5.11 TUBERCULOSIS
NOTIFIABLE

RECOMMENDATIONS

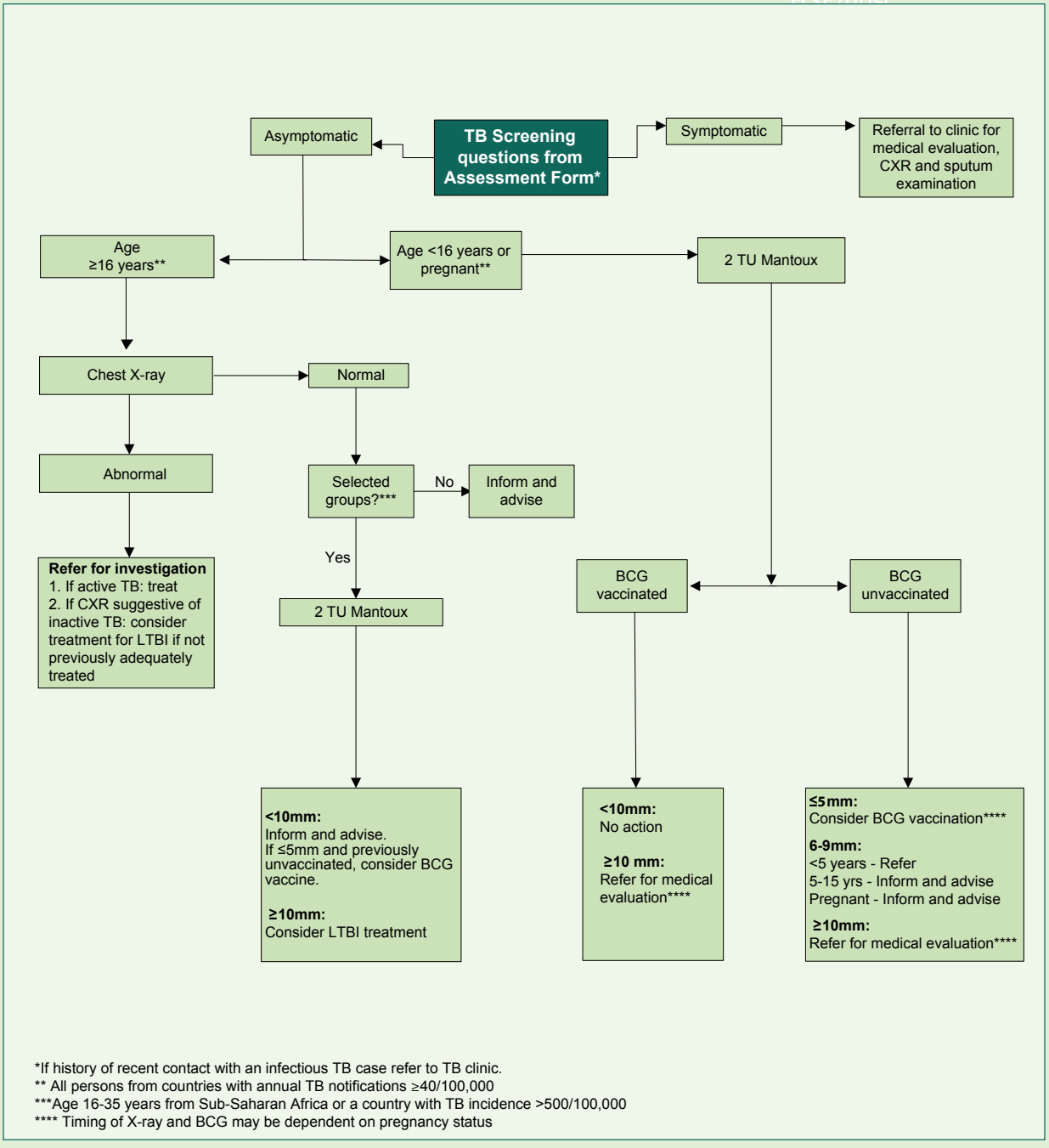
Risk assess:

All migrants from countries where prevalence of TB disease is known to be ≥40 cases per 100,000 population, as per the National TB guidelines 2010.

