

**SURVEILLANCE OF TUBERCULOSIS**  
**IN NORTHERN IRELAND**  
**2002**

Dr Hilary E Kennedy  
Epidemiological Scientist  
CDSC NI

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## Summary

In 2002 as part of the enhanced surveillance of tuberculosis notification scheme, CDSC (NI) received 78 notifications of tuberculosis. Eight were subsequently identified as having infections with mycobacteria other than tuberculosis complex (MOTTs) and a further three cases were subsequently diagnosed as having a condition other than tuberculosis. Forty-eight cases were culture confirmed as *M. tuberculosis* infection. There were no cases of *M. bovis* infection during 2002. In addition to the culture confirmed cases; three cases were positive by histological examination of lymph nodes and two cases were positive by histological examination of lung tissue. The outstanding fourteen cases remain notified on the basis of clinical and other laboratory diagnosis, giving a total of sixty-seven notified cases of tuberculosis identified through this programme in 2002. The annual notification rate of tuberculosis was estimated at 3.9 cases per 100,000 population.

Fifty-four of the 67 notified cases had pulmonary disease and 13 had non-pulmonary disease. Out of the 54 cases of pulmonary tuberculosis, 19 were both sputum smear and culture positive and a further 20 were culture positive only. Seven patients with pulmonary disease died. Tuberculosis was the cause of death in 2 cases and was cited as a contributing factor in 2 out of the 5 remaining cases.

Nine of the 13 non-pulmonary tuberculosis cases were confirmed by culture. The sites of disease reported in these cases were: lymph nodes (5), pleura (5), genitourinary (1), joint/bone (1) and CNS (1).

Details of initial treatment were recorded for 51 of the 67 notified cases cases, of which 49 received a combination of rifampicin, isoniazid and pyrazinamide. Continuation therapy was recorded for 45 cases. Forty-three of these 45 cases received a combination of rifampicin and isoniazid, with or without an additional drug.

Antimicrobial sensitivity testing results were available for all 48 *M. tuberculosis* isolates. One isolate was found resistant to isoniazid only and a further isolate was found resistant to both isoniazid and streptomycin.

## 1. Introduction

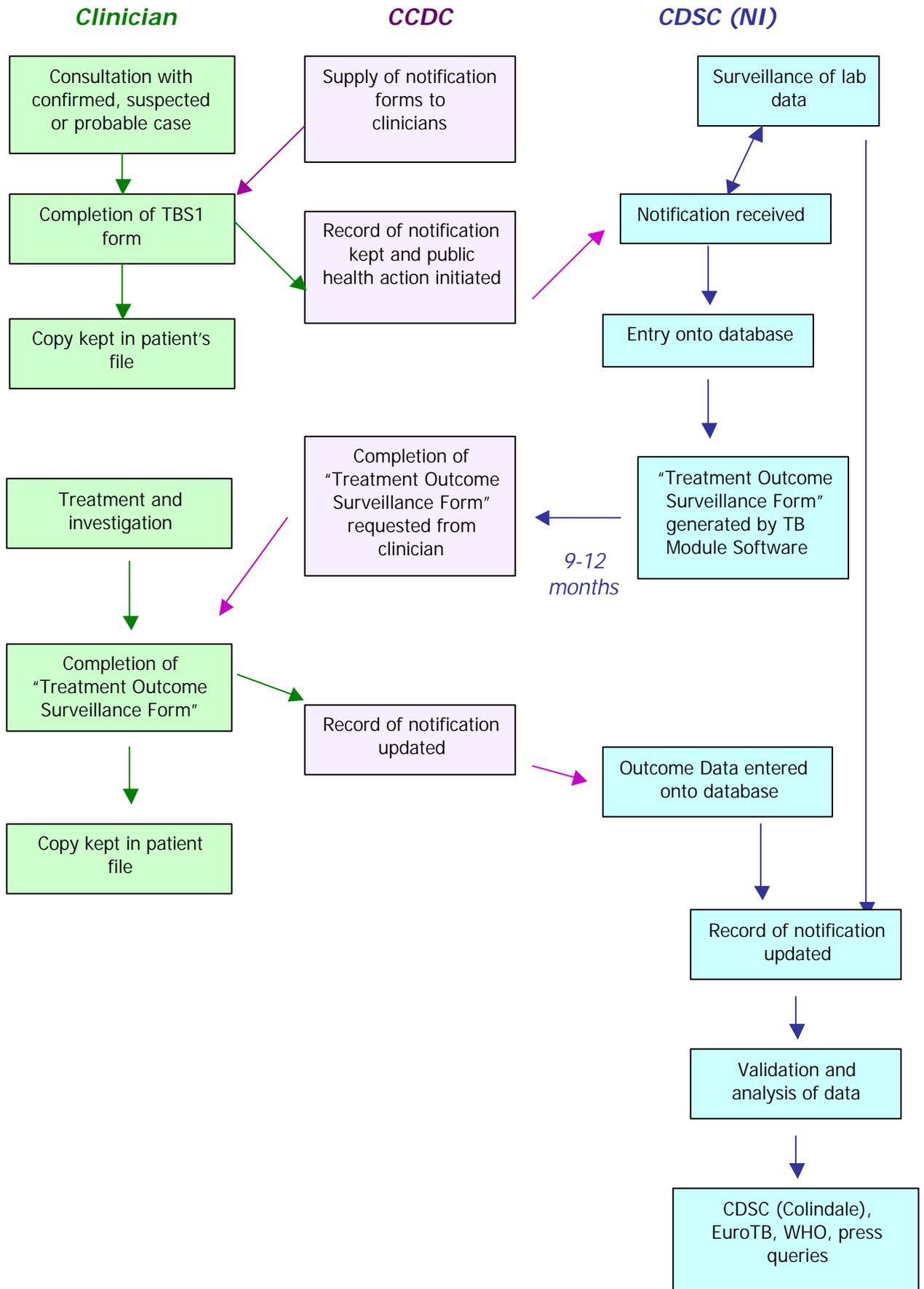
Clinicians in Northern Ireland, in line with those in the rest of the United Kingdom, are required to notify all cases of tuberculosis to the Director of Public Health of the Health and Social Services Board (HSSB) of residence. Enhanced surveillance of tuberculosis was established in Northern Ireland 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 follow-up TBS2 form was, until recently, used to collect details of treatment and outcome, together with any additional clinical and/or microbiological information not available at the time of initial notification.

