



Communicable Disease Surveillance Centre  
(Northern Ireland)

# Surveillance of Tuberculosis in Northern Ireland 2005

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## Acknowledgements

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## Summary

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- There were 75 tuberculosis cases notified in 2005 meeting the case definition, making a Northern Ireland rate of 4.4/100 000 population. This contrasts with 81 notifications in 2004 (4.7/100 000).
- Rates of TB in Northern Ireland remain approximately three times lower than for England and Wales.
- Forty four (59%) cases had pulmonary TB of whom 17 were smear positive.
- The proportion of cases aged 65 years and older with TB has continued to decrease from 53% in 2000 to 28% in 2005.
- The proportion of cases diagnosed with TB during 2005 and born outside the UK/Ireland was 26% - a decrease from 2004 (31% born overseas) but higher than that noted in 2000/01 (approximately 10%).
- Of 45 isolates of *M. tuberculosis*, two were resistant to at least one first line drug and one was multi drug resistant (MDRTB).
- Eight healthcare workers were notified with tuberculosis – the highest annual total for many years.
- There were five culture confirmed cases of *M. bovis*, three of whom had no obvious risk factors.

## 1. Introduction

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Clinicians in Northern Ireland, in line with those in the rest of the United Kingdom, are required to notify all cases of tuberculosis to the Director of Public Health of the Health and Social Services Board (HSSB) of residence. Enhanced surveillance of tuberculosis was established in Northern Ireland in 1992, with the introduction of two customised data collection forms.

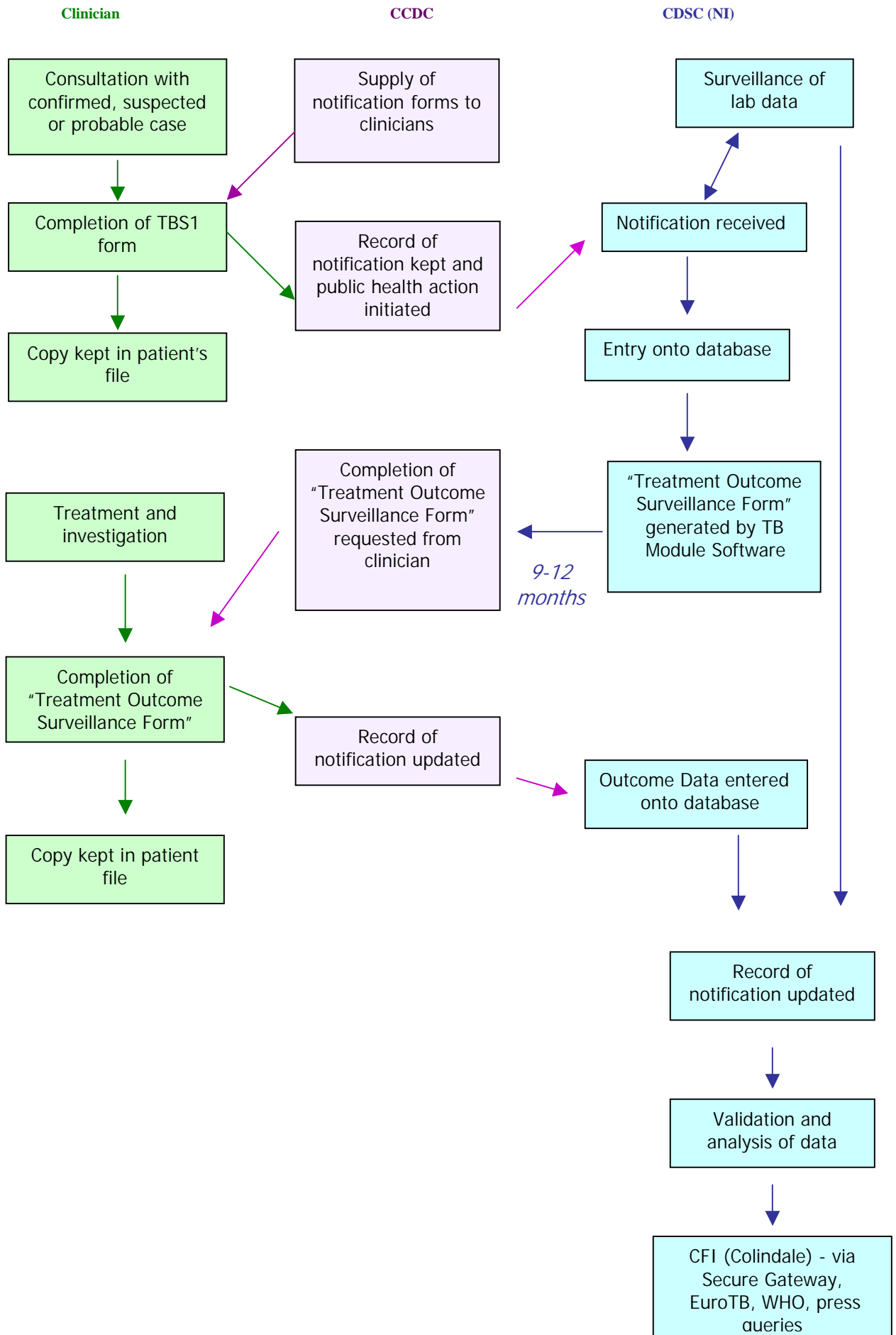
The notification form, TBS1, is used to collect clinical, demographic and microbiological information. The collection of outcome data, for all cases notified after 1 January 2001, was introduced in England and Wales at the beginning of 2002. In order to facilitate the export and central collation of data for England, Wales and Northern Ireland, outcome data is now collected across all three regions of the UK on a standardised 'Tuberculosis Treatment Outcome Surveillance Form'. This form, which replaces the TBS2 form, has been customised for local use and continues to collect details of drug treatment and outcome - together with any additional clinical and/or microbiological information not available at the time of initial notification.

Once a case has been notified and the TBS1 details entered onto a secure database at CDSC (NI), 'Tuberculosis Treatment Outcome Surveillance Forms', are generated automatically. These forms are then forwarded, approximately 9 months after initial notification, to the appropriate Consultant in Communicable Disease Control (CCDC) for completion by the patients' clinician.

All forms are subsequently returned to CDSC (NI) where the information is entered onto a secure database, validated (using laboratory reports and anti-microbial susceptibility information), updated and analysed. The information is then used for inclusion in national, European and WHO reports, as well as for disease surveillance at a local level. A summary of the process is shown on the following page.

If *M. bovis* infection is identified in a notified patient, an additional questionnaire (available to download at <http://www.cdscni.org.uk/forms>) is forwarded to the CCDC in the patient's Board of residence and, once completed, is returned to CDSC (NI). 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 (NI) from 1<sup>st</sup> January 2005 to 31<sup>st</sup> December 2005. As the data collection process can only be completed 12 months after the initial notification, an annual epidemiological report does not normally become available until 18 months after the end of the reporting period. Where appropriate, provisional information on 2006 notifications is included.



