



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

**SURVEILLANCE REPORT ON TUBERCULOSIS
IN THE
HSE MID-WESTERN AREA IN 2003**

January 2004

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The data used in this report were collected by Area Medical Officers (AMOs) in the three Community Care Areas (CCAs) of the Health Service Executive Mid-Western Area (HSE Mid-Western Area) – Limerick, Clare and East Limerick/North Tipperary. Reports were collated at the Department of Public Health using the EPI-INFO NTBSS 2000 system. The area referred to as the Health Service Executive (HSE) Mid-Western Area is the region previously known as the Mid-Western Health Board.

The completed and finalised dataset was referred to the Health Protection Surveillance Centre in January 2005.

Analysis was performed in MS Access and Excel and EPI-INFO 2000. Denominator data for population rates used data from the 2002 Census of Ireland.

Ireland	3,917,203
HSE Mid-Western Area Population:	339,591
Co Clare	103,277
Co Limerick	175,304
North Tipperary	61,010

Note on rates and Census

Data on rates should be interpreted with caution. Where small numbers are quoted variances can be large and not statistically significant.

Data for 1994-1999 based on Census 1996, data 2000-2003 based on Census 2002.

The population rates published in previous TB surveillance reports (2000 and 2001) have been corrected in this report to reflect the rates based on the national and HSE Mid-Western Area population census of 2002.

Acknowledgements: The Department of Public Health thanks Dr Carmel Collins, Dr PJ Loughnane, Dr Phil FitzGerald and Dr Joe Quinn and the Senior Area Medical Officers for their follow-up on all these cases. Thanks to Breda Tuohy and Clare Harwood-Smith for data entry using the NTBSS 2000.

The co-operation of the respiratory physicians and laboratory staff in the Mid-Western Regional Hospital was greatly appreciated.

1. Summary data:

In 2003, there were 53 suspected cases of tuberculosis (TB) in the HSE Mid-Western Area. After validation, eleven cases were denotified (not cases or diagnosis changed, confirmed with AMO or respiratory physician).

In total, there were 42 confirmed cases of TB in the Area in 2003. This corresponds to a crude annual incidence rate of 12.4/100,000 population (95% Confidence Interval: 8.6-16.1).

This compares to 32 cases in 2002, 26 cases in 2001, 47 cases in 2000, 54 cases in 1999 and 47 in 1998.

The trend in the crude annual incidence of TB in the HSE Mid-Western Area is shown in Table 1 and Figure 1.

Table 1: Annual crude incidence rate of TB in HSE Mid-Western Area 1992 – 2003

Year	Crude annual incidence rate/100,000
1992	20.9
1993	18.0
1994	17.7
1995	15.4
1996	17.7
1997	15.1
1998	14.8
1999	17.0
2000	13.8
2001	7.7
2002	9.4
2003	12.4

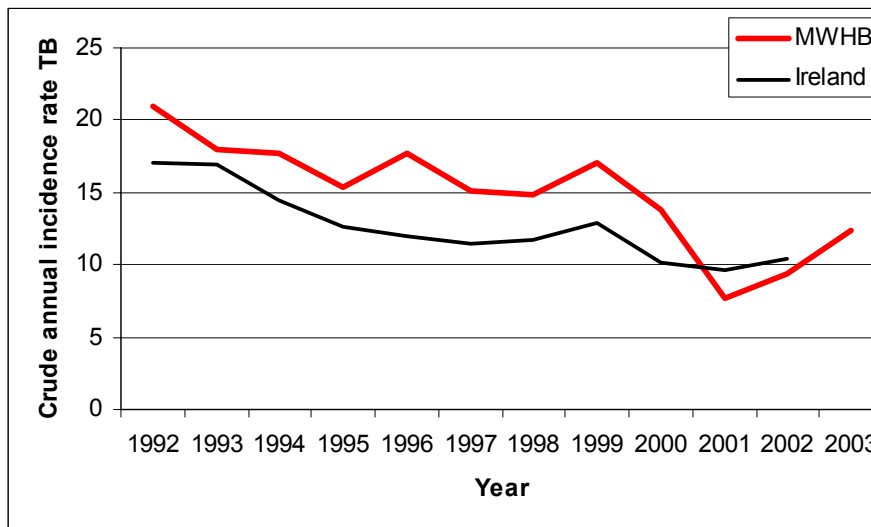


Figure 1: Crude annual incidence of TB in HSE Mid-Western Area and Ireland, 1992 – 2003.

