HSC Public Health Agency

Epidemiology of Tuberculosis in Northern Ireland

Annual Surveillance Report 2025
(data up to end of 2024)

Acknowledgements

The Public Health Agency gratefully acknowledges all those who contributed to this report, including; physicians, nurses, microbiologists, laboratory staff, and administrative staff who provide or contribute information on the surveillance of tuberculosis.

Data correct as of 31 March 2025.

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Key Points

- In 2024, 86 cases of active tuberculosis (TB) disease were formally notified to the Public Health Agency. TB notifications have increased, with an overall upward trend in cases since 2021.
- The 2024 TB incidence rate was 4.5 per 100,000 population. Northern Ireland remains a very low incidence country in accordance with the World Health Organisation (WHO) definition threshold of 10 per 100,000 population. However, an upward trend has been observed since 2021 with a notification increase of 10.3% compared with 2023.
- In 2024, by Local Government District, Belfast, Mid Ulster, and Armagh City have the highest burden of active TB each year. The highest TB incidence rate was reported in those residing in Belfast (9.2 cases per 100,000 population).

Demographic characteristic

- In 2024, the mean age of cases was 44 years, with 62.8% male. Stratified by sex, males were older than females (mean age 45 years vs. 36 years, respectively).
- In 2024, the rate of TB cases born outside the UK and Ireland was 43.8 cases per 100,000 population. There is a general trend upwards since 2021. However, in 2024, there was a small decrease in the rate per 100,000 population compared to 2023 (46.5 cases per 100,000 population). By comparison, the UK and Ireland born case rate has remained relatively stable (1.1 and 1.7 per 100,000 population in 2023 and 2024, respectively).
- In 2024, TB rates remain significantly higher among those living in the most deprived areas (6.7 cases per 100,000 population) compared to those living in the least deprived areas (2.9 cases per 100,000 population). This displays a trend of a persistent equity gap between the lowest and highest deprived areas.

Social Risk Factors

- In 2024, 23.3% of cases were reported as having at least one social risk factor and 9.3% with at least two or more risk factors. Social risk factors include: alcohol misuse, drug misuse, homelessness, prison, asylum seeker status and mental health needs.

Clinical characteristics

- In 2024, 61.6% of cases were pulmonary TB and 38.4% were extra-pulmonary TB. There is an increasing trend post-pandemic in both pulmonary and extra-pulmonary TB.
- The average rate of pulmonary TB in 2024 was 2.7 cases per 100,000 population and shows an increasing trend from 2021.
- The average rate of extra-pulmonary TB in 2024 was 1.7 cases per 100,000 population. This rate also displays an increasing upwards trend seen in pulmonary TB; albeit at lower levels.

Microbiology

- Culture confirmation is critical to identify sensitivity to TB treatment and to allow tracing of TB transmission
- In 2024, 58.1% of TB cases were confirmed by culture (64.1% in 2023). Culture confirmation rates from 2018 to 2024 demonstrate no consistent change over time.
- Of the 50 cases that were successfully cultured and species identified within the Mycobacterium tuberculosis complex (MTBC), 94.0% were *Mycobacterium tuberculosis* and 6.0% *Mycobacterium bovis.*
- Belfast Health and Social Care Trust and PHA worked together on a pilot of sequencing mycobacteria.

Drug resistance

- In 2024, phenotypic drug susceptibility test results for first-line drugs (rifampicin, isoniazid, pyrazinamide, and ethambutol), plus aminoglycosides and fluoroquinolones, were available for 98.0% of all culture confirmed cases in Northern Ireland.
- In 2024, 20.4% of culture confirmed cases were resistant to any first line drug treatment for those with reported sensitivities for all four drugs (includes the three *M. bovis* cases (inherently resistant to pyrazinamide)).
- In 2024, 6.0% of culture confirmed cases were multi-drug resistant/rifampicin resistant (MDR/RR) TB. Since 2018, there have been seven MDR/RR cases reported but with no evidence of a clear trend over the period.

Treatment outcome

- Reporting treatment outcomes is important to assess success of treatment, which is essential in preventing the onwards transmission of TB. Treatment outcomes are reported for non-MDR and non-RR TB cases with and without central nervous system (CNS) disease at 12 months according to the year of notification.
- In 2023, 74.7% of cases with non-MDR and non-RR TB without spinal and central nervous system (CNS) disease successfully completed treatment within 12 months. This was lower compared to 2022 (83.6%); but higher to completion rates reported in previous years.

Introduction

This report presents the epidemiology of tuberculosis (TB) reported in Northern Ireland from 1 January 2024 to 31 December 2024. This report also presents data from previous years for comparative purposes and to give indications of trends in TB epidemiology.

The outcomes of TB treatments are collected annually and reported in retrospect. TB treatment consists of a combination of antibacterial medications for a period of 6 to 12 months, and sometimes longer. The treatment outcomes reported in this report are for those individuals notified to the Public Health Agency (PHA) in 2023 because this is the latest year of notifications for whom treatment completion is expected within the 2024 data.

Data in this report uses a combination of historic (up to 2020) and recent epidemiological data (2020 onwards) from the Electronic Tuberculosis System (ETS) and the National Tuberculosis Surveillance system (NTBS).

During the COVID-19 pandemic, major impacts on healthcare, migration, and social interactions affected TB notifications in complex ways.[1,2] The data from 2020 to 2022 are unlikely to represent the true burden of disease. As such their use in monitoring progress against both elimination goals and planning service provision require careful consideration and further analysis.

There may be differences in numbers of TB cases quoted in the UK National TB report compared with this regional report, principally due to differences in time of data extraction and analysis between the two reports.[3]

This regional report includes cases transferred into the Northern Ireland TB Service from other UK regions and takes account of late notifications that may have been reported after the national data extraction process has taken place.

Definitions

Suspected case: suspected active TB is a notifiable disease under the Public Health Act (Northern Ireland) 1967.[4] Any person who presents with clinical and/or radiological signs and/or symptoms of active TB disease caused, or thought to be caused, by infection with organisms of the Mycobacterium tuberculosis complex (MTBC) (*Mycobacterium tuberculosis, Mycobacterium bovis, Mycobacterium africanum, Mycobacterium microti*).

Laboratory culture confirmed case: Any person with a laboratory result of a positive culture for MTBC.

Non-culture confirmed case: In the absence of culture confirmation, any person where the clinician's judgement of the clinical and/or radiological signs and/or symptoms is compatible with active TB disease *and* a clinician's decision to treat the patient with a full course of anti-TB treatment.

Pulmonary tuberculosis: Any person with disease involving the lung parenchyma and/or tracheobronchial tree, with or without extra-pulmonary tuberculosis diagnosis. In line with the WHO 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.

Extra-pulmonary tuberculosis: a case of TB involving organs other than the lungs, e.g. pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges. Diagnosis is based on at least one specimen with confirmed *M. tuberculosis* or strong clinical evidence, followed by a decision by a clinician to treat with a full course of tuberculosis chemotherapy.

Sputum smear result: acid-fast microscopy is conducted on a spontaneously produced or induced sputum sample to identify bacilli and quantify the number found in the sample, which relates to the degree of infectivity of the person. A sputum smear positive result refers to identification of bacilli. There are several reporting systems to quantify the number of bacilli present.

Drug Susceptibility Testing: phenotypic drug susceptibility testing (DST) is conducted on MTBC isolates of cases of TB that have been successfully cultured. DST is conducted for first line drugs (rifampicin, isoniazid, pyrazinamide, and ethambutol), plus aminoglycosides and fluoroquinolones.

Fully drug sensitive TB: refers to a case of TB where DST has been conducted for all four first line drugs and all are sensitive to treatment.

Resistant to any first line drug: refers to a case of TB where DST has been conducted for all four first line drugs and resistance has been reported for at least one of the first line drugs.

Rifampicin resistance or multidrug resistant TB (RR or MDR-TB): refers to a case of TB where DST has been conducted and shows resistance to rifampicin and isoniazid (MDR-TB) or only resistance to rifampicin (RR-TB), with or without any other resistance.

Pre-extensively drug-resistant TB (Pre-XDR): refers to a case of RR or MDR-TB that is also resistant to one of the second-line injectable drugs (amikacin, kanamycin, capreomycin) **or** a fluoroquinolone.

Extensively-drug resistant TB (XDR-TB): refers to a case of RR or MDR-TB that is also resistant to at least one of the second-line injectable drugs (amikacin, kanamycin, capreomycin) **and** any fluoroquinolone.

Health and Social Care Trusts (HSCTs) in Northern Ireland: Five of the six HSCTs in Northern Ireland provide secondary healthcare services; Belfast (BHSCT), South Eastern (SEHSCT), Northern (NHSCT), Southern (SHSCT) and Western (WHSCT).

