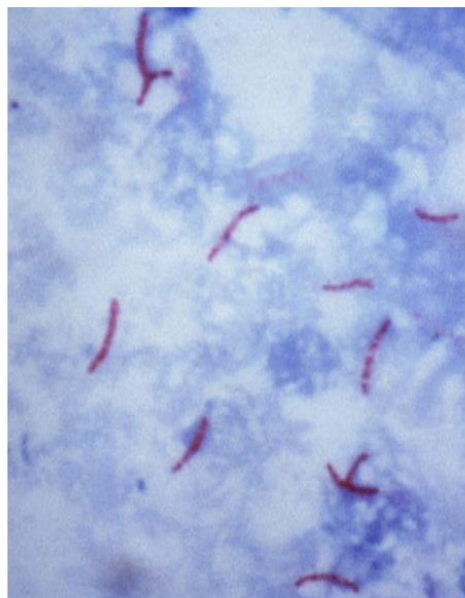
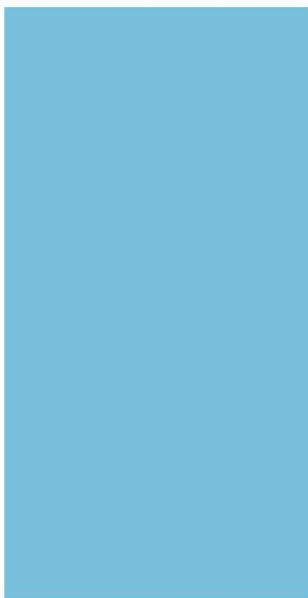
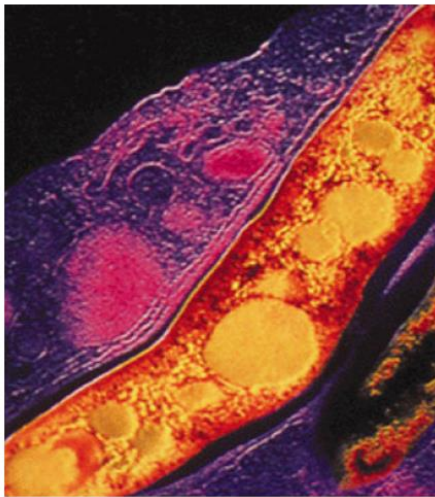


# Epidemiology of Tuberculosis In Northern Ireland

Annual Surveillance Report 2018



## Acknowledgements

---

The Public Health Agency Northern Ireland 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.

## Authors

---

M. G. O'Doherty, E. Dickson, E. Walker and M. Devine



**Public Health Agency**  
12-22 Linenhall Street  
Belfast  
BT2 8BS  
Tel: 0300 555 0114

[www.publichealth.hscni.net](http://www.publichealth.hscni.net)

## Contents

---

Acknowledgements .....	1
Authors .....	1
Contents .....	2
Key Points .....	3
Introduction.....	4
Definitions.....	5
Methodology.....	6
Results .....	7
Demographic characteristics .....	9
Clinical characteristics .....	12
Microbiology .....	22
Drug resistance .....	23
Treatment outcomes.....	24
Discussion .....	26
References.....	28

## Key Points

---

- There were 56 cases of tuberculosis (TB) notified in Northern Ireland in 2018 giving the lowest recorded rate of TB in Northern Ireland of 3.0 cases per 100,000 population.
- The average rate of TB was 3.8 cases per 100,000 population in 2016-2018.
- The average rates of TB were highest in the Southern Health and Social Care Trust at 7.5 cases per 100,000 population in 2016-2018.

### Demographic characteristic

- The highest average rates of TB were observed in those aged 65 years and over at 5.8 cases per 100,000 population in 2016-2018.
- The proportion of TB cases born outside the UK/Ireland was 57% (n=32/56) in 2018. The average rate was highest in this population at 42.4 cases per 100,000 population in 2016-2018.

### Clinical characteristics

- The average rate of pulmonary TB in Northern Ireland was 2.4 cases per 100,000 population in 2016-2018.
- The average rate of non-pulmonary TB in Northern Ireland was 1.4 cases per 100,000 population in 2016-2018.

### Microbiology

- 64% (n=36/56) of TB cases were culture confirmed in 2018.

### Drug resistance

- In 2018, <5 culture confirmed TB cases were recorded as resistant to first line treatment.

### Treatment outcome

- The proportion of drug sensitive TB cases that completed treatment by 12 months, an indicator of the quality of the TB service, was 78% (n=50/64) in 2017.

## Introduction

---

This report presents the epidemiological data for tuberculosis (TB) cases reported in Northern Ireland from 1 January 2018 to 31 December 2018. This report also presents data from previous years for comparative purposes and to give indications of trends in TB epidemiology.

The outcome of TB treatments are collected annually and reported in retrospect. The treatment outcomes reported in this report are for those individuals notified to the Public Health Agency (PHA) from 1 January 2017 to 31 December 2017.

There may be slight 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. This regional report takes account of late notifications that may have been reported after the national data extraction process has taken place.

## Definitions

---

**Notified case:** Refers to clinically active disease caused, or thought to be caused, by infection with organisms of the *Mycobacterium tuberculosis* complex (*Mycobacterium tuberculosis*, *Mycobacterium bovis*, *Mycobacterium africanum*).

**Culture confirmed cases:** Where the diagnosis has been confirmed by culture as *M. tuberculosis*, *M. bovis* or *M. africanum*.

**Other than culture confirmed cases:** In the absence of culture confirmation, a case with a clinician's judgement that the patient's clinical and/or radiological signs and/or symptoms are compatible with TB *and* a clinician's decision to treat the patient with a full course of anti-tuberculosis treatment<sup>1</sup>.

**Pulmonary tuberculosis:** A disease involving the lung parenchyma and/or tracheobronchial tree, with or without extra-pulmonary tuberculosis diagnosis<sup>1</sup>.

**Sputum smear result:** Sputum smear positive TB is defined as a positive microscopy result on spontaneously produced or induced sputum.

**Multi-drug resistance (MDR):** Resistance to at least isoniazid and rifampicin<sup>1</sup>.

**Extensively-drug resistant (XDR):** MDR case with additional resistance to any fluoroquinolone and at least one of the second-line drugs (capreomycin, karamycin, amikacin)<sup>1</sup>.

**Health and Social Care Trusts (HSCTs) in Northern Ireland:** There are five HSCTs in Northern Ireland; Belfast (BHSCT), South Eastern (SEHSCT), Northern (NHSCT), Southern (SHSCT) and Western (WHSCT).

**Treatment outcome:** A patient is defined as having completed treatment if; a) the case was reported, b) the patient completed a full course of treatment and c) was officially discharged by the attending physician.

## Methodology

---

### Data collection

Completed TB notification forms are forwarded to PHA in Northern Ireland where the information is entered onto a secure database. 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.

Data on cause of death, including TB, are also collected from the Northern Ireland Statistics and Research Agency (NISRA).

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

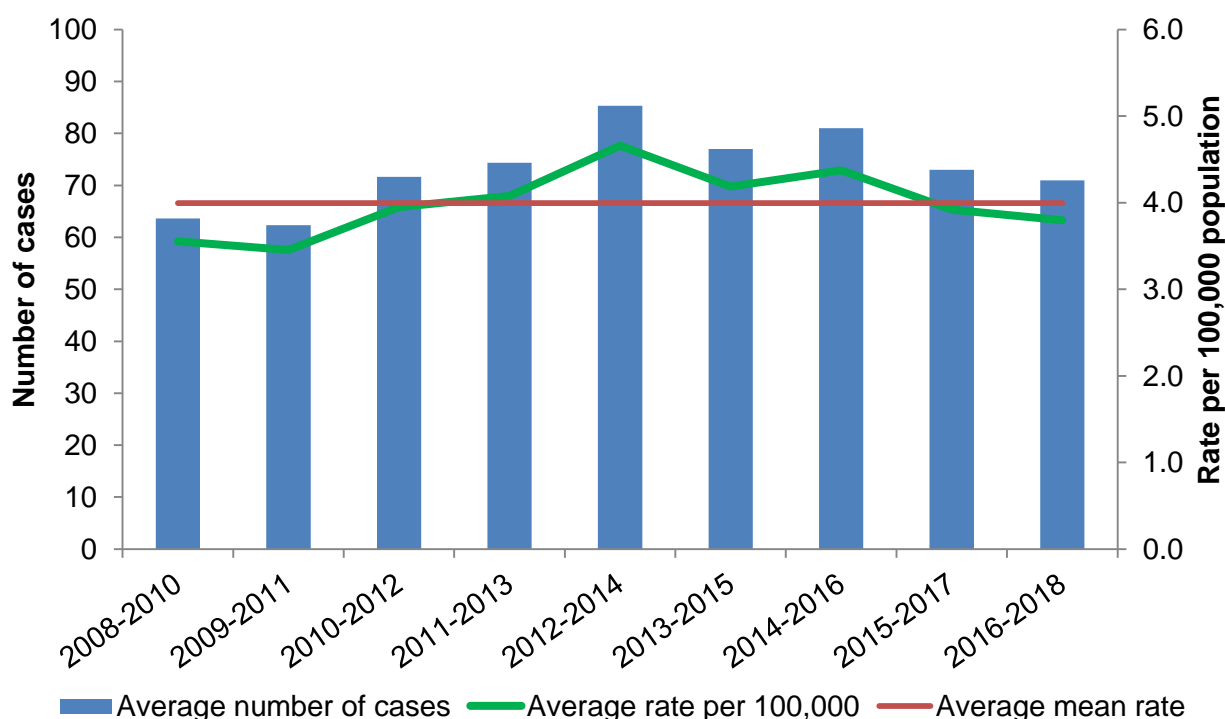
### Data analysis

Data are entered onto the PHE National Enhanced TB Surveillance database and analysed. TB rates per 100,000 population, stratified by age, sex and HSCT in Northern Ireland, are calculated using the mid-year estimates of the Northern Ireland population from NISRA. Three-year moving averages are calculated, where possible, as relatively small differences in the number of cases each year can give rise to substantial percentage changes due to small numbers and considerable year to year variation. Summary information on cases is reported only if the numbers do not risk data confidentiality.

