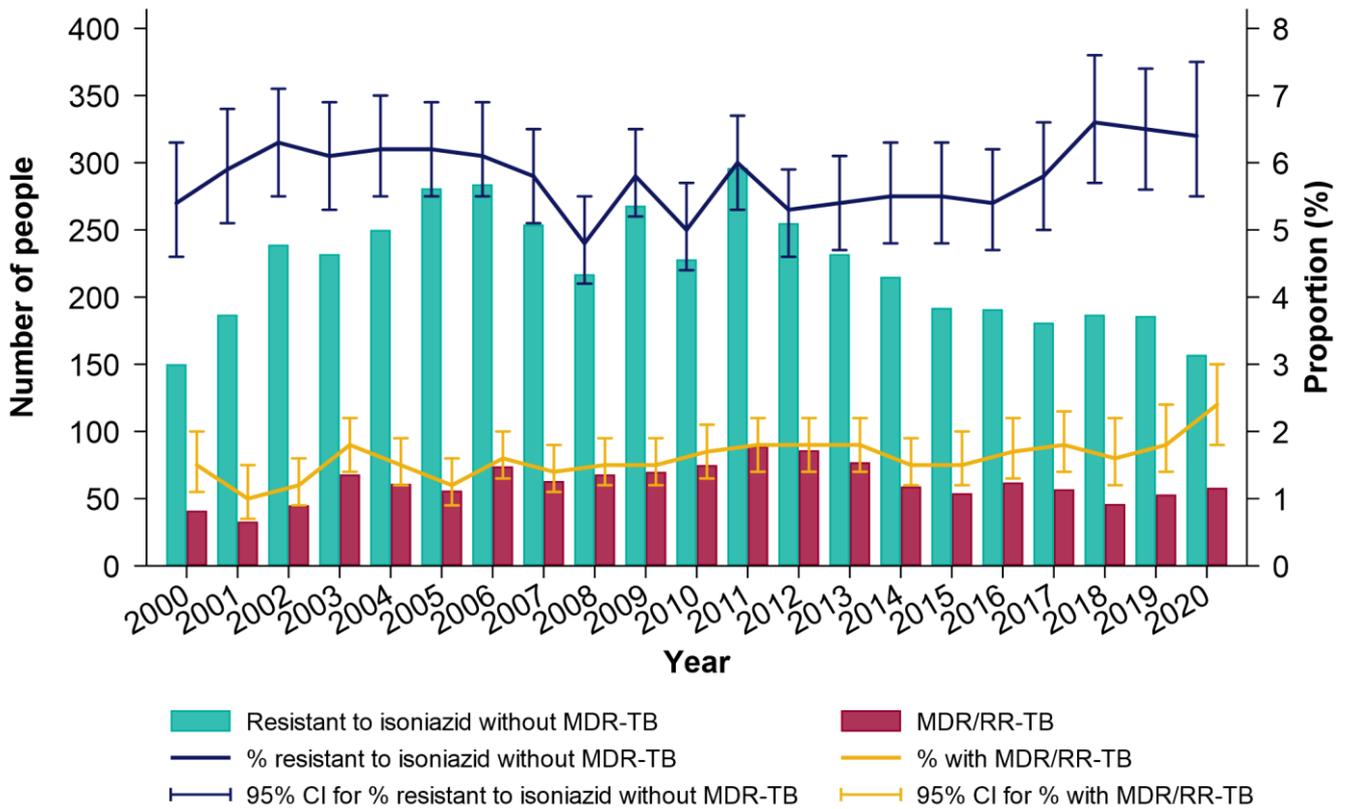
In 2020, 97.8% (2,450 out of 2,505) of people with culture confirmed TB had susceptibility results for at least isoniazid and rifampicin, this was the lowest recorded proportion since 2000 (except for 2013) (Table Ai.2.3). Of these, 8.1% (198 out of 2,450) had resistance to isoniazid, 2.4% (58 out of 2,450) to rifampicin (MDR/RR-TB), 1.9% (43 out of 2,240) to ethambutol and 2.6% (62 out of 2,331) to pyrazinamide (Table Ai.2.4). Overall, 11.6% (253 out of 2,190) of people had resistance to at least one first line drug, and 1.7% (41 out of 2,450) had MDR-TB¹³ (Table Ai.2.6).

Isoniazid resistance without MDR-TB

The proportion of people with initial isoniazid resistance (INH-R) without MDR-TB in 2020 slightly decreased to 6.4% (157 out of 2,409) compared to previous years (Figure 2.1, Table Ai.2.5). This proportion was higher across males compared to females (6.7%, 103 out of 1,537, versus 5.9%, 54 out of 913, respectively) and highest in those aged 45 to 64 (7.4%, 46 out of 623) whilst lowest in children (4.7%, 2 out of 43) (Table 2.3). The most frequent countries of birth for these individuals were the UK (31), India (28) and Pakistan (22), with the highest proportion between 2016 and 2020 observed in London (7.6%, 416 out of 5,484) (Table Ai.2.6).

¹³ MDR-TB is defined as resistance to at least isoniazid and rifampicin

Figure 2.1. Number and proportion^a of people notified with TB with initial drug resistance, England, 2000 to 2020



^a People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin.

Multi-drug resistant/rifampicin resistant (MDR/RR) TB¹⁴

In 2020, 2.4% of TB cases (58 out of 2,450) had MDR/RR-TB, the highest proportion since 2000 (Figure 2.1, Table Ai.2.5)¹⁵. The 58 MDR/RR-TB cases comprised 17 people with RR-TB and 41 with MDR-TB (Table 2.3).

There was no difference between the sex of MDR/RR-TB cases in 2020, unlike previous years which reported a larger number of males. Likewise, the proportion of people with at least one social risk factor (SRF) that had MDR/RR-TB was equal to those without a SRF (2.2%), despite being greater in the past (Table 2.2). More people with a previous diagnosis of TB had MDR/RR-TB compared to those without (5.5%, 7 out of 128 versus 2.2%, 48/2,199, respectively), and this increased from the previous year (4.9%, 7 out of 144). Between 2016 and 2020, the East Midlands had the highest proportion of people with MDR/RR-TB (2.7%, 27 out of 1,003; Table Ai.2.6).

¹⁴ People with confirmed initial or acquired MDR/RR-TB including people treated with a second line regimen for MDR/RR-TB irrespective of confirmation of this resistance. To report on the proportion of people with MDR/RR-TB, only those with initial resistance confirmed by DST or WGS are included, as there is no denominator data for people with acquired MDR/RR-TB or those treated with a second line regimen without confirmation

¹⁵ Proportions are calculated using the denominator of all people with culture confirmed TB with phenotypic DST or WGS resistance predictions for at least isoniazid and rifampicin

Table 2.2. Number and proportion of people with drug resistant TB by characteristic, England, 2020

Characteristic	Total culture confirmed ^a	Isoniazid resistance without MDR-TB		MDR/RR-TB ^d	
	n	n	%	n	%
Sex					
Female	913	54	5.9	22	2.4
Male	1,537	103	6.7	36	2.3
Age					
0 to 14	43	2	4.7	0	0.0
15 to 44	1,447	89	6.2	45	3.1
45 to 64	623	46	7.4	12	1.9
Over 65	337	20	5.9	1	0.3
Most frequent countries of birth^b					
UK	564	31	5.5	9	1.6
India	482	28	5.8	16	3.3
Pakistan	251	22	8.8	1	0.4
Romania	128	3	2.3	4	3.1
Eritrea	76	8	10.5	3	3.9
Philippines	66	8	12.1	3	4.5
Afghanistan	57	7	12.3	3	5.3
At least one social risk factor^c	322	22	6.8	7	2.2
Previous diagnosis	128	7	5.5	7	5.5

^a People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin.

^b Included if 4 or more people had either isoniazid resistance without MDR-TB or MDR/RR-TB, ordered by number of people with a result (DST or WGS) for at least isoniazid and rifampicin.

^c Includes people aged 15 and over.

^d Includes people with initial or acquired MDR/RR-TB, and people treated with a second line regimen.

Table 2.3. Number of people with MDR/RR-TB, England, 2011 to 2020

Year	Rifampicin resistant without MDR-TB ^a			MDR-TB including XDR-TB				MDR/RR-TB ^b
	Initial resistance	Acquired resistance	Total	Initial resistance	Acquired resistance	Treated with MDR-TB regimen	Total	
2011	8	0	8	81	4	2	87	95
2012	10	0	10	76	2	6	84	94
2013	10	1	11	67	0	6	73	85
2014	6	0	6	53	4	11	68	74
2015	9	0	9	45	1	12	58	67
2016	9	1	9	53	0	9	62	70
2017	11	0	11	46	1	6	53	64
2018	10	1	11	36	0	3	39	50
2019	16	0	16	37	0	0	37	53
2020	17	1	17	41	0	0	41	58

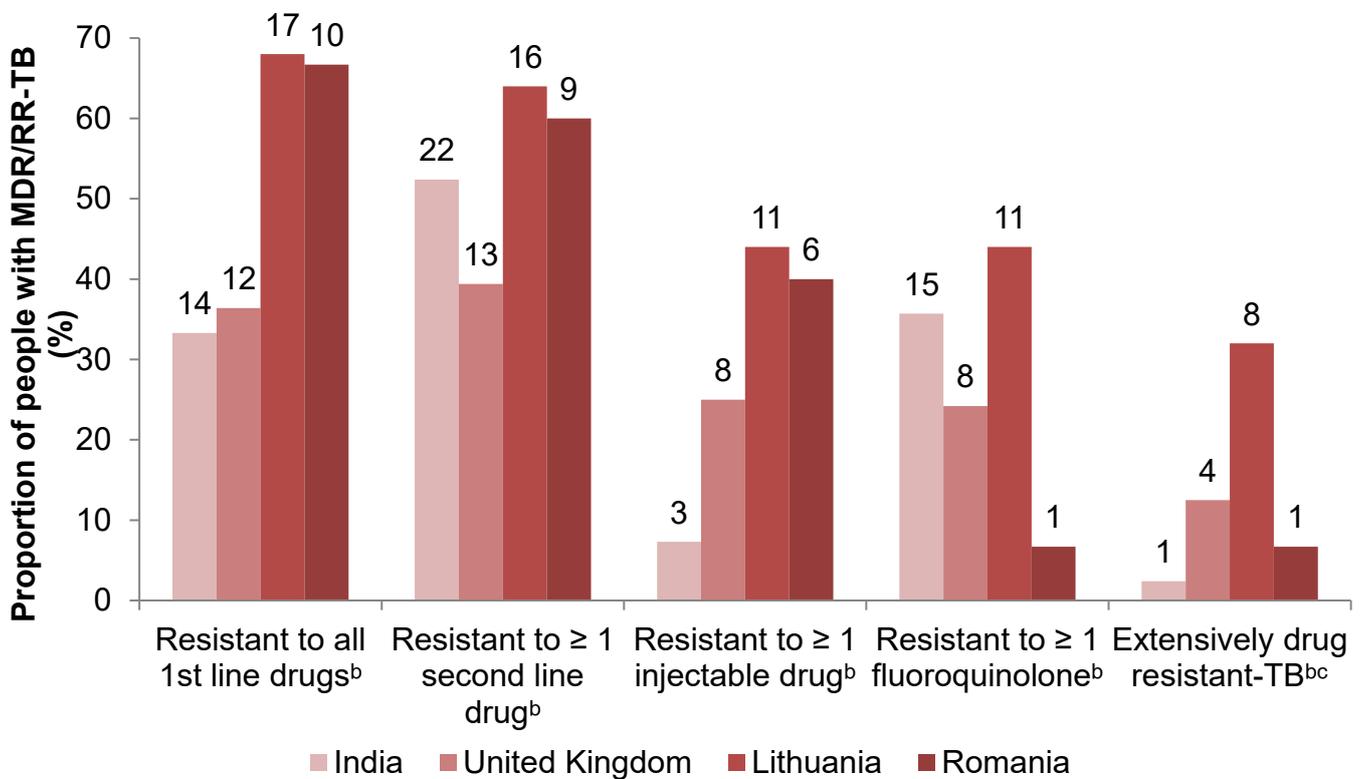
^a People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin.

^b Includes people with initial or acquired MDR/RR-TB, and people treated with a second line regime.

Second line drug resistance and extensively drug resistant (XDR) TB

In 2020, of the 39 people (1.8%, 39 out of 2,201) with confirmed initial MDR-TB and results for all first line drugs, 56.4% (22 out of 39) were resistant to all 4. Among people with MDR-TB tested for resistance to injectables^{16,17} and/or fluoroquinolones^{18,19}, 22.0% (9 out of 41) were resistant to at least one injectable agent and 22.0% (9 out of 41) were resistant to fluoroquinolone (pre-XDR TB; Table Ai.2.7) (6). The resistance patterns of people with pre-XDR-TB is strongly associated with country of birth; most notably for people of Indian, Lithuanian and Romanian origin (Figure 2.2, Table Ai.2.8).

Figure 2.2. Number and proportion of people with MDR-TB^a by full resistance profile and most frequent country of birth, England, 2016 to 2020



Please note: numbers of people with MDR-TB are displayed as labels.

^a People with culture confirmed TB with results (DST or WGS) for at least isoniazid and rifampicin.

^b Denominators only include people with results for the drugs in question.

^c Resistant to both a fluoroquinolone and an injectable.

Acquired drug resistance on repeat culture

Four people with culture confirmed TB notified in 2020 were identified to have acquired resistance on repeat testing, having acquired resistance to isoniazid (n=1), rifampicin (n=1) and pyrazinamide (n=2).

¹⁶ Includes those with a DST result for at least one injectable or a WGS result for aminoglycosides

¹⁷ Injectables include amikacin, capreomycin or kanamycin

¹⁸ Includes those with a DST result for at least one fluoroquinolone or a WGS result for quinolones

¹⁹ Fluoroquinolones include ofloxacin, moxifloxacin or ciprofloxacin

Between 2000 and 2020²⁰, 0.2% (168 out of 82,061) of people with culture confirmed TB acquired resistance whilst on treatment in England, of which 29.2% (n=49) acquired resistance to rifampicin and 33.9% (n=57) acquired resistance to isoniazid.

Challenges in TB drug supply

TB drug shortages have been an ongoing concern over the last couple of years. This is a global issue. Interruptions in supplies of drugs used for treating TB can pose a significant public health risk by delaying or stopping treatment for active and latent TB infection (LTBI), potentially leading to reduced clinical care and increased risk of relapse, increased TB transmission and contributing to the development of drug resistance. NHS England and NHS Improvement (NHS-E&I), together with the Department for Health and Social Care, have put into place a process that regularly alerts TB services when TB drug shortages are identified, provides timely information on drugs availability and advice on actions to take to reduce the impact of drug shortages.

²⁰ People who acquire resistance are recorded in the year of notification, not the year resistance was acquired. Numbers for recent years may increase for those still on treatment

3. Time to treatment start and treatment outcomes in people with sensitive and resistant TB

Important messages

In 2020, the median time between symptom onset and treatment start for people with pulmonary TB was 79 days (IQR: 39 to 154 days). Almost one third (32.4%) experienced a delay of more than 4 months.

Eighty-two per cent of people notified with drug sensitive TB in 2019 (with an expected treatment duration of less than 12 months) completed treatment by 12 months compared to 84.8% in 2018. The proportion of children completing treatment within 12 months between 2018 and 2019 reduced by 0.3%.

The proportion of all people with drug sensitive TB who died at the last reported outcome in 2019 was 4.2%, compared to 4.4% in the previous year.

Fewer people in the 2018 MDR/RR-TB cohort completed treatment at 24 months compared to those in the 2017 cohort (62.0% versus 64.1%, respectively). At the last recorded outcome, 12.0% of the 2018 MDR/RR cohort were still on treatment, which more than doubled those in 2017 (4.7%).

Time from symptom onset to treatment start for people with pulmonary TB

The prompt diagnosis and treatment of active TB can improve patient outcomes and reduce the period of infectiousness and thus TB transmission. Uncertainties about the quality of data collected for date of first presentation to health services means it is not possible to distinguish late presentation to health services from delays occurring within the health service.

Information on the time between symptom onset to treatment start was available for 87.3% (1,924 out of 2,204) of people with pulmonary TB (pTB) notified in 2020. For further information on data completeness, see Appendix IV: Surveillance data quality.

In 2020, the median time between symptom onset and treatment start among people with pTB was 79 days (IQR: 39-154). There has not been an improvement in treatment delay during the last 5 years. The proportion of people who experienced a delay exceeding 4 months in 2020 (32.4%, 624 out of 1,924) was comparable to 2019 (31.2%, 724 out of 2,324) (Table 3.1).

Table 3.1. Number and proportion of people with pulmonary TB by time from symptom onset to treatment start, England, 2016 to 2020

Year	Time from symptom onset to treatment start						
	0 to 2 months		2 to 4 months		Over 4 months		Total ^a
	n	%	n	%	n	%	n
2016	1,092	38.8	867	30.8	857	30.4	2,816
2017	989	38.3	792	30.7	800	31.0	2,581
2018	972	41.2	734	31.1	652	27.7	2,358
2019	929	40.0	671	28.9	724	31.2	2,324
2020	754	39.2	546	28.4	624	32.4	1,924

^a Number of people with pulmonary TB for whom time from symptom onset to treatment start was known.

Age and sex

In 2020, as in previous years, the highest proportion of people with pTB who experienced a delay of more than 4 months was in the older age groups (Table 3.2). A greater proportion of females with pTB (36.2%, 266 out of 735) experienced a treatment delay exceeding 4 months compared to males (30.1%, 358 out of 1,189) (Table 3.3).

Table 3.2. Number and proportion of people with pulmonary TB by time from symptom onset to treatment start and age group, England, 2020

Time from symptom onset to treatment start	Age group (years)									
	0 to 14		15 to 44		45 to 64		Over 65		Total ^a	
	n	%	n	%	n	%	n	%	n	%
0 to 2 months	58	73.4	415	39.7	186	37.3	95	31.5	754	39.2
2 to 4 months	14	17.7	302	28.9	134	26.9	96	31.8	546	28.4
Over 4 months	7	8.9	328	31.4	178	35.7	111	36.8	624	32.4
Total	79	100.0	1,045	100.0	498	99.9	302	100.0	1,924	100.0

^a Number of people with pulmonary TB for whom time from symptom onset to treatment start was known.

Table 3.3. Number and proportion of people with pulmonary TB who experienced a delay of more than 4 months between symptom onset and treatment start by age group and sex, England, 2020

Age group (years)	Female		Male		Total ^a
	n	%	n	%	n
0 to 14	7	17.1	0	0.0	7
15 to 44	146	35.3	182	28.8	328
45 to 64	64	39.5	114	33.9	178
Over 65	49	41.5	62	33.7	111
Total	266	36.2	358	30.1	624

^a Number of people with pulmonary TB for whom time from symptom onset to treatment start was known.

Place of birth

In line with previous years, in 2020, people born in the UK with pTB experienced a longer treatment delay than those born outside the UK and a higher proportion had a delay exceeding 4 months (Figure 3.1 and Table Ai.3.1). Treatment delays among non-UK born people slightly increased (2019: 29.1%, (457 out of 1,573) versus 2020: 30.3%, (386 out of 1,274)).

Figure 3.1. Proportion of people with pulmonary TB by time from symptom onset to treatment start and place of birth, England, 2016 to 2020

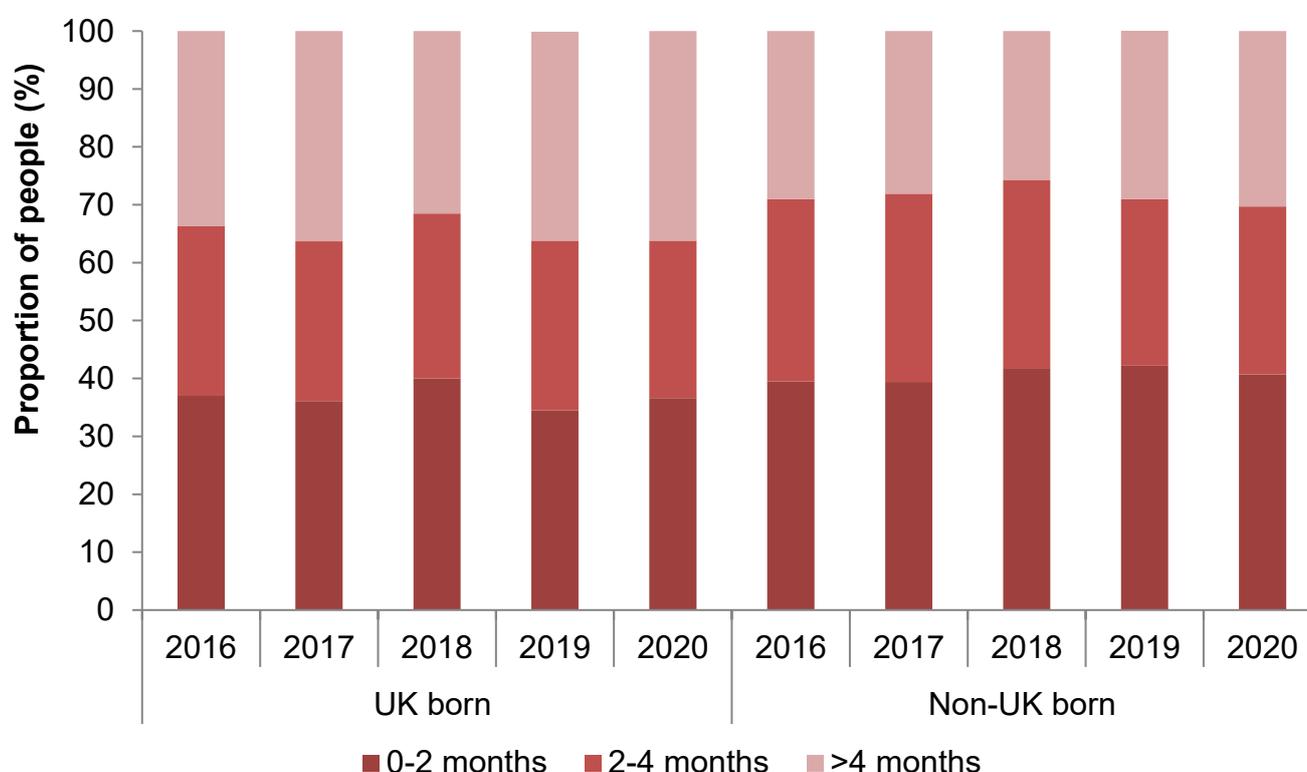
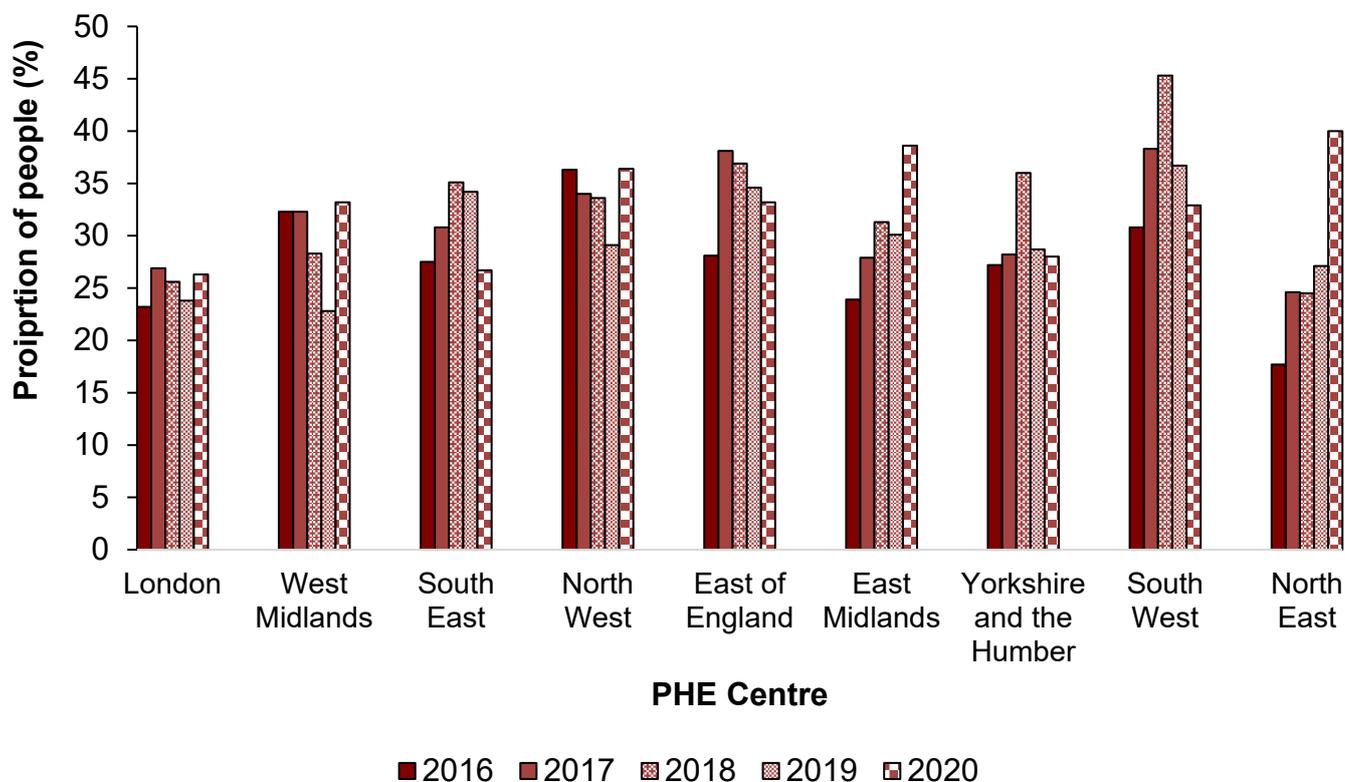


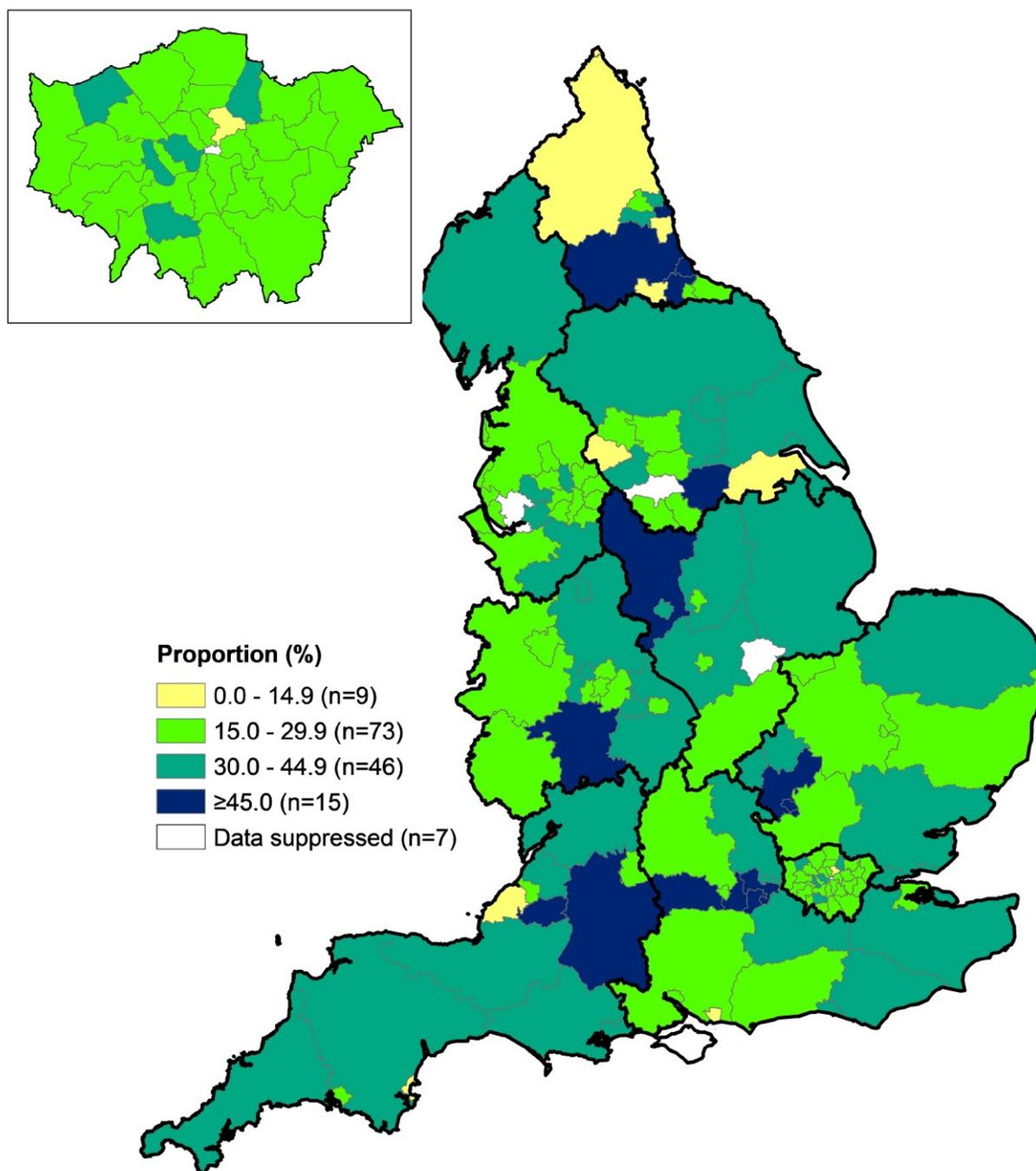
Figure 3.2. Proportion of people with pulmonary TB with a delay of more than 4 months between symptom onset and treatment start by PHE Centre^a, England, 2016 to 2020



^a Ordered by decreasing total number of TB notifications in 2020.

For 2018, 2019 and 2020, there was considerable variation by upper-tier local authority in the proportion of people with pTB who experienced a delay of more than 4 months between symptom onset and treatment start (Figure 3.3).

Figure 3.3. Proportion of people with pulmonary TBa who experienced a delay of more than 4 months between symptom onset date and treatment start by upper-tier local authority, England, 2018 to 2020 (box shows enlarged map of London area)



a People with pulmonary TB for whom time between symptom onset to treatment start was known
b Data for upper-tier local authorities with less than 5 people with pulmonary TB and known time between symptom onset to treatment start are suppressed due to the effect of small numbers on the proportion. PHEC boundaries are outlined in black

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Outcomes in the people with and without MDR/RR-TB

For the purpose of reporting outcomes for people with TB, the non-MDR/RR cohort is defined as all people notified with TB, excluding those in the MDR/RR cohort (see Chapter 2 for a complete definition of the drug resistant cohort). Under this definition, people with TB resistant to isoniazid, ethambutol and/or pyrazinamide but without resistance to rifampicin are included in the non-MDR/RR cohort. Outcomes are reported according to the year of notification for people with non-MDR/RR TB up to, and including, 2019. TB outcomes for the non-MDR/RR cohort are reported separately for the following groups:

For people with TB that have an expected treatment duration of less than 12 months

TB outcomes at 12 months are reported and compared with 2018, as the most recent reported year. This group excludes people with CNS disease. In addition, those with spinal, cryptic disseminated or miliary disease are excluded, as CNS involvement cannot be reliably ruled out for the purposes of reporting.

For people with CNS, spinal, cryptic disseminated or miliary disease

The last recorded TB outcome is reported. Detailed data on mortality and people lost to follow-up at last recorded outcome is presented for the entire non-MDR/RR cohort.

TB outcomes for the non-MDR/RR cohort with expected treatment duration of less than 12 months

Treatment completion

Table 3.4. Outcome at 12 months for people with non-MDR/RR TB with an expected treatment duration less than 12 months^a, England, 2019

TB outcome	n	%
Treatment completed	3,425	82.0
Died	177	4.2
Lost to follow-up	143	3.4
Still on treatment	217	5.2
Treatment stopped	54	1.3
Not evaluated ^b	161	3.9
Total	4,177	100.0

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

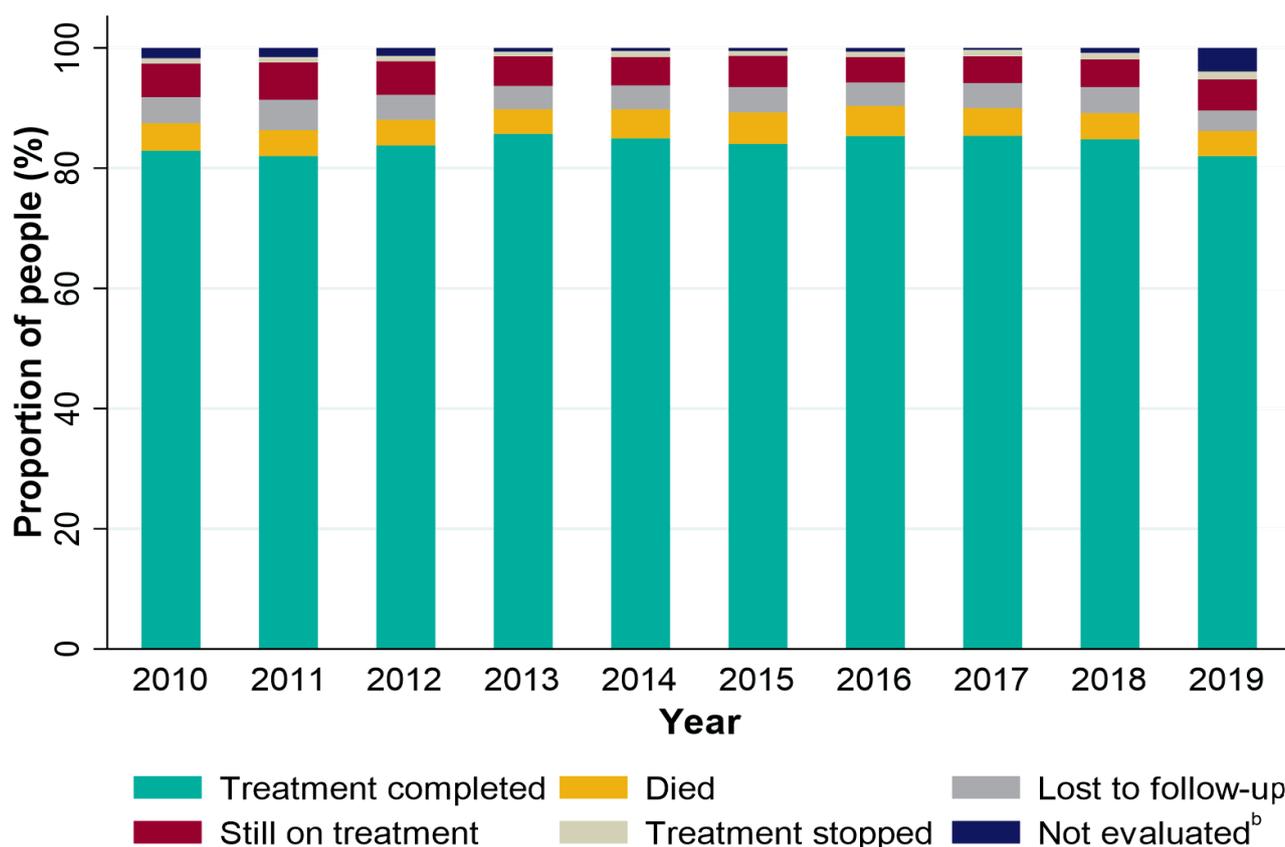
^b Not evaluated includes unknown and transferred out.

In 2019, 82.0% of people notified with non-MDR/RR TB completed treatment within 12 months (Table 3.4), which was slightly less than in 2018 (84.8%) (Table Ai.3.1). A further 3.6% (149 out of 4,177) of people notified in 2019 are known to have completed treatment after 12 months, bringing the overall treatment completion to 85.6% (3,574 out of 4,177) at the last recorded outcome (Table Ai.3.4).

Of those who completed treatment and had a known treatment duration, 95.8% (3,364 out of 3,511) completed treatment within 12 months. The majority of people (68.9%, 2,419 out of 3,511) completed treatment in 6 to 8 months. However, 6.3% (222 out of 3,511) completed treatment in less than 6 months (Table Ai.5.3), which is shorter than the full duration of a short-course treatment.

This may arise if patients start treatment abroad and therefore do not require a full course of treatment post-arrival in the UK from non-pre-entry screening countries.

Figure 3.4. Outcomes at 12 months for people with non-MDR/RR TB with an expected treatment duration <12 months^a, England, 2010 to 2019



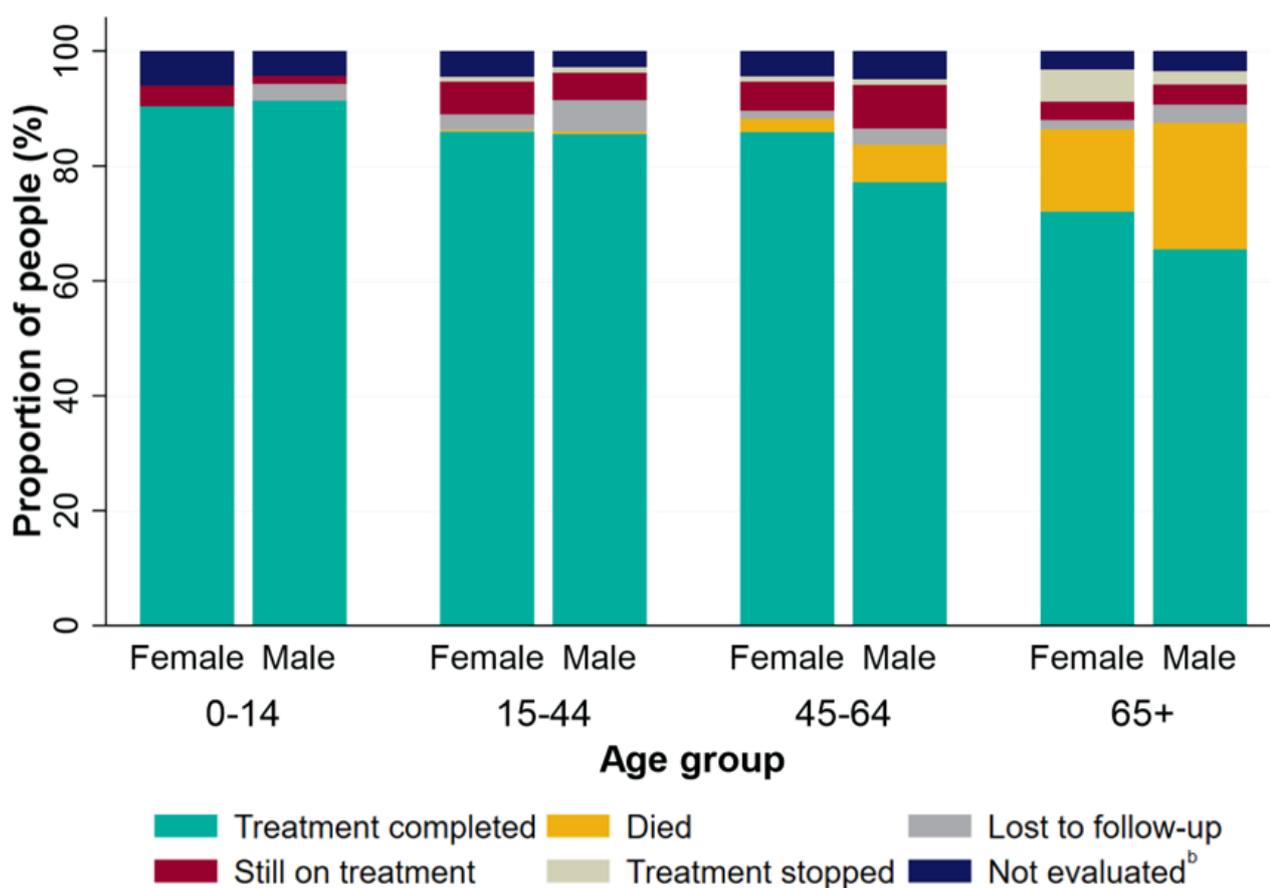
^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

^b Not evaluated includes unknown and transferred out.

Age and sex

Treatment completion within 12 months was 2.2% higher for females (84.1%; 1,410 out of 1,677) than males (80.6%; 2,015 out of 2,500) notified in 2019 and decreased with increasing age (Table Ai.3.6.). In each age category, this was the lowest recorded proportion of treatment completion within 12 months since 2016, with a notable 5.0% drop among 45-64 year olds completing treatment from 2018 to 2019. The difference in treatment completion by sex increased with age, primarily driven by the higher mortality in older age groups. The difference was greatest in people aged 45 to 64 years; 85.9% (371 out of 432) of females completed treatment compared to 77.3% (550 to 712) of males (Figure 3.5, Table Ai.3.7).

Figure 3.5. Outcomes at 12 months, by sex and age group, for people with non-MDR/RR TB with an expected treatment duration <12 months^a, England, 2019



^a Excludes people in the drug resistant cohort and those with CNS, spinal, miliary or cryptic disseminated TB

^b Not evaluated includes unknown and transferred out

Site of disease

Treatment completion at 12 months was lower in people who had pulmonary compared to extra-pulmonary TB (81.5%; 2,136 out of 2,620 vs. 85.6%; 2,431 out of 2,841, respectively). See Table Ai.3.8 for a detailed breakdown of treatment completion by site of disease at the last recorded outcome.

Geographical distribution

Treatment completion at 12 months for people notified in 2019 varied from 85.7% (449 out of 524) in the West Midlands, to 73.6% in the South West (153 out of 208) (Table Ai.3.9). The proportion of people completing treatment at 12 months in the North East increased from 71.9% in 2018 to 81.4% in 2019. All other PHECs experienced a reduction in treatment completion at 12 months from 2018 to 2019, with the largest decrease observed in Yorkshire and the Humber from 89.0% in 2018 to 80.3% in 2019 (Table Ai.3.10).

Still on treatment

Over 5% (5.2%, 217 out of 4,177) of people notified in 2019 were still on treatment at 12 months (Table 3.4, Table Ai.3.3), of which 68.7% (149 out of 217) went on to complete treatment by the last recorded outcome (Table Ai.3.4). Where the reason for still being on treatment was recorded (76.5%; 166 out of 217), 53.0% (88 out of 166) were on a planned regimen exceeding 12 months, 24.1% (n=40) had their treatment changed, and 22.9% (n=38) had their treatment interrupted, which was comparable to last year.

TB outcomes for the non-MDR/RR cohort with CNS, spinal, miliary or cryptic disseminated TB

At the last recorded outcome, 74.8% (353 out of 472) of people notified in this cohort in 2019 had completed treatment, whilst 6.1% (29 out of 472) were still on treatment (Table Ai.3.11). Due to a shorter follow-up period for cases notified in 2019, the proportion of people that complete treatment is expected to increase, as in previous years. For people notified with TB in 2018, 81.5% (347 out of 426) had completed treatment at the last recorded outcome (Table Ai.3.11).

Table 3.5. Last recorded TB outcome for the non-MDR/RR cohort with CNS, spinal, miliary or cryptic disseminated TB, England, 2019

TB outcome	n	%
Treatment completed	353	74.8
Died	48	10.2
Lost to follow-up	17	3.6
Still on treatment	29	6.1
Treatment stopped	4	0.9
Not evaluated ^b	21	4.5
Total	472	100.0

^a Excludes people in the MDR/RR cohort and only includes people with drug sensitive CNS, spinal, miliary or cryptic disseminated TB.

^b Not evaluated includes unknown and transferred out.

TB outcomes in the entire non-MDR/RR cohort

At the last recorded outcome, 84.5% (3,927 out of 4,649) of all non-MDR/RR TB notifications in 2019 had completed treatment, 4.9% had died, and 3.5% were lost to follow-up (Table 3.6). These proportions were comparable to that observed in previous years (Table Ai.3.12).

