



A Report on the Epidemiology of
Tuberculosis in Ireland 2000

Acknowledgements

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Introduction

In Ireland, information on all notified cases of tuberculosis (TB) is sent to the National Disease Surveillance Centre (NDSC) for analysis. From January 1st, 2000, NDSC, in consultation with the eight health boards and the National Tuberculosis (TB) Advisory Group, implemented an enhanced National TB Surveillance System. (NTBSS)

This report presents a review of the epidemiology of the cases of TB notified to the NDSC by each of the health boards in Ireland during 2000. 2000 is the third year that national epidemiological data on TB has been collated by NDSC.

While global TB control is improving, with more cases than ever being managed using the World Health Organisation's Directly Observed Treatment Short-course (DOTS) strategy, the number of cases of TB worldwide has continued to increase significantly each year. In 1999, there were an estimated 8.4 million new TB cases worldwide, an increase on the 8.0 million cases estimated in 1997. If this trend continues, there will be approximately 10.2 million new cases in 2005. This continuing rise in the caseload, despite the improved global control programme, is largely due to the increases seen in developing countries and particularly in the African countries most affected by the HIV/AIDS pandemic where the two diseases are frequently associated and where there has been a 20% increase in TB incidence. TB deaths have also been increasing in Eastern Europe, again after 40 years of steady decline.

With the overall improvement in the management of TB, high treatment success rates have been achieved. At the same time, however, multi-drug resistant forms of *Mycobacterium tuberculosis* have been increasingly emerging. In 2000 395 cases of TB were reported in Ireland which represented the lowest annual incidence rate ever in the country (10.9/100,000). In the previous two reporting years the number of reported cases of TB in Ireland had increased after a persistent decline in the early nineties.

Case Definitions

The case definitions used were those recommended by the National TB Working Party (1996).¹

- A notified case of TB refers to clinically active disease due to infection with organisms of the *Mycobacterium tuberculosis* complex. Active disease is presumed if the patient is commenced on a full curative course of anti-tuberculosis chemotherapy. Persons placed on chemoprophylaxis for preventive treatment or infected by mycobacterium other than *M. tuberculosis* complex are not included as cases.
- A definite case of tuberculosis is a case with culture confirmed disease due to *M. tuberculosis* complex.
- An other than definite case meets both of the following conditions: (1) It is the clinician's judgement that the patient's clinical and/or radiological signs and/or symptoms are compatible with tuberculosis and (2) The physician takes the decision to treat the patient with a full course of anti-tuberculosis therapy.
- Pulmonary TB is defined as a laboratory confirmed case-either a positive smear, histology or culture-with or without radiological abnormalities consistent with active pulmonary TB or a case where the physician takes the decision that the patient's clinical symptoms and/or radiological signs are compatible with pulmonary TB.
- Extra-pulmonary TB is defined as a patient with a smear, culture or histology specimen from an extra-pulmonary site, that is positive for *M. tuberculosis* complex or a case with clinical signs of active extra-pulmonary disease in conjunction with a decision taken by the attending physician to treat the patient with a full curative course of anti-tuberculosis chemotherapy.
- Pulmonary and extra-pulmonary TB is a case of tuberculosis that meets the previous two definitions.
- A recurrent case is defined as a patient with a documented history of TB prior to their 2000 notification.
- Indigenous population is defined as those who were born in Ireland.

Methods and Data Analysis

Individual case notification forms were completed by Area Medical Officers using the clinical, microbiological and histological data available to them. These forms were then collated in the Departments of Public Health. An Epi-Info file or copies of the TB notification forms were sent to the NDSC on a quarterly basis. In NDSC this anonymised information was merged into an Epi-Info TB database for analysis and quarterly reports were produced. The data in these quarterly reports is regarded as provisional until a process of validation has been completed during the six months following the end of the notification year.

Six health boards use a computerised Epi-Info TB database to record case notification data, in addition to the paper records. The other two health boards rely solely on a paper-based system.

Data were analysed using a computerised Epi-Info software version 6.04d.² The X² (Chi-square) test was used to compare proportions in independent groups and 95% confidence intervals were used to compare rates between independent groups. Population data were taken from the 1996 census of population. Direct methods of standardisation were used to allow comparison of rates between geographical areas using the 1996 Irish population as the standard population.

Tables illustrating indigenous rates used 1996 population data that excluded those born outside Ireland (3,596,543 versus 3,626,087).

Results

Notified TB cases in Ireland

There were 395 cases of TB notified in the period January 1st - December 31st, 2000. A summary of the data is shown in table 1.

Table 1: Summary of the epidemiology of TB in Ireland, 2000

| Parameter | Number |
|---------------------------------|------------|
| Total number of cases | 395 |
| Notification rate per 100,000 | 10.9 |
| Cases in indigenous population | 349 |
| Cases in non-nationals | 45 |
| Culture positive cases | 229 |
| Smear positive pulmonary cases | 144 |
| Cases resistant to isoniazid | 6 |
| Cases resistant to rifampicin | 3 |
| Cases resistant to ethambutol | 0 |
| Cases resistant to pyrazinamide | 4 |
| Cases resistant to streptomycin | 1 |
| Multi-drug resistant cases | 3 |
| Deaths attributable to TB | 6 |

Table 2 shows the number of TB cases notified in each quarter of 2000. Notifications were lowest in the fourth quarter as in 1999 and highest in the first and second quarters.

Table 2: Number of notifications of TB in each quarter, 2000

| Quarter (2000) | No. of cases notified | Percentage (%) |
|------------------|-----------------------|----------------|
| January-March | 106 | 27.0 |
| April-June | 106 | 27.0 |
| July-September | 100 | 25.6 |
| October-December | 80 | 20.4 |
| Total | 392* | 100 |

*3 cases could not be allocated to a yearly quarter

The number of cases notified for each of the years from 1991-2000 is shown in table 3.

Table 3: TB cases in Ireland 1991-2000 with 3 year moving averages, 1992-1999

| Year | Number | Crude Rate per 100,000 | 3 year moving average |
|------|--------|------------------------|-----------------------|
| 1991 | 640 | 18.2 | |
| 1992 | 604 | 17.1 | 611 |
| 1993 | 598 | 17.0 | 581 |
| 1994 | 524 | 14.5 | 526 |
| 1995 | 458 | 12.6 | 468 |
| 1996 | 434 | 12.0 | 436 |
| 1997 | 416 | 11.5 | 423 |
| 1998 | 424 | 11.7 | 433 |
| 1999 | 469 | 12.9 | 439 |
| 2000 | 395 | 10.9 | |

Health board incidence rates

The total number of TB cases in each health board is shown in table 4a, with the totals for the indigenous population in each health board being shown in table 4b.