## Results

### Overall number of cases and rates of infection

Northern Ireland is a low incidence region for TB averaging 4 cases per 100,000 population. In 2018, a total of 56 cases of TB were reported giving a rate of 3.0 cases per 100,000 population, which is the lowest recorded rate in Northern Ireland. The three-year moving average numbers and rates of notified TB cases between 2008 and 2018 are shown in Figure 1. The average rate in 2016-2018 was similar to that in 2015-2017, 3.8 TB cases per 100,000 compared to 3.9 per 100,000. The average number of TB cases was also similar, 71 cases for the period 2016-2018 compared to 73 for 2015-2017.



**Figure 1: Three-year moving average numbers and rates of TB cases, Northern Ireland, 2008-2018**

In 2016-2018, the average TB rate was highest in SHSCT at 7.5 cases per 100,000, similar to the previous period (2015-2017) when the rate in SHSCT was also highest at 7.4 per 100,000. The average number of TB cases in SHSCT was 29 in 2016-2018 (28 cases in 2015-2017). The average TB rates and average number of cases decreased in BHSCT and SEHSCT between 2015-2017 and 2016-2018, whilst remaining relatively stable in the NHSCT and WHSCT (Figures 2 and 3).



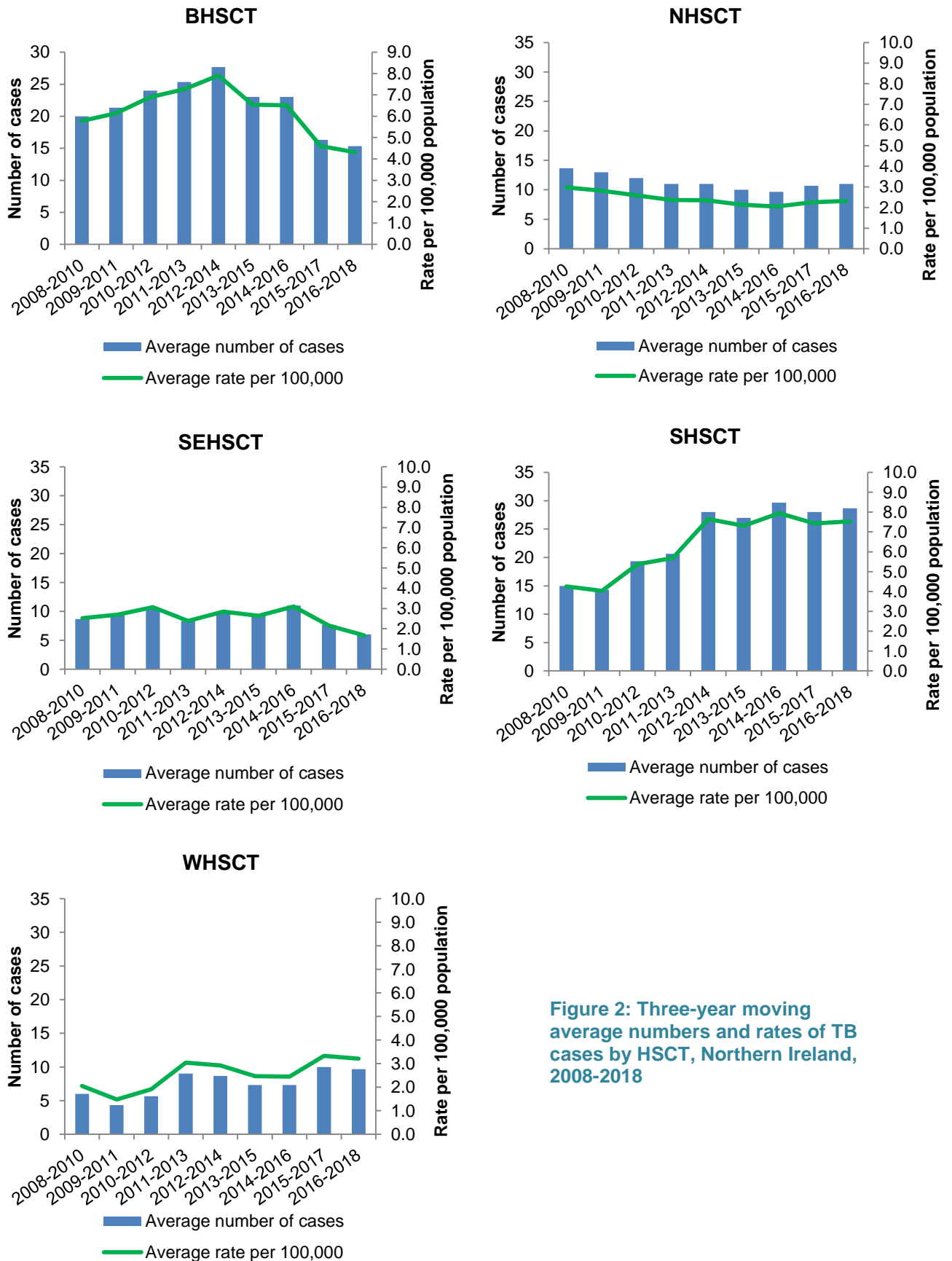


Figure 2: Three-year moving average numbers and rates of TB cases by HSCT, Northern Ireland, 2008-2018

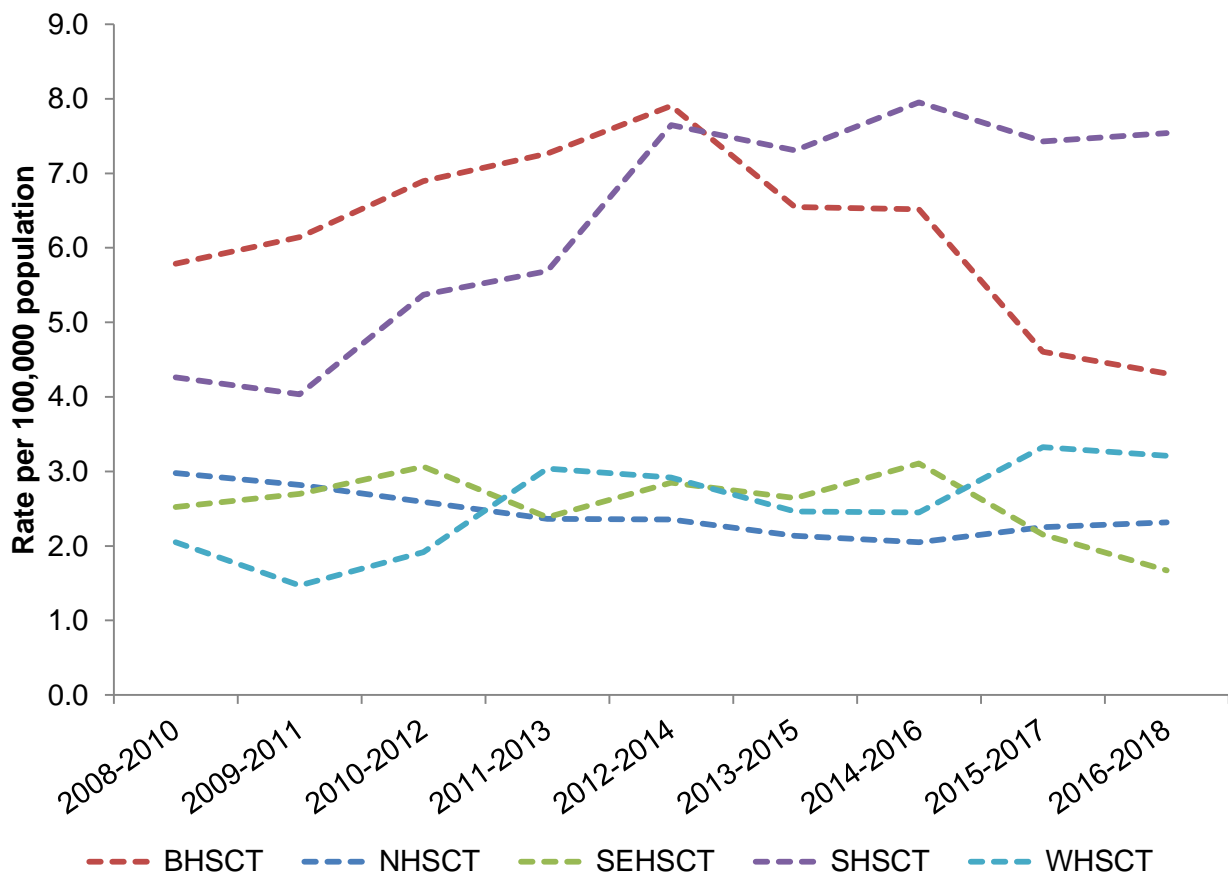


Figure 3: Three-year moving average rates of TB cases by HSCT, Northern Ireland, 2008-2018

## Demographic characteristics

### Age and gender

Of the 56 notified cases of TB in 2018, 70% (n=39/56) were male and 30% (n=17/56) were female. The ages ranged from 12 years to 90 years, with a median age of 49 years and a mean age of 50 years.

Patients aged 15-44 years accounted for the majority of cases reported in 2018, 41% (n=23/56), a decrease from 2017 when this group accounted for 49% of cases.

However, the average rate of TB remained highest in those aged 65 years and over at 5.8 cases per 100,000 population in 2016-2018, which was a slight increase from 5.5 cases per 100,000 in 2015-2017. The average TB rate remained relatively stable in those aged 0-14 years in 2016-2018, whilst the rate decreased slightly in those aged 15-44 years. The

average TB rate increased from 3.9 cases per 100,000 in 2015-2017 to 4.2 per 100,000 in 2016-2018 in those aged 45-64 years (Figure 4).

