

SURVEILLANCE OF TUBERCULOSIS
IN NORTHERN IRELAND
2001

Dr Hilary E Kennedy
Epidemiological Scientist
CDSC NI

Table of contents

Summary	3
1. Introduction	4
2. Methods	6
2.1. Sources of information	6
2.2. Definition	6
2.3. Data analysis	7
3. Results	7
3.1. Notifications	7
3.2. Tuberculosis cases	8
3.3. Pulmonary tuberculosis cases	10
3.4. Non-pulmonary tuberculosis cases	12
3.5. Anti-tuberculous treatment	14
3.6. Non tuberculosis cases	15
3.7. Surveillance of mycobacterial isolates susceptibility to anti-tuberculous drugs	16
4. Discussion	17
5. References	23

Summary

In 2001 as part of the enhanced surveillance of tuberculosis notification scheme, CDSC (NI) received 66 notifications of tuberculosis. Five were subsequently identified as having infections with mycobacteria other than tuberculosis complex (MOTTs) and a further six cases were subsequently diagnosed as having a condition other than tuberculosis. Forty-two cases were culture confirmed as *M. tuberculosis* infection and a further two cases were culture confirmed as *M. bovis* infection. In addition to the culture confirmed cases; two cases were positive by histological examination of lymph nodes, one case was positive by histological examination of lung tissue and one case was positive by histological examination of chest wall tissue. The outstanding seven cases remain notified on the basis of clinical and other laboratory diagnosis, giving a total of fifty-five notified cases of tuberculosis identified through this programme in 2001. The annual notification rate of tuberculosis was estimated at 3.3 cases per 100,000 population.

Thirty-six of the 55 notified cases had pulmonary disease and 19 had non-pulmonary disease. Out of the 36 cases of pulmonary tuberculosis, 21 were both sputum smear and culture positive and a further 7 were culture positive only. Five patients with pulmonary disease died. Tuberculosis was the cause of death in 2 cases and was cited as a contributing factor in the remaining 3 cases.

Sixteen of the 19 non-pulmonary tuberculosis cases were confirmed by culture. The sites of disease reported in these cases were: lymph nodes (4), pleura (3), genitourinary (4), abscesses (2) joint/bone (2) and skin (1).

Details of initial treatment were recorded for 46 of the 55 notified cases, of which 44 received a combination of rifampicin, isoniazid and pyrazinamide. Continuation therapy was recorded for 41 cases. Thirty-seven of these 41 cases received a combination of rifampicin and isoniazid, with or without an additional drug.

Antimicrobial sensitivity testing results were available for all 42 *M. tuberculosis* isolates. Two isolates were found resistant to isoniazid only and a further isolate was found resistant to rifampicin only. Both *M. bovis* isolates were also tested. Each was found resistant to pyrazinamide only.

1. Introduction

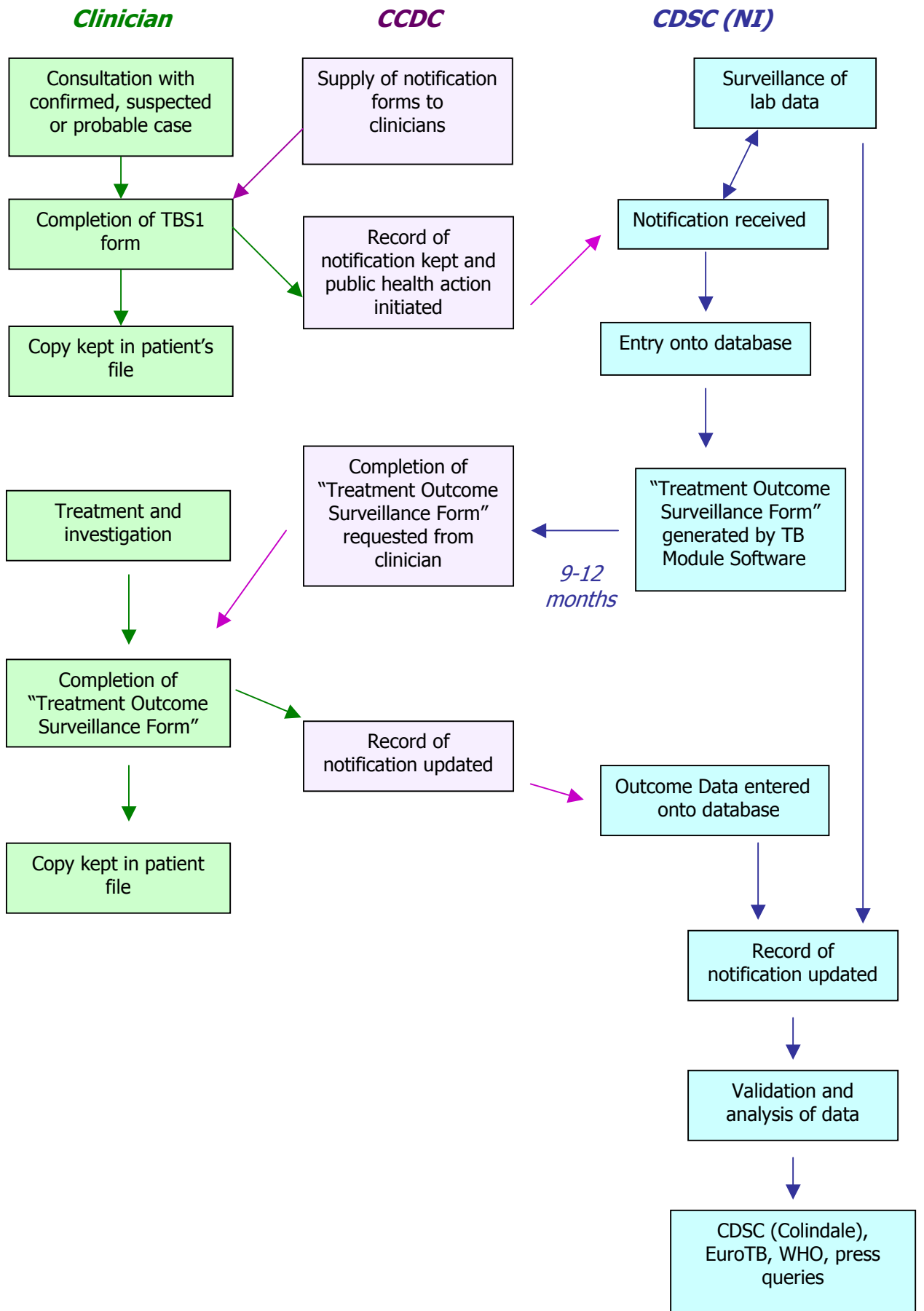
Clinicians in Northern Ireland, in line with those in the rest of the United Kingdom, are required to notify all cases of tuberculosis to the Director of Public Health of the Health and Social Services Board (HSSB) of residence. Enhanced surveillance of tuberculosis was established in Northern Ireland 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 Consultant in Communicable Disease Control (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, 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 1st January 2001 to 31st December 2001. 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.