Table 4a: TB cases in each health board, 2000

| Health Board | Cases | Crude Rate/100,000 | 95% CI for rate |
|----------------|------------|--------------------|-----------------|
| ERHA | 143 | 11.0 | 9.2-12.8 |
| MHB | 16 | 7.8 | 4.0-11.6 |
| MWHB | 47 | 14.8 | 10.6-19.1 |
| NEHB | 21 | 6.9 | 3.9-9.8 |
| NWHB | 9 | 4.3 | 1.5-7.1 |
| SEHB | 41 | 10.5 | 7.3-13.7 |
| SHB | 80 | 14.6 | 11.4-17.8 |
| WHB | 38 | 10.8 | 7.4-14.2 |
| Ireland | 395 | 10.9 | 9.8-12.0 |

Table 4b: TB cases in each health board for the indigenous population only, 2000

| Health Board | Cases | Crude rate/100,000 | 95% CI for rate |
|--------------|-------|--------------------|-----------------|
| ERHA | 118 | 9.1 | 7.5 - 10.8 |
| MHB | 14 | 6.9 | 3.3 - 10.5 |
| MWHB | 44 | 14.0 | 9.9-18.1 |
| NEHB | 16 | 5.3 | 2.7 - 7.8 |
| NWHB | 9 | 4.3 | 1.5 - 7.2 |
| SEHB | 37 | 9.6 | 6.5 - 12.6 |
| SHB | 75 | 13.9 | 10.7 - 17.0 |
| WHB | 26 | 10.2 | 6.9 - 13.6 |
| Ireland | 349 | 9.6 | 8.6 - 10.6 |

The crude incidence rates seen in each health board in the period 1992-2000 are shown in table 5.

Table 5: Crude TB incidence rates per 100,000 by health board, 1992-2000

| Health Board | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|----------------|-------------|-----------|-------------|-------------|-----------|-------------|-------------|-------------|-------------|
| ERHA | 16.2 | 11.6 | 13.4 | 12.4 | 8.7 | 9.9 | 11.7 | 13.9 | 11.0 |
| MHB | 18.7 | 10.8 | 14.7 | 8.9 | 8.3 | 9.7 | 5.4 | 7.3 | 7.8 |
| MWHB | 20.9 | 18 | 17.7 | 15.4 | 17.7 | 15.1 | 14.8 | 17.0 | 14.8 |
| NEHB | 10 | 7.8 | 18.3 | 8.7 | 10.1 | 9.8 | 9.5 | 8.2 | 6.9 |
| NWHB | 15.9 | 26.3 | 9.1 | 11.5 | 7.1 | 8.5 | 9.0 | 9.0 | 4.3 |
| SEHB | 12.3 | 16.4 | 11.2 | 9.7 | 6.9 | 12.8 | 8.9 | 7.9 | 10.5 |
| SHB | 21.5 | 23.3 | 17.8 | 21 | 22.5 | 17.4 | 14.3 | 13.7 | 14.6 |
| WHB | 36 | 22.5 | 23.3 | 11.4 | 13.1 | 10.8 | 15.3 | 19.9 | 10.8 |
| Ireland | 17.1 | 17 | 14.5 | 12.6 | 12 | 11.5 | 11.7 | 12.9 | 10.9 |

Age-standardised TB incidence rate by county

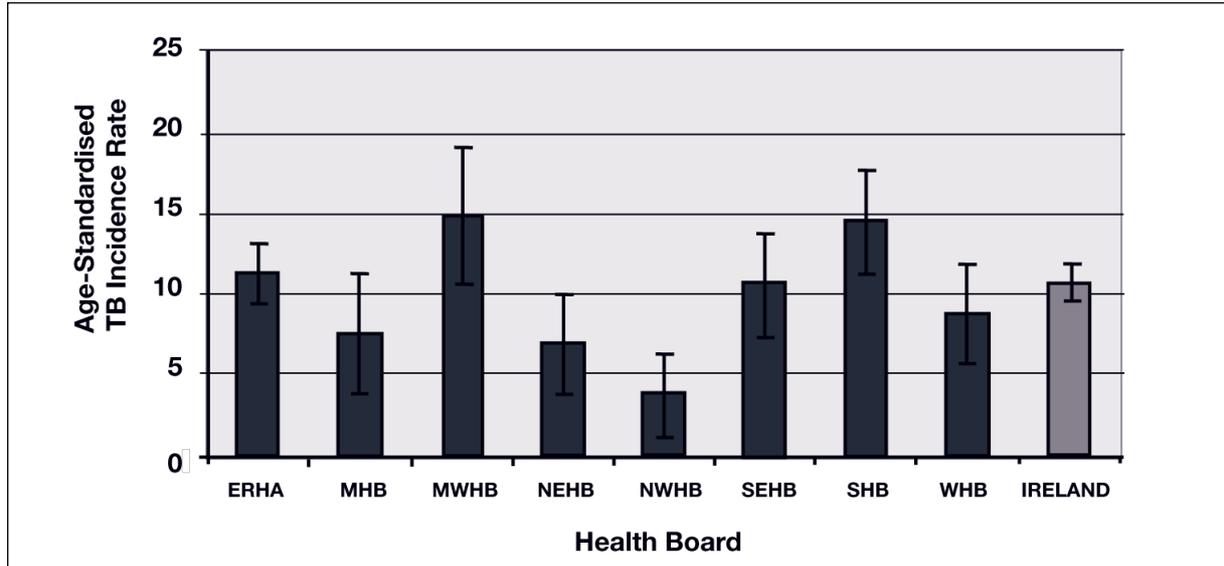
The age-standardised incidence rate for each county is shown in table 6. Cork had a significantly higher incidence rate than the national rate. Counties with significantly lower incidence rates than the national rate were Meath, Wexford, Donegal, Laois and Monaghan.

