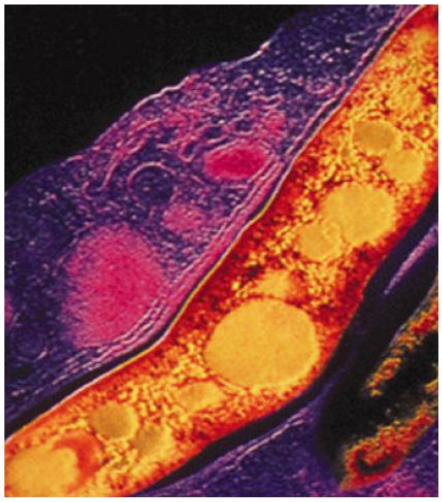
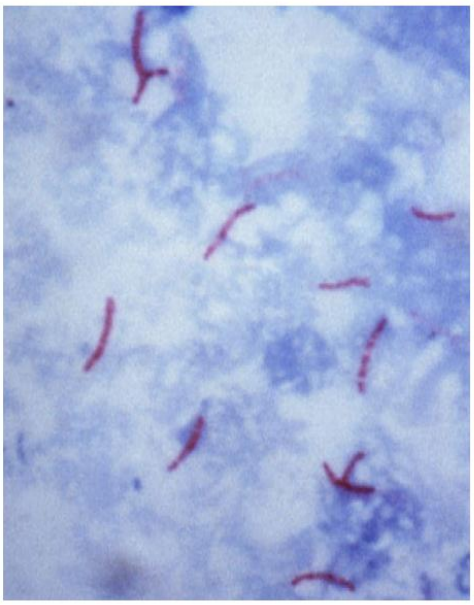
HSC Public Health Agency

# Epidemiology of Tuberculosis In Northern Ireland

## Annual surveillance report 2011





# Surveillance of tuberculosis in Northern Ireland, 2011

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## Acknowledgements

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## Summary

This report outlines information on tuberculosis in Northern Ireland for the year 2011.

In Northern Ireland in 2011 there were 62 notified cases of tuberculosis, giving a rate of 3.5 cases per 100,000 population, representing a 5% decrease in rates from 2010 when the rate of TB was 3.7 per 100,000 population.

There are five Health and Social Care Trusts in Northern Ireland. In 2011, the highest rates of TB were in the Belfast Health and Social Care Trust (BHSCT) at 7 cases per 100,000 population. In addition 40% of all tuberculosis cases reported in 2011 were from this Trust.

Cases of tuberculosis were principally male, with a male/female ratio of 1.5:1

There were nine deaths in 2011 (CFR 14.5%), two cases were diagnosed post mortem.

In 2011, the age of cases ranged from 15 to 92 years, with a mean age of 48 years and a median age of 42 years. The majority of cases (52%) were in young adults aged between 15 and 44 years old.

Those aged 65 and over continued to have the highest rate of tuberculosis in 2011 at 5.6 per 100,000 population; however this rate decreased from 7.3 per 100,000 in 2010.

In 2011, the approximately half (52%) of notified cases were from the indigenous population.

Similar to previous years, the majority of notified cases originated from Europe and were of White ethnicity. Of the non-UK/Ireland born cases, the highest proportion (47%) originated from South East Asia

In 2011, 77% of TB cases were culture confirmed, of which 46 cases were confirmed as *M.tuberculosis* and 2 cases as *M.bovis.*

There were 47 (76%) cases of pulmonary disease in 2011, of which 81% were both culture confirmed and sputum smear positive. Rates of pulmonary disease increased by 43% compared with 2010 and were the highest rate since 2004. Pulmonary disease in males was principally in the elderly population, while rates of the disease in females in the 15 to 44 year age group increased in 2011.

In 2011, three cases showed resistance to one of the first-line drugs. All three cases were resistant to isoniazid with two cases having multi-drug resistance. Both *M.Bovis* cases were resistant to pyrazinamide.

In 2011, outcome information was available for 59 (95%) cases. Of these, 46 (78%) completed treatment within 12 months, while four cases (7%) were still receiving treatment after the 12 month period.

## Introduction

Tuberculosis remains a serious global health problem, with World Health Organization (WHO) global estimates of 9 million new cases and 1.4 million deaths in 2011. The number of cases of multi-drug resistant (MDR) TB notified in the 27 high MDR-TB burden countries increased reaching almost 60,000 worldwide in 2011, however this is only one in five of the notified TB patients estimated to have MDR-TB[1].

The joint ECDC-WHO TB surveillance network reported 309,648 new episodes of TB in 2010, a 2.6% decrease compared with 2009. However, the majority of new cases originated from the 18 High-Priority Countries of the WHO European region. These countries represent 87% of the TB incidence and 94% the mortality caused by TB in the region[2].

In the United Kingdom in 2011, TB cases increased slightly compared with 2010, but overall TB incidence rates in the UK appear to have stabilised in recent years[3].

In the United Kingdom, clinicians and public health staff work together at local levels to collect detailed clinical and demographic information on tuberculosis cases, which are reported to the enhanced surveillance scheme. Clinicians in Northern Ireland, similar to those throughout the UK, are required to notify all cases of tuberculosis to the Director of Public Health.

Notification forms (TBS1) are completed by clinicians, recording all available demographic, clinical, microbiological, histological and epidemiological details. In order to facilitate the export and central collation of data for England, Wales and Northern Ireland, outcome data is collected across all three regions of the UK on a standardised *Tuberculosis Treatment Outcome Surveillance Form* (TOM). This form is used to facilitate collection of drug treatment and outcome data, together with any additional clinical and/or microbiological information not available at the time of initial notification.

If *M. bovis* infection is identified in a notified patient, an additional questionnaire is completed. This questionnaire collects data on case background information, travel history, un-pasteurised milk/milk product consumption, and occupational details (including animal contact).

This report presents the epidemiological data for tuberculosis cases reported in Northern Ireland from 1 January 2011 to 31 December 2011.

## Definitions

**Notified case:** Refers to clinically active disease caused, or thought to be caused, by infection with organisms of the *Mycobacterium tuberculosis* complex (*M. tuberculosis, M. bovis, M. 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 tuberculosis *and* a clinician's decision to treat the patient with a full course of anti-tuberculosis treatment" [1]

**Pulmonary tuberculosis**: A disease involving the lung parenchyma and/or bronchial tree, with or without extra-pulmonary tuberculosis diagnosis.

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

**Multi-drug resistance (MDR):** Resistance to at least isoniazid and rifampicin.

**Extensively-drug resistant (XDR):** An MDR case with additional resistance to any fluoroquinolone and at least one of the second-line drugs (capreomycin, karamycin, amikacin) (see ref 6 ROI 2009 report).

**Health and Social Care Trusts in Northern Ireland (HSCT):** There are 5 HSCTs in Northern Ireland; Belfast (BHSCT), South East (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.

## Methods

### Data collection

Completed tuberculosis notification forms are forwarded to the Public Health Agency (PHA) in Northern Ireland where the information is entered onto a secure database. Treatment outcome forms are generated and forwarded, approximately nine months after initial notification, to the patients' clinician, who then returns it to the PHA. This data is then appended to the initial notification details.

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

Data on cause of death, including tuberculosis, 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 using STATA. Tuberculosis rates per 100,000 of the population, stratified by age, sex and HSSB, were calculated using the mid-year estimates from NISRA.

## Results

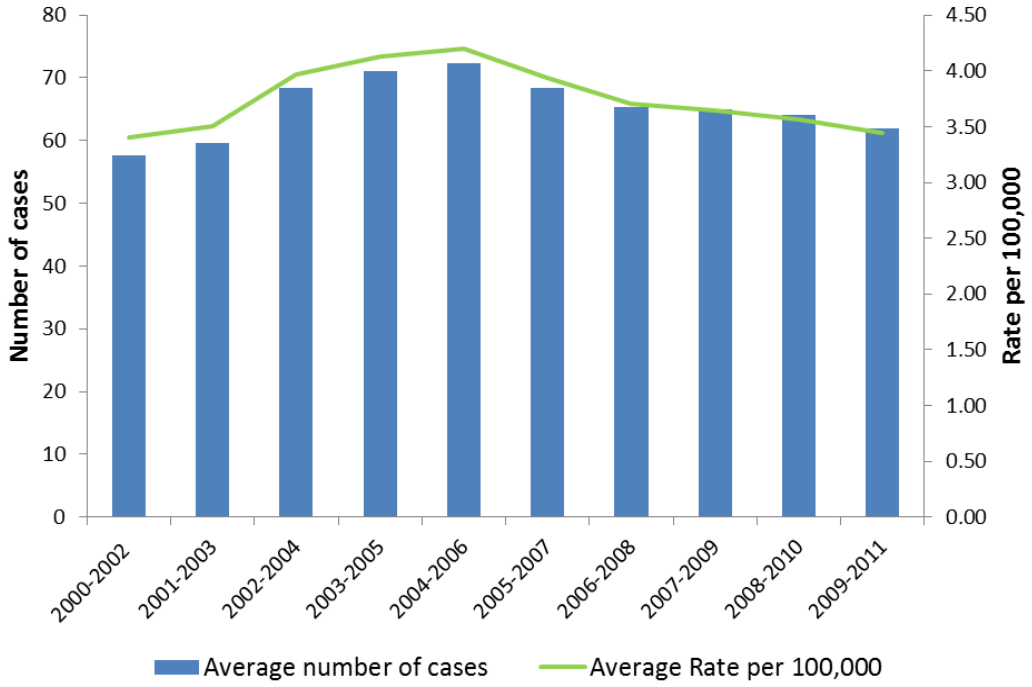
### Overall number of cases and rates of infection

In 2011 in Northern Ireland, a total of 62 cases of tuberculosis were reported giving a rate of 3.5 cases/100,000 population (95% CI 2.7 - 4.5). This represents a 6 % decrease in the number of cases compared with 2010 (Figure 1).