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 PHLS Regional Module for Enhanced TB Surveillance (2002 version 2). The 2001 mid-year population estimates, from the 2001 census (Registrar General Northern Ireland, NISRA), were used for calculating rates.

3. Results

3.1. Notifications

A total of 66 cases were notified through the surveillance scheme during 2001. Of these 66 notifications, 5 were laboratory confirmed as infections with mycobacteria other than tuberculosis (MOTTs) and 6 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 55 cases of tuberculosis notified during the course of 2001, of which 44 (80 %) were culture confirmed. Forty-two of the isolates were identified as *M. tuberculosis* and the remaining two were identified as *M. bovis* (1 pulmonary case and 1 non-pulmonary case). Eleven cases were notified on the basis of clinical or non-culture diagnosis and response to anti-tuberculous therapy. Of these 11 cases; 2 cases were positive by histological examination of lymph nodes, 1 case was positive by histological examination of lung tissue and 1 case was positive by histological examination of chest wall tissue. The remaining 7 cases, of which 6 were notified with pulmonary tuberculosis, all responded well to anti-tuberculous therapy. Three of these 7 cases were close contacts of known culture-positive pulmonary tuberculosis patients and 2 of the 3 cases exhibited chest X-ray changes at the time of notification.

Of the 55 tuberculosis cases, 36 (65 %) had pulmonary disease and 19 (35 %) had non-pulmonary disease. Follow-up information (either TBS2 or death certificate) was provided for 53 (96 %) cases (Table 1).

Table 1: Enhanced TB surveillance notification forms submitted in Northern Ireland, 2001

	<i>TBS1</i>	<i>Follow-up</i>	<i>TBS1/follow-up (%)</i>
NI Total	55	53	96

3.2 Tuberculosis cases

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

Table 2: Tuberculosis cases, Northern Ireland, 2001

	<i>Confirmed*</i>	<i>Non-culture confirmed**</i>	<i>Total</i>	<i>Rate per 100 000</i>
NI Total	44	11	55	3.3

* In 2001, notification forms for all individuals in Northern Ireland with laboratory confirmed tuberculosis were received by CDSC (NI). There were, therefore, no "Lab Only" cases during this period.

** 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 these non-culture confirmed cases displayed clinical symptoms such as lung X-ray changes.

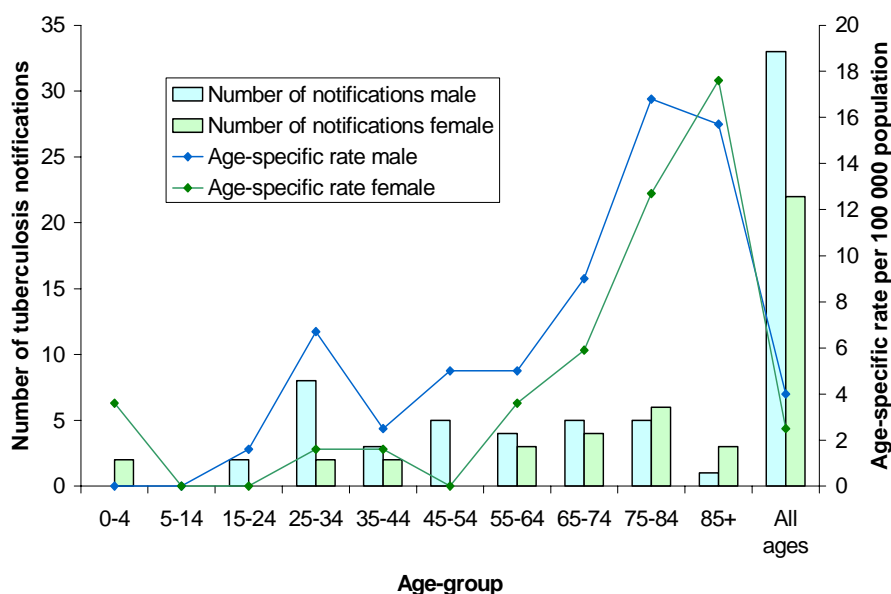
Of the 55 tuberculosis cases, 33 were male and 22 female, giving a sex ratio M/F of 1.5. The ages ranged from 3 to 92 years with a median of 58 and a mean of 55 years. The age-sex distribution is shown in Figure 1. The highest proportion of cases for men was in the 25-34 age-group and, for women, in the 75-84 age-group. Of the 8 cases in men aged 25-34 years, 3 were imported to Northern Ireland from patients born outside the UK and who entered the Province less than 2 years prior to notification.