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 continue the export and central collation of data for England, Wales and Northern Ireland, the introduction of new software was also required. Outcome data in Northern Ireland is now collected on a standardised 'Tuberculosis Treatment Outcome Surveillance Form', which has been customised for local use and replaces TBS2. 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 CCDC for completion by the patients' clinician.

All forms are subsequently forwarded to the Northern Ireland Communicable Disease Surveillance Centre CDSC (NI) where the information is entered onto a secure database, validated (using laboratory reports and anti-microbial resistance information), updated and analysed. The information is then used for inclusion in national and 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.

This report presents the epidemiological data for tuberculosis cases reported in Northern Ireland (NI) from 1<sup>st</sup> January 2002 to 31<sup>st</sup> December 2002. 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.



## 2. Methods

### 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 organisms 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*.

**“non culture confirmed” case\*** is based on a clinical diagnosis of tuberculosis, where the physician has the intention to treat with a full course of anti-tuberculous therapy. Such cases may have been clinically diagnosed and “confirmed” by methods other than culture, e.g., sputum smear or histology.

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 diagnosis other than tuberculosis.

**\* For cases notified after August 2003, “Non culture confirmed case” is replaced by “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.”

**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 (2002 version 2 release 5). The 2002 mid-year population estimates (Registrar General Northern Ireland, NISRA) were used for calculating rates.

## 3. Results

### 3.1. Notifications

A total of 78 cases were notified through the surveillance scheme during 2002. Of these 78 notifications, 8 were laboratory confirmed as infections with mycobacteria other than tuberculosis (MOTTs) and 3 further cases were subsequently diagnosed as having an illness other than tuberculosis. These 11 patients who were either diagnosed with another condition or infections with MOTTs were de-notified but remained recorded in the dataset. They were excluded from the main analysis and analysed separately. This gave a total of 67 cases of tuberculosis notified during the course of 2002, of which 48 (72 %) were culture confirmed. All of the isolates were identified as *M. tuberculosis*. Nineteen cases were notified on the basis of clinical or non-culture diagnosis and response to anti-tuberculous therapy. Of these 19 cases; 3 were positive by histological examination of lymph nodes and 2 were positive by histological examination of lung tissue. Twelve of the remaining 14 cases were notified with pulmonary tuberculosis and 4 of these were close contacts of known culture positive pulmonary tuberculosis patients. Of these 12 patients, 9 responded well to anti-tuberculous therapy. Treatment details were not available for two further patients and the remaining patient died shortly after treatment commenced.

Of the 67 tuberculosis cases, 54 (81 %) had pulmonary disease and 13 (19 %) had non-pulmonary disease. Follow-up information (either TBS2 or death certificate) was provided for 61 (91 %) cases (Table 1).

**Table 1: Enhanced TB surveillance notification forms submitted in Northern Ireland, 2002**

	TBS1	Follow-up	TBS1/follow-up (%)
Total	67	61	91

### 3.2 Tuberculosis cases

The annual notification rate of tuberculosis for Northern Ireland in 2002, based on 67 notifications, was estimated at 3.9 cases per 100 000 population (Table 2). This indicates a continued increase in the incidence of tuberculosis within Northern Ireland between 2000 and 2002. In 2000, there were 51 notifications and the rate was 3.0 per 100 000 population. In 2001, there were 55 notifications and the rate had increased to 3.3 per 100 000 population.

**Table 2: Tuberculosis cases, Northern Ireland, 2002**

	Confirmed	Non-culture confirmed*	Total	Rate per 100 000
Total	48	19	67	3.9

\* A number of notified individuals, although never culture confirmed, were known contacts of others who already had culture confirmed tuberculosis. In addition, a number of non-culture confirmed cases displayed clinical symptoms such as lung X-ray changes.

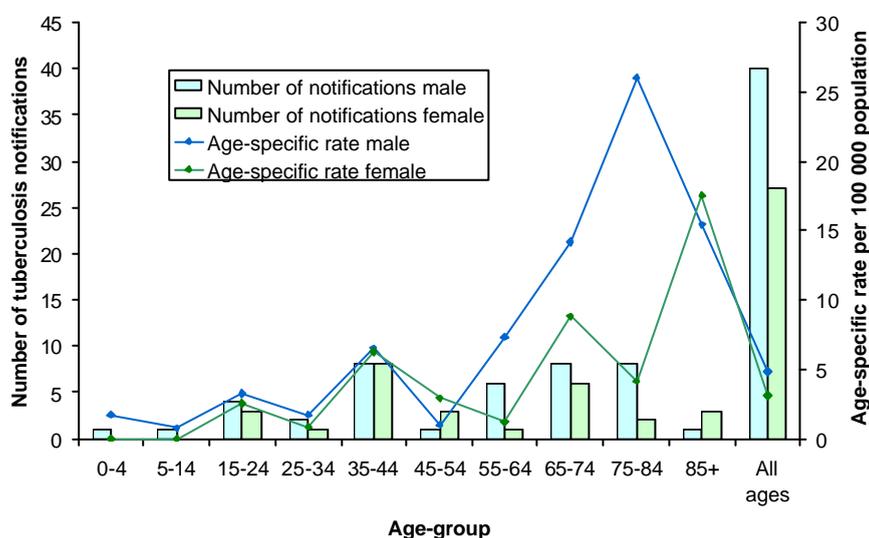
Of the 67 tuberculosis cases, 40 were male and 27 female, giving a sex ratio M/F of 1.5 (unchanged from 2001). The ages ranged from 2 to 94 years with a median of 56 and a mean of 54 years. The age-sex distribution is shown in Table 3 and Figure 1. The highest proportion of cases for both men and women was in the 35-44 age-group. Six of the 7 cases in young adults aged 15-24 years were born in the UK and one of these was a contact of an individual with culture-confirmed pulmonary tuberculosis. Two further cases aged 15-24 had culture-confirmed pulmonary tuberculosis and no history of contact with another infected individual.