(rates used 1991, 1996, 2002 Census data where appropriate)

The change in the trend in the rate of TB in the region needs to be monitored closely over time to ascertain if this is a reversal of a downward trend or some transient artefact in incidence. Nationally the fall in TB has slowed. It is unclear whether this trend is temporary or evidence of a changing pattern in terms of demography or diagnosis, however preliminary data for 2004 indicates a continuation of the current

rate in the HSE Mid-Western Area. Very often, outbreaks can affect the crude annual rate, leading to spikes from year to year. Looking at the “smoothed” three year moving average of the crude rate, we can see that the national downward trend in TB has entered a plateau and this is the case also in the HSE Mid-Western Area, Table 2.

Table 2: Three-year moving average incidence rate of TB in HSE Mid-Western Area 1992 – 2002

Year	3-yr moving average incidence rate/100,000
1992	20.0
1993	18.7
1994	17.2
1995	17.2
1996	16.5
1997	15.7
1998	15.4
1999	15.6
2000	12.5
2001	10.3
2002	9.8

Overall the trend in the HSE Mid-Western Area and nationally is downwards, as illustrated in Figure 2, but recently the rate of drop in both populations fell.

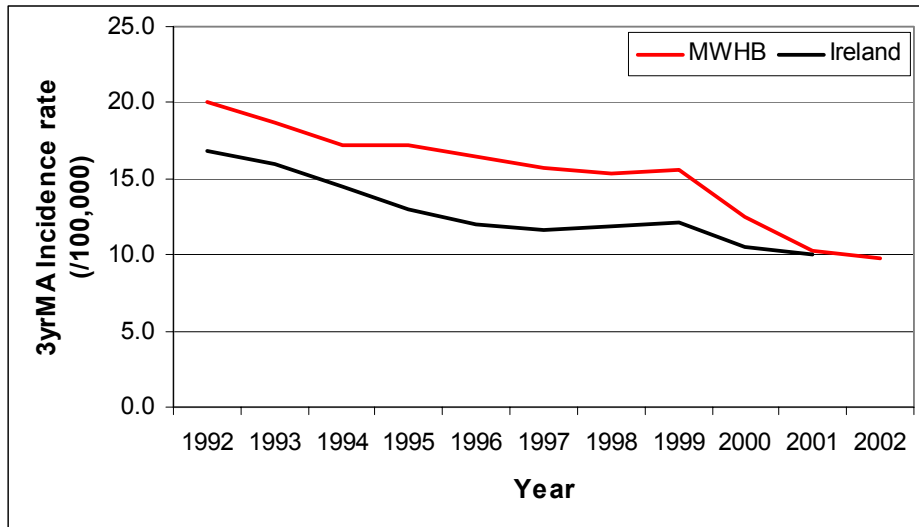


Figure 2: Three-year moving average incidence rate of TB in HSE Mid-Western Area and Ireland, 1992 – 2002.

(rates used 1991, 1996 and 2002 Census data where appropriate)

Cases occurred throughout 2003 with June and September having a large number of cases as seen in Figure 3.

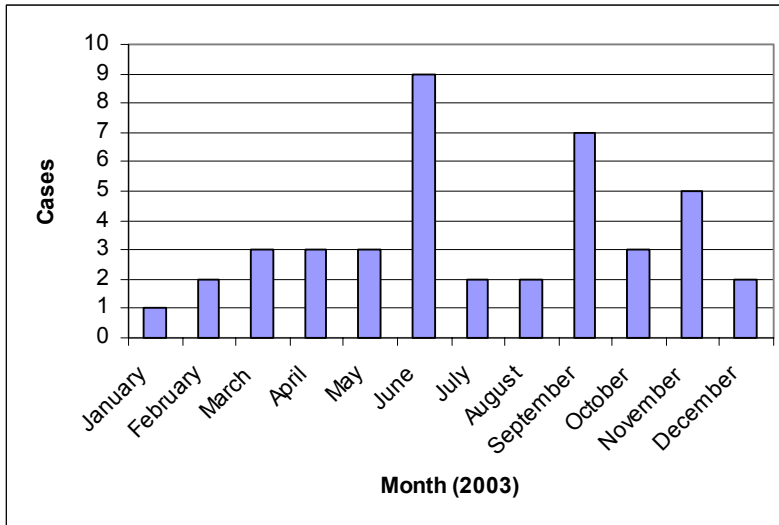


Figure 3: Cases of TB in 2003 in HSE Mid-Western Area by month of notification.