Methodology

Data collection

Completed TB notification forms are forwarded to PHA in Northern Ireland where the information is entered onto NTBS. Treatment outcome forms are generated and forwarded, approximately 12 months after initial notification, to the patient's clinician, who then returns them to the PHA. This information is then appended to the initial notification details.

Information on *M. tuberculosis* complex isolates is obtained from local hospital diagnostic laboratories and the mycobacterial reference laboratory. Collected data include species (*M. tuberculosis*, *M. bovis* and *M. africanum*), specimen type, strain type and drug susceptibility.

Datasets are validated (using laboratory reports and anti-microbial susceptibility information), updated and analysed.

Data analysis

TB rates per 100,000 population, stratified by age, sex, Local Government District (LGD) and HSCT in Northern Ireland are calculated using the mid-year estimates of the Northern Ireland population from the Northern Ireland Statistics and Research Agency (NISRA).

Revised 2012-2023 mid-year population estimates for Northern Ireland and the 11 LGDs, in line with the most recent Census 2021 population estimates, were made available by NISRA on 19 September 2024.

However, not all lower level populations have been updated and will be reflected in the respective results, e.g. Trust level and LGD populations are currently not available for 2023 and beyond. Therefore, the mid-year population estimates are carried forward from 2022.

This report was produced in accordance with PHA's small cell count policy to manage statistical disclosure control risk.

Results

Number of cases and rates of active TB

In 2024, 86 active TB cases were notified to the PHA (4.5 cases per 100,000 population). This is a 10.3% increase in cases from 2023 (78 cases, 4.1 cases per 100,000 population), with an increasing trend evident from 2021 (Figure 1).

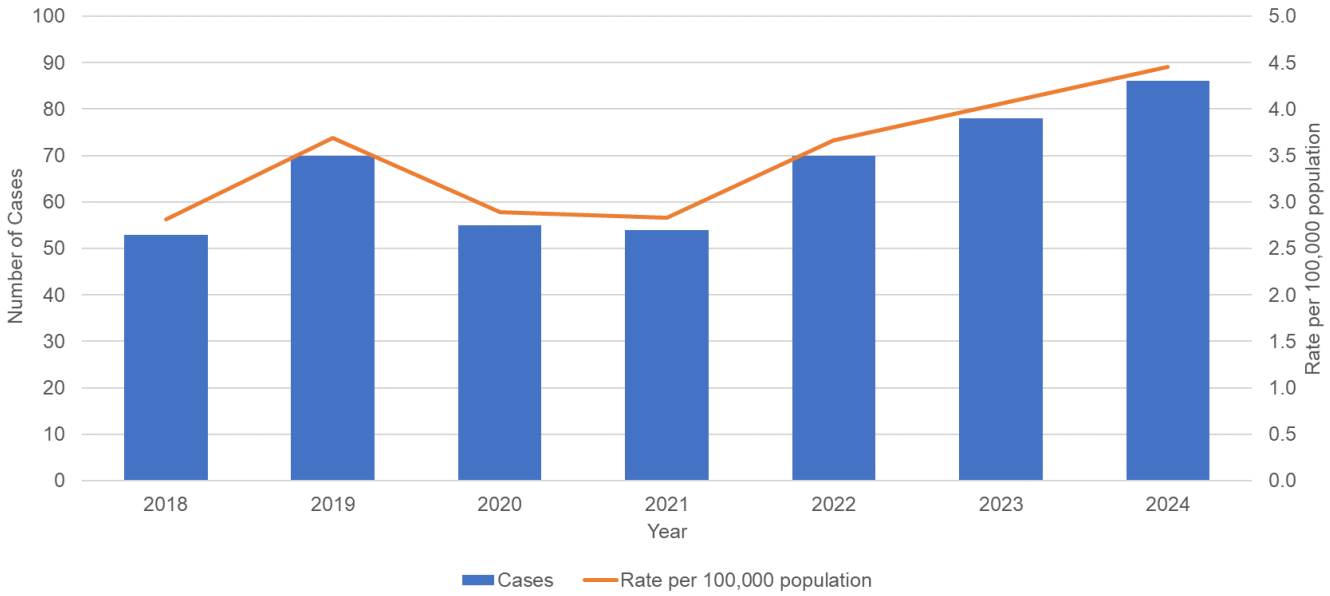

Figure 1. Number of cases and rates of active TB, Northern Ireland, 2018-2024

Belfast, Mid Ulster, and Armagh City, Banbridge and Craigavon have the highest burden of active TB each year. Belfast has consistently reported the highest number of cases each year, with 37.2% (32 cases) of all cases residing in Belfast in 2024.

The highest rate in 2024 was reported in those residing in Belfast (9.2 cases per 100,000 population) followed by those residing in Mid Ulster (10 cases, 6.6 cases per 100,000 population) (Table 1).

Table 1. Rates of active TB by Local Government District, Northern Ireland, 2018-2024

Local Government District	Year						
	2018	2019	2020	2021	2022	2023	2024
Antrim and Newtownabbey	1.4	1.4	0.7	2.1	2.7	4.8	1.4
Ards and North Down	1.2	0.6	0.0	3.1	1.2	1.2	1.8
Armagh City, Banbridge and Craigavon	4.7	4.6	2.8	3.7	6.4	4.5	5.0
Belfast	3.5	6.1	5.2	4.9	4.6	8.6	9.2
Causeway Coast and Glens	0.7	2.1	2.1	0.7	2.8	2.8	4.2
Derry City and Strabane	0.7	0.7	0.7	0.7	1.3	0.0	2.7
Fermanagh and Omagh	0.9	3.4	1.7	2.6	1.7	4.3	2.6
Lisburn and Castlereagh	1.4	2.7	4.1	3.3	1.3	0.7	4.0
Mid and East Antrim	2.9	2.9	3.6	2.2	3.6	0.7	3.6
Mid Ulster	8.8	9.4	6.0	2.0	6.0	9.3	6.6
Newry, Mourne and Down	2.8	3.3	2.2	1.6	3.8	1.1	2.2

The BHSCT consistently treats the highest number of TB cases in Northern Ireland each year, with 51.2% of all cases being treated by BHSCT in 2024 (44 cases). BHSCT has seen an increasing trend in the number of cases treated from 2020 with a plateauing in 2023 and 2024.

The SHSCT treated 25.6% of all cases in 2024 (22 cases). Although this is an increase from 2023 (19 cases), the trend appears to be a return to levels seen before the pandemic.

The other Trusts report treating less than 10 cases each year (Figure 2).

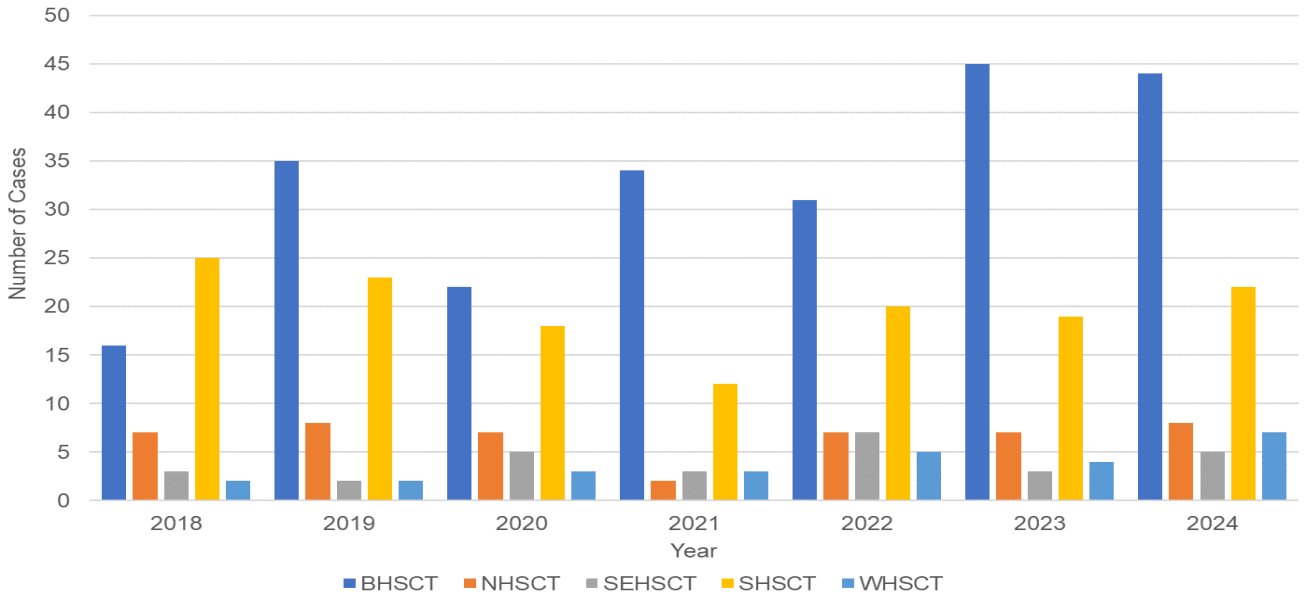

Figure 2. Number of cases of active TB by treating HSCT, Northern Ireland, 2018-2024

Social and demographic characteristics

Age and sex

Of the 86 active TB cases in 2024, 62.8% (54 cases) were male. Mean age of all cases was 44 years (8 years to 87 years). Stratified by sex, males were older than females (mean age 45 years vs. 36 years, respectively).