Figure 1. Tuberculosis case reports and rates, Northern Ireland, 2000-2011


Rates of tuberculosis in Northern Ireland are low when compared to GB/ROI and have remained relatively stable over the last few years, showing a marginal decline in 2011. The number and rates of notified TB cases for 2000-2011 and the three-year moving averages are shown in Figure 2.

Figure 2: Three year moving average number and rates of Tuberculosis cases in Northern Ireland, 2000-11



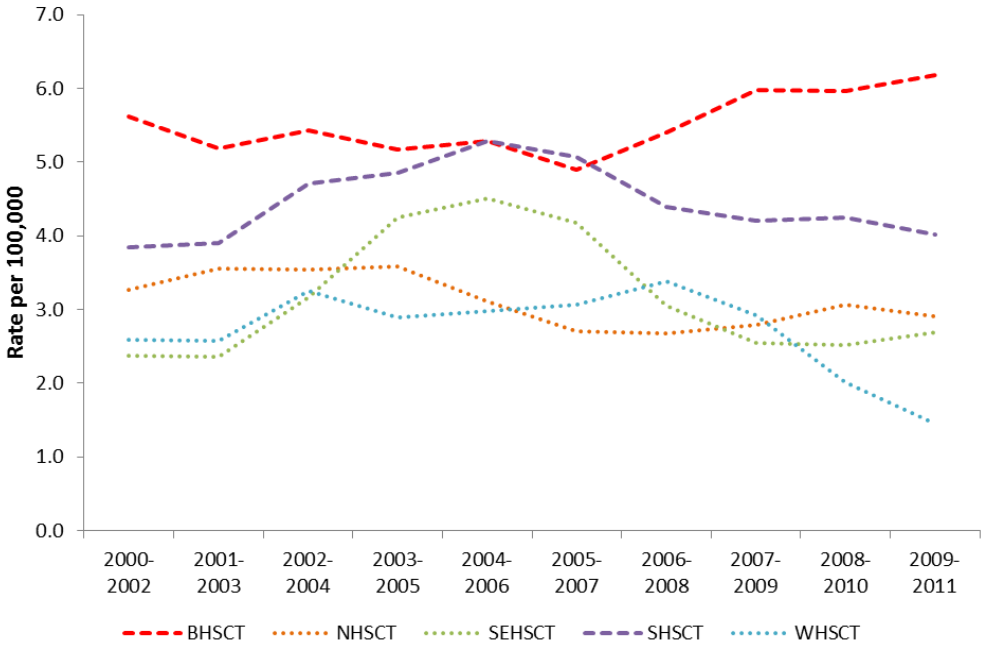

There are five Health and Social Care Trusts in Northern Ireland. In 2011, 40% of tuberculosis cases were from the Belfast Health and Social Care Trust (BHSCT) representing a 39% increase in cases in this Trust compared to 2010. Conversely, the proportion of TB cases reported in the Southern Health and Social Care Trust decreased by 47% compared with 2010 (Table 1).

Table 1:Number of Tuberculosis cases by Health and Social Care Trust, Northern Ireland, 2010 and 2011

| Trust | Number of Cases 2010 | Number of Cases 2011 | Case Number difference (%) |
|---|---|---|---|
| BHSCT | 18 | 25 | 39% |
| SEHSCT | 11 | 9 | -18% |
| NHSCT | 15 | 12 | -20% |
| SHSCT | 19 | 10 | -47% |
| WHSCT | 3 | 6 | 100 |
| **Total** | **66** | **62** | **-6%** |

The BHSCT also continues to report the highest rates of TB, with a rate of 7.0/100,000 in 2011, an increase of 40% from 5 cases per 100,000 population in 2010. With the exception of the WHSCT which increased from 1.0/100,000 in 2010 to 2.0/100,000 in 2011, all remaining Health and Social Care Trusts reported decreased rates of TB in 2011 (Figure 3).

Figure 3: Three year moving average number and rates of Tuberculosis cases by HSCT in Northern Ireland, 2000-2011




Follow-up information (treatment outcome forms and/or death certificates) was provided for 59 cases (95%) in 2011, with three cases being lost to follow up (Table 2).

Table 2: Tuberculosis notification and outcome forms by HSCT, 2011

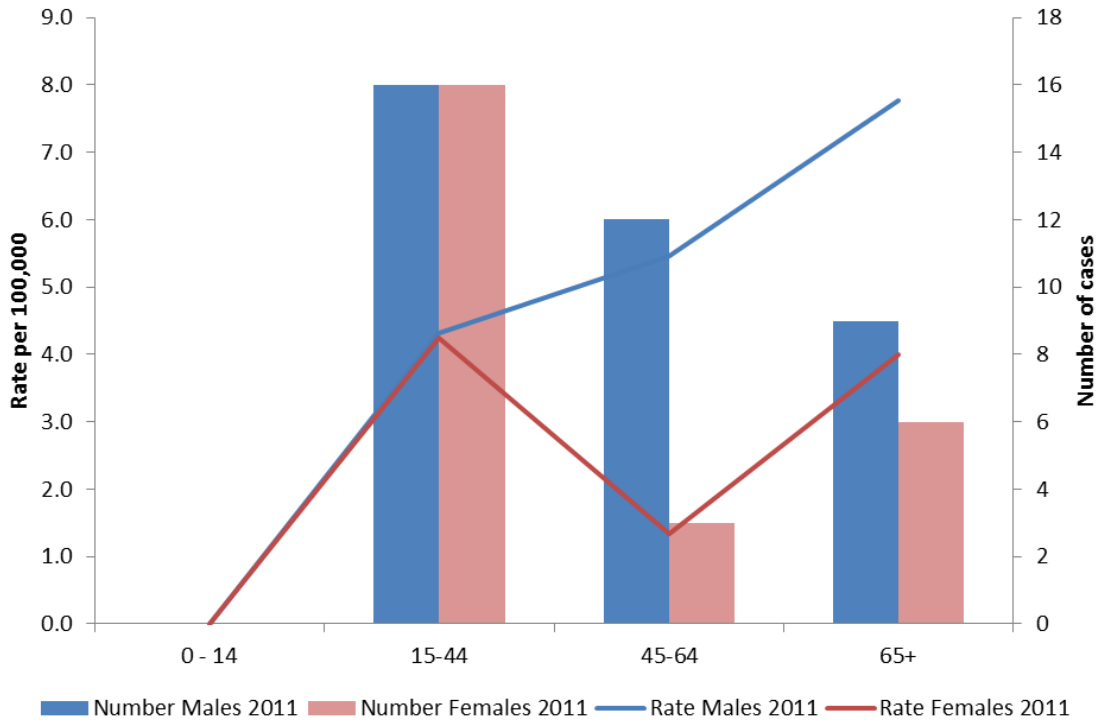
| Health & Social Care Trust | Number of Cases 2011 | Number of Cases completed at 12 mth | Number of Cases completed at 24 mth | Number of Cases died | Number of Cases Lost to Follow-up |
|---|---|---|---|---|---|
| BHSCT | 25 | 19 | 2 | 3 | 1 |
| SEHSCT | 9 | 7 | 1 | 1 | 0 |
| NHSCT | 12 | 6 | 1 | 4 | 1 |
| SHSCT | 10 | 9 | 0 | 0 | 1 |
| WHSCT | 6 | 5 | 0 | 1 | 0 |
| **N.Ireland** | **62** | **46** | **4** | **9** | **3** |

## Demographic Characteristics

Age and gender

Of the 62 notified cases of tuberculosis, 37 were male and 25 were female, giving a male/female ratio of 1.5:1 (a slight increase on the ratio of 1.3:1 recorded in 2010). The ages ranged from 15 years to 92 years, with a median of 42 years (IQR 29-67) and a mean of 48 years. Age profiles between UK and non-UK-born cases continue to differ, with the mean age of cases known to have been born in UK/Ireland of 60 years old and a median age of 64 years (IQR 49-78), compared with a mean age of 34 years and a median age of 32 years (IQR 27-38) for non-UK-born cases. There were no cases reported in children under the age of five years in Northern Ireland in 2011 (Figure 4).