Table 6: Age-standardised TB incidence rates per 100,000 by county with 95% confidence intervals, 2000

| County | Incidence rate/100,000 | 95% CI |
|----------------|------------------------|-------------------|
| Limerick | 17.5 | 11.1 – 23.9 |
| Carlow | 17.0 | 4.39 – 29.6 |
| Cork | 16.4 | 12.5 – 20.2 |
| Louth | 14.4 | 6.6 – 22.2 |
| Waterford | 13.6 | 4.9 – 19.0 |
| Clare | 13.0 | 5.6 – 20.3 |
| Dublin | 12.4 | 10.2 – 14.5 |
| Offaly | 10.2 | 3.05 – 20.6 |
| Tipperary | 11.6 | 5.9 – 17.4 |
| Galway | 10.6 | 5.93 – 15.3 |
| Kilkenny | 10.1 | 3.11 – 17.2 |
| Roscommon | 10.0 | 1.76 – 18.3 |
| Leitrim | 9.9 | 0 – 21.5 |
| Westmeath | 9.4 | 1.88 – 16.9 |
| Longford | 8.6 | 0 – 18.2 |
| Kerry | 8.1 | 3.27 – 12.9 |
| Mayo | 6.5 | 1.9 – 11.1 |
| Kildare | 6.4 | 1.8 – 11.0 |
| Wicklow | 6.0 | 1.19 – 10.8 |
| Meath | 4.8 | 0.57 – 9.11 |
| Sligo | 4.6 | 0 – 9.9 |
| Cavan | 4.4 | 0 – 10.6 |
| Wexford | 2.8 | 0 – 5.82 |
| Donegal | 2.2 | 0 – 4.72 |
| Laois | 1.8 | 0 – 5.28 |
| Monaghan | 1.8 | 0 – 5.23 |
| Ireland | 10.8 | 9.7 – 11.9 |

Age-standardised TB incidence rates by health board

Age standardised TB incidence rates for the various health boards with their 95% confidence intervals are shown in Figure 1.



*Figure 1: Age-standardised TB incidence rates per 100,000 with 95% confidence intervals, 2000.**

*Age missing on 5 cases

Figures 2 and 3 show the age-standardised health board and county TB incidence rates per 100,000 population in 2000.

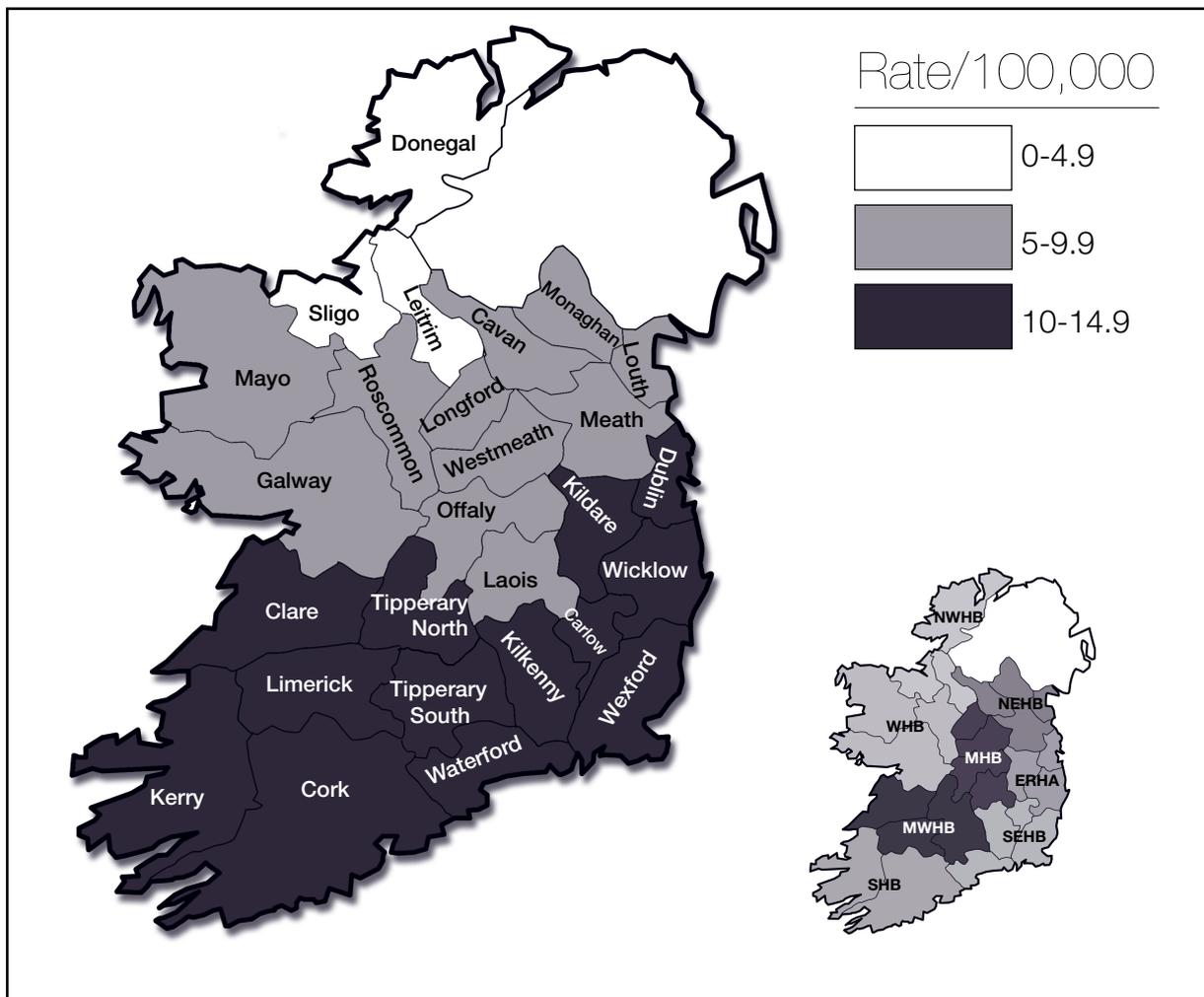


Figure 2: Age-standardised health board TB incidence rates per 100,000 population, 2000