The highest age-specific rates in 2002 occurred in male patients aged 75-84 years and in female patients aged 85+, which has remained unchanged since 2000. Overall, the age-specific rate in men was higher than that in women, except for the 45-54 and 85+ age-groups.

**Table 3: Rates of notification of tuberculosis cases per 100 000 population in Northern Ireland by age and sex, 2002**

Age-Group	Male	Female	Total
0-4	1.7	0.0	0.9
5-14	0.8	0.0	0.4
15-24	3.2	2.5	2.9
25-34	1.7	0.8	1.3
35-44	6.5	6.2	6.4
45-54	1.0	2.9	2.0
55-64	7.3	1.2	4.2
65-74	14.2	8.8	11.2
75-84	26.0	4.1	12.6
85+	15.4	17.5	17.0
Total	4.8	3.1	3.9

**Figure 1: Notified cases of tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2002**



In 2002, the country of birth was recorded for all 67 cases. Fifty-eight (87 %) were born in the United Kingdom, 2 each in India, Pakistan & Portugal and 1 each in China, South Africa & Sudan. Since 1992, when enhanced surveillance of tuberculosis commenced in Northern Ireland, an average of 90% (range 83 % - 100 %) of all notified individuals are known to have been born in the UK or Ireland.

Information on any previous treatment for tuberculosis was available for 60 of the 67 cases notified. Three were reported to have received previous treatment. In one of these cases (non-pulmonary), previous treatment had been received during the 1940's when the patient was a young child. The remaining 2 cases (one pulmonary, one non-pulmonary) had received treatment within the past 20 years. When notified in 2002, both cases were 66 years of age.

Seven notified cases, 6 pulmonary and 1 pleural, were identified through contact tracing. Of these 7 cases; 3 were culture-confirmed, 2 (both young children) were diagnosed with primary pulmonary tuberculosis and 1 had chest X-ray changes consistent with tuberculosis. The remaining case had a strongly positive heaf test with no history of BCG vaccination and was treated with a full course of anti-tuberculous therapy.

### **3.3. Pulmonary tuberculosis cases**

Of the 67 tuberculosis cases notified, 54 (81 %) were diagnosed with pulmonary tuberculosis. Thirty-nine (72 %) of these 54 cases were confirmed by culture. This is similar to 2001 when, of the 55 tuberculosis cases notified, 36 (78 %) were diagnosed with pulmonary tuberculosis. The percentage of pulmonary tuberculosis cases confirmed by culture has changed little between 2000 and 2002. In 2000, 22 (79 %) of 28 pulmonary tuberculosis cases were culture-confirmed and, in 2001, 28 (78 %) of 36 pulmonary tuberculosis cases were culture-confirmed.

Nineteen (35 %) of the 54 pulmonary tuberculosis cases notified in 2002 were found to be sputum smear positive at the time of notification and all were confirmed by culture. This compares favourably to 2001, when 21 (58 %) of the 36 cases of pulmonary tuberculosis notified were found to be both smear and culture positive. A further 20 pulmonary tuberculosis cases notified in 2002 were smear negative at the time of notification but were, subsequently, confirmed by culture. The remaining 15 pulmonary tuberculosis cases notified in 2002 were not culture-confirmed; 10 cases completed a full course of anti-tuberculous therapy, 1 case died shortly after treatment commenced, 1 case defaulted from treatment and drug details were not recorded for the remaining 3 cases.

Seven patients with pulmonary tuberculosis died. Tuberculosis was registered as the primary cause of death in two cases and as a contributing factor in a further 2 cases.

The annual notification rate for pulmonary tuberculosis in Northern Ireland was 3.2 cases per 100 000 population (Table 4). The corresponding rate in 2001 was 2.1 cases per 100 000 population and, in 2000, was 1.6 cases per 100 000 population.

**Table 4: Pulmonary tuberculosis notifications, Northern Ireland, 2002**

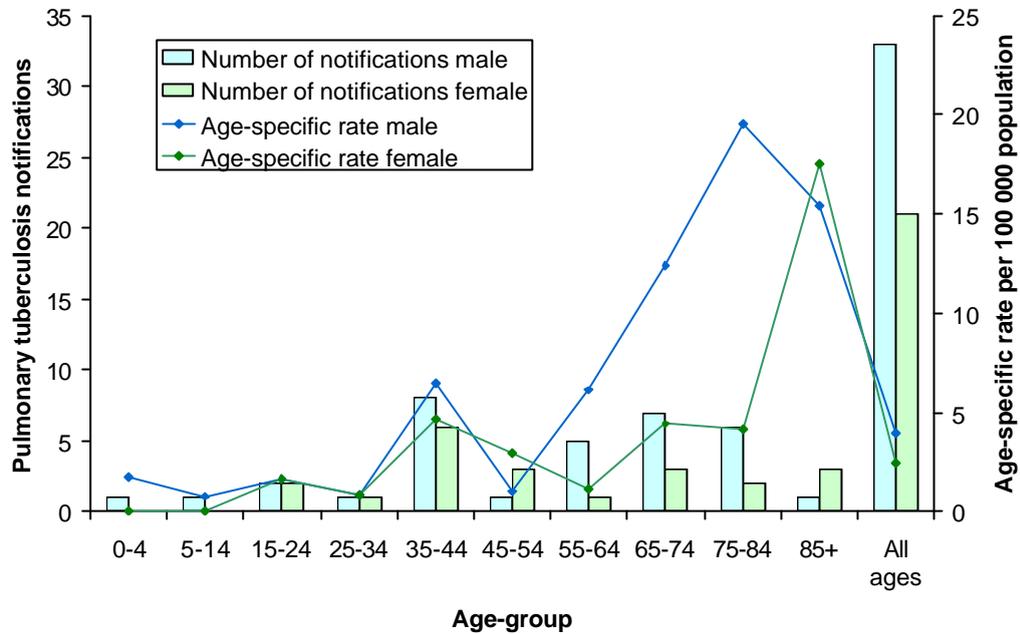
	Confirmed	Non-culture confirmed	Total	Rate per 100 000
Total	39	15	54	3.2

