UK Health Security Agency

Tuberculosis in the South East

Annual review (2020 data)

Data from 2000 to 2020

Contents

Executive summary

The rate of tuberculosis (TB) in the South East continues to decline by a small amount year-on-year, from a peak in 2011, other than a small increase in 2019. In 2020, 456 people with TB were notified, a rate of 5.1 per 100,000 population. This was below the England average (7.3 per 100,000) and accounted for 11% of the 4125 notifications in England. Most of the South East has very low rates. In all but 3 upper-tier local or unitary authorities (Slough, Reading, Southampton), rates were below the national average.

The rate of TB among people born outside the UK has more than halved since 2011 although cases among this group still accounted for 73% of all reports. The median time since entry for people born abroad increased to 12 years. India, Pakistan and Nepal remain the most common non-UK countries of birth, accounting for more than half of those born abroad. Time since entry for people born in India and Pakistan decreased from the previous report, although people from Pakistan still had the longest median time since entry, 15 years.

In 2020 there was a decline in TB among people born in the UK, as in 2019, with the rate in this group remaining below the England average. The most common ethnic group was white (78% born in the UK), which accounted for a quarter of all people with TB.

Just under half of people notified in 2020 had pulmonary disease. Pulmonary TB was more common among people born in the UK (60% versus. 45% in those born abroad). In 2020 only 54% of people with TB had their diagnosis confirmed by culture (70% among those with pulmonary TB). The proportion resistant to one or more first line drug decreased to 9%, while the proportion with multi-drug resistance increased to 3%, the highest level since 2002. However, the effect of small numbers on these rates should be noted.

Almost 1 in 4 people had one of the key co-morbidities (diabetes, hepatitis B, hepatitis C, chronic renal disease, chronic liver disease and immunosuppression). Diabetes was the most common.

People with pulmonary TB in the South East had a median delay from symptoms to starting treatment of 84.5 days, similar to the previous year and 3.5 days longer than the national average. Delays were longest and increased from 2018 in Surrey and Sussex.

Of the people notified in 2019 who would be expected to receive 6 months standard treatment, (excluding those with rifampicin-resistant, CNS, spinal, miliary or cryptic disseminated disease) 83% had completed at 12 months. Completion was lowest among people with a co-morbidity (71%), those born in the UK (77%), and in those of white (77%) ethnicity. Of those with CNS, spinal, military, or cryptic disseminated TB who were notified in 2019, 81% had completed treatment by the last recorded outcome.

More than 1 in 10 people with TB in 2020 experienced a social risk factor, of which a third had more than 1. Social risk factors were more common in people born in the UK, men and those of black-Caribbean and white ethnicity. People with social risk factors were more likely to have infectious TB and slightly less likely to complete treatment. 93% of people with TB were offered and received HIV testing, higher than the national average across England. Children were least likely to be offered a test (although numbers were small), and testing was also lower among adults over 65.

While TB rates remain very low across most of the South East and continue to decline after a small rise in 2019, the rate of decline is small. Furthermore, recent TB notifications should be viewed with caution in light of the impact of the coronavirus (COVID-19) pandemic. Levels of multi-drug resistance have increased, and issues remain with above average delays from symptom onset to treatment. Continued focus is needed by TB services to diagnose and manage complex cases successfully through treatment.

Recommendations

Further reductions in TB in the South East will require:

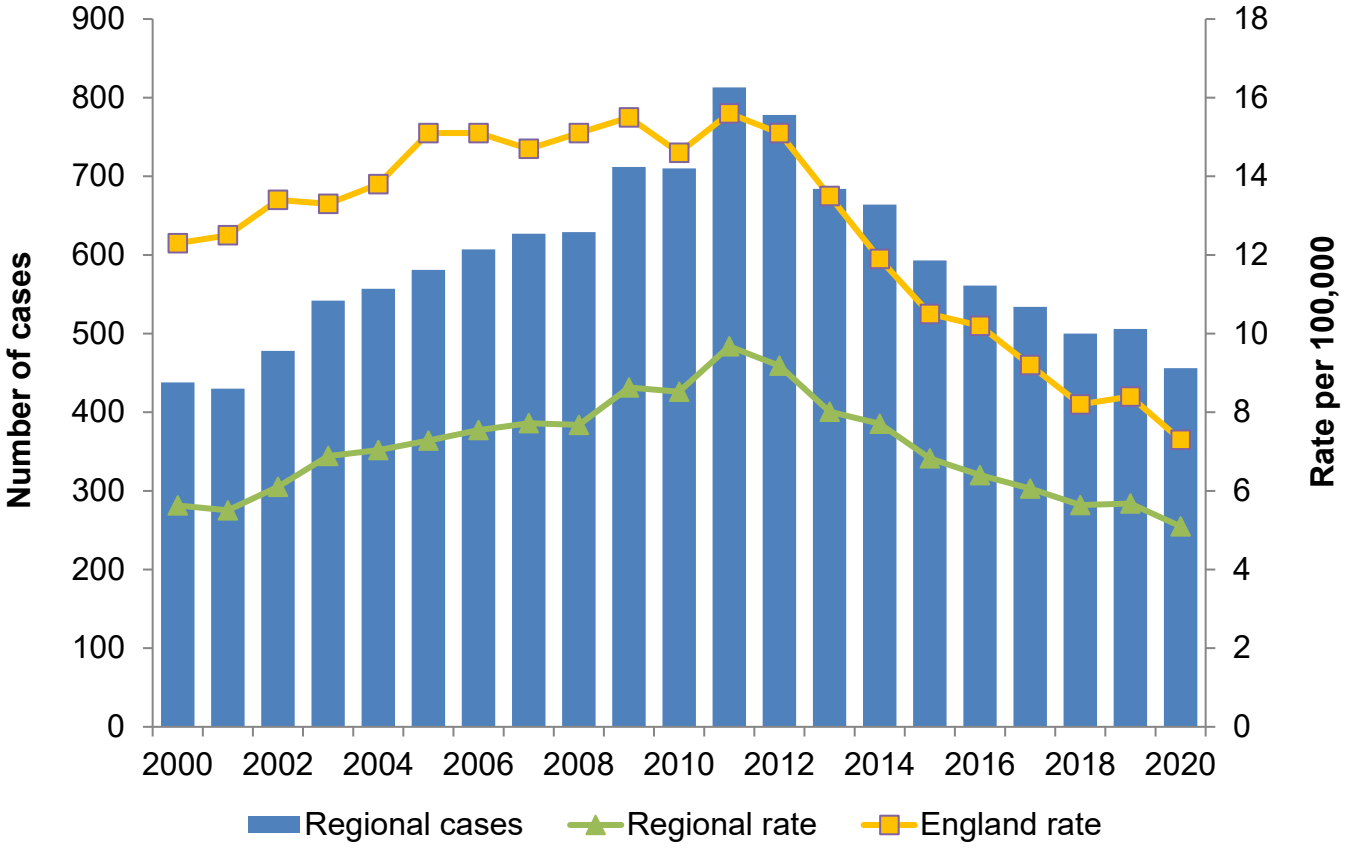
- efforts to increase rates of culture confirmation as healthcare systems return to normal after the COVID-19 pandemic
- work to ensure that delays to diagnosis are monitored to ensure timely access to treatment services, particularly in Surrey and Sussex and Hampshire & Isle of Wight HPTs
- data completion to be up to date for accurate monitoring of key indicators such as treatment delay and outcomes
- work to understand the impact of the COVID-19 pandemic on outcomes and TB services, and what can be done to address these issues

1. TB notifications and incidence

Overall numbers, rates and geographical distribution

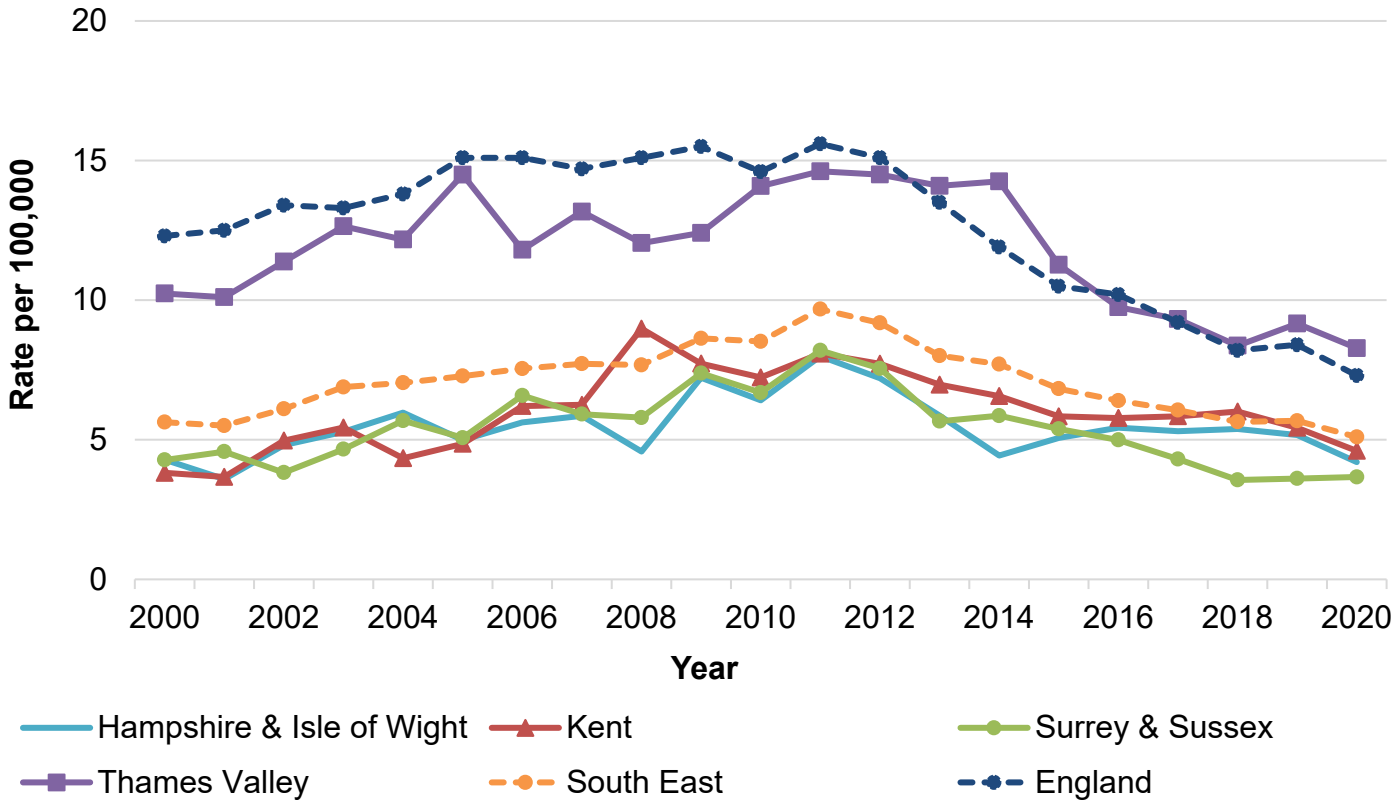
In 2020, there were 456 cases of tuberculosis (TB) notified in South East of England residents; a rate of 5.1 per 100,000 population (Figure 1). Despite a small rise in 2019, this was the lowest number of people notified with TB in the South East since 2000, and represents a 10% decline in numbers from 2019, and a 44% decrease from 2011, when cases peaked. The rate of TB in the South East in 2020 remains lower than the rate for England (7.3 per 100,000) and accounted for 11% of the 4125 cases in England in 2020.