Table 3.6. Last recorded TB outcome for the entire non-MDR/RR cohort^a, England, 2019

TB outcome	n	%
Treatment completed	3,927	84.5
Died	229	4.9
Lost to follow-up	162	3.5
Still on treatment	90	1.9
Treatment stopped	59	1.3
Not evaluated ^b	182	3.9
Total	4,649	100.0

^a Excludes people in the MDR/RR cohort

^b Not evaluated includes unknown and transferred out

Death in the entire non-MDR/RR cohort

In 2019, 4.9% (229 out of 4,649) of people notified were reported to have died at the last recorded outcome, which was comparable to 2018 (5.1%) (Table Ai.3.12). TB caused or contributed to 37.1% (85) of deaths, was incidental to 29.7% (68) of deaths, and for 34.9% (80) the relationship between TB and death was unknown (Table Ai.3.13). Eleven percent (10.9%, 25 out of 229) had been diagnosed with TB post-mortem. Excluding those diagnosed at post-mortem, the median time to death after starting treatment (known for 83.8% (171 out of 204)) was 39 days (range 0 to 545 days, IQR: 14 to 115 days). 63.2% (108 out of 171) died within 2 months of starting treatment.

A higher proportion of males died at last recorded outcome (5.9%, 165 out of 2,806) compared with females (3.5%, 64 out of 1,843). Death was highest in those aged 65 years and older (19.8%, 132 out of 667). A quarter (24.5%, 40 out of 163) of adults (aged ≥15 years) who died had at least one social risk factor, which was greater than in the previous 3 years (2018: 20.4%, 2017: 18.6% and 2016: 14.2%).

A higher proportion of people notified with pulmonary disease in 2019 died at the last recorded outcome compared to those with only extra-pulmonary disease (6.5%, 167 out of 2,585 versus 3.0%, 62 out of 2,053, respectively) (Table Ai.3.8). More people with a previous diagnosis of TB (5.5%, 16 out of 293) died compared with those who had not had TB previously (3.8%, 159 out of 4,178). The proportion of deaths varied by PHEC; from 4.1% (68 out of 1,655) in London, to 6.8% (16 out of 234) in the South West (Table Ai.3.14).

Lost to follow-up in the entire non-MDR/RR cohort

In 2019, 3.5% (162 out of 4,649) of cases were lost to follow-up at the last recorded outcome (Table 3.6). This proportion was higher among people born outside the UK (3.8%, 127 out of 3,374) compared to those born in the UK (2.2%, 27 out of 1,209). Where the reason was known, 57.4% (66 out of 115) of people born outside the UK had left the country. The proportion of people lost to follow-up was highest in those aged 15 to 44 years (4.3%, 110 out of 2,540) and almost two-thirds (63.0%, 102 out of 162) had pulmonary disease.

TB outcomes for the MDR/RR-TB cohort

TB outcomes for the entire MDR/RR cohort are reported at 24 months, so the most recent year of reporting is for people notified in 2018. The 2018 cohort comprised 50 people; 11 had rifampicin resistance without MDR-TB, 34 had MDR-TB and 5 had XDR-TB (See Chapter 2: Table 2.4).

Sixty-two percent (62.0%, 31 out of 50) of people notified in 2018 completed treatment within 24 months (Figure 3.6, Table 3.7, Table Ai.3.15). Fewer than 5 people completed treatment after 24 months, bringing overall treatment completion for people notified in 2018 to 68.0% (34 out of 50) (Table 3.7, Table Ai.3.16).

Table 3.7. 24-month and last recorded TB outcomes for the MDR/RR cohort, England, 2018

TB outcome	At 24 months		At last recorded outcome	
	n	%	n	%
Completed	31	62.0	34	68.0
Died	4	8.0	4	8.0
Lost to follow-up	5	10.0	5	10.0
Still on treatment	6	12.0	6	12.0
Treatment stopped	1	2.0	1	2.0
Not evaluated ^b	3	6.0	0	0.0
Total	50	100.0	50	100.0

^a Includes people with initial and acquired MDR/RR-TB and people treated with a second line regimen

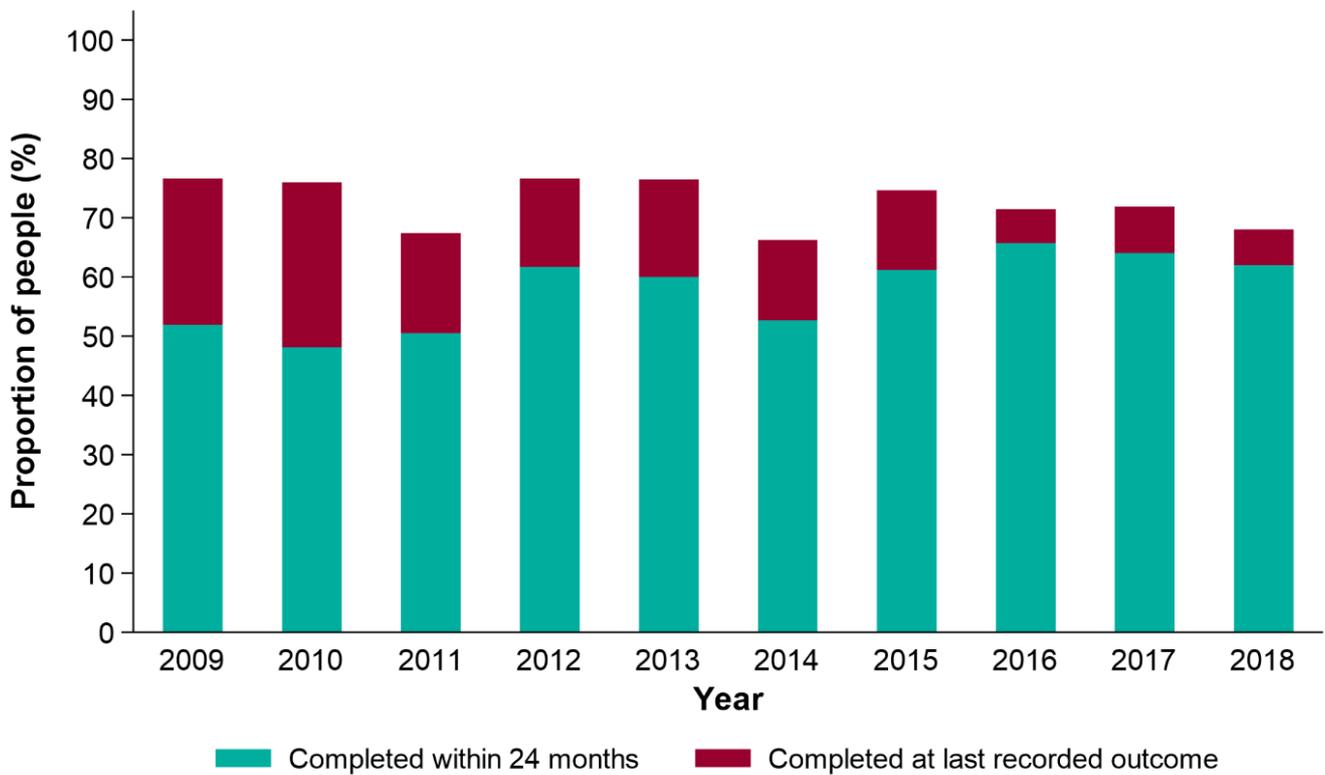
^b Not evaluated includes unknown and transferred out

For people with known treatment start and completion dates, 8 (23.5%, 8 out of 34) had less than 18 months of treatment, of which less than 5 had less than 12 months of treatment (Table Ai.3.17). At the last recorded outcome, 12.0% of the 2018 MDR/RR cohort were still on treatment, which more than doubled those in 2017 (4.7%). Reasons for this could include the access and engagement to healthcare services due to the COVID pandemic but requires further investigation, including data from the current calendar year.

Four (8.0%, 4 out of 50) people had died at their last recorded outcome, compared to 7 (10.9%) from the MDR/RR cohort notified in 2017 (Table 3.7, Table Ai.3.16). All 4 people were above 40 years old, 2 of which were aged over 65 years and 3 of which were not born in the UK. TB contributed to the death of 2, was incidental to one and had an unknown relationship to the remaining death. Two people who had died reported drug misuse. Five (10.0%) people were lost to follow-up; all were born outside the UK with 4 being lost to follow-up abroad. From 2007 to 2018 only 2 people (out of 161) from the MDR/RR cohort born in the UK were lost to follow-up.

Of the 5 people notified with XDR-TB in 2018, 3 had completed treatment and 2 were still on treatment at the last recorded outcome.

Figure 3.6. Treatment completion for the MDR/RR cohort^a, England, 2009 to 2018



^a Includes people with initial and acquired MDR/RR-TB and people treated with a second line regimen.

4. TB in children

Main messages

The main messages are that:

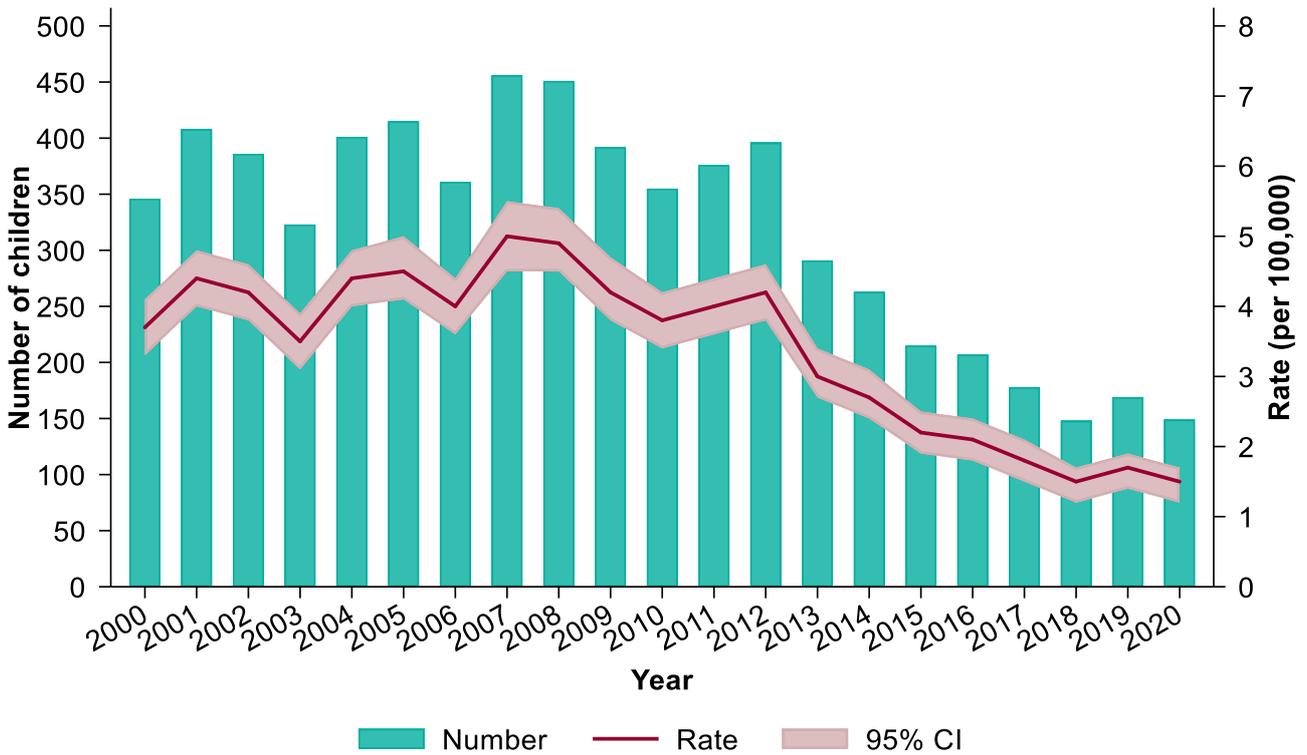
- incidence of TB in children has been decreasing since 2007, both in UK born and non-UK born children
- over half (67.8%, 99 out of 146) of children notified with TB in 2020 were born in the UK
- the rates in UK-born children of Black African and South Asian ethnicities were approximately 20 times higher than for children of white ethnicities, thus reflecting an increase in rates from 2018
- six children (7.8%) had severe disease (CNS, meningeal or miliary TB)
- no children notified with TB in 2019 were recorded to have died of TB at the last recorded outcome.

Number and rate of TB in England

In 2020, 149 children (under 15 years) were notified with TB in England, a rate of 1.5 per 100,000 (95% CI 1.2-1.7). This rate was slightly lower than in 2019 (1.7 per 100,000, 95% CI 1.4-1.9), which reflects the continual decrease following an annual decline from a rate of 4.2 per 100,000 (3.8-4.6) in 2012 (Figure 4.1, Table Ai.4.1).

Since the peak number of notifications in 2007, there has been a 67.3% reduction in the number of children with TB (2007: 456, 2020: 149) and a 70.0% reduction in rate from 5.0 per 100,000 (95% CI 4.5-5.5) to 1.5 per 100,000 (95% CI 1.2-1.7) (Figure 4.1, Table Ai.4.1) in 2020.

Figure 4.1. The overall number and rate of TB in children (<15 years), England, 2000 to 2020



Demographic characteristics

TB in children born in and outside the UK

Over half (67.8%, 99 out of 146^a) of children notified with TB in 2020 were born in the UK. Romania, India and Pakistan were the most frequent other countries of birth, accounting for nearly 5% each (Table 4.1).

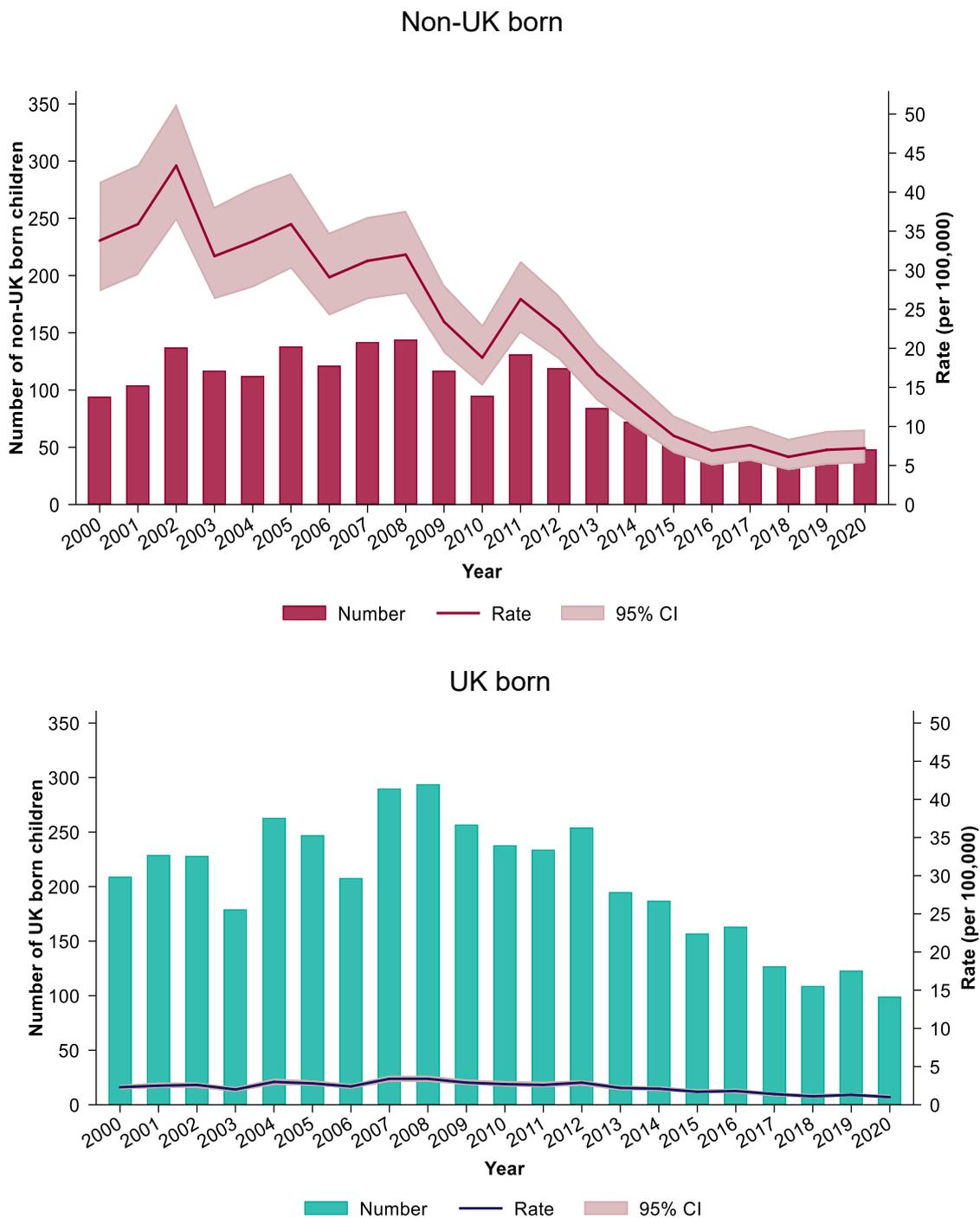
Table 4.1. Most frequent countries of birth for children with TB, England, 2020

Country of birth	Number of cases	Proportion of people (%) ^a
United Kingdom	99	67.8
India	7	4.8
Romania	6	4.1
Pakistan	6	4.1
Somalia	5	3.4
Kenya	4	2.7
Italy	4	2.7
Spain	3	2.1
Nigeria	2	1.4
Other	10	6.8
Total	146	100

^a Where country of birth was known.

In 2020, the rate of TB in children born outside the UK was 7.2 per 100,000 (95% CI 5.3-9.6), 7 times higher than the rate in of children born in the UK at 1 per 100,000 (95% CI 0.8-1.3). The difference in rates between these groups has declined from the 9-fold higher rate seen in children born outside the UK in 2008 (Figure 4.2, Table Ai.4.2).

Figure 4.2. The overall number and rate of TB in children (under 15 years) by place of birth, England, 2000 to 2020

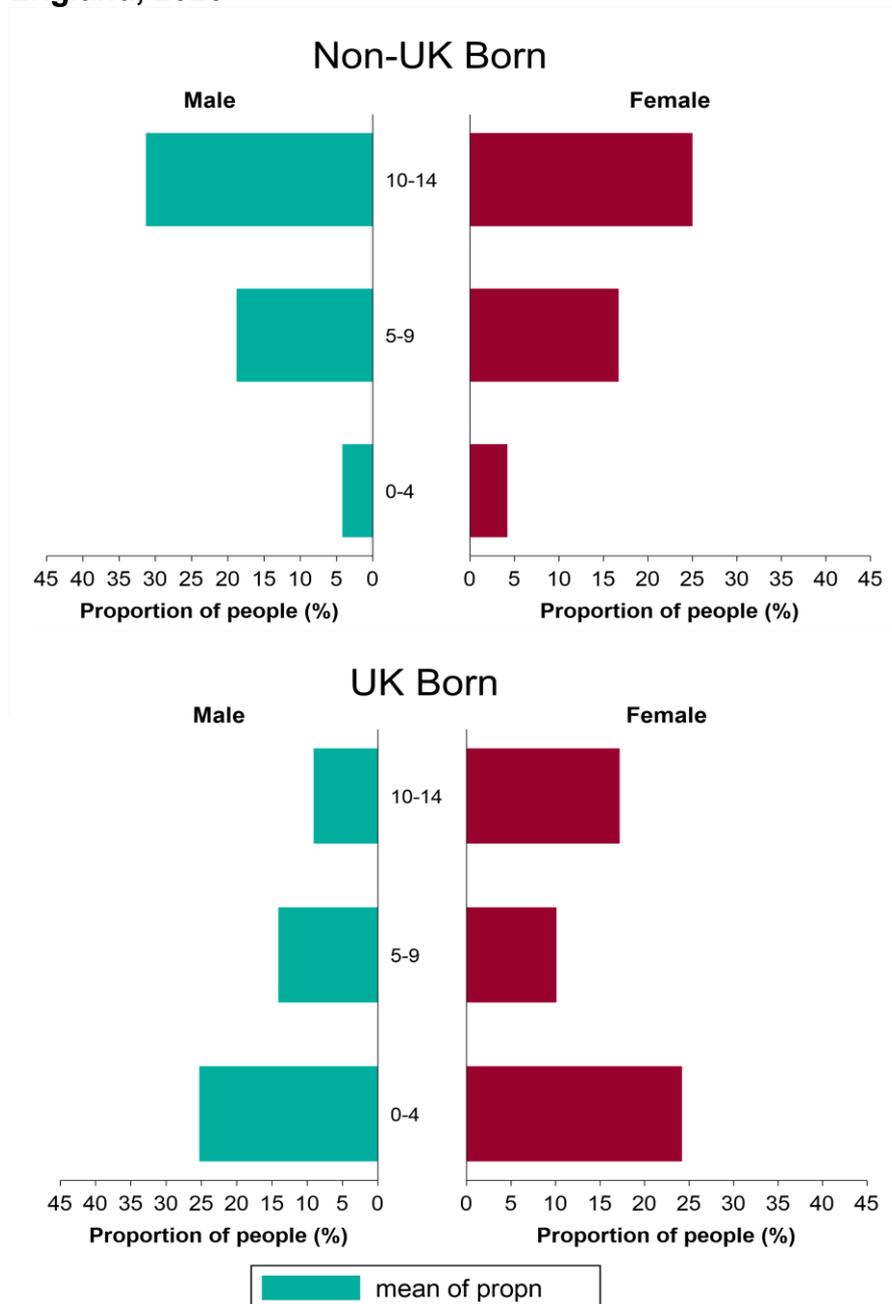


Age and sex

Overall, 49.7% of children notified with TB were male and 50.3% were female. The sex ratios differed by place of birth, with 51.5% of UK born children being male but only 45.8% of non-UK born children being male.

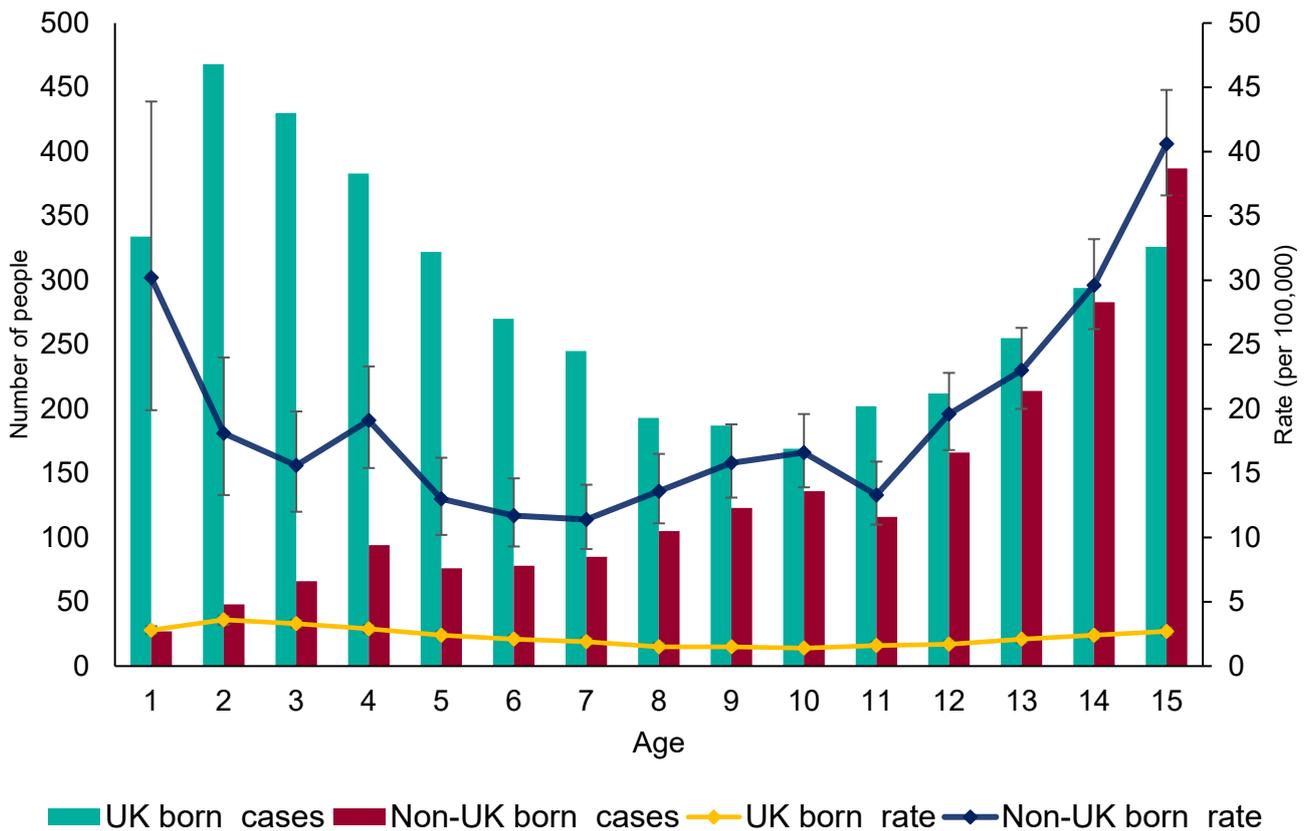
The greatest proportion of UK-born children were male and aged 0 to 4 (25.3%, 25 out of 99), followed by females aged 0 to 4 (24.2%, 24 out of 99). Among children born outside of the UK, there was a greater proportion of males aged between 10 to 14 (31.3%, 15 out of 48) compared to any other non-UK born category (Figure 4.3, Table Ai.4.3).

Figure 4.3. Proportion of children (under 15 years) with TB by age, sex and place of birth, England, 2020



Between 2000 and 2020, the age-specific rates were highest in both very young and in older children, with the lowest rates seen at about age 7 to 9 in UK born children and age 5 to 6 non-UK born children (Figure 4.4). The rate of TB in non-UK born children was 5 times higher than that of UK born children at age 1 (18.1 vs 3.6 per 100,000), 9 times higher at age 7 (13.6 vs 1.5 per 100,000) and 15 times higher at age 14 (40.6 vs 2.7 per 100,000) (Table A1 4.4).

Figure 4.4. Overall number and rate of TB in children (under 15 years) by age and place of birth, England, 2000 to 2020



Ethnicity

Among children born in the UK, the highest number of cases notified in 2020 were of white ethnicities (29.6%, 29 out of 98), whereas the rates were highest in Black African (8.1 per 100,000) and south Asian (2.2-3.9 per 100,000) ethnicities. The rates in UK born children of Black African and South Asian ethnicities were approximately 20 times higher than for children of white ethnicities (Table Ai.4.5).

In the non-UK born group, the highest rate of TB was in children of Pakistani¹ (43.2 per 100,000) and Black-African ethnicities (17.6 per 100,000).

Clinical characteristics

Culture confirmation

Overall in 2020, 29.0% (43 out of 149) of TB in children were culture confirmed. Of those with pulmonary TB, 27.1% (26 out of 96) were culture confirmed compared to 32.7% (17 out of 52) of those with only extra pulmonary TB (Table Ai.4.6).

The highest culture confirmation rates were in the East Midlands (50.0%, 6 out of 12) and North East (50.0%, 3 out of 6), London ((36.8%, 14 out of 38) and the West Midlands (33.3%, 2 out of 6). The lowest proportion of culture confirmed children with TB was recorded in the East of England (10.0%, 2 out of 20) (Table A1 4.7).

Site of disease

In 2020, site of disease was recorded for 99.3% (148 out of 149) of children with TB. Of these, 96 (64.9%) had pulmonary disease, with or without extrapulmonary TB. Pulmonary TB in children aged 0 to 4 comprised 60.4%, 56.1% in those aged 5 to 9 and 42.6% in those aged 10 to 14 (Table 4.2).

The most common extra-pulmonary site of TB in all age groups was lymph nodes, both intra-thoracic (34, 23.0%) and extra-thoracic (23, 15.5%).

A total of 6 children (4.1%) had severe disease (CNS, meningeal or miliary TB). CNS-meningeal TB was most frequent in those aged 0 to 4 (3, 5.7%).

Table 4.2. Number of children with TB by age group, site and severity of disease, England, 2020

Clinical characteristic	Age group (Years)						Total	
	0 to 4		5 to 9		10 to 14			
	n	%	n	%	n	%	n	%
Site of disease								
Pulmonary, with or without disease at another site	44	83	28	68.3	24	44.4	96	64.9
Extra-pulmonary only	9	17	13	31.7	30	55.6	52	35.1
Total site of disease known	53	100	41	100	54	100	148	100
Individual sites of disease								
Pulmonary only	32	60.4	23	56.1	23	42.6	78	52.7
Intra-thoracic lymph nodes	10	18.9	12	29.3	12	22.2	34	23.0
Intra-thoracic lymph nodes only	4	7.5	8	19.5	8	14.8	20	13.5
Extra-thoracic lymph nodes	2	3.8	5	12.2	16	29.6	23	15.5
Extra-pulmonary other	1	1.9	1	2.4	4	7.4	6	4.1
Extra-pulmonary unknown	7	13.2	1	2.4	9	16.7	17	11.5
Pleural	0	0.0	1	2.4	4	7.4	5	3.4
Gastrointestinal	0	0.0	1	2.4	2	3.7	3	2.0
Bone-Other	1	1.9	1	2.4	2	3.7	4	2.7
CNS-other	1	1.9	0	0.0	0	0.0	1	0.7
Bone-Spine	0	0.0	1	2.4	0	0.0	1	0.7
Genitourinary	0	0.0	0	0.0	0	0.0	0	0.0
Laryngeal	0	0.0	0	0.0	0	0.0	0	0.0
All severe disease*	4	7.5	1	2.4	0	0.0	6	3.4
CNS-meningitis	3	5.7	1	2.4	0	0.0	4	2.7
Miliary	1	1.9	0	0.0	0	0.0	1	0.7
Cryptic disseminated	1	1.9	0	0.0	0	0.0	1	0.7

CNS: Central Nervous System.

^a With, or without disease at another site.

^b Includes cases with either CNS meningitis, miliary or cryptic disseminated disease.

Time to treatment start and outcomes

Overall, more than two-thirds (58, 73.4%) of children experienced a delay of 2 months or less. Seven (8.9%) children experienced a delay of more than 4 months from symptom onset to treatment start (Table 4.3).

Table 4.3. Number and proportion of children (<15 years) with pulmonary TB by age group and time from symptom onset to treatment start, England, 2020

Time from symptom onset to treatment start	Age group (years)							
	0 to 4		5 to 9		10 to 14		Total*	
	n	%	n	%	n	%	n	%
0 to 2 months	32	91.4	14	66.7	12	52.2	58	73.4
2 to 4 months	3	8.6	2	9.5	9	39.1	14	17.7
Over 4 months	0	0	5	23.8	2	8.7	7	8.9
Total	35	100	21	100	23	100	79	100

^a Number of people with pulmonary TB for whom time from symptom onset to treatment start was known. In 2019, 138 (90.8%) children notified with non-MDR/RR TB completed treatment within 12 months (Table 4.4, Table Ai.4.8). A further 3 children (92.8%) completed treatment by last recorded outcome. Although lower than the 94.8% recorded in the previous year, this is likely to rise as more outcomes are recorded.

No children who started on treatment in 2019 had died by last recorded outcome and 3 were still on treatment.

Table 4.4. TB outcome at 12 months and the last recorded TB outcome for children (<15 years) with non-MDR/RR TB, with an expected treatment duration <12 months^a, England, 2019

	TB outcome at 12 months		Last recorded TB outcome	
	n	%	n	%
Treatment completed	138	90.8	141	92.8
Died	0	0.0	0	0.0
Lost to follow-up	2	1.3	2	1.3
Still on treatment	4	2.6	1	0.7
Stopped	0	0.0	0	0.0
Not evaluated ^b	8	5.3	8	5.3
Total	152	100	152	100

^a Excludes people with MDR/RR-TB and those with CNS, spinal, miliary or cryptic disseminated TB.

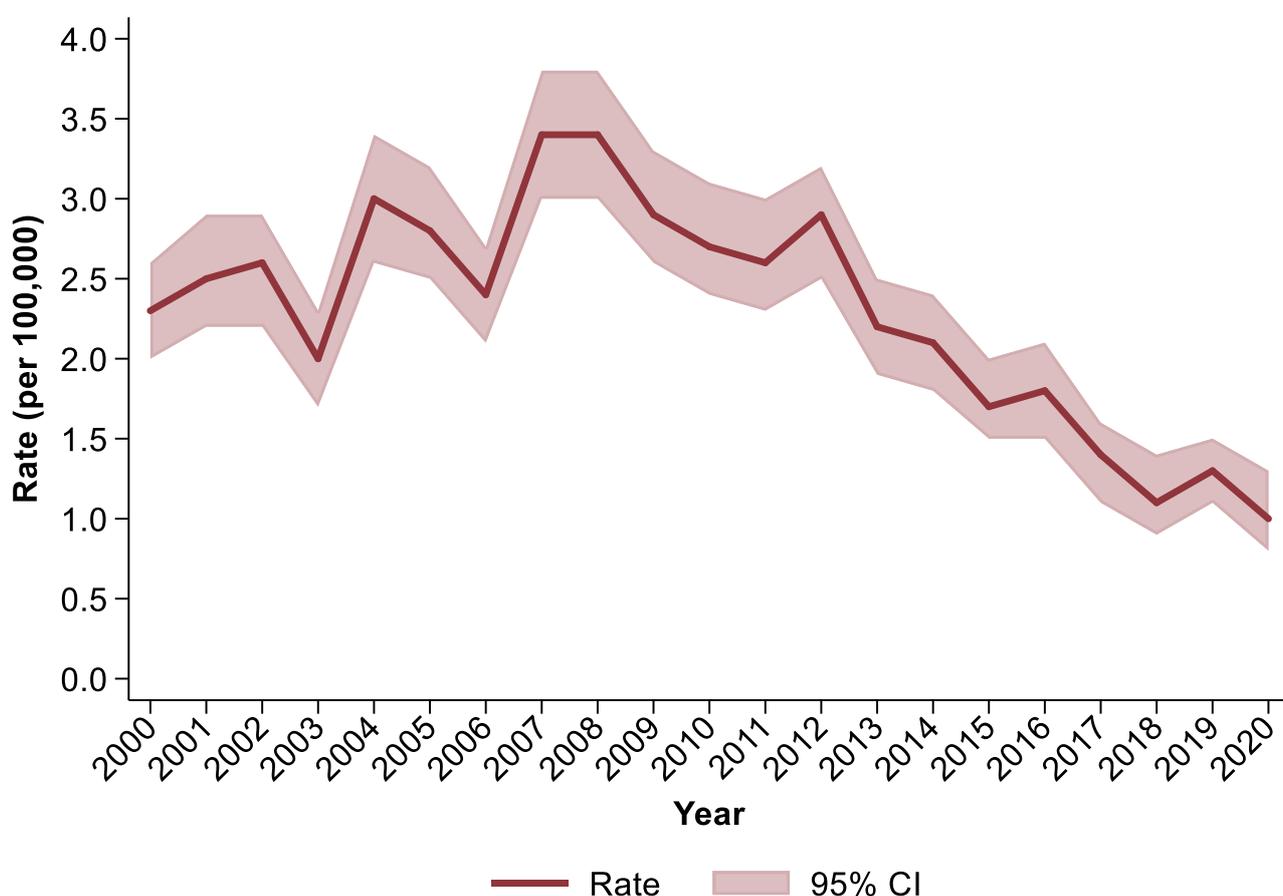
^b Not evaluated includes unknown and transferred out.

Rates of TB as a proxy for recent transmission

TB in children born in the UK indicates likely recent transmission as children have a limited time during which they could have become infected, and in most cases progress to disease within 12 months. Therefore, the rate of TB in children (under 15 years) born in the UK is a proxy for recent transmission within England.

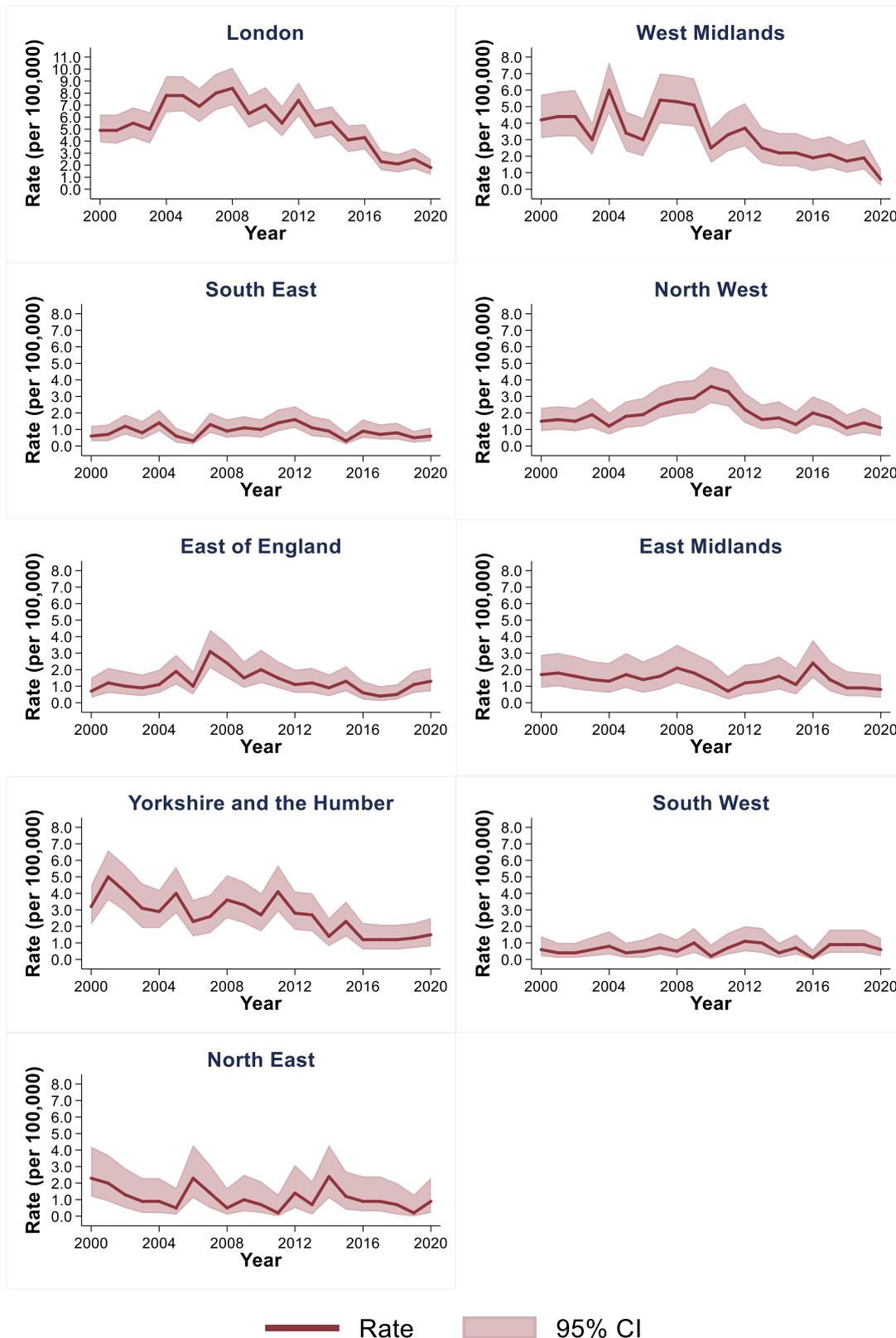
There has been a 70.6% reduction in this rate between its peak of 3.4 per 100,000 (95% CI 3.0-3.8) in 2007 to 2008 and the rate in 2020 (Figure 4.6, Table Ai.4.1).

Figure 4.6. The overall rate of TB in children (<15 years) born in the UK, England, 2000 to 2020



The rate of TB in children remained the same or decreased in 5 of the 9 PHEC regions between 2019 and 2020 (Figure 5.7). Small increases were observed in South East, Yorkshire and the Humber, North East and East of England regions (Table Ai.5.10). London continues to have the highest rate of TB in UK-born children, although a substantial decline has been observed from 9.2 cases per 100,000 (95% CI 7.6-11) in 2008, to 1.7 per 100,000 (95% CI 1.4-2.9) in 2020.

Figure 4.7. Rate of TB in children (under 15 years) born in the UK, by PHEC, 2000 to 2020 continued



Please note: the axes on the London figure are different to that of other PHECs due to the higher number of TB notifications and rate in London. Ordered by decreasing rate in 2020.

BCG vaccination

BCG vaccine coverage data

The BCG immunisation programme is a risk-based programme recommended for individuals at higher risk of exposure to TB. In addition to this risk-based approach, all infants (0-12 months) living in an area with an incidence above 40 per 100,000 population should be offered the BCG vaccine. Detailed information on the BCG programme can be found in the 'Green Book' (7): From April 2015, as part of the COVER programme, neonatal BCG was included in the data extraction template from local Child Health Information Systems (CHISs), alongside extraction of coverage data for other vaccines offered under the age of 5 years. This provides an opportunity for BCG vaccine coverage to be estimated for Local Authorities (LAs) offering a universal neonatal programme (11). It is not possible to calculate LA level coverage for the selective programme offered in the rest of England as the number of eligible children is not defined in the CHISs. COVER collections for BCG data have only recently been established and data are of variable quality. Estimates of low coverage may reflect poor data quality and should be interpreted with caution.

In 2019 to 2020, a universal BCG programme was offered by 5 LAs, all of which were in London (Newham, Brent, Hounslow, Ealing and Redbridge). A coverage figure is only reported for these LAs running a universal programme. Data on the number of children up to 12 months who received BCG in the remaining LAs are available in the COVER report available (8).

Annual universal BCG programme vaccine coverage data

At the time when threshold levels for universal BCG vaccination were set (using the average annual rate of TB per 100,000 between 2014 and 2016), there were 6 LAs in England with a TB incidence of ≥ 40 cases per 100,000 population, 5 of which were in London. In 2019 to 2020, 5 London boroughs had a universal BCG programme. Based on data submitted by CHISs to COVER for 2018 to 2019, estimated coverage for these 5 London LAs ranged from 20.5% to 77.9%, compared with 36.8% to 68.9% in 2017 to 2018 (Table 1). Most notably, there was a substantial increase in BCG vaccination coverage in Newham between 2019 to 2020 and 2020 to 2021 (69.2% versus 79.2%).

Table 4.5. Annual BCG vaccine coverage at 12 months in local authorities with TB incidence ≥ 40 per 100,000 in England: April 2020 to March 2021 (April 2019 to March 2020)

Upper Tier Local Authority	Three-year average (2015 to 2017) annual TB rate per 100,000^a	Number of eligible children (1st birthday in 2019 to 2020)^b	Universal BCG coverage% in 2020 to 2021 (2019 to 2020)
Newham	45.0	5,640	79.2 (69.2)
Brent	37.6	4,798	30.0 (33.6)
Hounslow	31.2	3,818	20.6 (20.5)
Ealing	37.5	4,925	40.6 (40.1)
Redbridge	31.2	4,428	74.6 (77.9)

^a The BCG vaccination programme was based on the 2012-14 LA TB rates, as published in the Tuberculosis in England Annual report 2015.

^b Cohort born between 1 April 2019 and 31 March 2020.

5. TB in under-served populations

Main messages

In 2020, 12.7% of people notified with TB had a social risk factor (SRF), which was slightly lower than 2019 (13.9%).

A social risk factor was present in 22.6% of people born in the UK, compared with 9.1% in those born outside the UK.

A higher proportion of people with at least one SRF had pulmonary disease (77.0%) compared to those without a SRF (49.5%).

People with drug sensitive TB and a SRF had poorer outcomes and treatment completion was lower compared to those without.

The rate of TB in the most deprived 10% of the population was 13.3 per 100,000, more than 5 times higher than in the least deprived decile (2.5 per 100,000).