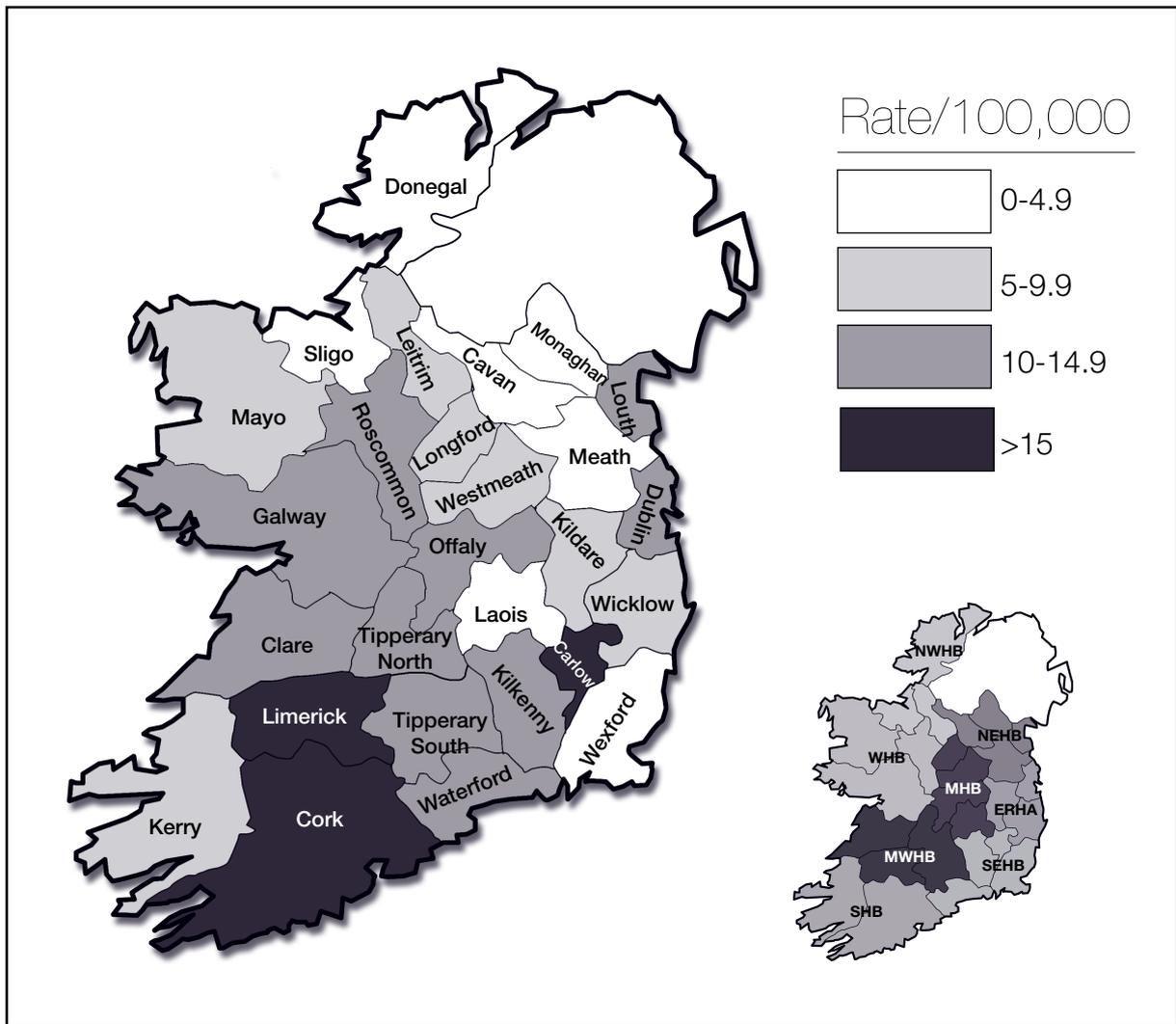


Figure 3: Age-standardised county TB incidence rates per 100,000 population, 2000

Three-year moving average notification rates, 2000

The 3-year moving average TB notification rates for each health board for the period 1992-1999 are shown in table 7.

Table 7: 3 year moving average TB notification rate per 100,000, 1992-1999

| Health Board | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|----------------|------|-------------|-------------|-------------|------------|-------------|-------------|-------------|
| ERHA | 14.5 | 13.2 | 12.7 | 11.7 | 9.9 | 10.1 | 11.8 | 12.6 |
| MHB | 15.8 | 13.7 | 12.3 | 10.2 | 8.8 | 8.3 | 7 | 6.8 |
| MWLB | 20.0 | 18.7 | 17.2 | 17.2 | 16.5 | 15.7 | 15.4 | 15.9 |
| NEHB | 10.0 | 11.0 | 13.3 | 11.3 | 9.7 | 9.8 | 9.3 | 8.2 |
| NWLB | 20.3 | 19.4 | 14.0 | 9.3 | 8.6 | 8.3 | 8.9 | 7.8 |
| SEHB | 12.5 | 14.1 | 12.1 | 9.4 | 9.1 | 10.4 | 9.6 | 8.8 |
| SHB | 21.6 | 21.5 | 20.0 | 20.6 | 20.9 | 17.9 | 14.9 | 14.1 |
| WHB | 26.0 | 22.6 | 20.0 | 14.6 | 12.1 | 12.5 | 15.3 | 16.5 |
| Ireland | | 16.5 | 15.0 | 13.2 | 9.6 | 11.7 | 11.9 | 12.1 |

Age-specific incidence rates

The age-specific TB incidence rates by health board in 2000 are shown in figure 4 and the age and sex specific incidence rates in figure 5.