Figure 1. TB case reports and rates, South East, 2000 to 2020



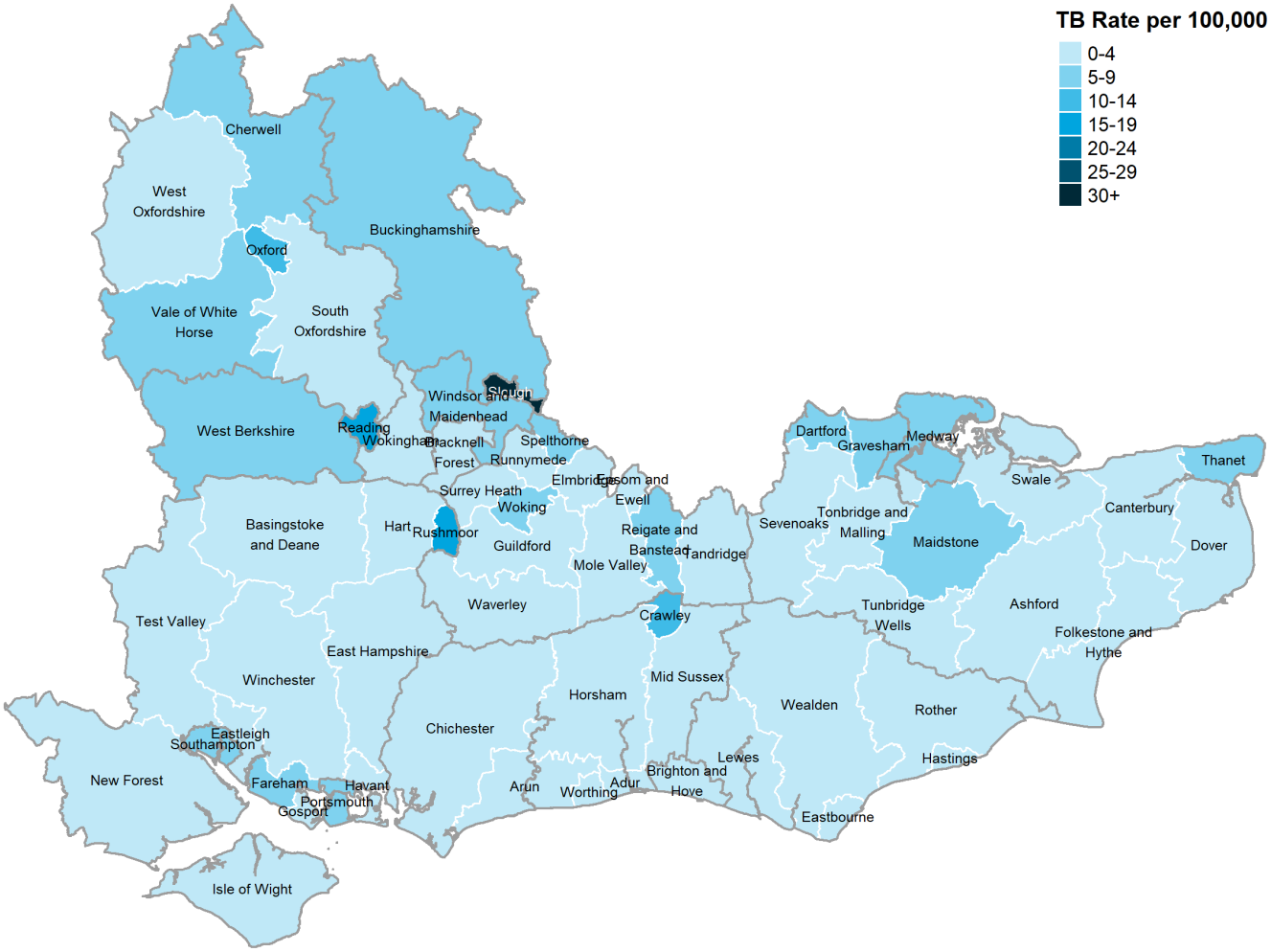
The highest TB rate was among residents of the Thames Valley Health Protection Team area (8.3 per 100,000 of the population), despite a 9.6% reduction since 2019: the rate in this area was above the average for England. All Health Protection Team areas saw a decrease in rates since 2019, other than Surrey and Sussex where TB rates increased by 1.6% (Figure 2). The largest reduction in rates was in the Hampshire and Isle of Wight area, where TB rates decreased by 18.7% between 2019 and 2020.

Figure 2. TB case rates, by Health Protection Team area of residence, South East, 2000 – 2020



Slough in Thames Valley remained the upper-tier local authority with the highest rate of TB (30.8 per 100,000, 46 cases), followed by Reading (17.5 per 100,000, 28 cases) (Appendix Cii). Slough was also the only lower-tier local authority to have a rate of over 30 per 100,000 (30.8 per 100,000 in 2020), as illustrated in Figure 3. Other than Southampton (8.3 per 100,000, 21 cases), all other upper-tier local authorities had TB rates lower than the national average of 7.3 per 100,000. Most upper-tier local authorities saw falling TB rates between 2019 and 2020. Increased rates of TB were seen only in West Berkshire (100%, 3.2 per 100,000 in 2019 to 6.3 per 100,000 in 2020), East Sussex (19.7%, 2.7 per 100,000 in 2019 to 3.2 per 100,000 in 2020), and Brighton and Hove (8.8%, 3.8 per 100,000 in 2019 to 4.1 per 100,000 in 2020).

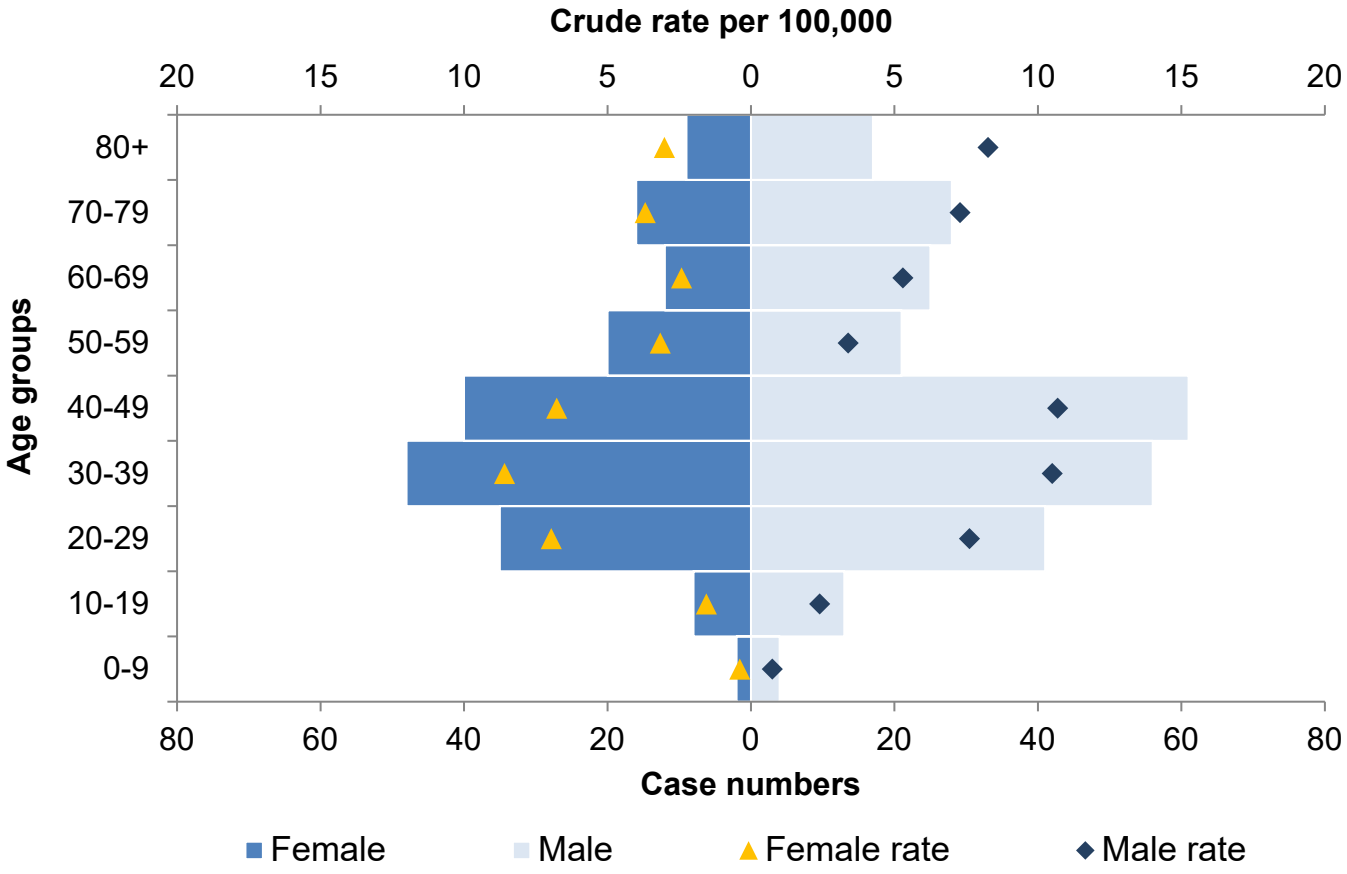
Figure 3. Case rate by lower-tier local authority of residence, South East, 2020



Demographic characteristics

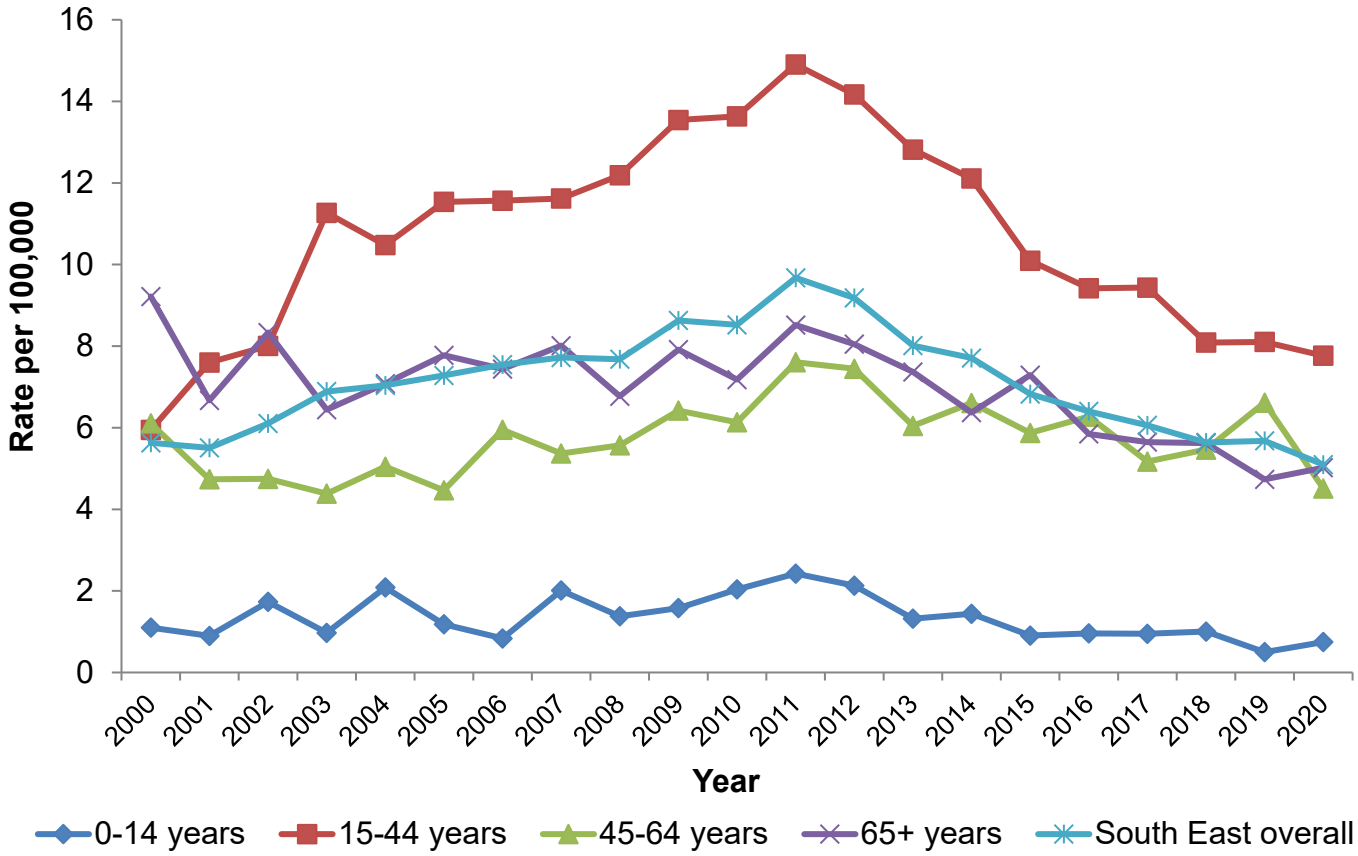
Age and sex

Figure 4. TB case reports and rate by age and sex, South East, 2020



In 2020, 58% (266) of people with TB in the South East were male, and the rate was higher among males (6 per 100,00) than for females (4 per 100,000). Rates were highest for males aged between 40 to 49 (10.7 per 100,000) and 30 to 39 years (10.5 per 100,000) and for females aged between 30 to 39 (8.6 per 100,000).