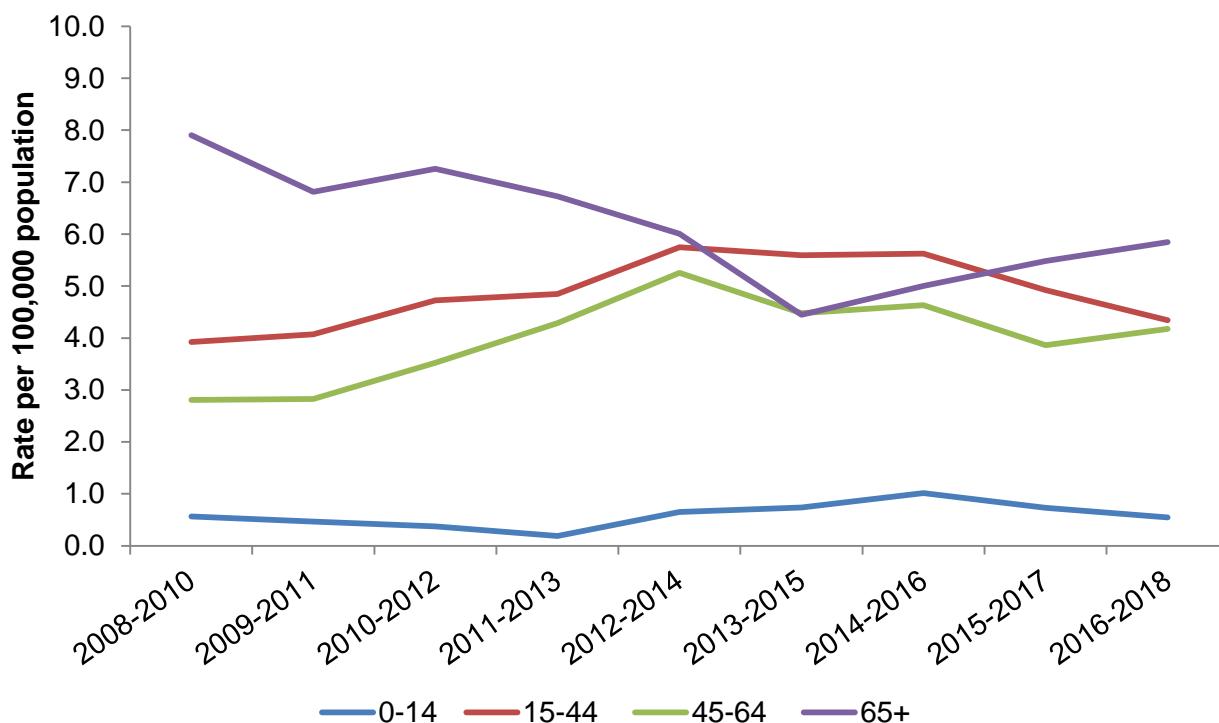


Figure 4: Three-year moving average age-specific disease rates of TB cases, Northern Ireland, 2008-2018

### Place of birth

In 2018, 57% (n=32/56) of TB cases were born outside the UK/Ireland, an increase compared with 2017 when the proportion was 51%. The highest average rates of TB remained in those born outside the UK/Ireland at 42.4 per 100,000 in 2016-2018 (40.6 per 100,000 in 2015-2017). The average rate of TB in the UK-born population remained relatively stable at 2.0 cases per 100,000 population in 2016-2018 compared with 2.2 per 100,000 in 2015-2017 (Figure 5).

In 2018, the highest proportion of UK-born TB cases occurred in those aged 65 years and over (50%, n=12/24). In comparison, the highest proportion of non-UK born TB cases were in those aged 15-44 years (56%, n=18/32).

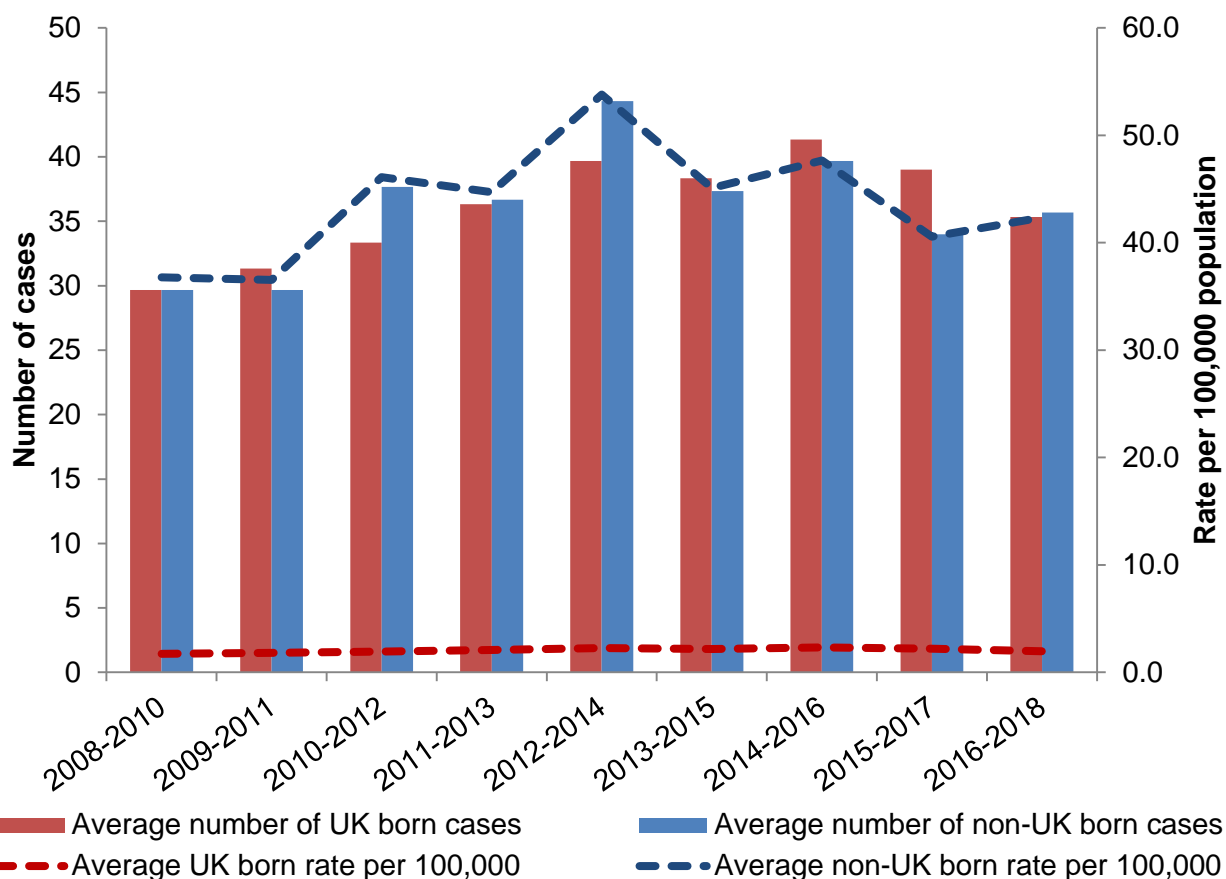


Figure 5: Three-year moving average numbers and rate of UK-born and non-UK born TB cases, Northern Ireland, 2008-2018

### Time from entry to UK to diagnosis

Time from entry into Northern Ireland until TB diagnosis in 2018 was known for 81% (n=26/32) of cases born outside the UK/Ireland. Of these, the majority were diagnosed between three and nine years of entry (54%, n=14/26).

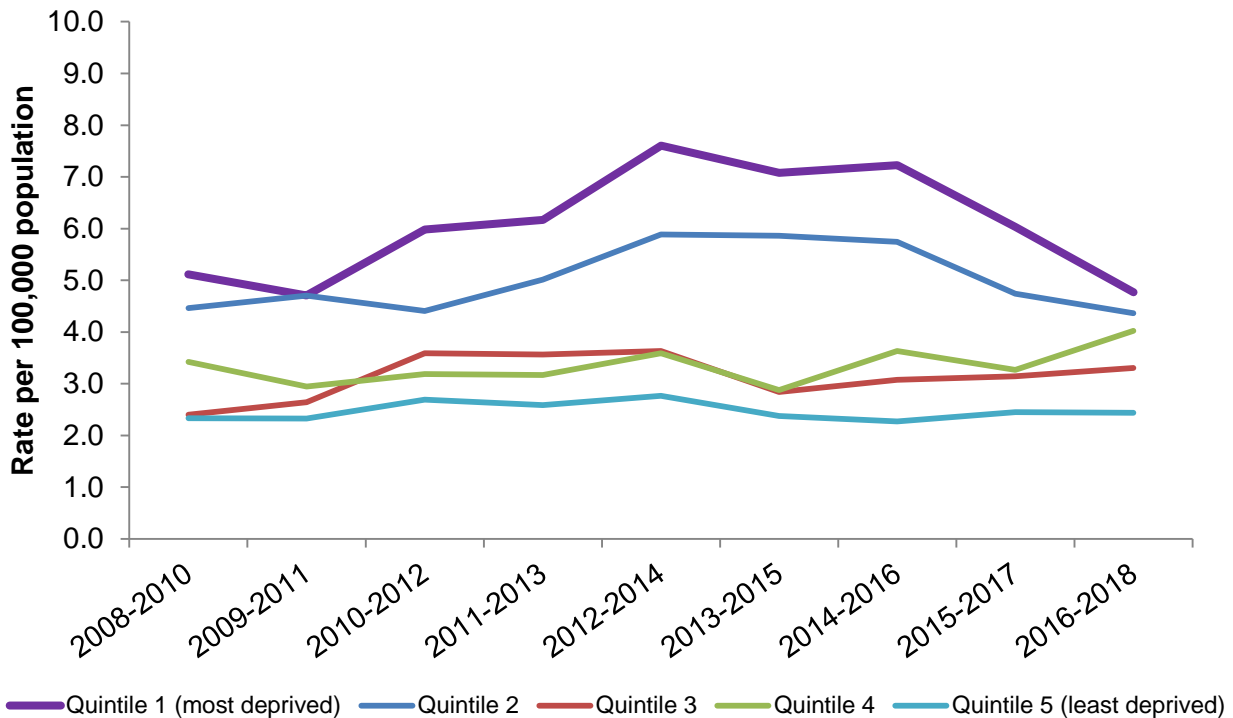
### Social risk factors

In 2018, 18% (n=10/56) of TB cases were reported as having at least one social risk factor. The risk factors associated with the cases were reported as being homeless and/or a history of alcohol misuse/abuse and/or a history of drug misuse/abuse and/or were in prison in the last five years. However, 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.

### Deprivation

The rates of TB are falling among those in the most deprived areas but they remain almost twice that of those living in the least deprived areas. In 2016-2018 the average rate of TB in

the most deprived areas of Northern Ireland was 4.8 cases per 100,000 population compared with 2.4 per 100,000 in the least deprived areas (Figure 6).



**Figure 6: Three-year moving average rate of TB cases by deprivation, Northern Ireland 2008-2018**

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.

## Clinical characteristics

The average rate of pulmonary and non-pulmonary TB cases in Northern Ireland remained relatively stable between 2016-2018 and 2015-2017 (2.4 vs. 2.3 cases and 1.4 vs. 1.6 cases per 100,000 population, respectively) (Figure 7).