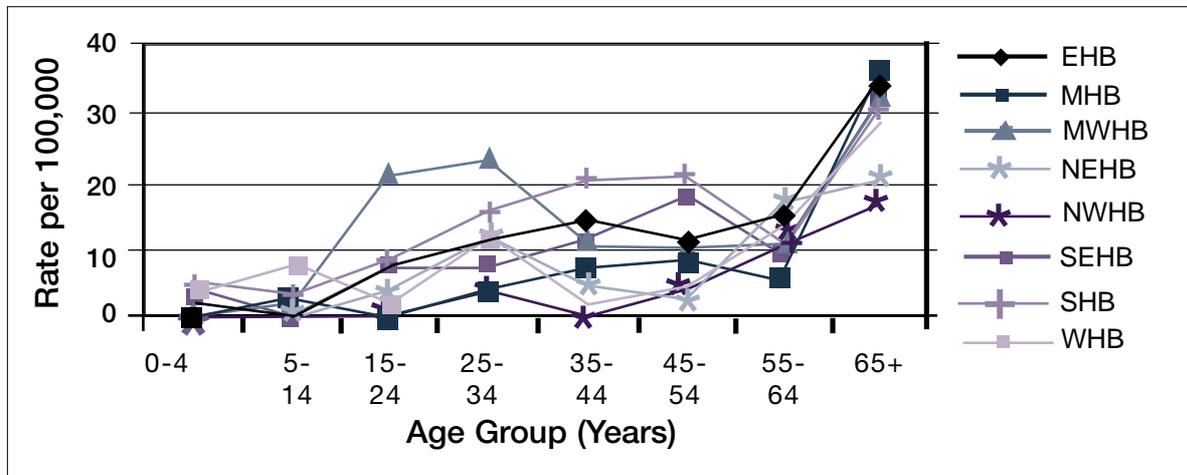


Figure 4: Age-specific TB incidence rates per 100,000 by health board, 2000

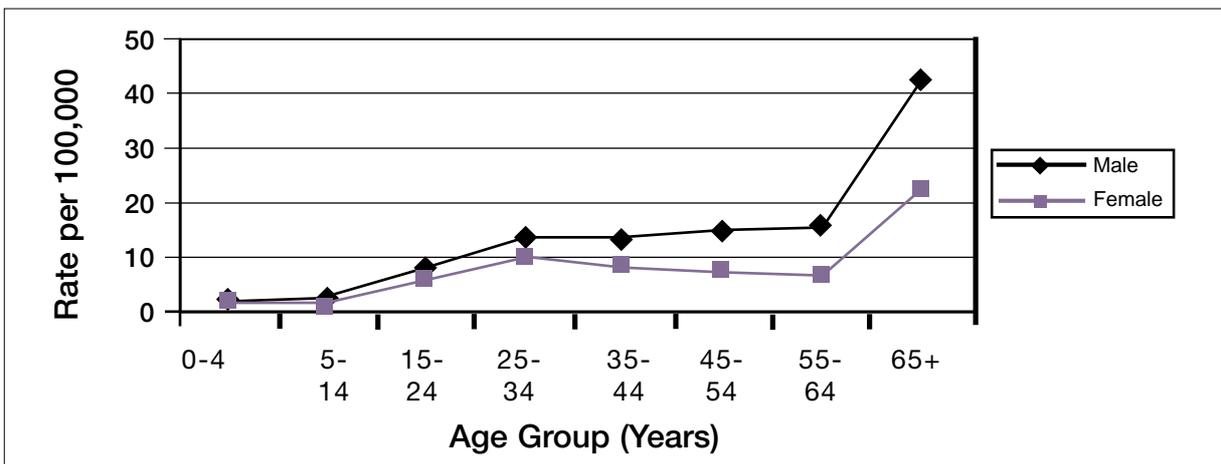


Figure 5: Age* and sex-specific incidence rates per 100,000, 2000

*Age data missing on 5 cases

In 2000 the Mid-Western Health Board had the highest crude and age standardised TB incidence rate among the health boards followed by the Southern Health Board. Looking at the crude TB notification rates for the indigenous population alone, the Mid-Western Health Board also had the highest rate.

Sex breakdown of TB cases

There were 244 cases of TB notified in males (60.5%) and 159 in females (39.5%), giving a male to female ratio of 1.6:1. Table 8 gives the sex breakdown of notified TB cases in 2000 by health board.

Table 8: Sex breakdown of TB cases by health board in Ireland, 2000

| Health Board | Males | Females | Male:Female ratio |
|--------------|------------|------------|-------------------|
| ERHA | 84 | 59 | 1.4 |
| MHB | 12 | 4 | 3.0 |
| MWHB | 29 | 18 | 1.6 |
| NEHB | 11 | 10 | 1.1 |
| NWHB | 5 | 4 | 1.3 |
| SEHB | 25 | 16 | 1.6 |
| SHB | 48 | 32 | 1.5 |
| WHB | 27 | 11 | 2.5 |
| Total | 241 | 154 | 1.6 |

Geographic origin of TB cases

Forty-five of the TB patients (11.4% of all notified cases) were known to have been born outside Ireland. The corresponding figure for 1999 was 13.8%. In 2000, the non-national patients with TB originated from 18 countries. TB cases in non-nationals are shown in tables 9 and 10 by health board and country of origin respectively.

Table 9: Cases of TB in non-national patients, 2000

| Health Board | Born outside Ireland | % of health board cases |
|--------------|----------------------|-------------------------|
| ERHA | 25 | 17.5 |
| MHB | 2 | 12.5 |
| MWHB | 3 | 6.4 |
| NEHB | 4 | 19.0 |
| NWHB | 0 | 0 |
| SEHB | 4 | 9.8 |
| SHB | 5 | 6.3 |
| WHB | 2 | 5.3 |
| Total | 45 | 11.4 |

Table 10: Countries of origin of non-national patients with TB, 2000

| Country of Birth | Cases | Country of Birth | Case |
|------------------|-------|------------------|-----------|
| Angola | 2 | Nigeria | 3 |
| Bosnia | 1 | Pakistan | 1 |
| Burundi | 1 | Romania | 6 |
| China | 2 | Sierra Leone | 2 |
| France | 1 | Spain | 4 |
| India | 3 | United Kingdom | 6 |
| Kazakhstan | 1 | Vietnam | 4 |
| Korea, S | 1 | Yugoslavia | 3 |
| Nepal | 1 | Zambia | 1 |
| | | Total* | 43 |

*Country of origin not available for 2 cases

Diagnostic classification

The diagnostic categories reported for Ireland and by health board are shown in tables 11 and 12 respectively. Pulmonary TB was diagnosed in 280 (70.9%) of the 395 cases, of which 186 (66.4%) were laboratory confirmed. Pulmonary and extrapulmonary TB was diagnosed in 21 (5.3%) cases, of which 10 (47.6%) were laboratory confirmed. Extrapulmonary TB was diagnosed in 92 (23.3%) cases of which 33 (35.8%) had positive histology. Laboratory confirmation was thus available on 58.0% of the cases overall.

Table 11: Diagnostic categories of TB cases in Ireland, 2000

| Diagnosis | No. cases | % |
|--------------------------|------------|------------|
| Pulmonary | 280 | 70.9 |
| Pulmonary+Extrapulmonary | 21 | 5.3 |
| Extrapulmonary | 92 | 23.3 |
| Unknown | 2 | 0.5 |
| Total | 395 | 100 |

Table 12: Diagnostic categories of TB cases by health board, 2000

| Health Board | Pulmonary | | Extrapulmonary | | Pulmonary +Extrapulmonary | | Unknown | | Total |
|--------------|------------|-------------|----------------|-------------|---------------------------|------------|----------|------------|------------|
| | n | % | n | % | n | % | n | % | n |
| ERHA | 107 | 74.8 | 28 | 19.6 | 8 | 5.6 | 0 | | 143 |
| MHB | 7 | 43.7 | 8 | 50.0 | 1 | 6.3 | 0 | | 16 |
| MWHB | 30 | 63.8 | 10 | 21.3 | 6 | 12.8 | 1 | 2.1 | 47 |
| NEHB | 18 | 85.7 | 3 | 14.3 | 0 | | 0 | | 21 |
| NWHB | 6 | 66.7 | 2 | 22.2 | 1 | 11.1 | 0 | | 9 |
| SEHB | 30 | 73.1 | 9 | 22.0 | 2 | 4.9 | 0 | | 41 |
| SHB | 52 | 65.0 | 25 | 31.3 | 3 | 3.7 | 0 | | 80 |
| WHB | 30 | 79.0 | 7 | 18.4 | 0 | | 1 | 2.6 | 38 |
| Total | 280 | 70.9 | 92 | 23.3 | 21 | 5.3 | 2 | 0.5 | 395 |

Pulmonary TB*

There were 301 cases with a pulmonary disease component (76.2%). Sputum smear and culture status for these cases are shown in table 13.