Figure 5. TB case rates by age group, South East, 2000 to 2020



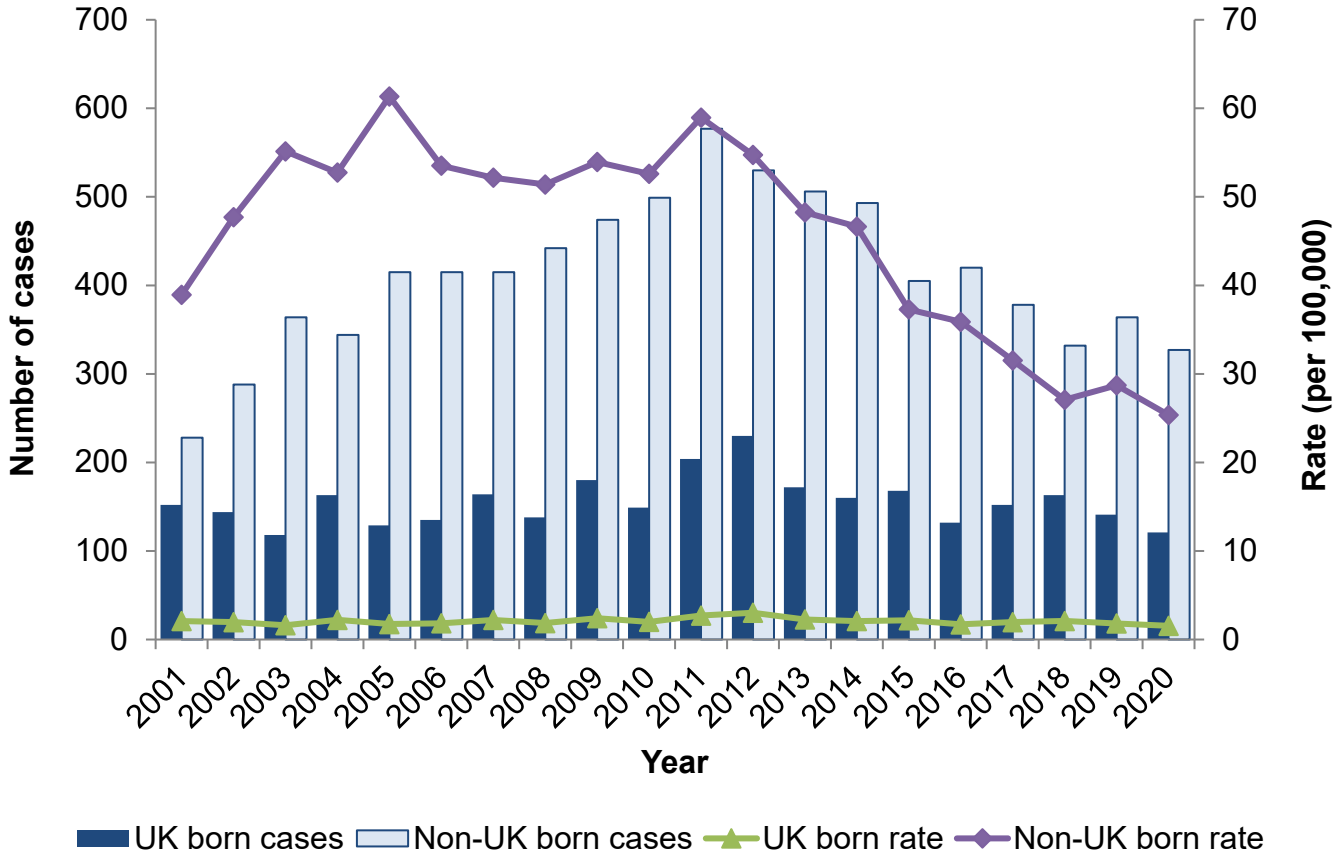
TB rates remained highest among people aged 15 to 44 years (7.8 per 100,000) (Figure 5). The overall decrease in TB since 2011 has mostly been in this age group, although TB rates in this group have levelled off since 2018. TB rates in South East residents aged 45 to 64 years had increased in 2019 (6.6 per 100,000 versus. 5.5 per 100,000 in 2018), however have since fallen to the lowest rate out of the adult age groups (4.5 per 100,000).

Place of birth and time since entry

In 2020, country of birth was known for 98% of people with TB (448 out of 456). Overall, 73% (327 out of 456) of all people with TB in the South East were born outside the UK, the same as the proportion of cases born abroad nationally. This was also a similar figure to the proportion to cases born abroad in 2019 (72%), however an increase 2018 (67%).

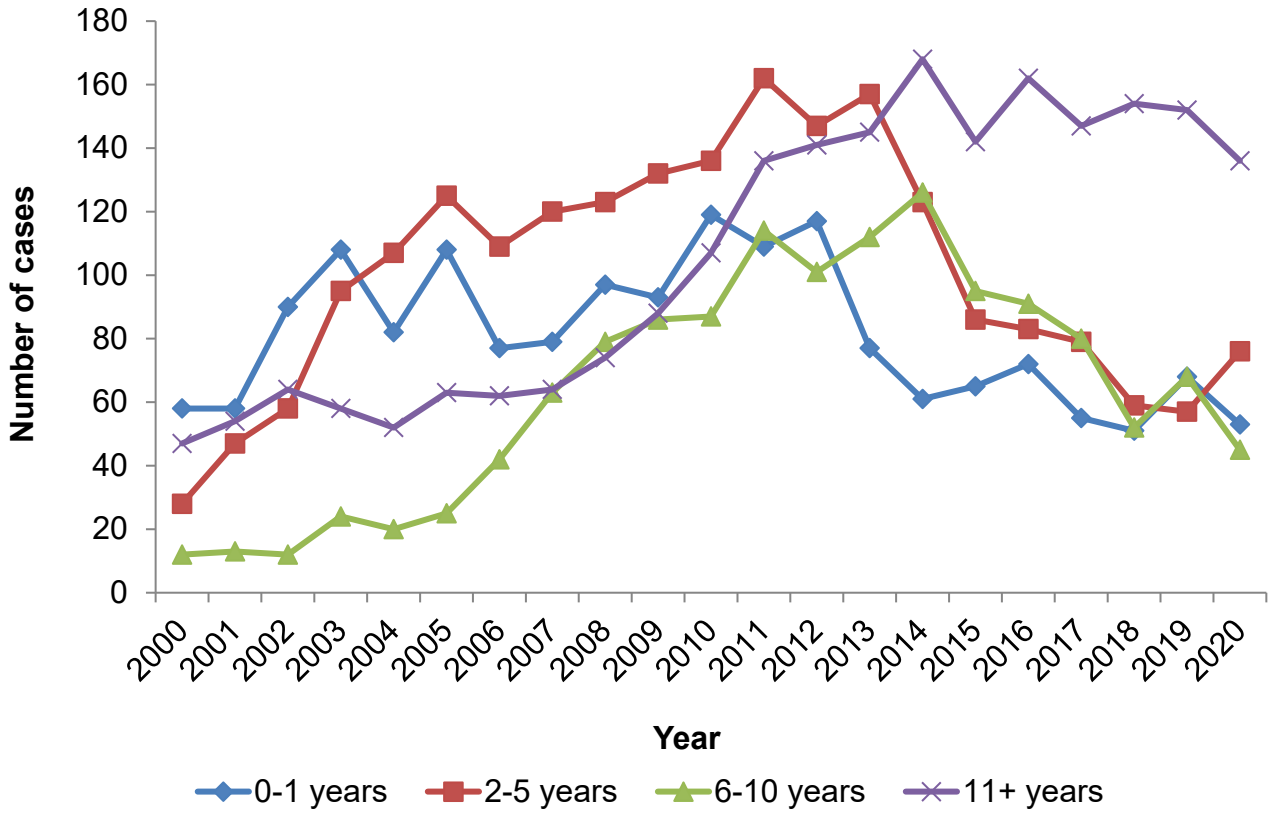
The rate of TB in people born outside of the UK fell by 11% from 2019 (28.7 per 100,000 versus 25.4 per 100,000 in 2020), reaching the lowest it has been since the peak of 60 per 100,000 in 2001 (Figure 6). Despite this decline, the rate of TB in people born abroad was over 16 times greater than the rate of TB in people born in the UK (1.6 per 100,000). This rate those born in the UK was also the lowest it has been since 2001, reflecting a very gradual decline in TB rates since 2012 (3.0 per 100,000), and was almost half of the national rate of TB in people born in the UK (3 per 100,000 in 2012).

Figure 6. TB case reports and rate by place of birth, South East, 2001 to 2020



In 2020, information on the time since entry to the UK and notification date of TB was available for 68% (310) of people born outside the UK. The median time since entry was 12 years (interquartile range, IQR, 4–18 years), an increase on 2019 (9 years, IQR 3-18). The proportion of people diagnosed with TB in less than 10 years from entering the UK has remained stable since 2019 (56%). There was an increase in the number of people diagnosed 2 to 5 years after entry to the UK in 2020, the majority of which were born in India (29%, 22 out of 76), followed by Nepal (11%, 8 out of 76) and Timor-Leste (11%, 8 out of 76). These people were most commonly resident in Thames Valley HPT 47%, 36 out of 76) (Figure 7).

Figure 7. Time between entry to the UK and TB notification for non-UK born people by year, South East, 2000 to 2020



In 2020, the country of birth was known for 100% (327 out of 327) of people not born in the UK. As in previous years, the most common country of birth for people with TB who were not born in the UK was India (25%, 83 out of 327). Of those countries which make up the 10 most common countries of birth for people with TB born outside the UK, those born in Pakistan had the longest median time since entry in 2020 (15 years), followed by those born in the Philippines (12 years) and Nepal (10 years).The median time since entry for those born in India halved since the previous year, from 9 years in 2019 to 4 years in 2020.

Table 1. Ten most common countries of birth of non-UK born people with TB and time between entry to the UK and TB notification, South East, 2020

Country of origin	Number of cases	Proportion of non-UK born (%)	Median time since entry	Time since entry (IQR)	
India	83	25	4	1	13
Pakistan	47	14	15	7	28
Nepal	44	13	10	4	13
Romania	16	5	4	1	6
Philippines	13	4	12	7	17
Timor-Leste	12	4	5	4	8
Eritrea	9	3	2	0	3

Country of origin	Number of cases	Proportion of non-UK born (%)	Median time since entry	Time since entry (IQR)	
Nigeria	9	3	9	2	11
Afghanistan	7	2	6	1	14
Kenya	7	2	1	1	21

Ethnicity

In 2020, 98% of those with TB in the South East had their ethnicity recorded (447 out of 456). People of Bangladeshi ethnicity had the highest rate of TB in the South East (91 per 100,000), followed by those of those of Pakistani ethnicity (56 per 100,000), and those of Black-African ethnicity (44 per 100,000). As in previous years, the most common ethnicity overall was the white ethnic group, accounting for a quarter of all cases in the South East (26%, 115 out of 447) (Figure 8). Most people of white ethnicity were born in the UK (78%, 90 out of 115); of those born abroad, 87% (20 out of 23) were from Central or Eastern Europe, most commonly Romania. The second highest number of cases were in those within the mixed or other ethnic group (24%, 107 out of 447), in whom the most common country of birth was Nepal (41%, 44 out of 107). Those of Indian ethnicity made up 21% of cases (92 out of 447), and were predominantly born in India (88%, 81 out of 92).