## 2. Methods

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### 2.1. Sources of information

The sources from which information used in the surveillance programme is taken include: enhanced surveillance notification forms; the NI laboratory reporting system; information provided by the UK Mycobacterial Resistance Network (MYCOBNET); and death certifications.

All laboratories report a comprehensive list of clinically significant microbiological data to CDSC (NI), including isolates of *Mycobacterium* species. The Northern Ireland Mycobacterial Reference Laboratory, based at the Northern Ireland Public Health Laboratory at Belfast City Hospital, has also been participating in a national system for the surveillance of drug resistance in *Mycobacterium tuberculosis* complex organisms. This scheme, called MYCOBNET, provides information about drug resistant mycobacteria in cases where the organism has been microbiologically confirmed.

### 2.2. Definitions

Case definitions are based on the recommendations developed by the working group of the World Health Organisation (WHO) and the European Region of the International Union Against Tuberculosis and Lung Disease (IUATLD).

**“culture confirmed” case** is defined as one in which the diagnosis has been confirmed by culture of *Mycobacterium tuberculosis*, *M. bovis* or *M. africanum*.

**“other than culture confirmed case” \*** In the absence of culture confirmation, such a case needs to meet the following criteria: “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”.

\* **Applicable to all cases notified after August 2003**

Both types of cases should be notified through this surveillance system. Any case which subsequently does not fulfil one of the above case definitions is marked as denotified but remains in the dataset. This would include those with a diagnosis other than tuberculosis.

**Pulmonary Tuberculosis** is defined as disease involving the lung parenchyma and/or bronchial tree but EXCLUDES pleural and intra-thoracic lymph node disease unless lung parenchyma and/or bronchial tree are also involved

**Multi-drug resistance (MDR)** is defined as resistance to at least isoniazid and rifampicin, with or without resistance to other drugs.

### **2.3. Data analysis**

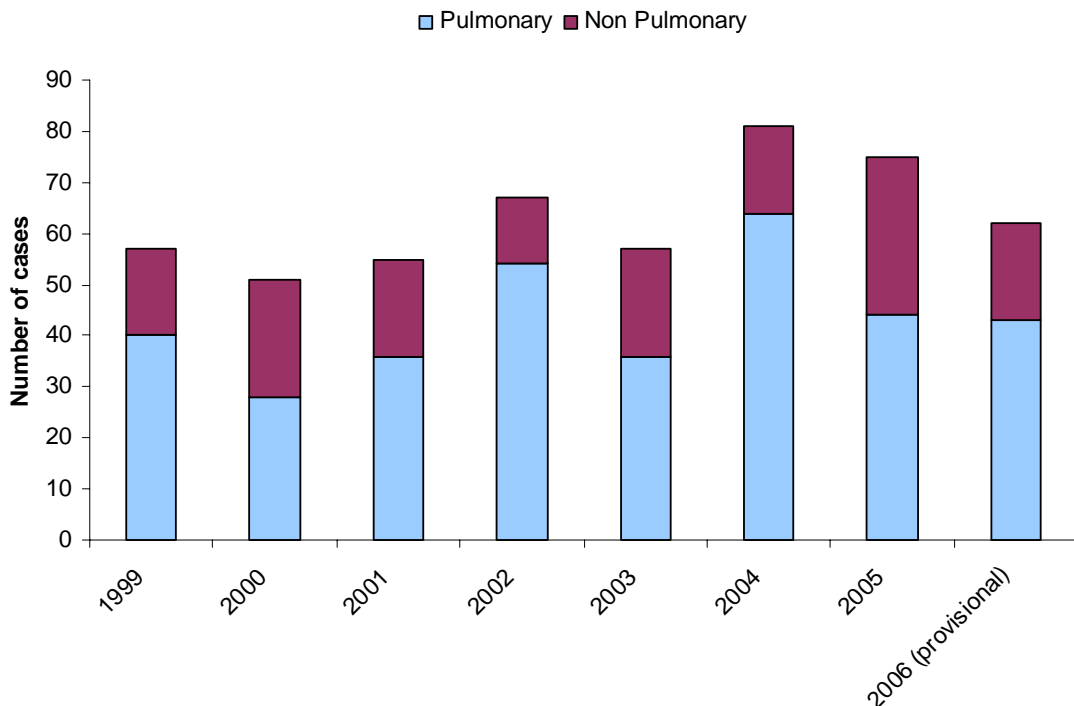
Data are entered onto and analysed using custom designed Microsoft Access-based software called HPA Regional Module for Enhanced TB Surveillance (2005; version 3.0). The 2005 mid-year population estimates (Registrar General Northern Ireland, NISRA) were used for calculating rates.

### 3. Results

#### 3.1. Notifications

A total of 81 cases were notified through the surveillance scheme during 2005. Of these 81 notifications; four cases were laboratory confirmed as an infection with a mycobacterium other than tuberculosis (MOTT) and two further cases were de-notified for other reasons. These 6 patients were de-notified but remained recorded in the dataset. They were excluded from the main analysis. This gave a total of 75 cases of tuberculosis notified during the course of 2005, of which 50 (67%) were culture confirmed. Forty-five of the isolates were identified as *M. tuberculosis* and five as *M. bovis*. Twenty-five cases were notified on the basis of clinical or non-culture diagnosis and response to anti-tuberculosis therapy. Of these 25 cases; 12 were confirmed by histological examination of lymph nodes (6), bronchial tree specimens (2) and other tissue (4).

Of the 75 tuberculosis cases; 44 (59%) had pulmonary disease and 31 (41%) had non-pulmonary disease. Provisional 2006 data show 62 cases: 43 (69%) pulmonary and 19 non pulmonary.



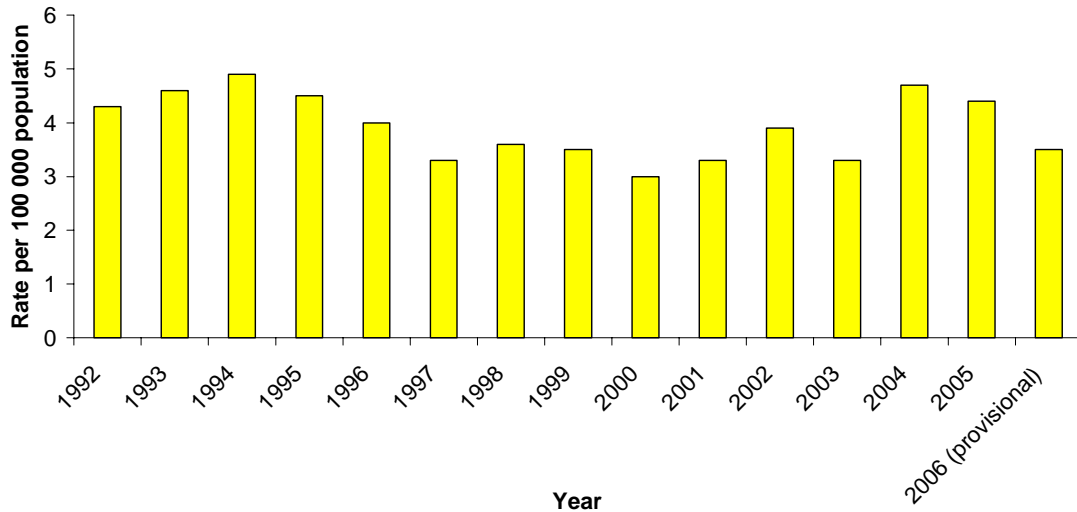
**Figure 1: Notifications of Tuberculosis through Enhanced Surveillance 1999 - 2006**

Follow-up information (either Treatment Outcome Form or death certificate) was provided for 62 (77 %) of the 81 cases.



