



National TB Surveillance

A report by the Health Protection Surveillance Centre

Quarter 1 - 3 2016 TB Report

Report produced 30th November 2016*

* The data in this report are provisional and will not be regarded as final until all notification data on individual cases are complete and the data have been validated.
Data extracted from CIDR 14/11/2016

Introduction

This Quarter 1 to 3 2016 TB Report presents an epidemiological summary of the cases of tuberculosis (TB) notified to eight HSE areas in Ireland during January - September 2016.

HPSC produces a quarterly TB report using data submitted to it by HSE areas after the end of each quarter. Quarterly returns from the areas consist of disaggregate data on new TB notifications and some additional data on notified TB cases from previous years. **Data in quarterly reports should be regarded as provisional until a process of validation has been completed at the end of that notification year.** Quarterly reports will invariably have incomplete data on cases until this process of validation has occurred.

Summary

During Quarter 1 to 3 2016:

- 260 TB cases[†] were notified to HPSC
- HSE East reported the highest number of cases 112 (43.1% of total)
- The male to female ratio was 1.4:1
- The highest proportion of cases occurred in those aged 25-34 years (23.1%) and in those aged 65 years and older (19.6%)
- 43.5% of all cases were foreign born
- No cases of TB meningitis were notified
- 189 cases (72.7%) were culture positive, 20 (7.7%) were culture negative and four (1.5%) were reported as not having been culture tested (table 9). Culture result was not reported for the remaining 47 cases (18.1%).
- *M. tuberculosis* was isolated in 182 (96.3%) cases, *M. bovis* in three (1.6%), *M. tuberculosis* complex[‡] in two (1.1%) and *M. africanum* in two (1.1%)
- 172 (91.0%) culture positive cases had drug sensitivity details
- 4 cases of multidrug-resistant TB (MDR-TB) were notified for this period.
- No XDR-TB cases were reported during this period
- HIV status was reported for 88 (33.8%) TB cases
- Four outbreaks were reported during this period

[†] Data in quarterly reports should be regarded as provisional until a process of validation has been completed at the end of that notification year.

[‡] Species of mycobacteria not specified

Results

Total cases of tuberculosis notified in Q1 to 3 2016

There were 260 cases of TB notified during the period 1st January to 30th September 2016. Figure 1 illustrates the trend the number of TB notifications by HSE area from Q1-3 2012 to Q1-3 2016. The number of cases notified in each HSE area and LHO is shown in table 1 and a breakdown of TB cases by county is shown in table 2. Table A1, appendix 1 displays the number of TB notifications, 3 year moving average and crude incidence rate by year.