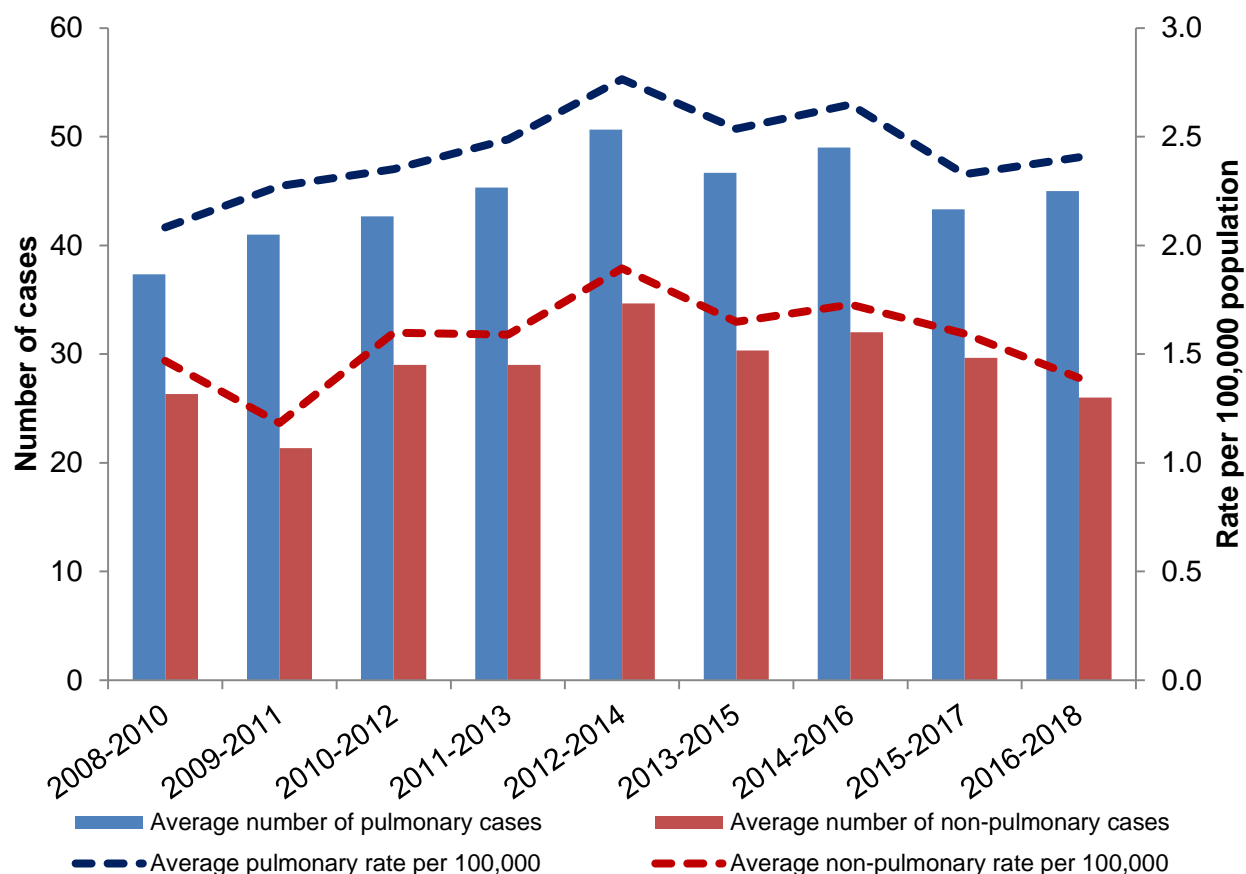


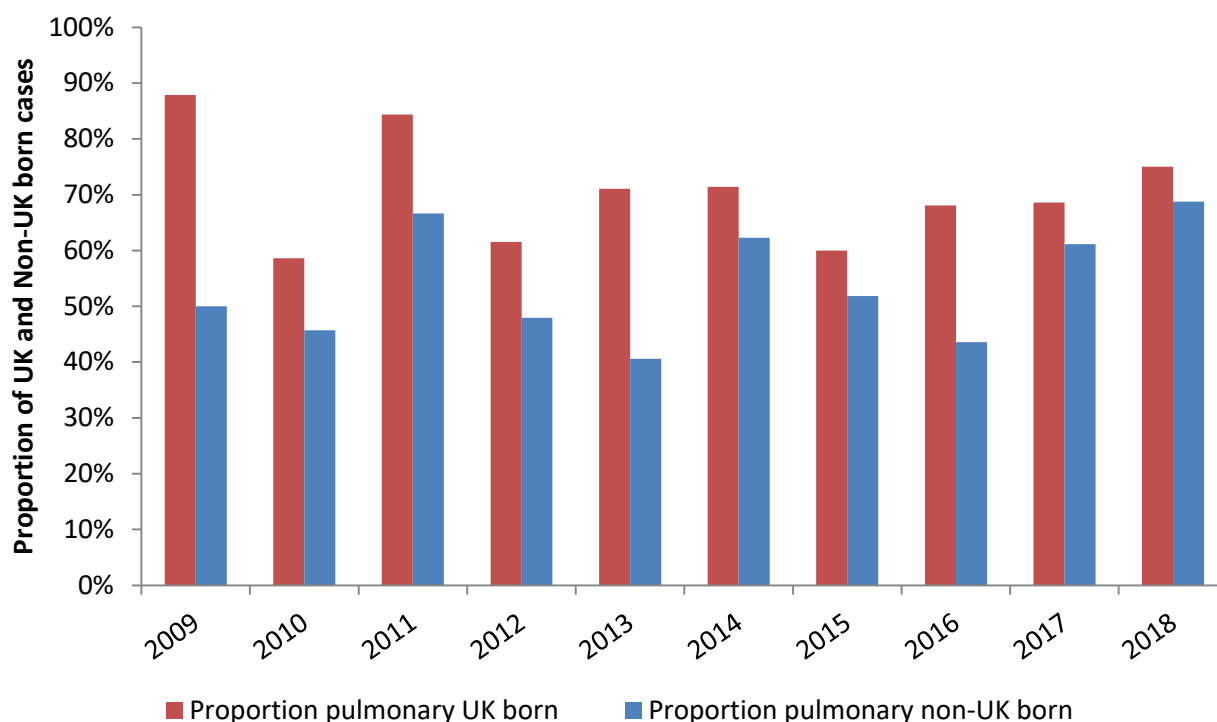
Figure 7: Three-year moving average numbers and rates of pulmonary and non-pulmonary TB cases, Northern Ireland, 2008-2018

### Site of disease

Pulmonary involvement was reported as a site of disease in 71% (n=40/56) of cases in 2018. Extra-thoracic and intra-thoracic lymph nodes were reported as a site of disease in 30% (n=17/56) of cases in 2018. Other reported sites of disease included extra pulmonary, pleural, miliary, CNS meningitis and other, gastrointestinal/peritoneal, bone joint space and other, and genitourinary. The total percentage exceeds 100% due to infections at more than one site.

### Site of disease - pulmonary

In 2018, 75% (n=18/24) of UK-born cases had pulmonary TB, which is higher compared to the proportion of cases in 2017 (69%). The proportion of pulmonary disease in those born outside the UK/Ireland also increased, from 61% in 2017 to 69% (n=22/32) in 2018 (Figure 8).



**Figure 8: Proportion of UK and non-UK born pulmonary TB cases, Northern Ireland 2009-2018**

The average rates of pulmonary TB remained similar in those aged 0-14 years (0.5 cases per 100,000 population) and 15-44 years (2.4 per 100,000) in 2016-2018, compared to the rates in 2015-2017 (0.7 and 2.5 per 100,000, respectively). The average pulmonary TB rate increased in those aged 45-64 years from 2.7 cases per 100,000 in 2015-2017 to 3.1 per 100,000 in 2016-2018. The average rate of pulmonary TB also increased in those aged 65 years and older in 2016-2018, 3.9 cases per 100,000 compared to 3.1 per 100,000 in 2015-2017.

Average pulmonary disease rates were lower in all age groups in females compared to males in 2016-2018, with the exception of those aged 0-14 years. The highest average rate of pulmonary TB in both males and females occurred in those aged 65 years and older in 2016-2018; 5.6 cases per 100,000 population in males and 2.4 per 100,000 in females (Figures 9, 10 and 11).

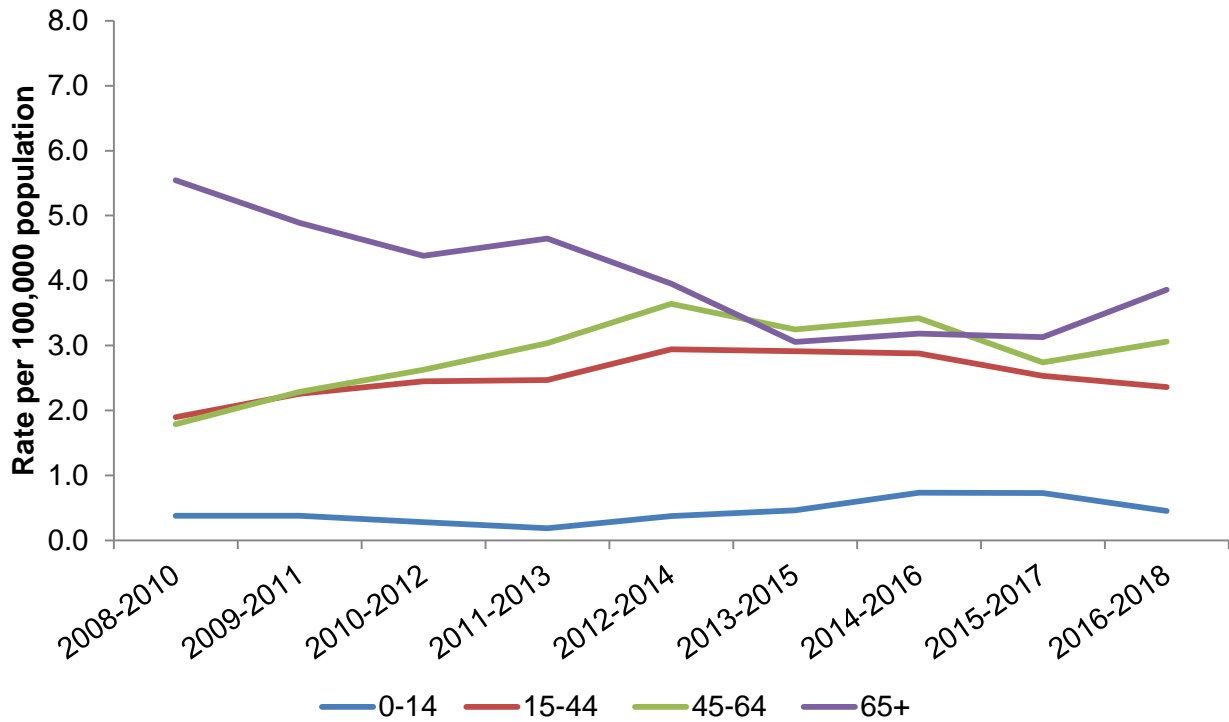


Figure 9: Three-year moving average age-specific disease rates of pulmonary TB cases, Northern Ireland, 2008-2018