See Appendix F for current list of countries

Algorithm for assessing all migrants from countries with ≥40 cases of TB per 100,000 pop.

TB Screening Questions from Assessment Form*



*If history of recent contact with an infectious TB case refer to TB clinic.
** All persons from countries with annual TB notifications ≥40/100,000
***Age 16-35 years from Sub-Saharan Africa or a country with TB incidence >500/100,000
**** Timing of X-ray and BCG may be dependent on pregnancy status

Source: Adapted from HSE HPSC Guidelines on the prevention and control of tuberculosis in Ireland 2010.[5]

Epidemiology

The incidence of TB disease in immigrant groups is high particularly within the initial years following arrival, principally due to the reactivation of latent infection.[1] Immigrants are at increased risk of disease if they originate from countries with a high incidence of TB (see appendix F) and HIV. Overcrowded living conditions, poverty and migration from a war zone also contribute to the spread of TB.[1]

Ireland

The following information on the notification rate of tuberculosis (TB) in Ireland is contained in the HPSC Report on the Epidemiology of Tuberculosis in Ireland 2012.[2]

In Ireland, the notification rate of TB has started to decrease since 1998 (11.7/100,000 population in 1998 and 7.8/100,000 population in 2012). However, during this period the rate in the foreign-born population increased significantly from 8.7/100,000 in 1998 to 20.9/100,000 in 2012, while the rate in the Irish-born population decreased from 11.2/100,000 in 1998 to 5.2/100,000 in 2012. The notification rate in foreign-born cases reached a peak in 2008 (Figure 5.11.1).

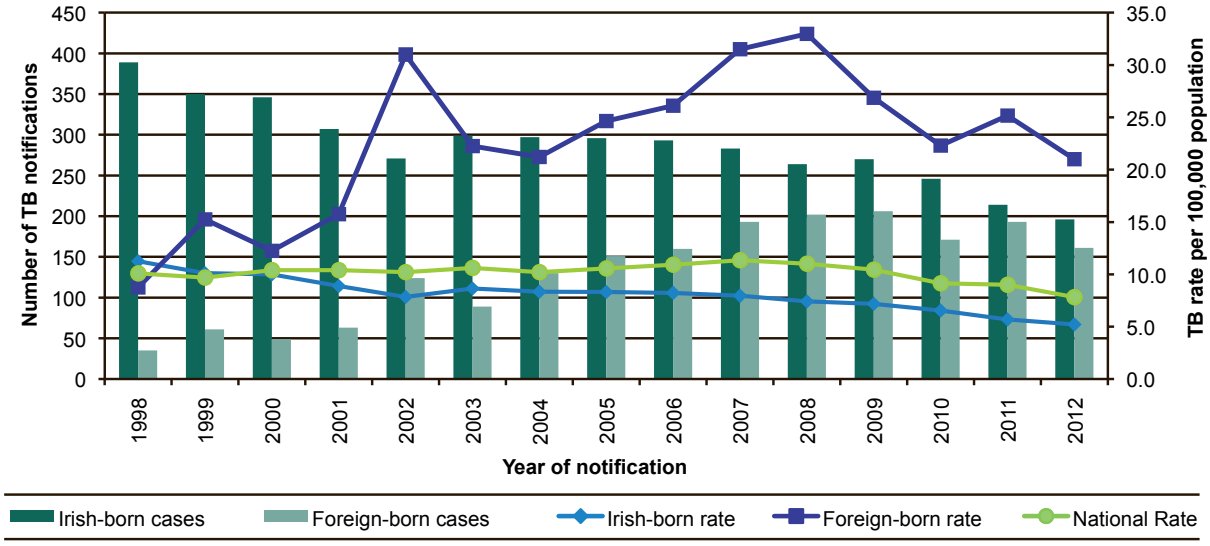


Figure 5.11.1. TB cases and rates per 100,000 population by geographic origin, 1998 to 2012.