### 3.2 Tuberculosis cases

The annual notification rate of tuberculosis for Northern Ireland in 2005, based on 75 notifications, was estimated at 4.4 cases per 100 000 population which is a slight drop from 2004 (4.7/100 000), however this is still higher than the average over the period 1998 – 2003 of 3.5 per 100 000. The provisional rate for 2006 is 3.6/100 000.



**Figure 2: Rate of Tuberculosis (all types) notified in Northern Ireland, 1992 - 2006**

**Table 1: Tuberculosis cases, Northern Ireland, 2005**

HSSB	Confirmed	Non-culture confirmed*	Total	Rate per 100 000
EHSSB	22	13	35	5.3
NHSSB	10	4	14	3.2
SHSSB	14	4	18	5.5
WHSSB	4	4	8	2.8
<b>Total</b>	<b>50</b>	<b>25</b>	<b>75</b>	<b>4.4</b>

\* A number of notified individuals, although never culture confirmed, were known contacts of others who already had culture confirmed tuberculosis. A further number of non-culture confirmed cases displayed clinical symptoms such as lung X-ray changes, heaf conversion or were diagnosed at post-mortem.

Of the 75 tuberculosis cases, 43 were male and 32 were female, giving a sex ratio M/F of 1.3 (a decrease in the ratio of 1.8 recorded in 2004). The ages ranged from seven months to 87 years with a median of 49 years and a mean

of 48 years (51 years and 46 years respectively in 2004). The age-sex distribution is shown in Table 3b and Figure 3. The highest proportion of cases for men was recorded in the 25-34 and 55-64 year age-groups and, for women there was an even spread of cases in each of the age-groups.

Six children under the age of 15 years were notified with tuberculosis during 2005 of which three were household contacts of known tuberculosis cases. Four children were born in the UK or Republic of Ireland (ROI) with two born in countries with a high incidence of TB. Three were notified with culture confirmed pulmonary tuberculosis and none were sputum smear positive.

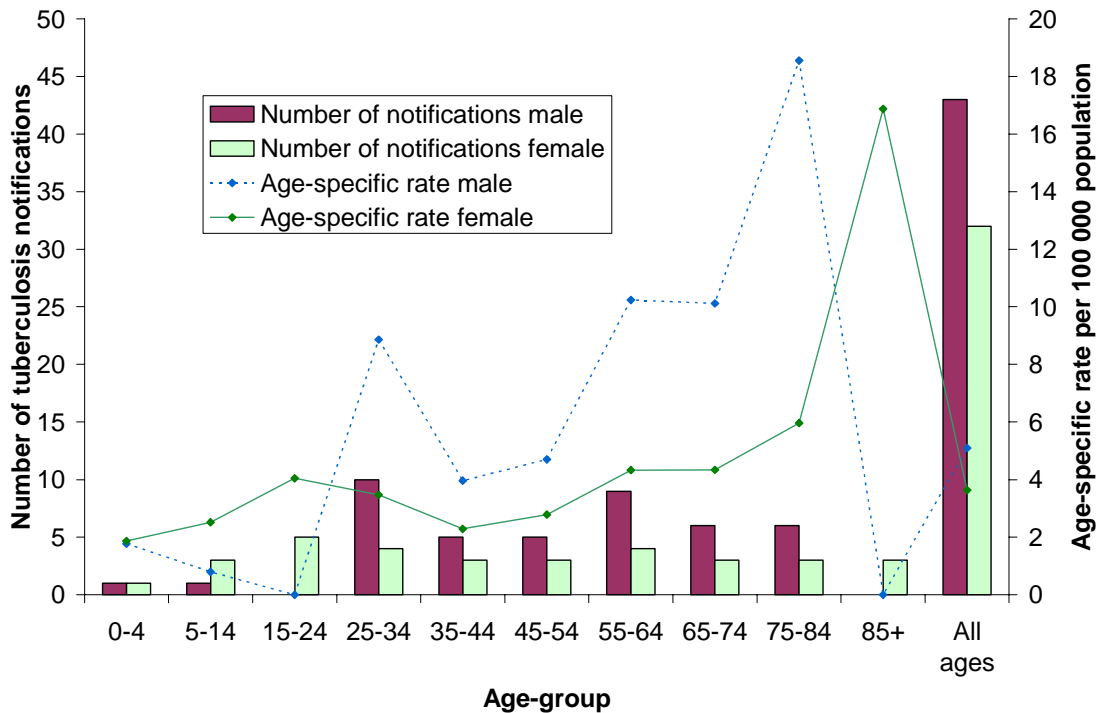
During 2005, the highest age-specific rate for both male and female patients occurred in those aged over 75 years. Overall, the age-specific rate for men was higher than that for women, except in those under 25 years of age or over 85 years of age at the time of notification (Table 2a and Figure 3).

**Table 2a: Rates of notification of tuberculosis cases per 100 000 population in Northern Ireland by age and sex, 2005**

Age-Group	Male	Female	Total
0-4	1.8	1.9	1.8
5-14	0.8	2.5	1.6
15-24	0.0	4.0	2.0
25-34	8.9	3.5	6.1
35-44	4.0	2.3	3.1
45-54	4.7	2.8	3.7
55-64	10.2	4.3	7.2
65-74	10.1	4.3	7.0
75-84	18.6	6.0	10.9
85+	0.0	16.9	11.9
<b>Total</b>	<b>5.1</b>	<b>3.6</b>	<b>4.3</b>

**Table 2b: Tuberculosis notifications in Northern Ireland by age and sex, 2005**

	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
Male	1	1	0	10	5	5	9	6	6	0	43
Female	1	3	5	4	3	3	4	3	3	3	32
<b>Total</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>14</b>	<b>8</b>	<b>8</b>	<b>13</b>	<b>9</b>	<b>9</b>	<b>3</b>	<b>75</b>

**Figure 3: Notified cases of tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2005**

In 2005, the country of birth was recorded for all but one of the 75 notified cases. Fifty-five were known to have been born in the United Kingdom or RoI and 19 (26%) were known to have been born elsewhere. These included those born in India, East Timor, Portugal, South Africa, Bangladesh, Brazil, Fiji, Latvia, Sri Lanka, Sudan and Thailand. In the ten years between 1992 (when enhanced surveillance of tuberculosis commenced in Northern Ireland) and 2002, an average of 10% of all notified individuals were known to have been born outside the UK or RoI. This proportion increased to more than 31% in 2004 and, in 2005, has fallen slightly to 26%.