Table 13: Sputum smear and culture status for pulmonary TB cases, 2000

| | Sputum +ve | Sputum -ve | Sputum not done | Sputum unknown | Total |
|------------------|------------|------------|-----------------|----------------|------------|
| Culture +ve | 125 | 46 | 15 | 0 | 186 |
| Culture -ve | 5 | 50 | 4 | 0 | 59 |
| Culture not done | 0 | 2 | 14 | 1 | 17 |
| Culture unknown | 14 | 11 | 8 | 6 | 39 |
| Total | 144 | 109 | 41 | 7 | 301 |

Definite cases

In countries where laboratories capable of identification of *M. tuberculosis* complex are routinely available, a definite case of TB has been defined as a case with culture confirmed disease due to *M. tuberculosis* complex.³ In 2000, 58.0% (229/395) of all TB cases notified were culture positive. In 1999, 55.4% of TB cases in Ireland were culture positive and in 1998, 56.8% of cases were culture positive.

* WHO defines pulmonary TB, for the purpose of analysis, as any case that has a pulmonary disease component.

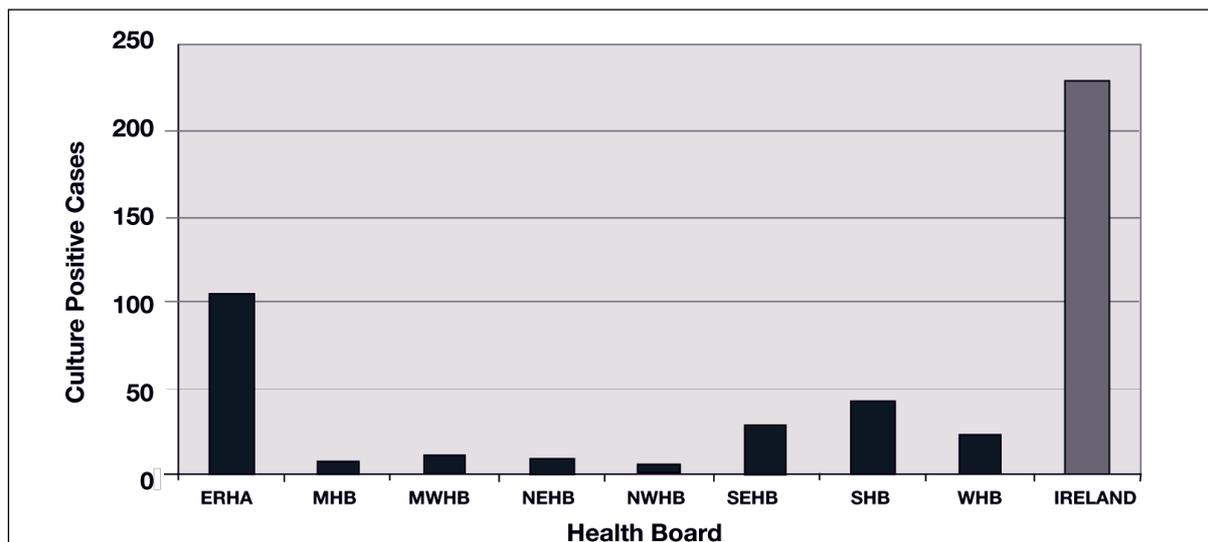


Figure 6: TB culture positive cases by health board, 2000

Pulmonary smear positive cases

In Ireland in 2000, 144 (47.8%) of the 301 cases with a pulmonary disease component were sputum smear positive. This compared to 38% (124/328) of pulmonary cases in 1999.

Extrapulmonary disease sites

One hundred and thirteen cases had an extrapulmonary disease component. The extrapulmonary sites reported are shown in table 14.

Table 14: Extrapulmonary disease sites in notified cases, 2000

| Site | Number |
|---------------------|------------|
| Pleural | 44 |
| Lymph-intrathoracic | 6 |
| Lymph-extrathoracic | 15 |
| Spinal | 2 |
| Meningeal/ CNS | 8 |
| Genitourinary | 9 |
| Disseminated | 5 |
| Peritoneal | 4 |
| Other* | 19 |
| Site not reported | 1 |
| Total | 113 |

*Other sites reported included hip, breast abscess, nasopharynx, neck gland, bone, paratracheal node, paravertebral abscess, pelvic node, psoas abscess, pericardial, renal, skin abscess, sternal abscess and testis.

TB meningitis

There were six cases of TB meningitis in 2000 giving an incidence rate of 1.65 cases per million. This compares to seven cases in 1999 and six cases in 1998. Some details on these cases are provided in table 15. The cumulative incidence rates of TB meningitis in the health boards and in Ireland for 1998-2000 are shown in table 16.

Table 15: TB meningitis cases in Ireland, 2000

| Health Board | Age group (years) | History of BCG | Diagnosis |
|--------------|-------------------|----------------|-----------|
| ERHA | 25-34 | N | Confirmed |
| NEHB | 15-24 | U | Presumed |
| NWHB | 25-34 | N | Presumed |
| SHB | 35-44 | N | Confirmed |
| SHB | 35-44 | U | Presumed |
| WHB | 5-14 | N | Presumed |

Table 16: Cumulative incidence rate of TB meningitis in Ireland, 1998-2000

| Health Board | Cases 1998-2000 | Cumulative incidence rate | 95% CI |
|----------------|-----------------|---------------------------|------------------|
| ERHA | 6 | 0.46/100,000 | 0.09-0.83 |
| NEHB | 2 | 0.65/100,000 | 0-1.6 |
| NWHB | 2 | 0.94/100,000 | 0-2.26 |
| SHB | 7 | 1.28/100,000 | 0.33-2.23 |
| WHB | 1 | 0.28/100,000 | 0-0.84 |
| SEHB | 1 | 0.26/100,000 | 0-0.76 |
| Ireland | 19 | 0.52/100,000 | 0.29-0.76 |

Mycobacterium isolates

There were 2 cases of *Mycobacterium bovis* and three cases of *Mycobacterium africanum* TB notified in 2000.

Table 17: Isolates detected in TB notifications in Ireland, 2000

| Isolate | No | (%) |
|-----------------------------------|-----|------|
| <i>Mycobacterium tuberculosis</i> | 222 | 97.8 |
| <i>Mycobacterium bovis</i> | 2 | 0.9 |
| <i>Mycobacterium africanum</i> | 3 | 1.3 |
| Total | 227 | 100 |

HIV and TB

Seven of the cases of TB diagnosed in 2000 were known to occur in HIV positive individuals. The majority of these cases were in the Eastern Region.