Compared to 2002, there was a further disimprovement on average delay from diagnosis to notification. Average delay in 2003 was 79 days compared to 21 days in 2002. The range in 2003 was 0-268 days (Median; 61.5 days). Efforts to address delays in notification to the Department of Public Health have been made and these will improve the public health response where outbreaks could occur. The concern is that contacts who may be positive have an opportunity to spread disease widely before being assessed and offered appropriate intervention.

It is likely that the official IMO dispute in 2003 may have had some effect in the time from diagnosis to notification and may explain the peak seen in June when the dispute ended.

2. Geographical distribution:

Table 3: Cases of TB by Community Care Area (CCA) in HSE Mid-Western Area (n=42).

County	Cases	%
Clare	7	17
Limerick	21	50
North Tipperary/E. Limerick	14	33

A much smaller percentage of total cases were seen in the Clare CCA in 2003 compared to 2002. The percentage of cases seen in the E. Limerick/North Tipperary CCA is higher than seen previously in 2002 and 2001.

The proportions are represented in Figure 4

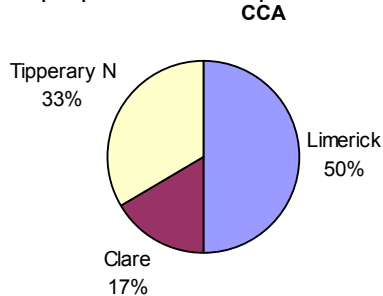


Figure 4: Pie chart of proportion of cases in each HSE Mid-Western Area CCA, 2003.

The population estimates for CCA are not as reliable as county estimates so further rates are based on county population.

Table 4: Cases of TB by county in HSE Mid-Western Area (n=42):

County	Population	Cases	CAIR	95% CI
Clare	103,277	7	6.8	1.8-11.8
Limerick	175,304	33	18.8	12.4-25.2
N Tipperary	61,010	2	3.3	0-7.8

CAIR = crude annual incidence rate per 100,000. CI = Confidence Interval

The annual TB incidence rate in 2003 in Limerick rose again to 18.8 compared to 2002 (12.0) and 2001 (10.3). The rate in Clare has fallen compared to 2002 (9.7) but is still higher than the rate seen in 2001 (5.8). Two cases were reported from North Tipperary in 2003 compared to two cases in 2001 and one in 2002.

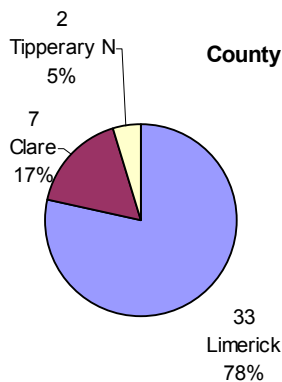


Figure 5: Pie chart of proportion of cases in each HSE Mid-Western Area county, 2003.

While numbers are small there appears to be a persistent high rate of TB in Limerick. Unlike 2002 when 69% of cases reported were Irish-born persons (22/32), in 2003 there were only four cases of TB reported in foreign-born persons. Three of these cases were reported from Limerick and one from Clare. All foreign-born persons were male.

Table 5: Country of origin of foreign-born TB cases, 2003:

Country	Cases
India	1
Iraq	1
Philippines	1
South Africa	1
<i>Total</i>	<i>4</i>

One case was detected in the asylum seeker population. Data excluding non-national cases can be presented to show the incidence in the indigenous population alone.