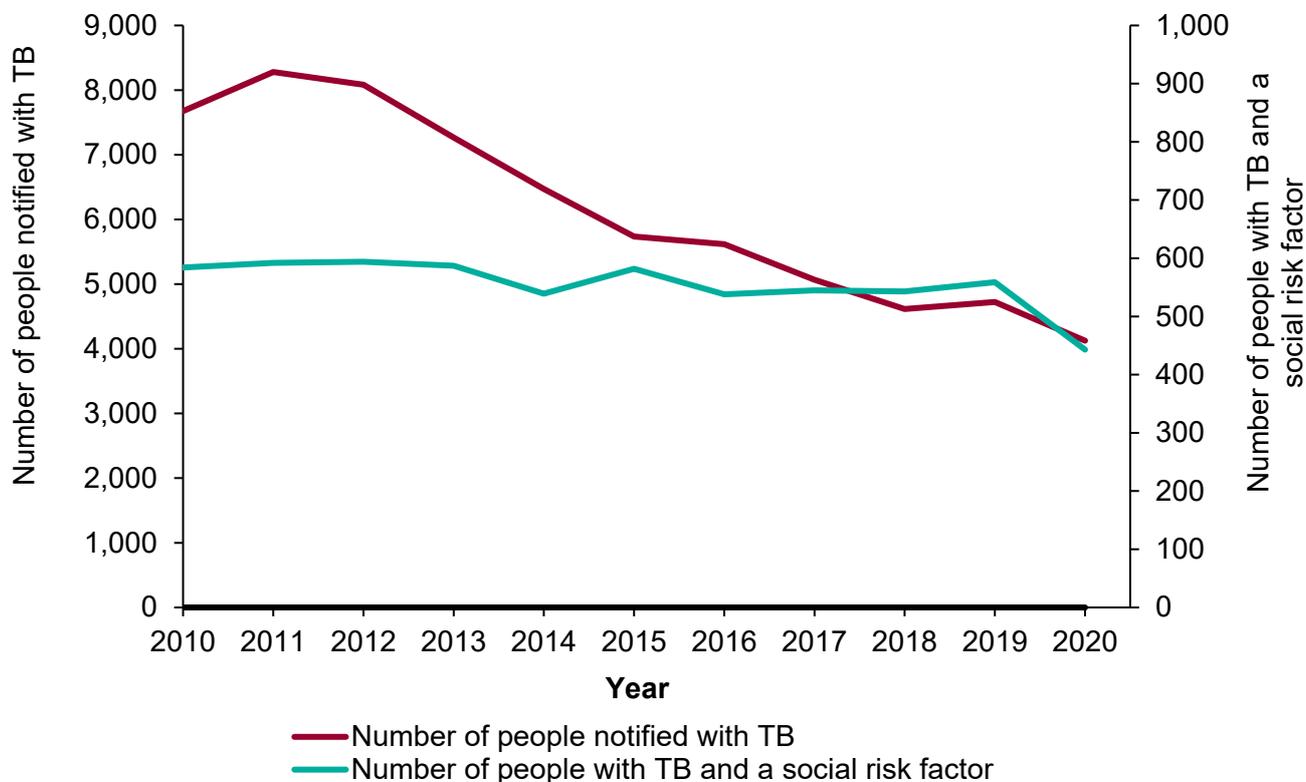
Social risk factors

Data is collected on the presence or absence of 4 social risk factors (SRF) known to increase the risk of TB: current alcohol misuse, current or history of drug misuse, homelessness and/or imprisonment²¹. This chapter presents data for people notified with TB with SRFs and in addition, aged 15 years and older, with TB and a SRFs and people with TB in an immigration removal centre, identified as asylum seekers, or unemployed. TB rates by area level deprivation are also presented (see [Appendix III: Methods](#)). Data on area level deprivation is presented for all people with TB regardless of age and risk factors status.

People reported with TB decreased between 2011 and 2019 but those with a SRF has remained consistent (Figure 5.1). Overall in 2020, 12.7% (443 out of 3,492) of people with TB had at least one SRF, slightly lower than the 13.9% (570 out of 4,098) in 2019, which represents the third highest proportion since data collection began in 2010 (Figure 6.1, Table Ai.5.1). In 2020, 4.5% (166 out of 3,829) of people had current alcohol misuse, a slight increase from 4.2% (180 out of 4,269) in 2019. For the other SRFs, 4.4% (163 out of 3,683) had current or a history of drug misuse, 4.3% (156 out of 3,668) of homelessness, and 4.0% (144 out of 3,557) of imprisonment (Figure 5.2, Table Ai.5.1), which were lower than 2019.

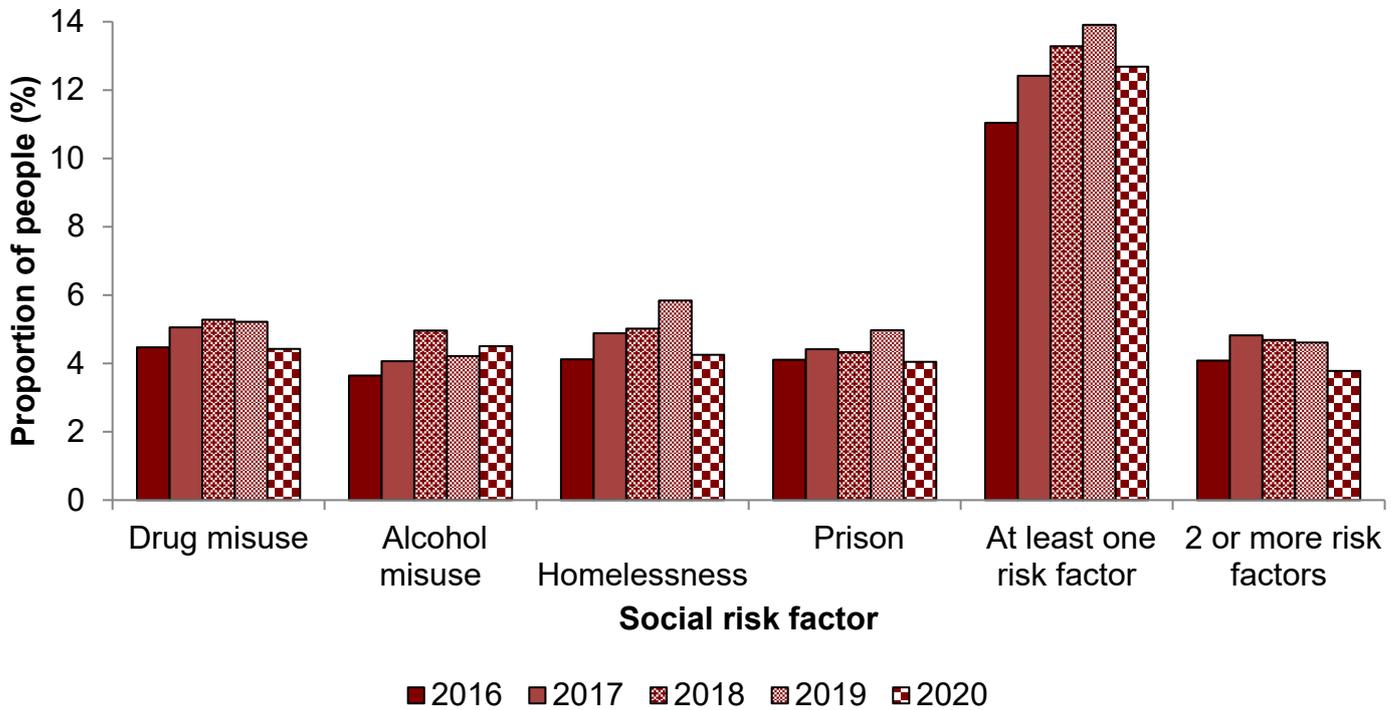
²¹ For people notified with TB in London a history of imprisonment is only recorded if imprisonment was in the UK, which will lead to an underestimate of the total number of people with TB with any history of imprisonment in that area.

Figure 5.1. Number of people notified with TB and the number of people with TB (≥15 years) and a social risk factor, England, 2010 to 2020



In 2020, 30.0%, (132 out of 443) of people with a single SRF had 2 or more SRFs. The proportion of people with 2 or more SRFs (3.8%, 132 out of 3,492) was lower than that of 2019 (4.6%, 189 out of 4,098).

Figure 5.2. Proportion of people with TB (≥15 years) with at least one social risk factor (SRF), England, 2016 to 2020



In 2020, where information about the timing of SRFs (previous or current) was available, 53.4% (47 out of 88 of people reported current drug use, 51.0% (51 out of 99) were reported to be currently homeless and 17.4% (21 out of 121) were reported as being in prison while receiving care for TB.

Demographic characteristics

Age and sex

The proportion of men with TB who had a SRF was almost 4 times higher (18.3%, 372 out of 2,037) than women (4.9%, 71 out of 1,455) (Table 5.1). Among men born in the UK, 31.1% (164 out of 527) had an SRF.

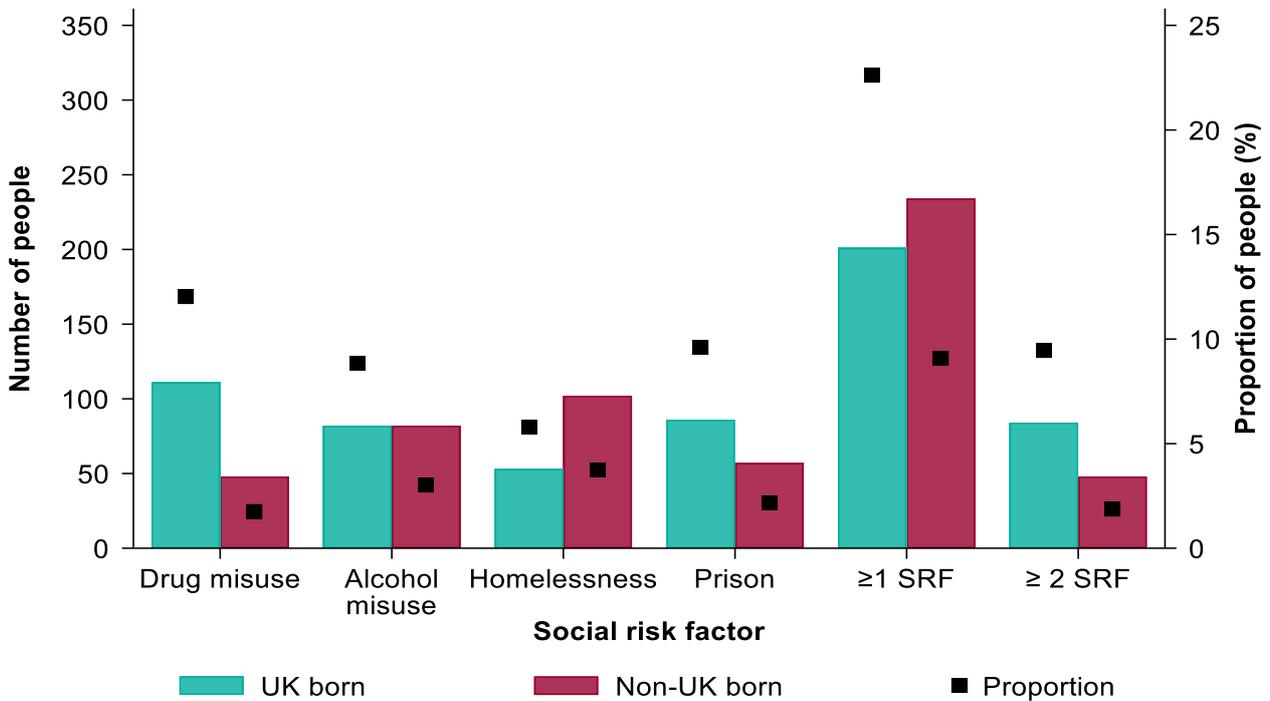
Almost 60% percent of people with a SRF were aged 15 to 44 years (58.9%, 261 out of 443). However, the proportion of people with a SRF was highest among those aged 45 to 64 (15.4%, 151 out of 984).

Place of birth and ethnicity

In 2020, the proportion of UK-born people with a SRF was almost double that of those born outside the UK (22.6%, 201 out of 889 versus 9.1%, 234 out of 2,574, respectively) (Figure 5.3, Table 5.1). Between 2019 and 2020, the proportion of people with a SRF among those born in

the UK was stable (from 22.9% to 22.6%, respectively) while that for those born outside the UK decreased slightly (10.5% to 9.1%, respectively) (Table Ai.5.1).

Figure 5.3. Number and proportion of people with TB (≥15 years) with social risk factors by place of birth, England, 2020



For individual risk factors reported among people born in the UK, there was a slight decrease in the proportion with alcohol misuse, from 9.6% (99 out of 1,030) in 2019 to 8.8% (82 out of 927) in 2020. Meanwhile, the proportion with homelessness decreased substantially from 7.5% (2019: 78 out of 1,036) to 5.8% (2020: 53 out of 914). However, longer term trends are unclear due to year-on-year variation and may be affected by the interventions in place during the COVID 19 pandemic (Table Ai.5.1). Among people with TB born outside the UK, the largest change was the proportion of people with homelessness, decreasing from 5.3% (169 out of 3,203) in 2019 to 3.8% (102 out of 2,722) in 2020 (Table Ai.5.1).

Table 5.1. Number and proportion of people with TB (≥15 years) with a social risk factor (SRF) by demographic characteristic, England, 2020

Demographic characteristic	Drug misuse		Alcohol misuse		Homeless		Prison		≥ 1 SRF		≥ 2 SRF	
	n	%	n	%	n	%	n	%	n	%	n	%
Sex												
Female	30	2.0	31	2.0	28	1.8	13	0.9	71	4.9	22	1.5
Male	133	6.2	135	6.3	128	6.0	131	6.4	372	18.3	110	5.4
Age												
15 to 44	107	5.1	80	3.8	101	4.8	79	3.9	261	13.0	72	3.6
45 to 64	50	4.8	73	7.1	49	4.8	54	5.4	151	15.3	55	5.6
Over 65	6	1.1	13	2.4	6	1.1	11	2.1	31	6.2	5	1.0
Place of birth												
UK Born	111	12.0	82	8.8	53	5.8	86	9.6	201	22.6	84	9.4
Non-UK Born	48	1.8	82	3.0	102	3.7	57	2.2	234	9.1	48	1.9
Other												
Asylum seekers	3	7.3	0	0.0	16	40.0	2	5.6	18	46.2	3	7.7
Unemployed	95	16.8	86	15.3	72	13.0	57	10.7	182	33.3	87	15.9

Among people born in the UK notified between 2016 and 2020, the Black-Caribbean ethnic group had the highest proportion with a SRF (36.9%, 108 out of 293) (Table Ai.5.2), in particular drug misuse (23.2%, 68 out of 293) and imprisonment (17.3%, 51 out of 294).

In people born outside the UK with an SRF, the largest number were born in Eritrea (151), India (138) and Romania (132). Of the 10 countries of birth with the highest numbers of people with an SRF, the highest proportions with a SRF were Poland (36.4%, 112 out of 308), Sudan (33.9%, 81 out of 239) and Lithuania (31.4%, 60 out of 191) (Table Ai.5.2).

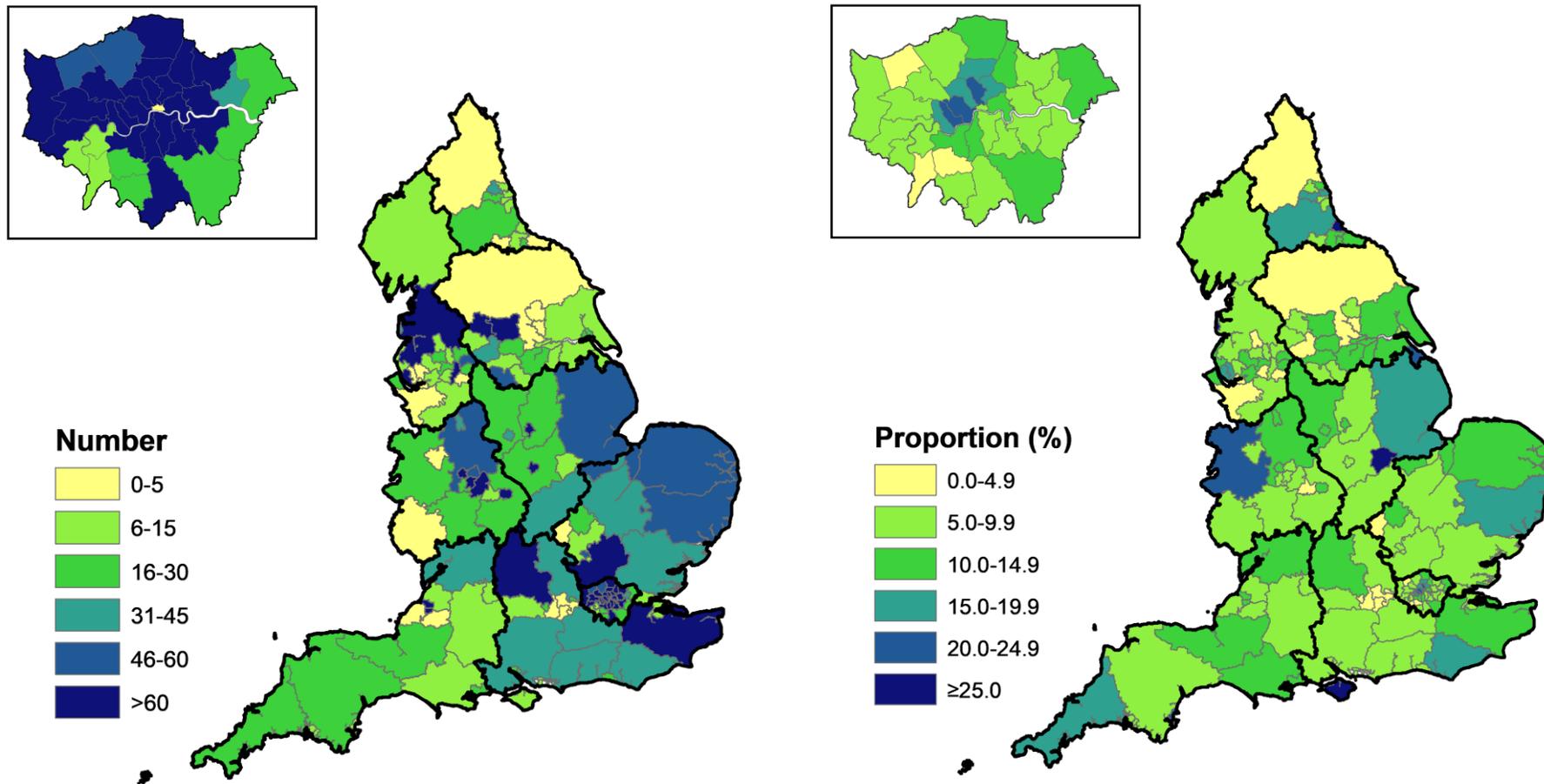
Geographical distribution

Between 2016 and 2020, there was considerable geographical variation in the number and proportion of people with TB who had a SRF by local authority (Figure 5.4), and by PHEC (Figure 5.5, Table Ai.5.3). Between 2019 and 2020, there were large decreases in the

proportion of people with a SRF in Yorkshire and the Humber (2019: 17.7%, 2020: 10.9%) and the West Midlands (2019: 16.0%, 2020: 8.9%) PHECs.

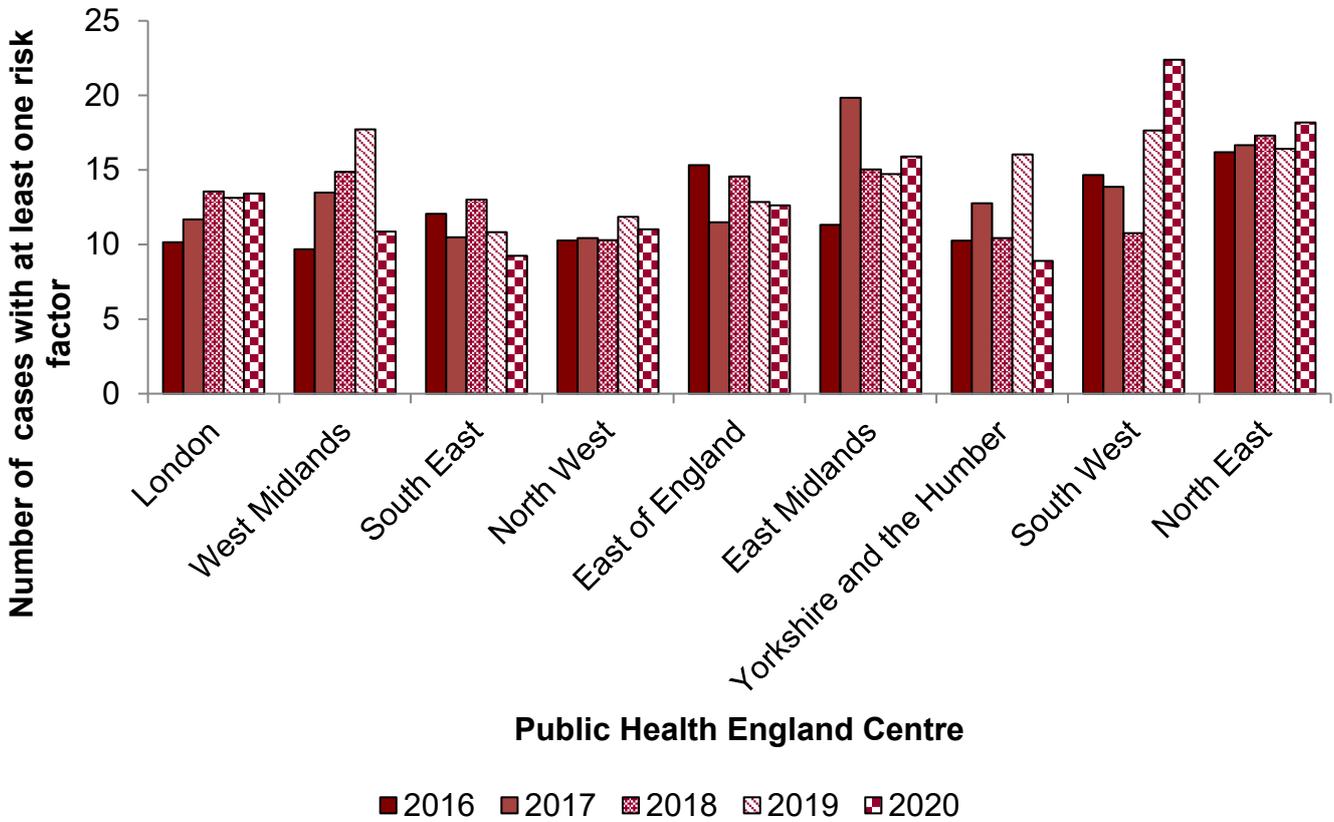
There were substantial increases in the South West (2019: 17.6%, 2020, 22.4%). There were smaller increases in London, East Midlands and North East PHECs. In the remaining PHECs, the proportion of people with a SRF decreased slightly (Table Ai.5.4).

Figure 5.4. Number and proportion of people with TB (≥ 15 years) with at least one SRF^a by local authority, England, 2016-2020 (boxes shows enlarged map of London area)



^a SRF refers to those with current alcohol misuse, current or history of homelessness, imprisonment or drug misuse. PHEC boundaries are outlined in black. Contains Ordnance Survey data © Crown copyright and database right 2021. Contains National Statistics data © Crown copyright and database right 2021.

Figure 5.5. Proportion of people with TB (≥15 years) with at least one social risk factor by PHE Centre, England, 2016 to 2020



Clinical characteristics

As in previous years, in 2020 a higher proportion of people with a SRF had a previous history of TB compared to people with no known SRFs (9.8%, 42 out of 428 versus 5.8%, 176 out of 3,025). Over three-quarters (77.0%, 341 out of 443) of people with a SRF had pulmonary TB (Table Ai.5.5).

The proportion of people with a SRF who received DOT decreased between 2016 (54.0%, 272 out of 504) and 2020 (47.3%, 191 out of 404) (Table Ai.5.5). Of the 21 people who were in prison at the time of notification, 71.4% (15 out of 21) were known to have received DOT.

The proportion of people with pulmonary TB and a SRF who experienced a delay from symptom onset to treatment start of more than 4 months was similar to those without a SRF (34.1%, 102 out of 299 versus 34.4%, 468 out of 1,360).

Drug resistance

In 2020, the proportion of people with resistance to isoniazid without MDR-TB was comparable for those with a SRF compared to those without (6.8%, 22 out of 322 versus 6.5%, 117 out of 1,790, respectively). The proportion of people with a SRF that had initial MDR/RR-TB (2.1%, 7 out of 326) was similar to those without a SRF (2.3%, 41 out of 1,793 (Table Ai.5.5).

TB outcomes

Among people with non-MDR/RR TB notified in 2019, treatment completion at the last recorded outcome was lower for those with a SRF (77.8%, 437 out of 562) compared to people without a SRF (87.7%, 3,062 out of 3,491). The proportion of people with a SRF who were lost to follow-up at their last recorded outcome was 2.3 times greater than people without a SRF (Table 5.2). In addition, a higher proportion of people with a SRF had died at their last recorded outcome (7.1%, 40 out of 562) compared to people without a SRF (3.5%, 123 out of 3,491).

Table 5.2. Last recorded TB outcome for the entire drug sensitive cohort by social risk factor^a, England, 2019

TB outcome	With at least one social risk factor		With no social risk factor		Total ^b
	n	%	n	%	N
Treatment completed	437	77.8	3,062	87.7	3,499
Died	40	7.1	123	3.5	163
Lost to follow up	35	6.2	94	2.7	129
Still on treatment	19	3.4	57	1.6	76
Treatment stopped	8	1.4	43	1.2	51
Not evaluated ^c	23	4.1	112	3.2	135
Total	562	100.0	3,491	100.0	4,053

^a Excludes people in the drug resistant cohort.

^b Total number of people with information reported for all 4 social risk factors.

^c Not evaluated includes unknown and transferred out.

For people with MDR/RR-TB notified in 2018, treatment completion for those with a SRF was 60.0% (3 out of 5), compared with 70.3% (26 out of 37) for those without.

Unemployment

In 2020, 14.9% (591 out of 3,976) of people with TB were unemployed at notification. Of those, one-third (33.3%, 182 out of 547) were known to have an SRF; which was the lowest since 2015.

People with TB who were asylum seekers or resident in an immigration removal centre

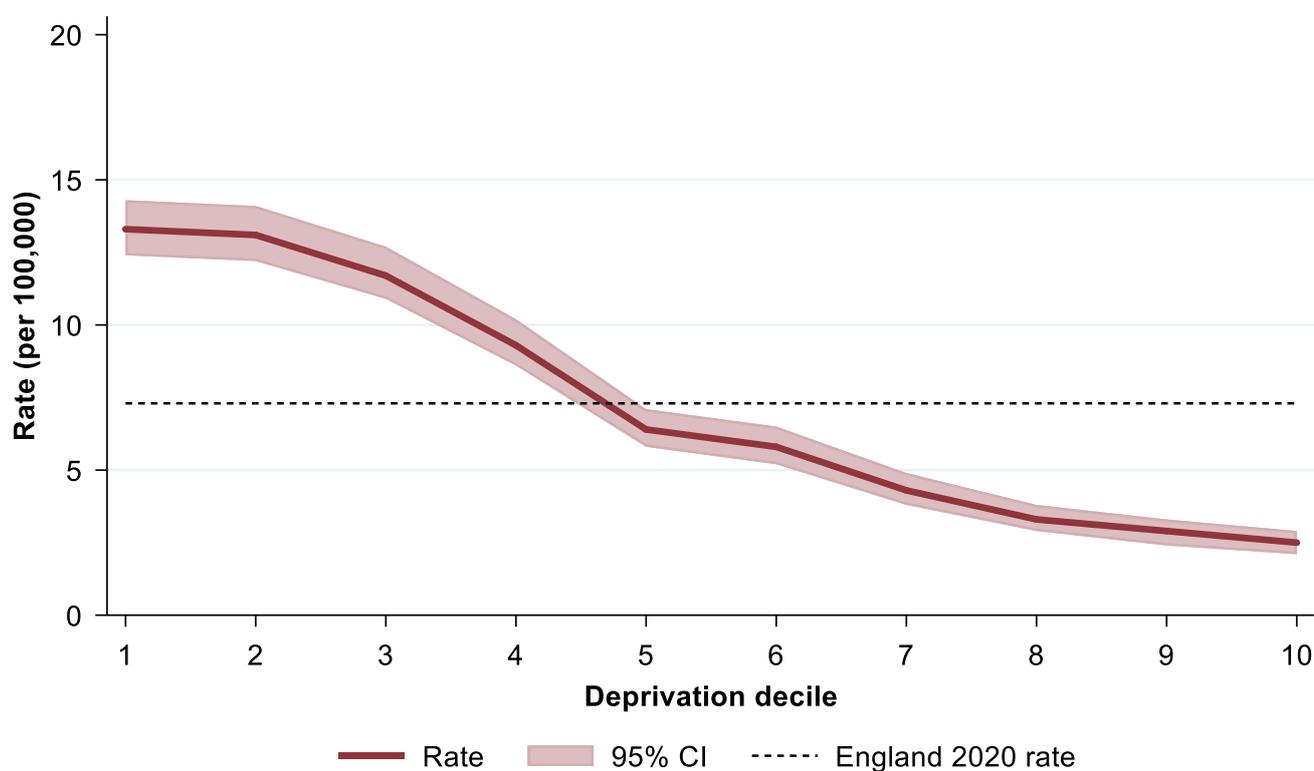
In 2020, 46 people notified with TB were recorded as being asylum seekers and 2 people were recorded as being in an immigration removal centre. Where information was known, over half (46.2%, 18 out of 39) of asylum seekers had an SRF, the majority (88.9%, 16 out of 18) of whom were currently homeless or had a history of homelessness (Table 5.1). A total of 103

people with TB were recorded as being in an immigration removal centre between 2010 and 2019 (range 1 to 19 per year).

Deprivation

In 2020, the rate of TB was 13.3 per 100,000 in the 10% of the population living in the most deprived areas compared with only 2.5 per 100,000 in the 10% of the population living in the least deprived areas²², with a clear trend of an increasing rate of TB with increasing deprivation (Figure 5.6, Table Ai.5.6).

Figure 5.6. Rate of TB by deprivation decile, England, 2020



²² The [Index of Multiple Deprivation \(IMD\) 2019](#), part of the English Indices of Deprivation, is an overall measure of multiple deprivation experienced by people living in an area and is measured at Lower Super Output (LSOA) level.

6. TB prevention and control

Important messages are that:

- just over 2.6 million pre-entry TB screening episodes were recorded to have taken place between October 2005 and December 2020
- 340,623 pre-entry TB screening episodes took place in 2020, detecting 385 people with TB (a detection rate of 113.0 per 100,000 (95%CI 102.0-124.9))
- as more people with TB were detected overseas, the number of prevalent people with pulmonary TB in the UK (within 1 year of entry to the UK) from countries within the pre-entry scheme decreased from 171 in 2014 to 57 (so far) in 2020
- there was a 48% decrease in the number of new migrants tested for LTBI in 2020 to 2021 (n=8,091) compared to 2019 to 2020 (n=15,495) and a 32% decrease compared to 2018 to 2019 (n=11,880)
- the new migrant LTBI programme was paused between April and October 2020 on advice from NHS England and Improvement to providers, as a result of the COVID pandemic
- the positivity rate for LTBI was 14.9% in 2018 and 13.5% in 2019 and has been noted as 13.7% for 2020

Pre-entry screening for active tuberculosis and post-entry screening for latent tuberculosis is associated with reductions in incidence of active TB disease among new migrants. PHE/UKHSA collaborates in the operation and monitoring of 2 different screening programmes for new migrants to the UK.

The pre-entry screening programme screens new migrants from countries with a TB incidence of over 40 per 100,000 for active pulmonary TB before they can apply for long term (more than 6 months) UK visas ([7](#)).

The Latent TB Infection screening programme (LTBI) offers screening to new migrants that have arrived in England provided they meet eligibility criteria listed below ([8](#)).

The following chapter presents data from each programme.

UK pre-entry TB screening programme

Introduction to the programme

The tuberculosis pre-entry screening programme has operated in 101 countries since replacing on-entry screening at UK airports in March 2014. The programme is commissioned by the UK Home Office. UKHSA provides advice, training, clinic audits, and data to support the quality assurance and evaluation of the programme.

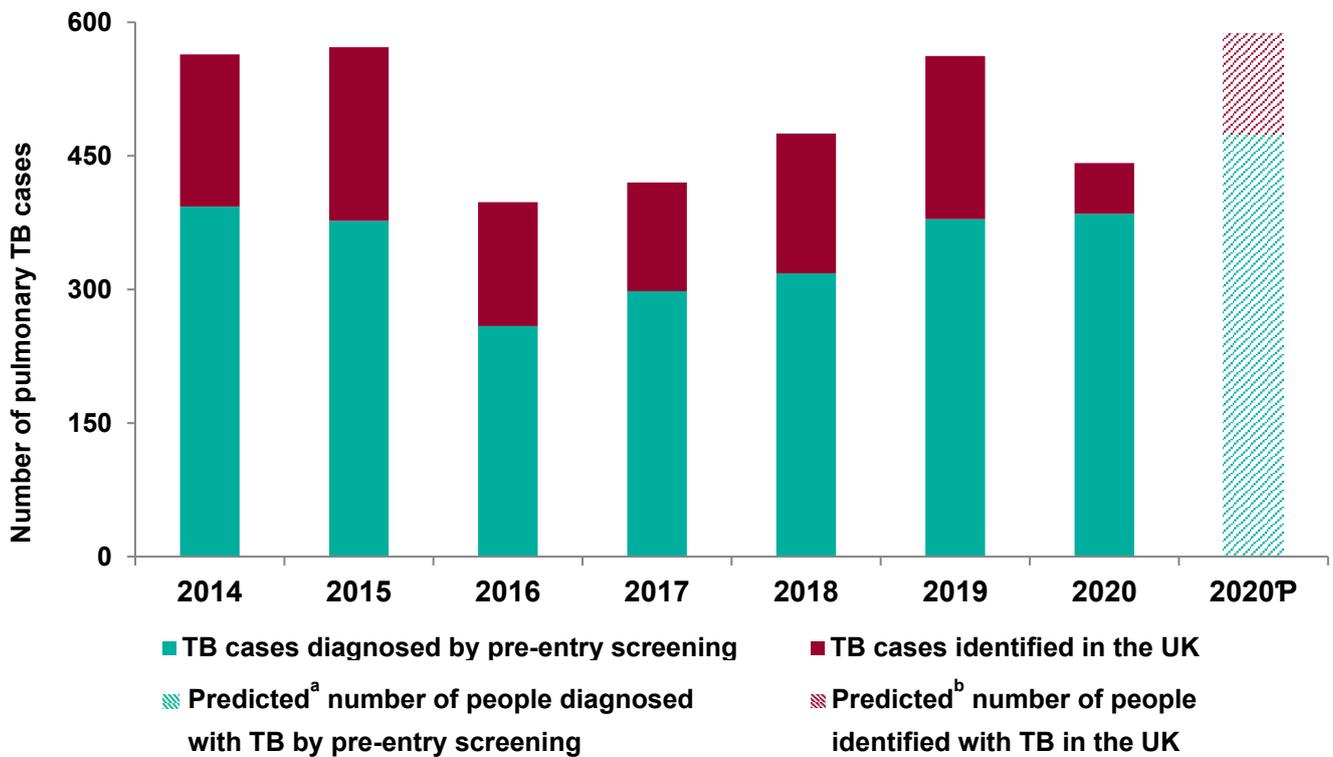
Chest X-ray based screening for active pulmonary TB is a requirement for all migrants from countries with a TB incidence greater than 40 per 100,000 who apply for a UK visa for more than 6 months. Screening is carried out by appointed panel clinics, usually in the country of origin (8).

Comparison of screening yields between in-country surveillance and pre-entry screening data

The number of people with TB detected through the pre-entry TB screening programme decreased between 2014 (393) and 2016 (259) although it has now increased to 385 in 2020. During the same period, the total number of people notified with pulmonary TB in the UK reported through routine surveillance, within a year of entry from the 101 countries in the screening programme, ranged from 195 (2015) to 57 (2020) (Figure 7.1).

Overall, the number of cases of active TB detected post arrival to the UK shows a decreasing trend, likely due a combination of to pre-entry screening and changes in migration trends (9). A summary of UK pre-entry TB screening work is provided below. Further details can be found in the UK pre-entry TB screening report 2020 (10).

Figure 6.1. Number of people with TB diagnosed by pre-entry screening in the 101 programme countries and those identified within one year of UK entry, 2014 to 2020^a



^a As of 17 July 2021, 887 sputum culture results were pending and the number of cases may increase when final results are available.

^b Predicted number of people of people diagnosed with TB assume that of the pending cultures, 10% will be positive; and for the number of people identified with TB in the UK, 50% more people will be notified for 2020 during 2021 as the proxy UK entry date is set at 2 July each year.

Drug susceptibility testing of positive TB cultures

TB culture and drug susceptibility testing (DST) is a mandatory requirement under the UK Tuberculosis Technical Instructions ([11](#)).

Culture results were available on 126 out of 385 (32.7%) of the TB cases at the time of reporting. DST results were available on 107 out of 126 (84.9%) of the patients who had positive sputum cultures. This compares to 134 out of 152 (88.2%) in 2019. Most of these TB isolates were sensitive to all first-line drugs (91.6%, 98 out of 107) with, 8.4% (9 out of 107) of cases having resistance to one or more first-line agents (8.9% in 2019).

Four had isoniazid monoresistance, one was resistant to a first-line drug other than isoniazid or rifampicin (that is, pyrazinamide) and 3 were resistant to 2 or more first line drugs but were not multi-drug resistant TB (MDR-TB). One person had extensively-drug resistant (XDR-TB) TB. Between 2014 and 2020, 75% (18 out of 24) of the MDR TB cases were from China, Philippines, India, Pakistan and Thailand.

Latent TB Infection (LTBI) testing and treatment programme for migrants

In 2015 the LTBI testing and treatment programme for 16 to 35-year olds who recently arrived in England from high incidence countries (TB incidence greater than or equal to 150 per 100,000 population) was commenced in 59 Clinical Commissioning Groups (CCGs) with a TB rates of ≥ 20 per 100,000 population and/or $\geq 0.5\%$ England's total TB notification numbers.

There are now 57 CCGs (due to CCG mergers), from which 56 and 41 submit LTBI testing and treatment data to the programme, respectively.

The section below presents data from 2016 to 2020.

Information on the LTBI dataset, testing and treatment outcomes are available in [Appendix III: Methods](#). All LTBI data provided in this report is provisional data.

A further analysis of the programme's outcomes for 2019 have been published ([12](#)).

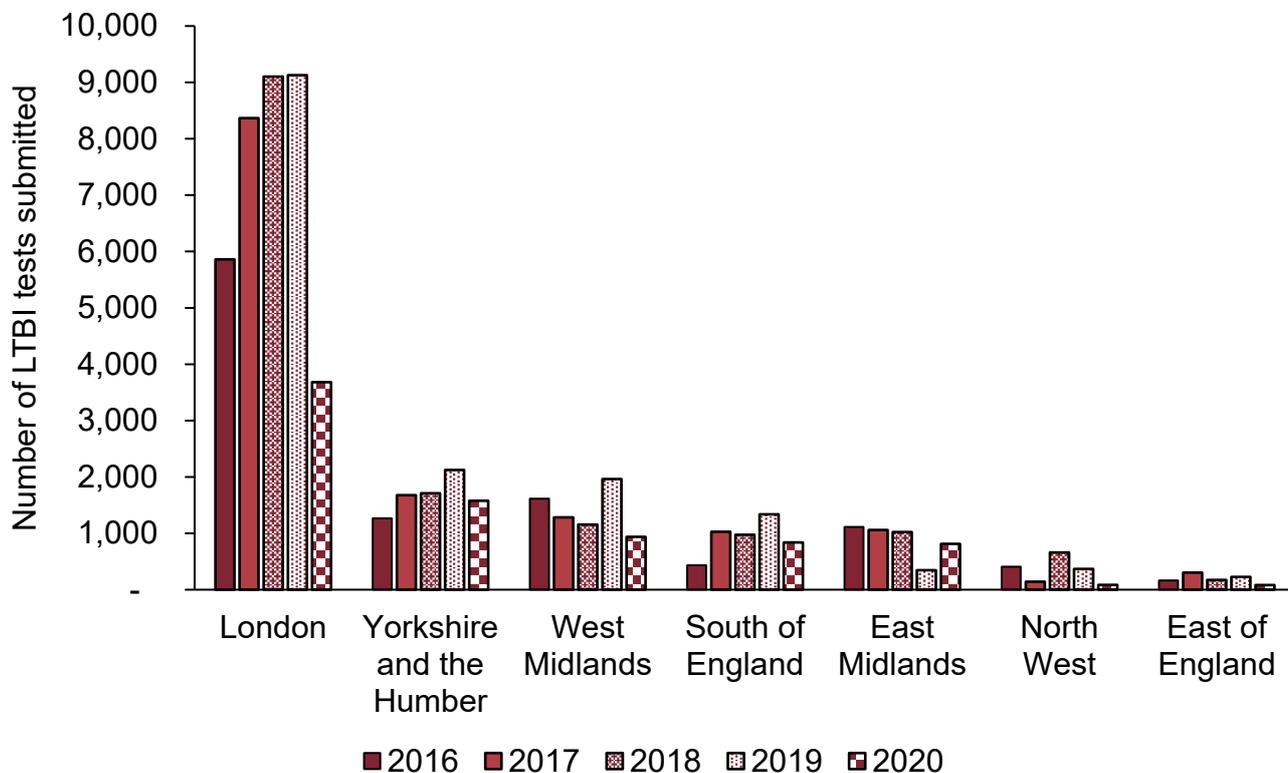
Test positivity

In 2020 8,091 people were tested for LTBI, a 48% and 32% decrease compared to 2019 (n=15,495) and 2018 (n=11,880).

This decline in testing numbers is due to the pause of all LTBI activity in the period of March to October 2020 due to the COVID-19 pandemic.

The number of tests and positivity rates per TB Control Board (TBCB) are summarised in Table Ai.7.3. The positivity rate has varied over the last 4 years from 17.5% in 2016 to 13.5% in 2019. In 2020, a positivity rate of 13.7% has been noted

Figure 6.3. Number of LTBI tests by TBCB, England, 2016 to 2020



Please note: Includes data from the shared TBCB between Yorkshire and the Humber and the North East.

7. Conclusions and recommendations

The collaborative UKHSA and NHSE&I TB Action Plan, 2021-2026 was published in July 2021 and contains actions and targets to drive forward improvements in TB care, prevention and control. The Action Plan has 5 main priorities; recovery from COVID-19, Prevent TB, Detect TB, Control TB disease and Workforce. Further details can be found at [Tuberculosis \(TB\): action plan for England](#).

Recommendations based on the conclusions are linked to appropriate TB Action Plan 2021 to 2026 priorities, but not all relevant outcomes and indicators from the Action Plan have been included in this document.

TB notifications

In 2020, there were 4,125 people notified with TB, a fall of 12.6% from 2019 in the number of notifications. In 2019 the rate rose for the first time since 2011 and this rise has not been fully explained.

The rate of TB in England was 7.3 per 100,000 in 2020. However, the period covered by this report was heavily affected by the COVID-19 pandemic, which has had complex impacts on healthcare access and delivery, migration and social behaviours, all of which may have influenced TB transmission, diagnoses and notifications.

A decline in the reported number and rate of people notified with TB in 2020, after the small rise in 2019, should be viewed with caution in the light of the significant impact of the COVID-19 pandemic. There are still significant hurdles to be overcome to reach the end TB pre-elimination goal of 1.0 per 100,000 by 2035. These include a continuing high proportion of cases with social risk factors and ongoing delays between symptom onset and start of treatment.