The highest age-specific rates in 2001 occurred in male patients aged 75-84 years and in female patients aged 85+, which is unchanged from 2000. Overall, the age-specific rate in men was higher than that in women, except for the 85+age-group (Table 3 and Figure 1).

Table 3: Rates of notification of tuberculosis cases per 100 000 population in Northern Ireland by age and sex, 2001

<i>Age-group</i>	Male	Female	Total
0-4	0.0	3.6	1.7
5-14	0.0	0.0	0.0
15-24	1.6	0.0	0.8
25-34	6.7	1.6	4.1
35-44	2.5	1.6	2.0
45-54	5.0	0.0	2.5
55-64	5.0	3.6	4.3
65-74	9.0	5.9	7.3
75-84	16.8	12.7	14.3
85+	15.7	17.6	17.1
Total	4.0	2.5	3.3

Figure 1: Notified cases of tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2001



In 2001, the country of birth was recorded for 43 people. 36 (84 %) were born in the United Kingdom, 3 in India and 1 each in Spain, Portugal, Libya and Yemen. The birthplace of the remaining 12 individuals was either unknown or unrecorded. However, the names and ages of these individuals suggest that the majority, if not all, were born

in the UK or Ireland. 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 49 of the 55 cases notified. Six were reported to have received previous treatment for tuberculosis. In 2 of these cases (one of which was pulmonary), previous treatment was received during the 1940's. Three of the four remaining cases (none of which were pulmonary) were treated previously in the 1990's, at which time all three had received at least 1 month of drug therapy. When treated previously, these three cases were aged 22, 23 and 29 years. When notified in 2001, they were aged 25, 30 and 34 years respectively. Details of the time interval between previous treatment and notification in 2001 (at the age of 36) for the last case are unknown. Three notified cases, all pulmonary, were identified through contact tracing. Of these three cases, 2 had X-ray changes consistent with tuberculosis and responded well to drug therapy. The third case was confirmed by culture.

3.3. Pulmonary tuberculosis cases

Of the 55 tuberculosis cases notified, 36 (65 %) were diagnosed with pulmonary tuberculosis. Of these 36 cases, 28 (78 %) were confirmed by culture. This is in contrast to 2000 when, of the 51 tuberculosis cases notified, 28 (55 %) were diagnosed with pulmonary tuberculosis. However, the percentage of pulmonary tuberculosis cases confirmed by culture has changed little between 2000 and 2001. In 2000, 22 (79 %) of the 28 pulmonary tuberculosis cases were confirmed by culture.

Of greater concern is the increase in the proportion of culture-confirmed pulmonary cases that are also sputum smear positive at the time of notification. In 2000, 6 (21 %) of the 28 pulmonary tuberculosis cases notified were sputum smear positive and 4 of these 6 cases were subsequently confirmed by culture. By contrast, 21 (58 %) of the 36 pulmonary tuberculosis cases notified in 2001 were sputum smear positive and all 21 were later culture confirmed.

In 2001, the 8 non culture confirmed pulmonary cases were all given a full course of anti-tuberculous therapy on the basis of clinical findings (including X-ray changes following close contact with other culture confirmed pulmonary tuberculosis cases). Seven of these 8 cases responded well to drug therapy and completed the prescribed course. The remaining case left Northern Ireland and was lost to follow up.

Five patients with pulmonary tuberculosis died. Tuberculosis was registered as the primary cause of death in two cases and as a contributing factor in the remaining 3 cases

The annual notification rate for pulmonary tuberculosis in Northern Ireland was 2.1 cases per 100 000 population (Table 4). This has increased since 2000, when the rate was 1.6 cases per 100 000 population.