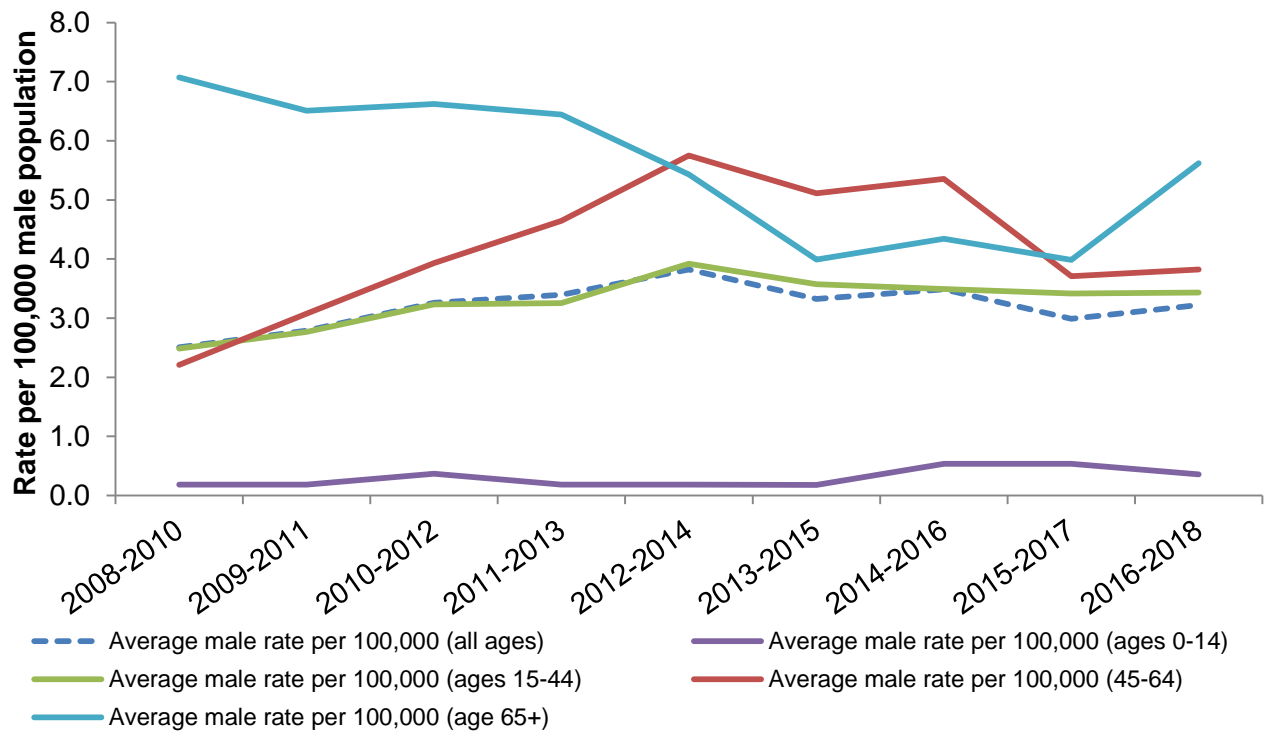
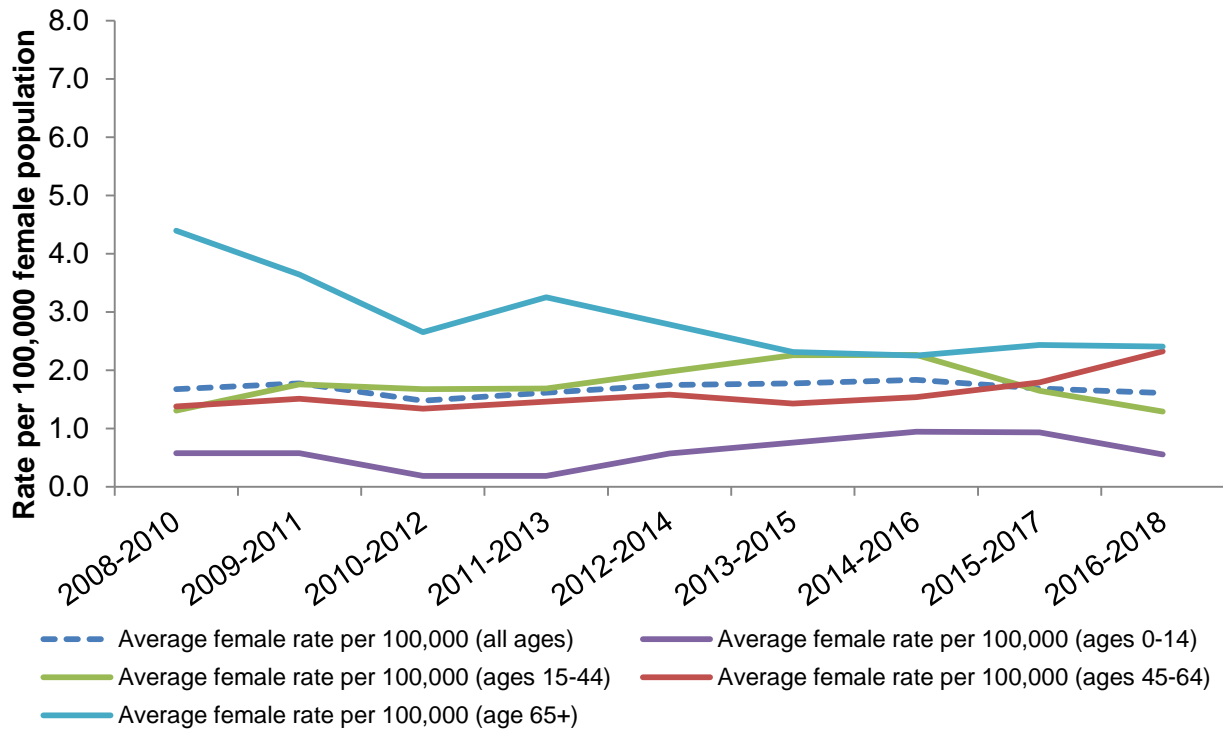


Figure 10: Three-year moving average age-specific disease rates of pulmonary TB cases in males, Northern Ireland, 2008-2018





**Figure 11: Three-year moving average age-specific disease rates of pulmonary TB cases in females, Northern Ireland, 2008-2018**

SHSCT had the highest rate of TB with a pulmonary component at 5.5 cases per 100,000 population and accounted for 75% (n=21/28) of all TB cases reported in SHSCT in 2018. SEHSCT had the highest proportion of pulmonary TB cases (80%) in 2018 with a rate of 1.1 pulmonary TB cases per 100,000 (Figure 12).