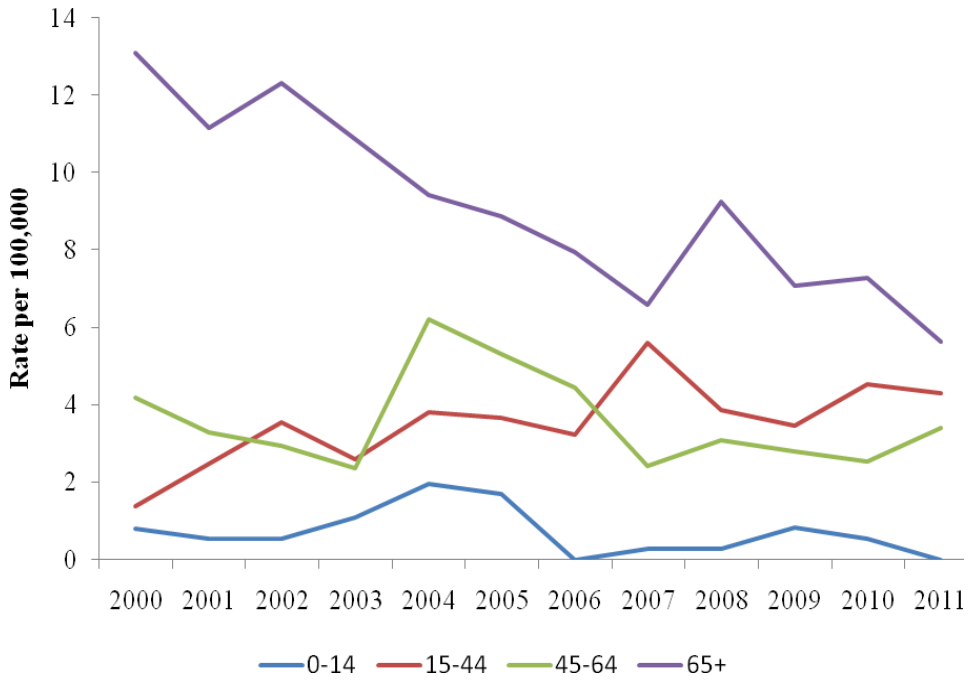
Figure 4: Tuberculosis case reports and rates by age group and gender, Northern Ireland, 2011




Similar to previous years individuals aged 15-44 years accounted for the largest proportion of cases in Northern Ireland at 52% (51% of cases in 2010). A further 24% of cases were in the 45-64 years and 65 years and over age groups, respectively.

The highest age-specific rate of tuberculosis in 2011 remained in the elderly population (65 years and over) however, the rate decreased from 7.3/100,000 in 2010 to 5.6/100,000 population in 2011. In 2011 rates remained similar to 2010 in the 15-44 year olds but increased slightly in the 45-64 year age-group from 2.6/100,000 in 2010 to 3.4/100,000 in 2011. Rates of tuberculosis were highest in males over 65 years, while the highest rates in females were in the 15-44 year age-group (Figure 5).

Figure 5: Northern Ireland TB rates per 100,000 by age group, 2000-2011




Place of birth

In 2011, the country of birth was known for all 62 cases. Of these 48% (30/62) were born outside the UK/Ireland, this compares with 55% of cases born outside the UK/Ireland in 2010 (Figure 6).

The majority of cases born outside the UK/Ireland in 2011 originated from South-east Asia (47%, n=14) and the Western Pacific region (17%, n=5), (Figures 7 and 8).

Information was available on ethnic group for all cases in 2011. An estimated 58% of cases were of white ethnicity and all but four cases belonging to this ethnic group were born in the UK/Ireland.

Figure 6: Northern Ireland number and proportion of UK Born and Non-UK Born tuberculosis case reports, 2000-2011

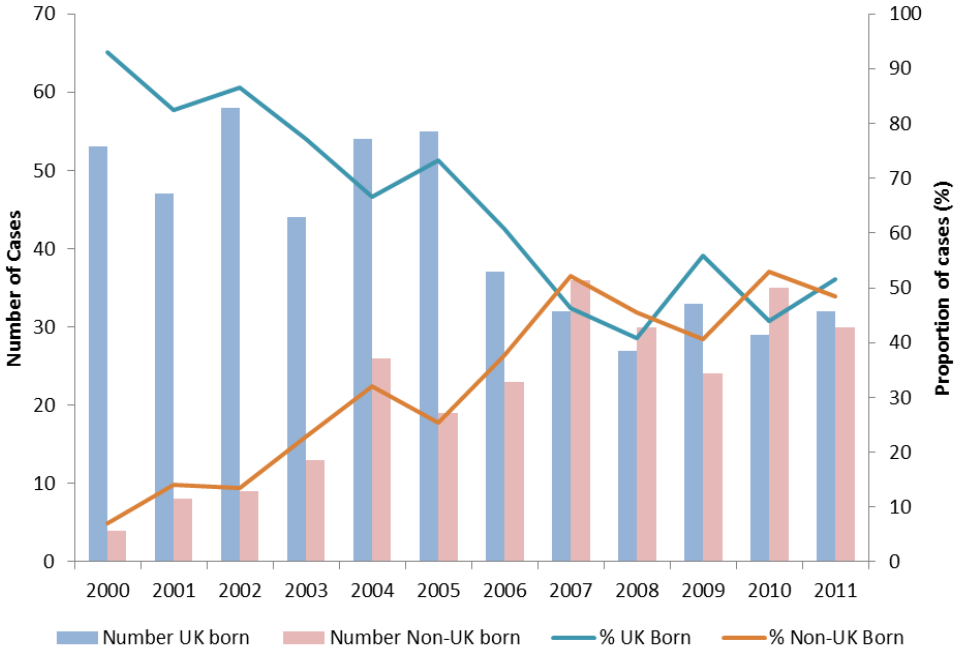



Figure 7: Northern Ireland tuberculosis reports by WHO region of birth, 2000-2011