In England, nearly 60% of local authorities have now achieved a 3-year average TB incidence of less than 5.0 per 100,000 and 12 of these have reached the WHO End TB pre-elimination target rate of less than 1.0 per 100,000.

Recommendations

1. Action Plan priority and actions 1.1 to 1.6
Plan and optimise the recovery of TB case detection, treatment and control, affected by the COVID-19 response, in the next 2 years.
All stakeholders to deliver actions in Priority 1 of the Action Plan to resolve the impact of the COVID-19 pandemic and support recovery of TB control.
2. Action Plan priority and action 1.1.1
Monitoring TB notifications, rates and trends, monthly and annually, locally, regionally and

nationally: UKHSA TB Unit to undertake further analysis of surveillance data 2019 and 2020 to better understand recent trends and their statistical significance.

3. Action Plan priority and action 3.6

Support the new National TB Surveillance System (NTBS) development and roll out. This system has reporting functions to assist NHS TB teams monitor and manage TB cases.

4. Action Plan priority and action 4.2

NHS TB Services are encouraged to ensure timely and complete reporting of TB notifications to improve surveillance data used to support commissioning and public health decision making.

5. Action Plan priority and action 5.3.3

Appropriate service transformation to provide a people centred TB service that can sustain the management of people with active TB disease, the LTBI programme, meet the needs of incidents, outbreaks and surge capacity.

TB service resource allocation should be based on 2019 numbers, rather than 2020, until the full impact of COVID-19 is known, which is unlikely to be until 2022.

TB in children

The rate of TB in children born in the UK, a proxy for recent transmission in England has reduced by 70%, from the peak of 3.4 per 100,000 in 2008 to 1.5 per 100,000 in 2020. The rate differs with ethnicity within UK-born children, with the rate in Black African and South Asian ethnicities being higher.

Recommendations

6. Action Plan priority and action 2.8

Optimise BCG vaccine provision through commissioning and specification, including 2.8.1 Support BCG programme change to vaccinate at 4 weeks.

7. Action Plan priority and action 3.3

Improve and optimise diagnostics in high and low incidence areas for children affected by TB.

People born outside the UK accounted for the majority (73%) of TB notifications in 2020 and had a rate of TB 14 times higher than that of people born in the UK.

TB in migrant groups

Numbers of people participating in the pre-entry TB screening programme fell in 2020, with 340,623 pre-entry TB screening episodes in 2020 (a decrease of 5.5% against 2019). This may

reflect the impact of COVID-19. 385 cases of TB were detected (113.0 per 100,000) in this group.

The LTBI programme for migrants from high-incidence countries was heavily impacted by the COVID-19 pandemic. NHSE&I provided guidance on the provision of TB services in March 2020 which included pausing the national LTBI programme from April 2020. There was a significant fall in LTBI test and treatment activity with 2020 to 2021 LTBI test activity achieving approximately 31% of 2019 to 2020 activity. NHSE&I recommended restoration of the LTBI programme in January 2021 and recovery of the programme has commenced across the majority of CCGs in 2021. More details will be available in the LTBI programme annual report which will follow later this year.

Recommendations

8. Action Plan priority and action 1.1.2
Increasing the number of people tested for LTBI as part of the national new entrant LTBI testing and treatment programme, to minimise the backlog of people eligible for LTBI testing.
9. Action Plan priority and action 2.1
Reduce active TB disease in people entering the UK after having negative TB tests overseas for a UK visa application.
10. Action Plan priority and action 2.4
Strengthen prevention, detection and treatment of active TB and/or LTBI in higher risk groups including: a. targeted screening in asylum seekers, including unaccompanied asylum-seeking children.

TB in underserved populations

Those with social risk factors (SRF) continue to be disproportionately affected by TB. Of cases notified in 2020, 12.7% had at least one SRF and were more likely to have pulmonary TB, have poorer outcomes and die of TB.

The most deprived 10% of the population experience TB rates more than 7 times higher than the least deprived 10%. The number of people with a SRF has not fallen in recent years and they are likely to comprise an ever-larger proportion of cases in the coming years.

Recommendations

11. Action Plan priority and action 2.4
Strengthen prevention, detection and treatment of active TB and/or LTBI in higher risk groups including (d) the homeless (e) those in contact with the criminal justice system and demonstrate active engagement with Local Authorities, their Public Health teams and the third sector.

12. Action Plan priority and action 2.7

Review and improve the effectiveness and delivery of communications used to increase awareness of TB in at-risk populations and healthcare workers, particularly those in primary care and Emergency Departments.

13. Action Plan priority and action 3.5

Focus on improving the detection and management of TB in people with Social Risk Factors or USPs: UKHSA, NHSE&I and TB control boards and partners to use the 2019 updated resource 'Tackling TB in Under-Served Populations' to take appropriate local action and better meet the needs of under-served populations.

14. Action Plan priority and action 5.3.1

Medical, nursing, social care, admin and wider workforce reflects the requirements of local people with TB and the community underpinned by the NHSE&I LTP workforce section.

Diagnostic delay

Delay between date of reported symptom onset and treatment in people with pulmonary TB rose to a median of 79 days and one-third (32%) of people with pulmonary TB experienced a delay of more than 4 months, similar to previous years.

Recommendations

15. Action Plan priorities and actions 3.1 and 3.2

Improve early detection of TB by identifying, investigating and acting on the evidence and components that contribute to patient (people affected by TB) and healthcare delay.

Culture confirmation, drug resistance and whole-genome sequencing

In 2020, 60.7% of people notified with TB had their diagnosis confirmed by culture, which was a decrease from 2019 (61.6%), and the lowest rate since 2013. Some reduction in culture confirmation may be due to lack of access to healthcare and pathology facilities. Thirty percent of people notified did not have any laboratory results reported (culture, microscopy, PCR, or histology) to confirm their TB diagnosis.

As in previous years, culture confirmation was higher for pulmonary (75.3% of cases) than non-pulmonary cases (44.2%). Culture confirmation rates in children are much lower at 27% for pulmonary disease, and 32.7% for non-pulmonary cases.

Whole genome sequencing (WGS) data is routinely available for all culture-positive cases of TB and gives robust indicators of TB transmission in England. In England, the number of people in the drug resistant cohort (confirmed or treated as MDR/RR-TB) has risen to 58 in 2020, a 2.4%

of culture confirmed cases. Four of these people had confirmed initial XDR-TB, the same number as in 2019.

Recommendations

16. Action Plan priority and action 3.3.2
Increase the proportion of culture confirmed cases, nationally and regionally.
17. Action Plan priority and action 3.4.1
Through the use of surveillance data and WGS diagnostic capabilities monitor and reduce transmission of TB.
18. Action Plan priority and action 3.4.2
Recognise and manage active TB, drug resistant TB, TB clusters, outbreaks and incidents, particularly in under-served populations with a focus on public health interventions.
19. Action Plan priority and action 4.6
Ensure effective management of cases of multi drug resistant (MDR-TB) in association with the British Thoracic Society MDR-TB Clinical Advice Service (CAS).

Treatment completion and outcomes

The proportion of people with drug sensitive TB completing treatment by 12 months fell to 82% in 2019. This reduction reflects the increased proportion of people with a SRF who have lower treatment completion rate with a greater potential for transmission and development of drug resistant TB.

Most deaths continue to occur in those aged 65 years and older, a population who are more likely to have other comorbidities associated with poorer outcomes.

Recommendations

20. Action Plan priority and action 4.1.1
All partners in TB diagnosis, treatment and patient-centred care in high and low incidence areas work to the national TB service specification including that TB services and commissioners achieve and maintain 85% treatment completion rates and work to achieve 90% treatment completion rates by 2026.
21. Action Plan priority and action 5.3.3
Appropriate service transformation to provide a people centred TB service that can sustain the management of people with active TB disease, the LTBI programme, meet the needs of incidents, outbreaks and surge capacity.
22. Action Plan priority and action 4.1b
Promote the use of 'GIRFT' across health care systems including TB services and other clinical services to maximise successful outcomes.

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Appendix I. Supplementary tables

Table Ai.1.1. Number of TB notifications, rates and annual percentage change, England, 2000 to 2020

Year	Total		Annual change in case numbers (%)	Annual change in rate (%)
	Number of cases	Rate per 100,000 (95% CI)		
2000	6,044	12.3 (12.0 - 12.6)	1.8	1.7
2001	6,169	12.5 (12.2-12.8)	2.1	1.6
2002	6,675	13.4 (13.1-13.8)	8.2	7.2
2003	6,631	13.3 (13.0-13.6)	-0.7	-0.7
2004	6,930	13.8 (13.5-14.1)	4.5	3.8
2005	7,658	15.1 (14.8-15.5)	10.5	9.4
2006	7,682	15.1 (14.7-15.4)	0.3	0.0
2007	7,577	14.7 (14.4-15.1)	-1.4	-2.6
2008	7,809	15.1 (14.7-15.4)	3.1	2.7
2009	8,112	15.5 (15.2-15.9)	3.9	2.6
2010	7,676	14.6 (14.3-14.9)	-5.4	-5.8
2011	8,280	15.6 (15.3-15.9)	7.9	6.8
2012	8,084	15.1 (14.8-15.4)	-2.4	-3.2
2013	7,266	13.5 (13.2-13.8)	-10.1	-10.6
2014	6,472	11.9 (11.6-12.2)	-10.9	-11.9
2015	5,735	10.5 (10.2-10.7)	-11.4	-11.8
2016	5,618	10.2 (9.9-10.4)	-2.0	-2.9
2017	5,066	9.1 (8.9-9.4)	-9.8	-10.8
2018	4,615	8.2 (8.0-8.5)	-8.9	-9.9
2019	4,725	8.4 (8.2-8.6)	2.4	2.4
2020	4,125	7.3 (7.1-7.5)	-12.6	-13.1

CI: Confidence intervals.

Table Ai.1.2: Number of TB notifications and rates by PHE Centre, England, 2000 to 2020

Year	London		West Midlands		South East		North West		East of England	
	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	2,632	36.4 (35.0-37.8)	699	13.3 (12.3-14.3)	438	5.6 (5.1-6.2)	624	9.2 (8.5-10.0)	299	5.4 (4.8-6.0)
2001	2,574	35.2 (33.8-36.5)	702	13.3 (12.3-14.3)	430	5.5 (5.0-6.1)	638	9.4 (8.7-10.2)	338	6.0 (5.4-6.7)
2002	3,055	41.4 (40.0-42.9)	794	15.0 (14.0-16.1)	478	6.1 (5.6-6.7)	638	9.4 (8.7-10.2)	355	6.3 (5.6-7.0)
2003	3,063	41.4 (40.0-42.9)	783	14.7 (13.7-15.8)	542	6.9 (6.3-7.5)	574	8.4 (7.7-9.1)	323	5.7 (5.1-6.3)
2004	3,111	41.9 (40.4-43.4)	920	17.2 (16.1-18.4)	557	7.0 (6.5-7.6)	570	8.3 (7.7-9.0)	405	7.1 (6.4-7.8)
2005	3,448	45.9 (44.3-47.4)	920	17.1 (16.0-18.2)	581	7.3 (6.7-7.9)	743	10.8 (10.1-11.6)	470	8.1 (7.4-8.9)
2006	3,328	43.8 (42.3-45.3)	927	17.1 (16.0-18.3)	607	7.5 (7.0-8.2)	694	10.1 (9.3-10.8)	479	8.2 (7.5-9.0)
2007	3,234	42.0 (40.6-43.5)	928	17.0 (15.9-18.2)	627	7.7 (7.1-8.4)	733	10.6 (9.8-11.4)	421	7.2 (6.5-7.9)
2008	3,362	43.0 (41.6-44.5)	1,008	18.3 (17.2-19.5)	629	7.7 (7.1-8.3)	730	10.5 (9.7-11.3)	506	8.5 (7.8-9.3)
2009	3,402	42.8 (41.4-44.3)	1,006	18.2 (17.1-19.4)	712	8.6 (8.0-9.3)	799	11.4 (10.7-12.3)	512	8.5 (7.8-9.3)
2010	3,241	40.2 (38.8-41.6)	872	15.7 (14.6-16.7)	710	8.5 (7.9-9.2)	809	11.5 (10.7-12.3)	506	8.4 (7.6-9.1)
2011	3,491	42.6 (41.2-44.0)	1,004	17.9 (16.8-19.0)	813	9.7 (9.0-10.4)	818	11.6 (10.8-12.4)	560	9.2 (8.4-10.0)
2012	3,403	41.0 (39.6-42.4)	1,076	19.1 (17.9-20.2)	778	9.2 (8.5-9.9)	775	10.9 (10.2-11.7)	497	8.1 (7.4-8.8)
2013	2,975	35.3 (34.1-36.6)	979	17.3 (16.2-18.4)	684	8.0 (7.4-8.6)	716	10.1 (9.4-10.8)	451	7.3 (6.6-8.0)
2014	2,555	29.9 (28.8-31.1)	775	13.6 (12.6-14.6)	664	7.7 (7.1-8.3)	642	9.0 (8.3-9.7)	436	6.9 (6.3-7.6)
2015	2,279	26.3 (25.2-27.4)	699	12.1 (11.3-13.1)	593	6.8 (6.3-7.4)	568	7.9 (7.3-8.6)	389	6.1 (5.5-6.8)
2016	2,197	25.1 (24.0-26.1)	717	12.3 (11.5-13.3)	561	6.4 (5.9-7.0)	589	8.2 (7.5-8.8)	434	6.8 (6.2-7.5)
2017	1,907	21.6 (20.6-22.6)	660	11.3 (10.4-12.2)	534	6.1 (5.6-6.6)	529	7.3 (6.7-7.9)	408	6.3 (5.7-7.0)
2018	1,679	18.8 (18.0-19.8)	612	10.4 (9.6-11.2)	500	5.6 (5.2-6.2)	467	6.4 (5.8-7.0)	352	5.4 (4.9-6.0)
2019	1,655	18.5 (17.6-19.4)	580	9.8 (9.0-10.6)	506	5.7 (5.2-6.2)	524	7.1 (6.5-7.8)	413	6.3 (5.8-7.0)
2020	1,464	16.3 (15.4-17.1)	548	9.2 (8.4-10.0)	456	5.1 (4.6-5.6)	455	6.2 (5.6-6.8)	371	5.7 (5.1-6.3)

CI: Confidence intervals.

Table Ai.1.2. Number of TB notifications and rates by PHE Centre, England, 2000 to 2020 (continued)

Year	Yorkshire and the Humber		East Midlands		South West		North East	
	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	544	11.0 (10.1-11.9)	414	9.9 (9.0-10.9)	230	4.7 (4.1-5.3)	157	6.2 (5.2-7.2)
2001	551	11.1 (10.2-12.0)	544	13.0 (11.9-14.1)	211	4.3 (3.7-4.9)	177	7.0 (6.0-8.1)
2002	505	10.1 (9.2-11.0)	471	11.2 (10.2-12.2)	220	4.4 (3.9-5.0)	149	5.9 (5.0-6.9)
2003	544	10.8 (9.9-11.8)	458	10.8 (9.8-11.8)	201	4.0 (3.5-4.6)	141	5.6 (4.7-6.5)
2004	535	10.6 (9.7-11.5)	418	9.7 (8.8-10.7)	263	5.2 (4.6-5.9)	143	5.6 (4.7-6.6)
2005	556	10.9 (10.0-11.8)	533	12.3 (11.3-13.4)	266	5.2 (4.6-5.9)	132	5.2 (4.3-6.1)
2006	661	12.9 (11.9-13.9)	566	13.0 (11.9-14.1)	278	5.4 (4.8-6.1)	141	5.5 (4.6-6.5)
2007	632	12.2 (11.3-13.2)	534	12.1 (11.1-13.2)	269	5.2 (4.6-5.9)	196	7.7 (6.6-8.8)
2008	635	12.2 (11.3-13.2)	483	10.9 (9.9-11.9)	279	5.4 (4.7-6.0)	177	6.9 (5.9-8.0)
2009	688	13.2 (12.2-14.2)	524	11.7 (10.7-12.8)	303	5.8 (5.2-6.5)	166	6.4 (5.5-7.5)
2010	628	12.0 (11.0-12.9)	494	11.0 (10.0-12.0)	265	5.0 (4.4-5.7)	150	5.8 (4.9-6.8)
2011	664	12.6 (11.6-13.5)	492	10.8 (9.9-11.8)	307	5.8 (5.2-6.5)	131	5.0 (4.2-6.0)
2012	593	11.2 (10.3-12.1)	497	10.9 (9.9-11.9)	300	5.6 (5.0-6.3)	167	6.4 (5.5-7.5)
2013	583	10.9 (10.1-11.8)	413	9.0 (8.1-9.9)	326	6.1 (5.4-6.8)	138	5.3 (4.4-6.2)
2014	516	9.6 (8.8-10.5)	400	8.6 (7.8-9.5)	316	5.8 (5.2-6.5)	168	6.4 (5.5-7.5)
2015	437	8.1 (7.4-8.9)	357	7.6 (6.9-8.5)	285	5.2 (4.6-5.8)	128	4.9 (4.1-5.8)
2016	420	7.7 (7.0-8.5)	341	7.2 (6.5-8.0)	238	4.3 (3.8-4.9)	121	4.6 (3.8-5.5)
2017	344	6.3 (5.7-7.0)	349	7.3 (6.6-8.1)	227	4.1 (3.6-4.7)	109	4.1 (3.4-5.0)

Year	Yorkshire and the Humber		East Midlands		South West		North East	
	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)
2018	351	6.4 (5.8-7.1)	339	7.1 (6.3-7.8)	191	3.4 (2.9-3.9)	120	4.5 (3.7-5.4)
2019	356	6.5 (5.8-7.2)	356	7.4 (6.6-8.2)	234	4.2 (3.6-4.7)	78	2.9 (2.3-3.6)
2020	270	4.9 (4.3-5.5)	310	6.4 (5.7-7.1)	167	3.0 (2.5-3.4)	84	3.1 (2.5-3.9)

CI: Confidence intervals.

Table Ai.1.3 Number of TB notifications and rates by age group and place of birth, England, 2020

Year	Place of birth							
	UK born				Non-UK born			
	Number of cases	Rate per 100,000 (95% CI)	Annual change in case numbers (%)	Annual change in rate (%)	Number of cases	Rate per 100,000 (95% CI)	Annual change in case numbers (%)	Annual change in rate (%)
2000	1,830	4.1 (3.9 -4.3)	-	-	3,329	79.6(76.9-82.4)	-	-
2001	1,889	4.3 (4.1 -4.4)	3.2%	4.9%	3,431	79.1 (76.5 -81.8)	3.1%	-0.6%
2002	1,852	4.2 (4.0 -4.4)	-2.0%	-2.3%	4,111	90.5 (87.7 -93.3)	19.8%	14.4%
2003	1,703	3.8 (3.6 -4.0)	-8.0%	-9.5%	4,326	90.8 (88.1 -93.5)	5.2%	0.3%
2004	1,790	4.0 (3.8 -4.2)	5.1%	5.3%	4,571	95.2 (92.4 -98.0)	5.7%	4.8%
2005	1,804	4.0 (3.8 -4.2)	0.8%	0.0%	5,186	100.7 (98.0 -103.5)	13.5%	5.8%
2006	1,729	3.9 (3.7 -4.1)	-4.2%	-2.5%	5,175	92.9 (90.4 -95.5)	-0.2%	-7.7%
2007	1,799	4.0 (3.8 -4.2)	4.0%	2.6%	5,135	85.5 (83.2 -87.9)	-0.8%	-8.0%
2008	1,867	4.2 (4.0 -4.4)	3.8%	5.0%	5,417	86.0 (83.7 -88.3)	5.5%	0.6%

Year	Place of birth							
	UK born				Non-UK born			
	Number of cases	Rate per 100,000 (95% CI)	Annual change in case numbers (%)	Annual change in rate (%)	Number of cases	Rate per 100,000 (95% CI)	Annual change in case numbers (%)	Annual change in rate (%)
2009	1,907	4.2 (4.1 -4.4)	2.1%	0.0%	5,662	86.8 (84.6 -89.1)	4.5%	0.9%
2010	1,813	4.0 (3.8 -4.2)	-4.9%	-4.8%	5,515	83.1 (80.9 -85.3)	-2.6%	-4.3%
2011	1,958	4.3 (4.1 -4.5)	8.0%	7.5%	6,021	85.9 (83.7 -88.1)	9.2%	3.4%
2012	2,004	4.4 (4.2 -4.6)	2.3%	2.3%	5,842	81.5 (79.4 -83.6)	-3.0%	-5.1%
2013	1,842	4.0 (3.8 -4.2)	-8.1%	-9.1%	5,259	70.6 (68.7 -72.6)	-10.0%	-13.4%
2014	1,756	3.8 (3.6 -4.0)	-4.7%	-5.0%	4,611	60.2 (58.5 -62.0)	-12.3%	-14.7%
2015	1,532	3.3 (3.2 -3.5)	-12.8%	-13.2%	4,099	51.3 (49.8 -52.9)	-11.1%	-14.8%
2016	1,454	3.1 (3.0 -3.3)	-5.1%	-6.1%	4,096	49.4 (47.9 -50.9)	-0.1%	-3.7%
2017	1,426	3.1 (2.9 -3.2)	-1.9%	0.0%	3,577	41.3 (40.0 -42.7)	-12.7%	-16.4%
2018	1,275	2.7 (2.6 -2.9)	-10.6%	-12.9%	3,291	39.1 (37.8 -40.5)	-8.0%	-5.3%
2019	1,216	2.6 (2.4 -2.7)	-4.6%	-3.7%	3,420	39.7 (38.4 -41.0)	3.9%	1.5%
2020	1,091	2.3 (2.1 -2.4)	-10.3%	-11.5%	2,948	36.3 (35.0 -37.6)	-13.8%	-8.6%

CI: Confidence intervals.

Table Ai.1.4: Number of TB notifications, rates and annual percentage change by place of birth, England, 2000 to 2020

Age group (years)	Place of Birth				Total ^a	
	UK born		Non-UK born			
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
0-4	49	1.5(1.1-2.0)	4	3.0 (0.8-7.6)	53	1.6 (1.2-2.1)
5-9	24	0.7(0.5-1.1)	17	7.5 (4.4-12.0)	42	1.2 (0.9-1.6)
10-14	26	0.8(0.6-1.2)	27	9.0 (5.9-13.0)	54	1.6 (1.2-2.1)
15-19	84	3.0(2.4-3.8)	124	44.6 (37.1-53.2)	208	6.8 (5.9-7.8)
20-24	89	3.0(2.4-3.7)	196	48.8 (42.2-56.2)	288	8.6 (7.6-9.6)
25-29	88	2.9(2.3-3.6)	315	44.5 (39.7-49.6)	410	11.0 (9.9-12.1)
30-34	76	2.7(2.1-3.3)	403	41.6 (37.6-45.9)	488	12.8 (11.7-14.0)
35-39	71	2.7(2.1-3.4)	382	34.7 (31.4-38.4)	461	12.3 (11.2-13.5)
40-44	73	2.9(2.3-3.6)	327	36.5 (32.6-40.7)	404	11.8 (10.6-13.0)
45-49	76	2.7(2.1-3.3)	266	35.0 (30.9-39.5)	350	9.6 (8.7-10.7)
50-54	68	2.1(1.6-2.6)	225	39.0 (34.1-44.5)	299	7.8 (6.9-8.7)
55-59	86	2.6(2.1-3.2)	174	37.7 (32.3-43.8)	264	7.1 (6.2-8.0)
60-64	49	1.8(1.3-2.3)	152	39.8 (33.7-46.6)	208	6.6 (5.7-7.5)
65-69	53	2.1(1.6-2.8)	97	34.8 (28.3-42.5)	160	5.8 (4.9-6.8)
70-74	56	2.2(1.6-2.8)	82	37.7 (30.0-46.8)	140	5.0 (4.2-5.9)
75-79	54	3.0(2.3-3.9)	62	36.3 (27.8-46.5)	120	6.1 (5.1-7.3)
80+	69	3.0(2.3-3.7)	95	36.2 (29.3-44.3)	176	6.7 (5.8-7.8)

CI: Confidence intervals.

^a Total number of people including those with an unknown place of birth.

Table Ai.1.5: Number of TB notifications and rates by place of birth and PHE Centre, England, 2000 to 2020

Year	London				West Midlands			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2000	446	8.5(7.7-9.3)	1775	92.4(88.1-96.8)	293	6.0(5.4-6.8)	380	105.4(95.1-116.6)
2001	422	8.0(7.2-8.8)	1862	95.0(90.8-99.4)	325	6.7(6.0-7.5)	359	94.7(85.2-105.1)
2002	540	10.3(9.5-11.2)	2264	110.0(105.5-114.6)	300	6.2(5.5-6.9)	448	119.7(108.8-131.3)
2003	480	9.3(8.5-10.1)	2326	108.1(103.8-112.6)	302	6.2(5.5-6.9)	438	110.0(99.9-120.8)
2004	535	10.3(9.5-11.2)	2299	105.6(101.3-110.0)	322	6.6(5.9-7.4)	551	137.2(126.0-149.1)
2005	578	11.3(10.4-12.2)	2579	112.0(107.7-116.4)	270	5.4(4.8-6.1)	602	168.6(155.4-182.6)
2006	546	10.6(9.7-11.5)	2564	108.3(104.1-112.6)	282	5.8(5.1-6.5)	580	125.0(115.0-135.6)
2007	519	10.2(9.4-11.1)	2577	101.5(97.6-105.5)	278	5.7(5.0-6.4)	535	114.9(105.4-125.1)
2008	553	10.8(9.9-11.7)	2669	102.4(98.5-106.3)	350	7.2(6.4-8.0)	599	110.1(101.4-119.2)
2009	511	10.0(9.1-10.9)	2754	100.9(97.2-104.8)	317	6.5(5.8-7.3)	638	106.0(97.9-114.6)
2010	503	9.6(8.8-10.5)	2696	98.0(94.3-101.7)	283	5.7(5.1-6.5)	559	97.4(89.5-105.8)
2011	504	9.7(8.9-10.6)	2931	100.1(96.5-103.8)	316	6.4(5.7-7.1)	664	113.9(105.4-122.9)
2012	561	10.6(9.8-11.5)	2799	94.8(91.3-98.4)	335	6.7(6.0-7.5)	704	117.3(108.8-126.3)

Year	London				West Midlands			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2013	485	9.2(8.4-10.1)	2466	80.6(77.4-83.8)	313	6.3(5.6-7.0)	643	100.1(92.5-108.2)
2014	477	9.0(8.2-9.8)	2075	66.2(63.4-69.1)	267	5.3(4.7-6.0)	501	77.0(70.4-84.0)
2015	420	7.8(7.0-8.6)	1844	57.9(55.2-60.6)	253	5.1(4.5-5.7)	440	63.2(57.4-69.4)
2016	398	7.4(6.7-8.2)	1779	52.5(50.0-55.0)	227	4.5(4.0-5.2)	487	68.6(62.6-74.9)
2017	371	6.8(6.1-7.5)	1517	44.3(42.1-46.6)	244	4.9(4.3-5.5)	410	55.4(50.2-61.1)
2018	301	5.3(4.8-6.0)	1361	42.0(39.8-44.3)	221	4.4(3.9-5.0)	391	48.7(44.0-53.8)
2019	290	5.1(4.6-5.7)	1346	40.7(38.6-43.0)	202	4.0(3.5-4.6)	372	44.9(40.5-49.7)
2020	294	4.9(4.4-5.5)	1155	37.6(35.5-39.9)	161	3.1(2.7-3.6)	365	52.6(47.4-58.3)

CI: Confidence intervals.

Please note: Denominator data used to calculate rates among people born in the UK and those born outside the UK are based on survey data, which have known limitations when broken down into smaller geographical areas, therefore rates and annual changes in rates should be interpreted with caution. For further information, see [Appendix III: Methods](#).

Table Ai.1.5: Number of TB notifications and rates by place of birth and PHE Centre, England, 2000 to 2020 (continued)

Year	South East				North West			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2000	170	2.3(2.0-2.7)	208	36.7(31.9-42.1)	261	4.1(3.6-4.6)	348	126.4(113.4-140.4)
2001	152	2.1(1.8-2.4)	228	38.9(34.0-44.3)	299	4.7(4.2-5.2)	327	116.1(103.9-129.4)
2002	144	2.0(1.7-2.3)	288	47.7(42.3-53.5)	258	4.0(3.6-4.6)	352	118.5(106.5-131.6)
2003	118	1.6(1.3-1.9)	364	55.1(49.6-61.1)	235	3.7(3.2-4.2)	330	109.5(98.0-122.0)
2004	163	2.2(1.9-2.6)	344	52.7(47.3-58.6)	198	3.1(2.7-3.5)	358	110.4(99.3-122.5)
2005	129	1.7(1.5-2.1)	415	61.3(55.6-67.5)	244	3.8(3.3-4.3)	468	126.1(114.9-138.1)
2006	135	1.8(1.5-2.2)	415	53.5(48.5-58.9)	229	3.6(3.1-4.1)	426	104.9(95.2-115.4)
2007	164	2.2(1.9-2.6)	415	52.2(47.3-57.4)	253	4.0(3.5-4.5)	458	96.8(88.1-106.1)
2008	138	1.9(1.6-2.2)	442	51.4(46.7-56.4)	231	3.6(3.2-4.1)	474	95.4(87.0-104.4)
2009	180	2.4(2.1-2.8)	474	53.9(49.2-59.0)	255	4.0(3.5-4.5)	494	93.8(85.8-102.5)
2010	149	2.0(1.7-2.3)	499	52.6(48.1-57.4)	270	4.2(3.7-4.8)	491	90.5(82.7-98.9)
2011	204	2.7(2.4-3.1)	577	59.0(54.2-64.0)	259	4.0(3.6-4.6)	521	93.3(85.4-101.7)
2012	230	3.0(2.6-3.4)	530	54.7(50.2-59.6)	262	4.1(3.6-4.6)	494	89.5(81.7-97.7)
2013	172	2.3(1.9-2.6)	506	48.2(44.1-52.6)	255	4.0(3.5-4.5)	447	76.7(69.8-84.2)
2014	160	2.1(1.8-2.4)	493	46.6(42.6-50.9)	226	3.5(3.1-4.0)	405	66.1(59.8-72.9)
2015	168	2.2(1.9-2.5)	405	37.3(33.7-41.1)	185	2.9(2.5-3.3)	368	52.1(46.9-57.7)

Year	South East				North West			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2016	132	1.7(1.4-2.0)	420	35.8(32.5-39.4)	209	3.2(2.8-3.7)	368	55.4(49.9-61.4)
2017	152	2.0(1.7-2.3)	378	31.4(28.3-34.7)	175	2.7(2.3-3.2)	340	49.3(44.2-54.8)
2018	163	2.1(1.8-2.4)	332	27.1(24.2-30.2)	160	2.4(2.1-2.9)	296	45.6(40.5-51.1)
2019	141	1.8(1.5-2.1)	364	28.7(25.8-31.8)	139	2.1(1.8-2.5)	374	52.2(47.0-57.7)
2020	121	1.5(1.3-1.8)	327	25.8(23.1-28.8)	133	2.0(1.7-2.4)	307	45.1(40.2-50.4)

CI: Confidence intervals.

Please note: Denominator data used to calculate rates among people born in the UK and those born outside the UK are based on survey data, which have known limitations when broken down into smaller geographical areas, therefore rates and annual changes in rates should be interpreted with caution. For further information, see [Appendix III: Methods](#).

Table Ai.1.5. Number of TB notifications and rates by place of birth and PHE Centre, England, 2000 to 2020 (continued)

Year	East of England				Yorkshire and the Humber			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2000	97	1.9(1.6-2.4)	150	46.8(39.6-54.9)	212	4.5(4.0-5.2)	259	114.0(100.5-128.7)
2001	111	2.2(1.8-2.7)	164	45.4(38.7-52.9)	245	5.2(4.6-5.9)	270	111.1(98.3-125.2)
2002	105	2.1(1.7-2.5)	209	60.7(52.8-69.5)	188	4.0(3.5-4.6)	284	108.2(96.0-121.6)
2003	97	1.9(1.6-2.4)	198	53.4(46.2-61.3)	201	4.3(3.7-4.9)	334	116.1(104.0-129.3)
2004	101	2.0(1.6-2.4)	270	71.5(63.2-80.5)	194	4.1(3.6-4.7)	330	115.6(103.5-128.8)
2005	129	2.6(2.1-3.0)	304	69.0(61.4-77.2)	180	3.8(3.3-4.4)	341	97.7(87.6-108.7)
2006	98	1.9(1.6-2.4)	324	66.0(59.0-73.6)	172	3.6(3.1-4.2)	415	126.7(114.8-139.5)
2007	111	2.2(1.8-2.7)	275	51.1(45.3-57.5)	179	3.8(3.3-4.4)	356	95.0(85.4-105.4)
2008	148	2.9(2.5-3.4)	309	58.0(51.8-64.9)	174	3.7(3.2-4.3)	415	102.9(93.2-113.3)
2009	132	2.6(2.2-3.1)	339	60.9(54.6-67.7)	212	4.4(3.9-5.1)	406	105.7(95.7-116.5)
2010	135	2.6(2.2-3.1)	347	61.7(55.4-68.6)	190	3.9(3.4-4.6)	366	96.9(87.2-107.4)
2011	147	2.8(2.4-3.3)	387	65.1(58.8-71.9)	220	4.6(4.0-5.2)	389	94.6(85.5-104.5)
2012	128	2.5(2.1-2.9)	345	52.9(47.4-58.7)	189	3.9(3.4-4.5)	354	78.3(70.3-86.9)
2013	120	2.3(1.9-2.7)	314	48.4(43.2-54.1)	182	3.8(3.2-4.4)	360	79.8(71.8-88.5)
2014	110	2.1(1.7-2.5)	313	46.3(41.3-51.8)	171	3.5(3.0-4.1)	320	67.9(60.7-75.8)
2015	102	1.9(1.6-2.4)	279	37.4(33.1-42.0)	127	2.6(2.2-3.1)	292	59.8(53.1-67.1)
2016	119	2.2(1.9-2.7)	304	42.2(37.6-47.3)	131	2.7(2.3-3.2)	287	55.0(48.8-61.7)

Year	East of England				Yorkshire and the Humber			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2017	121	2.3(1.9-2.7)	283	37.2(33.0-41.8)	101	2.1(1.7-2.5)	243	46.1(40.5-52.2)
2018	90	1.7(1.3-2.0)	259	36.5(32.2-41.2)	117	2.4(2.0-2.9)	232	43.4(38.0-49.4)
2019	121	2.2(1.9-2.7)	287	36.0(31.9-40.4)	122	2.5(2.1-3.0)	226	45.7(39.9-52.0)
2020	108	2.0(1.6-2.4)	257	34.5(30.4-39.0)	83	1.7(1.3-2.1)	178	40.9(35.1-47.3)

CI: Confidence intervals.

Please note: Denominator data used to calculate rates among people born in the UK and those born outside the UK are based on survey data, which have known limitations when broken down into smaller geographical areas, therefore rates and annual changes in rates should be interpreted with caution. For further information, see [Appendix III: Methods](#).

Table Ai.1.5. Number of TB notifications and rates by place of birth and PHE Centre, England, 2000 to 2020 (continued)

Year	East Midlands				South West			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2000	120	3.1(2.6-3.7)	101	46.4(37.8-56.4)	139	3.0(2.5-3.6)	70	29.6(23.1-37.5)
2001	120	3.1(2.5-3.7)	100	44.7(36.4-54.4)	123	2.7(2.2-3.2)	61	25.8(19.7-33.1)
2002	127	3.2(2.7-3.9)	119	47.2(39.1-56.5)	98	2.1(1.7-2.6)	89	32.3(25.9-39.7)
2003	116	2.9(2.4-3.5)	182	72.9(62.7-84.3)	87	1.9(1.5-2.3)	93	33.0(26.6-40.4)
2004	111	2.8(2.3-3.4)	225	90.4(78.9-103.0)	98	2.1(1.7-2.5)	134	53.5(44.8-63.3)
2005	95	2.4(1.9-2.9)	291	99.4(88.3-111.5)	123	2.6(2.2-3.1)	124	46.0(38.3-54.9)
2006	114	2.9(2.4-3.5)	233	68.3(59.8-77.6)	87	1.8(1.5-2.3)	160	52.8(44.9-61.7)
2007	118	3.0(2.5-3.6)	278	75.7(67.1-85.2)	97	2.1(1.7-2.5)	151	42.1(35.6-49.3)
2008	119	3.0(2.5-3.6)	296	76.5(68.0-85.7)	91	1.9(1.5-2.3)	141	40.7(34.2-47.9)
2009	146	3.6(3.1-4.3)	340	89.8(80.5-99.8)	99	2.1(1.7-2.5)	147	45.2(38.2-53.2)
2010	122	3.0(2.5-3.6)	351	85.3(76.6-94.8)	108	2.2(1.8-2.7)	125	35.8(29.8-42.6)
2011	142	3.5(3.0-4.1)	331	76.1(68.1-84.8)	127	2.6(2.2-3.2)	150	36.7(31.0-43.0)
2012	127	3.1(2.6-3.7)	354	80.3(72.1-89.1)	114	2.4(2.0-2.8)	167	39.6(33.8-46.0)
2013	116	2.8(2.4-3.4)	292	63.3(56.2-71.0)	151	3.1(2.6-3.6)	156	39.4(33.4-46.0)
2014	132	3.2(2.7-3.8)	258	55.8(49.2-63.0)	133	2.7(2.3-3.2)	171	38.2(32.7-44.3)
2015	99	2.4(2.0-2.9)	251	50.9(44.8-57.6)	123	2.5(2.1-3.0)	148	32.3(27.3-38.0)
2016	94	2.3(1.8-2.8)	242	48.2(42.3-54.7)	94	1.9(1.5-2.3)	138	31.1(26.1-36.8)

Year	East Midlands				South West			
	UK born		Non-UK born		UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2017	112	2.8(2.3-3.3)	225	37.5(32.7-42.7)	105	2.1(1.8-2.6)	117	21.6(17.9-25.9)
2018	76	1.8(1.4-2.3)	259	44.3(39.1-50.0)	94	1.9(1.5-2.3)	95	19.1(15.4-23.3)
2019	74	1.8(1.4-2.2)	274	46.4(41.0-52.2)	103	2.0(1.7-2.5)	124	25.9(21.6-30.9)
2020	81	1.9(1.5-2.4)	222	40.4(35.2-46.0)	68	1.4(1.1-1.7)	97	17.8(14.5-21.8)

CI: Confidence intervals.

Please note: Denominator data used to calculate rates among people born in the UK and those born outside the UK are based on survey data, which have known limitations when broken down into smaller geographical areas, therefore rates and annual changes in rates should be interpreted with caution. For further information, see [Appendix III: Methods](#).

Table Ai.1.5. Number of TB notifications and rates by place of birth and PHE Centre, England, 2000 to 2020 (continued)

Year	North East			
	UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
2000	90	3.7(2.9-4.5)	35	63.4(44.2-88.2)
2001	92	3.8(3.0-4.6)	59	88.5(67.4-114.2)
2002	90	3.7(3.0-4.6)	55	72.3(54.5-94.1)
2003	67	2.7(2.1-3.5)	60	91.0(69.5-117.2)
2004	68	2.8(2.2-3.6)	59	69.3(52.8-89.4)
2005	55	2.3(1.7-3.0)	60	66.3(50.6-85.4)
2006	66	2.7(2.1-3.5)	57	60.0(45.4-77.7)
2007	79	3.2(2.6-4.0)	90	95.1(76.5-116.9)
2008	63	2.6(2.0-3.3)	72	59.4(46.5-74.8)
2009	55	2.3(1.7-3.0)	70	48.9(38.1-61.7)
2010	53	2.2(1.6-2.9)	81	66.4(52.7-82.5)
2011	39	1.6(1.1-2.2)	71	62.2(48.6-78.5)
2012	58	2.4(1.8-3.1)	95	73.4(59.4-89.7)
2013	48	2.0(1.5-2.6)	75	48.6(38.2-60.9)
2014	80	3.3(2.6-4.1)	75	51.4(40.4-64.4)
2015	55	2.2(1.7-2.9)	72	57.6(45.1-72.5)
2016	50	2.1(1.5-2.7)	71	42.2(33.0-53.2)
2017	45	1.8(1.3-2.5)	64	36.3(28.0-46.4)
2018	53	2.2(1.6-2.8)	66	39.7(30.7-50.5)
2019	24	1.0(0.6-1.4)	53	37.9(28.4-49.6)
2020	42	1.7(1.2-2.3)	40	29.3(20.9-39.9)

CI: Confidence intervals.

Please note: Denominator data used to calculate rates among people born in the UK and those born outside the UK are based on survey data, which have known limitations when broken down into smaller geographical areas, therefore rates and annual changes in rates should be interpreted with caution. For further information, see [Appendix III: Methods](#).

Table Ai.1.6. Number and proportion of people with TB by most frequent country of birth for those born outside the UK, England, 2000 to 2020

Year	Country of birth																		
	India		Pakistan		Romania		Somalia		Eritrea		Bangladesh		Nepal		Philippines		Nigeria		Total*
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
2000	722	3.1	676	4.3	5	0.3	362	4.7	26	1.7	102	2.6	19	0.9	28	1.5	47	1.8	3,115
2001	668	2.9	715	4.5	5	0.3	360	4.7	18	1.18	109	2.8	28	1.4	35	1.9	47	1.8	3,236
2002	780	3.3	774	4.9	8	0.5	428	5.6	26	1.7	159	4.0	33	1.6	51	2.7	89	3.4	3,913
2003	789	3.4	729	4.6	11	0.7	473	6.2	43	2.81	182	4.6	34	1.7	52	2.8	116	4.5	4,083
2004	904	3.9	700	4.4	8	0.5	532	7.0	33	2.16	183	4.6	37	1.8	74	4.0	136	5.2	4,339
2005	1,099	4.7	832	5.3	11	0.7	581	7.6	43	2.81	191	4.8	36	1.8	69	3.7	153	5.9	4,917
2006	1,112	4.8	837	5.3	6	0.4	641	8.4	64	4.19	182	4.6	67	3.3	86	4.6	154	5.9	4,930
2007	1,187	5.1	796	5.0	15	1.0	551	7.2	66	4.32	243	6.1	69	3.4	92	4.9	150	5.8	4,886
2008	1,328	5.7	882	5.6	19	1.2	531	7.0	86	5.62	239	6.0	90	4.4	111	5.9	165	6.3	5,178
2009	1,531	6.5	921	5.8	25	1.6	535	7.0	93	6.08	235	5.9	114	5.6	114	6.1	174	6.7	5,436
2010	1,553	6.6	881	5.6	44	2.9	439	5.8	81	5.3	259	6.5	175	8.6	131	7.0	169	6.5	5,326
2011	1,787	7.6	1,061	6.7	54	3.5	415	5.4	98	6.41	285	7.2	214	10.5	101	5.4	190	7.3	5,884
2012	1,764	7.5	1,047	6.6	77	5.0	377	4.9	78	5.1	277	7.0	209	10.3	126	6.7	174	6.7	5,772
2013	1,549	6.6	1,045	6.6	69	4.5	290	3.8	58	3.79	237	6.0	163	8.0	123	6.6	156	6.0	5,205
2014	1,291	5.5	798	5.0	89	5.8	233	3.1	85	5.56	207	5.2	167	8.2	113	6.0	117	4.5	4,567
2015	1,068	4.6	640	4.0	120	7.9	178	2.3	90	5.89	209	5.3	127	6.3	106	5.7	120	4.6	4,084
2016	999	4.3	638	4.0	175	11.5	209	2.7	102	6.67	174	4.4	109	5.4	106	5.7	99	3.8	4,076
2017	890	3.8	515	3.3	204	13.3	129	1.7	99	6.47	139	3.5	94	4.6	78	4.2	98	3.8	3,552
2018	802	3.4	457	2.9	195	12.8	135	1.8	97	6.34	130	3.3	74	3.7	92	4.9	87	3.3	3,280
2019	799	3.4	464	2.9	217	14.2	115	1.5	149	9.74	131	3.3	85	4.2	100	5.4	90	3.5	3,403
2020	793	3.4	428	2.7	172	11.3	117	1.5	94	6.15	94	2.4	86	4.2	82	4.4	75	2.9	2,927
Total	23,415	25.4	15,836	17.2	1,529	1.7	7,631	8.3	1,529	1.7	3,967	4.3	2,030	2.2	1,870	2.0	2,606	2.8	92,109

^a Countries ordered by decreasing total number of TB notifications in 2020.