Information regarding previous tuberculosis infection was recorded for 71 of the 75 cases notified during 2005. Five (7%) individuals, ranging in age between 45-81 years, were reported to have a previous history of tuberculosis, of which two are recorded as having been treated with at least one month of chemotherapy at the time of original diagnosis.

### 3.3. Pulmonary tuberculosis cases

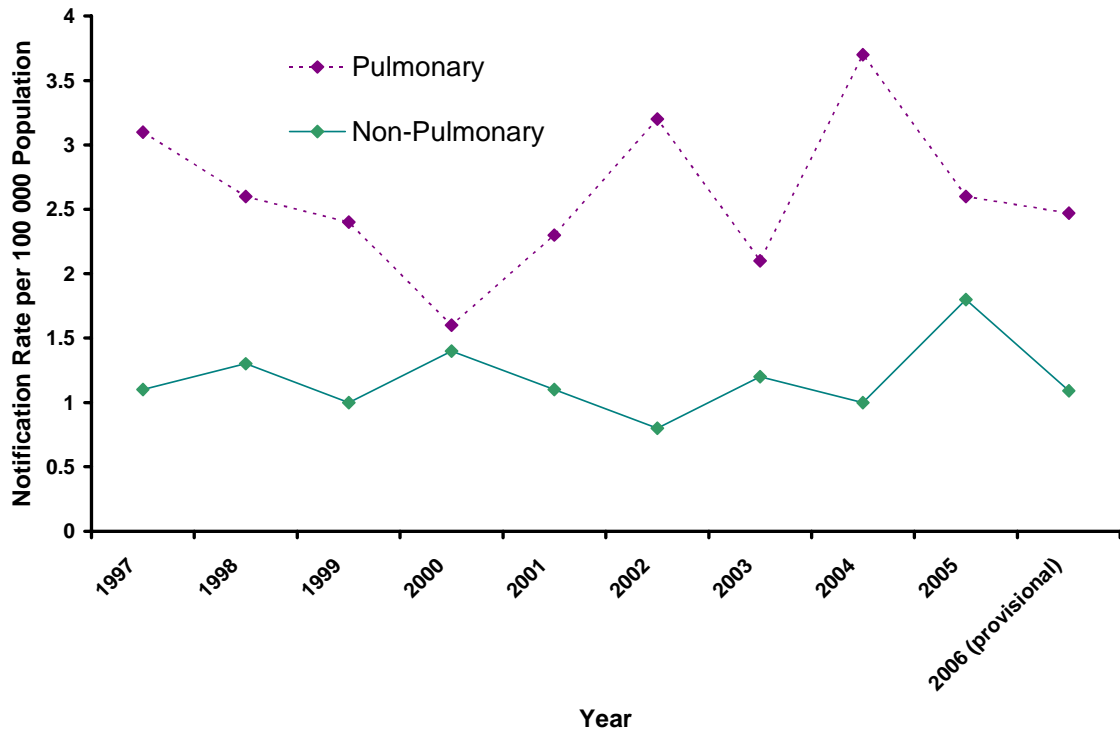
Of the 75 tuberculosis cases notified, 44 (59%) were diagnosed with pulmonary tuberculosis and 38 (87%) of these 44 cases were confirmed by culture (33 *M. tuberculosis* and five *M. bovis*). Seventeen (39%) of the 44 pulmonary tuberculosis cases notified during 2005 were sputum smear positive at the time of notification and all but one were, subsequently, confirmed by culture (13 *M. tuberculosis* and three *M. bovis*). This proportion is similar to 2004, when 27 (42%) of the 64 pulmonary tuberculosis cases notified were found to be sputum smear positive.

Provisional data for 2006 indicate, that of the 43 pulmonary cases, 36 (84%) were culture positive and 16 (37%) smear positive were smear positive.

Sixteen pulmonary tuberculosis cases in 2005 were sputum smear negative at the time of notification and all were subsequently confirmed by culture (14 *M. tuberculosis* and two *M. bovis*).

Treatment outcome information was available for 38 (86%) of pulmonary tuberculosis notifications. Twenty-seven (61%) of the 44 pulmonary tuberculosis cases notified during 2005 successfully completed a full course of anti-tuberculous treatment. Six patients were diagnosed at post mortem or died soon after treatment commenced with tuberculosis being cited on three death certificates.

The annual notification rate for pulmonary tuberculosis in Northern Ireland during 2005 was 2.6 cases per 100 000 population – a drop from the rate of 3.7 in 2004 (Figure 4). The provisional rate for 2006 is 2.5/100 000.



**Figure 4: Rates of pulmonary and non-pulmonary tuberculosis per 100 000 population, Northern Ireland by year**

Of the 44 pulmonary tuberculosis cases notified during 2005, 29 were male and 15 were female – a M/F ratio of 1.9:1. The age of those affected ranged from twelve years to 87 years with a median of 52 years and a mean of 49 years (in contrast to a mean of 45 years in 2004, 50 years in 2002, and 56 years in 2001). The incidence of pulmonary tuberculosis was spread over a wide age range for both men and women during 2005. Approximately 43% of all pulmonary cases occurred in those under 45 years of age (Table 3a and Figure 5).