Figure 8. TB case number and rate by ethnic group, South East, 2020

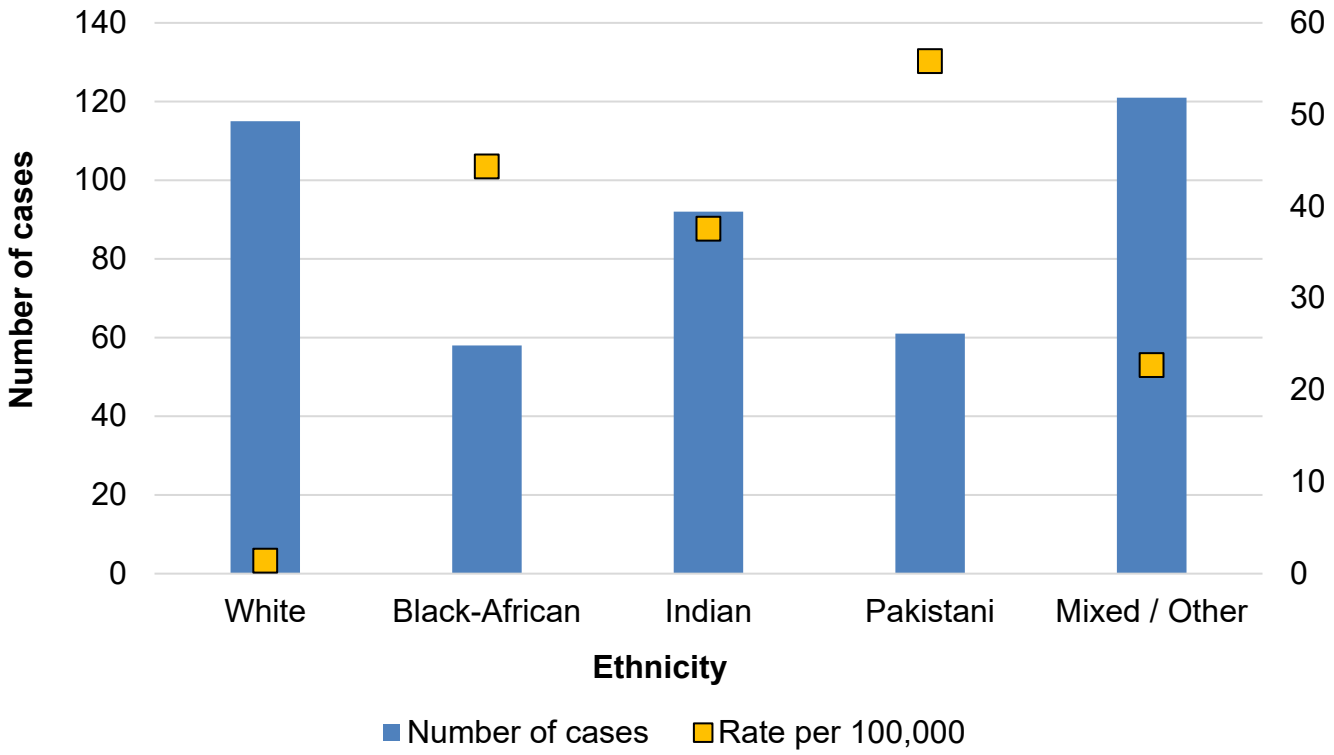
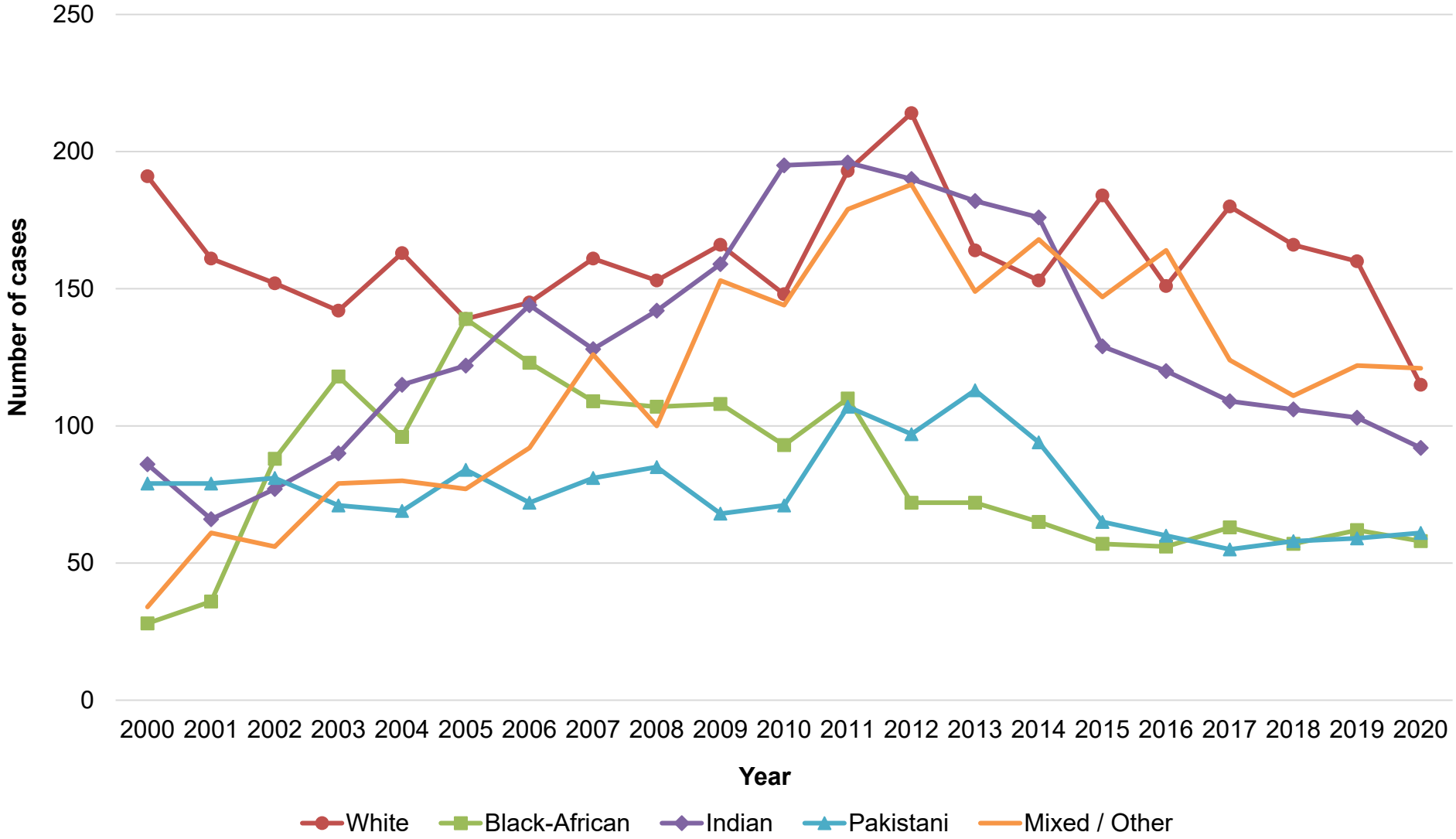


Figure 9. TB case number by ethnic group, South East, 2000 to 2020



Clinical characteristics

Site of disease

Table 2. Site of disease of people with TB, South East, 2020

Site of disease	n	%*
Pulmonary	223	48.9
Lymph nodes (extra-thoracic)	114	25.0
Lymph nodes (intra-thoracic)	56	12.3
Gastrointestinal	20	4.4
Bone/joint (spine)	30	6.6
Miliary	15	3.3
Bone/joint (other – not spine)	6	1.3
Central nervous system (meningitis)	10	2.2
Central nervous system (other – not meningitis)	15	3.3
Genitourinary	13	2.9
Cryptic	6	1.3
Pleural	35	7.7
Total patients*	**456**	

* People may have disease at more than one site, so the total % will not equal 100%.

Just under half of people notified with TB in 2020 had pulmonary disease (Table 2). Pulmonary disease was more common in those born in the UK (60%, 73 out of 121) than in those born outside the UK (45%, 146 out of 327), and in those aged over 65 (63%, 55 out of 88 versus 46%, 168 out of 365 in younger age groups). It was also more common in those of white ethnicity (71%, 82 out of 115) than in any other ethnic groups, particularly Indian (28%, 26 out of 92) and Pakistani (39%, 24 out of 64) ethnic groups.

Previous history of tuberculosis

In 2020, data on previous diagnosis was available for 95% (434 out of 456) of people with TB. Of these, 5.8% (25 out of 434) had a previous diagnosis, similar to previous years. The median time between diagnoses was 7 years (IQR 3-20). Of people who received Directly Observed Therapy (DOT), 9.3% (7 out of 75) had a previous TB diagnosis.

Hospital inpatient and directly observed therapy (DOT)

In 2020, information on hospital inpatient status was available for 94% (430 out of 456) of people with TB. As in previous years, around a quarter (27%, 115 out of 430) were hospital inpatients at the point of their diagnosis. Males were more likely to be hospital inpatients (30%,

74 out of 246) than females (22%, 41 out of 184). Being admitted to hospital was also more common among people over the age of 65 (36%, 29 out of 80, versus. 24%, 86 out of 350 in other age groups). People with pulmonary TB were more likely to be hospitalised (31%, 64 out of 208 versus. 23%, 50 out of 219 in those with extra-pulmonary TB only), and of people with pulmonary TB who were sputum smear positive, over a third (35%, 23 out of 65) were hospitalised. People with social risk factors were also more likely to be admitted to hospital (49%, 19 out of 39 versus 23%, 80 out of 345 of those with no social risk factors), as well as those with at least one comorbidity (35%, 35 out of 99 versus. 24%, 79 out of 324 in those with no comorbidities).

In 2020, 16% (75 out of 456) of people with TB received DOT. Of those with at least one social risk factor, 59% (26 out of 44) were placed on DOT. Of those with MDR-TB, 50% (3 out of 6) were placed on DOT.

Co-morbidities

Data was available for 97% (442 out of 456) of people notified with TB in 2020. Of those, 24% (105 out of 442) had at least one comorbidity. The most common comorbidity was diabetes, followed by immunosuppression (Table 3).

Table 3. Co-morbidities among people with TB, South East, 2020

Comorbidity	n	%	Total
Diabetes	58	13	433
Immunosuppression	29	7	417
Chronic renal disease	13	3	417
Hepatitis C	10	3	366
Chronic liver disease	6	1	420
Hepatitis B	4	1	367

Males had a higher prevalence of comorbidities than females in 2020 (24%, 64 out of 266 males versus 22%, 41 out of 190 females). Comorbidities were also more common in those born in the UK (29%, 34 out of 121) than in those born abroad (20%, 66 out of 327). The prevalence of comorbidities also increased with age, from 8% (1 out of 12) in those aged under 15, to 47% (42 out of 89) in those aged over 65.

Travel and visitor risk factors

Information on travel to, and visitors received from a country* outside the UK, in the 2 years prior to TB diagnosis was known for 81% (369 out of 456) and 76% (348 out of 456) of people notified in 2020, respectively.

Almost a quarter (23%, 86 out of 369) had travelled outside the UK and 5% (16 out of 348) had received a visitor from outside the UK. 29% (75 out of 263) people born outside the UK had travelled abroad. For people born outside the UK where the country of travel or origin of their visitor was known, 89% (63 out of 71) had travelled to their own country of birth, and 80% (12 out of 15) had received a visitor from their own country of birth. The most common countries for travel were India, Pakistan and Nepal, and the most common country which cases received visitors from was India.

2. Laboratory confirmation of TB

Laboratory tests data collection

Laboratory data on culture confirmed TB isolates from the National Mycobacterium Reference Service were matched to TB case notifications and used to report culture confirmation. Results for microscopy, PCR and histology are also collected in ETS.

Culture confirmation and speciation

In 2020, 54% of people with TB had their diagnosis confirmed by culture (246 out of 456). This was 70% among those with pulmonary TB (156 out of 223) and just 39% (90 out of 230) of people with exclusively extra-pulmonary TB. This was lower than the national figures of 75% of pulmonary cases and 44% of non-pulmonary cases.

Of those people with TB who had a positive culture diagnosis, the vast majority had *Mycobacterium tuberculosis* (98%, 240 out of 246), 4 had *M. africanum* and 2 had *M. bovis.*

Of the 210 people who did not have their diagnosis confirmed by culture, 12 had positive microscopy, 6 had a positive PCR result, and 33 had positive histology. In total, 35% (160 out of 456) of the people who had TB in 2020 had no recorded laboratory evidence of TB, similar to previous years. The proportion without a recorded laboratory result was highest among females (44%, 84 out of 190 versus. 29%, 76 out of 266 of males), those aged under 15 years (83%, 10 out of 12), those with extra-pulmonary TB (47%, 107 out of 230 versus. 22% 50 out of 223 with pulmonary disease).

Sputum smear

In 2020, sputum-smear results were known for 60% (133 out of 223) of people with pulmonary TB, similar to recent years. Results were more likely to be known among people with a social risk factor (70%, 31 out of 44) than those without (36%, 129 out of 355). Where known, 52% (69 out of 133) of people with pulmonary TB had sputum smear positive disease, similar to previous years.

3. TB transmission

Rate of TB in UK-born children

TB in UK born children is used as a proxy indicator for recent TB transmission, since it is likely to be caused by recent exposure. In 2020, the rate of TB in UK born children under 15 years of age in the South East remains very low at 0.6 per 100,000 population (95% CI 0.3 to 1.1, 9 cases) compared to 1.5 per 100,000 in the UK in 2020. Small numbers mean year on year changes should be interpreted with caution (Figure 10).

Figure 10. Rate of TB in UK born children under 15 years of age, South East, 2001 to 2020

Whole genome sequencing (WGS) of TB isolates

Routine whole genome sequencing (WGS) of TB isolates was introduced in the South East in January 2018 for speciation, to predict drug resistance and detect relatedness. Forest, a UKHSA prototype, assigns patients to a WGS cluster if their isolate is found to be within 12 single nucleotide polymorphisms (SNPs) of an isolate from another person in the database. UKHSA South East and the Field Service systematically collect and review TB relatedness information to better understand TB transmission in the South East and identify where public health action may be applied to interrupt this.