Of the 54 pulmonary tuberculosis cases, 33 were male and 21 were female. The ages ranged from 2 to 94 years with a median of 56 years and an average of 54 years (compared to an average of 58 years in 2001 and 61 years in 2000). The incidence of pulmonary tuberculosis was spread over a wide age range for both men and women. However, almost half of all pulmonary cases occurred in those under 55 years of age. The age-sex distribution shows that the highest age-specific rate occurred in the 75-84 age-group for men and in the 85+ age group for women (Table 5 and Figure 2).

**Table 5: Rates of notification of pulmonary tuberculosis in Northern Ireland per 100 000 population by age and sex, 2002**

Age-Group	Male	Female	Total
0-4	1.7	0.0	0.9
5-14	0.8	0.0	0.4
15-24	1.6	1.7	1.6
25-34	0.9	0.8	0.8
35-44	6.5	4.7	5.6
45-54	1.0	2.9	2.0
55-64	6.1	1.2	3.6
65-74	12.4	4.4	8.0
75-84	19.5	4.1	10.1
85+	15.4	17.5	17.0
Total	4.0	2.4	3.2

**Figure 2: Notified cases of pulmonary tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2002**



### **3.4. Non-pulmonary tuberculosis cases**

Altogether, 13 notifications of non-pulmonary tuberculosis were received. Nine of these (69 %) were culture-confirmed.

The sites of disease were:

- Lymph nodes: 5
- Pleura: 5
- Genitourinary: 1
- Joint/bone: 1
- Brain: 1

Two patients with non-pulmonary disease are known to have died. Tuberculosis was cited as the cause of death in one case. The cause of death in the second case is unknown.

The annual notification rate for non-pulmonary tuberculosis was 0.8 cases per 100 000 population (Table 6). This has fallen from that recorded for either 2001 or 2000, when the rates were 1.1 and 1.4 per 100 000 population respectively.

**Table 6: Non-pulmonary tuberculosis notifications, Northern Ireland, 2002**

	Confirmed	Non-culture confirmed	Total	Rate per 100 000
Total	9	4	13	0.8

Of the 13 non-pulmonary tuberculosis cases, 7 were male and 6 were female. The ages ranged from 19 years to 82 years with a median of 58 years and a mean of 51 years. In 2002, the highest proportion of cases overall was found in the 65-74 age-group (Table 7 and Figure 3). However, almost half of all non-pulmonary tuberculosis cases occurred in individuals under 45 years of age.

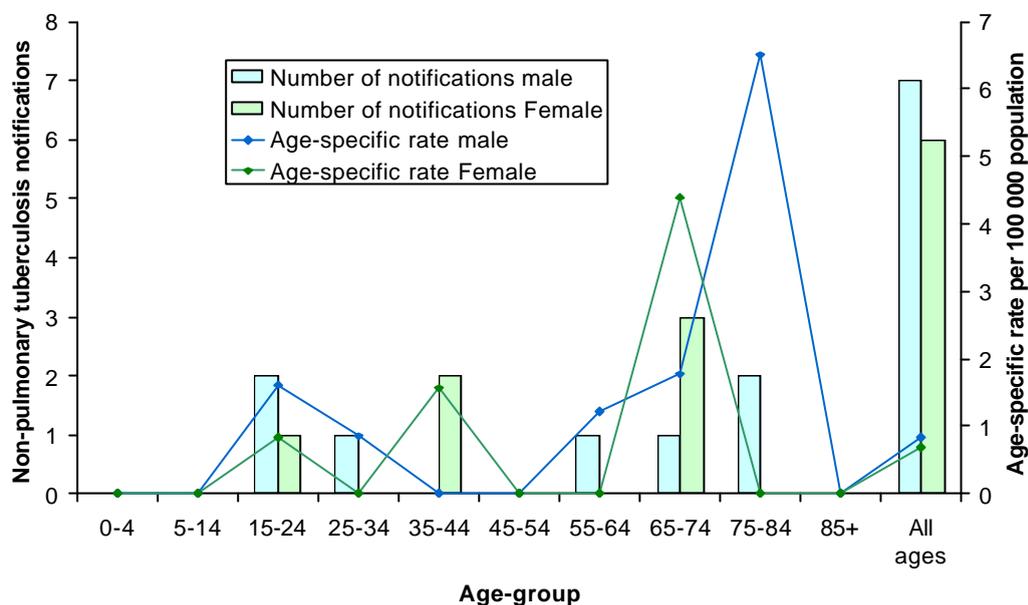
The highest age-specific rate occurred in men aged 75-84 years and in women aged 65-74 years. The highest age-specific rate overall also occurred in the 65-74 age-group.