Source: Report on the Epidemiology of Tuberculosis in Ireland 2012, HPSC.[2]

In 2012, the majority (76.1%) of cases born outside Ireland were aged between 15 and 44 years compared to 35.7% of Irish cases occurring in this age range. The median age of foreign-born cases was 33 years compared to 51 years among Irish-born cases.

The majority of foreign-born cases were from Asia, followed by Africa and Europe.

The percentage of drug resistant TB cases is still low in Ireland although it has been increasing in recent years. Between 2002 and 2012 there were 30 multi-drug resistant (MDR) TB cases in Ireland; 24 (80%) were foreign-born and 6 (20%) were Irish-born (Personal communication Dr Joan O'Donnell, HPSC, 2015).

Worldwide

There were an estimated 9 million new TB cases globally in 2013. Approximately 1.5 million people died from TB in 2013.[3] The estimated TB incidence rate by country in 2013 is shown in figure 5.11.2. Globally, 13% of new TB cases were co-infected with HIV in 2013 (figure 5.11.3).

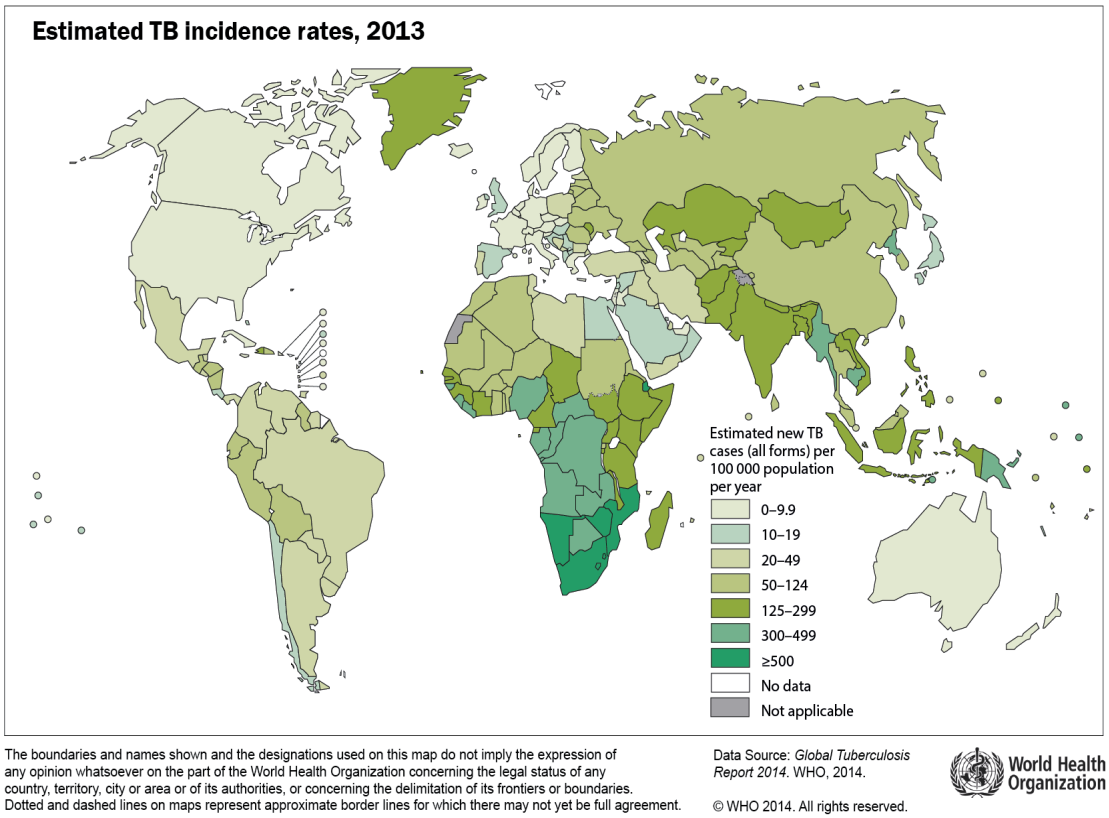


Figure 5.11.2 Estimated TB incidence rate by country, 2013

Source: WHO Global TB report 2014 (3)