Table 4: Pulmonary tuberculosis notifications, Northern Ireland, 2001

	<i>Culture confirmed</i>	<i>Non-culture confirmed</i>	<i>Total</i>	<i>Rate per 100 000</i>
NI Total	28	8	36	2.1

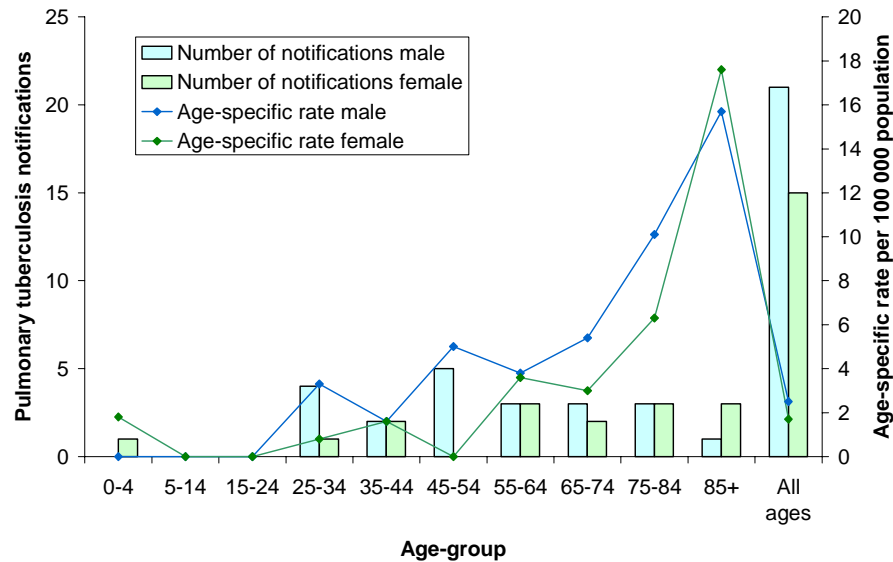
Of the 36 pulmonary tuberculosis cases, 21 were male and 15 were female. The ages ranged from 3 to 92 years with a median of 59 years and an average of 58 years (compared to 61 years of age in 2000). The incidence of pulmonary tuberculosis was spread over a wide age range for both men and women. However, the greatest proportion of cases occurred in those over 55 years of age. (Figure 2).

The age-sex distribution shows that the highest age-specific rate occurred in the 85+ age group for both men and 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, 2001

Age-group	Male	Female	Total
0-4	0.0	1.8	0.9
5-14	0.0	0.0	0.0
15-24	0.0	0.0	0.0
25-34	3.3	0.8	2.1
35-44	1.6	1.6	1.6
45-54	5.0	0.0	2.5
55-64	3.8	3.6	3.7
65-74	5.4	3.0	4.1
75-84	10.1	6.3	7.8
85+	15.7	17.6	17.1
Total	2.5	1.7	2.1

Figure 2: Notified cases of pulmonary tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2001



3.4. Non-pulmonary tuberculosis cases

Altogether, 19 notifications of non-pulmonary tuberculosis were received. Sixteen of these (84 %) were culture-confirmed.

The sites of disease were:

- Lymph nodes: 5
- Pleura: 3
- Genitourinary: 4
- Abscesses: 3
- Joint/bone: 2
- Skin: 1
- Brain: 1

Two patients with non-pulmonary disease are known to have died. Tuberculosis was cited as a contributing factor in one case. The cause of death in the second case was unrelated to tuberculosis.

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

Table 6: Non-pulmonary tuberculosis notifications Northern Ireland, 2001

	<i>Culture confirmed</i>	<i>Non-culture confirmed</i>	<i>Total</i>	<i>Rate per 100,000</i>
NI Total	16	3	19	1.4

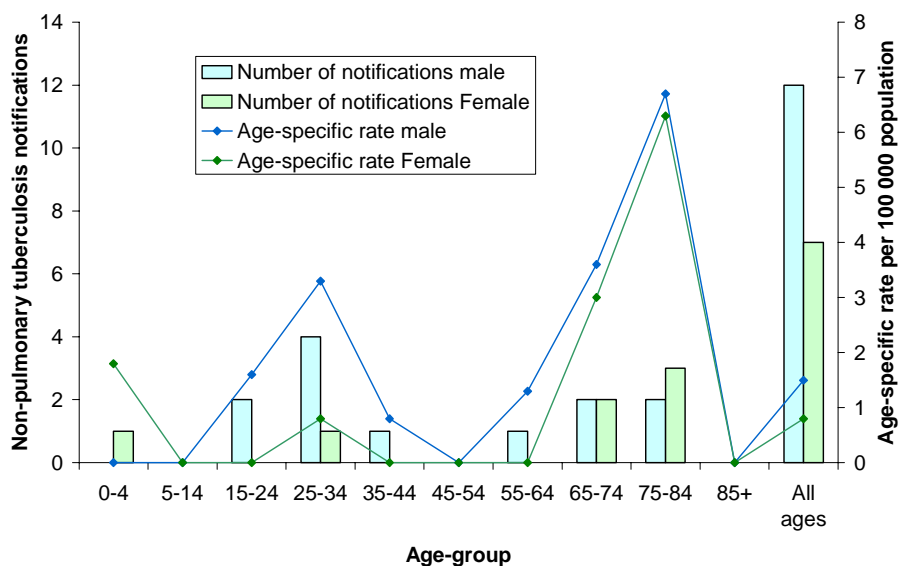
Of the 19 non-pulmonary tuberculosis cases, 12 were male and 7 were female. The ages ranged from 3 years to 84 years with a median of 56 years and a mean of 51 years. The average age of notified non-pulmonary tuberculosis cases has fallen by 10 years since 2000. In 2001, the highest proportion of cases occurred in the 25-34 age-group in men and in the 75-84 age-group in women. The highest proportion of cases overall were found in the 25-34 and 75-84 age-groups (Figure 3).