Table 6: Cases of TB by county in HSE Mid-Western Area (indigenous population only n=38):

County	Population	Cases	CAIR	95% CI
Clare	92,383	6	6.5	1.3-11.7
Limerick	164,524	30	18.2	11.7-24.8
N Tipperary	57,671	2	3.5	0-8.2
HSE M-W	314,578	38	11.2	7.6-14.7

CAIR – crude annual incidence rate per 100,000. CI = Confidence Interval

All cases were reported as living at home. No cases were reported in the hostel, homeless or prison population.

3. Sex distribution:

Of the 42 cases confirmed in the HSE Mid-Western Area, 28 were male (67%) and 14 were female (33%). The male to female ratio was 2. This is a lower ratio than seen in 2002 (2.6).

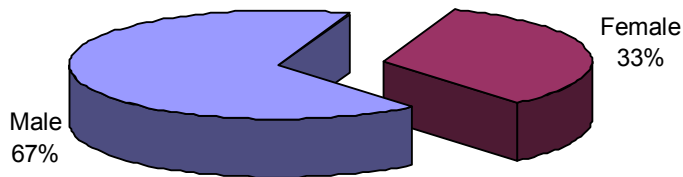


Figure 6: Pie chart illustrating sex distribution of TB cases in HSE Mid-Western Area, 2003.

There is no statistically significant difference in the incidence of TB in males and females at the 95% significance level. The crude annual incidence rate in males is 16.4 (95% Confidence Interval; 10.3-22.5) and in females 8.3 (95% Confidence Interval; 3.9-12.6). All cases in Clare were in males.

Table 7: Distribution of TB cases by sex in HSE Mid-Western Area, 2003 (n=42)

	Clare	Limerick	N Tipperary
Cases	7 (6)	33 (30)	2 (2)
Males	7 (6)	20 (17)	1 (1)
Female	0 (0)	13 (13)	1 (1)

() = Indigenous population cases.

Due to small numbers, the confidence intervals are large and overlap.

4. Age Distribution:

The distribution of cases of TB in different age groups was analysed. Direct methods of standardisation were used to compare the data from the region with the Irish population. Age range of cases in HSE Mid-Western Area, 2003 was 3 years to 87 years (Mean age 46.5 yrs). In 2003 the mean age was 46.5 compared to 2002 (44.8 years), 2001 (56.8 years), and 2000 (45.5 years).

Table 8: Mean age of TB cases in HSE Mid-Western Area counties, 2003.

County	Mean age in years (2002 for comparison)	n
Clare	55.3 (42.7)	7
Limerick	44.5 (45.9)	33
Tipperary N	47 (50)	2

The mean age of cases in the Limerick area remains low. The development of active disease in the younger population is cause for concern.

Table 9: Distribution of TB by age in HSE Mid-Western Area and counties, 2003.

Age group	HSEM-W	Males	Females	Limerick	Clare	N Tipperary
0 – 4	1	1	0	1	0	0
5 – 14	0	0	0	0	0	0
15 – 24	6	3	3	6	0	0
25 – 34	8	7	1	6	1	1
35 – 44	6	5	1	5	1	0
45 – 54	6	4	2	5	1	0
55 – 64	3	3	0	1	1	1
65+	12	5	7	9	3	0

The age standardised incidence rate of TB in the HSE Mid-Western Area was calculated to be 12.4 (95% CI: 8.6–16.1). For the counties, the age standardised rates were calculated as:

Clare	6.5 (95% CI: 1.7–11.4)
Limerick	18.8 (95% CI: 12.4– 25.3)
North Tipperary	3.5 (95% CI: 0 – 8.5)

In 2003, the rate of TB in the older groups (over 55 years) rose compared to the rate in 2002 and is similar to rates in the older in 2001 but, like 2002, there is still a high rate of cases in the younger age groups (15-54 years) in the HSE Mid-Western Area in 2003.