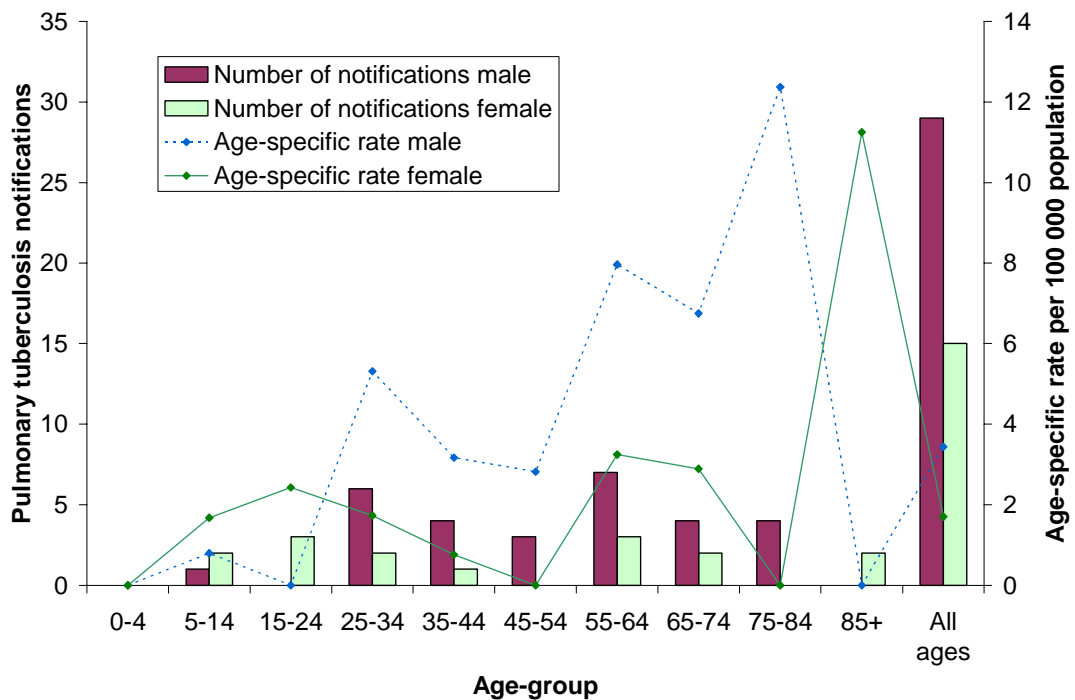
**Table 3a: Pulmonary tuberculosis notifications in Northern Ireland by age and sex, 2005**

	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
Male	0	1	0	6	4	3	7	4	4	0	29
Female	0	2	3	2	1	0	3	2	0	2	15
<b>Total</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>8</b>	<b>5</b>	<b>3</b>	<b>10</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>44</b>

The age-sex distribution shows that, as in previous years, the highest age-specific rates for pulmonary tuberculosis continue to be recorded in older age-groups. During 2005, the highest age-specific rates occurred in the 75-84 age-group for men and the 85+ age-group for women (Table 3b and Figure 3).

**Table 3b: Rates of notification of pulmonary tuberculosis in Northern Ireland per 100 000 population by age and sex, 2005**

Age-Group	Male	Female	Total
0-4	0.0	0.0	0.0
5-14	0.8	1.7	1.2
15-24	0.0	2.4	1.2
25-34	5.3	1.7	3.5
35-44	3.2	0.8	1.9
45-54	2.8	0.0	1.4
55-64	8.0	3.2	5.5
65-74	6.7	2.9	4.7
75-84	12.4	0.0	4.8
85+	0.0	11.2	7.9
<b>Total</b>	<b>3.4</b>	<b>1.7</b>	<b>2.6</b>



**Figure 5: Notified cases of pulmonary tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2004**

### 3.4 Non-pulmonary tuberculosis cases

Thirty one notifications of non-pulmonary tuberculosis were received during 2005. Twelve of these cases (39 %) were culture confirmed and all had *M. tuberculosis* infection.

The sites \* of disease were:

- Pleura (3)
- Intra thoracic lymph nodes (4)
- Lymph node - other (9)
- Spine (1)
- Meningitis (4)
- Genitourinary (6)
- Gastrointestinal /peritoneal (4)
- Miliary (1)
- Other (3)

\* Note that more than one site of infection was recorded for some individuals.

The annual notification rate for non-pulmonary tuberculosis in 2005 was 1.8 cases per 100 000 population. This is an increase from the figure recorded in 2004, when the rate was 1.0 per 100 000 population. The provisional rate for 2006 based on 19 cases is 1.1/100 000.

Of the 31 non-pulmonary tuberculosis cases notified during 2005, fourteen were male and seventeen were female (M/F ratio 1:1.2). The ages ranged from 6 months to 85 years with a median of 49 years and a mean of 47 years.

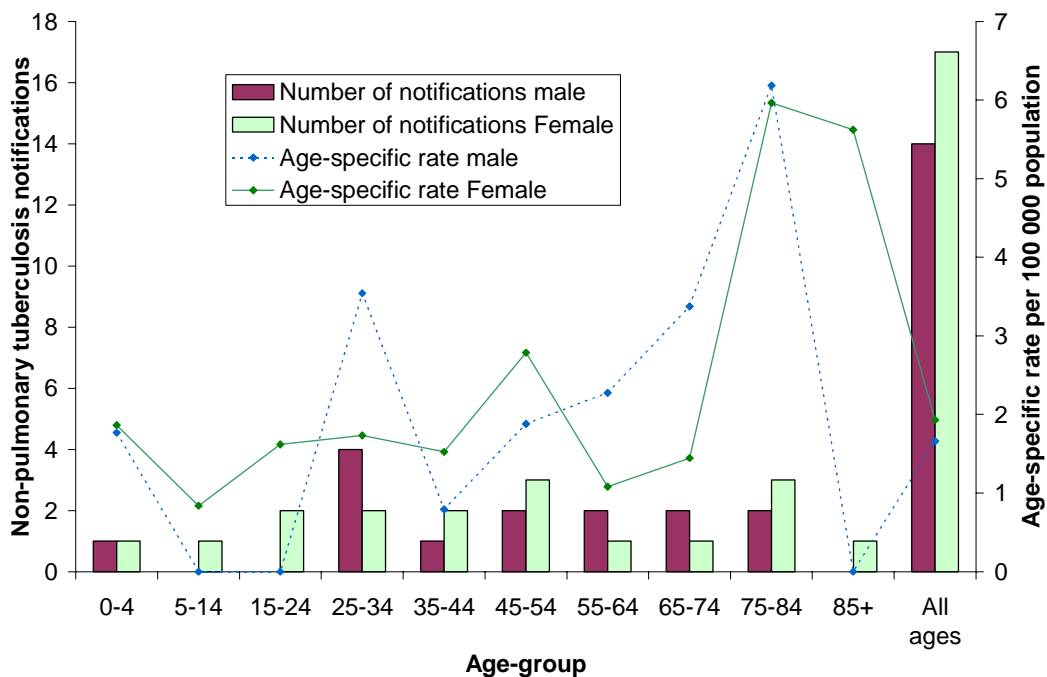
**Table 4a: Non-pulmonary tuberculosis notifications in Northern Ireland by age and sex, 2005**

	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	Total
Male	1	0	0	4	1	2	2	2	2	0	14
Female	1	1	2	2	2	3	1	1	3	1	17
<b>Total</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>31</b>

The highest age-specific rate for non-pulmonary tuberculosis occurred in both men and women aged 75-84 years, however the rate for women aged 85+ was similar to this rate. (Table 4b and Figure 6).