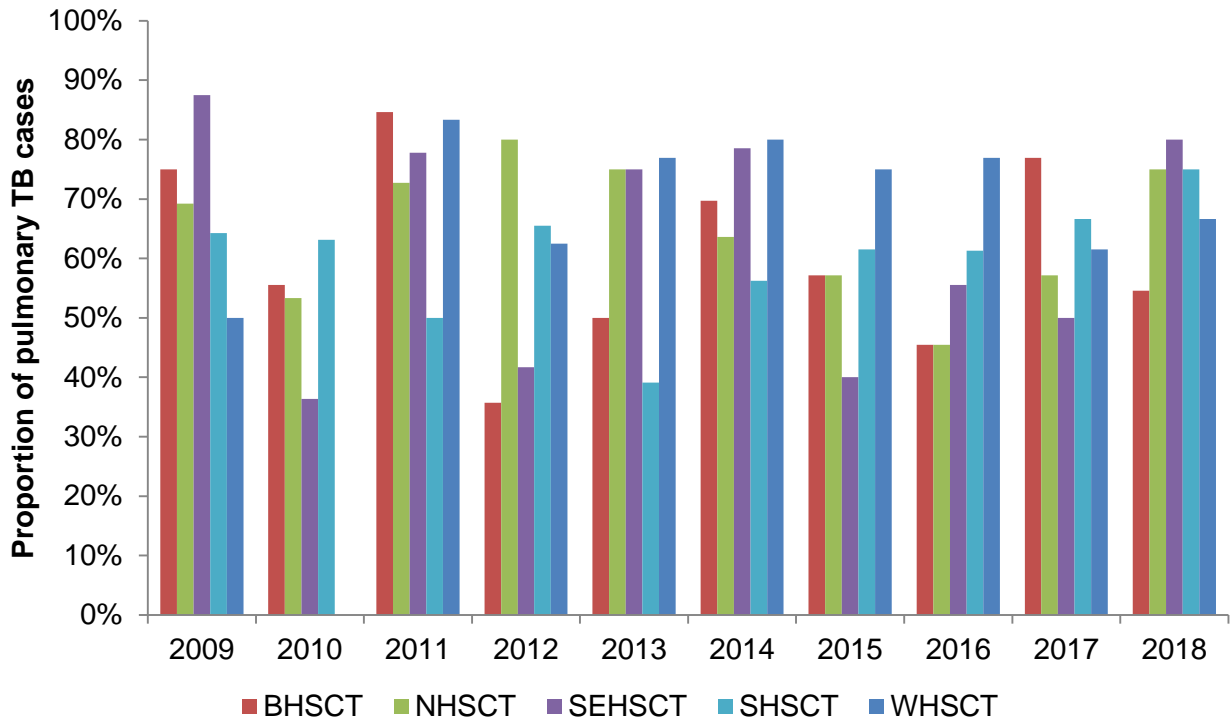
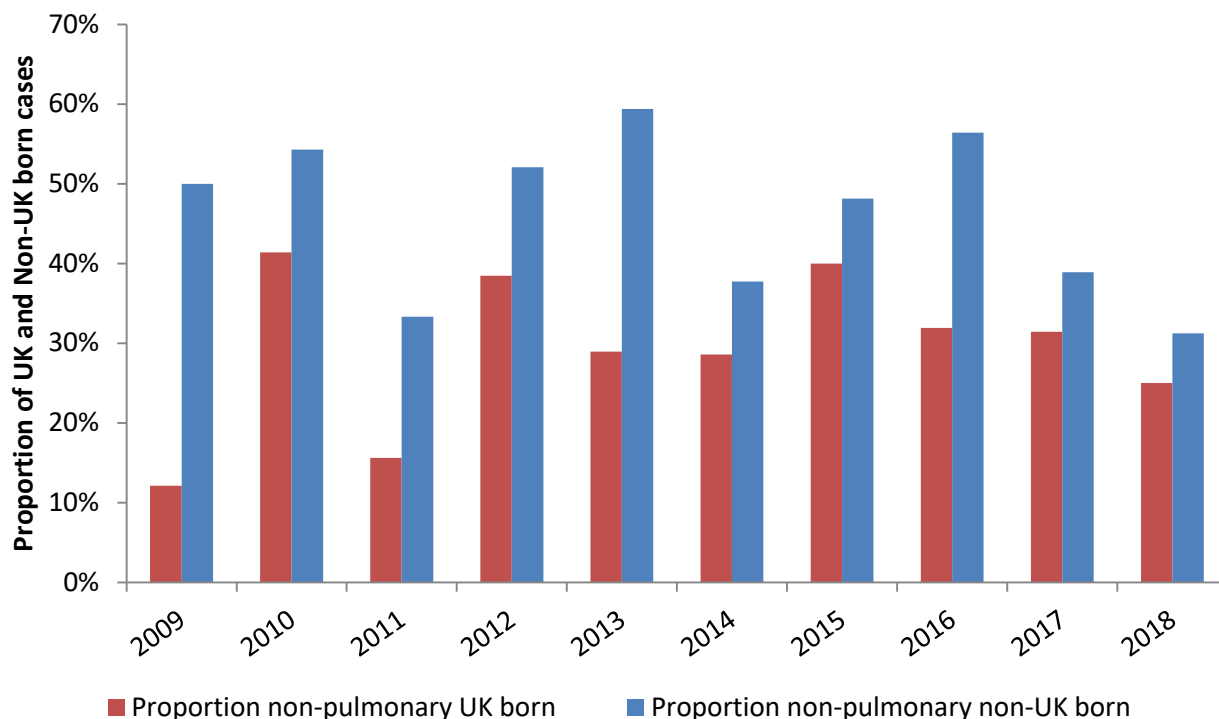


Figure 12: Proportion of TB cases in HSCTs with pulmonary infection, Northern Ireland, 2009-2018

### Site of disease - non-pulmonary

The proportion of non-pulmonary TB continued to decrease in both UK-born and non-UK born cases in 2018 compared to previous years. In 2018, 25% (n=6/24) of cases born in the UK were diagnosed with non-pulmonary TB, compared to 31% in 2017. The proportion of cases born outside the UK/Ireland who presented with non-pulmonary TB decreased from 39% in 2017 to 31% (n=10/32) in 2018 (Figure 13).



**Figure 13: Proportion of UK and non-UK non-pulmonary TB cases, Northern Ireland, 2009-2018**

The average rates of non-pulmonary TB remained similar in those aged 0-14 years (0.1 cases per 100,000 population) and 45-64 years (1.1 per 100,000) in 2016-2018, compared to the rates in 2015-2017 (0 and 1.1 per 100,000, respectively). The average non-pulmonary TB rate decreased slightly in those aged 15-44 years from 2.4 cases per 100,000 in 2015-2017 to 2.0 per 100,000 in 2016-2018. The average rate of non-pulmonary TB also decreased slightly in those aged 65 years and older in 2016-2018, 2.0 cases per 100,000 compared to 2.3 per 100,000 in 2015-2017.

Average non-pulmonary disease rates were lower in all age groups in females compared to males in 2016-2018, with the exception of those aged 65 years and older. The highest average rate of non-pulmonary TB in males occurred in those aged 15-44 years in 2016-2018 at 2.0 cases per 100,000 population. The highest average rate in females occurred in those aged 65 years and older at 2.0 cases per 100,000 population (Figures 14, 15 and 16).

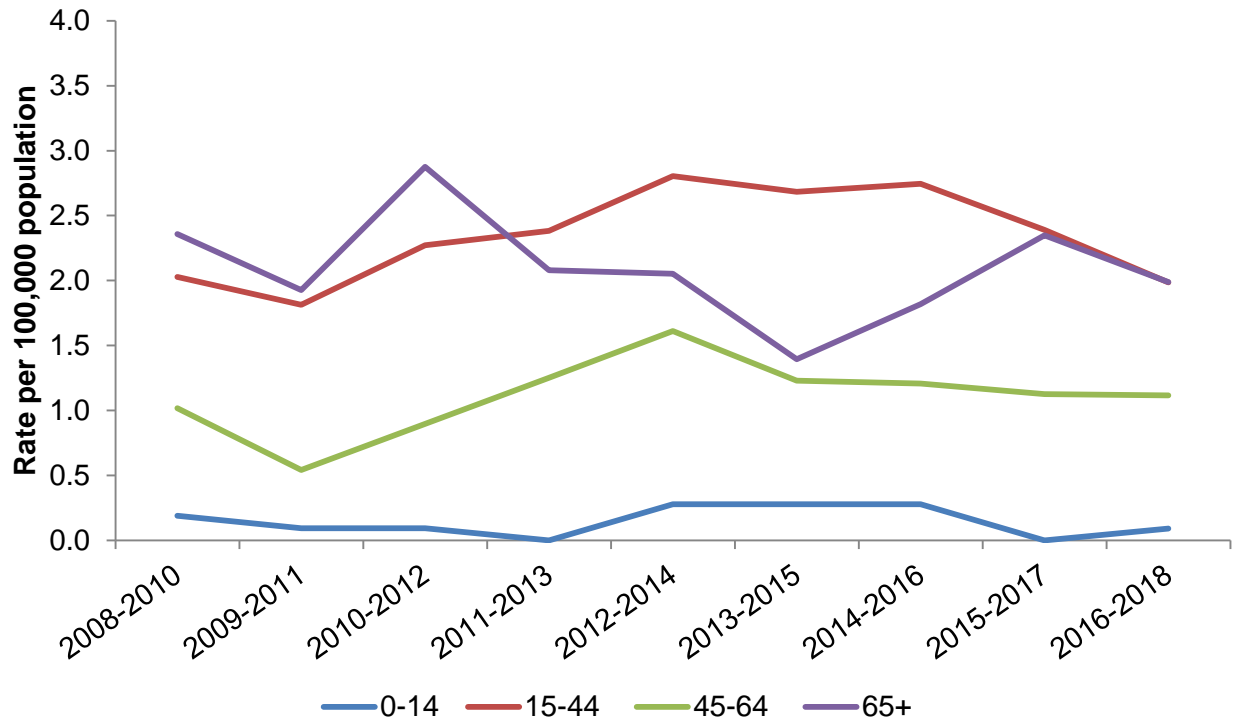


Figure 14: Three-year moving average age-specific disease rates of non-pulmonary TB cases, Northern Ireland, 2008-2018