The highest age-specific rate was in both men and women aged 75-84 years. The highest age-specific rate overall also occurred in this age-group (Table 7 and Figure 3).

Table 7: Rates of notification of non-pulmonary tuberculosis in Northern Ireland per 100 000 population by age and sex, 2001

Age-group	Male	Female	Total
0-4	0.0	1.8	0.9
5-14	0.0	0.0	0.0
15-24	1.6	0.0	0.8
25-34	3.3	0.8	2.1
35-44	0.8	0.0	0.4
45-54	0.0	0.0	0.0
55-64	1.3	0.0	0.6
65-74	3.6	3.0	3.2
75-84	6.7	6.3	6.5
85+	0.0	0.0	0.0
Total	1.5	0.8	1.1

Figure 3: Notified cases of non-pulmonary tuberculosis by age and sex, and age-specific rates per 100 000 population, Northern Ireland, 2001



3.5. Anti-tuberculous treatment

Initial therapy

Initial therapy was recorded for 46 (84 %) tuberculosis patients notified in 2001, a much higher percentage than that recorded in either 1999 (35/59 patients – 59 %) or 2000 (31/51 patients – 61 %). As in previous years, the most commonly reported treatment regimen in 2001 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, 2001

Initial therapy	Number of cases
Isoniazid/Rifampicin/Pyrazinamide/ Ethambutol	21
Isoniazid/Rifampicin/Pyrazinamide	23
Rifampicin/Pyrazinamide/Ethambutol	1
Pyrazinamide only	1

Continuation therapy

In 2001, continuation therapy was recorded for 41 (75 %) of tuberculosis cases. This compares very favourably to a figure of 34 (58 %) during 1999 and 25 (49 %) in 2000. In all but 6 of these 41 cases, the treatment regimen was a combination of rifampicin and isoniazid (Table 9). Continuation therapy information was not available in 5 cases for which details of initial therapy were recorded. Four of these 5 patients died shortly after commencement of treatment. The remaining patient left Northern Ireland after treatment commenced and was lost to follow up.

Adverse drug reactions were recorded in 3 cases (7 % of cases for which initial therapy details were recorded). Hepatotoxicity was recorded in one case receiving rifampicin and a rash, caused by pyrazinamide, was reported in another case. The nature of the adverse reaction caused by isoniazid in a third case was not recorded.

Table 9: Continuation therapies employed for the treatment of tuberculosis in Northern Ireland, 2001

Continuation therapy	Number of cases
Rifampicin/Isoniazid	35
Rifampicin/Isoniazid/Ethambutol	1
Rifampicin/Isoniazid/Pyrazinamide	1
Rifampicin/Pyrazinamide/Ethambutol (then Rifampicin/Ethambutol)	1
Rifampicin/Ethambutol	1
Isoniazid/Ethambutol	1
Isoniazid/Pyrazinamide/Ethambutol (then Isoniazid/Ethambutol)	1

3.6. Non-tuberculosis cases

Five 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:

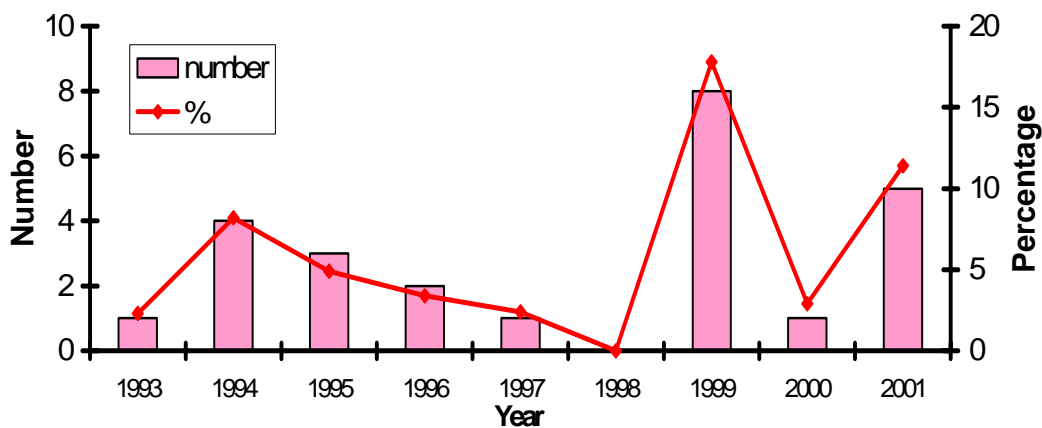
- 1 *M. avium-intracellulare*
- 1 *M. avium-intracellulare* + *M. malmoense*
- 1 *M. malmoense*
- 1 *M. celatum*
- 1 not fully determined (not *M. tuberculosis* complex organism)

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

In 2001, all 44 isolates from culture confirmed cases of both pulmonary and non-pulmonary tuberculosis cases were examined for susceptibility to anti-tuberculous drugs. Forty-two of these isolates were identified as *M. tuberculosis* (27 pulmonary and 15 non-pulmonary) and the remaining 2 isolates were identified as *M. bovis* (1 pulmonary and 1 non-pulmonary). Of the 42 *M. tuberculosis* isolates, two were found resistant to isoniazid only and a further was found resistant to pyrazinamide only. Each of the *M. bovis* isolates was found resistant to pyrazinamide only.