4. Delay from onset of symptoms to start of treatment

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

Overall delay includes time from symptom onset to the people presenting to healthcare and from the initial presentation to diagnosis and start of TB treatment. Information on delay was available for 93% (207 out of 223) of people with pulmonary TB in 2020. A total of 4 people (2%) were diagnosed post-mortem. The median time from symptom onset to start of treatment was 85 days (IQR 50-170) (Table 4). This was similar to the delay previously reported in 2019 (85, IQR 45-161), but 6 days longer than the median of 79 for England in 2020.When these components of delay were separated out, the median time between symptom onset to presentation was 24 days (IQR 5-67, n=189), and the median time between initial presentation to diagnosis was 33 days (IQR 11-73, n=193).

Table 4. Time between symptom onset and treatment start in people with pulmonary TB, South East, 2013 to 2020

Year	0 to 2 months		2 to 4 months		>4 months		Median days (IQR)		Total N
	n	%	n	%	n	%			
2013	122	39	96	30	98	31	76	(39-153)	316
2014	103	33	104	33	107	34	85	(49-160)	314
2015	104	36	82	28	106	36	85	(49-160)	292
2016	107	36	87	30	100	34	86	(46-157)	294
2017	113	39	79	27	97	34	82	(39-154)	289
2018	101	39	83	32	75	29	78	(41-145)	259
2019	98	36	74	27	101	37	85	(45-161)	273
2020	66	33	65	33	69	35	85	(50-170)	200

The median delay between symptom onset and treatment start was longest in Surrey and Sussex HPT (105 days, IQR 61-173), which was similar to the previous year (106 days (IQR 49-163) in 2019). This was followed by Kent (86, IQR 53-165), which had increased from 83 days (IQR 53-137) in 2019. The largest increase in median delay was seen in Hampshire & Isle of Wight, which saw an increase in median delay from 59 days (IQR 29-121) in 2019 to 79 days (IQR 50-178) in 2020, while Thames Valley had the largest decrease in median delay time (88 days (IQR 48-196) in 2019 versus. 74 days (IQR 36-148) in 2020).

Delay between symptom onset and first presentation to healthcare was longest in Hampshire & Isle of Wight and Kent HPTs, with a median of 28 days for both. However, Surrey and Sussex saw the longest delay between first presentation and diagnosis (39 days) and diagnosis and start of treatment (3 days) (Table 5).

Table 5. Time between onset of symptom to presentation, presentation to diagnosis, diagnosis to treatment start, and overall time from onset to treatment start, by HPT, in people with pulmonary TB in the South East, 2020

HPT	Delay from onset of symptoms to presentation		Delay from presentation to diagnosis		Delay from diagnosis to treatment start		Delay from onset of symtoms to treatment start	
	Median delay (days)	IQR	Median delay (days)	IQR	Median delay (days)	IQR	Median delay (days)	IQR
Hampshire and Isle of Wight	28	(6-58)	26	(6-59)	1	(0-2)	79	(50-178)
Kent	28	(6-80)	34	(12-64)	1	(0-4)	86	(53-165)
Surrey and Sussex	26	(4-79)	39	(12-107)	3	(1-6)	105	(61-173)
Thames Valley	21	(7-62)	30	(13-68)	1	(1-4)	74	(36-148)

Characteristics of people with pulmonary TB with a delay from onset of symptoms to treatment of more than 4 months

Over one in 3 South East residents with pulmonary TB had a delay of more than 4 months from first experiencing symptoms to starting treatment. As in recent years, older adults were more likely to experience delays: 46% of adults over the age of 65 experienced a delay longer than 4 months (Table 6).

Other groups more likely to experience delays included women (40% versus. 31% in men), and those with no social risk factors (38% versus. 25% in those with at least one social risk factor.

Table 6. Proportion of people with pulmonary TB with a delay from onset of symptoms to treatment of more than 4 months, by UK HSA Health Protection Team area, age group, sex, place of birth, social risk factor, and comorbidity, South East, 2020

		Number delayed	Percentage delayed	Total
HPT	Hampshire and Isle of Wight	13	34%	38
	Kent	15	34%	44
	Surrey and Sussex	22	42%	52
	Thames Valley	19	39%	66
Age group	0 to 14	0	0%	6
	15 to 44	32	31%	104
	45 to 64	15	36%	42
	65+	22	46%	48
Sex	Female	30	40%	75
	Male	39	31%	125
Place of birth	Non-UK-born	45	34%	131
	UK-born	23	34%	67
Social risk factor	No	59	38%	155
	Yes	7	25%	28
Any comorbidity	Yes	20	38%	52
	No	48	33%	146

5. TB outcomes in drug-sensitive cohort

Drug-sensitive cohort

For the purposes of reporting outcomes for people with TB, the drug-sensitive cohort is defined as all people notified with TB excluding those in the drug-resistant cohort (see Chapter 6). Under this definition, people with TB resistant to isoniazid, ethambutol and/or pyrazinamide but without resistance to rifampicin are included in the drug-sensitive cohort. Outcomes are reported according to the year of notification up to and including 2019.

Treatment outcomes for the drug-sensitive cohort are reported separately for:

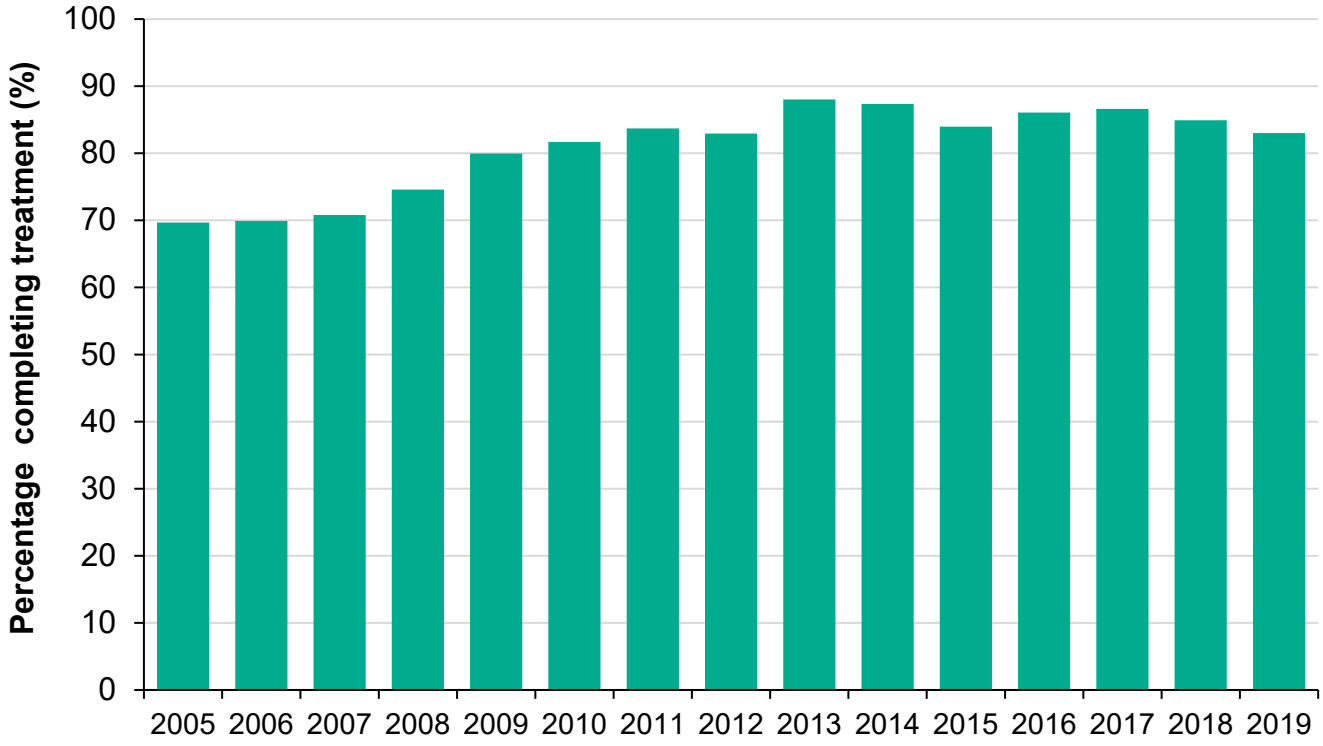
- people with TB with an expected duration of treatment less than 12 months, for whom outcomes at 12 months are reported. This group excludes individuals with central nervous system, (CNS) disease, who would be treated for 12 months. In addition, those with spinal, cryptic disseminated or miliary disease are excluded from this group, as CSN involvement cannot be reliably ruled out for the purpose of reporting
- people with CNS, spinal, cryptic disseminated or miliary disease, for whom the last recorded treatment outcome is reported

Outcomes for people with TB with expected treatment duration of less than 12 months

The majority (91%, 459 out of 506) of those notified with rifampicin-sensitive TB in 2019 did not have CNS, spinal, miliary or cryptic disseminated disease. Of these, 83% (381) had completed treatment at 12 months, slightly lower than those diagnosed in 2018 (85%, 383 out of 451, Figure 11), but similar to nationally in 2019 (82%).

As in previous years, treatment completion was lowest in Surrey and Sussex (72%, 76 out of 105) and Kent (72%, 73 out of 101), and higher in Thames Valley (91%, 178 out of 197) and Hampshire Isle of Wight (80%, 79 out of 102). Surrey and Sussex and Kent saw decreases in treatment completion compared to the year before (84% versus. 72%, and 79% versus. 72%, respectively) while Thames Valley and Hampshire Isle of Wight had similar figures to the previous year.

Figure 11. Proportion completing treatment at 12 months, South East, 2005 to 2019*



* Excludes rifampicin-resistant TB, and people with CNS, spinal, miliary or cryptic disseminated disease.

The most common outcomes other than treatment completion were not being evaluated (5%, 24 out of 459), death (5%, 21 out of 459), still being on treatment (4%, 18 out of 459) and loss to follow up (3%, 12 out of 459). 3 people had their treatment stopped. Of those still on treatment at 12 months, further information was available for 16 people. Seven were on a planned treatment regime that exceeded 12 months, 5 had their treatment changed, and 4 were on treatment due to treatment interruptions. Outcomes were generally similar to those seen nationally, although a slightly larger proportion of cases in the South East had no outcome recorded at 12 months (5.2% versus. 3.9% in England). The majority of the people who were not evaluated were resident in Surrey and Sussex (46%, 11 out of 24). Within this HPT, 12% of people with TB (11 out of 92) were not evaluated.

Table 7. Treatment outcomes at 12 months for people diagnosed in the South East, 2019*

Outcome	n	%
Treatment completed	381	83
Died	21	4.6
Still on treatment	18	3.9
Lost to follow up	12	2.6
Treatment stopped	3	0.7
Not evaluated	24	5.2
Total	**459**	

* Excludes rifampicin-resistant TB, and people with CNS, spinal, miliary or cryptic disseminated disease.

There was no difference in treatment completion between men and women, although the most common reason for not completing treatment in men was death (30%, 12 out of 46) and still being on treatment in women (28%, 9 out of 32). Treatment completion was lower in those aged 65 and over (69%, 49 out of 71) than in other age groups. The most common reason for not completing in this age group was death (68%, 15 out of 22).

Treatment completion was lower among those born in the UK (77%, 98 out of 126) than those born abroad (85%, 283 out of 332). The primary reason for not completing treatment by 12 months amongst UK-born people was death (32%, 9 out of 28), followed by still being on treatment (21%, 6 out of 28). Treatment completion was also lower among people of white (77%, 109 out of 142) ethnicity, compared to those of Bangladeshi (92%, 11 out of 12), mixed out of other (88%, 78 out of 89) and Pakistani (87%, 46 out of 53) ethnicities.

Treatment completion was slightly lower among people who had at least 1 social risk factor in 2019 (80%, 36 out of 45 versus. 85%, 309 out of 367 among those with no social risk factors), with the most common reason for not completing treatment in this group still being on treatment (7%, 3 out of 45) and having died (7%, 3 out of 45). People with one of the key morbidities were less likely to complete (71%, 57 out of 80 versus. 85%, 318 out of 375 in those without a key morbidity). The most common reason for not completing treatment in this group was having died (13%, 10 out of 80). Of these people, 50% (5 out of 10) were recorded to have diabetes, and 40% (4 out of 10) were immunosuppressed.