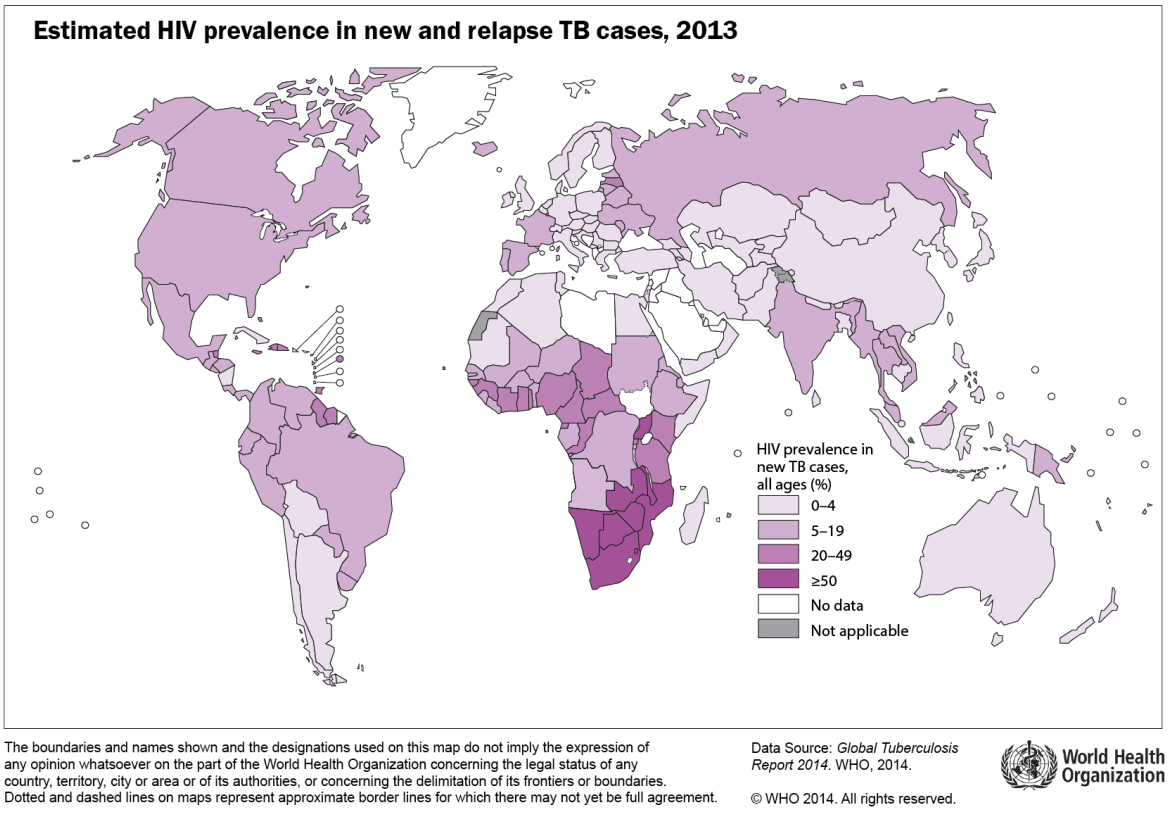


Figure 5.11.3 Estimated HIV Prevalence in new and relapse TB cases, 2013

Source: WHO Global TB report 2014 (3)