In 2024, rates were highest in those aged 15-44 years (8.4 cases per 100,000 population), followed by those aged 65 years and older (3.4 cases per 100,000 population), 45-64 years (2.0 cases per 100,000 population and lastly 0-14 years (0.8 cases per 100,000 population).

Post pandemic, there is an upward trend in those aged 15-44 years, with a plateauing and/or declines seen in the other age groups in more recent years. However, case numbers are small and should be interpreted with caution (Figure 3).

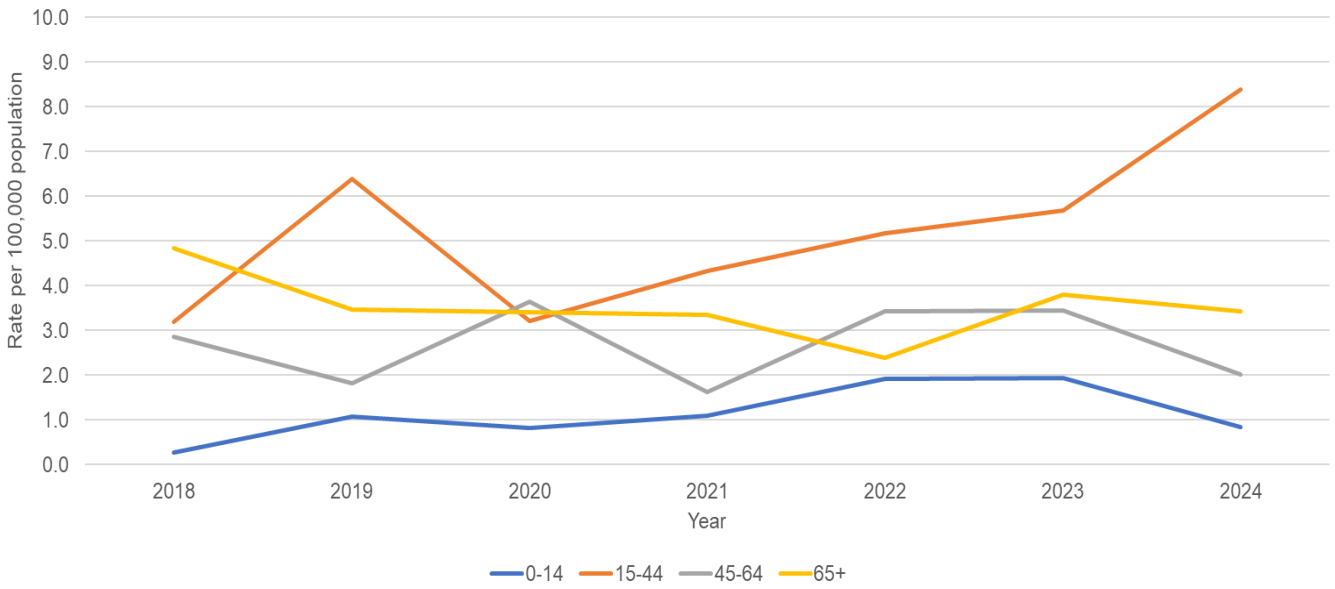

Figure 3: Age-specific rates of active TB cases, Northern Ireland, 2018-2024

Country of birth

In 2024, 64.0% (55 cases) of cases were born outside the UK and Ireland, a decrease compared to 74.4% in 2023 (58 cases). However, there has been an upward trend in the proportion of non-UK and Ireland born cases from 2021 after decreasing to 52.7% in 2020 (29 cases) due to the impact of the pandemic. Rates appear to have plateaued in 2024 and returned to levels similar to pre-pandemic years.

In comparison, UK and Ireland born cases have fluctuated somewhat across the years with minimal impact evident from the pandemic, and rates have remained relatively stable during the same time period (Figure 4).

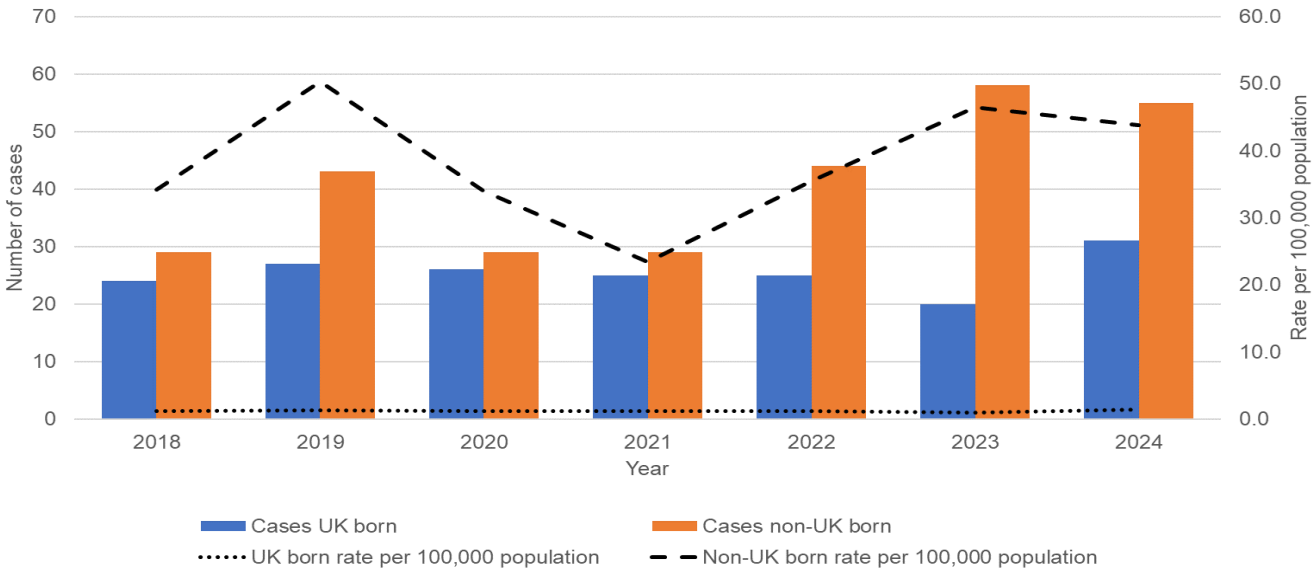

Figure 4. Number of cases and rates of active TB by country of birth, Northern Ireland, 2018-2024

In 2024, the highest proportion of non-UK and Ireland born cases were in those aged 15-44 years (81.8%, 45 cases) with this remaining similar across the years. Those born in the UK and Ireland had a mixed picture, with the majority of cases being notified in those aged 65 years and older across the years. In 2024, the highest proportion of cases were in those aged 15-44 years (51.6%, 16 cases), followed by those aged 65 years and older (32.3%, 10 cases).

Time from entry to UK to diagnosis

Active TB disease occurs after initial infection, rarely occurring more than two years after infection, or from reactivation of latent TB infection. There is a 5-10% lifetime risk of progression to active disease from latent TB and may occur decades later.[5]

The proportion of individuals born outside the UK and Ireland who were notified with TB within five years of entry to the UK has risen from 41.4% (12 cases) in 2018 to 61.8% (34 cases) in 2024. During the same period, the number of individuals notified within 1 to 2 years of entry increased from 13.8% (4 cases) in 2018 to 49.1% (27 cases) in 2024 (Figure 5).