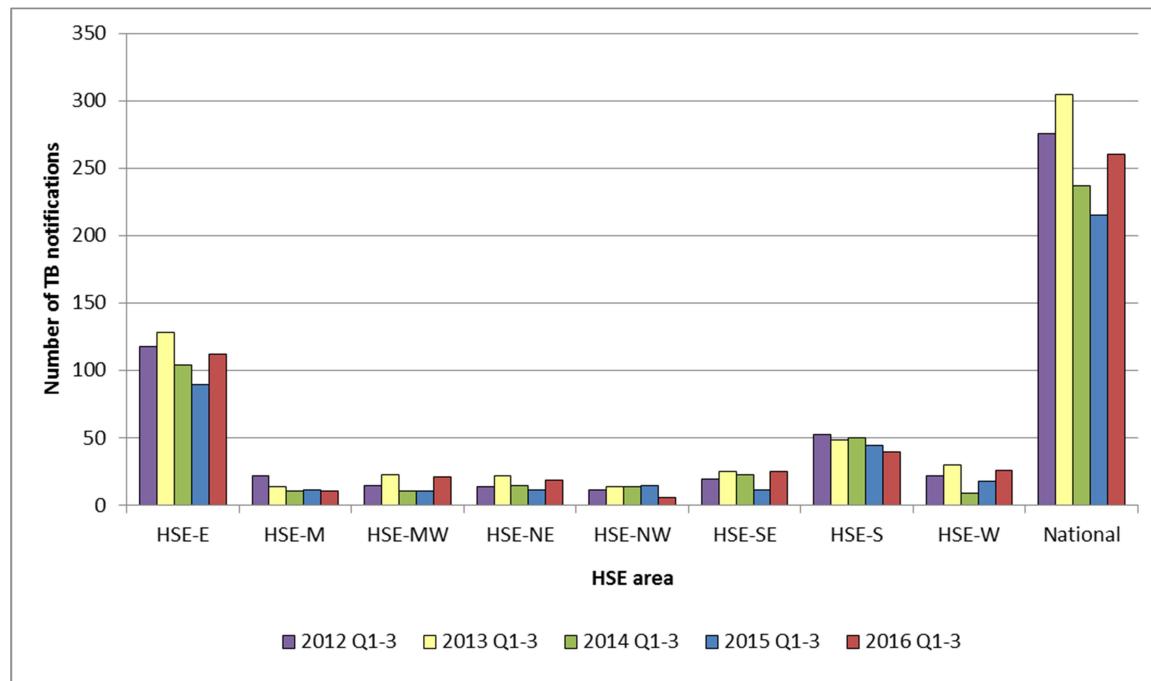


Figure 1: Number of TB notifications by HSE area, Q1 – Q3 2012-2016

Table 1: Number and percentage of TB notifications by HSE area and LHO, Q1 – Q3 2016

HSE Area	Number of TB cases	% of Total	LHO	Number of TB cases
East	112	43.1	Dublin South	9
			Dublin South East	6
			Dublin South City	10
			Dublin South West	7
			Dublin West	11
			Dublin North West	20
			Dublin North Central	15
			Dublin North	14
			Kildare/West Wicklow	11
			Wicklow	9
Midland	11	4.2	Longford/Westmeath	5
			Laois/Offaly	6
Mid-West	21	8.1	Clare	7
			Limerick	13
			Tipperary N/ E Limerick	1
North East	19	7.3	Cavan	6
			Louth	8
			Meath	4
			Monaghan	1
North West	6	2.3	Donegal	1
			Sligo/Leitrim	5
South East	25	9.6	Carlow/Kilkenny	15
			Tipperary S	1
			Waterford	6
			Wexford	3
South	40	15.4	Kerry	7
			North Cork	5
			North/South Lee	27
			West Cork	1
West	26	10.0	Galway	14
			Mayo	7
			Roscommon	5
Ireland	260	100.0	Total	260

Table 2: Number and percentage of TB notifications by county, Q1 – Q3 2016

County	Number of TB Cases	% Total
Dublin	92	35.4
Kildare	11	4.2
Wicklow	9	3.5
Laois	6	2.3
Longford	2	0.8
Westmeath	3	1.2
Clare	7	2.7
Limerick	13	5.0
Tipperary North	1	0.4
Cavan	6	2.3
Louth	8	3.1
Meath	4	1.5
Monaghan	1	0.4
Donegal	1	0.4
Leitrim	2	0.8
Sligo	3	1.2
Carlow	7	2.7
Kilkenny	8	3.1
Tipperary South	1	0.4
Waterford	6	2.3
Wexford	3	1.2
Cork	33	12.7
Kerry	7	2.7
Galway	14	5.4
Mayo	7	2.7
Roscommon	5	1.9
Total	260	100.0

Age groups

A breakdown of cases by age group and HSE area is shown in table 3 while figure 2 displays the trend in the 0-14 year age group by year.