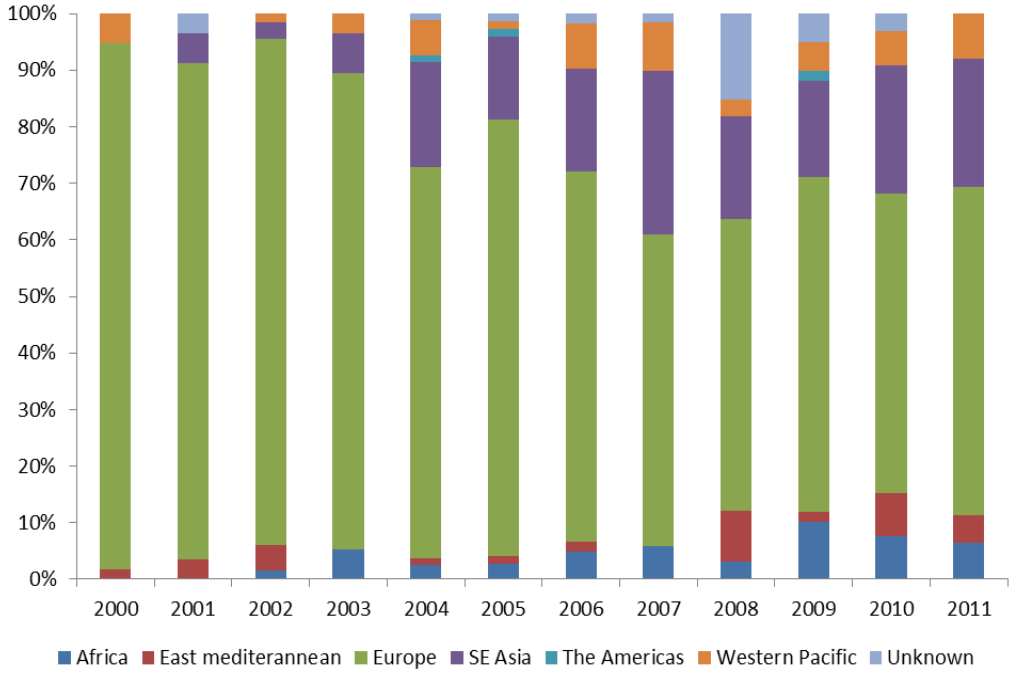
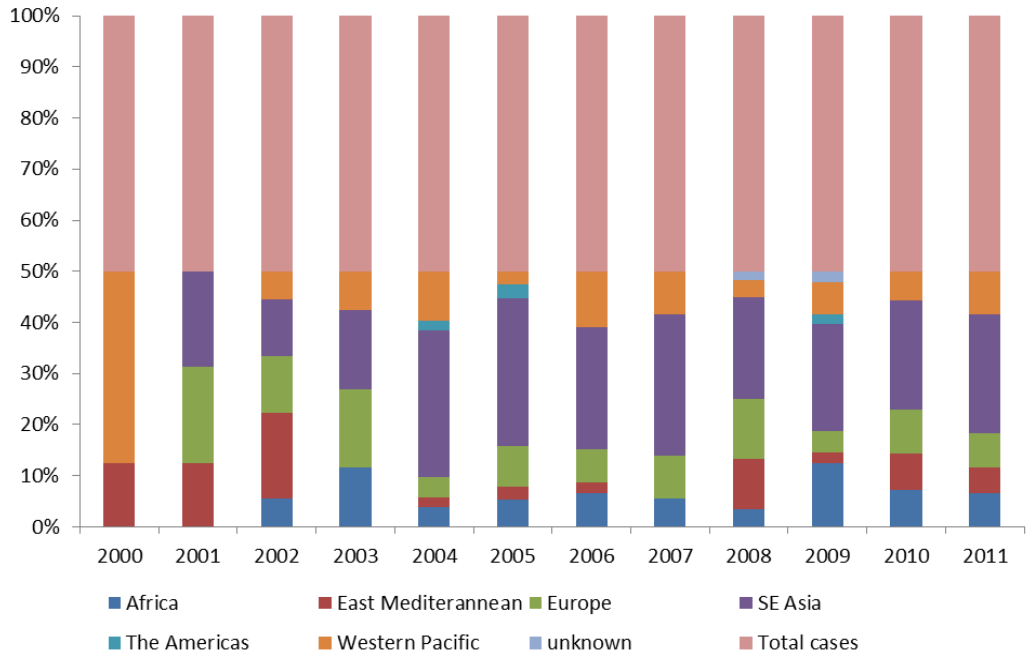


Figure 8: Non-UK Born tuberculosis reports in Northern Ireland by WHO region, 2000-2011




Time since entry into Northern Ireland until tuberculosis diagnosis, was known for 57% (17/30) of cases born outside the UK/Ireland. Of these, 35% (6/17) were diagnosed within 2 years of entry, 53% (9/17) were diagnosed between three and nine years of entry, and the remaining 12% (2/17) had been in the UK/Ireland for ten years or more before diagnosis.

## Clinical Characteristics

In 2011, 77% (n=48) of tuberculosis cases were culture confirmed, a decrease in comparison with 2009 and 2010 when 83% of cases were culture confirmed, respectively. Forty-six of the 48 isolates in 2011 were identified as *M. tuberculosis* and two as *M. bovis*. In addition one case of *M. tuberculosis* was culture confirmed overseas, but as no laboratory report was obtained this case is not included in the culture confirmed cases. Thirteen cases were notified on the basis of clinical or non-culture diagnosis and response to anti-tuberculosis therapy. Of these 13 cases, six were confirmed by histology of the lymph node, lung or other tissue.

In 2011 there were 47 (76%) cases that had pulmonary TB, an increase compared to 2010 when 52% of cases reportedly had pulmonary disease. Of the

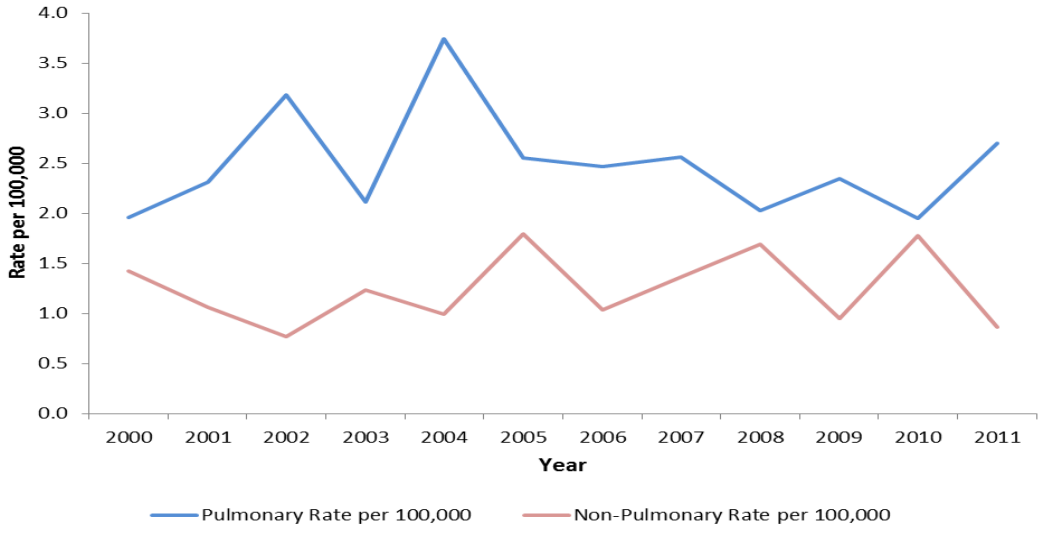
47 cases, 38 (81%) were culture confirmed (36 as *M. tuberculosis* and two as *M. bovis*); the remaining nine cases with a pulmonary component were diagnosed on a clinical basis (Table 3). Of the remaining 15 cases with exclusive extra-pulmonary disease, 10 (67%) were culture confirmed and an additional three (20%) cases were confirmed by histology of the lymph nodes.

Table 3: Pulmonary, Culture positive and Sputum Smear positive tuberculosis cases, Northern Ireland, 2000-2011

| Year | Pulmonary Cases | Culture Positive (%) | Culture and Sputum Smear Positive (%) |
|---|---|---|---|
| **2000** | 33 | 76% | 18% |
| **2001** | 39 | 79% | 56% |
| **2002** | 54 | 72% | 35% |
| **2003** | 36 | 67% | 42% |
| **2004** | 64 | 84% | 42% |
| **2005** | 44 | 86% | 36% |
| **2006** | 43 | 84% | 37% |
| **2007** | 45 | 93% | 49% |
| **2008** | 36 | 83% | 39% |
| **2009** | 42 | 86% | 31% |
| **2010** | 34 | 97% | 59% |
| **2011** | 47 | 81% | 45% |
| **Total** | **517** | **83%** | **40%** |

The rate of pulmonary tuberculosis cases in Northern Ireland increased by 43% from 1.89/100,000 in 2010 to 2.70 per 100,000 population in 2011, the highest rate of pulmonary disease from 2004 when the rate was 3.7/100,000. Conversely, the rates on non-pulmonary disease in the region decreased by 54% from 1.78/100,000 in 2010 to 0.82/100,000 in 2011 (Figure 9).

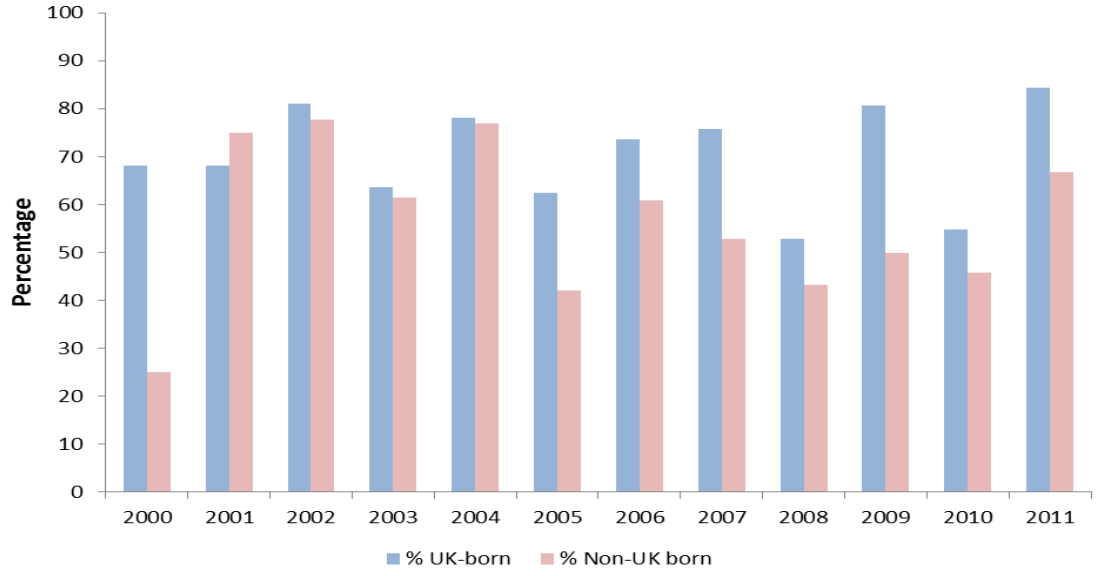
Figure 9: Rates of pulmonary and non-pulmonary tuberculosis, Northern Ireland, 2000-2011




## Site of disease-Pulmonary

In 2011, 84% (27/32) of cases born in the UK/Ireland had pulmonary disease compared with 55% in 2010. The proportion of pulmonary disease also increased in those born outside the UK/Ireland to 67% (20/30) in 2011 compared with 46% in 2010 (Figure 10).