**Table 7: Rates of notification of non-pulmonary tuberculosis in Northern Ireland per 100 000 population by age and sex, 2002**

Age-Group	Male	Female	Total
0-4	0.0	0.0	0.0
5-14	0.0	0.0	0.0
15-24	1.6	0.8	1.2
25-34	0.9	0.0	0.4
35-44	0.0	1.6	0.8
45-54	0.0	0.0	0.0
55-64	1.2	0.0	0.6
65-74	1.8	4.4	3.2
75-84	6.5	0.0	2.5
85+	0.0	0.0	0.0
Total	0.8	0.7	0.8

**Figure 3: Notified cases of non-pulmonary tuberculosis by age and sex, and**

## age-specific rates per 100 000 population, Northern Ireland, 2002



### 3.5. Anti-tuberculous treatment

#### Initial therapy

Initial therapy was recorded for 51 (76 %) tuberculosis patients notified in 2002. 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 8: Initial therapies employed for the treatment of tuberculosis in Northern Ireland, 2002**

Initial Therapy	Number of cases
Rifampicin/Isoniazid/Pyrazinamide/Ethambutol	26
Rifampicin/Isoniazid/Pyrazinamide	23
Rifampicin/Isoniazid/Ethambutol	1
Rifampicin/Isoniazid	1

## Continuation therapy

In 2002, continuation therapy was recorded for 47 (70 %) of tuberculosis cases, a similar figure to that recorded for 2001. In all but 3 of these 47 cases, the treatment regimen was a combination of rifampicin and isoniazid (Table 9). Continuation therapy information was not available in 4 cases for which details of initial therapy were recorded. Two of these 4 patients died shortly after commencement of initial treatment. One patient defaulted from treatment and left Northern Ireland and continuation therapy details were not recorded for the remaining patient.

Adverse drug reactions were recorded in 2 cases (4 % of cases for which initial therapy details were recorded). A rash, caused by pyrazinamide, was reported in one case. The nature of the adverse reaction caused by isoniazid in the second case was not recorded.

**Table 9: Continuation therapies employed for the treatment of tuberculosis in Northern Ireland, 2002**

Continuation therapy	Number of cases
Rifampicin/Isoniazid	44
Rifampicin/Isoniazid/Pyrazinamide	1
Rifampicin/Ethambutol	2

### 3.6. *Non-tuberculosis cases*

Eight notified cases were found subsequently to be due to MOTTs and were therefore excluded from the main analysis. The mycobacterial species breakdown of these cases was as follows:

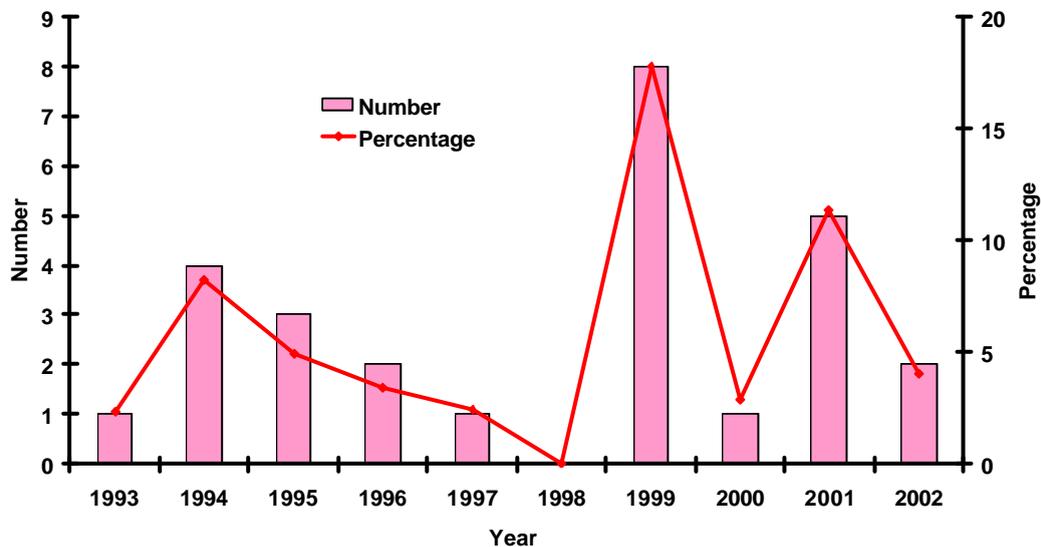
- 2 *M. avium-intracellulare*
- 3 *M. malmoense*
- 1 *M. chelonae*
- 2 *M. kansasii*

### 3.7. Surveillance of mycobacterial isolates susceptibility to anti-tuberculous drugs in 2002

In 2002, 39 *M. tuberculosis* isolates from cases of pulmonary tuberculosis and 9 *M. tuberculosis* isolates from cases of non-pulmonary tuberculosis were examined for susceptibility to anti-tuberculous drugs. Two isolates from pulmonary tuberculosis cases were found resistant to isoniazid and one of these was also found resistant to streptomycin.

This level of resistance in *M. tuberculosis* isolates is largely unchanged from that observed in either 2000 or 2001 (Figure 4). (Two of the five drug-resistant isolates in 2001 were *M. bovis* – which is, as a general rule, pyrazinamide resistant)

**Figure 4: Incidence of drug resistance in isolates of *M. tuberculosis* complex organisms in Northern Ireland, 1993-2002**



## 4. Discussion

Notification rates for tuberculosis in several Western European countries, including England and Wales, have been increasing since the late 1980s. In both 1998 and 1999, the notification rate for England and Wales was 11.0 per 100 000 population. In 2000, this figure rose to 12.0 per 100 000 population and, by 2001, it had reached 12.7 per 100 000 population. Provisional 2002 figures for England and Wales indicate a further rise in the statutory notification rate to 13.2 per 100 000 population <sup>1</sup> (Figure 5).

Although the notification rate in Northern Ireland has been increasing since 2000, it still remains at approximately one third of that recorded for the UK as a whole. (In 2002, the notification rate for Northern Ireland was 3.9 per 100 000 population and, for the UK overall, the corresponding provisional rate was 12.9 per 100 000 population <sup>1</sup>).

