

# 1.5 Other Forms of Bacterial Meningitis\*

(\*excluding meningococcal disease)

## Summary

Bacterial meningitis, not otherwise specified (NOS)  
Number of cases, 2012: 29  
Number of cases, 2011: 35  
Number of cases, 2010: 42  
Crude incidence rate, 2011: 0.6/100,000

Apart from *Neisseria meningitidis*, which is the most common cause of bacterial meningitis in Ireland, other pathogens cause this disease including those caused by non-notifiable organisms, details of which are presented below. For information on invasive meningococcal disease (*Neisseria meningitidis*), see the other chapter within this report. Information on bacterial meningitis caused by specified notifiable diseases is summarised below and further pathogen-specific data is available in the relevant chapter. The figures presented in this chapter are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 29<sup>th</sup> July, 2013. These figures may differ from those published previously due to ongoing updating of notification data on CIDR. Furthermore, since 1<sup>st</sup> January 2012, a revised version of the case definition of bacterial meningitis has come into effect and is detailed in the HPSHC Case Definitions for Notifiable Diseases booklet on the HSPC website ([www.hpsc.ie](http://www.hpsc.ie)).

### Bacterial meningitis caused by diseases not otherwise specified:

In total, 29 cases of meningitis under this disease category were notified in 2012, among which two patients (age range 20-59 years) died (one of which was classified as probable case and the other as possible).

The causative pathogens were identified in 41% (n=12/29) of cases, but not among those two cases that died. No causative pathogen was identified in the remaining 59% (n=17) cases.

Prior to 1<sup>st</sup> January 2012, all cases of *S. agalactiae* were notifiable under the 'Bacterial Meningitis (NOS)' disease category. In 2012 this changed when *Streptococcus agalactiae* in children < 90 days of age was notifiable in its own right, including those which were meningitis-related. This has meant that the overall number of bacterial meningitis NOS in 2012 has fallen compared

to the previous year because it does not include 11 meningitis-related cases of *Streptococcus agalactiae* in children < 90 days of age (table 1). Furthermore, there is evidence of an additional seven meningitis-related cases of this disease in this same age group where *Streptococcus agalactiae* was isolated from or detected in CSF specimens from patients that were not categorised as 'meningitis'; these cases have not been included in table 1.

Among the bacterial meningitis (not otherwise specified) cases notified in 2012 were seven cases of *Escherichia coli* (age range 1-4 weeks; none of which had serotype details) and one case each of the following (age range 2 weeks-77 years): *Staphylococcus aureus*, *Enterococcus faecium*, Group C Streptococcus, *Proteus mirabilis* and a combined infection of *Staphylococcus aureus*/*Staphylococcus capitis*.

### Bacterial meningitis caused by specified notifiable diseases:

#### *Haemophilus influenzae*

Three cases of meningitis due to *H. influenzae* were notified in 2012 and these infections were attributable to one case each of types b and f and one non-typeable/non-capsulated strain. The age range was three months to 77 years. No deaths were reported. See the chapter on invasive *H. influenzae* disease for further details.

#### *Leptospira* species

In 2012, one case of leptospirosis meningitis was reported in a male aged 20-24 years. See a separate chapter on non-IID zoonotic diseases for further details.

#### *Listeria* species

Two male cases of listeriosis meningitis were notified in 2012: one with a serotype 4b infection was aged 80-84 years with an underlying medical condition and the other with a 1/2a infection in a middle aged adult aged 55-59 years. See the chapter on listeriosis disease for further details.

#### *Streptococcus pneumoniae*

In 2012, 37 cases of pneumococcal meningitis were notified, compared to 23 in 2011. The age range of the 37 cases was one month to 87 years (median 42 years).

Eight (21.6%) pneumococcal meningitis related deaths were reported in 2012 with an age range of 6 months-87 years (median 29 years). Four of the eight deaths were attributable to the infection itself, one was not, one is still awaiting a coroner's report at the time of writing and the cause of death for the remaining two cases has not yet been specified.