^b Total number of people notified with TB born outside the UK where country of birth was known.

Table Ai.1.6: Number and proportion of people with TB by most frequent country of birth for those born outside the UK, England, 2000 to 2020 (continued)

Year	Country of birth																
	Afghanistan		Zimbabwe		Poland		Kenya		Sudan		Sri Lanka		Lithuania		Other		Total*
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
2000	43	2.7	78	2.5	10	1.1	92	4.7	7	1.1	50	3.2	1	0.2	847	27.2	3,115
2001	66	4.2	110	3.5	9	0.9	109	5.6	10	1.6	66	4.2	3	0.6	878	27.1	3,236
2002	100	6.3	240	7.6	10	1.1	110	5.7	10	1.6	82	5.3	3	0.6	1,010	25.8	3,913
2003	65	4.1	275	8.7	15	1.6	109	5.6	17	2.6	66	4.2	5	1.0	1,102	27.0	4,083
2004	78	5.0	270	8.6	13	1.4	130	6.7	20	3.1	81	5.2	2	0.4	1,138	26.2	4,339
2005	83	5.3	269	8.5	12	1.3	134	6.9	23	3.6	85	5.5	6	1.2	1,290	26.2	4,917
2006	73	4.6	242	7.7	30	3.1	106	5.5	27	4.2	62	4.0	12	2.3	1,229	24.9	4,930
2007	83	5.3	203	6.4	36	3.8	126	6.5	37	5.7	92	5.9	13	2.5	1,127	23.1	4,886
2008	92	5.8	201	6.4	53	5.6	124	6.4	34	5.3	86	5.5	11	2.1	1,126	21.7	5,178
2009	97	6.2	158	5.0	43	4.5	110	5.7	20	3.1	91	5.9	18	3.5	1,157	21.3	5,436
2010	95	6.0	189	6.0	48	5.0	96	5.0	27	4.2	86	5.5	27	5.2	1,026	19.3	5,326
2011	104	6.6	152	4.8	61	6.4	116	6.0	24	3.7	107	6.9	27	5.2	1,088	18.5	5,884
2012	76	4.8	129	4.1	60	6.3	95	4.9	21	3.3	97	6.2	31	6.0	1,134	19.6	5,772
2013	66	4.2	105	3.3	63	6.6	85	4.4	33	5.1	96	6.2	36	6.9	1,031	19.8	5,205
2014	95	6.0	107	3.4	71	7.4	80	4.1	21	3.3	76	4.9	55	10.6	962	21.1	4,567
2015	69	4.4	102	3.2	72	7.5	61	3.2	32	5.0	59	3.8	49	9.4	982	24.0	4,084
2016	54	3.4	83	2.6	70	7.3	59	3.0	51	7.9	83	5.3	45	8.6	1,020	25.0	4,076
2017	68	4.3	71	2.3	75	7.9	55	2.8	64	9.9	54	3.5	50	9.6	869	24.5	3,552
2018	48	3.0	53	1.7	82	8.6	52	2.7	59	9.2	43	2.8	52	10.0	822	25.1	3,280
2019	66	4.2	67	2.1	74	7.8	44	2.3	66	10.2	55	3.5	36	6.9	845	24.8	3,403
2020	56	3.6	50	1.6	48	5.0	46	2.4	42	6.5	39	2.5	39	7.5	666	22.8	2,927
Total	1,577	1.7	3,154	3.4	955	1.0	1,939	2.1	645	0.7	1,556	1.7	521	0.6	21,349	23.2	92,109

^a Countries ordered by decreasing total number of TB notifications in 2020.

^b Total number of people notified with TB born outside the UK where country of birth was known.

Table Ai.1.7. Time between entry to the UK and TB notification for people with TB born outside the UK by year, England, 2010 to 2020

Year	Time (years) between entry to the UK and TB notification								
	Under 2		2 to 5		6 to 10		over 11		Total ^a
	n	%	n	%	n	%	n	%	n
2009	967	20.5	1,398	29.7	971	20.6	1,371	29.1	4,707
2010	1,071	22.5	1,368	28.7	938	19.7	1,382	29.0	4,759
2011	1,185	22.4	1,408	26.6	1,087	20.5	1,612	30.5	5,292
2012	1,021	19.4	1,460	27.8	1,047	19.9	1,727	32.9	5,255
2013	688	14.2	1,419	29.3	1,014	20.9	1,727	35.6	4,848
2014	604	14.1	1,101	25.8	898	21.0	1,669	39.1	4,272
2015	597	15.3	878	22.5	787	20.1	1,646	42.1	3,908
2016	654	16.8	779	20.0	732	18.8	1,729	44.4	3,894
2017	537	16.0	692	20.6	608	18.1	1,528	45.4	3,365
2018	518	16.6	626	20.1	560	18.0	1,411	45.3	3,115
2019	591	18.4	615	19.2	569	17.7	1,432	44.7	3,207
2020	511	18.9	587	21.7	390	14.4	1,220	45.1	2,708

^a Total number of people notified with TB in the population born outside the UK where year of entry to the UK is known

Table Ai.1.8. Number of TB notifications and rates by ethnic group and place of birth, England, 2020

Ethnic group	Place of birth			
	UK born		Non-UK born	
	Number of people	Rate per 100,000 (95% CI)	Number of people	Rate per 100,000 (95% CI)
White	636	1.5(1.4-1.6)	334	8.2(7.4-9.1)
Black-Caribbean	46	10.0(7.3-13.3)	32	17.9(12.2-25.3)
Black-African	84	16.6(13.3-20.6)	626	86.8(80.2-93.9)
Black-Other	17	18.7(10.9-30.0)	25	51.0(33.0-75.3)
Indian	80	10.7(8.5-13.3)	847	90.9(84.9-97.3)
Pakistani	131	17.8(14.9-21.1)	442	99.6(90.5-109.3)
Bangladeshi	24	9.2(5.9-13.6)	95	43.0(34.8-52.6)
Chinese	2	2.0(0.2-7.2)	38	21.3(15.0-29.2)
Mixed/Other	60	4.1(3.1-5.2)	486	37.0(33.8-40.4)

CI: Confidence intervals.

Table Ai.1.9. Number of people with TB born in the UK over time by ethnic group, England, 2000 to 2020

Year	White	Black ^a	South Asian ^b	Mixed/other ^c
	n	n	n	n
2000	1,262	173	346	35
2001	1,309	151	367	48
2002	1,229	178	391	38
2003	1,191	127	335	36
2004	1,163	204	345	59
2005	1,117	197	399	69
2006	1,094	189	373	62
2007	1,051	240	425	70
2008	1,049	235	483	81
2009	1,115	232	432	86
2010	1,053	225	436	70
2011	1,138	233	462	85
2012	1,183	242	474	83
2013	1,093	218	419	90
2014	1,072	224	363	90
2015	918	205	329	78
2016	883	189	299	77
2017	900	185	273	65
2018	788	153	267	64
2019	710	152	274	72
2020	636	147	235	62

^a People from Black-Caribbean, Black-African and Black-Other ethnic groups were grouped as 'Black'.

^b People from Indian, Pakistani and Bangladeshi ethnic groups were grouped as 'South Asian'.

^c People from Mixed/Other and Chinese ethnic groups were grouped as 'Mixed/other'.

Table Ai.1.10. Number and proportion of people with TB by site of disease and place of birth, England, 2010 to 2020

Year	All people with TB ^a					UK born					Non-UK born				
	Pulmonary ^b		Extra-pulmonary only ^c		Total	Pulmonary ^b		Extra-pulmonary only ^c		Total	Pulmonary ^b		Extra-pulmonary only ^c		Total
	n	%	n	%	n	n	%	n	%	n	n	%	n	%	n
2009	4,441	55.1	3,619	44.9	8,060	1,353	71.5	539	28.5	1,892	2,766	49.0	2,878	51.0	5,644
2010	4,109	53.8	3,535	46.2	7,644	1,249	69.2	556	30.8	1,805	2,626	47.8	2,872	52.2	5,498
2011	4,359	52.9	3,883	47.1	8,242	1,386	71.7	548	28.3	1,934	2,801	46.6	3,208	53.4	6,009
2012	4,266	53.1	3,774	46.9	8,040	1,378	69.2	612	30.8	1,990	2,752	47.2	3,075	52.8	5,827
2013	3,779	52.3	3,448	47.7	7,227	1,254	68.7	572	31.3	1,826	2,437	46.5	2,806	53.5	5,243
2014	3,444	53.3	3,014	46.7	6,458	1,196	68.3	556	31.7	1,752	2,180	47.4	2,421	52.6	4,601
2015	3,087	53.9	2,639	46.1	5,726	1,081	70.7	448	29.3	1,529	1,945	47.5	2,149	52.5	4,094
2016	3,082	54.9	2,531	45.1	5,613	995	68.6	456	31.4	1,451	2,044	49.9	2,051	50.1	4,095
2017	2,814	55.6	2,245	44.4	5,059	999	70.3	423	29.7	1,422	1,780	49.8	1,795	50.2	3,575
2018	2,625	57.0	1,980	43.0	4,605	914	71.9	358	28.1	1,272	1,691	51.4	1,597	48.6	3,288
2019	2,620	55.9	2,071	44.1	4,691	842	69.5	370	30.5	1,212	1,742	51.0	1,673	49.0	3,415
2020	2,204	53.5	1,913	46.5	4,117	735	67.4	355	32.6	1,090	1,429	48.6	1,514	51.4	2,943

^a Total number of people with TB including those with an unknown place of birth.

^b With or without extra-pulmonary disease.

^c Extra-pulmonary disease only.

Table Ai.1.11. Number of people with TB receiving directly observed therapy (DOT) by age group, England, 2010 to 2020

Year	Age group (years)								Total ^a
	0 to 14		15 to 44		45 to 64		Over 65		
	n	%	n	%	n	%	n	%	
2010	67	24.7	281	7.4	117	9.4	70	9.2	6,094
2011	72	20.3	364	7.6	145	9.2	100	10.8	7,654
2012	100	28	372	8	166	10.9	109	11.7	7,447
2013	65	24.3	349	8.4	183	12.1	113	13	6,818
2014	79	31.9	388	10.9	193	13.6	110	12.8	6,076
2015	57	28.5	380	11.8	196	15.3	132	17.6	5,453
2016	61	30.8	361	12	227	16.8	115	14.8	5,341
2017	54	31.6	311	11.5	188	15.3	105	14.2	4,841
2018	56	39.4	297	12.1	170	14.8	103	15.7	4,404
2019	47	28.5	320	12.9	162	13.3	101	16.5	4,470
2020	38	26.8	256	12	160	15.2	82	15.1	3,875

^a Total number of people with TB where information on whether they received DOT was known.

Table Ai.2.1. Species identification for people with culture confirmed TB, England, 2009 to 2020

Year	<i>M. tuberculosis</i>		<i>M. bovis</i>		<i>M. africanum</i>		<i>M. microti</i>		MTBC		Total
	n	%	n	%	n	%	n	%	n	%	n
2009	4,612	98.8	17	0.4	31	0.7	0	0.0	10	0.2	4,670
2010	4,370	94.4	32	0.7	17	0.4	2	0.0	209	4.5	4,630
2011	4,901	97.0	30	0.6	34	0.7	0	0.0	87	1.7	5,052
2012	4,771	97.3	30	0.6	42	0.9	2	0.0	60	1.2	4,905
2013	4,289	97.4	24	0.5	52	1.2	1	0.0	36	0.8	4,402
2014	3,839	97.5	33	0.8	42	1.1	1	0.0	21	0.5	3,936
2015	3,404	97.1	26	0.7	59	1.7	0	0.0	17	0.5	3,506
2016	3,484	97.1	32	0.9	53	1.5	2	0.1	16	0.4	3,587
2017	3,083	97.1	35	1.1	47	1.5	4	0.1	5	0.2	3,174
2018	2,806	97.9	22	0.8	34	1.2	2	0.1	2	0.1	2,866
2019	2,825	97.5	30	1.0	40	1.4	0	0.0	1	0.0	2,896
2020	2,448	97.7	18	0.7	39	1.6	0	0.0	0	0.0	2,505

Table Ai.2.2. Number and proportion of people with TB who were culture confirmed by PHE Centre and site of disease, England, 2016 to 2020

PHE Centre ^a	All people with TB										People with pulmonary TB									
	2016		2017		2018		2019		2020		2016		2017		2018		2019		2020	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
London	1,384	63	1,181	61.9	1,042	62.1	1,000	60.4	925	63.2	855	78.2	759	77.9	688	76.6	638	76.5	599	79.8
West Midlands	417	58.2	413	62.6	359	58.7	338	58.3	315	57.5	285	70.2	288	74.4	259	73	243	73.9	202	74.8
North West	379	64.3	324	61.2	311	66.6	343	65.5	289	63.5	253	73.8	190	75.1	203	79.6	228	77.3	172	80
South East	379	67.6	343	64.2	304	60.8	306	60.5	246	53.9	247	80.5	227	74.7	213	77.2	213	73.4	156	70
East of England	277	63.8	263	64.5	209	59.4	259	62.7	211	56.9	191	75.2	206	78.9	155	68.9	192	72.5	149	65.9
East Midlands	211	61.9	213	61	200	59	208	58.4	187	60.3	155	79.1	153	73.6	145	74	144	74.6	130	70.7
Yorkshire and the Humber	303	72.1	215	62.5	231	65.8	226	63.5	155	57.4	215	85	153	71.2	166	78.7	153	73.2	113	67.3
South West	151	63.4	144	63.4	120	62.8	159	67.9	110	65.9	110	69.6	109	71.2	90	68.7	120	72.3	83	78.3
North East	86	71.1	78	71.6	90	75	57	73.1	67	79.8	59	83.1	46	78	61	78.2	36	92.3	55	90.2
England^b	3,587	63.9	3,174	62.6	2,866	62.2	2,896	61.6	2,505	60.7	2,370	76.9	2,131	75.7	1,980	75.4	1,967	75.1	1,659	75.3

^a Ordered by decreasing total number of TB notifications in 2020.

^b Total number including those with an unknown PHE Centre of residence.

Table Ai.2.3. Number and proportion of people with TB with first line drug results, England, 2000 to 2020

Year	Results for isoniazid and rifampicin ^a		Results for all first line drugs ^b		People with culture confirmed TB	
	n	%	n	%	n	%
2000	2,798	100.0	2,780	99.4	2,798	46.3
2001	3,160	99.8	3,141	99.2	3,167	51.3
2002	3,815	99.4	3,787	98.7	3,838	57.5
2003	3,827	99.9	3,802	99.2	3,832	57.8
2004	4,032	99.0	4,015	98.6	4,073	58.8
2005	4,550	99.3	4,533	98.9	4,582	59.8
2006	4,637	99.2	4,613	98.7	4,673	60.8
2007	4,386	99.0	4,374	98.7	4,432	58.5
2008	4,481	98.8	4,447	98.0	4,537	58.1
2009	4,597	98.4	4,535	97.1	4,670	57.6
2010	4,545	98.2	4,531	97.9	4,630	60.3
2011	4,966	98.3	4,919	97.4	5,052	61.0
2012	4,856	99.0	4,819	98.2	4,905	60.7
2013	4,304	97.8	4,275	97.1	4,402	60.6
2014	3,907	99.3	3,866	98.2	3,936	60.8
2015	3,487	99.5	3,464	98.8	3,506	61.1
2016	3,546	98.9	3,480	97.0	3,587	63.8
2017	3,140	98.9	3,109	98.0	3,174	62.6
2018	2,841	99.1	2,818	98.3	2,866	62.2
2019	2,879	99.4	2,637	91.1	2,896	61.6
2020	2,450	97.8	2,201	87.9	2,505	60.7

^a People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin.

^b People with culture confirmed TB with a result (DST or WGS) for at least isoniazid, rifampicin, ethambutol and pyrazinamide.

Table Ai.2.4. Number and proportion of people with TB with first line drug resistance^a, England, 2000 to 2020

Year	Isoniazid		Rifampicin		Ethambutol		Pyrazinamide		Resistant to any	
	resistant		resistant		resistant		resistant ^b		first line drug	
	n	%	n	%	n	%	n	%	n	%
2000	178	6.4	41	1.5	10	0.4	14	0.5	193	6.9
2001	210	6.6	33	1.0	11	0.3	16	0.5	228	7.2
2002	273	7.2	45	1.2	19	0.5	29	0.8	297	7.8
2003	281	7.3	68	1.8	17	0.4	19	0.5	307	8.0
2004	295	7.3	61	1.5	17	0.4	26	0.6	325	8.1
2005	322	7.1	56	1.2	18	0.4	14	0.3	346	7.6
2006	338	7.3	74	1.6	25	0.5	22	0.5	371	8.0
2007	303	6.9	63	1.4	26	0.6	26	0.6	331	7.5
2008	267	6.0	68	1.5	34	0.8	36	0.8	306	6.8
2009	327	7.1	70	1.5	27	0.6	49	1.1	369	8.0
2010	293	6.4	75	1.7	35	0.8	40	0.9	322	7.1
2011	377	7.6	89	1.8	55	1.1	46	0.9	414	8.3
2012	331	6.8	86	1.8	47	1.0	43	0.9	360	7.4
2013	299	6.9	77	1.8	39	0.9	37	0.9	326	7.6
2014	268	6.9	59	1.5	42	1.1	31	0.8	289	7.4
2015	237	6.8	54	1.5	27	0.8	23	0.7	255	7.3
2016	244	6.9	62	1.7	50	1.4	22	0.6	266	7.5
2017	227	7.2	57	1.8	59	1.9	72	2.3	285	9.1
2018	223	7.8	46	1.6	43	1.5	108	3.8	329	11.6
2019	223	7.7	53	1.8	55	2.0	86	3.1	310	10.8
2020	198	8.1	58	2.4	43	1.9	62	2.6	253	11.6

^a People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin. A person may have resistance to more than one of the first line drugs.

^b Excludes people with *M. bovis*, which is inherently resistant to pyrazinamide.

Table Ai.2.5. Number and proportion of people with TB^a with initial drug resistance, England, 2000 to 2020

Year	Isoniazid resistance without MDR-TB		Rifampicin resistance without MDR-TB		MDR/RR-TB (including XDR-TB)		MDR-TB (including XDR-TB)		XDR-TB	
	n	%	n	%	n	%	n	%	n	%
2000	150	5.4	13	0.5	41	1.5	28	1.0	1	0.04
2001	187	5.9	10	0.3	33	1.0	23	0.7	0	0.00
2002	239	6.3	11	0.3	45	1.2	34	0.9	0	0.00
2003	232	6.1	19	0.5	68	1.8	49	1.3	1	0.03
2004	250	6.2	16	0.4	61	1.5	45	1.1	0	0.00
2005	281	6.2	15	0.3	56	1.2	41	0.9	0	0.00
2006	284	6.1	20	0.4	74	1.6	54	1.2	0	0.00
2007	254	5.8	14	0.3	63	1.4	49	1.1	0	0.00
2008	217	4.8	18	0.4	68	1.5	50	1.1	2	0.04
2009	268	5.8	11	0.2	70	1.5	59	1.3	2	0.04
2010	228	5.0	10	0.2	75	1.7	65	1.4	2	0.04
2011	296	6.0	8	0.2	89	1.8	81	1.6	6	0.12
2012	255	5.3	10	0.2	86	1.8	76	1.6	2	0.04
2013	232	5.4	10	0.2	77	1.8	67	1.6	3	0.07
2014	215	5.5	6	0.2	59	1.5	53	1.4	3	0.08
2015	192	5.5	9	0.3	54	1.5	45	1.3	10	0.29
2016	191	5.4	9	0.3	62	1.7	53	1.5	7	0.20
2017	181	5.8	11	0.4	57	1.8	46	1.5	3	0.10
2018	187	6.6	10	0.4	46	1.6	36	1.3	5	0.18
2019	186	6.5	16	0.6	53	1.8	37	1.3	4	0.14
2020	157	6.4	17	0.7	58	2.4	41	1.7	4	0.16

^a People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin

^b Includes people with initial or acquired MDR/RR-TB, and people treated with a second line regimen

Table Ai.2.6. Number and proportion of people with TB with drug resistance by PHE Centre, England, 2016 to 2020

PHE Centre ^a	Isoniazid resistance without MDR-TB		MDR/RR-TB (including XDR-TB)		MDR-TB (including XDR-TB)		XDR-TB		Total ^b
	n	%	n	%	n	%	n	%	n
London	416	7.6	88	1.6	72	1.3	5	0.1	5,484
West Midlands	76	4.2	33	1.8	23	1.3	0	0.0	1,822
South East	87	5.6	27	1.7	23	1.5	1	0.1	1,556
North West	92	5.6	27	1.7	21	1.3	3	0.2	1,636
East of England	63	5.2	29	2.4	23	1.9	3	0.2	1,209
East Midlands	50	5.0	27	2.7	20	2.0	5	0.5	1,003
Yorkshire and the Humber	63	5.6	27	2.4	18	1.6	5	0.4	1,126
South West	40	6.2	14	2.2	10	1.6	1	0.2	644
North East	15	4.0	4	1.1	3	0.8	0	0.0	376
England	902	6.1	276	1.9	213	1.4	23	0.2	14,856

^a Ordered by decreasing total number of TB notifications in 2020.

^b People with culture confirmed TB with a result (DST or WGS) for at least isoniazid and rifampicin.

Table Ai.2.7: Number and proportion of people with MDR-TB with resistance to an injectable agent or a fluoroquinolone, England, 2000 to 2020

Year	MDR-TB ^a	Tested for at least one injectable agent		Resistant to an injectable agent		Tested for at least one fluoroquinolone		Resistant to a fluoroquinolone	
		n	n	%	n	%	n	%	n
2000	28	1	3.6	1	100.0	1	3.6	1	100.0
2001	23	9	39.1	0	0.0	9	39.1	0	0.0
2002	34	33	97.1	1	3.0	33	97.1	0	0.0
2003	49	48	98.0	2	4.2	47	95.9	4	8.5
2004	45	45	100.0	1	2.2	36	80.0	2	5.6
2005	41	41	100.0	0	0.0	41	100.0	2	4.9
2006	54	54	100.0	3	5.6	54	100.0	0	0.0
2007	49	45	91.8	2	4.4	48	98.0	4	8.3
2008	50	46	92.0	3	6.5	49	98.0	11	22.4
2009	59	55	93.2	5	9.1	57	96.6	7	12.3
2010	65	61	93.8	9	14.8	61	93.8	9	14.8
2011	81	80	98.8	14	17.5	81	100.0	21	25.9
2012	76	76	100.0	13	17.1	76	100.0	4	5.3
2013	67	66	98.5	12	18.2	67	100.0	12	17.9
2014	53	52	98.1	7	13.5	52	98.1	13	25.0
2015	45	45	100.0	13	28.9	45	100.0	15	33.3
2016	53	51	96.2	13	25.5	53	100.0	14	26.4
2017	46	45	97.8	7	15.6	46	100.0	17	37.0
2018	36	36	100.0	7	19.4	36	100.0	7	19.4
2019	37	37	100.0	8	21.6	37	100.0	10	27.0
2020	41	41	100.0	9	22.0	41	100.0	9	22.0

^a Includes people with initial or acquired MDR-TB, and people treated with a second line regimen.

Table Ai.2.8: The number and proportion of people with MDR-TB resistant to at least one injectable agent or at least one fluoroquinolone by most frequent country of birth, England, 2016 to 2020

Country of birth ^a	MDR-TB ^c	Pre-XDR				XDR-TB	
		Resistant to an injectable agent		Resistant to a fluoroquinolone			
	n	n	% ^b	n	% ^b	n	% ^b
India	42	3	7.3	15	35.7	1	2.4
United Kingdom	33	8	25.0	8	24.2	4	12.1
Lithuania	25	11	44.0	11	44.0	8	32.0
Romania	15	6	40.0	1	6.7	1	6.7
Philippines	12	0	0.0	1	8.3	0	0.0

^a The table shows the top 5 countries of birth for people with MDR-TB who are resistant to at least one injectable agent or at least one fluoroquinolone with 9 or more people with MDR-TB from that country in 2016-2019. For these countries, the total number and proportion of people with resistant TB are shown.

^b Proportion of people with MDR-TB who are resistant to an injectable agent or a fluoroquinolone (of those tested), born in the respective country.

^c Includes people with initial or acquired MDR-TB, and people treated with a second line regimen.

Table Ai.3.1. Number and proportion of people with pulmonary TB by time from symptom onset to treatment start and place of birth, England, 2016 to 2020

Place of birth	Year	Time from symptom onset to treatment start						
		0 to 2 months		2 to 4 months		Over 4 months		Total ^a
		n	%	n	%	n	%	n
UK born	2016	328	37.0	260	29.3	299	33.7	887
	2017	328	36.1	251	27.6	330	36.3	909
	2018	322	40.0	229	28.5	253	31.5	804
	2019	254	34.5	216	29.3	266	36.1	736
	2020	233	36.6	173	27.2	230	36.2	636
Non-UK born	2016	752	39.5	600	31.5	553	29.0	1,905
	2017	653	39.4	539	32.5	466	28.1	1,658
	2018	647	41.8	502	32.5	397	25.7	1,546
	2019	665	42.3	451	28.7	457	29.1	1,573
	2020	518	40.7	370	29.0	386	30.3	1,274

^a Number of people with pulmonary TB for whom time from symptom onset to treatment start was known.

Table Ai.3.2. Number and proportion of people with pulmonary TB by time from symptom onset to treatment start and PHE Centrea, England, 2016 to 2020

Year	London							West Midlands							South East						
	Time from symptom onset to treatment start							Time from symptom onset to treatment start							Time from symptom onset to treatment start						
	0 to 2 months		2 to 4 months		Over 4 months		Total ^b	0 to 2 months		2 to 4 months		Over 4 months		Total ^b	0 to 2 months		2 to 4 months		Over 4 months		Total ^b
	n	%	n	%	n	%	n	n	%	n	%	n	%	n	n	%	n	%	n	%	n
2016	409	41.0	319	32.0	269	27.0	997	134	35.8	120	32.1	120	32.1	374	107	36.4	87	29.6	100	34.0	294
2017	359	40.7	297	33.7	226	25.6	882	148	40.3	115	31.3	104	28.3	367	113	39.1	79	27.3	97	33.6	289
2018	342	42.2	275	34.0	193	23.8	810	163	49.1	94	28.3	75	22.6	332	101	39.0	83	32.0	75	29.0	259
2019	320	43.1	227	30.6	196	26.4	743	115	37.0	94	30.2	102	32.8	311	98	35.9	74	27.1	101	37.0	273
2020	298	44.9	180	27.1	186	28.0	664	88	36.2	69	28.4	86	35.4	243	66	33.0	65	32.5	69	34.5	200

^a Ordered by decreasing total number of TB notifications in 2020

^b The number of people with pulmonary TB for whom time from symptom onset to treatment start was known

Table Ai.3.2. Number and proportion of people with pulmonary TB by time from symptom onset to treatment start and PHE Centre^a, England, 2016 to 2020 (continued)

Year	North West							East of England							East Midlands						
	Time from symptom onset to treatment start							Time from symptom onset to treatment start							Time from symptom onset to treatment start						
	0 to 2 months		2 to 4 months		Over 4 months		Total ^b	0 to 2 months		2 to 4 months		Over 4 months		Total ^b	0 to 2 months		2 to 4 months		Over 4 months		Total ^b
	n	%	n	%	n	%	n	n	%	n	%	n	%	n	n	%	n	%	n	%	n
2016	120	40.7	84	28.5	91	30.8	295	80	34.5	63	27.2	89	38.4	232	73	40.3	57	31.5	51	28.2	181
2017	77	37.0	58	27.9	73	35.1	208	74	31.4	76	32.2	86	36.4	236	66	33.3	60	30.3	72	36.4	198
2018	79	39.1	54	26.7	69	34.2	202	70	36.5	55	28.6	67	34.9	192	80	42.8	53	28.3	54	28.9	187
2019	94	43.7	63	29.3	58	27.0	215	88	39.1	60	26.7	77	34.2	225	76	41.8	55	30.2	51	28.0	182
2020	66	39.5	43	25.7	58	34.7	167	59	31.2	51	27.0	79	41.8	189	52	30.6	56	32.9	62	36.5	170

^a Ordered by decreasing total number of TB notifications in 2020

^b The number of people with pulmonary TB for whom time from symptom onset to treatment start was known

Table Ai.3.2. Number and proportion of people with pulmonary TB by time from symptom onset to treatment start and PHE Centre^a, England, 2016 to 2020 (continued)

Year	Yorkshire and the Humber							South West							North East						
	Time from symptom onset to treatment start							Time from symptom onset to treatment start							Time from symptom onset to treatment start						
	0 to 2 months		2 to 4 months		Over 4 months		Total ^b	0 to 2 months		2 to 4 months		Over 4 months		Total ^b	0 to 2 months		2 to 4 months		Over 4 months		Total ^b
	n	%	n	%	n	%	n	n	%	n	%	n	%	n	n	%	n	%	n	%	n
2016	96	41.2	72	30.9	65	27.9	233	4	32.9	43	28.9	57	38.3	149	24	39.3	22	36.1	15	24.6	61
2017	83	39.7	60	28.7	66	31.6	209	4	33.1	30	21.6	63	45.3	139	23	43.4	17	32.1	13	24.5	53
2018	78	40.4	57	29.5	58	30.1	193	3	29.2	38	33.6	42	37.2	113	26	37.1	25	35.7	19	27.1	70
2019	61	31.9	57	29.8	73	38.2	191	6	43.6	33	22.1	51	34.2	149	12	34.3	8	22.9	15	42.9	35
2020	73	51.0	32	22.4	38	26.6	143	3	34.4	28	31.1	31	34.4	90	21	36.2	22	37.9	15	25.9	58

^a Ordered by decreasing total number of TB notifications in 2020.

^b The number of people with pulmonary TB for whom time from symptom onset to treatment start was known.

Table Ai.3.3: TB outcome at 12 months for people with non-MDR/RR TB with an expected treatment duration less than 12 months^a, England, 2010 to 2019

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
2010	5,655	83.0	312	4.6	290	4.3	380	5.6	60	0.9	116	1.7	6,813
2011	6,024	82.1	313	4.3	371	5.1	455	6.2	64	0.9	107	1.5	7,334
2012	6,015	83.7	308	4.3	296	4.1	401	5.6	67	0.9	96	1.3	7,183
2013	5,504	85.7	264	4.1	252	3.9	312	4.9	54	0.8	39	0.6	6,425
2014	4,847	84.9	276	4.8	228	4.0	267	4.7	58	1.0	30	0.5	5,706
2015	4,205	84.0	265	5.3	208	4.2	260	5.2	42	0.8	26	0.5	5,006
2016	4,230	85.2	249	5.0	196	3.9	211	4.2	47	0.9	32	0.6	4,965
2017	3,817	85.3	204	4.6	190	4.2	199	4.4	51	1.1	14	0.3	4,475
2018	3,506	84.8	182	4.4	176	4.3	192	4.6	44	1.1	34	0.8	4,134
2019	3,425	82.0	177	4.2	143	3.4	217	5.2	54	1.3	161	3.9	4,177
Total	47,228	84.0	2,550	4.5	2,350	4.2	2,894	5.1	541	1.0	655	1.2	56,218

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

^b Not evaluated includes unknown and transferred out.

Table Ai.3.4. Last recorded TB outcome for people with non-MDR/RR TB with an expected treatment duration under 12months^a, England, 2010 to 2019

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
2010	5,928	87.0	317	4.7	295	4.3	95	1.4	62	0.9	116	1.7	6,813
2011	6,466	88.2	316	4.3	373	5.1	5	0.1	67	0.9	107	1.5	7,334
2012	6,384	88.9	316	4.4	309	4.3	7	0.1	71	1.0	96	1.3	7,183
2013	5,801	90.3	267	4.2	254	4.0	2	0.0	62	1.0	39	0.6	6,426
2014	5,104	89.4	281	4.9	231	4.0	1	0.0	59	1.0	30	0.5	5,706
2015	4,449	88.9	269	5.4	215	4.3	4	0.1	43	0.9	26	0.5	5,006
2016	4,426	89.1	252	5.1	198	4.0	7	0.1	50	1.0	32	0.6	4,966
2017	4,001	89.4	206	4.6	193	4.3	5	0.1	56	1.3	14	0.3	4,476
2018	3,680	89.0	186	4.5	180	4.4	7	0.2	47	1.1	34	0.8	4,135
2019 ^c	3,574	85.6	181	4.3	145	3.5	61	1.5	55	1.3	161	3.9	4,177
Total	49,813	88.6	2,591	4.6	2,393	4.3	194	0.3	572	1.0	655	1.2	56,222

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

^b Not evaluated includes unknown and transferred out.

^c Reduced follow-up period for this group, therefore proportion completed expected to increase and proportion still on treatment expected to decrease in future reporting.

Table Ai.3.5. Time to treatment completion for people with non-MDR/RR TB with an expected treatment duration <12months^a, England, 2010 to 2019

Year	Less than 6 months to complete ^b		6 to 8 months to complete ^b		8 to 10 months to complete		10 to 12 months to complete		More than 12 months to complete		Completion time known		Treatment completed ^c
	n	%	n	%	n	%	n	%	n	%	n	%	n
2010	321	5.9	3,997	72.9	585	10.7	333	6.1	250	4.6	5,486	92.5	5,928
2011	326	5.4	4,355	71.7	664	10.9	316	5.2	415	6.8	6,076	94.0	6,466
2012	303	5.0	4,421	73.0	613	10.1	367	6.1	351	5.8	6,055	94.8	6,384
2013	303	5.5	4,034	72.6	569	10.2	375	6.8	274	4.9	5,555	95.8	5,801
2014	263	5.2	3,577	71.3	538	10.7	390	7.8	248	4.9	5,016	98.3	5,104
2015	223	5.1	3,162	72.4	473	10.8	271	6.2	240	5.5	4,369	98.2	4,449
2016	240	5.5	3,133	71.5	554	12.6	266	6.1	191	4.4	4,384	99.1	4,426
2017	237	6.0	2,753	69.6	503	12.7	284	7.2	181	4.6	3,958	98.9	4,001
2018	201	5.6	2,459	68.1	545	15.1	242	6.7	166	4.6	3,613	98.2	3,680
2019	222	6.3	2,419	68.9	498	14.2	225	6.4	147	4.2	3,511	98.2	3,574
Total	2,639	5.5	34,310	71.4	5,542	11.5	3,069	6.4	2,463	5.1	48,023	96.4	49,813

^a Excludes people in the drug resistant cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

^b People with completion between 168 and 180 days are included in the 6-8 months category.

^c Treatment completed at last recorded outcome.

Table Ai.3.6 Treatment completion at 12 months by age group for people with non-MDR/RR TB with an expected treatment duration under 12months^a, England, 2010 to 2019

Year	Age group (years)							
	0 to 14		15 to 44		45 to 64		Over 65	
	n	%	n	%	n	%	n	%
2010	301	91.8	3,568	85.8	1,153	82.5	633	68.1
2011	301	85.5	3,804	84.8	1,285	82.9	634	67.2
2012	336	91.6	3,779	86.4	1,252	84.2	648	68.0
2013	249	91.9	3,359	87.8	1,251	86.6	645	72.8
2014	232	94.3	2,911	88.3	1,110	84.5	594	70.0
2015	187	95.9	2,560	87.8	1,007	84.7	451	63.9
2016	180	96.3	2,456	88.7	1,066	85.0	528	69.8
2017	146	94.2	2,245	88.8	926	84.5	500	71.9
2018	122	91.0	2,009	88.1	918	85.5	457	70.9
2019	138	90.8	1,959	85.7	921	80.5	407	68.3
Total	2,192	91.8	28,650	86.4	10,889	84.1	5,497	67.9

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

Table Ai.3.7. TB outcome at 12 months for people with non-MDR/RR TB with an expected treatment duration under 12 months^a, by age and sex, England, 2019

Age group (years)	Sex	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total
		n	%	n	%	n	%	n	%	n	%	n	%	n
0 to 14	Female	75	90.4	0	0.0	0	0.0	3	3.6	0	0.0	5	6.0	83
	Male	63	91.3	0	0.0	2	2.9	1	1.5	0	0.0	3	4.4	69
15 to 44	Female	783	86.0	3	0.3	25	2.7	52	5.7	7	0.8	41	4.5	911
	Male	1,176	85.6	6	0.4	75	5.5	65	4.7	14	1.0	38	2.8	1,374
45 to 64	Female	371	85.9	10	2.3	6	1.4	22	5.1	4	0.9	19	4.4	432
	Male	550	77.3	46	6.5	20	2.8	54	7.6	7	1.0	35	4.9	712
Over 65	Female	181	72.1	36	14.3	4	1.6	8	3.2	14	5.6	8	3.2	251
	Male	226	65.5	76	22.0	11	3.2	12	3.5	8	2.3	12	3.5	345
Total		3,425	82.0	177	4.2	143	3.4	217	5.2	54	1.3	161	3.9	4,177

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

^b Not evaluated includes unknown and transferred out.

Table Ai.3.8. Last recorded TB outcome for the entire non-MDR/RR cohort^a by site of disease, 2019

Site of disease ^b	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^c		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
Pulmonary	2,136	81.5	171	6.5	106	4.0	70	2.7	31	1.2	106	4.0	2,620
Pulmonary only	1,507	81.5	121	6.5	82	4.4	40	2.2	23	1.2	77	4.2	1,850
Miliary	117	77.5	18	11.9	6	4.0	7	4.6	0	0.0	3	2.0	151
Laryngeal	11	84.6	2	15.4	0	0.0	0	0.0	0	0.0	0	0.0	13
Extrapulmonary	2,431	85.6	112	3.9	85	3.0	72	2.5	37	1.3	104	3.7	2,841
Extrapulmonary only	1,802	87.0	62	3.0	61	2.9	42	2.0	29	1.4	75	3.6	2,071
Extra-thoracic lymph nodes	882	90.4	15	1.5	22	2.3	16	1.6	12	1.2	29	3.0	976
Intra-thoracic lymph nodes	550	89.9	12	2.0	13	2.1	15	2.5	5	0.8	17	2.8	612
Unknown extra-pulmonary	481	83.8	25	4.4	18	3.1	18	3.1	5	0.9	27	4.7	574
Pleural	348	81.1	28	6.5	20	4.7	7	1.6	4	0.9	22	5.1	429
Other extra-pulmonary	356	86.0	14	3.4	12	2.9	10	2.4	7	1.7	15	3.6	414
Gastrointestinal	245	85.7	11	3.8	3	1.0	5	1.7	3	1.0	19	6.6	286
Bone – spine	136	84.5	4	2.5	3	1.9	10	6.2	0	0.0	8	5.0	161
Bone – other	70	81.4	1	1.2	6	7.0	3	3.5	1	1.2	5	5.8	86
CNS – meningitis	64	58.2	19	17.3	8	7.3	10	9.1	2	1.8	7	6.4	110
Genitourinary	77	93.9	1	1.2	0	0.0	2	2.4	1	1.2	1	1.2	82
CNS – other	53	63.1	12	14.3	6	7.1	8	9.5	1	1.2	4	4.8	84
Cryptic	25	69.4	5	13.9	1	2.8	2	5.6	1	2.8	2	5.6	36

^a Excludes people in the MDR/RR cohort.^b With or without disease at another site.^c Not evaluated includes unknown and transferred out

Table Ai.3.9. TB outcome at 12 months for people with non-MDR/RR TB with an expected treatment duration less than 12 months by PHE Centre^a, England, 2019

PHE Centre ^b	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^c		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
London	1,225	84.8	50	3.5	68	4.7	74	5.1	15	1.0	13	0.9	1,445
West Midlands	449	85.7	23	4.4	10	1.9	25	4.8	11	2.1	6	1.1	524
North West	385	81.4	15	3.2	15	3.2	24	5.1	8	1.7	26	5.5	473
South East	381	83.0	21	4.6	12	2.6	18	3.9	3	0.7	24	5.2	459
East of England	253	80.3	17	5.4	5	1.6	5	1.6	4	1.3	31	9.8	315
Yorkshire and the Humber	280	77.1	21	5.8	11	3.0	26	7.2	3	0.8	22	6.1	363
East Midlands	242	75.6	16	5.0	10	3.1	33	10.3	4	1.3	15	4.7	320
South West	153	73.6	10	4.8	10	4.8	8	3.8	5	2.4	22	10.6	208
North East	57	81.4	4	5.7	2	2.9	4	5.7	1	1.4	2	2.9	70
England^d	3,425	82.0	177	4.2	143	3.4	217	5.2	54	1.3	161	3.9	4,177

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, miliary or cryptic disseminated TB.

^b Ordered by decreasing total number of TB notifications in 2019.

^c Not evaluated includes unknown and transferred out.

^d Total number of people with TB including those with an unknown PHE Centre of residence.

Table Ai.3.10. Treatment completion at 12 months for people with non-MDR/RR TB with an expected treatment duration under 12months^a by PHE Centre, England, 2010 to 2019

PHE Centre ^b	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
London	2,435	86.0	2,618	85.5	2,573	86.1	2,251	86.7	1,951	87.6	1,711	86.9	1,664	87.1	1,442	86.1	1,268	86.1	1,225	84.8
West Midlands	633	80.0	724	81.3	823	85.6	736	85.9	575	83.2	516	83.1	548	84.7	505	85.6	485	86.5	449	85.7
North West	602	84.8	594	81.1	579	84.3	544	84.1	469	83.9	416	84.2	451	85.1	399	83.5	364	85.6	385	81.4
South East	522	81.7	606	83.7	583	82.9	536	88.0	525	87.4	440	84.0	432	86.1	408	86.6	383	84.9	381	83.0
East of England	372	80.7	405	82.2	350	79.2	339	84.3	316	81.0	276	79.3	319	83.3	308	84.4	250	80.1	280	77.1
Yorkshire and the Humber	427	75.7	431	72.9	442	82.5	458	86.6	400	84.9	324	84.8	323	87.1	278	91.7	291	89.0	253	80.3
East Midlands	371	85.3	362	82.5	353	80.8	317	88.1	278	82.0	233	76.9	230	75.4	234	80.7	255	83.9	242	75.6
South West	179	74.0	194	68.8	193	70.4	224	73.9	221	75.9	197	79.8	173	82.8	167	81.1	128	76.2	153	73.6
North East	114	81.4	90	74.4	119	78.3	99	81.1	112	82.4	92	78.6	90	84.1	76	77.6	82	71.9	57	81.4
England^c	5,655	83.0	6,024	82.1	6,015	83.7	5,504	85.7	4,847	84.9	4,205	84.0	4,230	85.2	3,817	85.3	3,506	84.8	3,425	82.0

a Excludes people in the drug MDR/RR and those with CNS, spinal, miliary or cryptic disseminated TB.

b Ordered by decreasing total number of TB notifications in 2019.

c Total number of people with TB including those with an unknown PHE Centre of residence.