**Table 4b: Rates of notification of non-pulmonary tuberculosis in Northern Ireland per 100 000 population by age and sex, 2005**

Age-Group	Male	Female	Total
0-4	1.8	1.9	1.8
5-14	0.0	0.8	0.4
15-24	0.0	1.6	0.8
25-34	3.5	1.7	2.6
35-44	0.8	1.5	1.2
45-54	1.9	2.8	2.3
55-64	2.3	1.1	1.7
65-74	3.4	1.4	2.3
75-84	6.2	6.0	6.1
85+	0.0	5.6	4.0
<b>Total</b>	<b>1.7</b>	<b>1.9</b>	<b>1.8</b>



**Figure 6: Notified cases of non-pulmonary tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2005**

Outcome information (either the TB outcome form or death certificate) was available for 24 (77%) of the 31 non pulmonary cases. Fourteen had completed treatment and one was still on treatment at the time of reporting. Four had died within months of diagnosis/notification however the cause of death was not attributed to tuberculosis. Tuberculosis was diagnosed in one patient post-mortem. Three others were lost to follow up.



### 3.5. Anti-tuberculosis treatment

#### Initial therapy

Initial therapy was recorded for 48 (64 %) of the 75 tuberculosis patients notified in 2005. As in previous years, the most commonly reported treatment regimen was a combination of rifampicin, isoniazid and pyrazinamide – with or without ethambutol (Table 8).

**Table 5: Initial therapies employed for the treatment of tuberculosis in Northern Ireland, 2005**

Initial Therapy*	Number of cases
Rifampicin/Isoniazid/Pyrazinamide/Ethambutol	37
Rifampicin/Isoniazid/Pyrazinamide	8
Rifampicin/Isoniazid/Ethambutol	2
Rifampicin/Isoniazid	1

\* No details of drug therapy were recorded for 27 individuals notified with tuberculosis during 2005. Of these: nine were diagnosed at post mortem or died before their initial phase of therapy was complete.

#### Continuation therapy

In 2005, continuation therapy was recorded for 42 (56 %) of tuberculosis cases. In all but one of these 42 cases, the treatment regimen was a combination of rifampicin and isoniazid (Table 6).

**Table 6: Continuation therapies employed for the treatment of tuberculosis in Northern Ireland, 2005**

Continuation therapy	Number of cases
Rifampicin/Isoniazid	40
Rifampicin/Isoniazid/Pyrazinamide/Ethambutol	1
Isoniazid/Pyrazinamide/Ethambutol	2

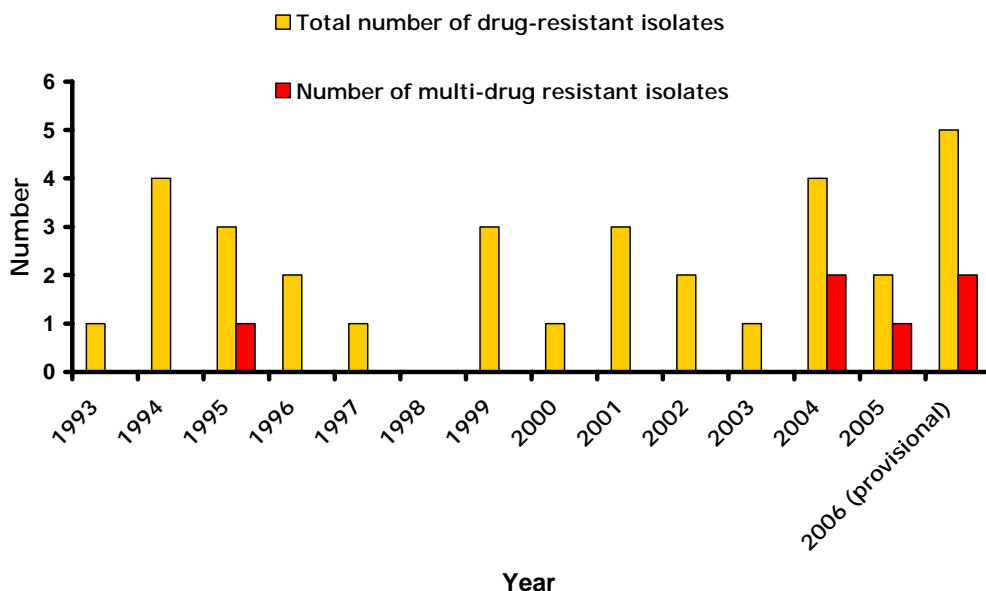
Adverse drug reactions were recorded in only one case during 2005. The adverse reaction reported was pyrazinamide hepatotoxicity.

### 3.6. Surveillance of mycobacterial isolates susceptibility to anti-tuberculous drugs in 2005

Antimicrobial susceptibility information was received on 40 of the 45 *M. tuberculosis* isolates (30 pulmonary, 10 non-pulmonary). Also five *M. bovis* isolates (all pulmonary), were examined for susceptibility to anti-tuberculous drugs during 2005.

One *M. tuberculosis* pulmonary isolate was found to be resistant to both isoniazid & rifampicin (MDR). This patient was born outside the UK. One further *M. tuberculosis* pulmonary isolate was resistant to isoniazid only and, as expected, each of the *M. bovis* isolates was pyrazinamide resistant

The number of *M. tuberculosis* drug resistant isolates during 2005 has reduced from that seen in 2004, however, provisional 2006 data is higher than that recorded during each of the last thirteen years (Figure 7). To date, susceptibility testing results are known for 44 *M. tuberculosis* isolates cultured during 2006. Three have been found to be resistant to isoniazid only, one to both isoniazid & rifampicin (MDR) and one to isoniazid, rifampicin, streptomycin, pyrazinamide and ethambutol (MDR).



**Figure 7: Incidence of drug resistance in isolates of *M. tuberculosis* Northern Ireland, 1995-2006\***

## 4. Discussion

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### 4.1 Enhanced surveillance of tuberculosis in England, Wales and Northern Ireland

Notification rates for tuberculosis in a number of Western European countries, including England and Wales, have been increasing since the late 1980's. In both 1998 and 1999, the Enhanced Surveillance of Tuberculosis notification rate for England and Wales was 11.0 per 100 000 population. It then rose steadily, reaching a rate of 14.7 per 100 000 population by 2005 with a similar rate for 2006 <sup>1</sup> (Figure 8). This equates with approximately 8,100 new cases annually.