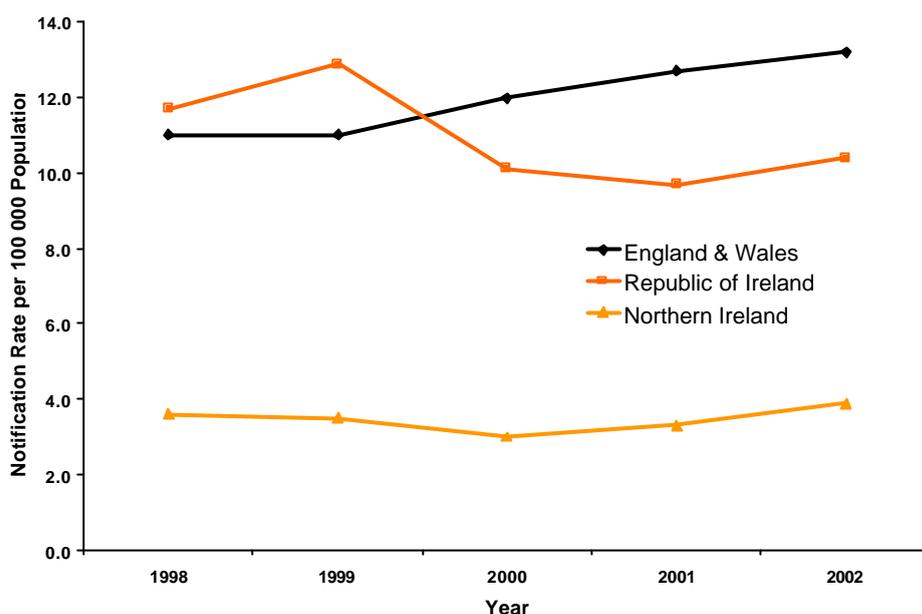
This difference in rates between Northern Ireland and England and Wales continues to be due largely to the high numbers of notifications in the London Region. The 2002 provisional rate for London was 41.0 cases per 100 000 population and accounted for 43 % of all cases reported. In comparison, Northern Ireland accounted for only 1 % of all cases notified in the UK during 2002 <sup>1</sup>. TB is also concentrated in particular parts of London. Rates of tuberculosis exceeded 40 cases per 100 000 in 14 of the 33 London boroughs during 2002 and, in 4 boroughs, rates were in excess of 80 cases per 100 000 population <sup>2</sup>.

In response to the increasing problem of tuberculosis in London, the London TB Register was set up. The purpose of this Register is to make clinical management of cases easier, to monitor treatment outcomes and to improve outcomes. Implementation was achieved, in all 33 London TB Clinics, by March 2002 <sup>3</sup>.

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 has been collated by the National Disease Surveillance Centre, Dublin (Figure 5). In 1998, the annual notification rate was 11.7 cases per 100 000 population. This rate increased to 12.9 per 100 000 population in 1999 before falling again, to 10.1 per 100 000 population, in 2000. In 2001 this downward trend continued, with a rate of 9.7 per 100 000 population <sup>4</sup>.

**Figure 5: Rate of Tuberculosis per 100 000 population in England & Wales,**

## Republic of Ireland and Northern Ireland 1998- 2002\*



\* 2002 data for England & Wales <sup>1</sup>, and for Republic of Ireland <sup>7</sup>, are provisional

By 2000, the Northern Ireland tuberculosis notification rate had fallen to its lowest value since 1992 (when enhanced surveillance commenced). However a reversal of this trend appears to have commenced in 2001 and continued during 2002 (Table 10). Examination of available data suggests that, for 2003, the provisional rate will be 3.4 per 100 000 population.

**Table 10: Number of tuberculosis notifications and rates per 100 000 population, Northern Ireland, 1992-2003**

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	65	3.9
1998	61	3.6
1999	59	3.5
2000	51	3.0
2001	55	3.3
2002	67	3.9
2003*	58	3.4

\* provisional data

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 notified that are over 65 years has begun to fall. In 2001, the figure was 42 % and, in 2002, was 39 %. Provisional data for 2003 suggests that the percentage of cases in those aged 65+ will be 41 %.

The proportion of cases in the UK as a whole attributable to those aged 65+ remains very much lower than in Northern Ireland. In 2000, only 20 % of the total 6597 notified UK cases were in individuals aged 65+. By 2001, this figure had fallen to 19 %. Provisional data for 2002 indicates a further fall, to 18 % <sup>1</sup>. In addition, the highest proportion of cases in the UK overall is to be found in the 15-44 age-group (53 % in 2001, rising to 56 % in 2002 <sup>1,5</sup>) and this is due, largely, to persons born abroad. In 2001, only 38 % of cases aged 15 to 44 years were born in the UK and provisional data for 2002 suggests that this figure has fallen further, to 37 %. In contrast, the proportion of UK cases aged below 14 years, and above 44 years, is highest in persons born in the UK <sup>1,5</sup>.

Northern Ireland provisional figures for 2003 indicate little change in the age range of those notified with tuberculosis. However, analysis of data collected over the past four years suggests that both the mean and median ages of those notified are falling (Table 11a). Although the number and proportion of cases imported into Northern Ireland has increased steadily since 2000 (Table 11b), this does not account wholly for the overall decrease in age at the time of notification. Table 11c shows that, for those known to have been born in the UK or Ireland, the average age at the time of notification fell by 8 years between 2000 and 2002 – although provisional data for 2003 indicates a slight rise in the average age once more.