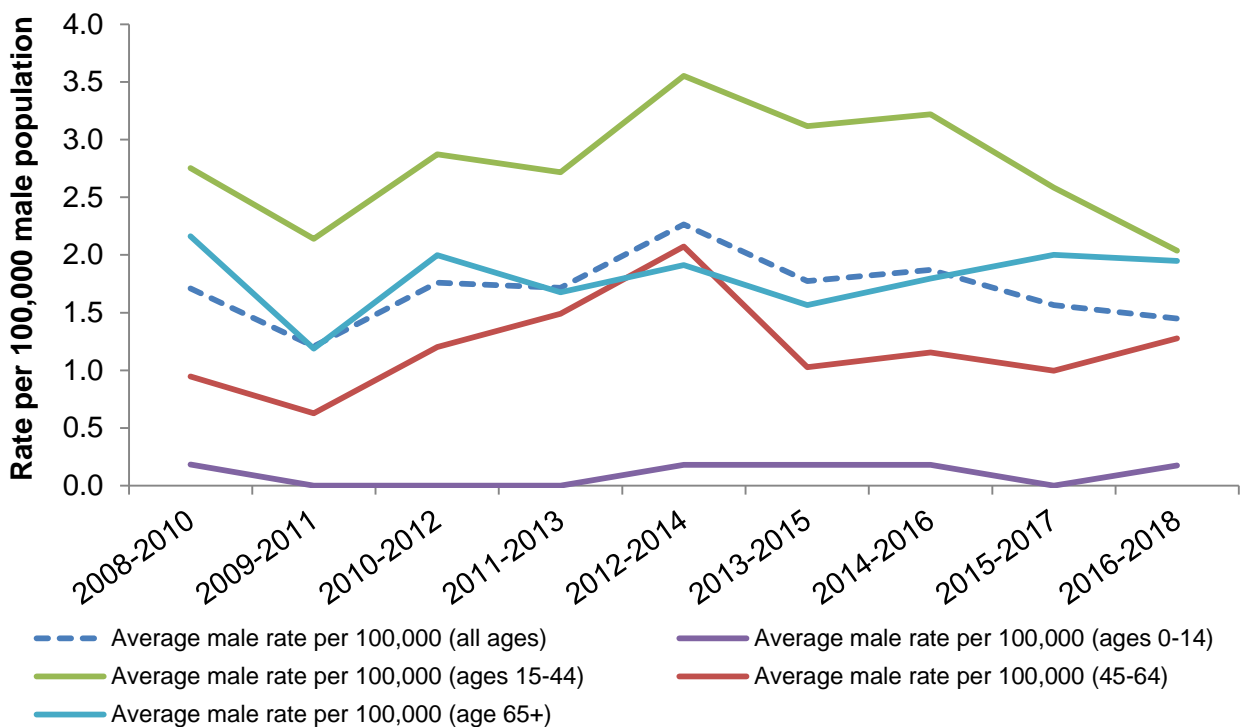
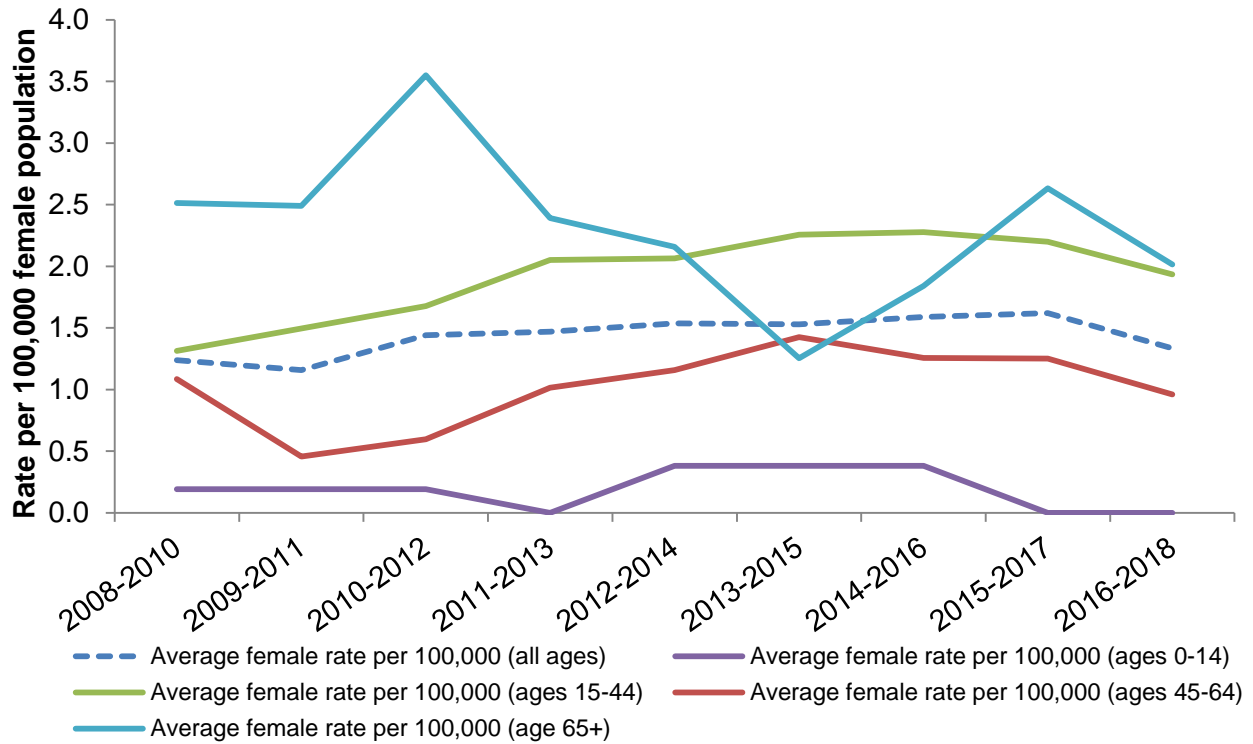


Figure 15: Three-year moving average age-specific disease rates of non-pulmonary TB in males, Northern Ireland, 2008-2018



**Figure 16: Three-year moving average age-specific disease rates of non-pulmonary TB in females, Northern Ireland, 2008-2018**

SHSCT had the highest rate of non-pulmonary TB at 1.8 cases per 100,000 population and accounted for 25% (n=7/28) of all TB cases reported in this Trust in 2018. BHSCT had the highest proportion of non-pulmonary TB cases (45%) in 2018 with a rate of 1.4 non-pulmonary TB cases per 100,000 (Figure 17).

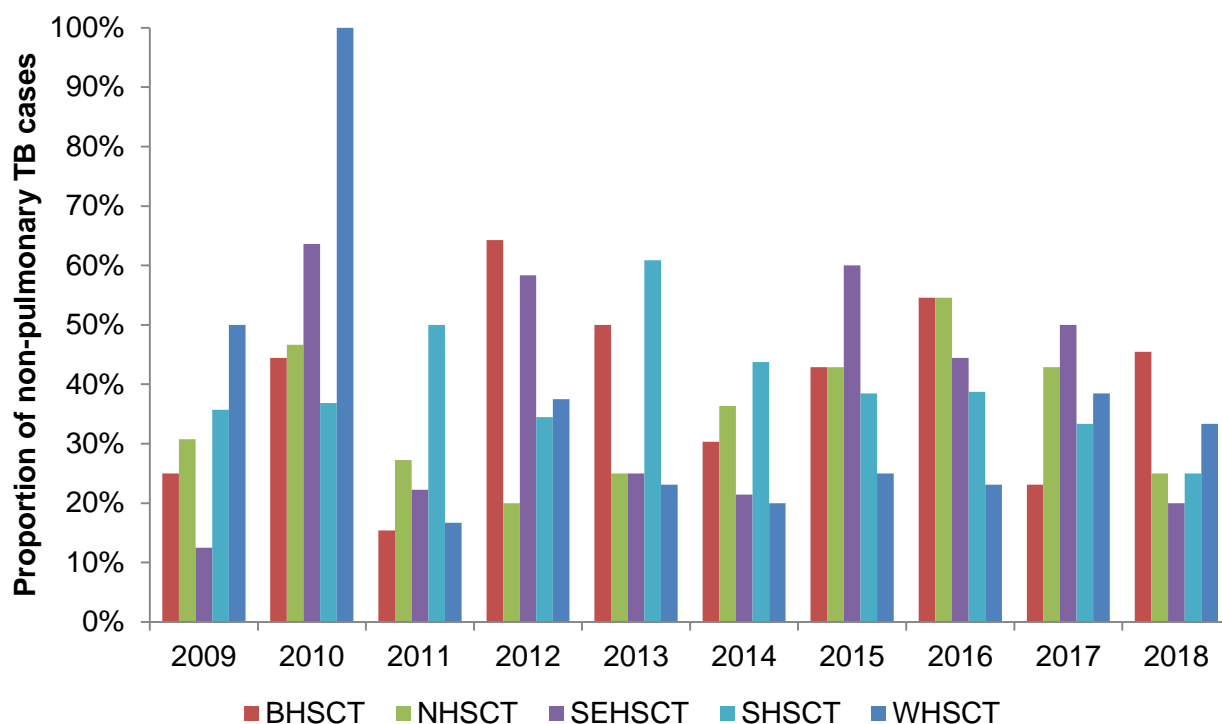


Figure 17: Proportion of TB cases in HSCTs with non-pulmonary infection, Northern Ireland, 2009-2018

### Time symptomatic

The time between onset of symptoms and starting treatment was known for 84% (n=47/56) of TB cases in 2018. Of the 47 cases: 23% (n=11/47) were treated within two months of onset of symptoms with a median time frame of 40 days (IQR 21-46); an additional 28% (n=13/47) of cases were treated within two to four months of onset with a median time period of 77 days (IQR 66-89); and the remaining 49% (n=23/47) of cases reported a treatment period from onset of symptoms greater than four months with a median time period of 218 days (IQR 151-320).

The time between onset of symptoms and starting treatment was known for 83% (n=33/40) of pulmonary cases in 2018. The overall median time period from onset of symptoms to treatment was 108 days (IQR 52-212). This period was lower than for non-pulmonary cases where the median time period from onset to treatment was 113 days (IQR 73-264) (Table 2).

**Table 2: Time between onset of symptoms and start of treatment (days)**

All TB cases	Number	Median	IQR
0-2 months	11	40	21-46
2-4 months	13	77	66-89
>4 months	23	218	151-320
All	<b>47</b>	<b>108</b>	<b>61-215</b>
<b>Pulmonary cases*</b>			
All pulmonary	<b>33</b>	<b>108</b>	<b>52-212</b>
<b>Non-pulmonary cases*</b>			
All non-pulmonary	<b>14</b>	<b>113</b>	<b>73-264</b>

\*Summary information on pulmonary and non-pulmonary cases is reported only if the numbers do not risk data confidentiality.

## Microbiology

In 2018, 64% (n=36/56) of TB cases were culture confirmed, similar to the proportion in 2017 (65%). Of the 36 isolates culture confirmed, 32 were identified as having *M. tuberculosis* infection, two as *M. tuberculosis* complex and two as *M. bovis*. The additional 20 cases were notified on the basis of clinical or non-culture diagnosis and response to anti-tuberculosis therapy.

Of the 40 pulmonary cases in 2018, 65% (n=26/40) were culture positive. Sputum smear results were known for 73% (n=29/40) of pulmonary infection cases. 40% (n=16/40) of pulmonary cases were sputum smear positive at notification, of which 75% (n=12/16) were confirmed by culture. An additional 33% (n=13/40) of pulmonary infection cases were sputum smear negative of which eight were later confirmed by culture as *M. tuberculosis* and <5 as *M. bovis*. Of the 11 pulmonary cases where sputum smear status was not known or not done, five were culture confirmed (Table 3).

Of the 16 non-pulmonary cases in 2018, 63% (n=10/16) were culture positive and the remaining six cases were not cultured or culture status was unknown (Table 4).

Table 3: Culture positive and sputum smear positive pulmonary TB cases, Northern Ireland, 2009-2018

Year	Pulmonary Cases	Culture Positive (%)	Culture and Sputum Smear Positive (%)
2009	42	86%	31%
2010	34	97%	59%
2011	47	81%	40%
2012	47	77%	36%
2013	42	67%	29%
2014	63	68%	35%
2015	35	83%	37%
2016	49	78%	35%
2017	46	67%	41%
2018	40	65%	30%
<b>Total</b>	<b>481</b>	<b>77%</b>	<b>37%</b>

Table 4: Culture positive non-pulmonary TB cases, Northern Ireland, 2009-2018

Year	Non-Pulmonary Cases	Culture Positive (%)
2009	17	76%
2010	32	69%
2011	15	67%
2012	40	45%
2013	32	53%
2014	32	66%
2015	27	41%
2016	37	46%
2017	25	60%
2018	16	63%
<b>Total</b>	<b>273</b>	<b>56%</b>

## Drug resistance

Isoniazid, rifampicin, ethambutol and pyrazinamide are first-line drugs for treatment of TB in the UK. Drug susceptibility test results were available for all 36 culture confirmed cases of TB in Northern Ireland in 2018.