Figure 10: Proportion of Pulmonary tuberculosis cases UK and Non-UK born in Northern Ireland 2000-2011

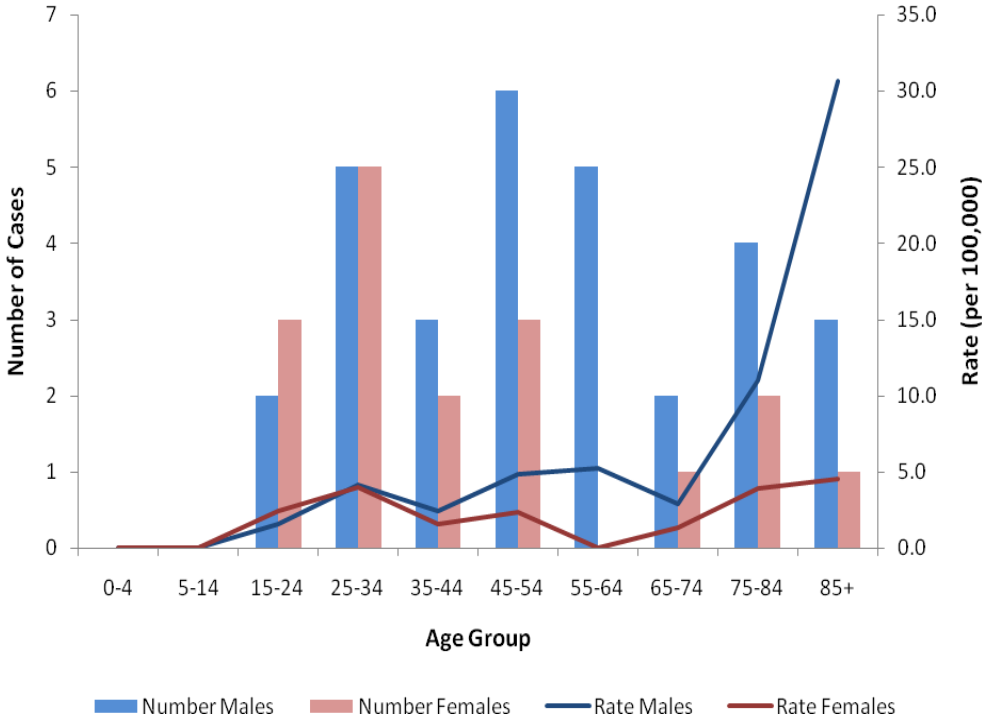


Of the 47 cases diagnosed in 2011 with pulmonary disease, 21 (45%) were found to be sputum smear positive at the time of notification, all of which were subsequently confirmed by culture as *M. tuberculosis*.

Eighteen (38%) pulmonary tuberculosis cases in 2011 were sputum smear negative at the time of notification. Fifteen of these cases were subsequently confirmed by culture (13 *M. tuberculosis* and 2 *M. bovis*). Five pulmonary disease cases had no sputum sample taken; of these two were confirmed by culture on bronchial washings. The outcome of sputum smear testing was not known for the remaining three pulmonary tuberculosis cases, none of which were culture confirmed.

Of the 47 tuberculosis cases in 2011 with pulmonary disease 30 (64%) were male, with a mean and median age of 54 years (IQR 35-74 years) and 17 (36%) were female, with a mean age of 44 years and a median age of 35 years (IQR 28-51 years). Similar to previous years, the age-sex distribution shows the highest age-specific rates for pulmonary tuberculosis continuing to be recorded in older age groups (Figure 11).

Figure 11: Pulmonary tuberculosis case reports and rates by age group and gender, Northern Ireland, 2011



Pulmonary disease rates in males continues to remain highest in the elderly population, while in females the highest age-specific rates in 2011 was in both the 15-44 year olds and in those over 65 years at 2.7/100,000, respectively (Figures 12 & 13).

Figure 12: Pulmonary age-specific disease rates in males in Northern Ireland

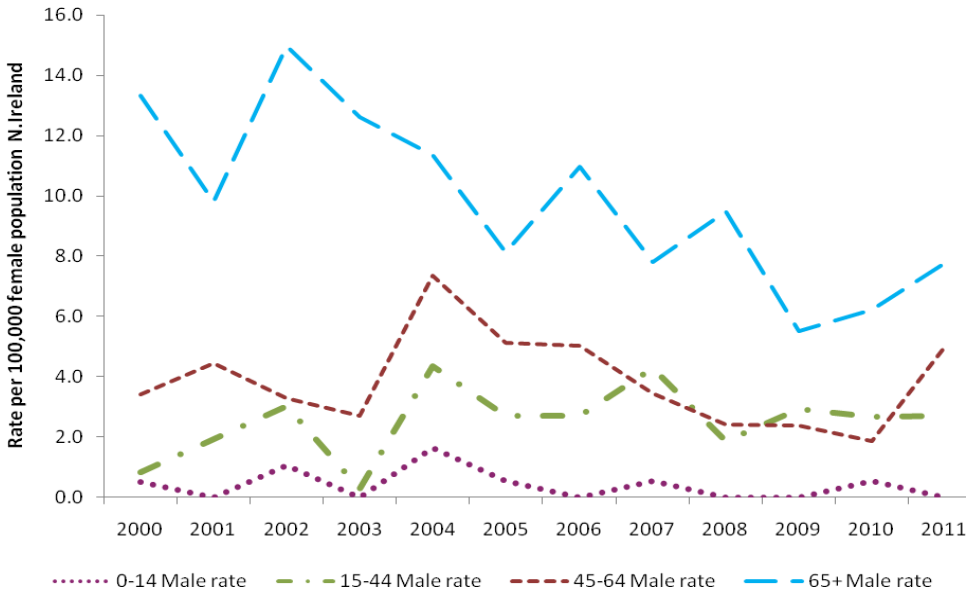
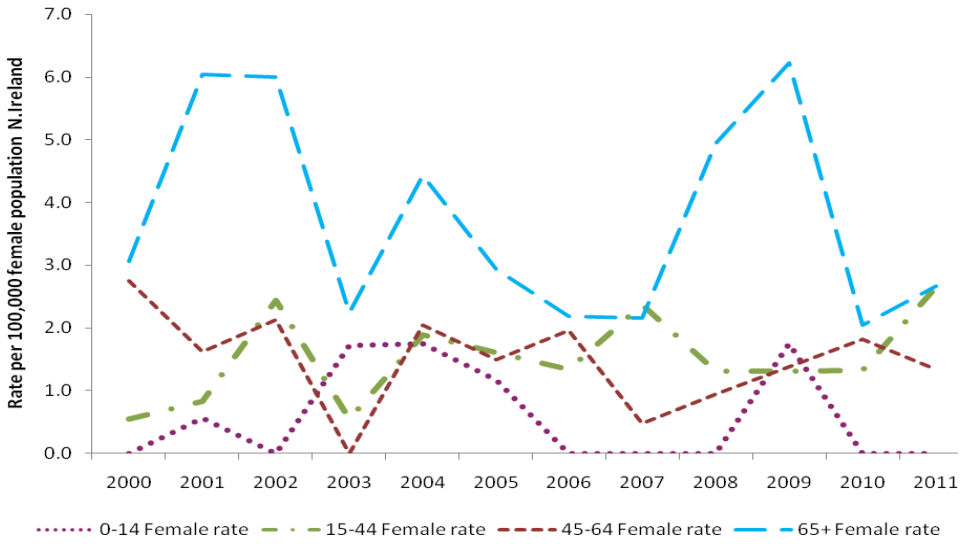



Figure 13: Pulmonary age-specific disease rates in females in Northern Ireland




Outcome information was available for 44 of the 47 pulmonary tuberculosis cases in 2011. Thirty-seven are known to have successfully completed a full course of

anti-tuberculosis treatment. Three cases were lost to follow up at the time of completion, two of which are known to have left the United Kingdom. An additional seven cases with pulmonary tuberculosis disease died, two of which were diagnosed post mortem. Of the remaining five cases who died before or while on treatment, tuberculosis was cited as being incidental to the cause of death for four of the five cases.