**Table 11a: Mean and median ages of all tuberculosis cases notified, Northern Ireland, 2000-2003**

Year	Total number of cases notified	All Countries of birth		
		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 (provisional)	58	1-89	53.2	55.5

**Table 11b: Mean and median ages of tuberculosis cases known *not* to be born in UK or Ireland, Northern Ireland 2000-2003**

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 (provisional)	58	11	19.0%	21-43	33.0	33.2

**Table 11c: Mean and median ages of tuberculosis cases known to be born in UK or Ireland, Northern Ireland 2000-2003**

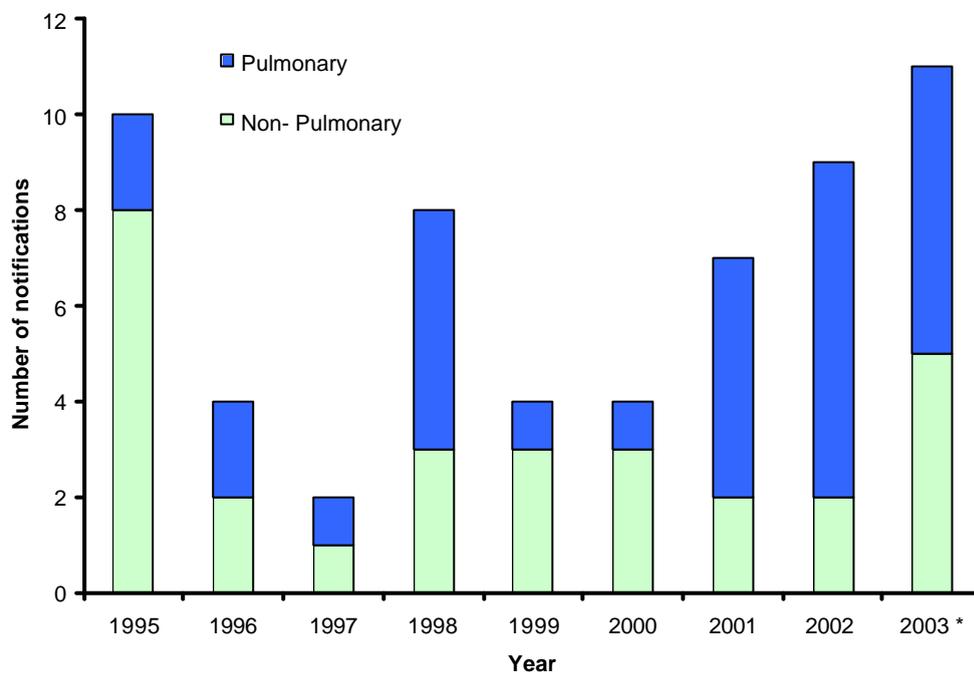
Year	Total number of cases notified	Known to be born in UK/Ireland				
		Number of cases	Percentage of total cases	Age range	Mean age	Median age
2000	51	43	84.3%	2-99	64.6	70.0
2001	55	36	65.5%	3-85	57.8	64.0
2002	67	58	86.6%	2-94	56.4	62.0
2003 (provisional)	58	46	79.3%	1-89	58.2	66.5

In the UK as a whole, the majority of cases and the highest rates of tuberculosis are found in people born outside the UK and within non-white ethnic groups. As has been the case since 1993, provisional data for 2002 indicates that the Black African ethnic group continues to have the highest rate of tuberculosis; 272 cases per 100 000 population. The corresponding rate in those of Pakistani, Indian or Bangladeshi origin is 124 cases per 100 000 population. By contrast, the rate of tuberculosis in persons of White ethnic origin is 4 cases per 100 000 population <sup>1</sup>.

In both 2001 and 2002, 63 % of the total number of cases notified in England, Wales and Northern Ireland were born outside the UK. For cases notified in 2002, where the patient was born abroad and the year of entry into the UK was known, 57 % developed disease within 5 years of arrival <sup>1</sup>. In Northern Ireland during 2002 (Table 11b), only 9 cases (13 % of all cases) occurred in individuals born abroad. However, 7 of these were notified with pulmonary disease and 5 of them were both smear and culture positive for

*M. tuberculosis* (Figure 6). The year of first entry into the Province was recorded for 8 of the 9 cases born abroad. Six developed disease within 5 years of entry to Northern Ireland and, of these, 2 developed disease during the same calendar year as their year of entry. Provisional data for 2003 indicates that 11 cases (19 % of all cases) occurred in individuals born abroad. Six of these were notified with pulmonary tuberculosis, of which 2 were both sputum smear and culture positive. The year of first entry into Northern Ireland was recorded for 9 of these 11 cases. Eight developed disease within 2 years of entry to the Province and, of these, 3 developed disease during the same calendar year as their year of entry.