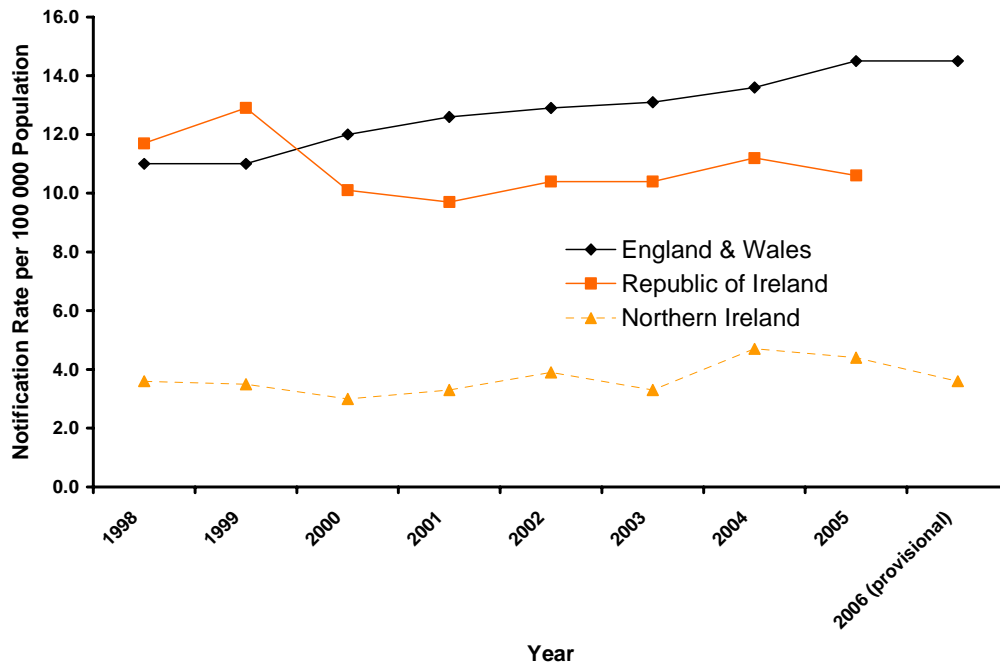
The notification rate in Northern Ireland (4.4/100 000) still remains at approximately one third of that recorded for the UK as a whole.

This difference in rates between Northern Ireland and England and Wales continues to be due largely to the high numbers of notifications in the London Region. The 2006 rate for London was 45/100 000 population and this accounted for 41 % of all cases reported across England, Wales & Northern Ireland <sup>2</sup>. In contrast, Northern Ireland accounted for approximately 1 % of all cases notified through the Enhanced Surveillance scheme during 2006. The rate in Scotland was 7.5/100 000 and Wales 6.4/100 000.

As stated in the HPA Tuberculosis Update of March 2006 <sup>3</sup> "The continuing increase in notification rates across the UK is largely confined to specific subgroups of the population in major cities. The increase reflects a combination of factors, including migration from high incidence countries, homelessness, HIV co-infection and, potentially, improvements in case reporting following the introduction of Enhanced Tuberculosis Surveillance"

Notification rates in the Republic of Ireland, although markedly higher than those in Northern Ireland, have not changed substantially during the time that epidemiological data on tuberculosis have been collated by the Health Protection Surveillance Centre, Dublin (Figure 8). In 1999, the annual notification rate was 12.9 cases per 100 000 population. This decreased to 9.7/100 000 population in 2001. Since then, the Republic of Ireland rate has increased slightly and between 2002 and 2005 has ranged from 10.2-10.6/100 000 <sup>4</sup>. In 2005 the highest crude incidence rates were in the Health Service Executive (HSE) Mid West region with a rate of 14.7/100 000. The HSE regions bordering Northern Ireland had much lower crude incidence rates (NE – 3.3/100 000 and NW – 6.3/100 000).

**Figure 8: Rate of Tuberculosis per 100 000 population in England & Wales, Republic of Ireland and Northern Ireland 1998- 2006\***



\* Northern Ireland 2006 data is provisional

Enhanced Surveillance of Tuberculosis commenced in Northern Ireland in 1992. Although the notification rate reached its lowest value during 2000, a reversal of this trend commenced in 2001 and continued to 2004 (Table 7). Provisional analysis of 2006 Northern Ireland data indicates that the rate of notification has fallen for the second consecutive year.

**Table 7: Number of tuberculosis notifications and rates per 100 000 population, Northern Ireland, 1992-2005**

Year	Number of cases	Rate
1992	71	4.4
1993	77	4.7
1994	87	5.3
1995	84	5.1
1996	78	4.7
1997	70	4.2
1998	66	3.9
1999	57	3.4
2000	51	3.0
2001	55	3.3
2002	67	3.9
2003	57	3.3
2004	81	4.7
2005	75	4.4
2006 (provisional)	63	3.6

#### 4.2. Incidence of tuberculosis in Northern Ireland by age

For many years, tuberculosis in Northern Ireland has been a disease confined largely to older age groups. In 2000, 53 % of tuberculosis notifications were in those aged 65+. However, since then, the proportion of those that are 65+ years of age at the time of notification has been falling; by 2002, the figure was 42 % and, by 2005, it had fallen further to 28 %.

Analysis of data collected between 2000 and 2004 indicates that both the mean and median ages of those notified in Northern Ireland with tuberculosis have been falling for five consecutive years (Table 8a). Although the number and proportion of cases imported into Northern Ireland has been increasing steadily since 2000 (Table 8b), this does not account wholly for the overall decrease in age at the time of notification. Table 8c shows that, for those known to have been born in the UK or Ireland, the average age at the time of notification fell by 7 years between 2000 and 2003 and by a further 6 years between 2003 and 2004. However, this downward trend across all age groups within the indigenous population appears to have halted for the time being – as evidenced by data for 2005/06 (Table 8c). In contrast, both the mean and median ages of those known to have been born outside the UK or RoI continued to fall in 2005 with evidence of a rise in 2006 (Table 8b).

**Table 8a: Mean and median ages of all tuberculosis cases notified, Northern Ireland, 2000-2005**

Year	All Countries of birth			
	Total number of cases notified	Age range	Mean age	Median age
2000	51	2-99	61.0	68.0
2001	55	3-92	55.0	58.0
2002	67	2-94	53.8	56.0
2003	57	1-89	52.8	53.0
2004	81	0-90	45.8	51.0
2005	75	0-87	48.5	49.0
2006 (provisional)	62	17-96	52.9	53.5

**Table 8b: Mean and median ages of tuberculosis cases known *not* to be born in UK or Ireland, Northern Ireland 2000-2005**

Year	Total number of cases notified	Known <i>not</i> to be born in UK/Ireland				
		Number of cases	Percentage of total cases	Age range	Mean age	Median age
2000	51	4	7.8%	32-43	39.0	41.0
2001	55	7	12.7%	27-85	41.7	34.0
2002	67	9	13.4%	24-49	37.6	38.0
2003	57	12	21.1%	21-44	34.1	35.0
2004	81	25	30.9%	19-73	34.1	28.0
2005	75	19	25.3%	13-65	30.9	27.0
2006 (provisional)	62	23	37.1%	17-73	33.7	33.0

*Note: The number of cases not born in UK/Ireland together with the number of cases born in UK/Ireland may not necessarily add up to the total number of cases if this information was not available.*