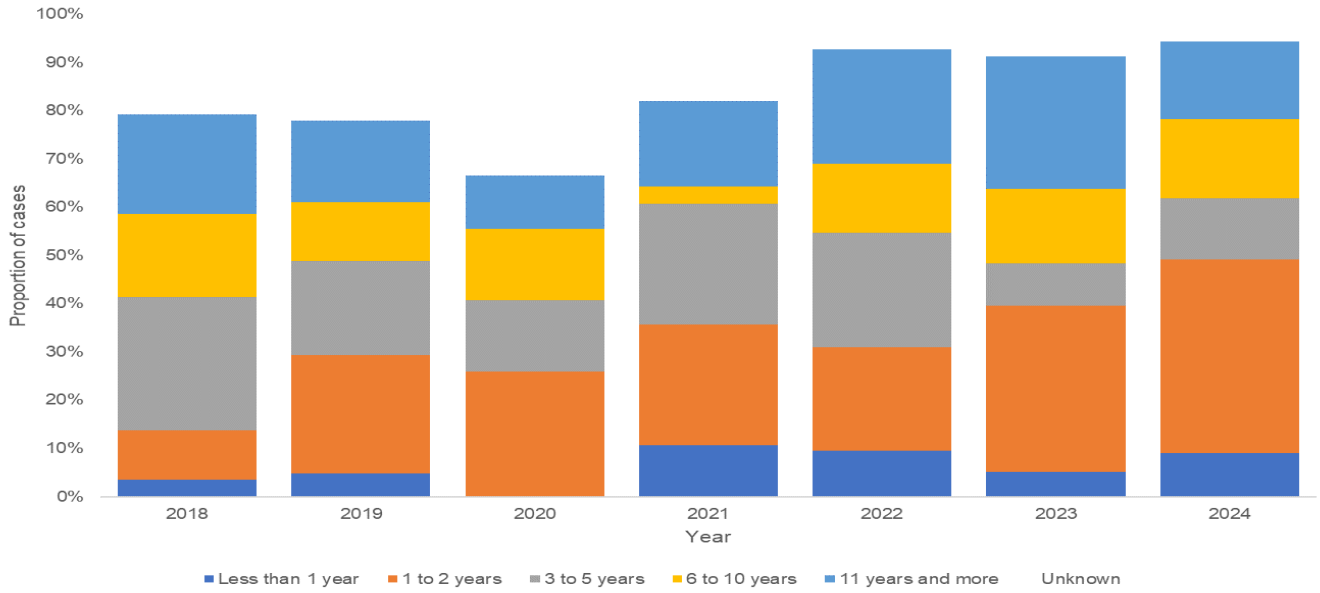

Figure 5. Proportion of notifications of TB in people born outside of the UK and Ireland by time since entry to the UK, Northern Ireland, 2018-2024
(Note: denominator includes those with missing data for year of entry to the UK)

The proportion of individuals born outside the UK and Ireland who were notified with pulmonary TB within five years of entry to the UK has also risen from 38.1% (8 cases) in 2018 to 66.7% (18 cases) in 2024. During the same period, the number of individuals notified within 1 to 2 years of entry increased from 19.1% (4 cases) in 2018 to 55.6% (15 cases) in 2024 (Figure 6).

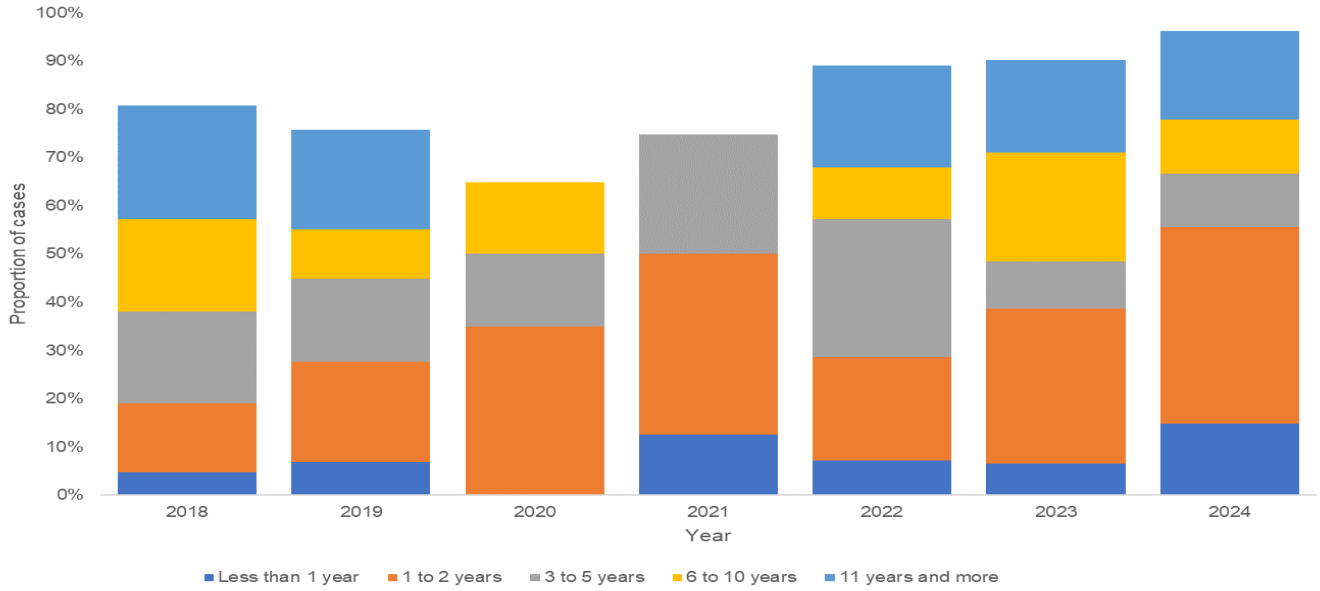

Figure 6. Proportion of notifications of pulmonary TB in people born outside of the UK and Ireland by time since entry to the UK, Northern Ireland, 2018-2024
(Note: denominator includes those with missing data for year of entry to the UK)

Deprivation

There is a marked gap in incidence between the most and least deprived areas. There has been an upward trend in rates in the most deprived quintiles since 2020. Other quintiles have either remained stable or decreased. In 2024, TB rates remained substantially higher among those living in the most deprived areas (Quintile 1 and 2, 6.7 cases per 100,000 population) compared to those living in the least deprived areas (Quintile 4 and 5, 2.9 cases per 100,000 population) (Figure 7).

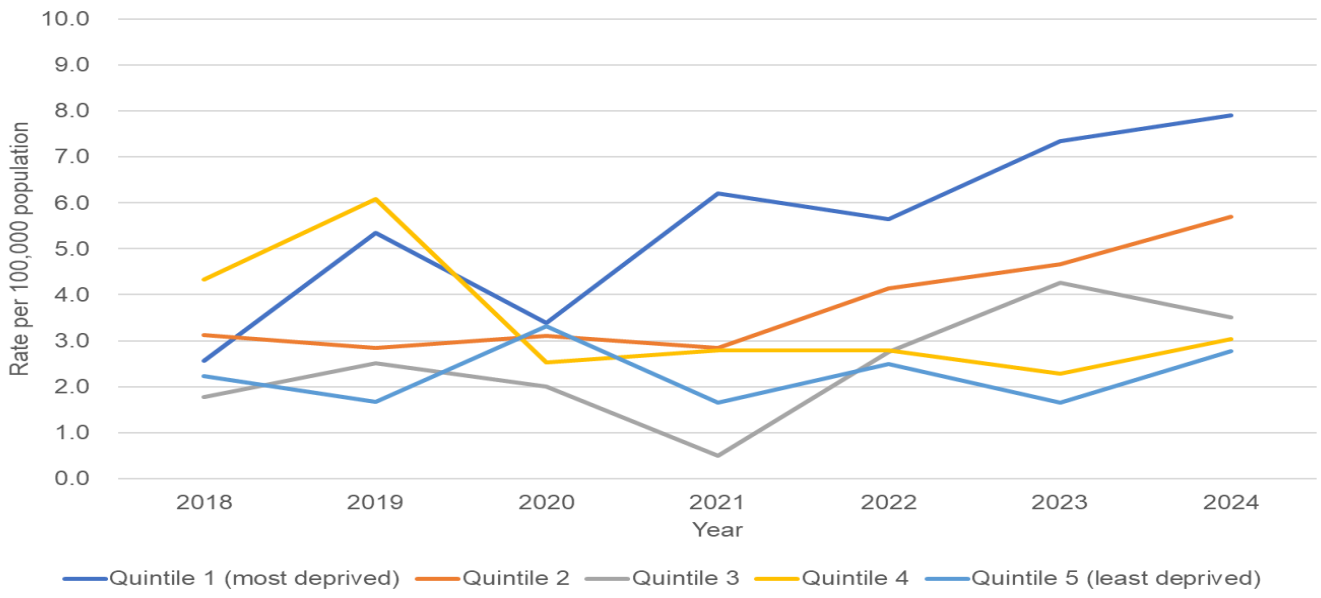

Figure 7. Rates of active TB cases by deprivation, Northern Ireland 2018-2024*
*mid-year population estimates are carried forward from 2020 for each quintile

The Northern Ireland Multiple Deprivation Measure (NIMDM) 2017 is an overall measure of multiple deprivation experienced by people living in an area and is measured at Super Output Area (SOA) level. Commissioned output is based on Small Area Population Estimates for 890 Super Output Areas in Northern Ireland. NISRA – Deprivation Statistics branch.