Table Ai.3.11. Last recorded TB outcome by end of follow-up period for people with non-MDR/RR CNS, spinal, miliary or cryptic disseminated TB^a, England, 2010 to 2019

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
2010	585	74.7	65	8.3	47	6.0	60	7.7	10	1.3	16	2.0	783
2011	704	82.7	66	7.8	52	6.1	0	0.0	10	1.2	19	2.2	851
2012	658	81.3	74	9.1	56	6.9	4	0.5	7	0.9	10	1.2	809
2013	628	83.3	68	9.0	44	5.8	2	0.3	6	0.8	6	0.8	754
2014	559	80.8	73	10.5	45	6.5	0	0.0	12	1.7	3	0.4	692
2015	539	81.4	77	11.6	38	5.7	1	0.2	3	0.5	4	0.6	662
2016	484	83.2	55	9.5	27	4.6	5	0.9	6	1.0	5	0.9	582
2017	427	81.0	60	11.4	30	5.7	1	0.2	6	1.1	3	0.6	527
2018	347	81.5	48	11.3	17	4.0	4	0.9	3	0.7	7	1.6	426
2019 ^c	353	74.8	48	10.2	17	3.6	29	6.1	4	0.8	21	4.4	472
Total	5,284	80.6	634	9.7	373	5.7	106	1.6	67	1.0	94	1.4	6,558

^a Excludes people in the MDR/RR cohort.

^b Not evaluated includes unknown and transferred out.

^c Reduced follow-up period for this group, therefore the proportion completed is expected to increase and the proportion still on treatment is expected to decrease in future reporting.

Table Ai.3.12. Last recorded TB outcome by end of follow-up period for the entire non-MDR/RR cohort^a, England, 2010 to 2019

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
2010	6,513	85.7	382	5.0	342	4.5	155	2.0	72	0.9	132	1.7	7,596
2011	7,170	87.6	382	4.7	425	5.2	5	0.1	77	0.9	126	1.5	8,185
2012	7,042	88.1	390	4.9	365	4.6	11	0.1	78	1.0	106	1.3	7,992
2013	6,429	89.6	335	4.7	298	4.2	4	0.1	68	0.9	45	0.6	7,179
2014	5,663	88.5	354	5.5	276	4.3	1	0.0	71	1.1	33	0.5	6,398
2015	4,988	88.0	346	6.1	253	4.5	5	0.1	46	0.8	30	0.5	5,668
2016	4,910	88.5	307	5.5	225	4.1	12	0.2	56	1.0	37	0.7	5,547
2017	4,428	88.5	266	5.3	223	4.5	6	0.1	62	1.2	17	0.3	5,002
2018	4,027	88.3	234	5.1	197	4.3	11	0.2	50	1.1	41	0.9	4,560
2019 ^c	3,927	84.5	229	4.9	162	3.5	90	1.9	59	1.3	182	3.9	4,649
Total	55,097	87.8	3,225	5.1	2,766	4.4	300	0.5	639	1.0	749	1.2	62,776

^a Excludes people in the MDR/RR cohort.

^b Not evaluated includes unknown and transferred out.

^c Reduced follow-up period for this group, therefore proportion completed expected to increase and proportion still on treatment expected to decrease in future reporting.

Table Ai.3.13. Relationship with TB for people in the entire non-MDR/RR cohort^a who died at last recorded outcome, England, 2010 to 2019

Year	TB caused or contributed to death		TB incidental to death		Unknown		Total deaths		Total
	n	%	n	%	n	%	n	%	n
2010	103	27.0	100	26.2	180	47.1	382	5.0	7,596
2011	107	28.0	91	23.8	191	50.0	382	4.7	8,185
2012	118	30.3	87	22.3	189	48.5	390	4.9	7,992
2013	110	32.8	71	21.2	158	47.2	335	4.7	7,180
2014	112	31.6	72	20.3	172	48.6	354	5.5	6,398
2015	127	36.7	100	28.9	124	35.8	346	6.1	5,668
2016	112	36.5	76	24.8	125	40.7	307	5.5	5,548
2017	118	44.4	66	24.8	89	33.5	266	5.3	5,003
2018	92	39.3	69	29.5	77	32.9	234	5.1	4,561
2019 ^b	85	37.1	68	29.7	80	34.9	229	4.9	4,649
Total	1,084	33.6	800	24.8	1,385	42.9	3,225	5.1	62,780

^a Excludes people in the MDR/RR cohort.

^b Reduced follow-up period for this group, therefore proportion expected to increase in future reporting.

Table Ai.3.14. Last recorded TB outcome for the entire non-MDR/RR cohort^a by PHE Centre, England, 2019

PHE Centre ^b	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^c		Total
	n	%	n	%	n	%	n	%	n	%	n	%	n
London	1,429	86.3	68	4.1	78	4.7	47	2.8	17	1.0	16	1.0	1,655
West Midlands	512	88.3	29	5.0	11	1.9	6	1.0	14	2.4	8	1.4	580
South East	428	84.6	25	4.9	14	2.8	10	2.0	3	0.6	26	5.1	506
North West	440	84.0	21	4.0	18	3.4	7	1.3	8	1.5	30	5.7	524
East of England	323	78.2	27	6.5	14	3.4	21	5.1	3	0.7	25	6.1	413
Yorkshire and the Humber	285	80.1	23	6.5	6	1.7	4	1.1	5	1.4	33	9.3	356
East Midlands	287	80.6	20	5.6	13	3.7	14	3.9	4	1.1	18	5.1	356
South West	173	73.9	16	6.8	11	4.7	3	1.3	5	2.1	26	11.1	234
North East	68	87.2	4	5.1	2	2.6	0	0.0	1	1.3	3	3.8	78
England	3,945	83.9	233	5.0	167	3.6	112	2.4	60	1.3	185	3.9	4,702

^a Excludes people in the MDR/RR cohort.

^b Ordered by decreasing total number of TB notifications in 2019.

^c Not evaluated includes unknown and transferred out.

Table Ai.3.15. TB outcome at 24 months after treatment start for the MDR/RR cohort^a, England, 2009 to 2018

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total n
	n	%	n	%	n	%	n	%	n	%	n	%	
2009	40	51.9	4	5.2	11	14.3	19	24.7	1	1.3	2	2.6	77
2010	38	48.1	0	0.0	9	11.4	25	31.6	4	5.1	3	3.8	79
2011	48	50.5	4	4.2	17	17.9	23	24.2	3	3.2	0	0.0	95
2012	58	61.7	3	3.2	9	9.6	16	17.0	5	5.3	3	3.2	94
2013	51	60.0	4	4.7	13	15.3	15	17.6	2	2.4	0	0.0	85
2014	39	52.7	2	2.7	14	18.9	14	18.9	4	5.4	1	1.4	74
2015	41	61.2	5	7.5	5	7.5	9	13.4	2	3.0	5	7.5	67
2016	46	65.7	6	8.6	8	11.4	9	12.9	1	1.4	0	0.0	70
2017	41	64.1	7	10.9	7	10.9	8	12.5	0	0.0	1	1.6	64
2018	31	62.0	4	8.0	5	10.0	6	12.0	1	2.0	3	6.0	50
Total	433	57.4	39	5.2	98	13.0	144	19.1	23	3.0	18	2.4	755

^a Includes people with initial and acquired MDR/RR-TB and people treated with a second line regimen.

^b Not evaluated includes unknown and transferred out.

Table Ai.3.16. Last recorded TB outcome for the MDR/RR cohort^a, England, 2009 to 2018

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total n
	n	%	n	%	n	%	n	%	n	%	n	%	
2009	59	76.6	4	5.2	11	14.3	1	1.3	1	1.3	1	1.3	77
2010	60	75.9	1	1.3	9	11.4	4	5.1	5	6.3	0	0.0	79
2011	64	67.4	7	7.4	18	18.9	3	3.2	3	3.2	0	0.0	95
2012	72	76.6	4	4.3	10	10.6	3	3.2	5	5.3	0	0.0	94
2013	65	76.5	4	4.7	14	16.5	0	0.0	2	2.4	0	0.0	85
2014	49	66.2	2	2.7	14	18.9	3	4.1	5	6.8	1	1.4	74
2015	50	74.6	5	7.5	5	7.5	4	6.0	2	3.0	1	1.5	67
2016	50	71.4	6	8.6	9	12.9	3	4.3	2	2.9	0	0.0	70
2017	46	71.9	7	10.9	7	10.9	3	4.7	1	1.6	0	0.0	64
2018 ^c	34	68.0	4	8.0	5	10.0	6	12.0	1	2.0	0	0.0	50
Total	549	72.7	44	5.8	102	13.5	30	4.0	27	3.6	3	0.4	755

^a Includes people with initial and acquired MDR/RR-TB and people treated with a second line regimen.

^b Not evaluated includes unknown and transferred out.

^c Reduced follow-up period for this group, therefore proportion completed expected to increase and proportion still on treatment expected to decrease in future reporting.

Table Ai.3.17. Time to TB treatment completion^a for the MDR/RR cohort^b, England, 2009 to 2018

Year	Under 12 months to complete ^c		12 to 18 months to complete ^c		18 to 20 months to complete		20 to 24 months to complete		More than 24 months to complete		Completion time known		Treatment completed ^c
	n	%	n	%	n	%	n	%	n	%	n	%	n
2009	1	2.2	2	4.3	11	23.9	17	37.0	15	32.6	46	78.0	59
2010	1	2.0	4	8.2	14	28.6	12	24.5	18	36.7	49	81.7	60
2011	1	1.7	8	13.6	11	18.6	23	39.0	16	27.1	59	92.2	64
2012	3	5.1	5	8.5	17	28.8	20	33.9	14	23.7	59	81.9	72
2013	4	6.3	8	12.5	15	23.4	24	37.5	13	20.3	64	98.5	65
2014	3	7.1	4	9.5	8	19.0	18	42.9	9	21.4	42	85.7	49
2015	4	8.3	12	25.0	9	18.8	14	29.2	9	18.8	48	96.0	50
2016	2	4.3	10	21.7	9	19.6	21	45.7	4	8.7	46	92.0	50
2017	1	2.7	11	29.0	13	34.2	8	21.1	5	13.2	38	82.6	46
2018	2	7.1	6	21.4	12	42.9	6	21.4	2	7.1	28	82.4	34
Total	22	4.0	70	12.8	119	21.7	163	29.7	105	19.1	479	87.2	549

^a Time to completion is from MDR/RR-TB treatment start date until completion date.

^b Includes people with initial and acquired MDR/RR-TB and people treated with a second line regimen.

^c Treatment completed at last recorded outcome.

Table Ai.4.1. Overall number and rate of TB in children (under 15 years) and annual percentage change, England, 2000 to 2020

Year	Total		Annual change in case numbers (%)	Annual change in rate (%)
	Number of children	Rate per 100,000 (95% CI)		
2000	346	3.7 (3.3 - 4.1)	-	-
2001	408	4.4 (4.0 - 4.8)	17.9	18.9
2002	386	4.2 (3.8 - 4.6)	-5.4	-4.5
2003	323	3.5 (3.1 - 3.9)	-16.3	-16.7
2004	401	4.4 (4.0 - 4.8)	24.1	25.7
2005	415	4.5 (4.1 - 5.0)	3.5	2.3
2006	361	4.0 (3.6 - 4.4)	-13.0	-11.1
2007	456	5.0 (4.5 - 5.5)	26.3	25.0
2008	451	4.9 (4.5 - 5.4)	-1.1	-2.0
2009	392	4.2 (3.8 - 4.7)	-13.1	-14.3
2010	355	3.8 (3.4 - 4.2)	-9.4	-9.5
2011	376	4.0 (3.6 - 4.4)	5.9	5.3
2012	396	4.2 (3.8 - 4.6)	5.3	5.0
2013	291	3.0 (2.7 - 3.4)	-26.5	-28.6
2014	263	2.7 (2.4 - 3.1)	-9.6	-10.0
2015	215	2.2 (1.9 - 2.5)	-18.3	-18.5
2016	207	2.1 (1.8 - 2.4)	-3.7	-4.5
2017	178	1.8 (1.5 - 2.1)	-14.0	-14.3
2018	148	1.5 (1.2 - 1.7)	-16.9	-16.7
2019	169	1.7 (1.4 - 1.9)	14.2	13.3
2020	149	1.5 (1.2 - 1.7)	-11.8	-11.8

CI: Confidence intervals.

Table Ai.4.2. Number and rate of TB in UK born and children born outside the UK (under 15 years) by place of birth, England, 2000 to 2020

Year	UK Born			Non-UK Born		
	Number of children	Rate per 100,000	95% CI	Number of children	Rate per 100,000	95% CI
2000	209	2.3	2.0-2.6	94	33.8	27.3-41.3
2001	229	2.5	2.2-2.9	104	35.9	29.4-43.5
2002	228	2.6	2.2-2.9	137	43.4	36.4-51.3
2003	179	2.0	1.7-2.3	117	31.8	26.3-38.1
2004	263	3.0	2.6-3.4	112	33.7	27.8-40.6
2005	247	2.8	2.5-3.2	138	35.9	30.2-42.4
2006	208	2.4	2.1-2.7	121	29.1	24.2-34.8
2007	290	3.4	3.0-3.8	142	31.2	26.3-36.8
2008	294	3.4	3.0-3.8	144	32	27.0-37.6
2009	257	2.9	2.6-3.3	117	23.4	19.4-28.1
2010	238	2.7	2.4-3.1	95	18.8	15.2-23.0
2011	234	2.6	2.3-3.0	131	26.3	22.0-31.2
2012	254	2.9	2.5-3.2	119	22.4	18.6-26.8
2013	195	2.2	1.9-2.5	84	16.7	13.3-20.6
2014	187	2.1	1.8-2.4	72	12.7	9.9-16.0
2015	157	1.7	1.5-2.0	54	8.8	6.6-11.4
2016	163	1.8	1.5-2.1	43	6.9	5.0-9.3
2017	127	1.4	1.1-1.6	48	7.6	5.5-9.9
2018	109	1.1	0.9-1.4	39	6.1	4.4-8.4
2019	123	1.3	1.1-1.5	45	7	5.1-9.4
2020	99	1	0.8-1.3	48	7.2	5.3-9.6

CI: Confidence intervals.

Table Ai.4.5, Proportion of children with TB by age, sex and place of birth, England, 2020

Age group	UK born				Non-UK born			
	Female		Male		Female		Male	
	n	%	n	%	n	%	n	%
0 to 4	24	24.2	25	25.3	2	4.2	2	4.2
5 to 9	10	10.1	14	14.1	8	16.7	9	18.8
10 to 14	17	17.2	9	9.1	12	25	15	31.3
Total	51	51.5	48	48.5	22	45.9	26	54.3

Table Ai.4.4. The overall number and rate of TB in children (under 15 years) by age and place of birth, England, 2000 to 2020

Age	UK Born			Non-UK Born		
	n	Rate per 100,000	95% CI	n	Rate per 100,000	95% CI
0	334	2.8	2.5-3.1	27	30.2	19.9-43.9
1	468	3.6	3.2-3.9	48	18.1	13.3-24.0
2	430	3.3	3.0-3.6	66	15.6	12.0-19.8
3	383	2.9	2.6-3.2	94	19.1	15.4-23.3
4	322	2.4	2.2-2.7	76	13	10.2-16.2
5	270	2.1	1.9-2.4	78	11.7	9.3-14.6
6	245	1.9	1.7-2.2	85	11.4	9.1-14.1
7	193	1.5	1.3-1.8	105	13.6	11.1-16.5
8	187	1.5	1.3-1.7	123	15.8	13.1-18.8
9	169	1.4	1.2-1.6	136	16.6	13.9-19.6
10	202	1.6	1.4-1.9	116	13.3	11.0-15.9
11	212	1.7	1.5-2.0	166	19.6	16.8-22.8
12	255	2.1	1.8-2.3	214	23	20.0-26.3
13	294	2.4	2.1-2.7	283	29.6	26.2-33.2
14	326	2.7	2.4-3.0	387	40.6	36.6-44.8

CI: Confidence intervals.

Table Ai.4.5. Overall number and rate of TB in children (0 to 14 years) by place of birth and ethnic group, England, 2020

Ethnic group	Place of birth			
	UK born		Non-UK born	
	Number of children	Rate per 100,000 (95% CI)	Number of children	Rate per 100,000 (95% CI)
White	29	0.4 (0.3-0.5)	8	2.7 (1.2-5.3)
Black-Caribbean	0	0.0 (0.0-0.0)	0	0.0 (0.0-0.0)
Black-African	26	8.1 (5.3-11.9)	15	17.6 (9.8-29.0)
Black-Other	0	0.0 (0.0-0.0)	0	0.0 (0.0-0.0)
Indian	6	2.2 (0.8-4.7)	9	12.7 (5.8-24.1)
Pakistani	14	3.9 (2.1-6.5)	11	43.2 (21.6-77.4)
Bangladeshi	3	2.3 (0.5-6.7)	0	0.0 (0.0-0.0)
Chinese	0	0.0 (0.0-0.0)	0	0.0 (0.0-0.0)
Mixed/Other	20	2.7 (1.6-4.1)	5	3.5 (1.1-8.1)

CI: Confidence intervals.

Table Ai.4.6. Number and proportion of children (<15 years) with culture confirmed TB by site of disease, England, 2020

Site of disease	Culture confirmed TB			
	Yes		No	
	n	%	n	%
Pulmonary ^a	26	27.1	70	72.9
Extra-pulmonary only	17	32.7	35	67.3
Total	43	29.1	105	70.9

^a With, or without disease at another site.

Table Ai.4.7. Number and proportion of children (under 15 years) with culture confirmed TB by PHE Centre, England, 2020

PHE Centres ^a	Number of culture confirmed cases	Total number of children	Proportion of culture confirmed cases %
London	14	38	36.8
West Midlands	3	13	23.1
South East	2	12	16.7
North West	6	25	24.0
East of England	2	20	10.0
East Midlands	6	12	50.0
Yorkshire and the Humber	5	17	29.4
South West	2	6	33.3
North East	3	6	50.0
Total	43	149	28.9

^a Ordered by decreasing number of TB notification in 2020.

Table Ai.4.8. Last recorded TB outcome for children (under 15 years) with non-MDR/RR TB with an expected treatment duration less than 12 months^a, England, 2009 to 2019

Year	Completed		Died		Lost to follow-up		Still on treatment		Stopped		Not evaluated ^b		Total n
	n	%	n	%	n	%	n	%	n	%	n	%	
2009	358	95.7	-	-	3	0.8	6	1.6	2	0.5	5	1.3	374
2010	314	95.7	3	0.9	1	0.3	4	1.2	2	0.6	4	1.2	328
2011	334	94.9	1	0.3	9	2.6	1	0.3	-	-	7	2	352
2012	361	98.4	-	-	1	0.3	1	0.3	1	0.3	3	0.8	367
2013	266	98.2	-	-	3	1.1	-	-	1	0.4	1	0.4	271
2014	244	99.2	-	-	2	0.8	-	-	-	-	-	-	246
2015	192	98.5	-	-	2	1	-	-	-	-	1	0.5	195
2016	185	98.9	-	-	1	0.5	-	-	-	-	1	0.5	187
2017	151	97.4	1	0.6	3	1.9	-	-	-	-	-	-	155
2018	127	94.8	-	-	3	2.2	-	-	2	1.5	2	1.5	134
2019	141	92.8	-	-	2	1.3	1	0.7	-	-	8	5.3	152
Total	2,673	97	5	0.2	30	1.1	13	0.6	8	0.3	32	1.2	2,761

^a Excludes people in the MDR/RR cohort and those with CNS, spinal, military or cryptic disseminated TB.

^b Not evaluated includes unknown or transferred out.

Table Ai.4.9: Number and proportion of children (under 15 years) with pulmonary TB by time from symptom onset to treatment start, England, 2011 to 2020

Year	Time from symptom onset to treatment start						Total ^a
	0 to 2 months		2 to 4 months		Over 4 months		
	n	%	n	%	n	%	
2011	77	65.3	27	22.9	14	11.9	118
2012	115	70.6	31	19	17	10.4	163
2013	79	65.8	24	20	17	14.2	120
2014	91	73.4	26	21	7	5.6	124
2015	76	71.7	19	17.9	11	10.4	106
2016	81	71.1	20	17.5	13	11.4	114
2017	65	65.7	15	15.2	19	19.2	99
2018	55	59.8	24	26.1	13	14.1	92
2019	57	68.7	16	19.3	10	12	83
2020	58	73.4	14	17.7	7	8.9	79

^a Number of people with pulmonary TB for whom time between symptom onset to treatment start was known.

Table Ai.4.10. The rate of TB in children (<15 years) born in the UK, by PHE Centre, 2000 to 2020

Year	Rate per 100,000 (95% CI)									
	Overall	East Midlands	East of England	London	North East	North West	South East	South West	West Midlands	Yorkshire and the Humber
2000	2.3 (2.0-2.6)	1.7 (0.9-2.9)	0.7 (0.3-1.5)	5.7 (4.4-7.1)	2.3 (1.2-4.2)	1.5 (0.9-2.3)	0.6 (0.3-1.2)	0.6 (0.2-1.4)	4.2 (3.1-5.7)	3.2 (2.1-4.5)
2001	2.5 (2.2-2.9)	1.8 (1.0-3.0)	1.2 (0.6-2.1)	5.6 (4.4-7.1)	2.0 (0.9-3.7)	1.6 (1.0-2.4)	0.7 (0.3-1.3)	0.4 (0.1-1.0)	4.4 (3.2-5.9)	5.0 (3.6-6.6)
2002	2.6 (2.2-2.9)	1.6 (0.8-2.8)	1.0 (0.5-1.9)	6.2 (4.9-7.8)	1.3 (0.5-2.9)	1.5 (0.9-2.3)	1.3 (0.7-2.0)	0.4 (0.1-1.0)	4.4 (3.2-6.0)	4.1 (2.9-5.7)
2003	2.0 (1.7-2.3)	1.6 (0.8-2.8)	0.8 (0.4-1.6)	4.9 (3.8-6.3)	0.9 (0.2-2.3)	1.4 (0.9-2.3)	0.7 (0.3-1.3)	0.0 (0.0-0.4)	4.3 (3.1-5.8)	2.5 (1.6-3.8)
2004	3.0 (2.6-3.4)	1.3 (0.6-2.4)	1.1 (0.6-2.0)	8.7 (7.2-10.5)	0.9 (0.2-2.3)	1.2 (0.7-2.0)	1.4 (0.9-2.2)	0.8 (0.3-1.7)	6.0 (4.6-7.7)	2.9 (1.9-4.2)
2005	2.8 (2.5-3.2)	1.7 (0.9-3.0)	1.9 (1.1-2.9)	8.9 (7.4-10.8)	0.5 (0.1-1.7)	1.8 (1.1-2.7)	0.6 (0.2-1.1)	0.4 (0.1-1.0)	3.4 (2.3-4.7)	4.0 (2.8-5.6)
2006	2.4 (2.1-2.8)	1.4 (0.6-2.5)	1.0 (0.5-1.9)	7.6 (6.2-9.3)	2.3 (1.1-4.3)	1.9 (1.2-2.9)	0.3 (0.1-0.7)	0.5 (0.1-1.2)	3.1 (2.1-4.5)	2.3 (1.4-3.6)
2007	3.4 (3.0-3.8)	1.6 (0.8-2.9)	3.1 (2.1-4.4)	8.9 (7.4-10.8)	1.4 (0.5-3.1)	2.5 (1.7-3.6)	1.3 (0.8-2.0)	0.7 (0.3-1.6)	5.4 (4.0-7.0)	2.6 (1.6-3.9)
2008	3.4 (3.0-3.8)	2.1 (1.2-3.5)	2.4 (1.5-3.6)	9.2 (7.6-11.0)	0.5 (0.1-1.7)	2.8 (1.9-3.9)	0.9 (0.5-1.6)	0.5 (0.1-1.2)	5.3 (3.9-6.9)	3.6 (2.5-5.1)
2009	2.9 (2.6-3.3)	1.8 (0.9-3.0)	1.5 (0.9-2.5)	6.7 (5.4-8.3)	1.0 (0.3-2.5)	2.9 (2.0-4.0)	1.1 (0.6-1.8)	1.0 (0.4-1.9)	5.1 (3.8-6.7)	3.3 (2.2-4.7)
2010	2.7 (2.4-3.1)	1.3 (0.6-2.5)	2.0 (1.2-3.2)	7.2 (5.9-8.8)	0.7 (0.2-2.1)	3.6 (2.6-4.8)	1.0 (0.5-1.6)	0.2 (0.0-0.9)	2.5 (1.6-3.7)	2.7 (1.7-4.0)
2011	2.6 (2.3-3.0)	0.7 (0.2-1.6)	1.5 (0.9-2.5)	5.8 (4.6-7.2)	0.2 (0.0-1.3)	3.3 (2.4-4.5)	1.4 (0.9-2.2)	0.7 (0.3-1.6)	3.3 (2.3-4.7)	4.1 (2.9-5.7)
2012	2.9 (2.5-3.2)	1.2 (0.5-2.3)	1.1 (0.6-2.0)	7.7 (6.3-9.3)	1.4 (0.5-3.1)	2.2 (1.4-3.2)	1.6 (1.1-2.4)	1.1 (0.5-2.0)	3.7 (2.6-5.2)	2.8 (1.8-4.1)
2013	2.2 (1.9-2.5)	1.3 (0.6-2.4)	1.2 (0.6-2.1)	5.4 (4.3-6.8)	0.7 (0.1-2.1)	1.6 (1.0-2.5)	1.1 (0.6-1.8)	1.0 (0.4-1.9)	2.5 (1.6-3.7)	2.7 (1.7-4.0)
2014	2.1 (1.8-2.4)	1.6 (0.8-2.8)	0.9 (0.4-1.7)	5.7 (4.5-7.1)	2.4 (1.1-4.3)	1.7 (1.1-2.7)	0.9 (0.5-1.6)	0.4 (0.1-1.0)	2.2 (1.4-3.4)	1.4 (0.8-2.5)
2015	1.7 (1.5-2.0)	1.1 (0.5-2.1)	1.3 (0.7-2.2)	4.1 (3.1-5.3)	1.2 (0.4-2.7)	1.3 (0.7-2.1)	0.3 (0.1-0.8)	0.7 (0.3-1.5)	2.2 (1.4-3.4)	2.3 (1.4-3.5)
2016	1.8 (1.5-2.1)	2.4 (1.5-3.8)	0.6 (0.2-1.3)	4.3 (3.3-5.4)	0.9 (0.3-2.4)	2.0 (1.3-3.0)	0.9 (0.5-1.6)	0.1 (0.0-0.6)	1.9 (1.1-3.0)	1.2 (0.6-2.2)
2017	1.4 (1.2-1.6)	1.4 (0.7-2.5)	0.4 (0.1-1.0)	2.3 (1.6-3.2)	0.9 (0.3-2.4)	1.7 (1.1-2.6)	0.7 (0.4-1.3)	0.9 (0.4-1.8)	2.1 (1.3-3.2)	1.2 (0.6-2.1)
2018	1.1 (0.9-1.4)	0.9 (0.4-1.9)	0.5 (0.2-1.1)	2.0 (1.4-2.9)	0.7 (0.1-2.0)	1.1 (0.6-1.9)	0.8 (0.4-1.4)	1.0 (0.5-1.9)	1.7 (1.0-2.7)	1.2 (0.6-2.1)
2019	1.3 (1.1-1.6)	0.9 (0.4-1.8)	1.2 (0.6-2.0)	2.5 (1.8-3.4)	0.2 (0.0-1.3)	1.4 (0.8-2.3)	0.5 (0.2-0.9)	0.9 (0.4-1.8)	2.0 (1.3-3.1)	1.3 (0.7-2.2)
2020	1.0 (0.5-1.8)	0.8 (0.3-1.7)	1.3 (0.7-2.1)	1.7 (1.1-2.5)	0.9 (0.2-2.3)	1.1 (0.6-1.8)	0.6 (0.2-1.2)	0.6 (0.2-2.3)	0.6 (0.2-1.2)	1.5 (0.8-2.5)

CI: Confidence intervals.

Table Ai.5.1. Number and proportion of people with TB (≥15 years) with a social risk factor (SRF) by place of birth, England, 2011 to 2020

	Year	Drug use		Alcohol use		Homelessness		Prison		≥ 1 SRF		≥ 2 SRF	
		n	%	n	%	n	%	n	%	n	%	n	%
All people with TB	2011	204	2.8	236	3.3	196	2.7	212	3.0	592	8.9	188	2.8
	2012	220	3.1	220	3.1	185	2.6	223	3.2	593	8.9	184	2.8
	2013	217	3.3	239	3.7	216	3.3	191	3.0	587	9.4	194	3.1
	2014	204	3.5	197	3.4	210	3.6	186	3.3	539	9.8	176	3.2
	2015	219	4.2	207	4.0	233	4.5	203	4.0	582	11.8	202	4.1
	2016	229	4.5	187	3.6	211	4.1	204	4.1	538	11.0	199	4.1
	2017	234	5.1	188	4.1	225	4.9	197	4.4	546	12.4	212	4.8
	2018	223	5.3	211	5.0	212	5.0	178	4.3	544	13.3	192	4.7
	2019	222	5.2	180	4.2	249	5.8	206	5.0	570	13.9	189	4.6
	2020	163	4.4	166	4.5	156	4.3	144	4.0	443	12.7	132	3.8
UK born	2011	134	8.6	121	7.8	62	3.9	126	8.4	271	18.6	125	8.6
	2012	129	8.0	99	6.2	54	3.3	106	6.8	254	16.7	94	6.2
	2013	133	8.6	130	8.5	70	4.5	99	6.6	259	17.5	115	7.8
	2014	125	8.6	98	6.8	74	5.1	93	6.6	236	17.0	101	7.3
	2015	146	11.4	112	8.7	76	5.9	114	9.1	271	21.8	117	9.4
	2016	141	11.7	97	8.1	59	4.9	99	8.5	235	20.3	104	9.0
	2017	155	12.7	86	7.0	74	6.0	106	8.8	251	21.0	119	10.0
	2018	139	12.6	92	8.3	59	5.4	95	8.9	222	20.7	105	9.8
	2019	133	12.9	99	9.6	78	7.5	107	10.7	239	23.8	107	10.6
	2020	111	12.0	82	8.8	53	5.8	86	9.6	201	22.6	84	9.4
Non-UK born	2011	63	1.1	106	2.0	128	2.3	78	1.5	301	6.0	58	1.2
	2012	86	1.6	111	2.1	124	2.3	110	2.1	315	6.2	86	1.7
	2013	81	1.6	104	2.1	144	2.9	91	1.9	320	6.8	76	1.6
	2014	76	1.8	96	2.2	132	3.1	91	2.2	294	7.2	72	1.8
	2015	68	1.8	91	2.3	155	4.0	88	2.3	303	8.3	81	2.2
	2016	84	2.2	87	2.2	150	3.9	105	2.8	298	8.1	92	2.5
	2017	77	2.3	100	3.0	150	4.5	91	2.8	291	9.1	92	2.9
	2018	84	2.7	117	3.7	153	4.9	83	2.7	320	10.6	87	2.9
	2019	86	2.7	78	2.4	169	5.3	97	3.1	322	10.5	81	2.6
	2020	48	1.8	82	3.0	102	3.7	57	2.2	234	9.1	48	1.9

Table Ai.5.2. Number and proportion of people with TB (≥15 years) with a social risk factor (SRF), by ethnicity and country of birth, England, 2016 to 2020

Demographic characteristic		Drug use		Alcohol use		Homelessness		Prison		≥ 1 SRF		≥ 2 SRF	
		n	%	n	%	n	%	n	%	n	%	n	%
Ethnicity (UK born) ^a	White	470	13.5	357	10.3	251	7.2	317	9.5	795	23.7	380	11.3
	Black-Caribbean	68	23.2	25	8.5	26	8.8	51	17.3	108	36.9	43	14.7
	Black-African	27	10.0	8	3.0	10	3.6	25	9.2	47	17.7	15	5.7
	South Asian	61	5.4	41	3.6	11	1.0	51	4.6	110	10.1	37	3.4
	Other	52	17.6	24	8.1	25	8.3	47	15.9	85	28.4	43	14.4
Country of birth (Non- UK born) ^b	India	5	1.0	8	1.5	115	23.2	49	10.3	151	31.7	18	3.8
	Eritrea	25	0.6	81	2.0	46	1.1	21	0.5	138	3.5	31	0.8
	Poland	31	3.6	42	4.8	61	7.0	40	4.8	132	16.0	33	4.0
	Romania	31	9.7	63	19.4	64	19.8	45	15.1	112	36.4	58	18.8
	Somalia	29	4.3	21	3.1	36	5.4	34	5.2	83	12.9	26	4.1
	Pakistan	6	2.3	2	0.8	63	25.0	21	9.0	81	33.9	11	4.6
	Lithuania	27	1.1	23	1.0	20	0.8	18	0.8	67	3.0	16	0.7
	Sudan	20	10.3	37	18.8	33	17.0	16	8.4	60	31.4	32	16.8
	Ethiopia	3	1.5	4	2.0	40	20.8	17	9.3	47	25.7	14	7.7
	Afghanistan	8	2.9	8	2.9	24	8.7	10	3.7	38	14.8	9	3.5

^a People from Indian, Pakistani and Bangladeshi ethnic groups were grouped as 'South Asian'.

^b The top 10 countries of birth by the number of people with TB with ≥1 SRF were included.

Table Ai.5.3. Number and proportion of people with TB (≥15 years) with social risk factors (SRF) by PHE Centre, England, 2020

PHE Centre ^a	Drug use		Alcohol use		Homelessness		Prison		≥ 1 SRF		≥ 2 SRF	
	n	%	n	%	n	%	n	%	n	%	n	%
London	63	4.6	73	5.3	67	4.8	48	3.5	183	13.4	52	3.8
West Midlands	22	4.5	16	3.3	18	3.7	28	5.9	51	10.9	20	4.3
South East	20	4.9	15	3.7	11	2.7	17	4.2	43	11.0	14	3.6
North West	11	2.8	16	4.1	9	2.4	8	2.2	32	9.2	8	2.3
East of England	12	3.8	13	4.1	10	3.2	13	4.3	37	12.6	9	3.1
East Midlands	14	5.2	12	4.4	17	6.3	13	5.4	38	15.9	13	5.4
Yorkshire and the Humber	6	2.7	6	2.6	4	1.8	7	3.5	17	8.9	3	1.6
South West	12	8.5	11	7.6	13	9.2	9	6.5	30	22.4	10	7.5
North East	3	4.3	4	5.6	7	9.9	1	1.5	12	18.2	3	4.5

^a Ordered by decreasing total number of TB notifications in 2020.

Table Ai.5.4. Number and proportion of people with TB (≥15 years) with a social risk factor by PHE Centre, England, 2012 to 2020

PHE Centre ^a	2012		2013		2014		2015		2016		2017		2018		2019		2020	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
London	259	8.8	263	9.8	229	9.9	228	10.8	209	10.2	210	11.7	215	13.6	203	13.1	183	13.4
West Midlands	75	8.4	87	10.5	62	9.3	78	12.6	62	9.7	79	13.5	83	14.9	92	17.7	51	10.9
South East	61	9.0	46	7.4	45	7.6	59	11.3	49	10.3	48	10.4	46	10.3	53	11.9	43	11.0
North West	56	10.3	52	9.4	52	10.7	63	14.4	51	12.1	39	10.5	48	13.0	43	10.8	32	9.2
East of England	32	7.3	26	6.7	34	9.1	39	12.7	57	15.3	43	11.5	45	14.6	45	12.9	37	12.6
East Midlands	24	6.6	29	9.5	34	12.4	30	11.0	30	11.3	51	19.8	43	15.0	43	14.7	38	15.9
Yorkshire and the Humber	39	8.6	36	8.0	47	11.2	40	11.7	35	10.3	36	12.8	29	10.4	47	16.0	17	8.9
South West	32	14.1	36	13.8	23	9.0	31	13.4	28	14.7	24	13.9	17	10.8	33	17.6	30	22.4
North East	15	11.0	12	10.1	13	9.4	14	13.0	17	16.2	16	16.7	18	17.3	11	16.4	12	18.2
England	593	8.9	587	9.4	539	9.8	582	11.8	538	11.0	546	12.4	544	13.3	570	13.9	443	12.7

^a Ordered by decreasing total number of TB notifications in 2020.

Table Ai.5.5. Number and proportion of people with TB (≥15 years) with specific clinical and disease characteristics, according to the presence of social risk factors (SRF), England, 2020

Social risk factor status	Clinical characteristics						Time from symptom onset until treatment start ^b						Initial drug resistance			
	Previous TB diagnosis		Pulmonary ^a		On DOT		0 to 2 months treatment delay		2 to 4 months treatment delay		More than 4 months treatment delay		INH-R without MDR		MDR/RR-TB	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Drug misuse	14	8.8	139	85.3	83	56.1	44	36.1	32	26.2	46	37.7	8	6.7	4	3.3
Alcohol misuse	18	11.5	136	81.9	91	62.3	53	46.5	23	20.2	38	33.3	11	9.0	3	2.4
Homeless	17	11.3	117	75.0	73	50.3	57	55.9	19	18.6	26	25.5	6	5.0	2	1.7
Prison	16	11.2	112	77.8	70	51.9	38	38.8	26	26.5	34	34.7	8	7.8	2	1.9
≥ 1 SRF	42	9.8	341	77.0	191	47.3	127	42.5	70	23.4	102	34.1	22	6.8	7	2.1
≥ 2 SRF	14	10.9	115	87.1	85	69.7	46	47.9	20	20.8	30	31.3	7	6.9	2	2.0
No SRF	176	5.8	1,506	49.5	257	8.7	489	36.0	403	29.6	468	34.4	117	6.5	41	2.3

^a With or without extrapulmonary disease.

^b For pulmonary cases excluding those diagnosed post-mortem and those who did not start treatment.

Table Ai.5.6. TB notifications and rates by deprivation decile^a, England, 2020

Deprivation decile	Number of people	Rate per 100,000 (95% CI)
1 (10% most deprived)	745	13.3 (12.4 - 14.3)
2	746	13.1 (12.2 - 14.1)
3	682	11.7 (10.9 - 12.7)
4	539	9.3 (8.6 - 10.2)
5	364	6.4 (5.8 - 7.1)
6	333	5.8 (5.2 - 6.5)
7	241	4.3 (3.8 - 4.9)
8	184	3.3 (2.9 - 3.8)
9	157	2.9 (2.4 - 3.3)
10 (10% least deprived)	134	2.5 (2.1 - 2.9)

CI: Confidence intervals.

Table Ai.6.1. Number of people with pulmonary TB diagnosed by pre-entry screening or identified within 1 year of UK entry, 2014 to 2020

Year of screening or entry to the UK	Number of people detected with TB by pre-entry screening	Number of people identified with TB in the UK
2014	393	171
2015	377	195
2016	259	139
2017	298	122
2018	318	157
2019	379	183
2020	385	57
2020 ^{a, b}	474	114

^a As of 17 July 2021, 887 sputum culture results were pending and the number of cases may increase when final results are available.

^b Predicted number of people of people diagnosed with TB assume that of the pending cultures, 10% will be positive; and for the number of people identified with TB in the UK, 50% more people will be notified for 2020 during 2021 as the proxy UK entry date is set at 2 July each year.

Table Ai.6.2. Drug susceptibility testing of people with TB, 2020

Drug susceptibility category	Number of people with TB	% Total
Sensitive to all first line drugs	98	91.6
Resistant to one first-line drug, other than isoniazid and rifampicin	1	0.9
INH-R but not RR-TB or MDR-TB	4	3.7
Resistant to 2 or more first-line drugs (but not MDR)	3	2.8
XDR-TB	1	0.9
Total	107	100.0

MDR=Multidrug resistant.

INH-R=Isoniazid resistant.

RR=Rifampicin resistant.

XDR=Extensively drug resistant.

Table Ai6.3. Number of LTBI tests by TBCB, England, 2016 to 2020

Clinical Commissioning Group (CCG)	2016				2017				2018			
	No. tests submitted	No. tests with result	LTBI positive		No. tests submitted	No. tests with result	LTBI positive		No. tests submitted	No. tests with result	LTBI positive	
			n	%			n	%			n	%
NHS Bedfordshire, Luton And Milton Keynes CCG	0	0	0	-	115	115	5	4.35	17	17	1	6
NHS Berkshire West CCG	0	0	0	-	125	125	20	16	177	171	32	19
NHS Birmingham and Solihull CCG	903	897	103	11	790	789	112	14	418	412	74	18
NHS Black Country and West Birmingham CCG	576	572	114	20	435	432	66	15	735	728	118	16
NHS Blackburn With Darwen CCG and NHS East Lancashire CCG*	345	345	63	18	138	138	26	19	222	222	25	11
NHS Bolton CCG	0	0	0	-	0	0	0	-	189	188	49	26
NHS Bradford District and Craven CCG	544	541	87	16	661	658	63	10	507	507	81	16
NHS Bristol, North Somerset And South Gloucestershire CCG	73	73	0	0	101	100	12	12	92	92	17	18
NHS Cambridgeshire And Peterborough CCG	157	157	19	12	79	79	15	19	70	69	13	19
NHS Coventry And Warwickshire CCG	115	115	23	20	43	42	5	12	1	1	1	100
NHS Derby and Derbyshire CCG	84	83	10	12	29	29	8	28	94	94	29	31
NHS Frimley CCG	109	109	13	12	363	362	37	10	392	392	49	13
NHS Hampshire, Southampton And Isle of Wight CCG	207	207	30	14	411	411	65	16	303	299	40	13
NHS Herts Valleys CCG	6	6	6	100	109	108	12	11	85	85	13	15
NHS Kirklees CCG	344	343	42	12	420	420	58	14	508	507	80	16

Clinical Commissioning Group (CCG)	2016				2017				2018			
	No. tests submitted	No. tests with result	LTBI positive		No. tests submitted	No. tests with result	LTBI positive		No. tests submitted	No. tests with result	LTBI positive	
			n	%			n	%			n	%
NHS Leeds CCG	117	116	19	16	317	316	49	16	410	410	50	12
NHS Leicester City CCG	613	613	83	14	776	776	115	15	718	718	99	14
NHS Liverpool CCG	0	0	0	-	0	0	0	-	2	2	2	100
NHS Manchester CCG	63	62	18	29	0	0	0	-	132	131	40	31
NHS North Central London CCG	0	0	0	-	6	6	3	50	164	161	30	19
NHS North East London CCG	3306	3271	684	21	3012	2947	469	16	2398	2365	317	13
NHS North West London CCG	2309	2291	436	19	4476	4464	615	14	5338	5311	753	14
NHS Nottingham And Nottinghamshire CCG	415	415	41	10	254	254	77	30	210	209	41	20
NHS Oldham CCG	0	0	0	-	3	3	1	33	115	115	8	7
NHS Sheffield CCG	261	258	48	19	278	277	48	17	285	281	51	18
NHS South East London CCG	181	178	21	12	603	596	97	16	699	693	91	13
NHS South West London CCG	64	64	4	6	270	267	29	11	502	495	44	9
NHS Stoke on Trent CCG	20	20	19	95	15	14	6	43	1	1	1	100
NHS West Sussex CCG	45	45	4	9	29	28	4	14	9	8	8	100
Total	12873	10781	1887	17.5	15875	13756	2017	14.7	16811	14684	2157	14.7

Clinical Commissioning Group (CCG)	2019				2020			
	No. tests submitted	No. tests with result	LTBI positive		No. tests submitted	No. tests with result	LTBI positive	
			n	%			n	%
NHS Bedfordshire, Luton And Milton Keynes CCG	145	145	10	7	33	33	2	6
NHS Berkshire West CCG	273	273	44	16	148	148	20	14
NHS Birmingham And Solihull CCG	391	387	70	18	61	61	12	20
NHS Black Country and West Birmingham CCG	1080	1071	189	18	199	196	28	14
NHS Blackburn With Darwen CCG and NHS East Lancashire CCG*	68	68	5	7	52	52	8	15
NHS Bolton CCG	196	193	16	8	4	4	1	25
NHS Bradford District and Craven CCG	608	607	106	17	371	371	25	7
NHS Bristol, North Somerset and South Gloucestershire CCG	203	201	20	10	185	180	22	12
NHS Cambridgeshire and Peterborough CCG	45	45	8	18	16	14	2	14
NHS Coventry and Warwickshire CCG	278	273	44	16	363	355	63	18
NHS Derby and Derbyshire CCG	159	157	28	18	89	88	12	14
NHS Frimley CCG	625	624	80	13	418	418	56	13
NHS Hampshire, Southampton and Isle of Wight CCG	232	229	45	20	86	84	37	44
NHS Herts Valleys CCG	37	36	3	8	32	31	4	13
NHS Kirklees CCG	466	465	54	12	606	604	84	14

Clinical Commissioning Group (CCG)	2019				2020			
	No. tests submitted	No. tests with result	LTBI positive		No. tests submitted	No. tests with result	LTBI positive	
			n	%			n	%
NHS Leeds CCG	521	519	62	12	137	137	24	18
NHS Leicester City CCG	62	62	5	8	170	170	22	13
NHS Liverpool CCG	61	61	5	8	30	30	16	53
NHS Manchester CCG	1	1	1	100	0	0	0	-
NHS North Central London CCG	2693	2659	286	11	107	107	19	18
NHS North East London CCG	0	0	0	-	1783	1765	275	16
NHS North West London CCG	4679	4657	619	13	1434	1421	183	13
NHS Nottingham and Nottinghamshire CCG	124	124	13	10	553	535	36	7
NHS Oldham CCG	43	43	2	5	0	0	0	-
NHS Sheffield CCG	528	525	108	21	463	459	75	16
NHS South East London CCG	1029	1021	139	14	100	98	11	11
NHS South West London CCG	726	707	88	12	258	253	19	8
NHS Stoke on Trent CCG	215	214	23	11	314	308	29	9
NHS West Sussex CCG	3	3	3	100	1	1	1	100
Total	17510	15370	2076	13.5	10033	7923	1086	13.7

* Blackburn with Darwen and East Lancashire CCGs submit a joint dataset.