**Figure 6: Site of disease in notified tuberculosis cases born outside UK & Ireland, Northern Ireland, 1995-2003**

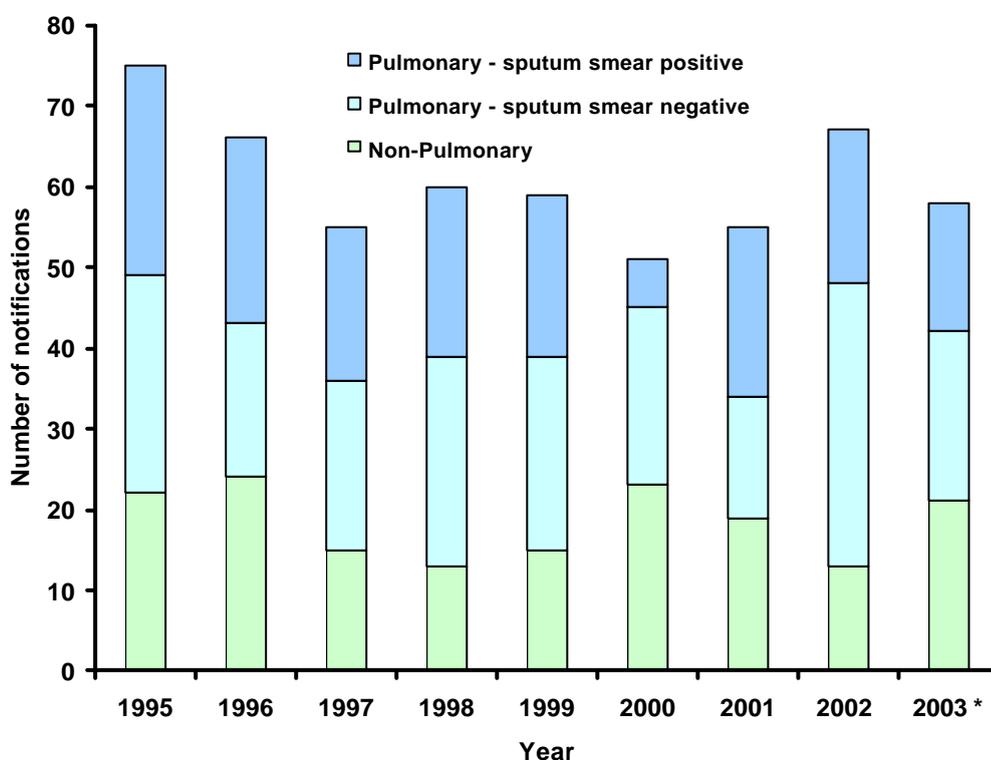


\* provisional data

The overall rate of notification of tuberculosis in Northern Ireland for 2002 was 3.9 per 100 000 population, a rise from that recorded in 2001 (Table 10). This rate of notification still compares very favourably to rates seen in both England and Wales and in the Republic of Ireland. However, the overall England, Wales and Northern Ireland rate for 2001 (12.7 per 100 000 population) and provisional rate for 2002 (13.2 per 100 000 population) are still low in comparison with the rates recorded in many other EU countries <sup>6</sup>. In 2001, the overall EU tuberculosis notification rate was 45 per 100 000 population with a clear gradient from West to East; the rate in Western Europe was 11.4 per 100 000 population, in Central Europe it was 41.4 per 100 000 population and, in Eastern Europe (the 15 Newly Independent States of the former Soviet Union), it was 92.1 per 100 000 population <sup>6</sup>.

Tuberculosis is not considered a major communicable disease problem in Northern Ireland. However, continued changes in disease patterns and epidemiology in demographic groups observed elsewhere, particularly in England and Wales, indicate the need for vigilance and the importance of functional and informative surveillance strategies. Of some concern in Northern Ireland during the last 2 years has been the increased proportion of tuberculosis cases that are notified as pulmonary and the number of those pulmonary cases which are both culture and sputum smear positive. In 2000, 55 % of all tuberculosis cases notified in Northern Ireland were diagnosed as pulmonary. This figure increased to 65 % in 2001 and, in 2002, to 81 % (Figure 7). In 2000, only 21 % (6 out of 28) of pulmonary tuberculosis cases notified in Northern Ireland were both culture positive and sputum smear positive and, by 2001, this figure had risen sharply, to 58 % (21 out of 36 pulmonary cases). In 2002, 19 out of 54 pulmonary cases (35 %) were both sputum smear and culture positive – representing a fall once again. However, a further 9 cases of pulmonary tuberculosis in 2002 were not, for a variety of reasons, subjected to sputum smear testing. In both 2001 and 2002, between one-quarter and one-third of sputum smear and culture positive patients were under 40 years of age at the time of notification and, of these, more than half were of White ethnic origin born in the UK.

**Figure 7: Classification of tuberculosis cases, Northern Ireland, 1995-2003**



\* provisional data

The incidence of drug resistant strains of *M. tuberculosis* in Northern Ireland continues to remain at very low levels. Only one multi-drug resistant isolate has been seen to date - in 1995. Two *M. tuberculosis* isolates were found resistant to isoniazid in Northern Ireland during 2002 and, of these, one was also found resistant to streptomycin. To date, provisional data for 2003 indicates only one *M. tuberculosis* drug resistant isolate (to isoniazid and streptomycin). In the Republic of Ireland, the situation remains largely unchanged in comparison to previous years; fourteen drug resistant isolates were identified in 2001 and, of these, two were found to be multi-drug resistant <sup>4</sup>. In the UK as a whole, the incidence of multi-drug resistance also remains relatively stable. Not unexpectedly, the proportion of multi-drug resistant cases is highest in those with a previous history of tuberculosis and/or in those born abroad <sup>5</sup>. Although not a problem at present, it will remain important to monitor closely any change in drug resistance within Northern Ireland, particularly the emergence of any multi-drug resistant strains.

## 5. Outcome Surveillance

Outcome data collection on tuberculosis cases (using the TBS2 form) has been ongoing in Northern Ireland since enhanced surveillance commenced, in 1992. The collection of outcome data, for all cases notified after 1 January 2001, began in England and Wales at the beginning of 2002. In order to facilitate the export and central collation of data from each of the three regions, a standardised 'Tuberculosis Treatment Outcome Surveillance Form' was introduced. The first annual report on outcome surveillance has now been published by the Health Protection Agency <sup>8</sup>. Overall, outcome information was reported on 79 % of tuberculosis cases reported in the UK during 2001. In Northern Ireland, treatment outcome was reported for 96 % of case reported in 2001 (the highest in the UK). However, in 2002 the percentage completion of treatment outcome forms in Northern Ireland has fallen again, to 91 %.

Treatment outcome forms were completed for 61 of the 67 cases notified in Northern Ireland during 2002. Forty-seven of the 61 patients completed their full course of treatment and 9 patients died prior to the commencement of, or during, treatment. One of those who died was diagnosed post mortem and all but 2 of those who died were over 70 years of age. This reflects the overall UK situation, where outcome is strongly associated with age and the proportion of treatment completion is lowest in those aged over 60 years <sup>8</sup>. Two patients in Northern Ireland refused to adhere to treatment for tuberculosis during 2002 (one returned to their country of birth), one patient was requested to continue with treatment due to initial drug resistance and one patient returned to their country of birth with a full treatment plan. Details of drug treatment were not recorded on the outcome surveillance form for one further patient.

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**their nursing and clerical staff to tuberculosis surveillance in Northern Ireland.**

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