**Table 8c: Mean and median ages of tuberculosis cases known to be born in UK or Ireland, Northern Ireland 2000-2005**

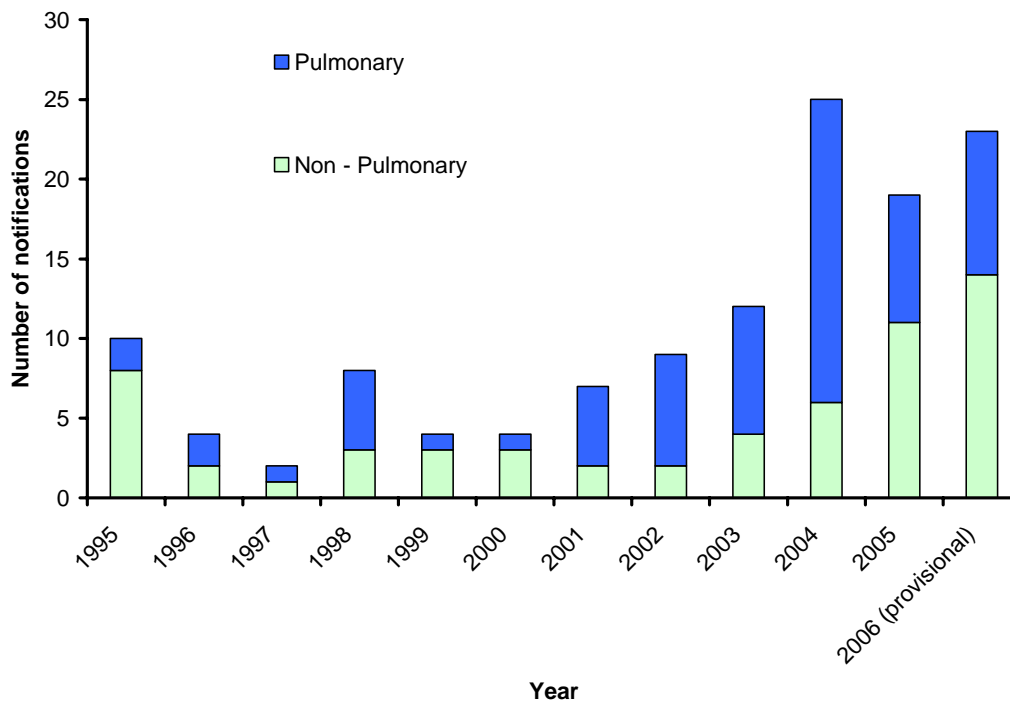
Year	Total number of cases notified	Known to be born in UK/Ireland				
		Number of cases	Percentage of total cases	Age range	Mean age	Median age
2000	51	43	84.3%	2-99	64.6	70.0
2001	55	36	65.5%	3-85	57.8	64.0
2002	67	58	86.6%	2-94	56.4	62.0
2003	57	45	78.9%	1-89	57.8	66.0
2004	81	55	67.9%	0-90	51.6	56.0
2005	75	55	73.3%	0-87	54.9	58.0
2006 (provisional)	62	38	61.3%	21-96	64.2	61.0

#### 4.3. Tuberculosis in Northern Ireland by place of birth

Although the proportion of cases in Northern Ireland known to have been born outside the UK remains very much lower than in England & Wales, it has been increasing since 2000 (Table 8b) and, in 2005, represented approximately one quarter of all cases notified (Figure 9). This is a slight decrease, both in absolute numbers and proportion, from 2004 when 25 (31%) were born outside the UK/Ireland. However the upward trend is evident reflecting immigration into Northern Ireland. In the Republic of Ireland, of the 450 patients diagnosed with tuberculosis during 2005, 152 (34%) were born outside Ireland continuing a trend which started in 2000/01.

In 2005, 19 cases (25 % of all cases notified) occurred in individuals born abroad. Eight (42%) of these 19 cases were notified with pulmonary tuberculosis, of which three were both sputum smear and culture positive for *M. tuberculosis* at the time of notification. The remaining five pulmonary cases were also culture positive for *M. tuberculosis*. The year of first entry into the UK was recorded for 17 of the 19 cases known to have been born abroad. Nine (53%) developed disease within two years of entry to the UK and, of these, three developed disease within one calendar year of entry.

**Figure 9: Site of disease in notified tuberculosis cases born outside UK & Ireland, Northern Ireland, 1995-2006 \***



#### 4.4. Tuberculosis in Healthcare Workers

In 2005 there were eight healthcare workers notified with tuberculosis: five with pulmonary and three with non pulmonary tuberculosis. This is the highest annual total for many years. This contrasts with only one healthcare worker with tuberculosis in 2004 (sputum smear and culture positive pulmonary tuberculosis). Provisional data for 2006 includes one healthcare worker with smear positive pulmonary tuberculosis and five with non pulmonary tuberculosis.

In the period 2000 – 05 tuberculosis has been notified in 20 healthcare workers: 13 with pulmonary and 7 with non pulmonary infection. Of the 13 pulmonary cases seven (54%) were born outside the UK/Rol as were six (86%) of the seven non pulmonary cases.

#### **4.5. Incidence of *M. bovis* infection in Northern Ireland**

There are, generally, only one or two human cases of *M. bovis* infection notified in Northern Ireland annually. As outlined earlier, additional information is sought on any patient with culture confirmed *M. bovis* infection - in order to help identify potential source(s) of infection. In the past, the majority of these cases have been elderly patients with a reactivation of old disease. However, *M. bovis* infection can also occur in an individual for whom no risk factors (animal contact, consumption of unpasturised milk etc.) have been identified. Between 1999 and 2005, a total of 15 culture confirmed human cases of *M. bovis* infection in Northern Ireland were notified through Enhanced Surveillance of Tuberculosis – with no cases in either 2000 or 2002.

Of some concern are the five cases of laboratory confirmed *M. bovis* infection during 2005. All had pulmonary disease (one also with miliary TB) and three were sputum smear positive at the time of notification. Four of the five cases were aged over 50 years. Apart from age there patients had no obvious reported risk factors for *M. bovis* infection. Provisionally there are three reports of *M. bovis* infection in 2006.



## 5. Outcome Surveillance

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The collection of outcome data on tuberculosis cases has been ongoing in Northern Ireland since enhanced surveillance commenced in 1992, but has only been in use across England and Wales for cases notified since January 2001. Overall, outcome information was reported on 88 % of tuberculosis cases reported in England, Wales and Northern Ireland during 2005. This represents a continuing year on year improvement in outcome reporting within the UK.<sup>3</sup> However in Northern Ireland, treatment outcome information was reported for 62 (83%) of cases in 2005 – the lowest for several years and compares with rates of reporting of 95% in 2004.

Outcome information (Treatment Outcome form or death certificate) was available for 62 of the 75 cases notified in Northern Ireland during 2004. Forty one patients are known to have completed their full course of treatment and details of drugs prescribed were recorded on their outcome form (see earlier). Four were still on treatment when the outcome form was being completed. Two were intolerant to their medication. Ten patients died and four were lost to follow up.

## 6. References

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