Appendix II. Supplementary tables of local level data

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) – London

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
London		1,611	18.0(17.5-18.5)
	Barking and Dagenham	44	20.5(17.1-24.3)
	Barnet	52	13.2(11.2-15.5)
	Bexley	22	8.9(6.9-11.3)
	Brent	107	32.6(29.1-36.3)
	Bromley	17	5.2(3.9-6.8)
	Camden	34	12.7(10.4-15.4)
	City of London	1	13.6(3.7-34.9)
	Croydon	70	18.0(15.6-20.6)
	Ealing	117	34.3(30.8-38.1)
	Enfield	49	14.6(12.3-17.1)
	Greenwich	60	20.9(17.9-24.1)
	Hackney	42	15.1(12.6-18.0)
	Hammersmith and Fulham	19	10.5(7.9-13.5)
	Haringey	42	15.5(12.9-18.5)
	Harrow	73	28.9(25.2-33.0)
	Havering	17	6.6(4.9-8.6)
	Hillingdon	69	22.4(19.4-25.6)
	Hounslow	87	31.9(28.2-36.1)
	Islington	27	11.2(8.9-13.9)
	Kensington and Chelsea	18	11.7(8.8-15.3)
	Kingston upon Thames	16	8.8(6.5-11.7)
	Lambeth	49	15.1(12.8-17.7)
	Lewisham	47	15.5(13.1-18.3)
	Merton	28	13.7(11.0-17.0)
	Newham	151	42.8(39.0-46.9)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Redbridge	85	27.8(24.5-31.4)
	Richmond upon Thames	11	5.4(3.7-7.6)
	Southwark	45	14.2(11.9-16.8)
	Sutton	24	11.6(9.1-14.7)
	Tower Hamlets	61	18.8(16.2-21.7)
	Waltham Forest	48	17.2(14.5-20.3)
	Wandsworth	38	11.7(9.6-14.0)
	Westminster	28	10.8(8.6-13.4)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – West Midlands

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
West Midlands		572	9.6(9.2-10.1)
	Birmingham	210	18.4(17.0-19.9)
	Coventry	72	19.3(16.8-22.1)
	Dudley	20	6.2(4.7-8.0)
	Herefordshire, County of	4	2.1(1.1-3.6)
	Sandwell	60	18.4(15.8-21.3)
	Shropshire	6	2.0(1.2-3.1)
	Solihull	8	3.7(2.4-5.5)
	Staffordshire	33	3.7(3.0-4.5)
	Cannock Chase	3	2.6(1.1-5.2)
	East Staffordshire	7	5.8(3.6-8.9)
	Lichfield	1	1.0(0.2-2.8)
	Newcastle-under-Lyme	6	4.9(2.9-7.6)
	South Staffordshire	3	2.7(1.2-5.1)
	Stafford	6	4.6(2.8-7.2)
	Staffordshire Moorlands	3	3.0(1.4-5.8)
	Tamworth	3	4.3(2.1-8.0)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Stoke-on-Trent	25	9.9(7.8-12.4)
	Telford and Wrekin	8	4.5(2.9-6.6)
	Walsall	36	12.6(10.4-15.2)
	Warwickshire	28	4.8(3.8-5.9)
	North Warwickshire	1	1.0(0.1-3.7)
	Nuneaton and Bedworth	12	9.3(6.5-12.8)
	Rugby	6	5.8(3.5-9.1)
	Stratford-on-Avon	2	1.3(0.4-3.0)
	Warwick	7	4.9(3.0-7.4)
	Wolverhampton	52	19.8(16.8-23.1)
	Worcestershire	18	3.0(2.3-3.9)
	Bromsgrove	5	4.7(2.6-7.9)
	Malvern Hills	1	1.7(0.5-4.3)
	Redditch	3	3.1(1.4-6.2)
	Worcester	5	4.9(2.8-8.2)
	Wychavon	4	2.8(1.4-5.1)
	Wyre Forest	1	0.7(0.1-2.4)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – South East

PHEC Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases	Average annual rate per 100,000 (95% CI)
South East		489	5.5(5.2-5.8)
	Bracknell Forest	6	5.2(3.1-8.1)
	Brighton and Hove	14	4.8(3.5-6.5)
	Buckinghamshire	45	8.2(6.9-9.7)
	East Sussex	15	2.6(1.9-3.5)
	Eastbourne	4	3.5(1.8-6.3)
	Hastings	3	3.2(1.5-6.1)
	Lewes	4	3.6(1.8-6.4)
	Rother	1	1.0(0.2-3.0)

PHEC Centre*	Upper tier local authority and local authority district**	2018 to 2020 average number of cases	Average annual rate per 100,000 (95% CI)
	Wealden	3	2.1(1.0-3.8)
	Hampshire	59	4.3(3.7-5.0)
	Basingstoke and Deane	10	5.5(3.7-7.9)
	East Hampshire	4	3.0(1.5-5.4)
	Eastleigh	5	4.0(2.3-6.5)
	Fareham	4	3.2(1.6-5.6)
	Gosport	2	2.0(0.6-4.6)
	Hart	2	2.1(0.8-4.5)
	Havant	4	3.4(1.8-5.9)
	New Forest	4	2.0(1.0-3.6)
	Rushmoor	17	18.3(13.7-24.0)
	Test Valley	5	3.7(2.0-6.2)
	Winchester	3	2.7(1.3-4.9)
	Isle of Wight	2	1.2(0.4-2.7)
	Kent	78	5.0(4.3-5.6)
	Ashford	7	5.1(3.1-7.9)
	Canterbury	6	3.6(2.1-5.7)
	Dartford	10	8.9(6.0-12.7)
	Dover	3	2.8(1.4-5.2)
	Folkestone and Hythe	6	5.6(3.4-8.8)
	Gravesham	12	10.9(7.6-15.2)
	Maidstone	16	9.1(6.7-12.1)
	Sevenoaks	4	3.6(1.9-6.1)
	Swale	5	3.6(2.0-5.8)
	Thanet	6	4.5(2.7-7.0)
	Tonbridge and Malling	1	1.0(0.3-2.6)
	Tunbridge Wells	1	1.1(0.3-2.9)
	Medway	21	7.5(5.8-9.6)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – South East

PHEC Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
South East		489	5.5(5.2-5.8)
	Bracknell Forest	6	5.2(3.1-8.1)
	Brighton and Hove	14	4.8(3.5-6.5)
	Buckinghamshire	45	8.2(6.9-9.7)
	East Sussex	15	2.6(1.9-3.5)
	Eastbourne	4	3.5(1.8-6.3)
	Hastings	3	3.2(1.5-6.1)
	Lewes	4	3.6(1.8-6.4)
	Rother	1	1.0(0.2-3.0)
	Wealden	3	2.1(1.0-3.8)
	Hampshire	59	4.3(3.7-5.0)
	Basingstoke and Deane	10	5.5(3.7-7.9)
	East Hampshire	4	3.0(1.5-5.4)
	Eastleigh	5	4.0(2.3-6.5)
	Fareham	4	3.2(1.6-5.6)
	Gosport	2	2.0(0.6-4.6)
	Hart	2	2.1(0.8-4.5)
	Havant	4	3.4(1.8-5.9)
	New Forest	4	2.0(1.0-3.6)
	Rushmoor	17	18.3(13.7-24.0)
	Test Valley	5	3.7(2.0-6.2)
	Winchester	3	2.7(1.3-4.9)
	Isle of Wight	2	1.2(0.4-2.7)
	Kent	78	5.0(4.3-5.6)
	Ashford	7	5.1(3.1-7.9)
	Canterbury	6	3.6(2.1-5.7)
	Dartford	10	8.9(6.0-12.7)
	Dover	3	2.8(1.4-5.2)
	Folkestone and Hythe	6	5.6(3.4-8.8)

PHEC Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Gravesham	12	10.9(7.6-15.2)
	Maidstone	16	9.1(6.7-12.1)
	Sevenoaks	4	3.6(1.9-6.1)
	Swale	5	3.6(2.0-5.8)
	Thanet	6	4.5(2.7-7.0)
	Tonbridge and Malling	1	1.0(0.3-2.6)
	Tunbridge Wells	1	1.1(0.3-2.9)
	Medway	21	7.5(5.8-9.6)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – South East

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
South East		489	5.5(5.2-5.8)
	Oxfordshire	44	6.3(5.3-7.5)
	Cherwell	12	8.0(5.6-11.0)
	Oxford	23	15.1(11.7-19.1)
	South Oxfordshire	3	1.9(0.8-3.7)
	Vale of White Horse	5	3.4(1.9-5.8)
	West Oxfordshire	1	1.2(0.3-3.1)
	Portsmouth	12	5.7(4.0-7.9)
	Reading	25	15.5(12.2-19.4)
	Slough	44	29.7(24.8-35.2)
	Southampton	25	9.8(7.7-12.3)
	Surrey	45	3.8(3.2-4.5)
	Elmbridge	5	3.4(1.9-5.7)
	Epsom and Ewell	4	4.6(2.3-8.1)
	Guildford	6	4.2(2.6-6.6)
	Mole Valley	2	1.9(0.6-4.5)
	Reigate and Banstead	8	5.2(3.3-7.7)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Runnymede	3	3.0(1.3-5.9)
	Spelthorne	5	4.7(2.6-7.9)
	Surrey Heath	3	3.4(1.5-6.4)
	Tandridge	2	2.3(0.8-4.9)
	Waverley	3	2.1(0.9-4.2)
	Woking	6	6.0(3.5-9.4)
	West Berkshire	7	4.4(2.7-6.8)
	West Sussex	31	3.6(2.9-4.4)
	Adur	2	2.6(0.8-6.1)
	Arun	3	1.9(0.9-3.5)
	Chichester	2	1.9(0.8-4.0)
	Crawley	13	11.9(8.5-16.1)
	Horsham	3	2.3(1.1-4.3)
	Mid Sussex	3	2.0(0.9-3.8)
	Worthing	5	4.2(2.3-7.1)
	Windsor and Maidenhead	10	6.6(4.5-9.4)
	Wokingham	4	2.3(1.2-4.1)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – North West

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
North West		486	6.6(6.3-7.0)
	Blackburn with Darwen	28	18.9(15.1-23.4)
	Blackpool	4	2.9(1.5-5.0)
	Bolton	35	12.1(9.9-14.6)
	Bury	15	7.9(5.7-10.5)
	Cheshire East	7	1.9(1.2-2.9)
	Cheshire West and Chester	9	2.5(1.7-3.7)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Cumbria	10	1.9(1.3-2.8)
	Allerdale	2	2.0(0.8-4.5)
	Barrow-in-Furness	1	2.0(0.5-5.1)
	Carlisle	3	2.8(1.3-5.2)
	Copeland	1	1.0(0.1-3.5)
	Eden	0	0.6(0.0-3.5)
	South Lakeland	2	2.2(0.9-4.6)
	Halton	1	1.0(0.3-2.6)
	Knowsley	2	1.1(0.4-2.6)
	Lancashire	66	5.4(4.7-6.2)
	Burnley	8	9.0(5.8-13.4)
	Chorley	1	1.1(0.3-2.9)
	Fylde	2	2.1(0.7-4.8)
	Hyndburn	6	7.4(4.4-11.7)
	Lancaster	4	3.0(1.6-5.1)
	Pendle	16	17.4(12.8-23.1)
	Preston	20	13.7(10.5-17.7)
	Ribble Valley	1	1.1(0.1-3.9)
	Rosendale	3	4.7(2.2-8.6)
	South Ribble	2	2.1(0.8-4.3)
	West Lancashire	1	0.6(0.1-2.1)
	Wyre	2	1.8(0.7-3.9)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – North West

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Liverpool	36	7.2(5.9-8.7)
	Manchester	108	19.5(17.4-21.7)
	Oldham	40	16.8(13.9-20.0)
	Rochdale	25	11.4(9.0-14.3)
	Salford	20	7.9(6.0-10.1)
	Sefton	7	2.7(1.7-4.0)
	St. Helens	1	0.6(0.1-1.6)
	Stockport	10	3.3(2.2-4.7)
	Tameside	17	7.4(5.5-9.7)
	Trafford	18	7.6(5.7-9.9)
	Warrington	6	2.7(1.6-4.3)
	Wigan	9	2.6(1.7-3.9)
	Wirral	9	2.9(1.9-4.2)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – East of England

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
East of England		382	5.9(5.5-6.2)
	Bedford	11	6.4(4.4-8.9)
	Cambridgeshire	46	7.1(6.0-8.4)
	Cambridge	24	19.2(15.0-24.1)
	East Cambridgeshire	3	3.0(1.3-5.9)
	Fenland	5	5.2(3.0-8.5)
	Huntingdonshire	8	4.3(2.7-6.5)
	South Cambridgeshire	7	4.2(2.6-6.5)
	Central Bedfordshire	5	1.8(1.1-3.0)
	Essex	51	3.4(2.9-4.0)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Basildon	8	4.5(2.9-6.6)
	Braintree	4	2.4(1.2-4.3)
	Brentwood	3	4.3(2.1-8.0)
	Castle Point	5	5.5(3.1-9.1)
	Chelmsford	4	2.4(1.3-4.2)
	Colchester	5	2.7(1.6-4.4)
	Epping Forest	5	3.5(1.9-5.9)
	Harlow	6	6.5(3.8-10.4)
	Maldon	1	1.5(0.3-4.5)
	Rochford	1	1.1(0.2-3.3)
	Tendring	2	1.6(0.6-3.3)
	Uttlesford	6	7.0(4.2-10.9)
	Hertfordshire	71	5.9(5.2-6.8)
	Broxbourne	5	5.1(2.9-8.5)
	Dacorum	7	4.3(2.6-6.6)
	East Hertfordshire	3	2.0(0.9-3.8)
	Hertsmere	8	7.6(4.9-11.4)
	North Hertfordshire	4	3.0(1.5-5.2)
	St Albans	7	4.9(3.1-7.5)
	Stevenage	7	8.0(4.9-12.2)
	Three Rivers	6	6.1(3.5-9.7)
	Watford	17	17.6(13.1-23.1)
	Welwyn Hatfield	7	5.7(3.5-8.7)
	Luton	49	23.1(19.5-27.1)
	Milton Keynes	25	9.4(7.4-11.8)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – East of England

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
East of England		382	5.9(5.5-6.2)
	Norfolk	40	4.4(3.6-5.2)
	Breckland	5	3.8(2.2-6.2)
	Broadland	2	1.5(0.6-3.3)
	Great Yarmouth	13	12.8(9.0-17.5)
	King's Lynn and West Norfolk	6	4.0(2.3-6.3)
	North Norfolk	1	1.0(0.2-2.8)
	Norwich	10	7.3(5.0-10.4)
	South Norfolk	2	1.7(0.7-3.4)
	Peterborough	35	17.2(14.0-20.8)
	Southend-on-Sea	13	6.9(4.9-9.5)
	Suffolk	22	2.9(2.3-3.7)
	Babergh	1	1.4(0.4-3.7)
	East Suffolk	7	2.7(1.6-4.1)
	Ipswich	8	5.8(3.7-8.7)
	Mid Suffolk	0	0.3(0.0-1.8)
	West Suffolk	6	3.4(2.0-5.3)
	Thurrock	10	5.9(4.0-8.4)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – Yorkshire and the Humber

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
Yorkshire and the Humber		326	5.9(5.6-6.3)
	Barnsley	4	1.6(0.8-2.8)
	Bradford	71	13.2(11.4-15.0)
	Calderdale	11	5.4(3.7-7.5)
	Doncaster	14	4.5(3.2-6.1)
	East Riding of Yorkshire	8	2.2(1.4-3.4)
	Kingston upon Hull, City of	18	6.9(5.2-9.0)
	Kirklees	42	9.5(8.0-11.4)
	Leeds	62	7.8(6.7-9.0)
	North East Lincolnshire	3	1.7(0.7-3.3)
	North Lincolnshire	6	3.5(2.1-5.5)
	North Yorkshire	12	1.9(1.3-2.6)
	Craven	1	1.8(0.4-5.1)
	Hambleton	2	1.8(0.6-4.2)
	Harrogate	2	1.0(0.3-2.4)
	Richmondshire	4	6.8(3.4-12.2)
	Ryedale	0	0.6(0.0-3.4)
	Scarborough	1	1.2(0.3-3.1)
	Selby	2	2.2(0.8-4.8)
	Rotherham	12	4.5(3.2-6.3)
	Sheffield	43	7.4(6.2-8.8)
	Wakefield	12	3.5(2.5-4.9)
	York	8	3.8(2.4-5.7)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – East Midlands

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
East Midlands		332	6.9(6.5-7.3)
	Derby	28	11.0(8.8-13.6)
	Derbyshire	11	1.3(0.9-1.9)
	Amber Valley	1	0.8(0.2-2.3)
	Bolsover	2	2.1(0.7-4.8)
	Chesterfield	2	2.2(0.9-4.6)
	Derbyshire Dales	1	1.4(0.3-4.0)
	Erewash	1	1.2(0.3-3.0)
	High Peak	1	1.1(0.2-3.2)
	North East Derbyshire	1	1.0(0.2-2.9)
	South Derbyshire	1	1.2(0.3-3.2)
	Leicester	140	39.5(35.8-43.5)
	Leicestershire	30	4.3(3.4-5.2)
	Blaby	6	6.3(3.8-9.8)
	Charnwood	10	5.6(3.8-7.9)
	Harborough	3	2.8(1.2-5.6)
	Hinckley and Bosworth	3	2.4(1.0-4.6)
	Melton	2	3.3(1.1-7.6)
	North West Leicestershire	2	2.3(0.9-4.6)
	Oadby and Wigston	4	7.0(3.6-12.2)
	Lincolnshire	23	3.1(2.4-3.9)
	Boston	8	11.9(7.7-17.5)
	East Lindsey	3	2.1(1.0-4.0)
	Lincoln	5	4.7(2.6-7.9)
	North Kesteven	2	2.0(0.8-4.1)
	South Holland	2	2.1(0.8-4.6)
	South Kesteven	2	1.4(0.5-3.1)
	West Lindsey	1	1.0(0.2-3.1)
	Northamptonshire	48	6.4(5.4-7.5)
	Corby	4	5.6(2.9-9.9)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Daventry	3	4.0(1.9-7.3)
	East Northamptonshire	1	1.4(0.4-3.6)
	Kettering	4	4.3(2.3-7.3)
	Northampton	27	12.0(9.5-14.9)
	South Northamptonshire	3	3.2(1.5-6.1)
	Wellingborough	5	6.3(3.5-10.4)
	Nottingham	39	11.7(9.7-14.0)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – East Midlands

PHE Centre*	Upper tier local authority and local authority district **	Average annual number of cases #	Average annual rate per 100,000 (95% CI)
East Midlands		332	6.9(6.5-7.3)
	Nottinghamshire	15	1.8(1.3-2.4)
	Ashfield	2	1.6(0.6-3.4)
	Bassetlaw	1	0.9(0.2-2.5)
	Broxtowe	2	1.8(0.6-3.8)
	Gedling	2	1.7(0.6-3.7)
	Mansfield	2	1.5(0.5-3.6)
	Newark and Sherwood	2	1.4(0.4-3.2)
	Rushcliffe	5	3.9(2.1-6.6)
	Rutland	1	1.7(0.2-6.0)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – South West

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
South West		198	3.5(3.2-3.8)
	Bath and North East Somerset	4	2.2(1.2-3.8)
	Bournemouth, Christchurch and Poole	17	4.4(3.3-5.7)
	Bristol, City of	47	10.1(8.5-11.9)
	Cornwall	12	2.2(1.5-3.0)
	Devon	19	2.3(1.8-3.0)
	East Devon	4	3.0(1.6-5.1)
	Exeter	5	4.0(2.3-6.6)
	Mid Devon	2	2.4(0.9-5.3)
	North Devon	1	1.0(0.2-3.0)
	South Hams	1	1.1(0.2-3.4)
	Teignbridge	3	2.2(1.0-4.2)
	Torridge	1	1.5(0.3-4.3)
	West Devon	1	1.8(0.4-5.2)
	Dorset	5	1.2(0.7-2.1)
	Gloucestershire	22	3.5(2.7-4.4)
	Cheltenham	4	3.4(1.8-6.0)
	Cotswold	2	2.2(0.8-4.9)
	Forest of Dean	1	1.5(0.4-3.9)
	Gloucester	7	5.2(3.1-8.0)
	Stroud	4	3.3(1.7-5.8)
	Tewkesbury	4	4.2(2.2-7.4)
	Isles of Scilly	0	0.0(0.0-0.0)
	North Somerset	6	2.8(1.7-4.4)
	Plymouth	10	3.8(2.6-5.4)
	Somerset	11	2.0(1.3-2.7)
	Mendip	1	1.2(0.3-3.0)
	Sedgemoor	3	2.4(1.1-4.6)

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
	Somerset West and Taunton	5	3.0(1.6-5.1)
	South Somerset	2	1.2(0.4-2.6)
	South Gloucestershire	12	4.2(2.9-5.8)
	Swindon	19	8.7(6.6-11.2)
	Torbay	3	2.4(1.2-4.5)
	Wiltshire	10	1.9(1.3-2.8)

Table Aii.1.1. Three-year average number and rate of TB cases by upper-tier local authority and local authority (2018 to 2020) (continued) – North East

PHE Centre*	Upper tier local authority and local authority district **	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
North East		94	3.5(3.1-4.0)
	County Durham	10	1.9(1.3-2.7)
	Darlington	5	5.0(2.9-8.1)
	Gateshead	7	3.6(2.3-5.5)
	Hartlepool	3	3.6(1.7-6.6)
	Middlesbrough	13	9.5(6.8-12.9)
	Newcastle upon Tyne	27	8.9(7.1-11.1)
	North Tyneside	5	2.2(1.2-3.8)
	Northumberland	3	0.8(0.4-1.6)
	Redcar and Cleveland	2	1.7(0.7-3.5)
	South Tyneside	5	3.1(1.7-5.2)
	Stockton-on-Tees	6	3.0(1.8-4.8)
	Sunderland	7	2.6(1.7-4.0)

Table Aii.1.2. Three-year average number and rate of TB cases by clinical commissioning group (2018 to 2020)

Clinical Commissioning Group	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
NHS Barnsley CCG	4	1.6(0.8-2.8)
NHS Basildon and Brentwood CCG	12	4.4(3.1-6.2)
NHS Bassetlaw CCG	1	0.9(0.2-2.5)
NHS Bath and North East Somerset, Swindon and Wiltshire CCG	34	3.7(3.0-4.4)
NHS Bedfordshire, Luton and Milton Keynes CCG	91	9.6(8.5-10.8)
NHS Berkshire West CCG	36	7.3(6.0-8.9)
NHS Birmingham and Solihull CCG	155	13.1(11.9-14.4)
NHS Black Country and West Birmingham CCG	231	16.8(15.6-18.1)
NHS Blackburn with Darwen CCG	28	19.0(15.1-23.4)
NHS Blackpool CCG	4	2.9(1.5-5.0)
NHS Bolton CCG	35	12.1(9.9-14.6)
NHS Bradford District and Craven CCG	72	12.2(10.6-13.9)
NHS Brighton and Hove CCG	14	4.8(3.5-6.5)
NHS Bristol, North Somerset and South Gloucestershire CCG	65	6.7(5.8-7.7)
NHS Buckinghamshire CCG	45	8.3(6.9-9.8)
NHS Bury CCG	15	7.9(5.7-10.5)
NHS Calderdale CCG	11	5.4(3.7-7.5)
NHS Cambridgeshire and Peterborough CCG	82	9.2(8.0-10.4)
NHS Cannock Chase CCG	4	2.7(1.3-4.8)
NHS Castle Point and Rochford CCG	6	3.4(2.0-5.3)
NHS Cheshire CCG	16	2.2(1.6-2.9)
NHS Chorley and South Ribble CCG	3	1.7(0.8-3.2)
NHS County Durham CCG	10	1.9(1.3-2.7)
NHS Coventry and Warwickshire CCG	100	10.5(9.4-11.8)
NHS Derby and Derbyshire CCG	38	3.7(3.1-4.5)
NHS Devon CCG	32	2.7(2.2-3.3)
NHS Doncaster CCG	14	4.5(3.2-6.1)
NHS Dorset CCG	22	2.8(2.2-3.6)

Clinical Commissioning Group	2018 to 2020 average number of cases #	Average annual rate per 100,000 (95% CI)
NHS East Lancashire CCG	34	8.9(7.3-10.8)
NHS East Leicestershire and Rutland CCG	17	4.9(3.7-6.5)
NHS East Riding of Yorkshire CCG	8	2.4(1.5-3.6)
NHS East Staffordshire CCG	7	5.4(3.3-8.3)
NHS East Sussex CCG	15	2.6(1.9-3.5)
NHS East and North Hertfordshire CCG	25	4.4(3.5-5.6)
NHS Frimley CCG	85	11.5(10.1-13.0)
NHS Fylde and Wyre CCG	4	1.9(0.9-3.4)

Table Aii.1.2. Three-year average number and rate of TB cases by clinical commissioning group (2018 to 2020) (continued)

Clinical Commissioning Group	2018 to 2020 average number of people	Average annual rate per 100,000 (95% CI)
NHS Gloucestershire CCG	22	3.5(2.7-4.4)
NHS Greater Preston CCG	20	10.0(7.6-12.8)
NHS Halton CCG	1	1.0(0.3-2.6)
NHS Hampshire, Southampton and Isle of Wight CCG	66	4.1(3.6-4.7)
NHS Herefordshire and Worcestershire CCG	22	2.8(2.2-3.6)
NHS Herts Valleys CCG	45	7.5(6.3-8.9)
NHS Heywood, Middleton and Rochdale CCG	25	11.4(9.0-14.3)
NHS Hull CCG	18	6.9(5.2-9.0)
NHS Ipswich and East Suffolk CCG	11	2.8(1.9-3.9)
NHS Kent and Medway CCG	99	5.4(4.8-6.0)
NHS Kernow CCG	12	2.2(1.5-3.0)
NHS Kirklees CCG	42	9.6(8.0-11.4)
NHS Knowsley CCG	2	1.1(0.4-2.6)
NHS Leeds CCG	62	7.8(6.7-9.0)
NHS Leicester City CCG	140	39.5(35.8-43.4)
NHS Lincolnshire CCG	23	3.1(2.4-3.9)
NHS Liverpool CCG	36	7.2(5.9-8.7)
NHS Manchester CCG	108	19.5(17.5-21.8)

Clinical Commissioning Group	2018 to 2020 average number of people	Average annual rate per 100,000 (95% CI)
NHS Mid Essex CCG	9	2.3(1.5-3.3)
NHS Morecambe Bay CCG	8	2.4(1.5-3.6)
NHS Newcastle Gateshead CCG	34	6.8(5.6-8.3)
NHS Norfolk and Waveney CCG	44	4.3(3.6-5.1)
NHS North Central London CCG	204	13.6(12.5-14.7)
NHS North Cumbria CCG	6	1.9(1.1-3.0)
NHS North East Essex CCG	8	2.3(1.4-3.4)
NHS North East Lincolnshire CCG	3	1.7(0.7-3.3)
NHS North East London CCG	449	22.2(21.1-23.5)
NHS North Lincolnshire CCG	6	3.5(2.1-5.5)
NHS North Staffordshire CCG	9	3.9(2.6-5.8)
NHS North Tyneside CCG	5	2.3(1.2-3.8)
NHS North West London CCG	518	24.7(23.5-25.9)
NHS North Yorkshire CCG	9	2.0(1.3-3.0)
NHS Northamptonshire CCG	48	6.5(5.5-7.7)
NHS Northumberland CCG	3	0.8(0.4-1.6)
NHS Nottingham and Nottinghamshire CCG	53	5.1(4.3-5.9)
NHS Oldham CCG	40	16.8(13.9-20.1)

Table Aii.1.2: Three-year average number and rate of TB cases by clinical commissioning group (2018 to 2020) (continued)

Clinical Commissioning Group	2018 to 2020 average number of people	Average annual rate per 100,000 (95% CI)
NHS Oxfordshire CCG	43	6.4(5.3-7.6)
NHS Portsmouth CCG	12	5.7(4.0-7.9)
NHS Rotherham CCG	12	4.5(3.2-6.3)
NHS Salford CCG	20	7.9(6.0-10.1)
NHS Sheffield CCG	43	7.4(6.2-8.8)
NHS Shropshire, Telford and Wrekin CCG	14	2.9(2.1-3.9)
NHS Somerset CCG	11	2.0(1.3-2.8)
NHS South East London CCG	241	13.3(12.3-14.3)

Clinical Commissioning Group	2018 to 2020 average number of people	Average annual rate per 100,000 (95% CI)
NHS South East Staffordshire and Seisdon Peninsula CCG	6	2.8(1.7-4.4)
NHS South Sefton CCG	3	2.1(1.0-3.8)
NHS South Tyneside CCG	5	3.1(1.7-5.2)
NHS South West London CCG	187	12.4(11.4-13.5)
NHS Southend CCG	13	6.9(4.9-9.5)
NHS Southport and Formby CCG	4	3.4(1.8-6.0)
NHS St Helens CCG	1	0.6(0.1-1.6)
NHS Stafford and Surrounds CCG	6	4.0(2.4-6.3)
NHS Stockport CCG	10	3.3(2.2-4.7)
NHS Stoke on Trent CCG	26	9.8(7.8-12.3)
NHS Sunderland CCG	7	2.6(1.7-4.0)
NHS Surrey Heartlands CCG	39	3.8(3.1-4.5)
NHS Tameside and Glossop CCG	17	6.7(5.0-8.8)
NHS Tees Valley CCG	30	4.5(3.6-5.5)
NHS Thurrock CCG	10	5.9(4.0-8.4)
NHS Trafford CCG	18	7.6(5.7-9.9)
NHS Vale of York CCG	10	2.7(1.8-3.9)
NHS Wakefield CCG	12	3.6(2.5-4.9)
NHS Warrington CCG	6	2.7(1.6-4.3)
NHS West Essex CCG	17	5.4(4.0-7.1)
NHS West Lancashire CCG	1	0.6(0.1-2.1)
NHS West Leicestershire CCG	14	3.5(2.5-4.7)
NHS West Suffolk CCG	7	2.9(1.8-4.4)
NHS West Sussex CCG	31	3.7(3.0-4.5)
NHS Wigan Borough CCG	9	2.6(1.7-3.9)
NHS Wirral CCG	9	2.9(1.9-4.2)

Appendix III. Methods

Data production

TB notifications

People who are diagnosed with TB in England must be notified through the Enhanced Tuberculosis Surveillance system (ETS), other than in London where the London TB Register (LTBR) is used. Data from the LTBR is imported weekly into ETS. ETS is also used in Wales and Northern Ireland, but only people who are resident in England, or are treated in England and are homeless or visiting from abroad are included in this report.

Data for TB notifications between 2000 and 2020 was extracted from ETS at the beginning of May 2021 and cleaned and validated by June 2021.

Matching laboratory isolates to case notifications

Data from all TB isolates sent to National Mycobacterium Reference Service laboratories for culture between January 2018 and May 2021 was de-duplicated and a summary record was generated from all the isolates from the same person within a 12-month period. If a patient received treatment for longer than 12 months, the summary record was generated from all the isolates that existed within the treatment period, even if this was outside the 12-month period. Isolates and notifications are matched in ETS; automatically where person identifiers are identical or manually by users where differences in person identifiers occur. For isolates that were not matched in ETS, these data were then matched to TB notifications from 2019 and 2020, through a probabilistic matching process based on person identifiers common to both the laboratory isolate and the notification (17). Matches were also subject to manual review to identify any false positive, false negative or multi-matches. For notifications prior to 2019, results from matching conducted in prior years were retained and included in the final dataset.

Data cleaning to improve data quality

In addition to validation checks at data entry and routine cleaning queries that identify missing or inconsistent data within ETS, the following cleaning was subsequently carried out to produce the dataset used in reporting for TB notifications from 2000 to 2020.

The postcode field (used to map postcodes to geographic areas) was cleaned by identifying invalid postcodes based on matching to the May 2021 Postcode Directory from the Office for National Statistics (ONS). Where cleaning was necessary, the correct postcode was identified using the address fields. For people who were homeless or who had a residence outside the UK, but were notified in England, the postcode of the clinic or hospital at which they were treated was assigned to the notification. For people with no postcode or treatment clinic or hospital, the local authority and PHEC were updated using the local authority field recorded in ETS based on the area that the notifying case manager was located in. Notifications were assigned to PHECs by matching the local authority of residence to the relevant PHEC.

People with BCGosis, on chemoprophylaxis for latent TB infection or with a non-tuberculous mycobacterial infection who were notified in error were identified using comments fields, and denotified. People with culture confirmed TB who had been denotified were queried with clinics. Laboratory contaminations were removed. People renotified if they were found to have been denotified in error.

The site of disease was reclassified to pulmonary if a positive sputum smear (microscopy) sample was recorded or if a positive culture was grown from a pulmonary laboratory specimen. People with laryngeal TB were included in pulmonary breakdowns, and people with miliary TB were included in both pulmonary and extra-pulmonary breakdowns. Site of disease for people with culture confirmation was reclassified based on the site in the body from which the specimen was taken. Site of disease classifications were also updated using the free text field for site of disease in ETS.

Occupation was re-categorised into the main occupational groups (agricultural or animal care worker, social service or prison, laboratory or pathology, healthcare worker and education) if the occupation documented in the free text field (which is available within ETS for occupational groups recorded as none or other) could be classified into one of these occupational groups. The presence or absence of social risk factors (current or a history of drug misuse, alcohol misuse, homelessness, and prison) was updated based on information recorded in free text comments fields within ETS. Drug misuse (current or past use) was updated to 'yes' if recorded as unknown but current or past drug misuse was mentioned in the free text comments fields. Alcohol misuse was updated if alcohol misuse was mentioned in the comments along with evidence that the person was non-compliant or on DOT, in line with the definition that alcohol misuse affects the ability to self-administer treatment. Homelessness was updated to 'yes' if mentioned in the comments fields or if the address given was 'no fixed abode' or a shelter or hostel for homeless people was named. Prison (current or in the past) was updated to "yes" if mentioned in the free text comments fields or if HMP or a prison name was recorded as the address. Data on incident TB cases reported to the Public Health in Prisons (PHiP) log were used to validate people with TB reported with a current imprisonment on ETS and updates were made where required. People with TB who were remanded in an immigration removal centre were identified if the address given at notification, comments fields or occupation field showed the person to be an immigration detainee. People were identified as asylum seekers through the occupation field sub-category under those grouped as having occupation as 'none'.

Data cleaning of TB outcomes

If a person was reported on ETS to have died without a date of death entered, ONS mortality data was used where available. If a person was reported on ETS to have died with a date of death entered, this was reviewed and validated against the ONS mortality data. In addition to deaths reported as diagnosed at post-mortem on ETS (where the person was not suspected or diagnosed with TB before death) additional deaths diagnosed post-mortem were identified through review of information in the comments fields, date of diagnosis and date of death. Deaths were re-classified as diagnosed at post-mortem if the date of death was earlier than the date of diagnosis, where date of diagnosis was available. Deaths were re-classified as not

diagnosed at post-mortem if a person had a start date of treatment and the TB outcome entered stated that the person died before treatment or while on treatment (indicating that the person was suspected to have TB before death).

People who died and had a treatment start date available were reclassified as died at 12, 24 or 36 months based on the time between the date of starting treatment and the date of death. Where the date of treatment start was not available, the notification date was used. Similarly, for people who completed treatment and a treatment start date was available, reclassification as completed at 12, 24 or 36 months based on the time between the date of treatment start and the date of treatment completion was conducted. Where treatment start date was not available the notification date was used if appropriate.

For people with MDR/RR-TB, the start date of MDR/RR-TB treatment was used to reclassify TB outcome at 12, 24 or 36 months. People with MDR/RR-TB who died were reclassified based on the time between date of starting MDR/RR-TB treatment and the date of death. Similarly, for people with MDR/RR-TB who had completed treatment, reclassification using the date of starting MDR/RR-TB treatment and date of treatment completion was conducted. Where the MDR/RR-TB treatment start date was not known, people with MDR/RR-TB were not reclassified and the original TB outcome recorded on ETS was used.

Comments fields were also used to identify additional outcomes (completed treatment, died, lost to follow-up, treatment stopped) that were not recorded on ETS. For people transferred to another clinic where a duplicate notification was entered, the TB outcome was used from the record where it was first recorded, and the duplicate was removed.

LTBI data

Enhancement of datasets

To improve the completeness of PII variables and the accuracy of the dataset, the LTBI dataset was matched to SPINE and FLAG 4 data received from NHS Digital on new migrants. Where no NHS number was available, the forename, surname and date of birth were used to complete this field.

Number of people tested for LTBI

Where an individual has more than once positive or negative test result, the first result is counted. Test results for individuals with more than one inconclusive result are retained in the total number of tests. LTBI test results that were reported as 'unprocessed' or 'rejected' were excluded from the dataset. Test results that had not yet been obtained at the time of reporting were reported as unknown results.

It is important to note that tests are currently not excluded if country of birth is missing and it is possible that current totals include testing for people born in countries not eligible for the programme.

LTBI cohort of positives who should be referred

For calculating treatment outcomes for CCGs that do submit treatment data, the minimum (first) and maximum (last) treatment start date reported for each CCG were extracted from the treatment data. Three months (90 days) were subtracted from the minimum date to create a cohort start date. All positive tests between the cohort start date and maximum date were included in the cohort of positives that should be referred for treatment.

LTBI number of people started or accessed treatment

This was defined as the number of people that had a treatment start date, a chemo prescription, refused treatment or had a treatment completion date.

LTBI cohort who should have completed treatment

The maximum (last) IGRA date reported for each CCG was extracted. Four months (120 days) were subtracted from the maximum IGRA date to create a 4 months window to enable receipt of treatment completion data. Only patients that started treatment prior to this 4-month window were included. People who had their treatment discontinued for reasons such as pregnancy were excluded from this cohort.

LTBI number completed treatment

This was defined as the number of people who reported a date of treatment completion.

UK TB pre-entry screening data

Data collection

Pre-entry screening data was collected from IOM and non-IOM clinics. IOM data was collected by IOM panel physicians, entered via a secure web-based IOM system, and collated by the central IOM office in Manila. This data was then securely transferred to PHE. Data from non-IOM providers was collected by the clinics, collated via the overseas UK visa application centres, and securely transferred to PHE.

Full details of data collection, cleaning and analysis are presented in the UK pre-entry TB screening report available at [Tuberculosis: pre-entry screening in the UK](#).

Reporting methodology

Time periods

TB rates are presented from the year 2000, the first year of enhanced surveillance for TB. All other trends are presented displaying the 10 most recent years of data, with the following exceptions *Mycobacterium* speciation, culture confirmation, treatment delay, social risk factors and HIV testing. Social risk factors and HIV testing are presented from the first year the data

were collected. *Mycobacterium* speciation is presented from 2009 onwards as MTBC was reclassified as *Mycobacterium tuberculosis* prior to 2009 and treatment delay is presented from 2011 onwards when data completeness for symptom onset and treatment start dates were both above 66%. For social risk factors, data was presented from 2010 when this data was available. Where presenting a single year of data would have resulted in the display of small numbers, 5 years have been combined.

Tuberculosis rates

Rates are presented from 2000 to 2020 with overall TB rates per 100,000 population, as well as those by area of reporting, calculated using the mid-year population estimates provided by ONS. Average annual rates per 100,000 for a 3-year period were calculated by dividing the numerator (the number of TB notifications in the 3-year period) by the denominator (the sum of the mid-year population estimates for the same 3-year period) and multiplying by 100,000.

Rates by age, sex, place of birth and ethnic group were calculated using population estimates from the [Labour Force Survey for the second quarter](#) (April to June) of 2020. The LFS is based on a population sample, so estimates are liable to sampling errors, particularly for small population sub-groups, and should be interpreted with caution.

CCGs were placed into priority groups for LTBI testing based on the average CCG TB rate per 100,000 between 2011 and 2014, and the TB burden (the proportion of notifications the CCG contributes to the overall number of notifications for England). High incidence CCGs are defined as those with an incidence of 20.0 per 100,000 or above. High burden CCGs are defined as those with notifications equal to or over 0.5% of the total number of notifications in England. TB rates detected during pre-entry TB screening were calculated by taking the notifications detected as the numerator and the number of applicants screened in the same year as the denominator.

Social risk factors and health inequalities

People with TB were reported as having at least one social risk factor (yes) if any of the 4 social risk factors (current alcohol misuse, current or a history of homelessness, drug misuse, and imprisonment) had 'yes' recorded. People were reported as no social risk factor where all 4 risk factors were recorded as 'no'. Information on individual social risk factors was also reported separately, regardless of whether information was known for all 4 risk factors. Because of this, the denominator for reporting of at least one social risk factor and individual social risk factors may differ.

TB notifications were assigned an Index of Multiple Deprivation (IMD) 2020 rank based on Lower Super Output Area (LSOA) of residence (2011 census). To assign LSOAs to deprivation categories, the LSOAs were first sorted from most to least deprived using the IMD 2020 rank, before being divided into deciles. The LSOA mid-year population estimates were also assigned to these deciles and the rate per decile was calculated by dividing the TB notifications per decile by the population per decile and multiplying by 100,000.

DOT interpretation

The variables for collecting information on DOT are different in ETS and LTBR. In ETS, the relevant variable is “Is the patient to begin a course of treatment under direct observation?” In LTBR, the relevant variable is “Patient was taking Directly Observed Therapy at any time during the episode of care”. For the purposes of this report, a report of ‘yes’ for either variable was taken as an indication that the person had received DOT.

Reporting of *Mycobacterium* species

Species was reclassified based on WGS lineage; those reported as MTBC with a WGS lineage of EAI, Beijing, CAS, or Euro-American were reclassified as *M. tuberculosis*. Those reported as *M. tuberculosis* or MTBC with a WGS lineage of *M. bovis* or *M. africanum* were reclassified as *M. bovis* or *M. africanum*, respectively.