Of the eight cases that died, three were vaccinated, one each with the PCV7, PCV13 and PPV23 vaccines. Of these three that were vaccinated, two had serotype details cases: the PCV7 vaccinated case had a 22F type infection, the PCV13 vaccinated case had a 15A type infection, neither of which were vaccine failures. The PPV23 vaccinated case had an untyped infection. Four of the remaining five deaths had their infections

serotyped: one each of types 22F and 23F and two each of type 7F. Serotypes 23F and 7F both feature in the PCV23 vaccine. See a separate chapter on invasive pneumococcal disease for further details.

#### **Mycobacterium species**

In 2012, three tuberculosis meningitis cases were notified (provisional). Cases ranged in age from 42 to 68 years. Two cases had a history of living abroad, one of which died. See the chapter on tuberculosis for further details.

Table 1. Annual notifications of bacterial meningitis (specified and not otherwise specified) except meningococcal disease, 2008-2012

Notified under	Causative organism	2008	2009	2010	2011	2012	2008-2012
<i>Haemophilus influenzae</i> disease (invasive)	<i>Haemophilus influenzae</i>	3	3	2	4	3	15
Leptospirosis	<i>Leptospira</i> spp.	2	1	0	1	1	5
Listeriosis	<i>Listeria</i> spp.	3	1	3	1	2	10
Salmonellosis	<i>Salmonella enteritidis</i>	0	1	0	0	0	1
<i>Streptococcus pneumoniae</i> infection (invasive)	<i>Streptococcus pneumoniae</i> †	27	22	16	23	37	125
Streptococcus Group A infection (invasive) (iGAS)	<i>Streptococcus pyogenes</i>	2	0	2	0	1	5
Streptococcus Group B infection (invasive) (Group B Strep) < 90 days of age	<i>Streptococcus agalactiae</i> †	n/a	n/a	n/a	n/a	11	11
Tuberculosis*	<i>Mycobacterium</i> spp.*	6	8	9	2	3	28
<b>Total Bacterial Meningitis, Specified</b>		<b>43</b>	<b>36</b>	<b>32</b>	<b>31</b>	<b>58</b>	<b>200</b>
Bacterial Meningitis, Not Otherwise Specified	<i>Streptococcus agalactiae</i> **	6	7	11	16	0	40
	<i>Escherichia coli</i>	11	3	2	1	7	24
	<i>Staphylococcus aureus</i>	3	2	6	2	1	14
	<i>Enterococcus faecalis</i>	1	1	0	0	0	2
	<i>Streptococcus bovis</i> biotype II/2	0	2	0	0	0	2
	<i>Citrobacter koseri</i>	1	0	0	0	0	1
	<i>Enterococcus faecium</i>	0	0	0	0	1	1
	Group C Streptococcus	0	0	0	0	1	1
	<i>Klebsiella oxytoca</i>	0	0	0	1	0	1
	<i>Mycoplasma pneumoniae</i>	0	0	1	0	0	1
	<i>Proteus mirabilis</i>	0	0	0	0	1	1
	<i>Serratia liquefaciens</i>	1	0	0	0	0	1
	<i>Staphylococcus aureus</i> & <i>Staphylococcus capitis</i>	0	0	0	0	1	1
	<i>Staphylococcus capitis</i>	0	0	1	0	0	1
	Unknown	2	1	1	1	1	6
Not specified	15	24	20	14	16	89	
<b>Total Bacterial Meningitis, Not Otherwise Specified</b>		<b>40</b>	<b>40</b>	<b>42</b>	<b>35</b>	<b>29</b>	<b>186</b>
<b>Total Bacterial Meningitis, Specified &amp; Not Otherwise Specified</b>		<b>83</b>	<b>76</b>	<b>74</b>	<b>66</b>	<b>87</b>	<b>386</b>

†*Streptococcus pneumoniae* meningitis numbers are provisional for 2008-2012 and are subject to change

\*Tuberculosis meningitis figure for 2012 is provisional

\*\**Streptococcus agalactiae* for all ages between 2008 and 2011 and for cases > 90 days of age only in 2012

†*Streptococcus agalactiae* < 90 days of age in 2012 figures do not include seven meningitis-related cases where the causative organism was isolated from or detected in CSF specimens from patients that were not clinically categorised as having 'meningitis'

n/a not applicable