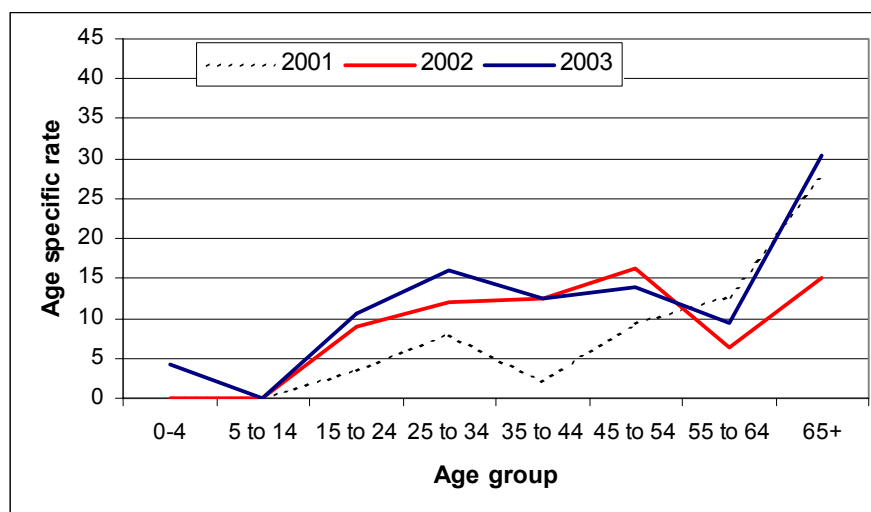


Figure 7: Age distribution of TB cases in HSE Mid-Western Area, 2003 (2001 and 2002 for comparison).

Age and sex specific TB rates were calculated in Table 10.

Table 10: Age and sex specific incidence rates of TB in HSE Mid-Western Area, 2003.

Age group	HSEM-W	Males	Females
0 – 4	4.2	8.3	0
5 – 14	0	0	0
15 – 24	10.7	10.4	11.0
25 – 34	16.1	27.7	4.1
35 – 44	12.5	20.6	4.2
45 – 54	14.0	18.2	9.5
55 – 64	9.5	18.8	0
65+	30.4	28.6	31.8

The rates of disease in the HSE Mid-Western Area in those aged 25-55 years in 2003 are higher than rates reported nationally for these age groups. Compared to 2002, there was an increase in cases in women over 65 years in 2003.

The difference between the male and female rates in each age group is shown graphically in Figure 8.

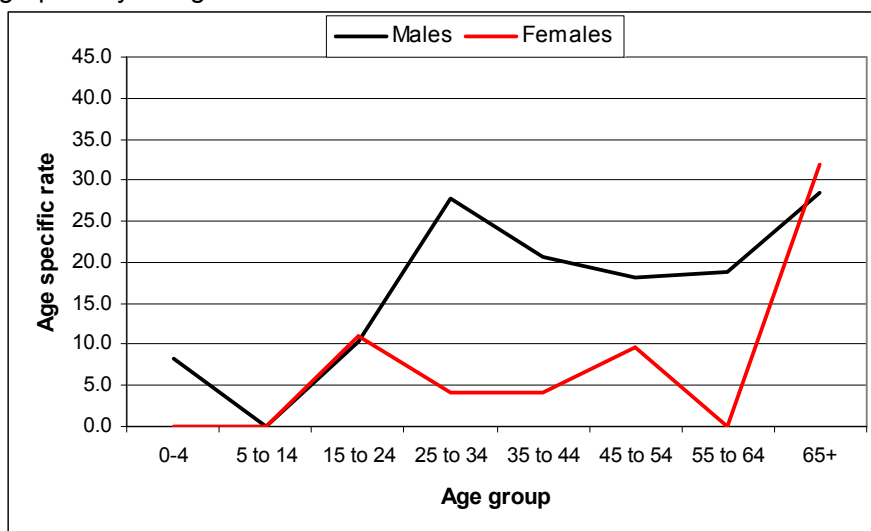


Figure 8: Age and sex specific incidence rates of TB in HSE Mid-Western Area, 2003 (n=42).

The unusual pattern of disease in 2003, like 2002, seems to be mainly confined to the male cases.

Table 11: Age specific incidence rates of TB in HSE Mid-Western Area counties in 2003.

Age group	Limerick	Clare	N Tipperary
0 – 4	8.4	0	0
5 – 14	0	0	0
15 – 24	18.5	0	0
25 – 34	22.5	6.7	12.2
35 – 44	20.8	6.6	0
45 – 54	23.2	7.4	0
55 – 64	6.3	10.1	17.3
65+	47.2	24.5	0

The incidence of TB in males in almost all age groups increased in Limerick in 2003 compared to 2002. Comparing 2002 and 2003, Clare experienced a drop in the TB rate in most age groups but increased in those over 65 years, see Figure 9.