This level of resistance in 2001 is higher than that observed in 2000 (Figure 4), when resistance (to streptomycin only) was recorded in one *M. tuberculosis* isolate. However, resistance to pyrazinamide is not unexpected in cases of *M. bovis* infection. In addition, one of the isoniazid resistant *M. tuberculosis* isolates was, originally, sensitive to the drug. Development of resistance was due to poor compliance on the part of the patient (a sputum smear and culture-positive pulmonary case).

Figure 4: Incidence of drug resistance in isolates of *M. tuberculosis* complex organisms in Northern Ireland, 1993-2001



4. Discussion

Notification rates for tuberculosis in several Western European countries, including England and Wales, have been increasing since the late 1980's. In 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 ¹. Provisional 2001 figures for England and Wales indicate a further rise in the statutory notification rate to 12.7 per 100 000 population ². 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. In 1988, the rate for this Region was 19.4 per 100 000 population and, by 2000, the figure had increased to 36.0 per 100 000 population ¹. The provisional rate for London in 2001 has increased further, to 38.0 cases per 100 000 population ². TB is also concentrated in particular parts of London. Rates of tuberculosis exceeded 40 cases per 100 000 in 12 of the 33 London boroughs during 2001 and, in 2 boroughs, rates were in excess of 100 cases per 100 000 population ³. 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 and to improve outcomes. Implementation of the London TB Register was achieved, in all 33 London TB Clinics, by March 2002 ³.

Notification rates in the Republic of Ireland, although markedly higher than those in Northern Ireland, have not changed substantially during the time that national epidemiological data on tuberculosis has been collated by the National Disease Surveillance Centre, Dublin. In 1998, the annual notification rate was 11.7 cases per 100 000 population. The rate increased to 12.9 per 100 000 population in 1999 before falling again, to 10.9 per 100 000 population, in 2000 ⁴. This downward trend has continued during 2001, with a notification rate of 9.6 per 100 000 population ⁵.

The 2000 Northern Ireland tuberculosis notification rate, 3.0 cases per 100 000 population, was at its lowest value since 1992. However, in 2001, a reversal in this trend appears to have commenced, with a rate of 3.3 per 100 000 population (Table 10). Examination of available data suggests that, for 2002, this upward trend will continue – with a provisional rate of 3.8 per 100 000 population.

Table 10: Number of tuberculosis notifications and rates per 100 000 population, Northern Ireland, 1992-2001

<i>Year</i>	<i>Number of cases</i>	<i>Rate per 100 000</i>
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

For many years, tuberculosis in Northern Ireland has been a disease confined largely to older age groups. In 1999, 46% of tuberculosis notifications were in those aged 65+ and, in 2000, this increased to 53%. In 2001 the proportion of cases in those aged 65+ has fallen again, to 44%. Northern Ireland provisional data for 2002 suggests that the percentage of cases in those aged 65+ will be 43%. However, the proportion of cases in England and Wales attributable to those aged 65+ remains consistently lower than in Northern Ireland. During 1999, 22% of notified cases in England and Wales were in individuals aged 65+ and, in 2000, this figure had fallen to 20%. Provisional data for 2001 indicates a further fall, to 19%².

Northern Ireland provisional figures for 2002 indicate little change in the age range of those notified with tuberculosis. However, analysis of data collected over the past three years suggests that both the mean and median ages of those notified are falling. In addition, these changes cannot be attributed solely to the importation of tuberculosis from other EU countries, or from elsewhere. Table 11 shows that, for those known to have been born in the UK or Ireland, the average age at the time of notification has fallen by 10 years between 2000 and 2002.

Table 11: Mean and median ages of tuberculosis cases notified, Northern Ireland, 2000-2002

Year	Number TB cases notified	All countries of birth (UK/Ireland/Abroad/Not Stated)				Known to be Born UK/Ireland			
		Number of cases	Age Range	Mean Age	Median Age	Number of cases	Age Range	Mean Age	Median Age
2000	51	51	2-99	61.0	68.0	43	2-99	64.6	70.0
2001	55	55	3-92	55.0	58.0	36	3-85	57.8	64.0
2002 (provisional)	65	65	2-94	54.2	56.0	48	2-94	54.6	70.0