Table 3: Number and percentage of TB notifications by age group and HSE area, Q1 -& Q3 2016

Age group (years)	HSE-E	HSE-M	HSE-MW	HSE-NE	HSE-NW	HSE-SE	HSE-S	HSE-W	Total	% Total
0-4		1			1		2		4	1.5
5-9	1		1					2	4	1.5
10-14	4	1	1				1		7	2.7
15-19	2		1	1			1	2	7	2.7
20-24	11					1	2	1	15	5.8
25-34	32	2	4	6	1	4	5	6	60	23.1
35-44	18		4	3		1	7	7	40	15.4
45-54	16	1	6	2		6	5	4	40	15.4
55-64	12	2		2	1	5	8	2	32	12.3
65+	16	4	4	5	3	8	9	2	51	19.6
Unknown	0	0	0	0	0	0	0	0	0	0.0
Total	112	11	21	19	6	25	40	26	260	100.0

During Q1-3 2016, six cases in the 0-14 year age group were born outside Ireland, six were born in Ireland and the remaining three cases did not have country of birth reported.

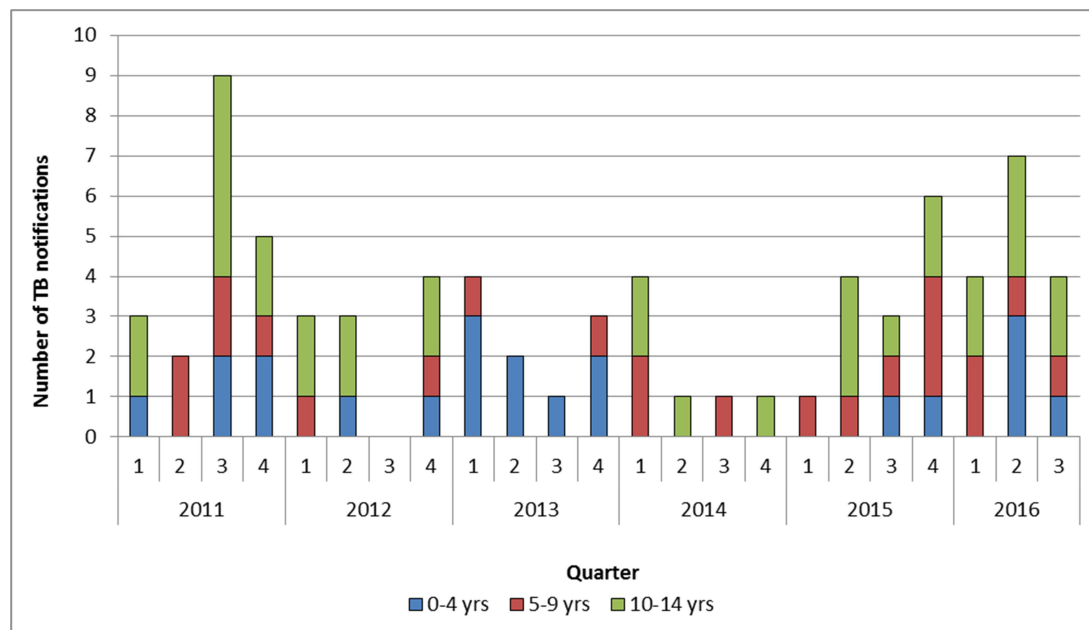


Figure 2: Number of notifications in 0-14 year age group by quarter and year

Sex

There were 108 females (41.5%) and 152 males (58.5%) in Q1 - 3 2016.

Country of origin

During Q1 to Q3 2016, 108 (41.5%) TB cases were born in Ireland and 113 (43.5%) were born outside Ireland. Country of birth was not reported for 39 cases (15.0%) cases. Table 4 summarises the region[§] of birth of cases while figure 3 shows the annual number of TB cases by geographic origin from 2002 to Q3 2016.

Of those 113 cases born outside Ireland, eight (7.1%) were reported as asylum seekers or refugees. Three were from HSE-E, two were from HSE-MW and one each from -SE, -S and -W.