Site of disease- Non-pulmonary

In 2011, 15 cases were diagnosed with non-pulmonary tuberculosis, representing 24% of all cases notified, a decrease when compared with 2010 when 48% of tuberculosis cases had non-pulmonary disease.

Of the 15 non-pulmonary cases of tuberculosis reported in 2011, 10 (67%)were culture confirmed (*M. tuberculosis)*. Three of the remaining five cases were histology positive and two were clinically diagnosed (Table 4).

The Southern Health and Social Care Trust (SHSCT) and the Belfast Health and Social Care Trust (BHSCT) had the highest rates of extra-pulmonary tuberculosis at 1.4 and 1.2 cases/100,000 population, respectively.

Table 4: Non-Pulmonary, Culture positive tuberculosis cases, Northern Ireland, 2000-2011

| Year | Non-Pulmonary Cases | Culture Positive (%) |
|---|---|---|
| **2000** | 24 | 66% |
| **2001** | 18 | 83% |
| **2002** | 13 | 69% |
| **2003** | 21 | 76% |
| **2004** | 17 | 65% |
| **2005** | 31 | 39% |
| **2006** | 18 | 67% |
| **2007** | 24 | 63% |
| **2008** | 30 | 70% |
| **2009** | 17 | 76% |
| **2010** | 32 | 69% |
| **2011** | 15 | 67% |
| **Total** | **238** | **68%** |

Of the 15 non-pulmonary cases of tuberculosis notified during 2011, 8 cases were female and 7 were male, giving a ratio of 1.14:1. The age of non-pulmonary disease cases ranged from 20 to 79 years with a median age of 33 years. The

highest age-specific rates in males with non-pulmonary tuberculosis remained in those age 15-44 years. While the rates in females with non-pulmonary disease has traditionally been highest in the over 65 year olds, similar rates (1.3/100,000) of disease were reported in the15-44 year age group in 2011, however small numbers in both groups may have accounted for this. (Figures 14 and 15).

Figure 14: Non-pulmonary age-specific rates in Males in Northern Ireland

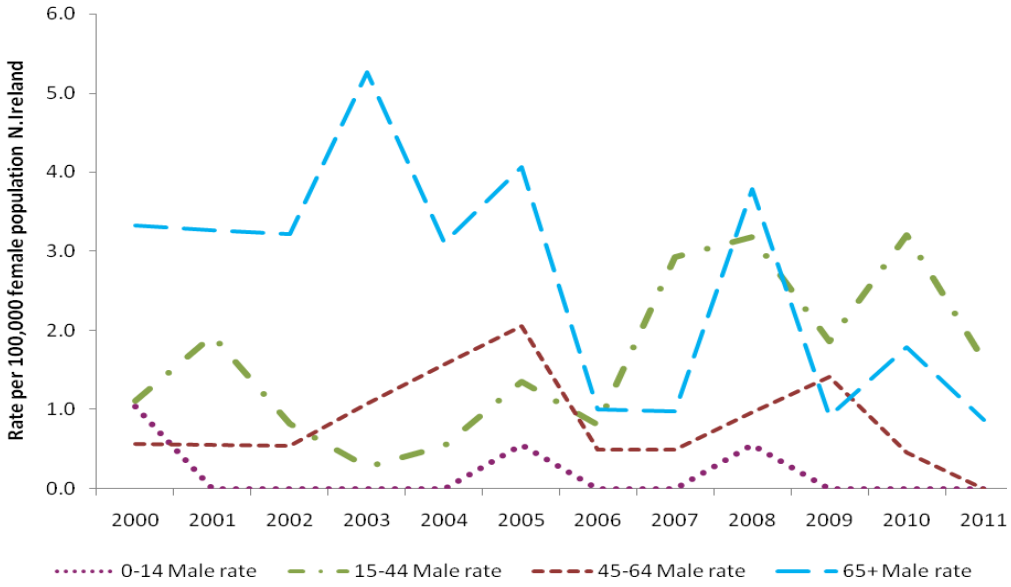
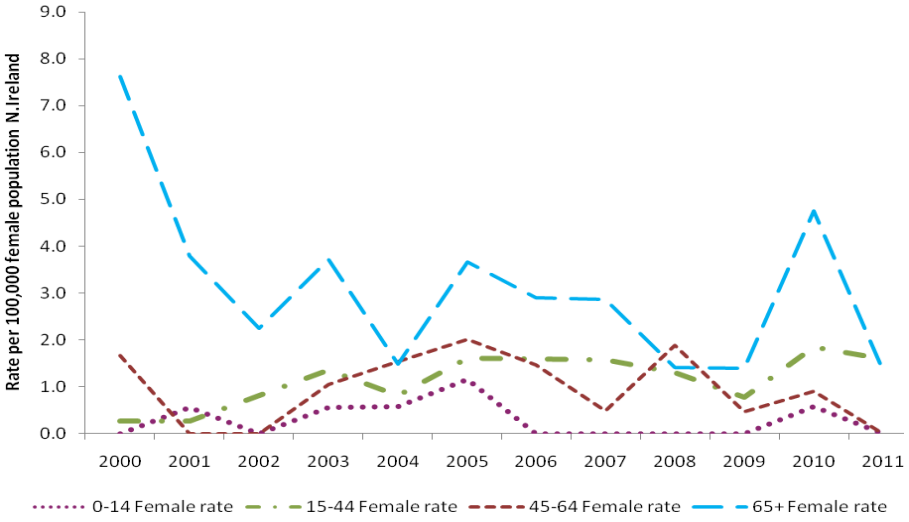



Figure 15: Non-pulmonary age-specific rates in Females in Northern Ireland




Of the specified extra-pulmonary sites, the most commonly reported in 2011 was extra-thoracic lymph nodes (18%), (Table 5).

There were three cases of TB meningitis reported in 2011, giving a total of 22 cases (3% of all cases) of TB meningitis reported from 2000 to 2011 in Northern Ireland.

Table 5: Tuberculosis case reports by site of disease, Northern Ireland, 2011

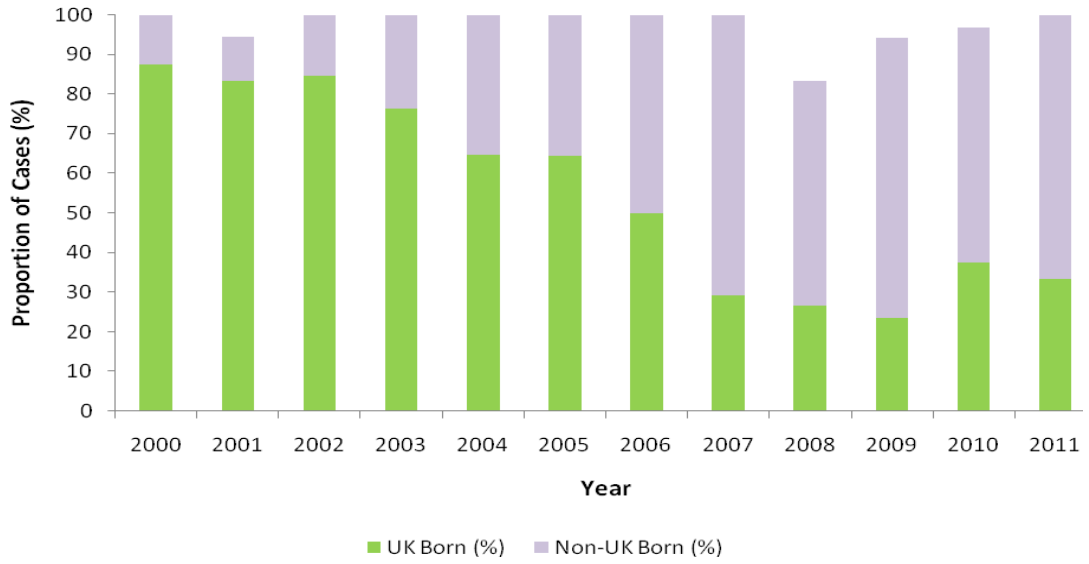
| Site of Disease | Number of Cases 2011 | Proportion of all Cases 2011 |
|---|---|---|
| Pulmonary | 47 | 76% |
| Extra-thoracic lymph nodes | 11 | 18% |
| Intra-thoracic lymph nodes | 3 | 5% |
| CNS-meningitis | 3 | 5% |
| Genitourinary | 2 | 3% |
| Pleural | 2 | 2% |
| CNS Other | 1 | 2% |
| Bone-spine | 3 | 5% |
| Laryngeal | 1 | 2% |
| Other extra-pulmonary | 3 | 5% |

*Note: Total percentage exceeds 100% due to infections at more than one site.*

Of the 15 cases of non-pulmonary tuberculosis notified in Northern Ireland in 2011, 10 (67%) were born outside the UK/Ireland, an increase in comparison with 2010 when 59% of non-pulmonary cases were born outside of Northern Ireland.