To assess the effect of the percentage of foreign-born TB cases (9.5%), rates were calculated based on indigenous cases only (figures 10 and 11). These must be interpreted with caution as data from previous years did not exclude foreign-born TB cases.

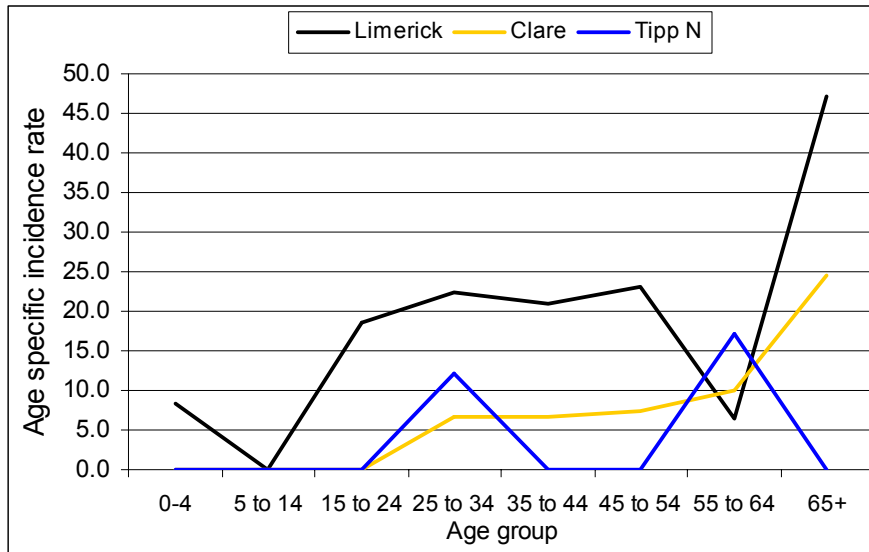


Figure 9: Age specific incidence rate of TB in counties Clare, Limerick and North Tipperary, 2003.

Figure 10 shows the age and sex specific incidence rate for the indigenous cases only. This assumes infection was acquired in Ireland in each case and that the foreign-born cases excluded all acquired infection elsewhere.

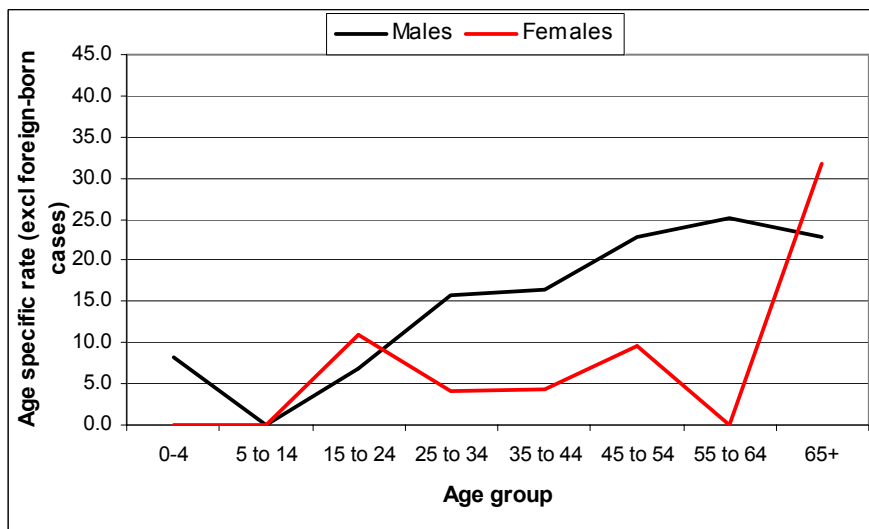


Figure 10: Age and sex specific rates of TB **excluding** all foreign-born cases in HSE Mid-Western Area, 2003.