Table 4: Number and percentage of TB notifications by region of origin, Q1 – Q3 2016

Region of origin	Number	%
Ireland	108	41.5
South Asia	60	23.1
Eastern Europe	18	6.9
Sub-Saharan Africa	14	5.4
Central Europe	9	3.5
Western Europe	6	2.3
Eastern Asia / Pacific	3	1.2
North Africa / Middle East	1	0.4
South America	1	0.4
Western Asia	1	0.4
Country of birth not reported	39	15.0
Total	260	100.0

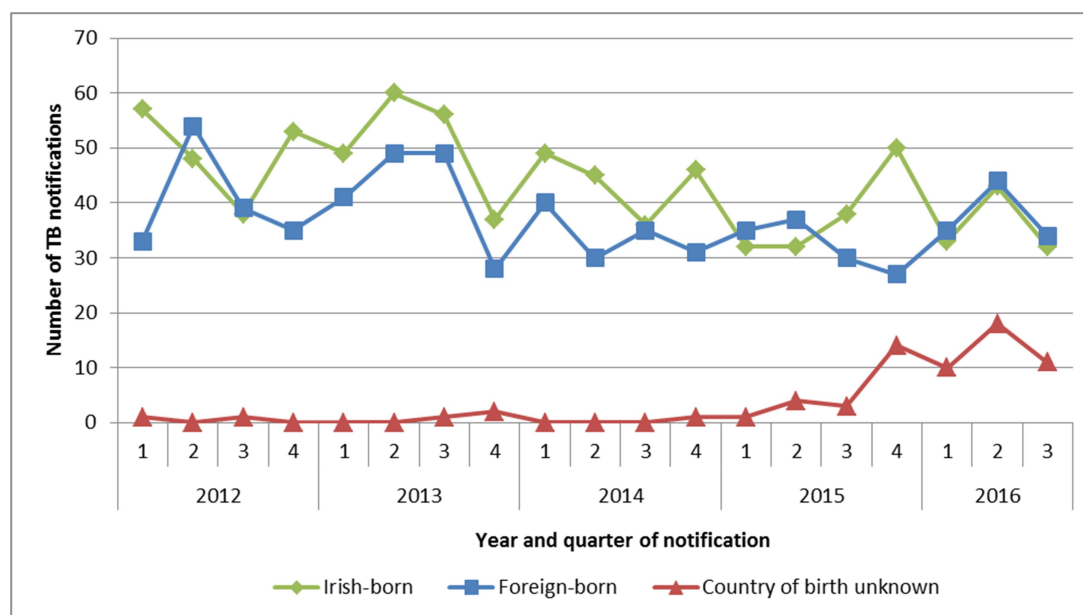


Figure 3: Number of TB notifications by year and quarter of notification and geographic origin, 2012 to Q3 2016

Case ascertainment

Table 5 summarises the method by which reported cases were detected in Q1 to Q3 2016.

[§] As per UN Statistics Division: <http://unstats.un.org/unsd/methods/m49/m49regin.htm#europe>

Table 5: Number and percentage of TB notifications by method of case finding, Q1 – Q3 2016

Found by	Number of TB Cases	% Total
Presenting as case	198	76.2
Contact tracing	13	5.0
Post-mortem diagnosis	4	1.5
Immigrant screening	1	0.4
Other	10	3.8
Not reported	34	13.1
Total	260	100.0

Diagnostic categories

Cases are classified into one of three diagnostic categories based on the site of disease. Table 6 summarises the available data for each HSE area.

Table 6: Number and percentage of TB notifications by diagnostic type and HSE area, Q1 – Q3 2016

HSE area	Pulmonary	Pulmonary & Extrapulmonary (P+E)	Extrapulmonary	Not reported	Total
HSE-E	61	11	34	6	112
HSE-M	4	2	3	2	11
HSE-MW	9	2	10	0	21
HSE-NE	10	3	6	0	19
HSE-NW	4	0	1	1	6
HSE-SE	14	5	6	0	25
HSE-S	23	9	8	0	40
HSE-W	15	1	9	1	26
Total	140	33	77	10	260
%	53.8	12.7	29.6	3.8	100.0

One hundred and ten cases (42.3%) had an extra-pulmonary disease component reported (table 7).