Antibiotic resistance

Resistance was documented in six cases out of a total of 222 *Mycobacterium tuberculosis* isolates (2.7%) (table 18). Mono-resistance to isoniazid was recorded in two cases. Mono-resistance to pyrazinamide was recorded in one case. There were two multi-drug resistant (MDR-TB) cases notified and treated in 2000 *. One case of streptomycin resistance was reported.

One of the cases where *M. bovis* was isolated was multidrug resistant while the other was resistant to isoniazid. All cases of TB caused by *M bovis* are resistant to pyrazinamide.

Table 18: Sensitivity results of resistant cases in Ireland, 2000 (+ indicates resistance)

| | Isolate | Isoniazid | Rifampicin | Pyrazinamide | Streptomycin |
|-----------|-----------------|-----------|------------|--------------|--------------|
| Pulmonary | <i>M. tb</i> | + | + | + | |
| Pulmonary | <i>M. tb</i> | + | + | | |
| Pulmonary | <i>M. tb</i> | + | | | |
| Pulmonary | <i>M. tb</i> | + | | | |
| Pulmonary | <i>M. tb</i> | | | + | |
| Pulmonary | <i>M. tb</i> | | | | + |
| Pulmonary | <i>M. bovis</i> | + | + | + | |
| Pulmonary | <i>M. bovis</i> | + | | + | |

Outcomes

Treatment outcome

Of the 395 cases of TB notified in 2000, the outcome was recorded in 235 cases (59.5%). Of these cases, 181 (77.0%) completed treatment, 37 (15.7%) died and six (2.6%) were lost to follow-up. In 11 cases (4.7%) treatment was interrupted.

Deaths

There were 37 deaths among the 395 cases of TB notified in 2000 (9.4%). In six of these cases, TB was recorded as the cause of death.

* Multi-drug resistance is defined as resistance to at least isoniazid and rifampicin

Discussion

This is the third national report on the epidemiology of TB in Ireland produced by the National Disease Surveillance Centre (NDSC). It is the first report to use the enhanced national TB surveillance system (NTBSS 2000) that became operational in all health boards in Ireland on January 1st, 2000. This new system is based on the European minimum data set required to be reported to Euro TB, the European agency in Paris that collates national TB data within Europe and contributes epidemiological data to the WHO global TB control programme for Europe. Under this new reporting system information is no longer collected on the source of the TB notification, on whether the patient was hospitalised or on the use of inpatient or outpatient facilities for the diagnosis and/or treatment of the TB case.

In 2000, the total number of cases notified nationally in the TB notification system fell to 395 cases, representing a decrease of 16% on the 469 cases reported in 1999. The number of cases notified in 1999 had been an increase of almost 11% on the 424 cases notified in 1998. The crude incidence rate for 2000 was 10.9 cases per 100,000 population, compared with corresponding rates of 12.9 in 1999 and 11.7 in 1998. This was the lowest TB incidence rate in the past decade. Before 1998 the crude incidence rate had been falling consistently through the nineties until 1997 when it was down to 11.5/100,000.

The crude incidence rate for all cases of TB varied across the health boards with the highest incidence rate in 2000 being seen in the Mid-Western Health Board, where 14.8 cases of TB per 100,000 population were notified, a lower rate than that seen in that health board in 1999. The second highest rate seen in 2000 was in the Southern Health Board where 14.6 cases per 100,000 population were notified. In 1999 the highest rate reported had been in the Western Health Board where 19.9 cases per 100,000 population were notified, with the rate in the Mid-Western Health Board being the second highest. A clear north-south divide can be seen for age-standardised TB incidence rates for 2000.

The sex ratio among TB cases notified nationally was 1.6 males to 1 female. However, higher ratios were seen in the Western and Midland Health Boards where the ratios were 2.5:1 and 3:1 respectively. The sex breakdown was 1:1 male to 1 female in the North Eastern Health Board. No health board had a female preponderance.

Looking at the incidence rates for the indigenous population in each health board, the rate in the Mid-Western Health Board was still the highest seen in 2000 at 14.0 cases per 100,000 population, with the rate for the Southern Health Board remaining second highest at 13.9. In 2000, 11.4% of all cases of TB notified were known to have been born outside Ireland. This is less than in 1999, when 13.8% of all TB cases notified had been born outside of Ireland. This represented a significant rise on the 1998 figure of 8.3%, but when compared to several other European countries e.g. Norway, Sweden, Denmark and Switzerland, where more than 50% of TB cases are in patients of foreign origin³, it was still one of the lowest proportions of TB cases in non-nationals in the EU.

However, given the increase in the arrival of asylum seekers in Ireland in recent years, many from countries with a higher incidence of TB than that seen in Ireland, there is a strong case for maintaining effective enhanced TB surveillance in these and other high-risk groups, so that it is possible to monitor the epidemiology of TB in these subgroups.

There were three cases of multi-drug resistance (MDR) reported in 2000, with resistance to at least isoniazid and rifampicin, an increase on the two MDR cases seen in 1999. Mono-resistance to isoniazid was recorded in two cases in 2000, monoresistance to pyrazinamide was recorded in one case and one case was resistant to streptomycin. Drug resistance is an issue that needs to be kept under close surveillance and is something that will be greatly facilitated by the establishment of a National TB Reference Laboratory.

It is disappointing that data on the outcome of treatment remains incomplete in many cases. This important information, which includes follow up microbiological data, was only reported in about 60% of cases in 2000. This did, however, represent a considerable increase on the corresponding 1999 percentage. It should still be possible to improve the availability of this important follow up data.

BCG Vaccination

As reported by the Working Party on Tuberculosis in their Report on Tuberculosis (Department of Health and Children, 1996)¹, cessation of neonatal BCG should be considered provided certain basic requirements are in place:

- Criterion 1
There is a well functioning TB Control Programme

Ireland
Yes.

- Criterion 2
There has been a reliable reporting system over the previous five or more years, enabling the annual incidence of active tuberculosis by age and risk groups, with particular emphasis on tuberculosis meningitis and sputum smear positive pulmonary tuberculosis

Ireland
No.
While data has been available at a local level for many years, national data enabling a detailed epidemiological analysis for the country as a whole was first presented by the NDSC in the 1998 National TB Report.

- Criterion 3
Due consideration has been given to the possibility of an increase in the incidence of tuberculosis resulting from the epidemiological situation of AIDS in that country.

Ireland
Yes.

- Criterion 4
The average annual notification rate of sputum smear positive pulmonary tuberculosis should be 5/100,000 or less during the previous three years.

Ireland
Yes.

In 2000, the national rate for sputum positive pulmonary TB was 4.0/100,000, while in 1998 and 1999 the rate was 3.3/100,000.