Over the past decade however, the proportion of non-pulmonary cases of tuberculosis who were born outside the UK has steadily risen from 13% in 2000 to 67% in 2011 (Figure 16).

Figure 16: Proportion of Non-Pulmonary tuberculosis cases UK and Non-UK born in Northern Ireland, 2000-2011




** *Cases only included where place of birth was known*

Outcome information was available for all non-pulmonary tuberculosis cases in 2011. Nine (60%) cases are known to have successfully completed a full course of anti-tuberculosis treatment at the 12 month report; four (27%) cases were still on treatment at the time of reporting and a further two (13%) cases died either before or while on treatment.

## Anti-tuberculosis treatment

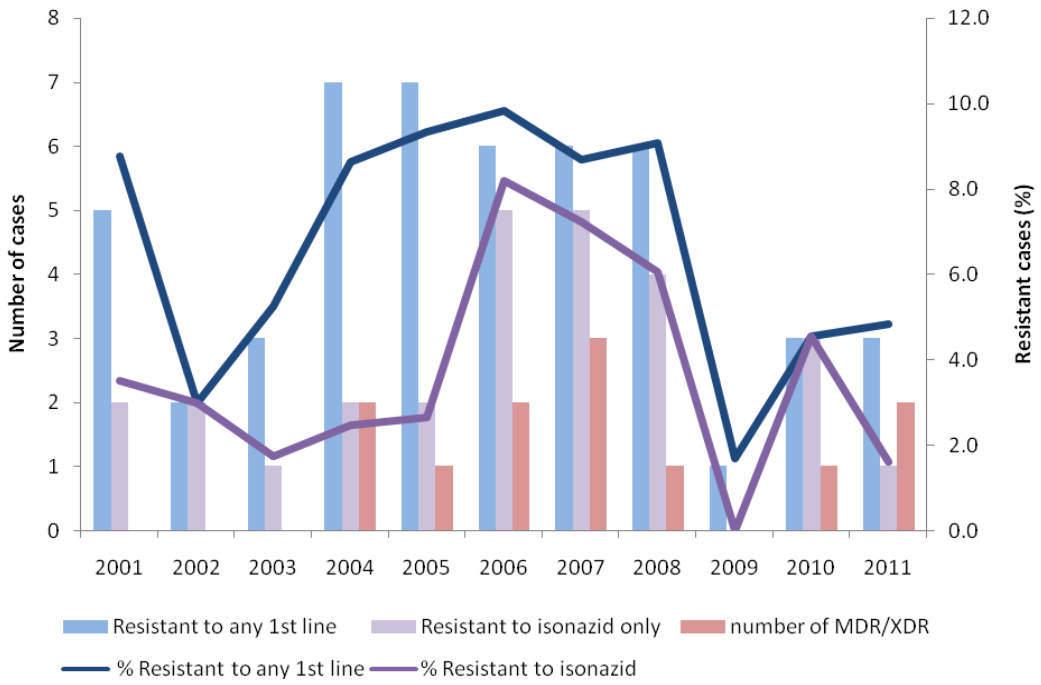
Isoniazid, rifampicin, ethambutol and pyrazinamide are first-line drugs for treatment of tuberculosis in the UK. Drug susceptibility test results were available for all 48 culture confirmed cases of tuberculosis in Northern Ireland in 2011.

### Drug resistance

In 2011, a total of three TB cases were resistant to isoniazid, two of which were Multi Drug Resistant (MDR), also showing resistance to rifampicin. In addition the two *M. bovis* isolates were resistance to pyrazinamide (Figure 17).

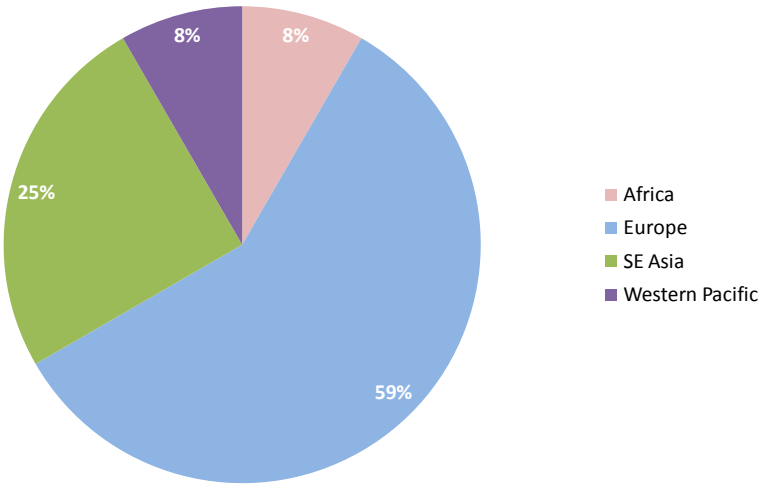
Forty-six patients completed treatment at 12 months of which 31 (67%) received the standard six month treatment regime and 15 cases had extended treatment due to a number of clinical complications but still completed within 12 months. Of the remaining 16 cases reported in 2011: nine died either; while on or before treatment started, four patients' treatment exceeded 12 months and three cases were lost to follow-up.

Figure 17: Number and proportion of drug resistant cases of tuberculosis in Northern Ireland, 2000-2011



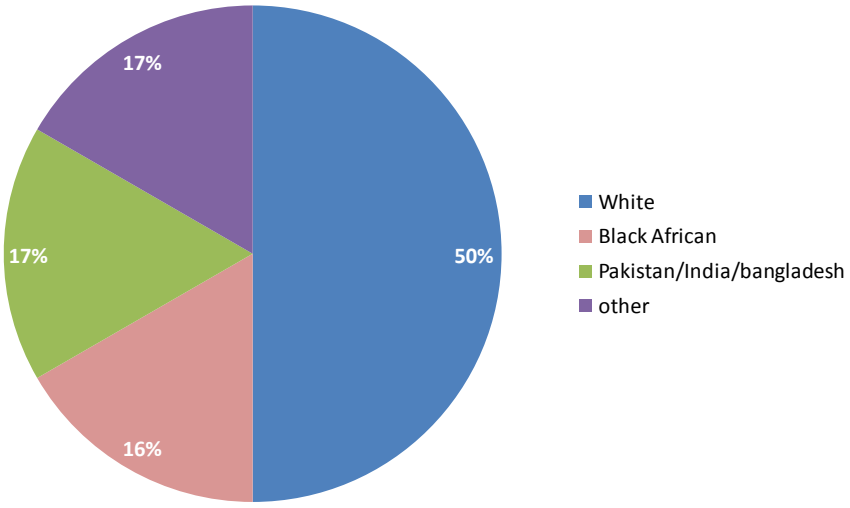

With the exception of 2009 when there were no MDR/XDR-TB isolates, there has been at least one case of MDR/XDR-TB from 2004 annually in Northern Ireland. Throughout the past decade, 58% (n=7/12) of MDR/XDR tuberculosis cases notified in Northern Ireland have originated from Europe (Figure 18).

Figure 18: MDR/XDR tuberculosis cases in Northern Ireland by WHO Region, 2000-2011




Of the 12 MDR/XDR tuberculosis cases notified in Northern Ireland during the past decade, the majority (50%) were of White ethnicity (Figure 19).

Figure 19: Ethnicity of MDR/XDR tuberculosis cases in Northern Ireland, 2000-2011



## Tuberculosis in healthcare workers

In 2011, there were seven healthcare workers notified with tuberculosis, approximately 11% of all notified cases. Six cases had pulmonary disease, four of which were culture confirmed and sputum smear negative. The remaining case was extra-pulmonary. The place of birth was known for all seven cases and five of these cases were born outside the UK/Ireland (Figure 20).

Figure 20: Number and proportion (%) of tuberculosis notifications among healthcare workers, Northern Ireland 2000-2011.


**2009 data excludes 1 HCW case where place of birth was unknown*

The proportion (11%) of tuberculosis cases notified in Northern Ireland in 2011 who work in a healthcare setting, is lower than 2010 (14%) which had the highest diagnosis of healthcare workers with TB reported during the past decade. The identification of TB cases who work in a healthcare setting in recent years has increased partly as a result of increased screening in this sector.