Table 7: Number and percentage of TB notifications by extrapulmonary site of disease, Q1 - Q3 2016

Extrapulmonary sites	Number of TB cases	% Total
Pleural	25	22.7
Lymphatic extrathoracic	24	21.8
Other	15	13.6
Lymphatic intrathoracic	7	6.4
Bone/joint other than spine	6	5.5
Spine	6	5.5
Genito-urinary	5	4.5
Disseminated	4	3.6
Peritoneal/digestive	4	3.6
Central nervous system other than meningitis	1	0.9
Unknown	1	0.9
Not reported	12	10.9
Total	110	100.0

TB meningitis

No cases of TB meningitis were reported during Q1 – Q3 2016.

Microbiological results:***Sputum-smear status - first sample***

Of the 173 cases with a pulmonary component, 82 (47.4%) were sputum smear positive at diagnosis. Thirty-three of these cases (40.2%) reported a second sputum smear positive result.

Culture – first sample and isolates

In Q1 – Q3 2016, 189 cases (72.7%) were culture positive, 20 (7.7%) were culture negative and four (1.5%) were reported as not having been culture tested (table 8). Culture result was not reported for the remaining 47 cases (18.1%).

Of the 189 culture positive cases, *M. tuberculosis* was isolated in 182 (96.3%), *M. bovis* in three (1.6%), *M. tuberculosis* complex** in two (1.1%) and *M. africanum* in two (1.1%).

** Species of mycobacteria not specified

Table 8: Number and percentage of TB notifications by first culture result and HSE area, Q1 – Q3 2016

Culture	HSE E	HSE M	HSE MW	HSE NE	HSE NW	HSE SE	HSE S	HSE W	Total	% Total
Culture positive	78	9	17	16	4	20	28	17	189	72.7
Culture negative	1		2			4	9	4	20	7.7
Not done	3						1		4	1.5
Not reported	30	2	2	3	2	1	2	5	47	18.1
Total	112	11	21	19	6	25	40	26	260	100.0
% Culture positive	69.6	81.8	81.0	84.2	66.7	80.0	70.0	65.4		

MIRU VNTR results

Of the 189 culture positive cases, MIRU-VNTR typing results were reported for 154 cases (81.5%). Of the 154 typed isolates, 132 (85.7%) were unique. During Q1-3 2016, 22 isolates had a 24 loci match with one or more typed isolates, across 10 clusters. These clusters comprised two clusters of three matching isolates and eight clusters of two matching isolates. Eight clusters of matching isolates were part of already documented clusters investigated by public health. Two clusters comprising two matching isolates each were not previously identified as part of a wider cluster.

Antibiotic resistance

Of the 189 culture positive cases reported, 172 (91.0%) had drug sensitivity details completed. Resistance was reported in 21 cases (12.2% of cases with drug sensitivity data reported and 8.1% of total cases reported).

Mycobacterium tuberculosis was isolated in 20 resistant cases and *M. africanum* was isolated from the remaining resistant case. Eighteen (85.7%) resistant cases were born outside Ireland. Three resistant cases reported a previous history of TB, all of whom were born outside Ireland (table 9).

Four cases of multidrug-resistant (MDR) TB were notified for this period, all of whom were born outside Ireland^{††}. No cases of XDR-TB were notified for this period.

^{††} MDR TB is defined as a TB case resistant to at least isoniazid and rifampicin with or without resistance to ethambutol and streptomycin.