Cigarette smoking

In 2024, smoking information was available for 90.7% (78 cases) of notifications. Of these, 42.3% had a history of ever smoking (33 cases) with 20.5% (16 cases) reporting current smoking.

Social risk factors

Certain demographic, social and economic characteristics can lead to people experiencing social exclusion, stigma and discrimination, resulting in barriers in access to healthcare,

poor health outcomes and contributing to increasing health inequalities. NTBS collects data on six specific social characteristics, referred to as social risk factors: alcohol misuse, drug misuse, homelessness, prison, asylum seeker status and mental health needs. Non-reporting of risk factors may not be indicative of there being no risk factors existing; therefore, it is difficult to ascertain the true incidence.

In 2024, 23.3% (20 cases) of cases reported having at least one social risk factor, with 9.3% (8 cases) reporting at least two or more social risk factors. Of the 20 cases reporting at least one social risk factor, 65.0% (13 cases) were reported in males born outside the UK and Ireland.

Although the number of TB cases with at least one social risk factor has generally been small each year (20 cases or less), there is indication of an increasing trend with a doubling of cases reporting at least one social risk factor in 2024 compared to 2021.

Clinical characteristics

Over half of TB notifications in 2024 had pulmonary disease (61.6%, 53 cases), which may lead to onward transmission. Post pandemic, there is suggestion of an upward trend in both pulmonary and extra-pulmonary disease, with this being most apparent with extra-pulmonary disease.

Other reported sites of disease in 2024 included intra- and extra-thoracic lymph nodes (17.4%, 15 cases); other extra-pulmonary (7.0%, 6 cases); genitourinary (7.0%, 6 cases); pleural (5.8%, 5 cases); gastrointestinal, ocular, soft tissue/skin, spine and other bone, CNS meningitis and other, and miliary (n=<5 each). Infection can occur at more than one site.

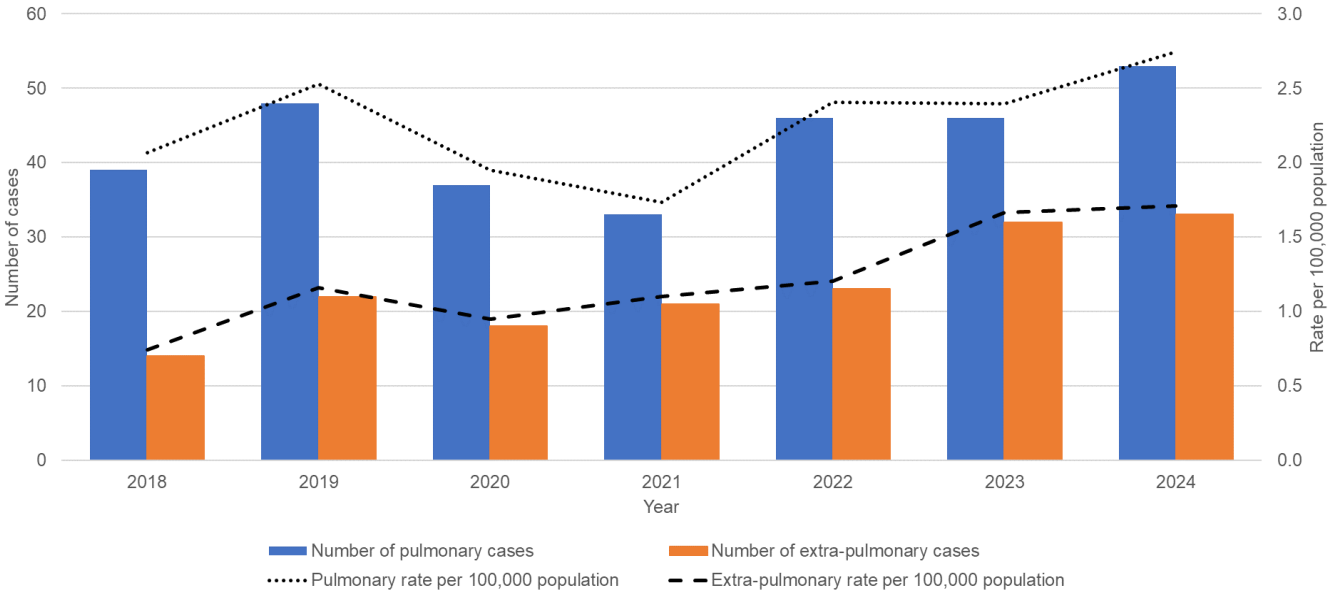

Figure 8. Number of cases and rates of active TB, by site of disease, Northern Ireland, 2018-2024

In 2024, 83.9% (26 cases) of cases born in the UK and Ireland had pulmonary disease (Figure 9). Cases born outside of the UK and Ireland have seen a consistent increase in the proportion diagnosed with extra-pulmonary disease, with some fluctuation during the pandemic. Over half of all cases were diagnosed with extra-pulmonary disease in 2024 (50.9%, 28 cases) (Figure 10).

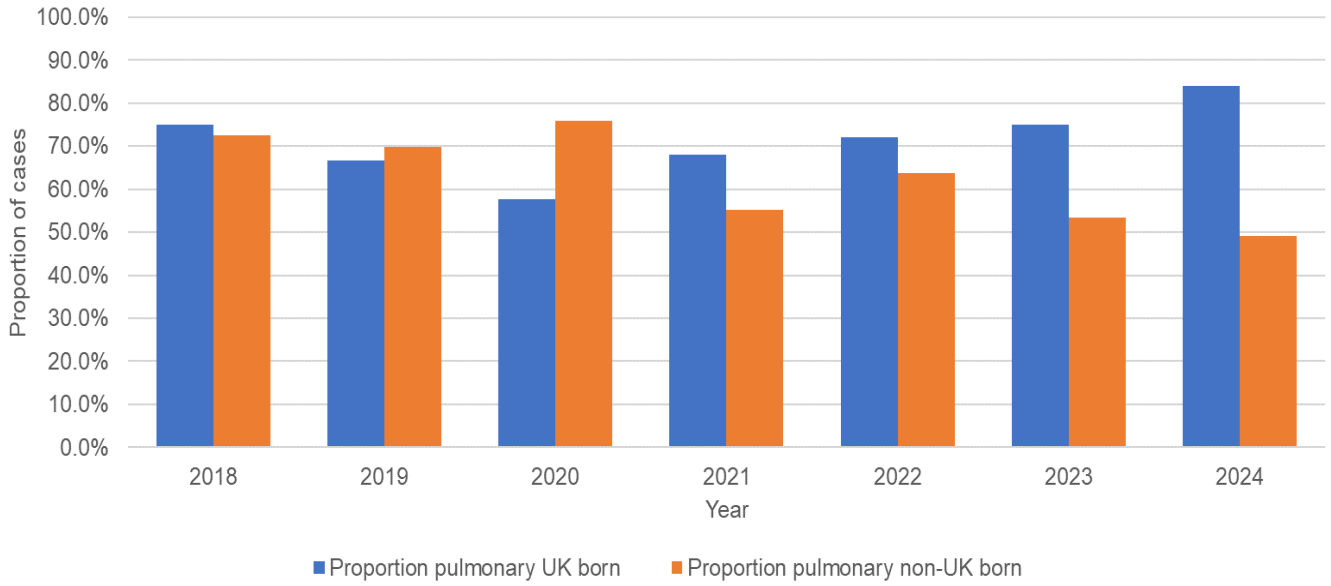

Figure 9. Proportion of pulmonary TB cases, by country of birth, Northern Ireland 2018-2024
Denominator: Total UK or non-UK born TB cases