Rationale for assessment

- TB is a significant cause of morbidity and mortality worldwide.
- Many migrants coming to Ireland are from countries with a high incidence of TB.[4]
- TB is a curable disease.[5]
- The tests for diagnosing TB are simple and well established (Mantoux, IGRA, chest X-ray, sputum analysis)
- Effective treatment regimens are available.[5]
- Latent TB (LTBI) is curable.[5]
- Treatment of TB and LTBI reduces the spread of disease.[5]

Assessment

The following guidelines for assessment are derived from the *Guidelines on the Prevention and Control of Tuberculosis in Ireland (2010)*.[5]

- All new migrants to Ireland who originate from a country with a high incidence of TB should be provided with an opportunity to be assessed for TB. Those include people who have recently arrived or returned from a country with an incidence of TB ≥40 cases per 100,000 population per year.[5] Countries with an incidence of ≥40 cases per 100,000 population per year are mainly located in Africa, the Eastern Mediterranean, Central and Eastern Europe, South East Asia, the Western Pacific and Central and South America. A list of current high incidence countries can be found in **Appendix F**.
- Every effort should be made to identify candidates either at reception centres for asylum seekers or in other clinical settings.
- TB screening for active disease and LTBI should be encouraged.
- Voluntary assessment for HIV should be offered to those with diagnosed TB as co-infection with HIV is common.[5]

Health assessment

A full history and examination should be undertaken for all new entrants to enquire into past history of TB and BCG status, current symptoms, and recent contact with a TB case. Those with symptoms should be urgently referred to a respiratory clinic for further clinical assessment.

Chest X-ray

Chest X-rays should be offered to all new migrants aged ≥16 years who are from a country with a high incidence of TB (provided they are not pregnant). All those with abnormal chest X-ray results suggestive of active disease or of inactive TB should be referred for medical evaluation. Treatment of LTBI should be considered in those with radiological evidence of inactive TB, if not previously treated.

Tuberculin Skin Test (TST) (Mantoux test)

Individuals ≥16 years

Asymptomatic individuals with a normal chest X-ray in a selected group i.e. those aged 16 to 35 years from Sub-Saharan Africa or a country with a TB incidence greater than 500 per 100,000* should be offered a TST (2TU Mantoux test) regardless of BCG vaccination status. Pregnant females (no chest X-ray, see above) should also have a TST (2TU Mantoux test), regardless of BCG vaccination status.

*These countries include Botswana, Cambodia, Djibouti, Lesotho, Namibia, Sierra Leone, South Africa, Swaziland, Timor-Lest, Zambia and Zimbabwe.

Those with TST results ≥10mm should be referred for further medical evaluation and considered for LTBI treatment. Individuals with TST results <10mm should be informed and advised of the signs and symptoms of TB disease and asked to seek medical care if they experience these symptoms. Consider BCG vaccination for all those aged ≤35 years with TST results <6mm who are previously unvaccinated (*see TB disease algorithm above*).

While all age groups should be considered for treatment of LTBI, care should be taken when prescribing LTBI therapy for those with co-morbidities which increase the likelihood of hepatotoxicity. The use of Directly Observed Therapy (DOT) should also be considered in this population on a case by case basis if resources allow.

Individuals <16 years

All new entrants aged 0 to 15 years should be screened initially by health questionnaire and TST (2TU Mantoux test).

Unvaccinated (BCG)

All those under 16 years of age with a negative TST result (<6mm) should be offered BCG vaccination after consideration has been given to the individual's HIV status.

Unvaccinated children under five years of age with a Mantoux reading of 6-9 mm should be referred to a TB clinic where treatment for LTBI should be considered if the chest X-ray is normal.

Unvaccinated children aged five to 15 years with a Mantoux reading of 6-9mm and without a history of recent contact with a TB case should be advised of the signs and symptoms of TB.

All unvaccinated children (aged 0 to 15 years) with a Mantoux reading of ≥10mm should be referred to a clinician with experience in the management of LTBI and chemoprophylaxis should be considered if the chest X-ray is normal.

Vaccinated with BCG

Vaccinated children should be referred for a chest X-ray and chemoprophylaxis considered if the Mantoux reading is ≥10mm. If the result is <10mm, no further action is required.