4.6% of people with rifampicin-sensitive disease in 2019 (21 out of 459) died before completing treatment, similar to the figure seen nationally (4.2%). TB caused out of contributed to 28% (7 out of 25) of these deaths; 32% (8 out of 25) deaths were not related to TB and information on whether TB was part of the reason for death was unknown for the remaining 10 individuals (40%). 4 people were diagnosed post-mortem. The median age at death was 74 (IQR 64-82).

Similar to previous years, 3% (13 out of 501) of people with rifampicin-sensitive TB notified in 2019 were lost to follow up within 12 months. Of those, 77% (10 out of 13) were born abroad. Where known, the majority (64%, 7 out of 11) of those lost to follow up had left the UK. The median age at loss to follow up was 46 (IQR 33-56).

Outcomes for people with isoniazid-resistant TB

There were 18 people with isoniazid-resistant TB in the 2019 drug-sensitive cohort. This included one with CNS, spinal, miliary or cryptic disseminated disease, and 17 without.

At 12 months, 72%, 13 out of 18, of people with isoniazid resistance had completed treatment. The remaining people had their treatment stopped, were still on treatment, or did not have an outcome recorded. By the last recorded outcome, completion had increased to 78% (14 out of 18) and no person was still on treatment, with the remaining people either having their treatment stopped or not having an outcome recorded.

Outcomes for drug-sensitive cohort of people with CNS, spinal, military or cryptic TB

Of the 42 people with CNS, spinal, miliary, or cryptic disseminated TB notified in 2019, 62% (26 out of 42) had completed treatment at 12 months, similar to recent years (Table 8). The most common reason for not completing was still being on treatment, although by the last recorded outcome 81% (34 out of 42) had completed, similar to that seen nationally, and only 1 person was still on treatment. The next most common reason for not completing by 12 months was death (9.5%, 4 out of 42), and 1 person (2.4%) was lost to follow up. For those who completed treatment, the median treatment time was 364 days (IQR 278-365).

Table 8. TB outcome at 12 months for people with rifampicin-sensitive, CNS, spinal, miliary, or cryptic disseminated diagnosed in South East in 2019

Outcome	Number of cases	Proportion (%)
Treatment completed	26	61.9
Died	4	9.5
Lost to follow up	1	2.4
Still on treatment	9	21.4
Not Evaluated	2	4.8
Total	**42**	

A total of 9.5% of people with CNS, spinal, miliary, or cryptic disseminated TB notified in 2019 (4 out of 42) died before completing treatment. TB was known to have contributed to 2 of these deaths; 1 death was not related to TB and information on whether TB was part of the reason for death was unknown for the remaining individual. No individuals were diagnosed post-mortem. The median age at death was 73 (IQR 69-80).

One individual (2.4%) with CNS, spinal, miliary, or cryptic disseminated TB notified in 2019 was lost to follow up, due to leaving the UK.

6. Drug-resistant TB (including outcomes in the drug-resistant cohort)

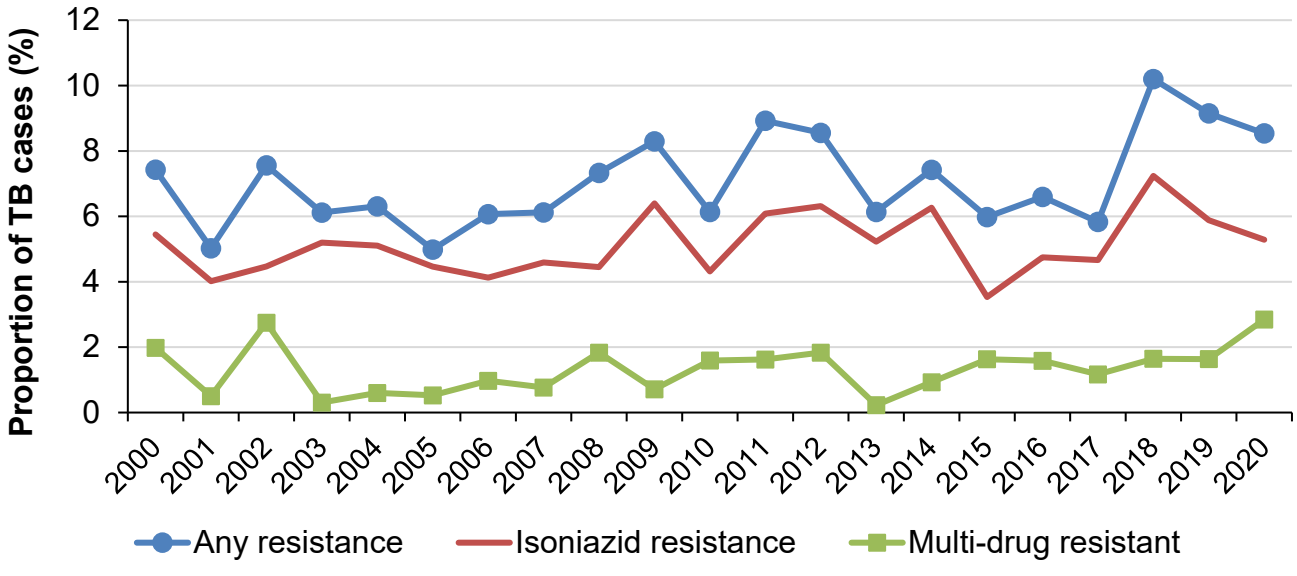
Drug resistance

Anti-TB antibiotic drugs are a large family and resistance may occur to one or more of these antibiotics and may be in complex combinations. A distinction is made between first, second and third-line TB antibiotic drugs depending upon their clinical effectiveness. First-line drugs include isoniazid, rifampicin, pyrazinamide and ethambutol. Second-line drugs are injectable agents (for example amikacin, capreomycin, kanamycin), fluoroquinolones (such as moxifloxacin, ofloxacin, ciprofloxacin) and other oral bacteriostatic agents. MDR-TB cases are initially resistant to at least isoniazid and rifampicin. Extensively drug-resistant TB cases (XDR-TB) are initially MDR and resistant to at least one injectable agent and at least one fluoroquinolone.

Overall initial drug resistance and geographical distribution

In 2020, resistance profiles were available for 98% (242 out of 246) of culture-confirmed TB cases. The proportion of cases resistant to at least 1 first-line drug among people with culture-confirmed TB was 8.5% (21 out of 242), a slight decrease compared to the previous 2 years (10.2% in 2018 and 9.2% in 2019) (Figure 12). This was due to a small decrease in the proportion with isoniazid resistance, while there was a small increase in the proportion with multi-drug resistant TB.

Figure 12. Proportion of TB cases with initial first-line drug resistance, South East, 2000 to 2020



Most people with resistance to a first-line drug had resistance to isoniazid (95%, 20 out of 21). Resistance to any first-line drug was most common in Hampshire and Isle of Wight (16%, 6 out of 37) and least common in Surrey and Sussex (6%, 4 out of 62).

Characteristics of people with drug-resistant TB

Any first-line drug resistance

In 2020, drug resistance was more common among men (11%, 15 out of 142) than women (8%, 6 out of 72), and more common among people aged 15 to 44 (13%, 17 out of 134) than among other age groups (5%, 4 out of 80). A higher proportion of people born outside the UK had drug-resistant disease (11%, 18 out of 164 versus. 7%, 3 out of 45 of those born in the UK). Among common countries of birth, resistance occurred most frequently among people from India (18%, 9 out of 49). Drug resistance was more prevalent among people with extra-pulmonary TB only (18%, 14 out of 76) compared to those with pulmonary TB (5%, 7 out of 138), and among people with a social risk factor (18%, 4 out of 22) compared to those without (8%, 13 out of 166).

Multi-resistance (MDR) and extensively drug-resistant (XDR) TB

Small numbers man the following information should be interpreted with caution. In 2020 there were 6 people with MDR-TB (resistance to isoniazid and rifampicin), 2.5% of the 242 culture-confirmed cases of TB among South East residents. None had XDR-TB.

Age ranged from 26 to 38 years, 4 were male and all were born abroad: 5 in India, 1 in Afghanistan. Their time since entry to the UK ranged from 0 to 6 years. None were reported as having any risk factor.

TB outcome at 24 months for patients with rifampicin-resistant disease

Of the 5 rifampicin-resistant TB cohort notified in 2018, 4 (80%) had completed treatment at 24 months. The outcome was not reported for the remaining person.

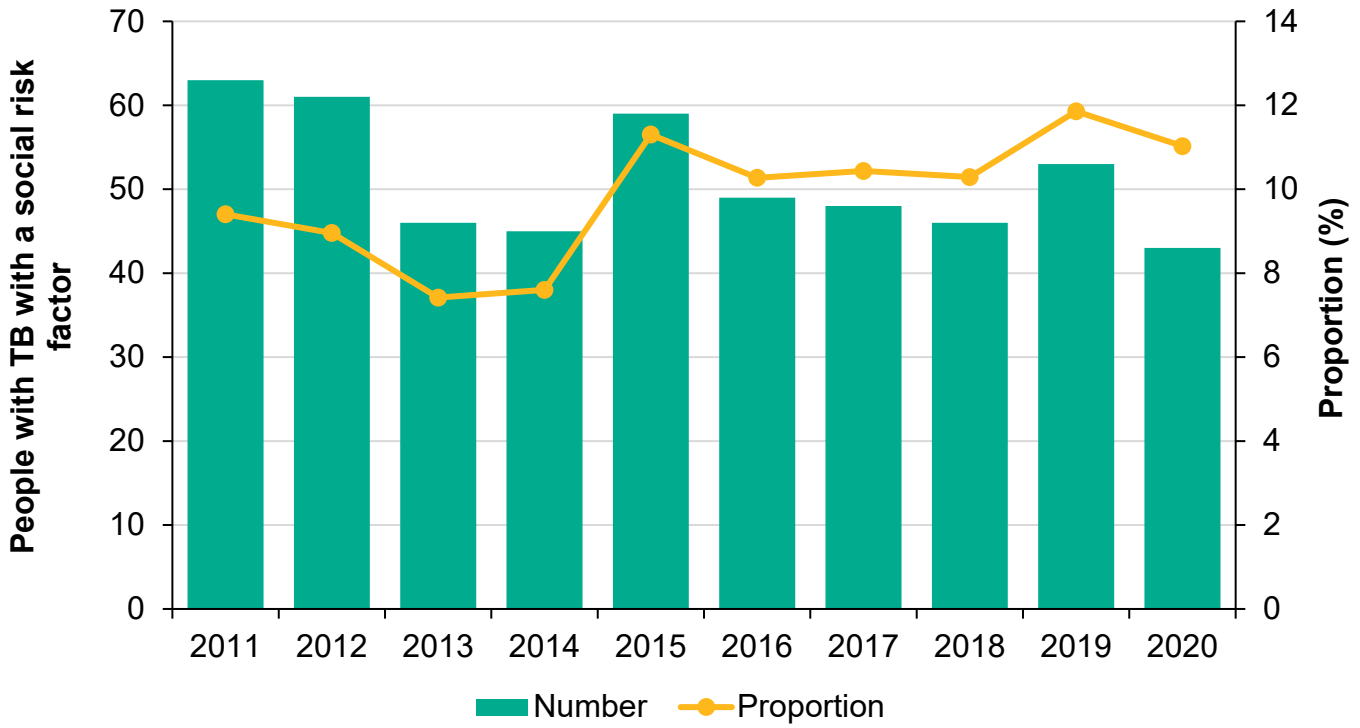
7. TB in under-served populations

Social risk factors

In this chapter, social risk factors (defined as current or previous history of homelessness, drug use or imprisonment, or current alcohol misuse) are described for people with TB aged 15 years or older.

In 2020, information was available for 89% (390 out of 444) of those aged 15 years or older. Of these, 11% (43 out of 390) had at least 1 social risk factor. Of those with at least 1 social risk factor, 33% (14 out of 43) experienced multiple. The most common social risk factor was drug misuse (4.9%, 20 out of 408), followed by history of imprisonment (4.2%, 17 out of 403), alcohol misuse (3.7%, 15 out of 404), and homelessness (2.7%, 11 out of 411).

Figure 13. Social risk factors among people with TB, South East, 2011 to 2020



Social risk factors were more common among people in Kent (26%, 20 out of 77) and Hampshire and Isle of Wight (17%, 12 out of 70). The prevalence of social risk factors was lower in Thames Valley (4%, 6 out of 158) and Surrey and Sussex (6%, 6 out of 94). There was a notable increase in the proportion of those in Kent with social risk factors, with the rate doubling from 12% in 2019.