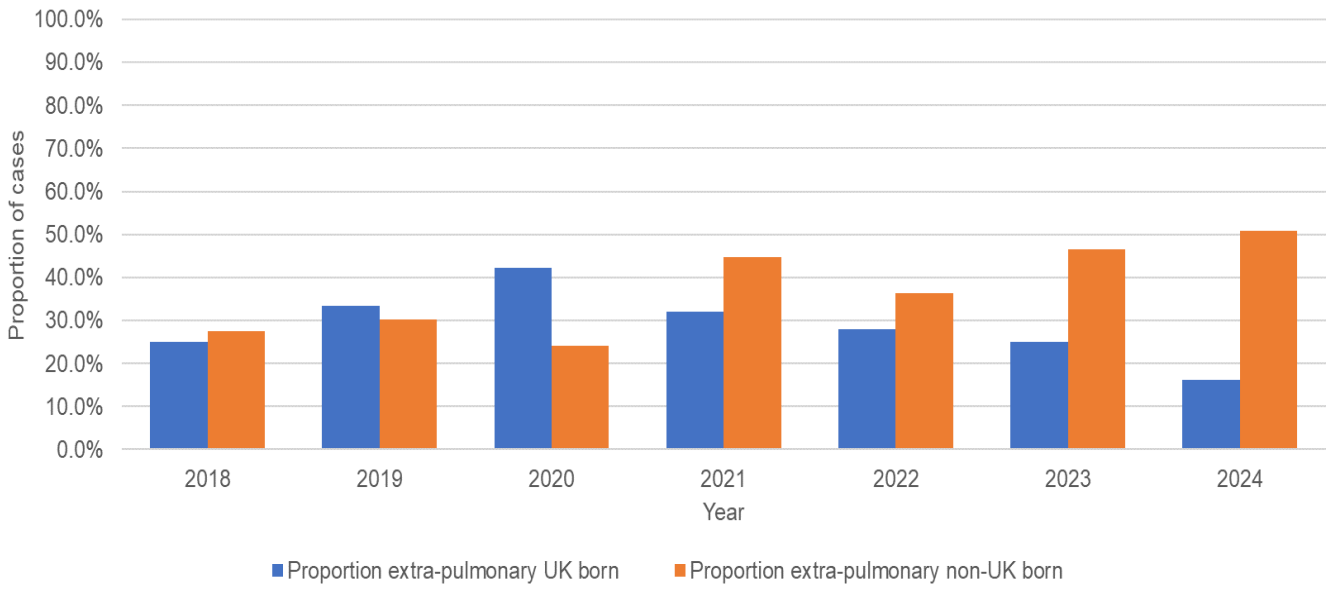

Figure 10. Proportion of extra-pulmonary TB cases, by country of birth, Northern Ireland 2018-2024

Denominator: Total UK or non-UK born TB cases

In 2024, rates of pulmonary and extra-pulmonary TB were highest in those aged 15-44 years (4.8 and 3.6 cases per 100,000 population, respectively), followed by those aged 65 years and older for pulmonary disease (2.9 cases per 100,000 population), and those aged 45-64 years for extra-pulmonary disease (1.0 cases per 100,000 population).

Post pandemic, there is suggestion of an upward trend in those aged 15-44 years, with a plateauing and/or declines seen in the other age groups in more recent years. However, case numbers are small and trends should be interpreted with caution (figures 11 and 12). Similar trends are seen for when stratified by sex (data not shown).

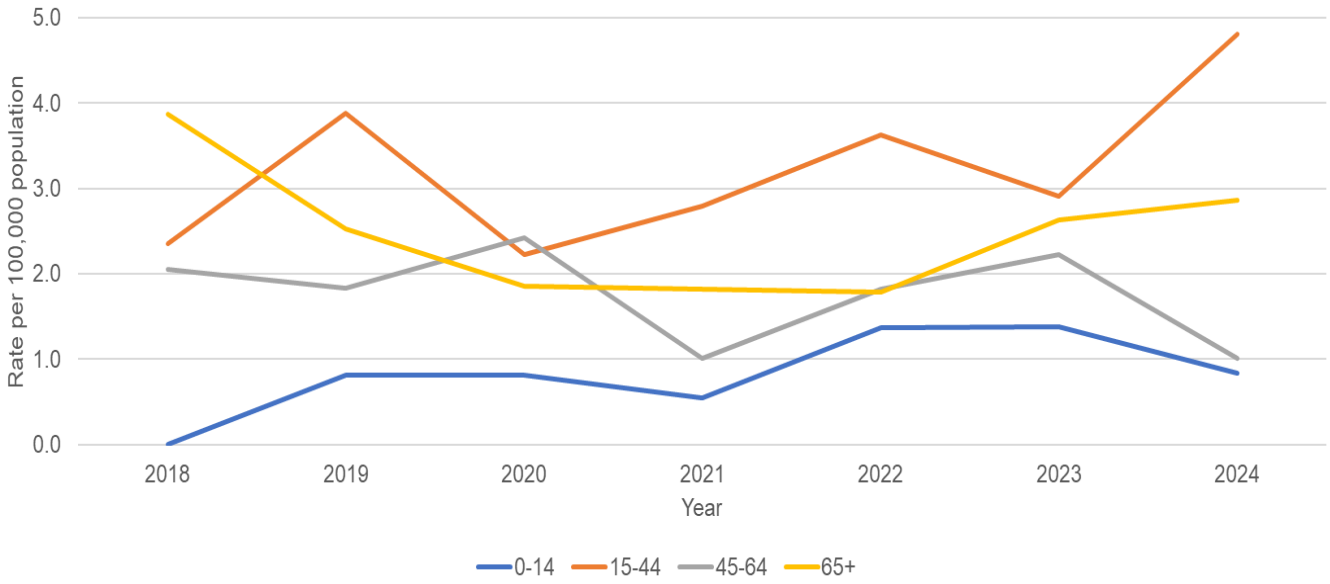

Figure 11. Age-specific rates of pulmonary TB cases, Northern Ireland, 2018-2024

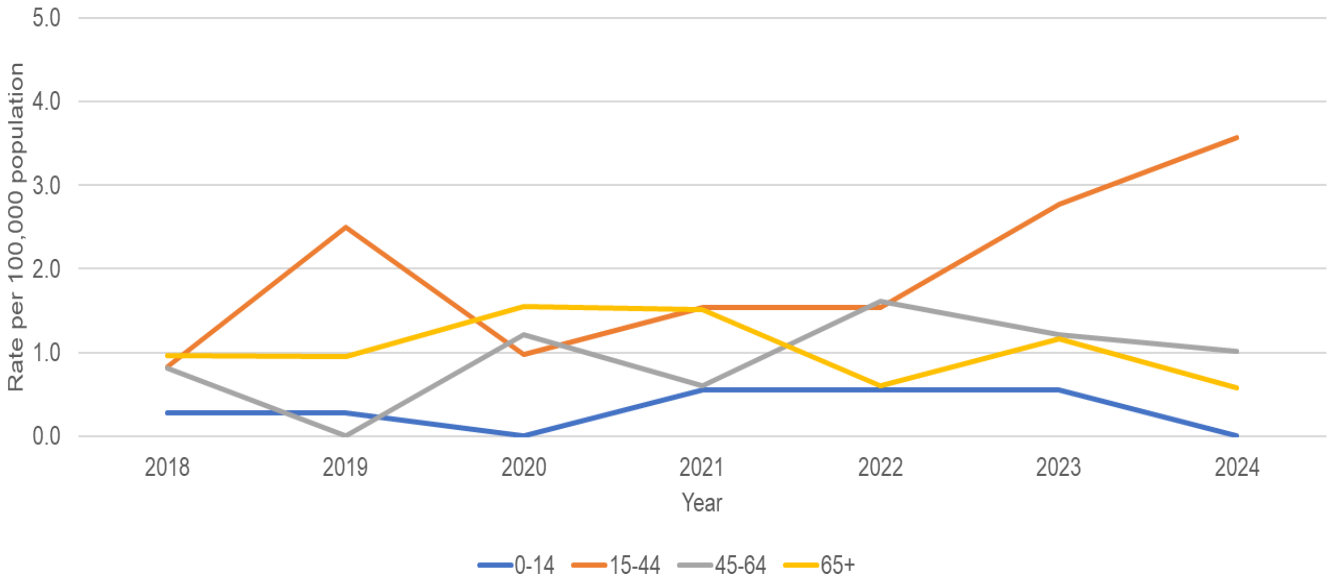

Figure 12. Age-specific rates of extra-pulmonary TB cases, Northern Ireland, 2018-2024

Treatment delays

Treatment delay is defined as the period from the onset of symptoms (as reported by the patient) to the start of TB treatment. Prompt diagnosis and treatment of active TB improves patient outcomes, and for infectious pulmonary TB cases reduces the period of infectiousness and onward transmission to others.

The time between onset of symptoms and starting treatment was known for 73.3% (63 cases) of TB notifications. In 2024, 39.7% (25 cases) of cases experienced a delay of more than four months before starting treatment, with a further 20.6% (13 cases) a delay of two to four months (Table 2). The overall median time period from onset of symptoms to treatment was 76 days. After an increasing median delay during the pandemic, reaching 127 days in 2022, this delay has now returned to levels seen pre-pandemic (74 days in 2019).

The time between onset of symptoms and starting treatment was known for 77.4% (41 cases) of pulmonary TB notifications. In 2024, 31.7% (13 cases) of cases experienced a delay of more than four months before starting treatment, with a further 24.4% (10 cases) a delay of two to four months (Table 2).