In 2018, there were <5 TB cases recorded as resistant to first line drug treatment. There were no multi-drug resistant TB cases recorded in 2018.



## Treatment outcomes

TB patient outcomes are reported a year after treatment commences and in accordance with the World Health Organization (WHO) treatment outcome definitions<sup>1</sup>. Under these definitions, treatment outcome at 12 months reporting is defined as all TB cases, diagnosed in 2017 with drug sensitive TB, excluding those with rifampicin resistant TB or MDR-TB.

In this report, treatment outcomes for drug sensitive TB cases are reported separately for the following groups:

- **Cohort 1:** For cases with an expected duration of treatment less than 12 months, treatment outcomes at 12 months (excluding rifampicin and multi-drug resistance).
- **Cohort 2:** For cases with an expected duration of treatment less than 12 months, excluding rifampicin and multi-drug resistance AND cases with central nervous system (CNS), spinal, cryptic disseminated or miliary disease.

TB treatment outcomes for cases notified from 2008 to 2017 under these definitions have been calculated to allow for trends to be monitored.

In 2017, 70 TB cases were notified in Northern Ireland; excluding rifampicin and multi-drug resistance cases. A further seven cases had CNS, spinal, miliary or cryptic disseminated disease and were excluded from the outcomes presented in cohort 2 (Table 5).

**Table 5: Outcome of TB cases in cohorts 1 and 2, Northern Ireland, 2017**

Outcome	Cohort 1 (n=70)	%	Cohort 2 (n=64)	%
Treatment completed	53	76%	50	78%
Not evaluated*	9	13%	6	9%

\*transferred out/not TB/unknown/missing

Additional treatment outcomes reported in cohorts 1 and 2 including died, still on treatment and lost to follow up have not been reported as small numbers may risk data confidentiality (Table 5).

In cohort 1, the proportion of cases who completed treatment within 12 months was 76% (n=53/70), which was similar to the proportion in 2016 (77%) (Table 5, Figure 19). Of the 53

cases who completed treatment within 12 months, 51% (n=27/53) were born in the UK/Ireland and the remaining were non-UK born (49%, n=26/53). The proportion of males completing at 12 months was slightly higher than the number of females (28 males, 53% and 25 females, 47%).

In cohort 2, the proportion of cases who completed treatment within 12 months was 78% (n=50/64), the same proportion as in 2016 (Table 5, Figure 19). Of the 50 cases who completed treatment within 12 months, 54% (n=27/50) were born in the UK/Ireland and the remaining were non-UK born (46%, n=23/50). The proportion of males completing at 12 months was slightly higher than the number of females (27 males, 54% and 23 females, 46%).

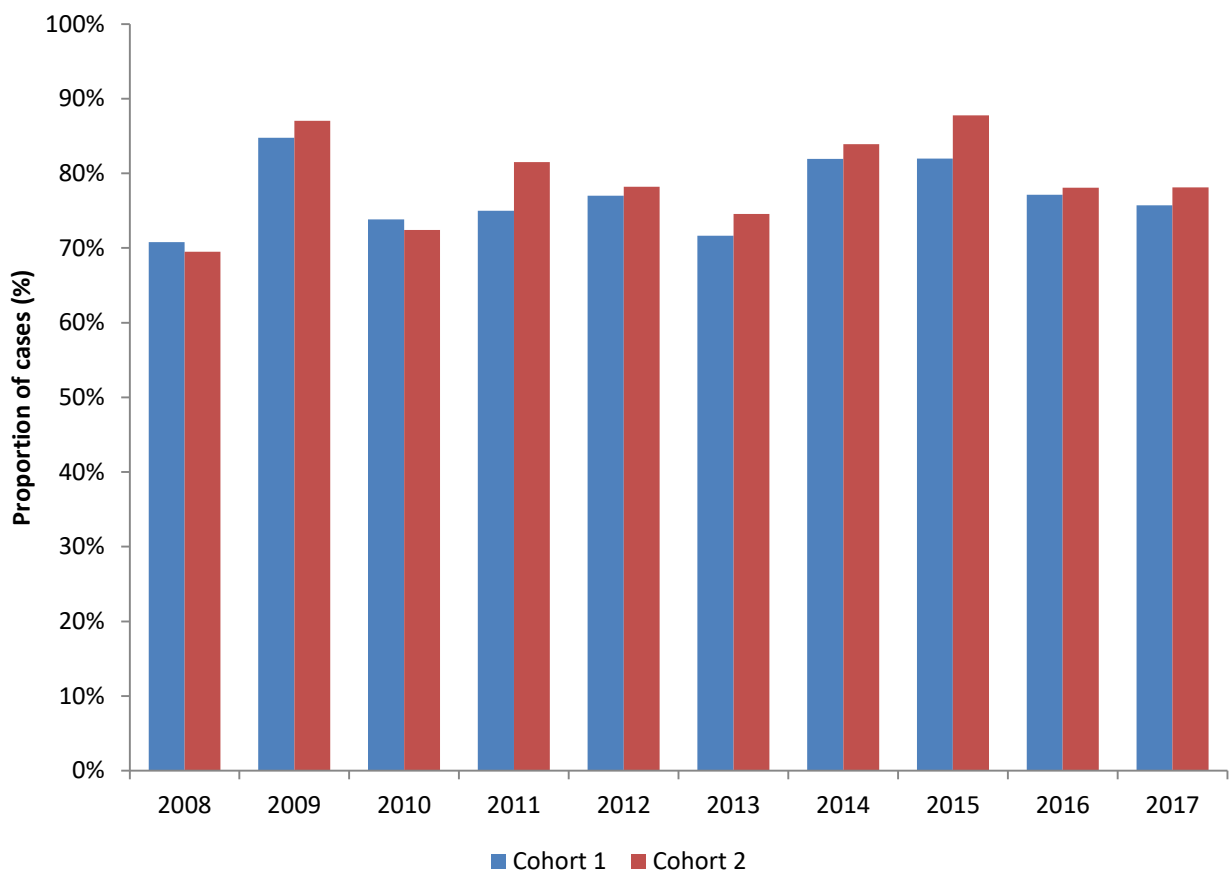


Figure 18: Treatment completed within 12 months for drug sensitive TB cases with expected treatment less than 12 months (in accordance with WHO treatment outcome definitions), 2008-2017

## Discussion

---

The incidence of TB in Northern Ireland remains relatively low with an average rate of 3.8 cases per 100,000 population in 2016-2018. The average rate of the disease was similar to that of the previous period (3.9 per 100,000 in 2015-2017). Three-year moving averages have been used where possible as relatively small differences in the number of cases can give rise to substantial percentage changes due to small numbers and considerable year to year variation. The rate of TB in Northern Ireland in 2018 was 3.0 cases per 100,000 population. This rate was the lowest recorded in Northern Ireland and was lower than England (8.3 per 100,000), Scotland (5.0 per 100,000), Wales (3.1 per 100,000) and the Republic of Ireland (6.6 per 100,000) in 2018<sup>2,3,4,5</sup>.

In 2016-2018, the average rate of TB remains highest in the SHSCT area at 7.5 cases per 100,000 population (7.4 per 100,000 in 2015-2017). The average number of TB cases was also highest in SHSCT, 29 cases in 2016-2018 (28 cases in 2015-2017).

Patients aged 15-44 years accounted for the majority of cases (41%, n=23/56) in 2016-2018, while the average rate of TB remains highest in those aged 65 years and over at 5.8 cases per 100,000 in 2016-2018 (5.5 cases per 100,000 in 2015-2017).

TB rates in the UK-born population remain low and relatively stable at 2.0 cases per 100,000 population in 2016-2018. The highest rates of TB continue to be reported in those born outside the UK/Ireland at 42.4 per 100,000 population in 2016-2018. In 2018, 57% (n=32/56) of TB cases occurred in individuals born outside the UK/Ireland.

In 2018, 71% (n=40/56) of TB cases had a pulmonary component. The average rate of pulmonary TB in 2016-2018 (2.4 cases per 100,000 population) remains similar to that in 2015-2017, whilst the rate of non-pulmonary TB has decreased slightly from 1.6 per 100,000 in 2015-2017 to 1.4 per 100,000 in 2016-2018.

European Centre for Disease Prevention and Control (ECDC) targets<sup>6</sup> recommend that at least 80% of pulmonary TB cases be culture confirmed in order to have optimal detection of infectivity and drug resistance. In 2018, 64% (n=36/56) of pulmonary cases were culture confirmed in Northern Ireland.

There were <5 TB cases recorded as resistant to first line drug treatment in 2018. There were no multi-drug resistant TB cases recorded in 2018. The proportion of drug sensitive TB cases expected to complete treatment by 12 months is an indicator of the quality of TB services. In 2017, 78% (cohort 2, n=50/64) of drug sensitive cases completed treatment in this time frame.

The overall median time period from onset of symptoms to starting treatment for pulmonary cases was 108 days (33 cases, IQR 52-215). This suggests a significant number of pulmonary cases still have a substantial delay before treatment, increasing the likelihood of infectivity. While we do not know the reasons behind the delay it highlights the need to continue raising awareness of TB.

## References

---

1. Definitions and reporting framework for tuberculosis- 2013 revision. WHO; updated December 2014.  
<https://www.who.int/tb/publications/definitions/en/>
2. Tuberculosis in England: 2019 report, August 2019.  
<https://www.gov.uk/government/publications/tuberculosis-in-england-annual-report>
3. Enhanced Surveillance of Mycobacterial Infections in Scotland: 2019 Tuberculosis Annual Report for Scotland. October 2019.  
<https://www.hps.scot.nhs.uk/web-resources-container/enhanced-surveillance-of-mycobacterial-infections-in-scotland-2019-tuberculosis-annual-report-for-scotland/>
4. Tuberculosis in Wales Annual report 2019. Public Health Wales, September 2019.  
<http://www.wales.nhs.uk/sitesplus/888/page/91231>
5. Annual Epidemiological Report; National TB surveillance in Ireland, 2018. Health Protection Surveillance Centre Ireland. February 2019.  
<https://www.hpsc.ie/a-z/vaccinepreventable/tuberculosis/tbdataandreports/>
6. European Centre for Disease Prevention and Control. Progressing towards TB elimination. Stockholm: ECDC; 2010.  
<https://www.ecdc.europa.eu/en/publications-data/progressing-towards-tb-elimination>