Confining the examination of data to Irish born persons there is a fall in the rate of disease in the 25-44 year old age groups in the region. This is true for the trend in

each county also – there is a small drop in the incidence of TB in the Limerick area and little change elsewhere when compared to 2002, Figure 11
 Figures and rates broken down by age and sex and county become small and may show marked variation year on year.

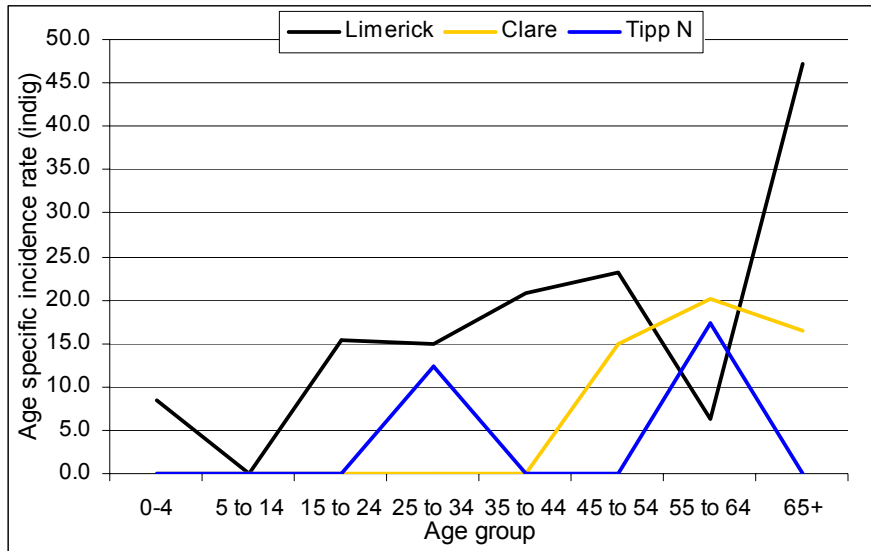


Figure 12: Age specific incidence rate of TB by county in HSE Mid-Western Area, 2003 (excluding foreign-born cases).

Excluding all foreign-born cases, the mean age of the cases of TB rise in Clare but does not alter much in Limerick.

HSE Mid-Western Area	48.6 years
Clare	60.0 years
Limerick	46.4 years

5. Diagnostic classification:

Criteria to define classifications are based on national and international standards (see Appendix).

Table 12: Diagnostic classification of TB in HSE Mid-Western Area, 2003 (n=42)

Area	P (%)	E (%)	P+E (%)	Pri (%)	Total (%)
HSE M-W	29 (69)	12 (29)	1 (2)	0 (0)	42 (100)
Clare	5	2	0	0	7 (16.7)
Limerick	22	10	1	0	33 (78.6)
N Tipperary	2	0	0	0	2 (4.7)

P=Pulmonary E=Extrapulmonary Pri=Primary
Classification undetermined in one case.

Diagnostic classification was recorded in 100% of cases in the region. The percentage of cases with a pulmonary (P or P&E) component (71.4%) increased from 59.5% in 2001. The proportion of extrapulmonary (E) cases in 2003 fell in comparison to 2002.

Extrapulmonary sites (12) involved were reported as:

Site	Cases
Pleural	5
Lymph extrathoracic	3
Spinal	2
Genitourinary	1
Other	1

6. Laboratory Investigation:

Table 13: Cases investigated by direct smear examination, HSE Mid-Western Area 2003.

Direct AFB Stain	All cases	Pulmonary TB
Positive	16	16
Negative	11	9
Not done	8	3

No data was available on 2 cases having a pulmonary component.

Of eighteen “pulmonary TB” smear positive cases detected, seventeen were culture positive (16 isolates were *M. tuberculosis* and one was *M. bovis*).

Two isolates of *M. tuberculosis* were detected in sputum (or bronchial washings) direct AFB (acid fast bacilli) negative cases of pulmonary TB.