Table 2. Number and proportion of people with treatment delay, and median treatment delay times (days), Northern Ireland, 2024

		All TB cases	Pulmonary TB cases	
Time of treatment delay	**Number (Proportion)**	**Median (IQR)**	**Number (Proportion)**	**Median (IQR)**
0-2 months	25 (39.7%)	27 (14-31)	18 (43.9%)	27 (17-40)
2-4 months	13 (20.6%)	76 (67-104)	10 (24.4%)	76 (65-100)
>4 months	25 (39.7%)	204 (150-279)	13 (31.7%)	204 (143-279)
Overall	63 (100.0%)	76 (30-172)	41 (100.0%)	76 (30-127)
Extra-pulmonary cases				
Overall	22 (66.7%)	118 (30-232)		

Diagnostic delays

Diagnostic delay is defined as the period from the onset of symptoms (as reported by the patient) to diagnosis date. Diagnosis may be affected by symptom recognition, healthcare seeking behaviours, access to services, clinical pathways and awareness, and service capacity.

The time between onset of symptoms and diagnosis was known for 73.3% (63 cases) of TB notifications. In 2024, 34.9% (22 cases) of cases experienced a delay of more than four months before diagnosis, with a further 22.2% (14 cases) a delay of two to four months (Table 3). The overall median time period from onset of symptoms to treatment was 62

days. After an increasing median delay during the pandemic, reaching 120 days in 2022, this delay has now returned to levels lower than pre-pandemic years (74 days in 2019).

The time between onset of symptoms and starting treatment was known for 77.4% (41 cases) of pulmonary TB notifications. In 2024, 29.3% (12 cases) of cases experienced a delay of more than four months before starting treatment, with a further 24.4% (10 cases) a delay of two to four months (Table 3).

Table 3. Number and proportion of people with diagnosis delay, and median treatment delay times (days), Northern Ireland, 2024

		All TB cases	Pulmonary TB cases	
Time of treatment delay	**Number (Proportion)**	**Median (IQR)**	**Number (Proportion)**	**Median (IQR)**
0-2 months	27 (42.9%)	21 (7-35)	19 (46.3%)	26 (13-39)
2-4 months	14 (22.2%)	82 (61-107)	10 (24.4%)	82 (64-100)
>4 months	22 (34.9%)	214 (151-346)	12 (29.3%)	170 (148-301)
Overall	63 (100.0%)	62 (28-152)	41 (100.0%)	60 (28-126)
Extra-pulmonary cases				
Overall	22 (66.7%)	110 (27-221)		

Microbiology

TB infection is optimally confirmed by culture for full information on drug resistance and transmission to be provided. In 2024, 58.1% (50 cases) of all cases were culture confirmed, which is a lower proportion compared to 2023 (64.1%, 50 cases) (Figure 13). Of the 50 isolates culture confirmed, 47 were confirmed as *M. tuberculosis* and three as *M. bovis*. BHSCT and PHA worked together on a pilot of sequencing mycobacteria, which will be reported separately.

For pulmonary disease, the proportion culture confirmed remained low in 2024 (55%, 29 cases) compared to what was reported in 2023 (67%, 31 cases) and lower to what was seen pre-pandemic, e.g. 2019 (88%, 42 cases) (Figure 14).

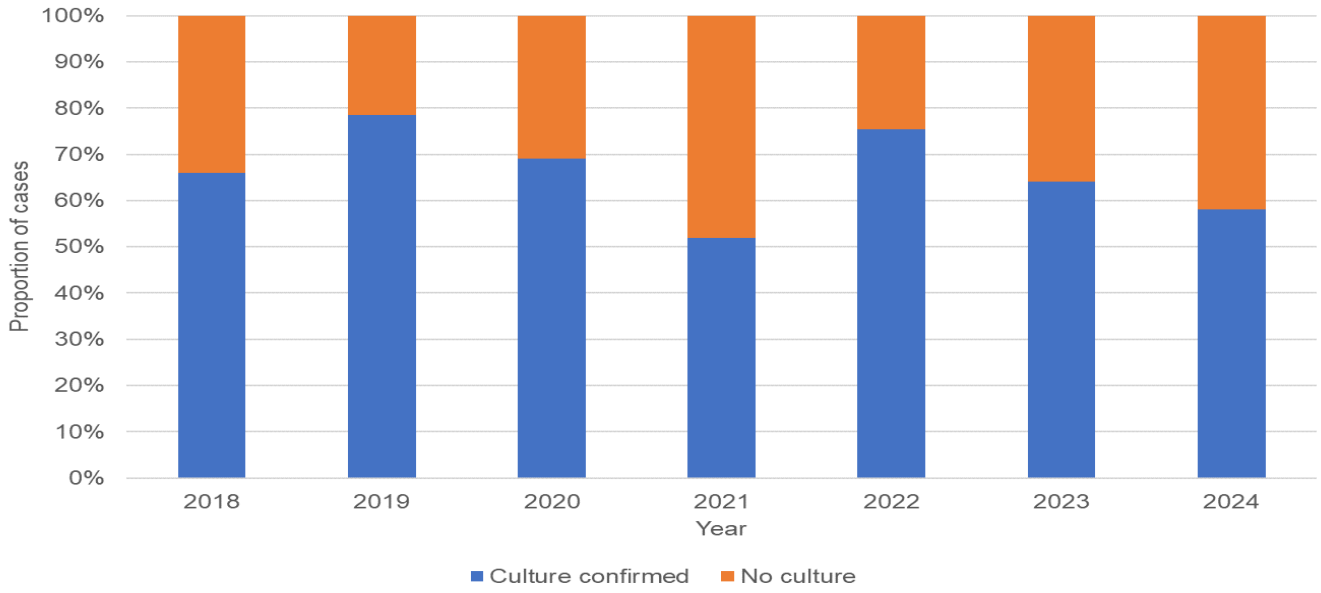

Figure 13. Proportion of TB cases culture confirmed, Northern Ireland, 2018-2024

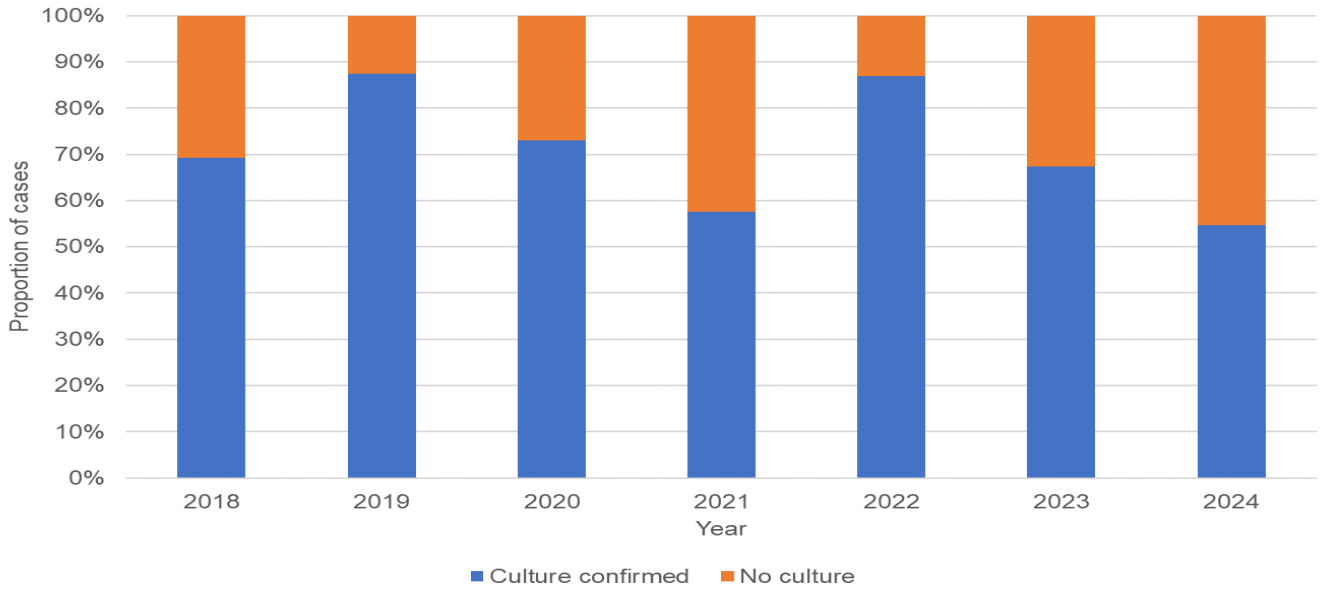

Figure 14. Proportion of pulmonary TB culture confirmed, Northern Ireland, 2018-2024

Drug resistance

Isoniazid, rifampicin, ethambutol and pyrazinamide are first-line drugs for treatment of TB. Drug susceptibility test results were available for 98.0% (49 cases) of all culture confirmed cases in Northern Ireland in 2024.