- **Criterion 5**
The average annual notification rate of tuberculosis meningitis in children under five years of age should be less than one case per ten million general population over the previous five years.

Ireland

No.

In 2000, there were no cases of TB meningitis in children less than five years of age but in 1998 there was a case of TB meningitis in a 1 year old child. That child had not received the BCG vaccination.

- **Criterion 6**
The average annual risk of tuberculosis infection should be 0.1% or less

Ireland

Not applicable.

In summary, Ireland does not yet meet all of the criteria set by the International Union Against Tuberculosis and Lung Disease for discontinuation of national BCG vaccination programmes⁴.

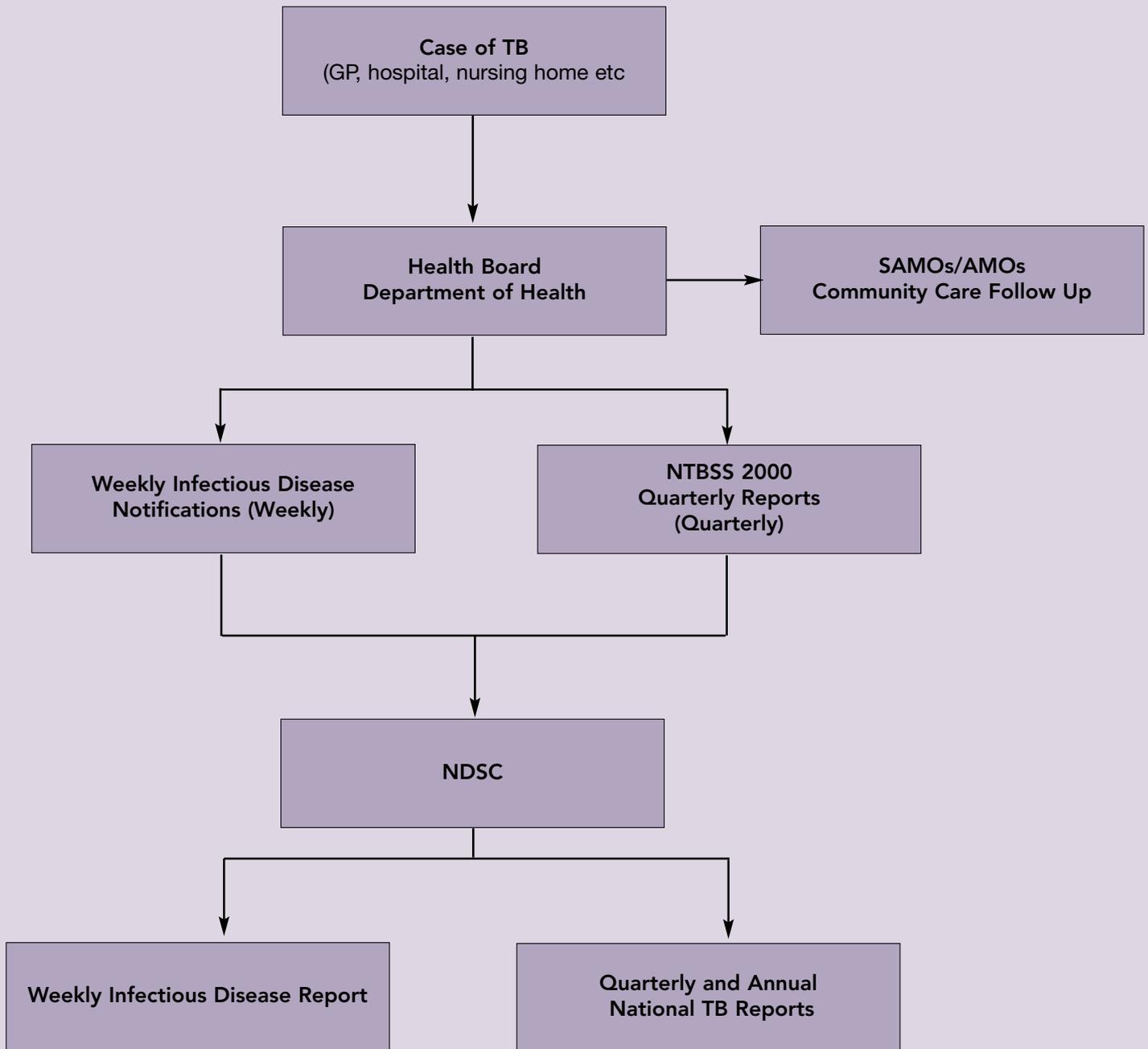
Conclusions

- There was a 15.8% decrease in TB case notifications in 2000 compared to the previous year.
- There was a regional variation in the TB case crude notification rates from 14.8/100,000 population in the Mid-Western Health Board to 4.3/100,000 population in the North Western Health Board.
- The age standardised incidence rates were also highest in the MWHB at 14.9/100,000 population and lowest in the NWHB at 3.9/100,000.
- The male:female ratio among TB cases was 1.6:1 nationally, varying from 3:1 in the Midland Health Board to 1.1:1 in the North Eastern Health Board.
- 11.4% of all TB cases notified in 2000 were in people known to have been born outside of Ireland, a decrease on the proportion of non-nationals noted in the previous year (13.8%).
- 76.2% of the TB cases notified in 2000 had a pulmonary component.
- 47.8% of pulmonary TB cases notified in 2000 were sputum smear positive.
- 61.8% of pulmonary TB cases notified in 2000 were culture positive.
- There were three cases of MDR-TB notified in 2000.
- Recorded treatment outcome data on TB case notification forms was available on 60% of cases notified in 2000.

References

1. Report of the Working Party on Tuberculosis (1996). Dept of Health and Children, Dublin, Ireland.
2. Dean, Dean, Coulombier et al., (1994). Epi-Info version 6.04d. Centres for Disease Control, Atlanta.
3. Euro TB (1999). Surveillance of Tuberculosis in Europe. Report on Tuberculosis Cases in 1997.
4. International Union Against Tuberculosis and Lung Disease (1994). Criteria for discontinuation of vaccination programmes using Bacille Calmette Guerin (BCG) in countries with a low prevalence of tuberculosis. *Tuber Lung Disease*; 75:179-80

Appendix 1: Notification pathway for a case of TB



TB is a notifiable disease. A case of TB should be notified to the Department of Public Health in the relevant health board. The Department of Public Health in turn notifies NDSC in 2 ways: (a) in its weekly infectious disease returns to NDSC and (b) through the enhanced TB surveillance system each quarter. NDSC produces a Weekly Infectious Disease Report, which will include TB case notifications. NDSC also produces Quarterly and National TB Reports.