Social risk factors were more common among people who were born in the UK (24%, 24 out of 99) than those born abroad (6.2%, 18 out of 290), among men (17%, 37 out of 223) than among women (3.6%, 6 out of 167), and among people of white (26%, 25 out of 97) ethnicity. Social

risk factors were also more prevalent in people with pulmonary TB (16%, 32 out of 194) than those with exclusively extra-pulmonary disease (5.6%, 11 out of 195).

People with TB who experienced social risk factors were more likely to have infectious disease (defined as having sputum smear-positive pulmonary TB) (65%, 17 out of 26), compared to those with no social risk factors (49%, 44 out of 90). They were also slightly less likely to complete treatment within 12 months (80%, 36 out of 45 versus. 84%, 309 out of 367 in those with no social risk factors) (Table 9).

Table 9. Treatment outcome at 12 months for people with drug-sensitive TB and at least one social risk factor, South East, 2019

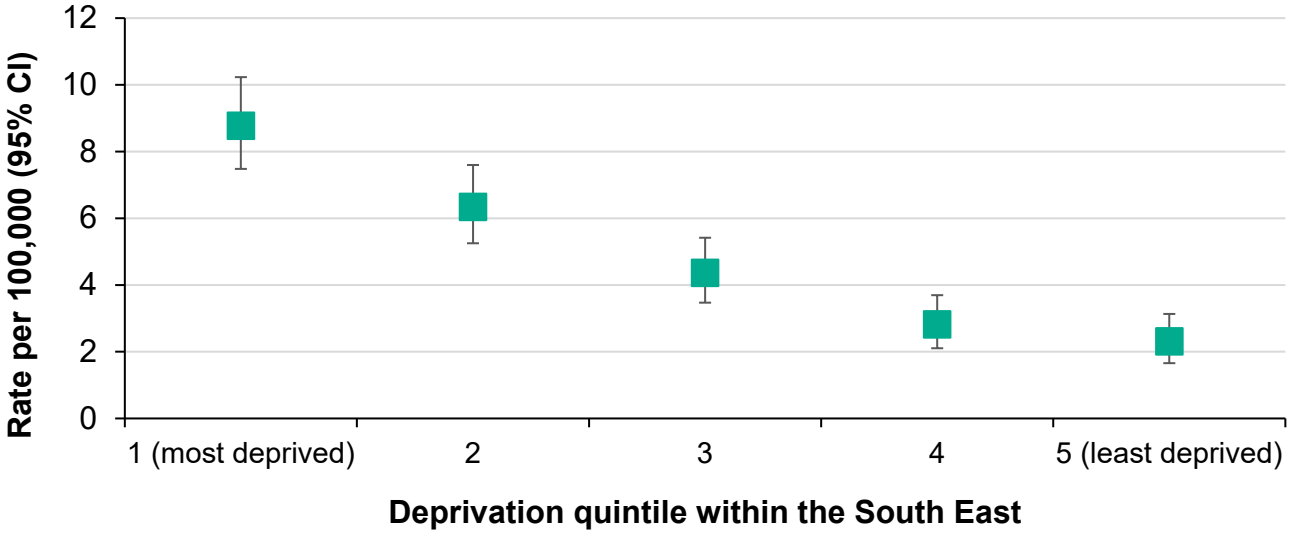
Outcome	n	%
Treatment completed	36	80
Died	3	6.7
Still on treatment	3	6.7
Lost to follow up	2	4.4
Not evaluated	1	2.2
Total	**45**	**100**

* Excludes rifampicin-resistant TB, and people with CNS, spinal, miliary or cryptic disseminated disease.

Deprivation

Deprivation was assessed using the 2019 Index of Multiple Deprivation. In 2020, 13% (59 out of 456) of all people with TB were resident in the most deprived quintile of the South East, and a further 16% (73 out of 456) were resident in the second most deprived quintile (Figure 14). Rates were also highest in these quintiles (8.8 and 6.3 per 100,000, respectively). The least 2 deprived quintiles accounted for only 10% of people with TB each.

Figure 14. TB case rate by deprivation, South East, 2020



8. HIV testing of people with TB

HIV testing

Of the 456 people with TB notified in 2020, HIV status was already known for 26 people. Of the remaining 430, information on HIV testing was available for 94% (404 out of 430). Of these, 93% (375 out of 404) were offered and received testing, a slight increase on the previously reported figure in 2018 (91%, 422 out of 465). This was also higher than the national average of 91%, reflecting a further improvement on 2018 in which the South East was the region with the lowest levels of HIV testing. A further 4.7% (19) were offered but did not receive testing, and 1 person refused testing. Ten individuals (2.5%) were not offered testing.

Almost a third of children under the age of 15 were not offered a HIV test (3 out of 10). HIV tests were offered less to people aged over 65 (94%, 73 out of 78), compared to other adult age groups (99%, 315 out of 319). People born in the UK were also offered tests less often (93%, 100 out of 107) than people born abroad (98% (289 out of 294). The proportion of people offered HIV testing was generally high across different areas in the South East.

Discussion

The South East of England remains a low incidence area for TB, below the average for England. However, the period covered by this report was heavily affected by the COVID-9 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. While case numbers continue to reduce from the peak in 2011, the rate of decline is lower than seen nationally. The rate among people born abroad has more than halved over this time, and most people notified with TB who were born elsewhere had been in the UK for a long period of time. Rates of TB have remained low among UK born residents, with a small decrease over the past 2 years.

There were fewer cases whose diagnosis was confirmed through culture in both pulmonary and non-pulmonary cases compared to the year before, with this figure also below the national average. This may have been due to lack of access to healthcare and pathology facilities during the COVID-19 pandemic. Overall, over a third of TB cases in the South East had no laboratory confirmation of TB. Culture confirmation has important implications for the ability to carry out WGS, and therefore to evaluate drug resistance and understand TB transmission.

There was a decrease in the proportion of people with TB with drug resistant disease compared to 2018, however levels remain higher than before the 2018 peak. Additionally, the proportion of people with TB with multi-drug resistant disease has increased to the highest levels observed since 2002. Therefore, close monitoring is required to ensure appropriate treatment without leading to further multi-drug resistant disease.

People with TB in the South East frequently had other medical concerns: almost 1 in 4 had one of the key co-morbidities collected in surveillance, with diabetes continuing to be the most common. These people were also more likely to die before completing treatment. In addition, 1 in 10 people with TB had one or more social risk factor across the South East. People with social risk factors were more likely to have infectious disease and were slightly less likely to complete treatment. These therefore remain a group of particular public health concern needing additional focus by TB control programmes.

Delays between symptom onset and starting treatment remain above the national average for people living in the South East. Although the overall median delay remained the same as the previous year, Hampshire and Isle of Wight HPT saw a notable increase in median delay of 20 days. Those aged over 65 were more likely to experience treatment delays, reflecting previous findings that older people are less likely to exhibit classical clinical symptoms and are more likely to have additional comorbidities, leading to a longer time to diagnosis and treatment. Women and those with no social risk factors were also more likely to experience delays in treatment, however there was no difference between those who were born in the UK or abroad. A previous report found that those who did not belong to traditional ‘high-risk’ groups for TB, such as those who are UK-born or have no social risk factors, are more likely to experience

delays as clinicians may be less likely to suspect TB. This may particularly be the case in areas of low incidence, like the South East, and may contribute partially to its high treatment delays.

Treatment completion was also generally low across the South East. Surrey and Sussex HPTs had the lowest rates of completion and were the only HPTs to have lower completion than the previous year. A higher than usual proportion of cases had no recorded outcome at 12 months, the majority of which were resident in one clinic in Surrey and Sussex HPT. However, on follow-up it was found that the majority of these patients have now completed treatment, however this data was not captured in time for the dataset used in this report. Treatment completion remained high among those with at least one key risk factor, however was generally lower in those with at least one comorbidity, with the most common reason for not completing treatment being death in the drug sensitive cohort. This indicates that TB services may be good at dealing with patients with risk factors but less successful in ensuring treatment completion in those with comorbidities, but also may illustrate the impact of the COVID-19 pandemic.

The proportion of people who were offered and received HIV testing in the South East saw an improvement on recent years and was above the national average. Tests were less likely to be done on children and older adults.

While TB rates remain very low across most of the South East and continue to decline after a small rise in 2019, the rate of decline is small. Furthermore, declines in TB notifications should be viewed with caution in light of the impact of the COVID-19 pandemic. Levels of multi-drug resistance have increased, and issues remain with poor outcomes experienced by people with comorbidities, lack of reporting in treatment outcomes and above average delays from symptom onset to treatment. Continued focus is needed by TB service to diagnose and manage complex cases successfully through treatment.

Conclusions and recommendations

Early diagnosis and treatment completion remain the cornerstone of TB control. The COVID-19 pandemic presented a huge challenge to the health service in 2020 and it is a credit to all working in TB services across the South East through this time that TB continued to be identified and treated without any significant drop off in access to services.

The reduction in TB rates seen in 2020, although welcome, may be partly a result of COVID-19 impacting some behaviours and transmission, and the emerging trends will need to be closely watched through 2021 and beyond to understand this impact as the UK returns to normal activity.

Recommendations

Further reductions in TB in the South East will require:

- efforts to increase rates of culture confirmation as healthcare systems return to normal after the COVID-19 pandemic
- work to ensure that delays to diagnosis are monitored to ensure timely access to treatment services, particularly in Surrey and Sussex and Hampshire & Isle of Wight HPTs
- data completion to be up to date for accurate monitoring of key indicators such as treatment delay and outcomes
- work to understand the impact of the COVID-19 pandemic on outcomes and TB services, and what can be done to address these issues

Programmes for LTBI testing and treatment of new migrants were mostly suspended in 2020 due to the pandemic but are being re-established.

Appendix A. Notes on the report

About the Field Service

The Field Service (FS) supports UKHSA Centres and partner organisations through the application of epidemiological methods to inform public health action. It does this firstly by providing a flexible expert resource available as and when needed to undertake epidemiological investigations for key health protection work and secondly through the expert analysis, interpretation and dissemination of surveillance information to UKHSA Centres, local health partners, service providers and commissioners of services. Within the FS network, excellence and innovation is encouraged, we foster academic collaborations and take active part and lead in research, development, and training.

Intended audience

This report is for use by healthcare professionals who diagnose and/or care for people with TB, commissioners involved in planning and financing TB services, public health professionals working to improve TB control and the health of at-risk populations, researchers with an interest in TB, and government and non-governmental organisations working in the field of TB. In particular this report is for the use of the South TB Control Board and local TB networks and health protection forums.

Aim of report

This report describes the recent epidemiology of TB in the South East. It includes local trends, areas and population groups with a high burden of disease, and detail on the care of people with TB.

Further TB information

You can find more information about TB online at:

- the National Report of TB in England
- Official Statistics for TB
- TB Strategy Monitoring Indicators Collaborative TB Strategy for England 2015 to 2020: end-of-programme report
- TB indicators at upper tier local authority and clinical commissioning group level

Appendix B. Description of data sources and definitions

Data sources

This report is based on TB case notifications made to the PHE Enhanced TB Surveillance system (ETS) to the end of 2020. This information is updated annually to take into account denotifications (if the patient was found not to have TB), late notifications and other updates. The data presented in this report supersedes data in previous reports.

Diagnostic laboratories serving acute hospitals are the first place in which TB infection-related samples are received and processed within the pathway of clinical diagnosis and management of suspected TB. Results for microbiology, polymerase chain reaction (PCR), histology and culture are collected in ETS. The National Mycobacterium Reference Service (NMRS) receives these diagnostic materials and undertake characterisation using culture and molecular diagnostic methods to define species of *Mycobacterium*, TB antibiotic (drug) susceptibility and organism relatedness.