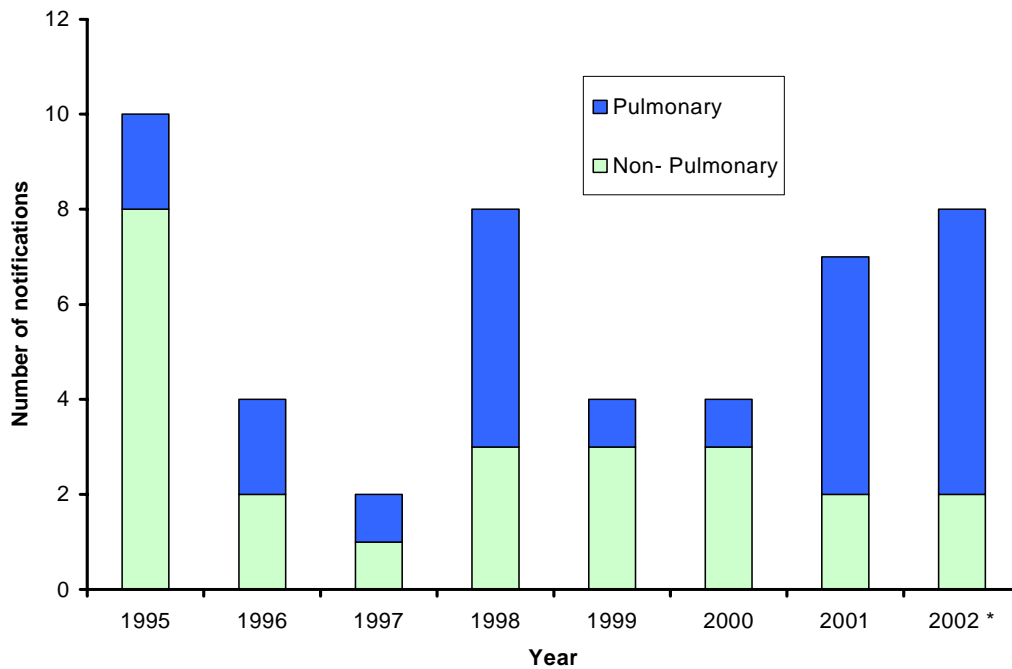
Several studies have attributed the increase in cases of tuberculosis in the UK, particularly among younger age groups, to changing socio-economic conditions and the incidence of HIV infection. This is particularly true of London where homelessness, alcohol and other substance misuse are recognised risk factors and where, it is estimated, some 10% of all tuberculosis cases may be co-infected with HIV ³. There is also an increasing incidence of tuberculosis within higher risk minority groups, some of whom are recent immigrants from endemic areas. Since 1988 in England and Wales, the tuberculosis rate has, overall, been increasing in individuals of Black African ethnic origin. In London, the majority of these cases are aged 25-44 years. During the same period, the rate in persons originating from the Indian sub-continent has decreased and, amongst those from Black Caribbean and from White ethnic groups, the rates have remained relatively stable ². Provisional data for 2001 indicates that, in England and Wales, the Black African ethnic group has the highest rate of tuberculosis; 211 cases per 100 000 population. The corresponding rates in those of Pakistani and of Indian origin are 145 cases and 104 cases per 100 000 population respectively. By contrast, the rate of tuberculosis in persons of White ethnic origin is 4 cases per 100 000 population ².

In Northern Ireland, the incidence of HIV infection and proportion of ethnic groups within the population remains much lower than for England and Wales. However, although the number of notified cases of tuberculosis amongst those born outside the UK has risen only slightly during past three years, the average age at the time of notification in Northern Ireland is very much lower than for those born in the UK (Table 12). The proportion of imported cases with pulmonary involvement has also risen during the same time period (Figure 5)

Table 12: Mean and median ages of notified tuberculosis cases born outside UK & Ireland, Northern Ireland, 2000-2002

Year	Number TB cases notified	Not Born in UK				
		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 (provisional)	65	8	12.3%	29-49	39.3	40.5

Figure 5: Site of disease in notified tuberculosis cases born outside UK & Ireland, Northern Ireland, 1995-2002