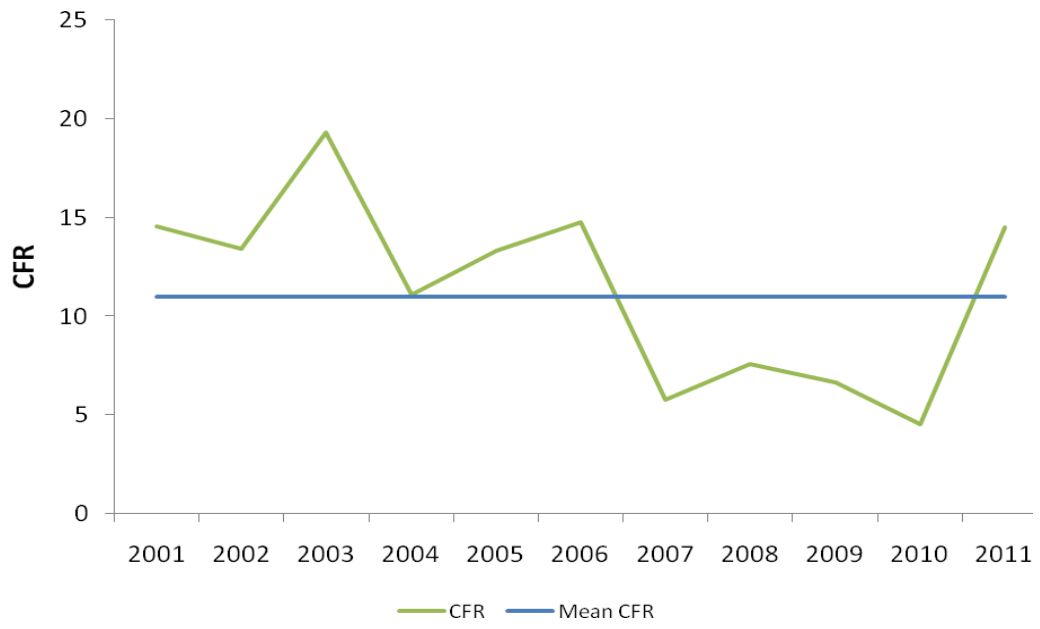
The majority (over 75%) of healthcare workers with tuberculosis in Northern Ireland from 2000 to 2011 were born outside the UK/Ireland.

## Treatment Outcomes

Of the 62 cases of tuberculosis reported in Northern Ireland in 2011, outcome information was available for 59 (95%) cases; three cases were lost to follow-up. Forty-six (78%) cases completed anti-tuberculosis treatment within 12 months and four (7%) cases were still receiving treatment after 12 months.

Nine patients died in 2011, giving a CFR of 14.5% which was above the 10 year average but similar to rates seen in 2006 (Figure 21). Two of the nine cases were diagnosed post-mortem. Of the remaining seven cases, tuberculosis was incidental to death in four of the cases and contributed to death in one case. The status was not known for the remaining two cases. All nine cases were from the indigenous population, with an age-range from 32-91 years and a mean age of 72 years.

Figure 21: Case-Fatality Rate of tuberculosis notifications, Northern Ireland 2001-2011.




From 2006 the proportion of cases completing treatment at 12 months has exceeded 70%, with the highest completion rate in 2009 at 86%, (Table 6).

Table 6: Number and proportion of tuberculosis cases completing treatment within 12 months, Northern Ireland, 2000-2011

| Year | Number of Cases | Completed Treatment at 12 months | Completed at 12 months (%) |
|---|---|---|---|
| 2000 | 57 | 25 | 44% |
| 2001 | 57 | 38 | 67% |
| 2002 | 67 | 47 | 70% |
| 2003 | 57 | 30 | 53% |
| 2004 | 81 | 58 | 72% |
| 2005 | 75 | 41 | 55% |
| 2006 | 61 | 33 | 54% |
| 2007 | 69 | 50 | 73% |
| 2008 | 66 | 46 | 70% |
| 2009 | 59 | 51 | 86% |
| 2010 | 66 | 45 | 68% |
| 2011 | 62 | 46 | 74% |
| **Total** | **777** | **508** | **65%** |

## Discussion

The number of cases of tuberculosis notified in the UK in 2011 increased by 6% to 8,963 compared with 8,483 in 2010, giving a rate of 14.4 per 100,000 population. As in previous years the highest rates of TB in the UK were in London accounting for approximately 39% of all cases in the UK. Conversely, the number of cases in Northern Ireland decreased slightly in 2011 compared with 2010. Provisional data for the Republic of Ireland indicates a rate similar to 2010 of 9.2/100,000 population in 2011. Rates of TB in Northern Ireland continue to remain low and stable and are much lower than rates of TB in both the UK and ROI (Figure 22).

Similar to the national trend the majority (52%) of patients with TB in Northern Ireland in 2011 were young adults aged 15 to 44 years.

Figure 22: Rate of tuberculosis per 100,000 population in the UK, Republic of Ireland and Northern Ireland 2000-2011


**2011 figures are provisional for Republic of Ireland*
*** UK data from 'Report on tuberculosis surveillance in the UK, 2012'*
**** ROI data from 'TB Cases notified in Ireland in 2010' & 'TB Cases notified in Ireland in 2011'*

Nationally In 2011, 74% of cases were born outside of the UK. In Northern Ireland the proportion of cases born outside the UK/Ireland has increased over the last decade however, there was a slight decrease in the proportion of foreign-born cases in 2011 where 48% of all TB cases were reported from this population compared with 55% in 2010. Similar to previous years the majority (47%) of these cases originated from South-East Asia. The proportion of cases in the Republic of Ireland that were born outside of Ireland in 2011 was an estimated 43% a slight increase from 41% in 2010.

The main burden of the disease in Northern Ireland in 2011 was in the largely urban Belfast Health and Social Care Trust, with rates of TB in this Trust area increasing by 40%.

The proportion of culture confirmed cases in Northern Ireland decreased from 83% of cases in 2010 to 77% in 2011 and all culture confirmed cases were tested for first line drug sensitivity. In pulmonary cases the proportion culture confirmed also decreased from 97% in 2010 to 81% in 2011 however, this still meets the EU monitoring framework target of ≥ 80% culture confirmation among new pulmonary TB cases[4]. The proportion of pulmonary cases that were culture confirmed and sputum smear positive dropped from 59% in 2010 to 45% in 2011. Trends in the proportion of culture confirmed pulmonary TB cases can be viewed as indicator of the performance of a TB control programme.

There was a considerable increase (43%) in rates of pulmonary TB disease in the region in 2011, the highest rate since 2004. Rates of pulmonary disease in males were principally in the elderly population, while there was an increase in rates of pulmonary disease in females in the 15 to 44 year age group.

The rise of drug-resistant TB globally is still an area of major concern[5-7]. In the UK the number and proportion of drug resistant cases remains relatively small. However, over the last decade, a small sustained increase in first line drug resistance and MDR has been observed In the UK, with the majority of patients with MDR/XDR TB born in regions of the world with a high burden of drug resistant TB such as the Indian subcontinent and Eastern Europe[3].

Similarly, the incidence of multi-drug resistance in Northern Ireland remains low. In 2011, there were two MDR cases representing 3% of all TB cases reported. For the period 2000-2011, there have been a total of twelve MDR/XDR tuberculosis cases, 11 of which had pulmonary disease with 50% also sputum smear positive at the time of detection. The majority (75%) were born outside the UK/Ireland and from regions of the world with high incidence of drug resistance.

In 2011, 78% of cases in Northern Ireland completed treatment within 12 months. This falls below the UK 85% target for completion. However, the number of deaths increased in 2011 and this was a principle reason for not completing treatment accounting for a further 11%. Two of these cases were diagnosed post mortem in 2011.

Due to the small numbers of TB cases in the region, annual fluctuations in data may be misleading therefore, care needs to be taken when interpreting figures.

In conclusion, rates of TB remain low and stable in the region and although treatment completion rates did not reach the UK targets they are still encouraging suggesting progress in service provision, however overall rates of TB are not reducing, this may partly be driven by the increasing numbers of cases born outside Northern Ireland. TB remains a global disease and we must continue our close collaboration with national and international partners in an effort to try and stop the global epidemic.

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## Further reading

- 2008/426/EC: Commission Decision of 28 April 2008 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council (notified under document number C(2008) 1589). OJ L159/46, 18.06.2008.

- Epidemiology of tuberculosis in Northern Ireland: annual surveillance report 2009-2010. http://www.publichealthagency.org/directorate-public-health/health-protection/tuberculosis

- Provisional report on 2011 TB data in Ireland. A report by the health protection surveillance centre, Ireland.