Interferon Gamma Release Assay (IGRA) testing

Foreign-born individuals can have a higher incidence of LTBI and may be more likely to have clinical conditions that increase the likelihood of reactivation of LTBI, such as HIV infection. Evidence from international studies suggests that IGRA tests have a higher specificity than tuberculin skin tests and have less potential for false positive results.[6-9]

It is recommended that the TST should be used initially to detect LTBI and a person with a positive result should be considered to have LTBI. False negative results are not uncommon in immunodeficient individuals; therefore if a clinician is concerned about the possibility of such a TST result, an IGRA can be conducted. LTBI can be considered if an IGRA test is positive, while indeterminate results should be repeated. Indeterminate results may indicate laboratory error or anergy, therefore a person's history, clinical features and laboratory findings must be taken into account when diagnosing LTBI using an IGRA.[5]

The use of IGRA can be considered:

- As a confirmatory test in those individuals with a positive TST.
- In screening new entrants with concomitant conditions that increase the individual's risk of reactivation of LTBI.

Contacts

Contacts of cases of active TB that are notified to public health will be followed up through Departments of Public Health following notification.

TB/HIV

The management of patients with TB and HIV is complex. Cases of TB/HIV should always be referred to physicians with expertise in treating both TB and HIV. See Chapter 10 of Guidelines on the prevention and control of tuberculosis in Ireland 2010.[5]

References

(1) Tuberculosis at the end of the 20th century in England and Wales: results of a national survey in 1998. Thorax 2001;56:173-9.

(2) Health Protection Surveillance Centre. Report on the Epidemiology of Tuberculosis in Ireland 2012 [Internet]. [cited August 2015]. Available from: http://www.hpsc.ie/A-Z/VaccinePreventable/TuberculosisTB/Epidemiology/AnnualReports/2012/File,15063,en.pdf

(3) World Health Organization. Global Tuberculosis control 2014. Geneva: WHO; 2014. http://www.who.int/tb/publications/global_report/en/

(4) CSO Ireland 2011 [cited 2013 Jun 12]; Available from: http://www.cso.ie/en/census/census2011reports/census2011profile6migrationanddiversity-aprofileofdiversityinireland/

(5) Health Protection Surveillance Centre. Guidelines on the prevention and control of tuberculosis in Ireland 2010. Dublin; 2010. http://www.hpsc.ie/AboutHPSC/ScientificCommittees/Publications/File,4349,en.pdf

(6) Public Health Agency of Canada. An advisory committee statement (ACS) by the Canadian Tuberculosis Committee on Interferon Gamma Release Asseys for Latent TB Infection. Canada Communicable Disease Report 2007;33(10):1-18.

(7) Tuberculosis: Clinical diagnosis and management of tuberculosis, and measures for its prevention and control. March 2011. Available from: http://www.nice.org.uk/nicemedia/live/13422/53638/53638.pdf

(8) Centers for Disease Control and Prevention. Guidelines for using the Quantiferon-TB test for detecting *Mycobacterium tuberculosis* infection, United States. *Morbidity and Mortality Weekly Report* 2005; 54 (RR15)(December 16):49-55.

(9) Pai M, Dheda K, Cunningham J, Scano F, O'Brien R. T-cell assays for the diagnosis of latent tuberculosis infection: moving the research agenda forward. *Lancet Infect Dis* 2007;7(6):428-438.