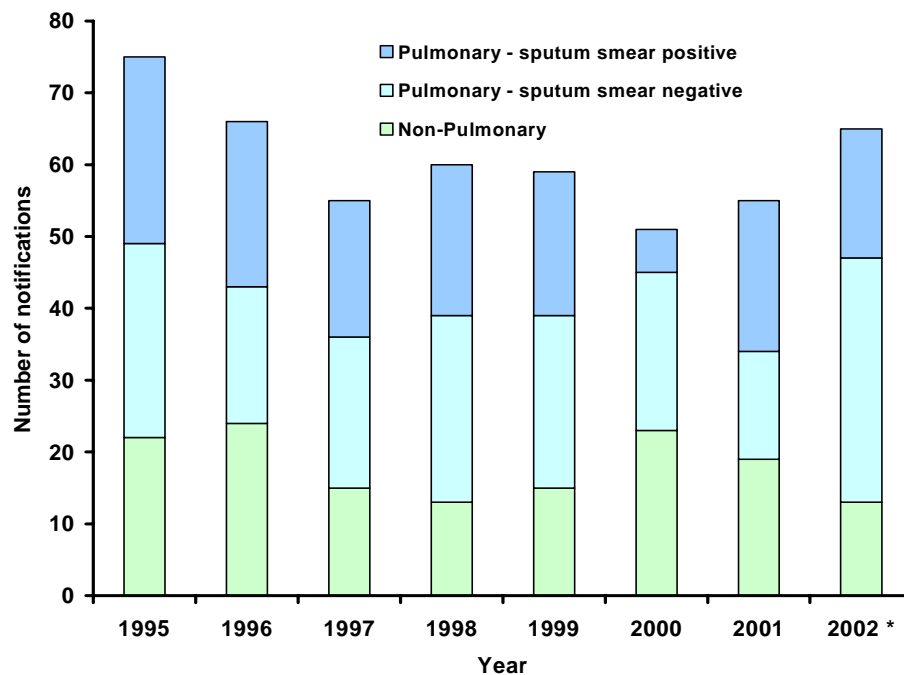


* provisional data

The overall rate of notification of tuberculosis in Northern Ireland for 2001 was 3.3 per 100 000 population, a slight rise from that recorded in 2000 (Table 10). This rate of notification still compares favourably to rates seen in both England and Wales and in the Republic of Ireland. The overall England, Wales and Northern Ireland rate for 2000 (11.7 per 100 000 population) and provisional rate for 2001 (12.4 per 100 000 population) also compare favourably to other countries within the EU ⁶. Rates of tuberculosis notification across Western Europe have been falling steadily between 1985 and 2001. Preliminary EuroTB data also estimates that the notification rate in Western Europe for 2001 will be 11.4 per 100 000 population ⁷. In Central and Eastern Europe, the provisional rate for 2001 is considerably higher and has been estimated at 41.5 cases per 100 000 population. However, in countries of the former Soviet Union, where multi-drug resistance and HIV co-infection are of major concern, provisional data for 2001 indicates an overall rate of 92.1 cases per 100 000 population (range of 37 to 194 cases per 100 000 population) ⁷.

Tuberculosis is not considered a major communicable disease problem in Northern Ireland. However, changing 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 2001 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. In 2001, this has increased to 65% and provisional data for 2002 indicates a further increase, to 80% (Figure 6). In 2000, only 14 % (4 out of 28) of pulmonary tuberculosis cases notified in Northern Ireland were both culture positive and sputum smear positive. However, by 2001 this figure has risen sharply, to 58 % (21 out of 36 pulmonary cases). Provisional data indicates that the corresponding figure for 2002 will be at least 35 % (18 out of 52 pulmonary cases).

Figure 6: Classification of tuberculosis cases, Northern Ireland, 1995-2002



• provisional data

There were three clusters of cases in Northern Ireland during 2001. All three occurred within families: two clusters were notified as pulmonary tuberculosis and the third was notified as non-pulmonary tuberculosis.

In Northern Ireland during 2000, only one isolate (*M. tuberculosis*) was found to be drug resistant (to streptomycin). However, although the number of drug resistant isolates in Northern Ireland for 2001 increased from that recorded in 2000, the figure is

lower than observed in 1999. During 2001, 3 isolates (2 *M. bovis* and 1 *M. tuberculosis*) were found resistant to pyrazinamide and a further 2 isolates (both *M. tuberculosis*) were found resistant to isoniazid. Only one multi-drug resistant isolate has been seen to date in Northern Ireland (in 1995). In the Republic of Ireland, 2 multi-drug resistant isolates were found in 1999 and 3 multi-drug resistant isolates were found in 2000⁴. In 2001, a further 2 multi-drug resistant cases were notified⁵. It therefore remains important to monitor closely any change in drug resistance within the Province, particularly the re-emergence of any multi-drug resistant strains.

Conclusions

In 2001, tuberculosis in Northern Ireland remains a disease of older age groups born in the UK or Ireland.

However

- ❖ the number of notifications is increasing
- ❖ the proportion that are pulmonary is increasing
- ❖ the proportion that are both sputum smear and culture positive is increasing
- ❖ the mean and median ages of those affected are falling

- ❖ the mean age of those born *outside* UK or Ireland is considerably lower than for those born *in* UK or Ireland

and

- ❖ although numbers of cases born outside UK/Ireland have increased only slightly, the proportion that are pulmonary has increased

- ❖ between 2000 and 2002, the mean age of those born *in* UK or Ireland has fallen by ~10 yrs

and

- ❖ the proportion that are pulmonary has increased from 58% to 79%

CDSC (NI) would like to acknowledge the continued significant contribution made by CCDCs, microbiologists, chest physicians, consultant colleagues and their nursing and clerical staff to tuberculosis surveillance in Northern Ireland. Of particular note is the successful implementation of the new "Tuberculosis Treatment Outcome Surveillance Form" which replaces the TBS2 form. This has enabled the collation of outcome information on 96% of tuberculosis cases notified during 2001.

This abridged report has been prepared for public dissemination. Further details may be obtained by contacting CDSC (NI) directly.

5. References

1. Annual Report on Tuberculosis Cases Reported in 2000 in England, Wales and Northern Ireland. Published at: <http://www.phls.org.uk>
2. Preliminary Report on Tuberculosis Cases Reported in 2001 in England, Wales and Northern Ireland. Published at: <http://www.phls.org.uk>
3. Communicable Disease in London 2001. Annual Report of the Communicable Disease Surveillance Centre, London. Published at <http://www.phls.org.uk>
4. A Report on the Epidemiology of Tuberculosis in Ireland 2000. Published at <http://www.ndsc.ie>
5. Epi-Insight (2003) Volume 4, Issue7. Published at <http://www.ndsc.ie>
6. Surveillance of Tuberculosis in Europe – EuroTB. Report on Tuberculosis Cases Notified in 2000. EuroTB-InVS, Saint-Maurice Cedex, France. Published at: <http://www.eurotb.org>
7. Preliminary European TB surveillance data 2001 and recent trends. Published at: <http://www.eurotb.org>