Reporting drug resistance

Initial resistance was classed as resistance identified within one month of the first specimen date. People who had a change from a sensitive to resistant result following treatment were reclassified as having acquired resistance, even if this was within the one-month period. If no drug susceptibility results (DST or WGS) were available for isolates cultured in the first month, any subsequent susceptibility results were not used, unless MDR-TB was identified. To ensure that all people with MDR-TB were counted, where the first available drug susceptibility result was after the one month cut-off and positive for MDR-TB (with no evidence of acquired resistance), this MDR-TB result was classified as initial resistance.

People with no resistance confirmation (DST or WGS) who were treated with an MDR/RR-TB regimen were identified by recording on ETS that MDR treatment was given (new field in ETS introduced in 2016) or using key word searches on the comments fields.

TB outcome cohorts

TB outcomes are reported for all people notified with TB, including those who started treatment and those who did not (for example those diagnosed post-mortem, died without starting treatment or lost to follow-up without starting treatment). For the purposes of TB outcome reporting, the drug sensitive cohort is defined as all people with TB, excluding those with rifampicin resistant TB or MDR-TB (initial or acquired), or treated with an MDR/RR-TB regimen (5). In this report, TB outcomes for people with drug sensitive TB were reported separately for:

- people with an expected duration of treatment of less than 12 months, TB outcomes at 12 months are reported – this group excludes people 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
- for people with CNS, spinal, cryptic disseminated or miliary disease, the last recorded TB outcome is reported

The drug resistant cohort included any people with MDR/RR-TB (initial or acquired) as well as those without phenotypic DST or WGS confirmation treated with an MDR/RR-TB regimen. A TB outcome is assigned to each person within these cohorts; those that have an unknown TB outcome, or recorded as transferred to another clinic, are assigned the outcome not evaluated'.

As well as reporting outcomes at defined time periods (at 12 and 24 months for drug sensitive and drug resistant cohorts, respectively), a last recorded outcome based on the last known outcome was derived and presented for those still on treatment beyond the 12 and 24 month time periods.

Specifically, for this report the groups presented have been:

- the drug sensitive cohort with an expected course of treatment of less than 12 months have TB outcomes reported at 12 months, with analysis of treatment completion at 12 months
- the drug sensitive cohort with CNS, spinal, miliary or cryptic disseminated TB have outcomes reported for the last recorded outcome
- analysis of deaths in the entire drug sensitive cohort (including CNS, spinal, miliary or cryptic disseminated TB) are presented for the last recorded outcome
- analysis of those lost to follow-up in the entire drug sensitive cohort was presented for the last recorded outcome
- the drug resistant cohort have TB outcomes reported at 24 months, with analysis of treatment completion at 24 months
- deaths and those lost to follow-up in the drug resistant cohort are reported at the last recorded outcome

Confidence intervals

Ninety-five per cent confidence intervals for incidence rates were calculated using a Poisson distribution. For proportions a binomial distribution was used.

Software packages

All statistical analysis was carried out using Stata 15. ArcGIS 10.5 was used to produce all maps shown in the report.

Appendix IV. Surveillance data quality

Data completeness overview

For people with a known previous TB diagnosis, information on previous treatment is also collected. This is important for understanding the role of previous treatment in drug resistance. However, until completion of the previous treatment variable improves, previous diagnosis must be used as a proxy measure when reporting nationally and internationally.

In 2020, completeness (yes, no or not known) of previous TB treatment increased slightly from 2019 (81% vs 80%). Both the North East and South West PHEC regions increased by 21% compared to 2019. The North West and London decreased by 9% and 5% respectively and there was no change in the East of England PHEC.

Diagnosis and treatment variables completeness (Table Aiv.3 and Aiv.4)

Sputum smear status

Sputum smear status among people with pulmonary TB enables quantification of the number and proportion of people that are likely to be most infectious. Results of sputum smear status are collected through manual data entry onto ETS. While onerous, entry of this data is important as currently there are no automated systems available for data collection.

In 2020, only 66% of people with pulmonary TB had a sputum smear status reported.

Completeness was lowest in the South West at 56% while highest in London (76%). Increases in completeness of this variable was seen in West Midlands (+6%), the East Midlands (+6%), the North East (+5%), Yorkshire and the Humber (+5%), the North West (+4%), London (+4%) and the East of England (+3%) PHECs. Decreases occurred in the South West (-3%) and the South East (-2%).

Symptom onset date completeness

This variable is used in the TB Strategy Monitoring indicators 6 and 7, and is vital to assess diagnostic and treatment delays.

In 2020 completeness of symptom onset date was 91% and was lowest in the East of England (82%) and highest in the Yorkshire and the Humber PHEC (99%).

Date first presented completeness²³

The definition of this variable is the date a person first presented to a healthcare service in relation to their TB symptoms, and is not when first presented to TB services (unless this was the first contact with healthcare). It is important to collect this to assess patient delays in

²³ Completion of this field does not include London cases, as this data field is not available in LTBR

diagnosis compared with healthcare delays, to monitor and improve access to healthcare and early diagnosis.

In 2020, completeness of date first presented was 87%; the lowest of the 4 key dates used in delay monitoring (symptom onset date, date first presented, date of diagnosis and date of treatment start).

Death variables completeness

Completion of the date of death variable is important to assess the timing of the death in relation to treatment start. Information on the relationship between TB and death is also important to be able to assess the proportion of people with TB who die where TB is the cause of death.

In 2020, completeness of date of death was 81% overall.

There was large variation in completeness of this variables across PHECs, with 100% completeness in the East of England, Yorkshire and the Humber, the South West and the North East PHECs, while London had the lowest percentage completeness at 52%.

Completeness of the relationship between TB and death (TB caused death, TB contributed to death or TB incidental to death) was only 75%.

The largest decrease in completeness of this variable was seen in the Yorkshire and the Humber PHEC (-27%), while the largest increase was seen in the South East (+17%).

Co-morbidities (Table Aiv.5 and Aiv.6)

The co-morbidity variables (diabetes, hepatitis B, hepatitis C, chronic liver disease, chronic renal disease, immunosuppression) and smoking status were introduced to ETS in mid-2015 and to LTBR in mid-2016. Data on these co-morbidities is essential to report and understand case complexity.

In 2020, overall completeness for reporting (yes, no or unknown) ranged from 86% to 95% for morbidity variables.

Diabetes had the highest completeness (95%), whereas hepatitis C had the lowest completeness (both 86%).

Travel and visitor risk factor variables (Table Aiv.7)²⁴

The travel and visitor history risk factor variables were introduced to ETS in May 2015. In 2020, completeness for reporting (yes, no or unknown) on travel history and visitor history was 93% and 94%, respectively.

In 2020, travel history was known (yes or no) for 80% of people with TB and visitor history was known (yes or no) for 74%.

²⁴ Completion of this field does not include London notifications, as this data field is not available in LTBR.

Under-notification of TB cases (Table Aiv.8)

Unmatched laboratory isolates²⁵ may occur if a person with TB is not notified, thereby providing an estimate of under-reporting. However, some isolates may also have failed to match to a TB notification if personal identifiers were incomplete or inaccurate, and a small number may represent contaminated samples which were not identified as such in surveillance reporting. The number and proportion of isolates received from NMRS that could not be matched to a TB notification in the previous, same or subsequent year was 67 (2.3%) in 2019, the highest proportion since 2012 (126, 2.5%).

In 2020, 220 (8.5%) isolates could not be matched to a TB notification in the previous or same year.

The proportion of unmatched isolates is likely to decrease further once matched to 2021 notifications.

²⁵ Isolates are de-duplicated and summarised to only count one isolate per TB notification per notification period, see [Appendix III: Methods](#) for further information.

Table Aiv.1. Percentage completeness of key data fields in ETS by PHE Centre, England, 2020

Some of the fields included here are mandatory data entry fields within ETS therefore it is not necessary to show 'reported' and 'known' for all fields.

PHE Centre ^a	Demographic				Clinical				Social risk factor							
	NHS Number ^b		Ethnic group	UK/non-UK born	HIV Testing ^c	Previous TB diagnosis		Previous TB treatment ^e	Drug misuse		Alcohol misuse		Homelessness		Prison	
	ETS	Lab	Known	Known	Known	Known	Reported ^d	Reported	Known	Reported	Known	Reported	Known	Reported	Known	Reported
London	86	99	99	99	99	98	100	78	97	99	97	99	97	99	96	99
West Midlands	96	98	96	98	85	93	95	87	92	95	92	94	91	94	89	93
South East	96	98	98	100	96	95	98	92	92	98	91	96	93	98	90	98
North West	99	99	97	97	93	95	99	78	90	97	90	98	87	97	85	97
East of England	99	97	98	98	96	94	97	71	90	95	90	96	88	95	87	93
East Midlands	97	100	98	98	93	94	99	84	90	97	92	98	92	98	82	95
Yorkshire and the Humber	99	97	97	96	90	96	100	85	89	98	90	98	89	98	81	97
South West	98	99	99	99	92	96	99	85	88	96	90	97	89	97	86	97
North East	99	100	98	99	93	93	98	71	89	96	92	96	92	96	86	96
England	93	99	98	98	94	96	99	81	93	98	93	97	92	97	90	97

Table Aiv.1 key: 99-100% complete 95-98% complete <95% complete

^a Ordered by decreasing total number TB notifications in 2020.

^b Data are reported and have a known value.

^c Excludes people diagnosed post-mortem.

^d Data are reported but may be reported as unknown.

^e Includes people with previous TB diagnosis only.

Table Aiv.2. Percentage difference in completeness of key fields in ETS between 2019 and 2020 by PHE Centre, England

Some of the fields included here are mandatory data entry fields within ETS therefore it is not necessary to show 'reported' and 'known' for all fields.

PHE Centre ^a	Demographic				Clinical				Social risk factor							
	NHS Number ^b		Ethnic group	UK/non-UK born	HIV Testing ^c	Previous TB diagnosis		Previous TB treatment ^e	Drug misuse		Alcohol misuse		Homelessness		Prison	
	ETS	Lab	Known	Known	Known	Known	Reported ^d	Reported	Known	Reported	Known	Reported	Known	Reported	Known	Reported
London	-3	+26	0	0	0	0	-	-5	0	-1	0	0	0	-1	-1	-1
West Midlands	-2	+7	-	-1	-10	-4	-5	+8	-5	-4	-4	-5	-5	-5	-5	-6
South East	+2	+10	-2	0	-4	-3	-1	+2	-2	-1	-3	-3	-3	0	-2	0
North West	+2	+10	-1	-1	0	+4	+2	-9	+2	+1	0	+2	0	+1	+4	+3
East of England	+5	+4	0	+1	-2	0	-1	0	-2	-2	-4	-1	-4	-2	-3	-4
East Midlands	-1	+11	0	0	-3	-1	0	+2	-2	-1	0	+2	-1	+1	-6	-1
Yorkshire and the Humber	0	0	-2	-2	-5	+1	+1	+1	-3	+1	-2	+1	-3	+1	-6	0
South West	-1	+49	0	-1	-4	+4	+1	+21	0	-1	+1	0	-1	0	-1	0
North East	0	+15	-	-	-3	-4	-2	+21	-5	-3	-3	-3	-2	-4	-2	0
England	-1	+17	-1	-1	-3	0	0	0	-1	0	-1	-1	-2	-1	-2	-1

Table Aiv.2 key: % increase No change % decrease 100% reached

^a Ordered by decreasing total number TB notifications in 2020.

^b Data are reported and have a known value.

^c Excludes people diagnosed post-mortem.

^d Data are reported but may be reported as unknown.

^e Includes people with previous TB diagnosis only.

Table Aiv.3. Percentage completeness of data fields for diagnosis, death and treatment in ETS by PHE Centre, England, 2020

For treatment outcome variables - recording of 'not completed', or 'transferred out' are counted as unknown and not reported. Date first presented completeness does not include London cases, as this data field is not available in LTBR.

PHE Centre ^a	Diagnosis					Death		Treatment					
	Sputum smear status ^b	Site of disease	Symptom onset date ^d	Date first presented	Date diagnosed ^d	Date of death ^e	Relationship between TB and Death ^e	Start of treatment date ^d	Date treatment completed ^f	Treatment Outcome reported at 12 months ^g		Treatment Outcome reported at 24 months ⁱ	
	Known ^c	Known	Known	Known	Known	Known	Known	Known	Known	Known	Reported ^h	Known	Reported
London	76	100	91	N/A	91	52	77	97	98	99	100	99	100
West Midlands	60	100	93	91	95	91	68	94	99	99	99	100	100
South East	60	99	95	87	97	96	61	95	99	95	95	95	95
North West	63	100	82	87	97	95	59	96	99	94	95	79	79
East of England	58	100	89	75	96	100	79	97	99	94	95	94	94
East Midlands	67	100	99	95	98	100	80	96	100	95	96	96	96
Yorkshire and the Humber	64	100	93	94	99	93	100	94	98	90	92	78	89
South West	56	100	92	95	96	100	100	93	99	89	91	100	100
North East	67	100	98	96	99	100	75	99	96	96	97	100	100
England	66	100	91	89	95	81	75	96	99	96	97	97	97

Table Aiv.3 key: 99-100% complete 95-98% complete <95% complete

^a Ordered by decreasing total number of TB notifications in 2020, ^b People with pulmonary TB only, ^c Data are reported and have a known value, ^d Excludes people diagnosed post-mortem, ^e People notified in the previous year that have treatment outcome died only, ^f People notified in the previous year that have completed treatment only, ^g For people notified in the previous year, ^h Data are reported but may be reported as unknown, ⁱ For people notified 2 years prior to the reporting year and still on treatment at 12 months.

Table Aiv.4. Percentage difference in completeness of data fields for diagnosis, death and treatment in ETS between 2019 and 2020 by PHE Centre, England

For treatment outcome variables - recording of 'not completed', or 'transferred out' are counted as unknown and not reported. Date first presented completeness does not include London cases, as this data field is not available in LTBR.

PHE Centre ^a	Diagnosis					Death		Treatment					
	Sputum smear status ^b	Site of disease	Symptom onset date ^d	Date first presented	Date diagnosed ^d	Date of death ^e	Relationship between TB and Death ^e	Start of treatment date ^d	Date treatment completed ^f	Treatment Outcome reported at 12 months ^g		Treatment Outcome reported at 24 months ⁱ	
	Known ^c	Known	Known	Known	Known	Known	Known	Known	Known	Known	Reported ^h	Known	Reported
London	+4	-	+28	N/A	+36	+2	+6	-1	-1	0	-	-	-
West Midlands	+6	-	+26	+49	+42	0	-13	0	+2	-1	-	-	-
South East	-2	-1	+14	+35	+30	+5	+17	-2	+5	-1	-	-	-
North West	+4	+1	0	+45	+39	-8	+7	-1	0	-2	-1	-	-
East of England	+3	-	+13	+32	+35	-8	+12	-1	-	0	-	+3	-
East Midlands	+6	+1	+33	+57	+42	+4	-10	-3	+1	-2	-1	-16	-16
Yorkshire and the Humber	+5	+1	+8	+51	+38	-5	-27	-1	-1	-2	-1	-	-
South West	-3	-	+8	+45	+23	+9	-4	+1	0	-4	-3	0	0
North East	+5	-	+17	+52	+37	-	-4	-4	+1	-6	-6	-	-
England	+2	-	+20	+45	+37	+2	-5	0	0	-1	-1	-1	-1

Table Aiv.4 key: % increase No change % decrease 100% reached

^a Ordered by decreasing total number of TB notifications in 2020, ^b People with pulmonary TB only, ^c Data are reported and have a known value, ^d Excludes people diagnosed post-mortem, ^e People notified in the previous year that have treatment outcome died only, ^f People notified in the previous year that have completed treatment only, ^g For people notified in the previous year, ^h Data are reported but may be reported as unknown, ⁱ For people notified 2 years prior to the reporting year and still on treatment at 12 months.

Table Aiv.5. Percentage completeness of data fields for co-morbidities in ETS by PHE Centre, England, 2020

PHE Centre ^a	Co-morbidities													
	Diabetes		Hepatitis B		Hepatitis C		Chronic liver disease		Chronic renal disease		Immuno-suppression		Smoker	
	Known ^b	Reported ^c	Known	Reported	Known	Reported	Known	Reported	Known	Reported	Known	Reported	Known	Reported
London	98	99	93	98	93	98	97	98	97	98	97	98	95	98
West Midlands	90	94	80	93	79	93	89	93	90	94	87	93	86	93
South East	95	98	80	97	80	97	92	97	91	96	91	97	89	98
North West	93	99	87	98	86	98	92	98	93	98	93	98	86	99
East of England	92	94	81	92	80	92	89	93	88	93	88	92	84	94
East Midlands	97	99	87	95	88	96	94	98	95	98	95	97	92	98
Yorkshire and the Humber	94	99	84	97	84	97	94	99	94	98	93	99	87	99
South West	93	98	87	96	83	94	90	96	92	97	92	97	87	97
North East	96	99	89	98	90	99	94	98	93	96	93	98	88	98
England	95	98	87	96	86	96	93	97	94	97	93	97	90	97

Table Aiv.5 key: 99-100% complete 95-98% complete <95% complete

^a Ordered by decreasing total number of TB notifications in 2018

^b Data are reported and have a known value

^c Data reported but may be reported as unknown

Table Aiv.6. Percentage difference in completeness of data fields for co-morbidities in ETS between 2019 and 2020 by PHE Centre, England

PHE Centre ^a	Co-morbidities													
	Diabetes		Hepatitis B		Hepatitis C		Chronic liver disease		Chronic renal disease		Immuno-suppression		Smoker	
	Known ^b	Reported ^c	Known	Reported	Known	Reported	Known	Reported	Known	Reported	Known	Reported	Known	Reported
London ^d	0	0	-3	0	-3	0	0	0	0	-1	0	-1	0	0
West Midlands	-6	-5	-7	-6	-6	-6	-5	-6	-5	-5	-6	-6	-3	-6
South East	-1	0	-2	0	-2	0	-2	0	-4	-1	-4	-1	-1	0
North West	+1	+4	+3	+3	+2	+4	+2	+4	+2	+4	+3	+4	0	+4
East of England	0	-2	-7	-4	-8	-4	-2	-2	-4	-2	-2	-2	0	-2
East Midlands	-3	+1	-6	0	-6	-1	0	+1	-1	+1	-1	+1	-5	+1
Yorkshire and the Humber	+1	+1	-3	-2	-3	-1	0	+1	0	0	+1	0	+2	+1
South West	-2	0	-1	-1	-6	-3	-3	-1	-3	-1	-3	0	0	0
North East	0	-1	+1	-2	0	-1	-2	-2	-2	-4	-1	+2	-8	-2
England	-1	0	-3	-2	-4	-1	-1	-1	-1	-1	-1	0	-1	-1

^a Ordered by decreasing total number of TB notifications in 2018

^b Data are reported and have a known value

^c Data reported but may be reported as unknown

Table Aiv.6 key: % increase No change % decrease 100% reached

Table Aiv.7: Percentage completeness and difference to previous year of data fields for travel and visitor history in ETS by PHE Centre, England^a, 2020

PHE Centre ^b	Risk factor							
	Travel history outside the UK ^c				Visitors received from outside the UK ^c			
	Known ^d		Reported ^e		Known ^c		Reported ^e	
	Completed %	Difference % ^f	Completed %	Difference % ^f	Completed %	Difference % ^f	Completed %	Difference % ^f
West Midlands	86	-5	94	-5	85	-2	94	-5
South East	81	-5	90	-2	76	-2	92	0
North West	78	0	96	+3	74	+2	97	+3
East of England	73	-2	84	-5	68	-2	85	-4
East Midlands	83	-2	96	-2	72	+2	96	-1
Yorkshire and the Humber	76	-7	98	+2	58	-7	98	+1
South West	81	+5	95	-1	72	+7	96	0
North East	89	-1	96	-3	88	-3	98	-2
England	80	-3	93	-2	74	0	94	-1

Completed%: 99-100% complete 95-98% complete <95% complete
 Difference%: % increase No change % decrease 100% reached

^a Excludes London notifications (as these data fields are not available in LTBR)

^c Excluding countries within Western Europe, US, Canada, New Zealand and Australia

^e Data reported but may be reported as unknown

^b Ordered by decreasing total number of TB notifications in 2020

^d Data are reported and have a known value

^f Between 2019 and 2020

Table Aiv.8. Unmatched isolates by specimen year, England, 2011 to 2020

Specimen year	Unmatched to a notification within the previous or same year		Unmatched to a notification within the previous, same or subsequent year		All isolates ^a
	n	%	n	%	n
2011	481	9.0	182	3.4	5,320
2012	392	7.9	125	2.5	4,984
2013	305	6.9	94	2.1	4,452
2014	231	5.9	68	1.7	3,912
2015	231	6.5	39	1.1	3,575
2016	193	5.4	37	1.0	3,553
2017	173	5.4	33	1.0	3,180
2018	212	7.2	36	1.2	2,927
2019	204	7.0	67	2.3	2,917
2020	220	8.5	-	-	2,584

^a Deduplicated based on patient identifiers to represent one isolate per TB notification and notification period.

Appendix V. National level data for TB strategy monitoring indicators, England, 2000 to 2020

Year	Indicator 1			Indicator 2					
	Overall TB incidence per 100,000 population			TB incidence in UK born and non-UK born populations					
	Number of cases	Rate	95% CI	UK born			Non- UK born		
				Number of cases	Rate	95% CI	Number of cases	Rate	95% CI
2000	6,044	12.3	12.0-12.6	1,830	4.1	3.9-4.3	3,329	79.6	76.9-82.4
2001	6,169	12.5	12.2-12.8	1,889	4.3	4.1-4.4	3,431	79.1	76.5-81.8
2002	6,675	13.4	13.1-13.8	1,852	4.2	4.0-4.4	4,111	90.5	87.7-93.3
2003	6,631	13.3	13.0-13.6	1,703	3.8	3.6-4.0	4,326	90.8	88.1-93.5
2004	6,929	13.8	13.5-14.1	1,791	4.0	3.8-4.2	4,571	95.2	92.4-98.0
2005	7,658	15.1	14.8-15.5	1,804	4.0	3.8-4.2	5,186	100.7	98.0-103.5
2006	7,682	15.1	14.7-15.4	1,729	3.9	3.7-4.1	5,175	92.9	90.4-95.5
2007	7,577	14.7	14.4-15.1	1,799	4.0	3.8-4.2	5,135	85.5	83.2-87.9
2008	7,809	15.1	14.7-15.4	1,867	4.2	4.0-4.4	5,417	86.0	83.7-88.3
2009	8,112	15.5	15.2-15.9	1,907	4.2	4.1-4.4	5,662	86.8	84.6-89.1
2010	7,675	14.6	14.3-14.9	1,814	4.0	3.8-4.2	5,515	83.1	80.9-85.3
2011	8,280	15.6	15.3-15.9	1,958	4.3	4.1-4.5	6,021	85.9	83.7-88.1
2012	8,086	15.1	14.8-15.4	2,004	4.4	4.2-4.6	5,840	81.4	79.4-83.6
2013	7,265	13.5	13.2-13.8	1,842	4.0	3.8-4.2	5,260	70.6	68.7-72.6
2014	6,472	11.9	11.6-12.2	1,756	3.8	3.6-4.0	4,611	60.2	58.5-62.0
2015	5,735	10.5	10.2-10.7	1,532	3.3	3.2-3.5	4,099	51.3	49.8-52.9
2016	5,618	10.2	9.9-10.4	1,454	3.1	3.0-3.3	4,096	49.4	47.9-50.9
2017	5,067	9.1	8.9-9.4	1,426	3.1	2.9-3.2	3,577	41.3	39.9-42.6
2018	4,611	8.2	8.0-8.5	1,275	2.7	2.6-2.9	3,291	39.1	37.8-40.5
2019	4,702	8.4	8.1-8.6	1,216	2.6	2.4-2.7	3,420	39.7	38.4-41
2020	4,125	7.3	7.1-7.5	1,091	2.3	2.1-2.4	2,948	36.3	35.0-37.6

Year	Indicator 5			Indicator 6			Indicator 7		
	Incidence of TB in UK born children aged under 15 years			Number and proportion of pulmonary TB cases starting treatment within 2 months of symptom onset			Number and proportion of pulmonary TB cases starting treatment within 4 months of symptom onset		
	Number of cases	Rate	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2000	209	2.3	2.0-2.6	-	-	-	-	-	-
2001	229	2.5	2.2-2.9	-	-	-	-	-	-
2002	228	2.6	2.2-2.9	-	-	-	-	-	-
2003	179	2.0	1.7-2.3	-	-	-	-	-	-
2004	264	3.0	2.6-3.4	-	-	-	-	-	-
2005	247	2.8	2.5-3.2	-	-	-	-	-	-
2006	209	2.4	2.1-2.8	-	-	-	-	-	-
2007	290	3.4	3.0-3.8	-	-	-	-	-	-
2008	294	3.4	3.0-3.8	-	-	-	-	-	-
2009	257	2.9	2.6-3.3	-	-	-	-	-	-
2010	238	2.7	2.4-3.1	-	-	-	-	-	-
2011	234	2.6	2.3-3.0	1,339	45.5	43.7-47.3	2,210	75.1	73.5-76.6
2012	254	2.9	2.5-3.2	1,390	44.5	42.7-46.2	2,334	74.7	73.1-76.2
2013	195	2.2	1.9-2.5	1,240	41.7	39.9-43.4	2,156	72.4	70.8-74.0
2014	187	2.1	1.8-2.4	1,173	40.0	38.3-41.8	2,071	70.7	69.0-72.3
2015	157	1.7	1.5-2.0	1,199	42.6	40.7-44.4	2,049	72.7	71.1-74.3
2016	163	1.8	1.5-2.1	1,092	38.8	37.0-40.6	1,959	69.6	67.8-71.2

Year	Indicator 5			Indicator 6			Indicator 7		
	Incidence of TB in UK born children aged under 15 years			Number and proportion of pulmonary TB cases starting treatment within 2 months of symptom onset			Number and proportion of pulmonary TB cases starting treatment within 4 months of symptom onset		
	Number of cases	Rate	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2017	127	1.4	1.1-1.6	989	38.3	36.5-40.2	1,781	69.0	67.2-70.8
2018	109	1.1	0.9-1.4	972	41.2	39.3-43.2	1,706	72.3	70.5-74.1
2019	123	1.3	1.1-1.5	929	40.0	38.0-42.0	1,600	68.8	66.9-70.7
2020	99	1.0	0.8-1.3	754	39.2	37.0-41.4	1,300	67.6	65.4-69.6

Year	Indicator 8			Indicator 9			Indicator 10		
	Number and proportion of pulmonary TB cases that were culture confirmed			Number and proportion of microbiologically confirmed cases with drug susceptibility testing reported for the 4 first line agents			Number and proportion of drug sensitive TB cases who had completed a full course of treatment by 12 months		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2000	1,921	52.7	51.1-54.3	2,780	99.4	99.0-99.6	-	-	-
2001	2,100	57.2	55.6-58.8	3,141	99.2	98.8-99.4	3,628	63.7	62.5-65.0
2002	2,633	64.8	63.3-66.2	3,787	98.7	98.3-99.0	4,112	67.4	66.2-68.5
2003	2,614	66.2	64.8-67.7	3,802	99.2	98.9-99.5	4,191	69.6	68.4-70.7
2004	2,755	68.4	66.9-69.8	4,015	98.6	98.2-98.9	4,426	70.1	69.0-71.2

Year	Indicator 8			Indicator 9			Indicator 10		
	Number and proportion of pulmonary TB cases that were culture confirmed			Number and proportion of microbiologically confirmed cases with drug susceptibility testing reported for the 4 first line agents			Number and proportion of drug sensitive TB cases who had completed a full course of treatment by 12 months		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2005	3,013	69.2	67.8-70.6	4,533	98.9	98.6-99.2	4,878	70.3	69.3-71.4
2006	3,010	69.5	68.1-70.9	4,613	98.7	98.4-99.0	5,212	75.5	74.5-76.5
2007	2,850	68.4	67.0-69.8	4,374	98.7	98.3-99.0	5,289	78.2	77.2-79.2
2008	2,922	67.7	66.3-69.1	4,447	98.0	97.6-98.4	5,602	80.3	79.3-81.2
2009	3,023	68.1	66.7-69.4	4,535	97.1	96.6-97.6	5,918	81.9	81.0-82.8
2010	2,911	70.8	69.4-72.2	4,531	97.9	97.4-98.2	5,655	83.0	82.1-83.9
2011	3,140	72.0	70.7-73.3	4,919	97.4	96.9-97.8	6,024	82.1	81.2-83.0
2012	3,015	70.7	69.2-70.0	4,819	98.2	97.8-98.6	6,015	83.7	82.9-84.6
2013	2,774	73.4	72.0-74.8	4,275	97.1	96.6-97.6	5,504	85.7	84.8-86.5
2014	2,522	73.2	71.7-74.7	3,866	98.2	97.8-98.6	4,847	84.9	84.0-85.9
2015	2,296	74.4	72.8-75.9	3,464	98.8	98.4-99.1	4,205	84.0	83.0-85.0
2016	2,370	76.9	75.4-78.4	3,480	97.0	96.4-97.5	4,230	85.2	84.2-86.2
2017	2,131	75.7	74.1-77.3	3,109	98.0	97.4-98.4	3,817	85.3	84.2-86.3
2018	1,980	75.4	73.7-77	2,818	98.3	97.8-98.7	3,506	84.8	83.7-85.9
2019	1,967	75.1	73.4-76.7	2,637	91.1	90.0-92	3,425	82	80.8-83.1
2020	1659	75.3	73.4-77	2201	87.9	86.5-89.1	-	-	-

Year	Indicator 11			Indicator 12			Indicator 13		
	Number and proportion of drug sensitive TB cases who were lost to follow-up at last reported outcome			Number and proportion of drug sensitive TB cases who had died at last reported outcome			Number and proportion of TB cases with rifampicin resistance or MDR-TB who had completed treatment at 24 months		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2000	-	-	-	-	-	-	-	-	-
2001	237	3.9	3.4-4.4	377	6.1	5.6-6.8	-	-	-
2002	296	4.5	4.0-5.0	436	6.6	6.0-7.2	-	-	-
2003	291	4.4	4.0-5.0	407	6.2	5.6-6.8	-	-	-
2004	332	4.8	4.4-5.4	403	5.9	5.3-6.5	35	51.5	39.8-62.9
2005	381	5.0	4.5-5.5	448	5.9	5.4-6.4	38	64.4	51.7-75.4
2006	413	5.4	4.9-6.0	430	5.7	5.2-6.2	40	50.0	39.3-60.7
2007	345	4.6	4.1-5.1	432	5.8	5.3-6.3	30	42.3	31.5-53.8
2008	368	4.8	4.3-5.3	436	5.6	5.1-6.2	45	57.7	46.6-68.0
2009	354	4.4	4.0-4.9	419	5.2	4.7-5.7	40	51.9	41.0-62.7
2010	342	4.5	4.1-5.0	382	5.0	4.6-5.5	38	48.1	37.4-58.9
2011	425	5.2	4.7-5.7	382	4.7	4.2-5.1	48	50.5	40.6-60.4
2012	365	4.6	4.1-5.0	390	4.9	4.4-5.4	58	61.7	51.6-70.9
2013	298	4.2	3.7-4.6	335	4.7	4.2-5.2	51	60.0	49.4-69.8
2014	276	4.3	3.8-4.8	354	5.5	5.0-6.1	39	52.7	41.5-63.7
2015	253	4.5	3.9-5.0	346	6.1	5.5-6.8	41	61.2	49.2-72.0
2016	225	4.1	3.6-4.6	307	5.5	5.0-6.2	46	65.7	49.2-72.1

Year	Indicator 11			Indicator 12			Indicator 13		
	Number and proportion of drug sensitive TB cases who were lost to follow-up at last reported outcome			Number and proportion of drug sensitive TB cases who had died at last reported outcome			Number and proportion of TB cases with rifampicin resistance or MDR-TB who had completed treatment at 24 months		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2017	223	4.5	3.9-5.1	266	5.3	4.7-6	41	64.1	49.2-72.2
2018	197	4.3	3.8-4.9	234	5.1	4.5-5.8	31	62	49.2-72.3
2019	162	3	3.0-4.1	229	5	4.3-5.6	-	-	-
2020	-	-	-	-	-	-	-	-	-

Year	Indicator 14			Indicator 15			Indicator 16		
	Number and proportion of TB cases with rifampicin resistance or MDR-TB who were lost to follow-up at last reported outcome			Number and proportion of TB cases with rifampicin resistance or MDR-TB who had died at last reported outcome			Number and proportion of TB cases offered an HIV test		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2000	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-
2003	-	-	-	-	-	-	-	-	-
2004	9	13	7.1-23.3	3	4	1.5-12.2	-	-	-
2005	8	14	7.0-24.5	3	5	1.7-13.9	-	-	-

Year	Indicator 14			Indicator 15			Indicator 16		
	Number and proportion of TB cases with rifampicin resistance or MDR-TB who were lost to follow-up at last reported outcome			Number and proportion of TB cases with rifampicin resistance or MDR-TB who had died at last reported outcome			Number and proportion of TB cases offered an HIV test		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2006	8	10	5.2-18.5	3	4	1.3-10.5	-	-	-
2007	6	8	3.9-17.2	10	14	7.8-24.0	-	-	-
2008	10	13	7.1-22.0	7	9	4.4-17.4	-	-	-
2009	11	14	8.2-23.8	4	5	2.0-12.6	-	-	-
2010	9	11	6.1-20.3	1	1	0.2-6.8	-	-	-
2011	18	19	12.3-28.0	7	7	3.6-14.4	-	-	-
2012	10	11	5.9-18.5	4	4	1.7-10.4	5,207	93.2	92.5-93.8
2013	14	16	10.1-25.8	4	5	1.8-11.5	5,787	93.6	92.9-94.1
2014	14	19	11.6-29.3	2	3	0.7-9.3	5,401	95.4	94.8-95.9
2015	5	7	3.2-16.3	5	7	3.2-16.3	4,951	96.3	95.7-96.8
2016	9	13	6.9-22.7	6	9	4.0-17.5	5,025	97.0	96.5-97.4
2017	7	11	5.4-20.9	7	11	5.4-20.9	4,558	96.5	95.9-97
2018	5	10	4.3-21.4	4	8	3.2-18.8	4,157	96.7	96.1-97.2
2019	-	-	-	-	-	-	4,243	97.6	97.1-98
2020	-	-	-	-	-	-	254	11.6	10.3-13.0

Year	Indicator 17			Indicator 18			Indicator 19		
	Number and proportion of drug sensitive TB cases with at least one social risk factor who completed treatment within 12 months			Number and proportion of culture confirmed TB cases with any first line drug resistance			Number and proportion of culture confirmed TB cases with multi-drug resistance TB		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2000	-	-	-	193	6.9	6.1-7.9	28	1.0	0.7-1.4
2001	-	-	-	228	7.3	6.4-8.2	23	0.7	0.5-1.1
2002	-	-	-	297	7.8	7.0-8.7	34	0.9	0.6-1.2
2003	-	-	-	308	8.1	7.3-9.0	49	1.3	1.0-1.7
2004	-	-	-	325	8.1	7.3-9.0	45	1.1	0.8-1.5
2005	-	-	-	346	7.6	6.9-8.4	41	0.9	0.7-1.2
2006	-	-	-	371	8.0	7.3-8.9	54	1.2	0.9-1.5
2007	-	-	-	331	7.6	6.8-8.4	49	1.1	0.8-1.5
2008	-	-	-	307	6.9	6.2-7.7	50	1.1	0.8-1.5
2009	-	-	-	371	8.2	7.4-9.0	59	1.3	1.0-1.7
2010	373	73.7	69.7-77.4	323	7.2	6.5-8.0	65	1.4	1.1-1.8
2011	371	71.5	67.5-75.2	414	8.5	7.7-9.3	81	1.6	1.3-2.0
2012	394	74.9	71.0-78.4	360	7.5	6.8-8.3	76	1.6	1.3-2.0
2013	402	77.2	73.4-80.6	327	7.7	6.9-8.5	67	1.6	1.2-2.0
2014	360	74.8	70.8-78.5	289	7.5	6.7-8.4	53	1.4	1.0-1.8
2015	392	75.7	71.8-79.2	255	7.4	6.6-8.3	45	1.3	1.0-1.7

Year	Indicator 17			Indicator 18			Indicator 19		
	Number and proportion of drug sensitive TB cases with at least one social risk factor who completed treatment within 12 months			Number and proportion of culture confirmed TB cases with any first line drug resistance			Number and proportion of culture confirmed TB cases with multi-drug resistance TB		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2016	368	76.5	72.5-80.1	266	7.7	6.9-8.6	53	1.5	1.1-1.9
2017	363	75.6	71.6-79.3	285	9.3	8.3-10.3	46	1.5	1.1-1.9
2018	359	73.9	69.8-77.6	330	11.8	10.6-13.0	36	1.3	0.9-1.7
2019	372	73.7	69.7-77.3	310	11.8	10.7-13.1	37	1.3	0.9-1.8
2020	41	1.7	1.2-2.3	-	-	-	-	-	-

Year	Indicator 18			Indicator 19		
	Number and proportion of culture confirmed TB cases with any first line drug resistance			Number and proportion of culture confirmed TB cases with multi-drug resistance TB		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2000	193	6.9	6.1-7.9	28	1.0	0.7-1.4
2001	228	7.3	6.4-8.2	23	0.7	0.5-1.1
2002	297	7.8	7.0-8.7	34	0.9	0.6-1.2
2003	308	8.1	7.3-9.0	49	1.3	1.0-1.7
2004	325	8.1	7.3-9.0	45	1.1	0.8-1.5
2005	346	7.6	6.9-8.4	41	0.9	0.7-1.2

Year	Indicator 18			Indicator 19		
	Number and proportion of culture confirmed TB cases with any first line drug resistance			Number and proportion of culture confirmed TB cases with multi-drug resistance TB		
	Number of cases	Proportion	95% CI	Number of cases	Proportion	95% CI
2006	371	8.0	7.3-8.9	54	1.2	0.9-1.5
2007	331	7.6	6.8-8.4	49	1.1	0.8-1.5
2008	307	6.9	6.2-7.7	50	1.1	0.8-1.5
2009	371	8.2	7.4-9.0	59	1.3	1.0-1.7
2010	323	7.2	6.5-8.0	65	1.4	1.1-1.8
2011	414	8.5	7.7-9.3	81	1.6	1.3-2.0
2012	360	7.5	6.8-8.3	76	1.6	1.3-2.0
2013	327	7.7	6.9-8.5	67	1.6	1.2-2.0
2014	289	7.5	6.7-8.4	53	1.4	1.0-1.8
2015	255	7.4	6.6-8.3	45	1.3	1.0-1.7
2016	266	7.7	6.9-8.6	53	1.5	1.1-1.9
2017	285	9.3	8.3-10.3	46	1.5	1.1-1.9
2018	330	11.8	10.6-13.0	36	1.3	0.9-1.7
2019	310	11.8	10.7-13.1	37	1.3	0.9-1.8
2020	253	11.6	10.3-13.0	41	1.7	1.2-2.3

List of acronyms

Abbreviation	Meaning
BCG	Bacillus Calmette-Guérin vaccination
BTS	British Thoracic Society
CCG	Clinical commissioning group
CHIS	Child Health Information systems
CI	Confidence Intervals
COVER	Cover of Vaccination Evaluated Rapidly
CNS	Central nervous system
DOT	Directly Observed Therapy
DST	Drug susceptibility testing
ETS	Enhanced TB Surveillance system
GP	General Practice
HANDD	HIV & AIDS New Diagnosis Database
HIV	Human immunodeficiency virus
HMP	Her Majesty's Prison service
IRC	Immigration removal centre
IGRA	Interferon gamma release assay
INH-R	Isoniazid resistance
IMD	Index of Multiple Deprivation
IOM	International Organisation of Migration
IQR	Inter-quartile range
JSNA	Joint Strategic Needs Assessment
LA	Local authority
LFS	Labour Force Survey
LSOA	Lower Super Output Area
LTBI	Latent TB infection
LTBR	London TB Register
MDR-TB	Multi-drug resistant TB
MDR/RR-TB	Multi-drug resistant/rifampicin resistant TB
MDT	Multidisciplinary team
MIRU-VNTR	Mycobacterial Interspersed Repetitive Uni-Variable Number Tandem Repeats

Abbreviation	Meaning
MTBC	Mycobacterium tuberculosis complex
NHS	National Health Service
NHSE&I	NHS England and NHS Improvement
ONS	Office for National Statistics
PCR	Polymerase chain reaction
PDS	Personal Demographic Service
PHE	Public Health England
PHEC	Public Health England Centre
PHiP	Public Health in Prisons
RCGP	Royal College of General Practitioners
SNP	Single Nucleotide Polymorphism
SRF	Social risk factor
SCCI	Standardisation Committee for Care Information
SOPHID	Survey of Prevalent HIV Infections Diagnosed
TB	Tuberculosis
TBCBs	TB Control Boards
VOT	Virtually Observed Treatment
USPs	Under-served populations
WGS	Whole genome sequencing
XDR-TB	Extensively drug resistant TB

Glossary

Acquired resistance

Acquired resistance is classed as resistance identified on repeat culture one or more months after the first specimen date. In addition, people with a change from a sensitive to resistant result following treatment start are reclassified as having acquired resistance, even if this is within the one-month period.

Drug resistant cohort

The drug resistant cohort includes any people with rifampicin resistant TB (initial or acquired), including MDR-TB (initial or acquired), as well as people treated with a second line regimen without confirmation through phenotypic DST or WGS resistance predictions.

Drug sensitive cohort

The drug sensitive cohort excludes all people with rifampicin resistant TB (initial or acquired) including MDR-TB (initial, acquired or treated).

Extensively-drug resistant TB (XDR-TB)

XDR-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).

First-line drug resistance

First-line drug resistance is defined as resistance to at least one of the first line drugs (isoniazid, rifampicin, ethambutol or pyrazinamide).

Initial resistance

Initial resistance is classed as resistance identified within 3 months of the first specimen date.

Latent TB infection (LTBI)

LTBI is defined as a state of persistent immune response to stimulation by Mycobacterium tuberculosis antigens without evidence of active TB disease.

Last recorded outcome

Last known outcome, irrespective of when it occurred compared to treatment start.

Multi-drug resistant TB (MDR-TB)

MDR-TB is defined as resistance to at least isoniazid and rifampicin, with or without resistance to other drugs.

Multi-drug resistant/Rifampicin resistant TB (MDR/RR-TB)

MDR/RR-TB is defined as resistance to rifampicin including people with MDR-TB.

Post-mortem diagnosis

A person diagnosed at post-mortem is defined as having TB which was not suspected before death, but a TB diagnosis was made at post-mortem, with pathological and/or microbiological findings consistent with active TB that would have warranted anti-TB treatment if discovered before death.

Pulmonary tuberculosis

A person with pulmonary TB is defined as having TB involving the lungs and/or tracheo-bronchial tree, with or without extra-pulmonary TB diagnosis. In this report, in line with the WHO's recommendation and international reporting definitions, miliary TB is classified as pulmonary TB due to the presence of lesions in the lungs, and laryngeal TB is also classified as pulmonary TB.

Social risk factor

Social risk factors for TB include current alcohol misuse, current or history of homelessness, current or history of imprisonment and current or history of drug misuse.

Under-served populations

Under-served populations refer to people with TB who have a social risk factor (current alcohol misuse, current or history of homelessness, imprisonment and drug misuse), as well as those who were remanded in an immigration removal centre, identified as asylum seekers or unemployed.

WGS cluster

Clusters in this document refer to molecular clusters only. These are defined as 2 or more people who are infected with a strain of Mycobacterium tuberculosis complex who are within 12 single nucleotide polymorphisms (SNPs).

About the UK Health Security Agency

UKHSA is responsible for protecting every member of every community from the impact of infectious diseases, chemical, biological, radiological, and nuclear incidents, and other health threats. We provide intellectual, scientific, and operational leadership at national and local level, as well as on the global stage, to make the nation health secure.

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