Five isolates of *M. tuberculosis* and one isolate of *M. bovis* were detected in cases classified extrapulmonary TB. (two were neck aspirates, one was a gland swab one was pleural fluid and one was urine – the *M. bovis* was isolated from pus from a thoracic disc)

Thirty cases had a pulmonary component to the disease classification. Of these cases, 17 (57%) were culture positive and 18 (60%) were positive on direct AFB smear. This corresponds to a direct smear positive rate of 5.3/100,000 population (95% CI: 2.8 – 7.8). This direct positive rate is twice as high as the rate seen in 2002. Susceptibility pattern on all 23 isolates of *M. tuberculosis* and 2 isolates of *M. bovis* was provided. One isolate of *M. tuberculosis* was resistant to isoniazid but susceptible to rifampicin, pyrazinamide and ethambutol. All other *M. tuberculosis* isolates were found susceptible to rifampicin, pyrazinamide, isoniazid and ethambutol. No multi-drug resistant isolates were detected.

In cases involving foreign-born nationals there were two pulmonary and two extrapulmonary cases, all were culture positive for *M. tuberculosis*. The isolates of *M. bovis* were detected in a male with extrapulmonary TB in Limerick and a female with pulmonary TB in North Tipperary. The isolates were susceptible to rifampicin, isoniazid and ethambutol.

Active TB was diagnosed on chest X-ray in 23 cases (22 had a pulmonary component, one had both P&E and one had extrapulmonary, both latter showing pleural effusion).

Microbiological culture was the sole positive finding in nine cases.

Histology was positive in one other case.

Overall, nine cases were diagnosed on clinical signs (five extrapulmonary, four pulmonary, though one case was direct AFB positive and culture negative).

7. Risk Factors:

Data on risk factors was available in five cases only. Two cases reported excess alcohol consumption, one was a diabetic, one reported immunosuppression and one case was on steroid treatment and had pulmonary fibrosis.

Five cases reported a previous history of TB, 34 cases reported no history of TB – one case had no response and one recorded history of TB as unknown. Eight cases reported a history of BCG and six cases had a “scar present”. However, data on many cases was unknown or incomplete for this question.

In 2003, 37 cases presented as a case of TB, four were detected by contact tracing.

8. Outcome data:

Outcome data was acquired for all cases notified (100%).

Table 14: Category of outcome for TB cases in HSE Mid-Western Area, 2003 (n=42).

Outcome	Cases
Completed therapy	31 (74%)
Died	3
Lost to follow-up	2
Still on treatment	2
Treatment Interrupted (>2mths)	4

Two males and one female died. TB was specified as cause of death on one case.

Two cases were aged 72 and the third was 80 years.

The percentage of those who had therapy completion verified is similar to 2002.

9. Comment:

Overall, the completeness and timeliness of the data collection and reporting of the enhanced TB surveillance system in 2002 was good.

The rate of tuberculosis in Limerick is high in comparison to national rates.

General practitioners in the south county Limerick area were alerted to an increase in the number of cases reported in that region in early 2004.

It is very important that when samples are sent to the Microbiology Laboratory for testing that investigation for TB is specifically requested.

Tuberculosis outcome surveillance was not introduced as expected.

Appendix:

Case Definitions

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

- **A notified case** of TB referred to clinically active disease due to infection with organisms of the Mycobacterium tuberculosis complex. Active disease was presumed if the patient was 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 were not included as cases.
- **A definite case** of tuberculosis was a case with culture confirmed disease due to M. tuberculosis complex.
- **An other than definite case** met both of the following conditions: (1) It was the clinician's judgement that the patient's clinical and/or radiological signs and/or symptoms were compatible with tuberculosis and (2) The physician took the decision to treat the patient with a full course of anti-tuberculosis therapy.
- **Pulmonary TB** was 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 took the decision that the patient's clinical symptoms and/or radiological signs were compatible with pulmonary TB.
- **Extra-pulmonary TB** was defined as a patient with a smear, culture or histology specimen, from an extra-pulmonary site, that was 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** was a case of tuberculosis that met the previous two definitions.
- **Primary TB** was defined as a patient with a negative smear, culture or histology specimen but which had radiological signs of hilar lymphadenopathy on chest x-ray and a positive tuberculin skin test or there was clinical evidence that led the physician to treat the patient with a curative course of antituberculosis chemotherapy.
- **A Recurrent Case** was defined as a patient with a documented history of TB prior to their 2000 notification.
- **Indigenous Population** was defined as those who were born in Ireland