Table 9: Sensitivity results of drug resistant TB cases in Ireland, Q1 – Q3 2016

Isolate	Isoniazid sensitivity	Rifampicin sensitivity	Ethambutol sensitivity	Pyrazinamide sensitivity	Streptomycin sensitivity	Previous history of TB disease	Born outside Ireland	Age group (years)
M. tb	R	R	R	R	S	Yes	Y	55-64
M. tb	R	R	R	R	R	No	Y	35-44
M. tb	R	R	S	S	R	No	Y	25-34
M. tb	R	R	S	R	R	No	Y	25-34
M. tb	R	S	R	S	R	Unk	Y	25-34
M. tb	R	S	S	S	S	No	Y	25-34
M. tb	R	S	S	S	S	No	Y	45-54
M. tb	R	S	S	S	S	No	Y	35-44
M. tb	R	S	S	S	S	Yes	Y	35-44
M. tb	R	S	S	S	S	Yes	Y	25-34
M. tb	R	S	S	S	R	Unk	Y	35-44
M. tb	R	S	S	S	S	Unk	Y	45-54
M. tb	R	S	S	S	Unk	No	Y	25-34
M. tb	R	S	Unk	Unk	Unk	Unk	Unk	25-34
M. africanum	R	S	S	S	S	No	N	10-14
M. tb	S	R	S	S	S	Unk	Unk	45-54
M. tb	S	S	S	S	R	No	Y	25-34
M. tb	S	S	S	S	R	No	Y	35-44
M. tb	S	S	S	S	R	No	Y	25-34
M. tb	S	S	S	S	R	No	N	25-34
M. tb	S	S	S	R	S	No	N	45-54

Chest X-ray

X-ray findings consistent with active pulmonary TB were reported in 109 cases with a pulmonary component (63.0% of pulmonary cases) (table 10).

Table 10: Chest X-ray results of TB cases with a pulmonary component, Q1 – Q3 2016

Chest X-ray	Number of TB cases	% Total
Active cavitary TB	45	26.0
Active non-cavitary TB	64	37.0
Pleural	6	3.5
Inactive/old TB	4	2.3
Other	13	7.5
Normal	8	4.6
Not reported	33	19.1
Total	173	100.0

Previous history

Nineteen cases (7.3% of total reported) had a previous history of TB. Twelve (63.2%) of these cases were born outside Ireland. Year of previous diagnosis ranged from 1956 to 2013 for these cases.

HIV status

HIV status was reported for 88 (33.8%) TB cases. Two TB cases were reported as HIV positive (0.8% of total cases, 2.3% of cases with known HIV status) while 86 cases were reported as HIV negative (33.1% of total case, 97.7% of cases with known HIV status).

Outcome

Thirteen deaths were reported, of which four were due to TB, four were not due to TB and two were awaiting a coroner's report. Cause of death for the remaining three cases was not available at the time of this report.

Outbreaks^{††}

Four TB outbreaks, comprising 16 active cases of TB and 13 associated hospitalisations, were reported to HPSC during Q1 to Q3 2016. Two family outbreaks occurred in a private house (3 cases, 2 hospitalised) and across an extended family (4 cases, 3 hospitalised). Two general outbreaks occurred in the community with six cases (5 hospitalised) and three cases (3 hospitalised) respectively. The number of latent TB infections (LTBI) was not reported for any outbreaks during Q1-3 2016.

^{††} Outbreak data taken from CIDR on 18/08/2016

Appendix 1:

Table A1: TB notifications, 3 year moving average and crude incidence rate by year

Year	Number of cases	3 year moving average - Cases	Crude rate per 100,000 population
1991	640		18.2
1992	604	612	17.1
1993	598	581	17.0
1994	524	526	14.5
1995	458	469	12.6
1996	434	436	12.0
1997	416	423	11.5
1998	424	433	11.7
1999	469	439	12.9
2000	395	410	10.1
2001	381	392	9.7
2002	410	402	10.5
2003	406	413	10.4
2004	433	430	10.2
2005	448	448	10.6
2006	463	464	10.9
2007	481	473	11.3
2008	467	474	11.0
2009	479	461	10.4
2010	420	433	9.2
2011	412	401	9.0
2012	358	376	7.8
2013	370	354	8.1
2014	313	325	6.8
2015	300		6.5