Definitions

Term	Definition
BCG	Bacillus Calmette-Guérin vaccination
CI	Confidence interval
CCG	Clinical Commissioning Group
Cluster	Two or more people notified within the tie period of analysis caused by indistinguishable strains with at least 23 complete MIRU-VNTR loci
CNS	Central nervous system
Cohort review	The systematic review of all people with TB notified by a TB service in a 3 to 4 month period looking at standard outcomes in terms of care and contacts tracing
Cryptic disseminated TB	Systemic illness without localising features
DOT	Directly observed treatment
Drug	In the context of TB control a drug is an anti-TB antibiotic
Drug-resistant cohort	The drug-resistant cohort includes an people with rifampicin-resistant TB (initial or acquired) including MDR-TB (initial or acquired) as well as those without culture confirmation treated with an MDR-TB regimen

Term	Definition
Drug-sensitive cohort	and non-culture confirmed treated with an MDR-TB regimen.
DST	Drug sensitivity testing based on phenotypic analysis of cultured TB isolates
ETS	Enhanced TB surveillance system
First-line drug resistance	First-line anti-TB antibiotic drug resistance is defined as resistance to at least one of the first-line antibiotics (isoniazid rifampicin ethambutol pyraminamide)
HAART	Highly active antiretroviral therapy
IGRA	Interferon-gamma release assay – blood test for TB infection which does not differentiate between active disease and LTBI
IMD 2015	The Index of Multiple Deprivation 2010 rank for each LSOA based on deprivation score assigned relative to other LSOAs
IQR	Interquartile range
LSOA	Lower super output area (geographic definition)
LTBI	Latent TB infection
MDR	Multidrug-resistance: cases initially resistant to at least isoniazid and rifampicin
Miliary TB	TB infection spread via the bloodstream to all parts of the body
MIRU-VNTR	Mycobacterial Interspersed Repetitive Unit-Variable Number Tandem Repeats
PCR	Polymerase chain reaction
Post-mortem diagnosis	A post-mortem diagnosis is defined as where TB 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 TB	A pulmonary case is defined as involving the lungs and/or tracheobronchial 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
Second-line drugs	Second-line drugs include injectable agents (for example amikacin capreomycin kanamycin) fluoroquinolones (for example moxifloxacin) and other oral bacteriostatic agents.
SNP	Single nucleotide polymorphism – mutation of one base pair in the genome of an *M. tuberculosis complex* isolate
TB	Tuberculosis

Term	Definition
ULTA	Upper tier local authority (geographic definition)
VOT	Video observed therapy
WGS	Whole genome sequencing
XDR	Extensive drug resistance: cases initially MDR and resistant to at least one injectable agent (amikacin capreomycin or kanamycin) and at least one fluoroquinolone (moxifloxacin ofloxacin or ciprofloxacin)

Treatment outcome

Information on outcomes were reported for all people notified in the previous year, excluding those with known rifampicin-resistant disease: outcomes for these were reported at 24 months.

Definitions for outcome are based on World Health Organisation (WHO) and European definitions but adapted to the UK context. In this report, all data was obtained from ETS matched dataset provided in September 2021.

Proportions

All proportions in this report are calculated among known information or a known result, except where otherwise stated.

Confidence interval

A 95% confidence interval for incidence was obtained using the relevant procedure in Stata, assuming a Poisson distribution.

Population denominator

TB rates by geographical area, age, sex, and place of birth were calculated using ONS mid-year population estimates. TB rates by ethnic group were calculated using population estimates from the Labour Force Survey. This is based on a population sample, so estimates are liable to sampling errors, particularly for small population subgroups, and should be interpreted with caution.

Appendix C. TB among South East residents

Table C1. TB case numbers by upper tier local authority of residence, South East, 2000 to 2020

LTLA name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hampshire	34	30	41	42	51	38	47	54	37	66	67	79	67	53	44	58	59	58	64	64	50
Isle of Wight	0	7	3	1	1	3	0	7	1	3	3	6	7	2	3	1	3	1	2	2	1
Portsmouth	24	12	15	16	23	20	23	23	23	30	24	16	23	19	10	17	11	12	12	13	12
Southampton	18	15	27	36	33	30	33	24	24	36	27	51	41	39	29	23	34	34	29	24	21
Hampshire and Isle of Wight	**76**	**64**	**86**	**95**	**108**	**91**	**103**	**108**	**85**	**135**	**121**	**152**	**138**	**113**	**86**	**99**	**107**	**105**	**107**	**103**	**84**
Kent	47	37	66	67	61	65	86	86	129	111	104	112	115	107	101	91	93	95	93	75	67
Medway	13	21	13	20	9	14	16	18	22	20	20	28	20	16	16	14	12	12	18	26	19
Kent	60	58	79	87	70	79	102	104	151	131	124	140	135	123	117	105	105	107	111	101	86
Brighton and Hove	17	24	6	3	14	15	15	30	28	35	22	23	31	15	22	24	19	15	19	11	12
East Sussex	13	28	25	13	20	15	16	12	17	27	23	25	34	20	25	23	20	15	11	15	18
Surrey	42	31	28	60	61	64	79	57	72	88	86	100	98	57	77	68	62	61	43	46	46
West Sussex	37	34	39	44	52	38	63	58	38	49	51	77	46	66	41	38	42	33	30	33	31
Surrey and Sussex	**109**	**117**	**98**	**120**	**147**	**132**	**173**	**157**	**155**	**199**	**182**	**225**	**209**	**158**	**165**	**153**	**143**	**124**	**103**	**105**	**107**
Bracknell Forest	8	4	4	6	4	10	4	6	7	9	12	10	10	6	14	7	3	5	7	7	5
Buckinghamshire	38	38	48	47	32	38	41	37	34	30	48	52	54	44	39	42	53	43	48	47	39
Oxfordshire	36	33	26	43	64	60	52	75	53	56	60	71	70	64	74	50	38	40	41	49	41
Reading	29	30	41	39	34	59	44	55	60	57	59	52	43	66	64	37	27	38	22	25	28
Slough	56	64	68	73	71	75	62	54	59	61	72	85	84	78	58	71	53	43	36	51	46
West Berkshire	6	5	8	4	9	11	3	10	5	11	7	6	9	11	7	5	6	8	6	5	10
Windsor and Maidenhead	11	12	11	15	7	17	8	9	11	13	9	10	12	9	21	7	10	14	12	10	8
Wokingham	9	5	9	13	11	9	15	12	9	10	16	10	14	12	19	17	16	7	7	3	2
Thames Valley	**193**	**191**	**215**	**240**	**232**	**279**	**229**	**258**	**238**	**247**	**283**	**296**	**296**	**290**	**296**	**236**	**206**	**198**	**179**	**197**	**179**

Table C2. TB rate per 100,000 by local authority of residence, South East, 2000 to 2020

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hampshire	2.7	2.4	3.3	3.4	4.1	3.0	3.7	4.2	2.9	5.1	5.1	6.0	5.0	4.0	3.3	4.3	4.3	4.2	4.7	4.6	3.6
Isle of Wight	0.0	5.3	2.2	0.7	0.7	2.2	0.0	5.1	0.7	2.2	2.2	4.3	5.0	1.4	2.2	0.7	2.1	0.7	1.4	1.4	0.7
Portsmouth	12.8	6.4	8.0	8.4	11.9	10.2	11.7	11.8	11.7	15.1	11.8	7.8	11.1	9.2	4.8	8.1	5.2	5.6	5.6	6.0	5.6
Southampton	8.3	6.8	12.2	16.2	14.8	13.2	14.6	10.6	10.5	15.7	11.6	21.6	17.2	16.3	12.0	9.3	13.6	13.5	11.5	9.5	8.3
Hampshire and Isle of Wight	**4.3**	**3.6**	**4.8**	**5.3**	**6.0**	**5.0**	**5.6**	**5.9**	**4.6**	**7.2**	**6.4**	**8.0**	**7.2**	**5.9**	**4.4**	**5.1**	**5.4**	**5.3**	**5.4**	**5.2**	**4.2**
Kent	3.5	2.8	4.9	5.0	4.5	4.7	6.2	6.1	9.1	7.7	7.2	7.6	7.8	7.2	6.7	6.0	6.0	6.1	5.9	4.7	4.2

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Medway	5.2	8.4	5.2	8.0	3.6	5.6	6.3	7.0	8.5	7.7	7.6	10.6	7.5	5.9	5.9	5.1	4.3	4.3	6.5	9.3	6.8
Kent	3.8	3.7	5.0	5.4	4.3	4.9	6.2	6.3	9.0	7.7	7.2	8.1	7.7	7.0	6.6	5.8	5.8	5.8	6.0	5.4	4.6
Brighton and Hove	6.8	9.6	2.4	1.2	5.6	5.9	5.9	11.6	10.7	13.2	8.2	8.4	11.2	5.4	7.8	8.4	6.6	5.2	6.5	3.8	4.1
East Sussex	2.6	5.7	5.0	2.6	4.0	2.9	3.1	2.3	3.3	5.2	4.4	4.7	6.4	3.7	4.6	4.2	3.6	2.7	2.0	2.7	3.2
Surrey	4.0	2.9	2.6	5.6	5.7	6.0	7.3	5.2	6.5	7.9	7.6	8.8	8.6	4.9	6.6	5.8	5.2	5.1	3.6	3.8	3.8
West Sussex	4.9	4.5	5.2	5.8	6.8	4.9	8.1	7.4	4.8	6.2	6.3	9.5	5.6	8.0	4.9	4.5	5.0	3.9	3.5	3.8	3.6
Surrey and Sussex	**4.3**	**4.6**	**3.8**	**4.7**	**5.7**	**5.1**	**6.6**	**5.9**	**5.8**	**7.4**	**6.7**	**8.2**	**7.6**	**5.7**	**5.9**	**5.4**	**5.0**	**4.3**	**3.6**	**3.6**	**3.7**
Bracknell Forest	7.3	3.6	3.7	5.5	3.7	9.1	3.6	5.4	6.3	8.0	10.6	8.8	8.7	5.1	11.9	5.9	2.5	4.2	5.8	5.7	4.0
Buckinghamshire	8.0	7.9	10.0	9.8	6.6	7.8	8.4	7.5	6.8	6.0	9.5	10.3	10.6	8.5	7.5	8.0	9.9	8.0	8.9	8.6	7.1
Oxfordshire	5.9	5.4	4.3	7.0	10.3	9.6	8.2	11.8	8.3	8.7	9.2	10.8	10.6	9.6	11.1	7.4	5.6	5.9	6.0	7.1	5.9
Reading	20.2	20.7	28.5	27.1	23.5	40.2	29.7	36.7	39.6	37.4	38.2	33.5	27.4	41.6	39.9	22.9	16.6	23.3	13.5	15.5	17.5
Slough	46.8	53.1	56.2	60.4	58.8	61.0	49.5	42.2	44.9	45.3	52.2	60.4	59.2	54.7	40.2	48.6	35.9	28.9	24.1	34.1	30.8
West Berkshire	4.2	3.5	5.6	2.8	6.2	7.5	2.0	6.7	3.3	7.2	4.5	3.9	5.8	7.0	4.5	3.2	3.8	5.0	3.8	3.2	6.3
Windsor and Maidenhead	8.2	9.0	8.2	11.2	5.2	12.5	5.8	6.4	7.8	9.1	6.3	6.9	8.2	6.2	14.2	4.7	6.7	9.3	8.0	6.6	5.3
Wokingham	6.0	3.3	6.0	8.7	7.4	6.0	10.0	7.9	5.9	6.5	10.3	6.5	8.9	7.6	11.9	10.5	9.8	4.2	4.2	1.8	1.1
Thames Valley	**10.2**	**10.1**	**11.4**	**12.6**	**12.2**	**14.5**	**11.8**	**13.2**	**12.0**	**12.4**	**14.1**	**14.6**	**14.5**	**14.1**	**14.3**	**11.3**	**9.7**	**9.3**	**8.4**	**9.2**	**8.3**

Table C3. TB case numbers and rate* by age and sex, South East, 2020

Age group	Female n	Female rate	Male n	Male rate
0 to 9	2	0.39	4	0.74
10 to 19	8	1.56	13	2.39
20 to 29	35	6.96	41	7.62
30 to 39	48	8.59	56	10.50
40 to 49	40	6.77	61	10.69
50 to 59	20	3.16	21	3.38
60 to 69	12	2.42	25	5.29
70 to 79	16	3.68	28	7.28
80+	9	3.02	17	8.26

* Rates calculated using ONS mid-year population estimates.

Table C4. Drug resistance among people with culture confirmed TB*, South East, 2000 to 2020

	Any first line drug resistance		Isoniazid resistance without rifampicin resistance		Multidrug resistance		Total*
	n	%	n	%	n	%	
2000	15	7	11	5	3	1	202
2001	10	5	8	4	0	0	198
2002	22	8	13	4	7	2	289
2003	20	6	17	5	1	0	325
2004	21	6	17	5	2	1	330
2005	19	5	17	4	1	0	374
2006	25	6	17	4	4	1	410
2007	24	6	18	5	1	0	387
2008	28	7	17	4	5	1	376
2009	35	8	27	6	3	1	416
2010	27	6	19	4	6	1	428
2011	44	9	30	6	6	1	479
2012	42	9	31	6	7	1	487
2013	27	6	23	5	1	0	434
2014	32	7	27	6	3	1	427
2015	22	6	13	4	6	2	367
2016	25	7	18	5	5	1	368
2017	20	6	16	5	4	1	338
2018	31	10	22	7	5	2	302
2019	28	9	18	6	3	1	306
2020	21	9	13	5	6	2	242

* Culture-confirmed cases with drug susceptibility testing results for at least isoniazid and rifampicin.

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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 heath secure.

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