Appendix F. List of countries with a TB incidence of ≥40/100,000 population

Country	WHO region	Estimated rate of TB per 100,000 population
Swaziland	Africa	1349
South Africa	Africa	1003
Sierra Leone	Africa	674
Namibia	Africa	655
Lesotho	Africa	630
Djibouti	Eastern Mediterranean	620
Marshall Islands	Western Pacific	572
Zimbabwe	Africa	562
Mozambique	Africa	552
Timor Leste	South-East Asia	498
Kiribati	Western Pacific	429
Gabon	Africa	428
Zambia	Africa	427
Cambodia	Western Pacific	411
Democratic People's Republic of Korea	South-East Asia	409
Botswana	Africa	408
Congo	Africa	381
Myanmar (Burma)	South-East Asia	377
Central African Republic	Africa	367
Mauritania	Africa	350
Papua New Guinea	Western Pacific	348
Democratic Republic of Congo	Africa	327
Angola	Africa	316
Liberia	Africa	304
Somalia	Africa	286
Gambia	Africa	284
Kenya	Africa	272
Philippines	Western Pacific	265
Ethiopia	Africa	247
Guinea-Bissau	Africa	242
Tuvalu	Western Pacific	241
Cameroon	Africa	238
Madagascar	Africa	234
Pakistan	Eastern Mediterranean	231
Bangladesh	South-East Asia	225
Mongolia	Western Pacific	223
Haiti	The Americas	213
Lao People's Democratic Republic	Western Pacific	204
Micronesia (Federated States of)	Western Pacific	194
Afghanistan	Eastern Mediterranean	189
Indonesia	South-East Asia	185
Bhutan	South-East Asia	180
Uganda	Africa	179
Guinea	Africa	178
India	South-East Asia	176
Cote d'Ivoire	Africa	172
Greenland	Europe	170
United Republic of Tanzania	Africa	165
Malawi	Africa	163
Nepal	South-East Asia	163
Republic of Moldova	Europe	160
Chad	Africa	151
Vietnam	Western Pacific	147
South Sudan	Eastern Mediterranean	146
Cape Verde	Africa	144
Kyrgyzstan	Europe	141
Equatorial Guinea	Africa	139
Kazakhstan	Europe	137
Senegal	Africa	137

Burundi	Africa	130
Bolivia	The Americas	127
Thailand	South-East Asia	119
Georgia	Europe	116
Sudan	Eastern Mediterranean	114
Guyana	The Americas	109
Nigeria	Africa	108
Republic of Korea	Western Pacific	108
Tajikistan	Europe	108
Niger	Africa	104
Morocco	Eastern Mediterranean	103
Solomon Islands	Western Pacific	97
Azerbaijan	Europe	95
Peru	The Americas	95
Romania	Europe	94
Eritrea	Africa	93
Sao Tome and Principe	Africa	93
Ukraine	Europe	93
Russian Federation	Europe	91
Algeria	Africa	89
Rwanda	Africa	86
China, Macao SAR	Western Pacific	83
Malaysia	Western Pacific	80
Uzbekistan	Europe	78
China, Hong Kong SAR	Western Pacific	77
Turkmenistan	Europe	75
China	Western Pacific	73
Togo	Africa	73
Ghana	Africa	72
Belarus	Europe	70
Benin	Africa	70
Northern Marianna Islands	Western Pacific	69
Brunei	Western Pacific	68
Lithuania	Europe	66
Sri Lanka	South-East Asia	66
Vanuatu	Western Pacific	65
Wallis and Futuna Islands	Western Pacific	65
Dominican Republic	The Americas	62
Guatemala	The Americas	60
Mali	Africa	60
Equador	The Americas	59
Burkina Faso	Africa	54
Honduras	The Americas	54
Nauru	Western Pacific	54
Latvia	Europe	53
Armenia	Europe	52
Singapore	Western Pacific	50
Bosnia Herzegovina	Europe	49
Yemen	Eastern Mediterranean	49
Guam	Western Pacific	48
Panama	The Americas	48
Brazil	The Americas	46
Iraq	Eastern Mediterranean	45
Paraguay	The Americas	45
Maldives	South-East Asia	41
Qatar	Eastern Mediterranean	41
Suriname	The Americas	40
Belize	The Americas	40
Libya	Eastern Mediterranean	40

Source: Public Health England.
Available from: http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Tuberculosis/TBWorldwideSurveillanceData/.
Accessed 26/01/2014.