In 2024, ten cases, which includes the three *M. bovis cases* (inherently resistant to pyrazinamide), were resistant to first line drug treatment which is higher to previous years and just under double what was reported in 2023. There were <5 cases multi-drug resistant/rifampicin resistant (MDR/RR-TB) reported in 2024. From 2018, seven cases were MDR/RR-TB.

Treatment outcomes

Treatment outcomes are reported according to the year of notification.

Non-MDR and Non-RR TB

For people treated for non-MDR or non-RR TB, outcomes are reported for those notified up to and including 2023 as that is the latest year of notifications for whom treatment completion is expected within the 2024 data.

Non-MDR and non-RR TB cases are individuals who are fully drug sensitive TB and for individuals diagnosed with TB with resistance to one or more of three first line drugs (isoniazid, ethambutol or pyrazinamide) excluding rifampicin, either with central nervous system (CNS) disease or without. For further definitions of TB treatment cohorts please see the definitions section.

TB outcomes are reported separately for cases with and without spinal and CNS disease. CNS disease also includes those with miliary or cryptic disseminated TB.

Non-MDR, non-RR TB without spinal and CNS disease (Group 1)

Duration of treatment is expected to be less than 12 months and includes individuals treated for non-MDR or non-RR TB without spinal and CNS disease notified in 2023. Reports 12 month treatment outcomes in this cohort.

Of cases notified in 2023, 74.7% (56 cases) completed treatment within 12 months, with 14.7% (11 cases) still on treatment at 12 months (Table 4). This is lower compared to cases

notified in 2022 when 83.6% (46 cases) completed treatment within 12 months, but is higher to treatment completion rates reported in previous years. However, the pandemic disrupted TB health services, including treatment support, resulting in a lower return of treatment completion information at 12 months for cases notified during the pandemic.

Table 4. Outcome at 12 months for Group 1 cohort with an expected treatment duration less than 12 months, Northern Ireland, 2023

Outcome	Group 1	%
Completed	56	74.7
Died	<5	-
Lost to follow-up	5	6.7
Still on treatment	11	14.7
Stopped treatment	<5	-
Total	**75**	**100**

Of those who completed treatment, 100% (56 cases) completed treatment within 12 months, with the majority of individuals (89.3%, 50 cases) completing treatment in 6 to 10 months.

Non-MDR, non-RR TB (Group 2)

Duration of treatment is not expected to complete within 12 months and includes individuals treated for non-MDR or non-RR TB (also includes those with spinal and CNS disease) notified in 2023. Reports last recorded treatment outcomes in this cohort.

At the last recorded outcome, 78.2% (61 cases) had completed treatment, with 11.5% (9 cases) still on treatment.

This is lower compared to cases notified in 2022 when 86.2% (46 cases) completed treatment, and lower to treatment completion rates reported in previous years except for those notified in 2020 during the pandemic (74.6%, 41 cases).

Table 5. Last recorded TB outcome for Group 2 cohort, Northern Ireland, 2023

Outcome	Group 2	%
Completed	61	78.2
Died	<5	-
Lost to follow-up	5	6.4
Still on treatment	9	11.5
Stopped treatment	<5	-
Total	**78**	**100**

Drug Resistant TB

Drug resistant TB cases include MDR/RR, pre-XDR and XDR TB cases. These cases include individuals that are confirmed on culture at diagnosis or during treatment and individuals receiving treatment with an MDR-TB or other drug resistant regimen in the absence of culture confirmation.

TB outcomes for the MDR or RR cohort are reported at 24 months, so the most recent complete data is for cases notified in 2022. At 24 months, <5 cases had completed treatment.

Discussion

TB remains a significant global public health issue. The WHO Global Tuberculosis Report 2024 estimates that 8.2 million new TB cases occurred globally in 2023, a rise from 7.5 million in 2022, the highest since global monitoring began in 1995.[6] Despite being classified as a very low incidence country (4.5 cases per 100,000 in 2024), Northern Ireland has experienced a sustained upward trend in TB notifications since 2021, replicating patterns seen across other regions of the UK and Europe post-pandemic.

The 10.3% rise in notifications compared to 2023 aligns with increases in TB notifications observed elsewhere in the UK. For example, Scotland recorded a 41.2% rise in cases, England recorded a 11.0% rise in cases and Wales recorded a 21.4% rise in cases between 2022 and 2023.[3] The Republic of Ireland also reported a 31.4% rise in cases between 2023 and 2024.[7]

While Northern Ireland's absolute case numbers remain low (n=86), the concentration of disease in Belfast (9.2 per 100,000 population) and Mid Ulster (6.6 per 100,000 population) highlights inherent geographic disparities. TB rates were more than double in the most deprived quintiles compared to the least deprived, a pattern consistent with social determinants of health and observed across the UK.[8,9,10]

The increasing proportion of active cases born outside the UK and Ireland notified within 1 to 2 years of entry (from 13.8% in 2018 to 49.1% in 2024) suggests the continuing important role of strengthening post-entry latent TB (LTBI) screening programmes to try and help reduce the incidence of new TB cases among new entrants to Northern Ireland. These trends are consistent with data from England, where the proportion of individuals born outside the UK who were notified with TB within 5 years of entry, rose from 25.7% in 2019 to 35.9% in 2023. Between 2019 and 2023, the number of individuals notified within 1 to 2 years of entry nearly doubled.[8]

The distribution of pulmonary vs extra-pulmonary TB in Northern Ireland remains broadly consistent with UK wide patterns. In 2024, 61.6% of cases in Northern Ireland were pulmonary, slightly lower to Wales in 2024 (63.0%),[9] but higher than England and Scotland in 2023 (55.0% and 58.0% respectively).[8,10]

Delays in initiating treatment for pulmonary TB can be problematic, as they can lead to continued transmission within the community. The median time from symptom onset to treatment for those with pulmonary TB in 2024 was 76 days (60 days to diagnosis), with 31.7% having a delay of over four months. These delays, although improved from the pandemic, remain similar to what England reported in 2023 (30.0% having a delay of over four months),[8] but higher than reported by Wales in 2023 (21% having a delay of over four months).[9]

Though numbers of individuals with drug resistance remain somewhat low in Northern Ireland (<5 culture confirmed cases MDR/RR-TB and 20.4% with any resistance to first line drugs; includes three *M. bovis cases* (inherently resistant to pyrazinamide)), they are higher than what has been reported in preceding years. Proportionally, Northern Ireland remains

similar to Wales (0.0%), but lower than England (2.4%) and Scotland (1.4%) for culture confirmed cases of MDR/RR-TB (latest data available for 2023).[3]

Treatment success rates within 12 months in 2023 for non-MDR, non-RR TB without spinal and CNS disease involvement were 74.7%, lower than 2022 (83.6%), and below what was reported globally in 2022 (88% completion)[6] and WHO's global target of ≥90% treatment success.[11]

Recommendations

The intelligence from this epidemiological report will support the future direction of TB prevention and control in Northern Ireland. It is suggested that the following recommendations are considered as part of the PHA Health Protection Division's TB future work programme:

- Working with partners to improve data completeness in NTBS, particularly around social risk factors and introducing data collection on contact tracing investigations.
- Working to better understand the factors behind diagnostic and treatment delays and to improve public and health protection awareness of TB.
- Working with partners to review post-entry LTBI screening for recent entrants from high-incidence countries.
- Working with partners to better understand how TB diagnostic and treatment services manage cases of active TB disease, with particular attention given to interventions that support those living in deprived areas and underserved populations e.g. use of Royal College of Nursing (RCN) Enhanced Care Management (ECM), Directly Observed Treatment (DOTs)/ Video Observed Therapy (VOTs).

PHA Health Protection TB team actions

The PHA Health Protection work programme for prevention and control of TB is delivered by a small multi-disciplinary team within the PHA Health Protection Division. The team works with multiple stakeholders to implement the programme including, Department of Health Policy Directorate, Department of Health Strategic Performance and Planning Group (SPPG), HSC Trusts, Laboratories, PHA Health Improvement, and Community and Voluntary Sector.

In line with PHA Health Protection Key Performance Indicators for 2024-25,

1. Regional Health Protection led TB Group has been re-established, which will enable regional multi-agency collaboration to review and take forward areas highlighted to improve TB prevention and control.
2. TB cohort review has been re-established as a systematic process for reviewing notified cases of TB and evaluating outcomes to improve service delivery.
3. Scoping review of information, resources and education materials for the public and health professionals to enhance the awareness of TB disease. This work will support reductions in diagnostic and treatment delays.

In addition to the Division's agreed work programme, the PHA Health Protection Division is working with the Department of Health, the HSC Trusts and other stakeholders to inform the future strategic direction for TB prevention and control in Northern Ireland to support reductions in TB incidence and contribute to the UK commitment to the World Health Organization (WHO) elimination targets by 2035.

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