

1.1 *Haemophilus influenzae* (invasive)

Summary

Number of cases, 2016: 58
 Number of cases, 2015: 52
 Number of cases, 2014: 61
 Crude incidence rate, 2016: 1.2/100,000

type f (10.3%; n=6), type b (5.2%; n=3), types e and 'not b' (1.7%, n=1 each) and isolates that were not typed (22.4%; n=13), of which 6 (10.3%) were diagnosed by PCR testing only. The median age of cases was 47 years (range 11 days to 91 years). The incidence rates were highest in infants <1 year (11.2/100,000) and those aged 65+ years (3.3/100,000) (Table 1).

In 2016, 58 cases of invasive *Haemophilus influenzae* disease were notified in Ireland (1.22 cases per 100,000 total population). This is a 15.4% increase on the number reported in 2015, which was a decrease of 14.8% in 2014. In 2004 the incidence rate was 0.89 cases/100,000. No imported cases or outbreaks were reported in 2016.

Cases occurring in children <10 years of age (n=12) and in elderly adults (65 years of age and older (n=21)) accounted for 56.9% of all invasive *H. influenzae* notifications in 2016 (Table 1). One notable trend since 2004 is the increase in the overall proportion of cases 65+ years of age from 26.3% to 36.2% in 2016.

The main change in 2016, when compared to 2015, is the increase in the number of non-typeable/non-capsular strains from 24 to 34 and the decrease in untyped cases from 21 to 13 (Figure 1).

In 2016, the highest frequency of cases occurs in the 0-4 year age group (19.0%; n=11), after which it falls sharply before increasing again among those aged 65+ years (34.6%; n=21) (Table 1), a pattern consistent with what has been observed since 2004 (Figure 2).

Non-typeable/non-capsular cases accounted for the majority of the invasive *H. influenzae* cases notified in 2016 (58.6%, n=34/58). The remaining cases were due to *H. influenzae*

In 2016 the number of male cases (n=18) was less than half that of females (n=39) giving a male to female ratio of 0.46:1.

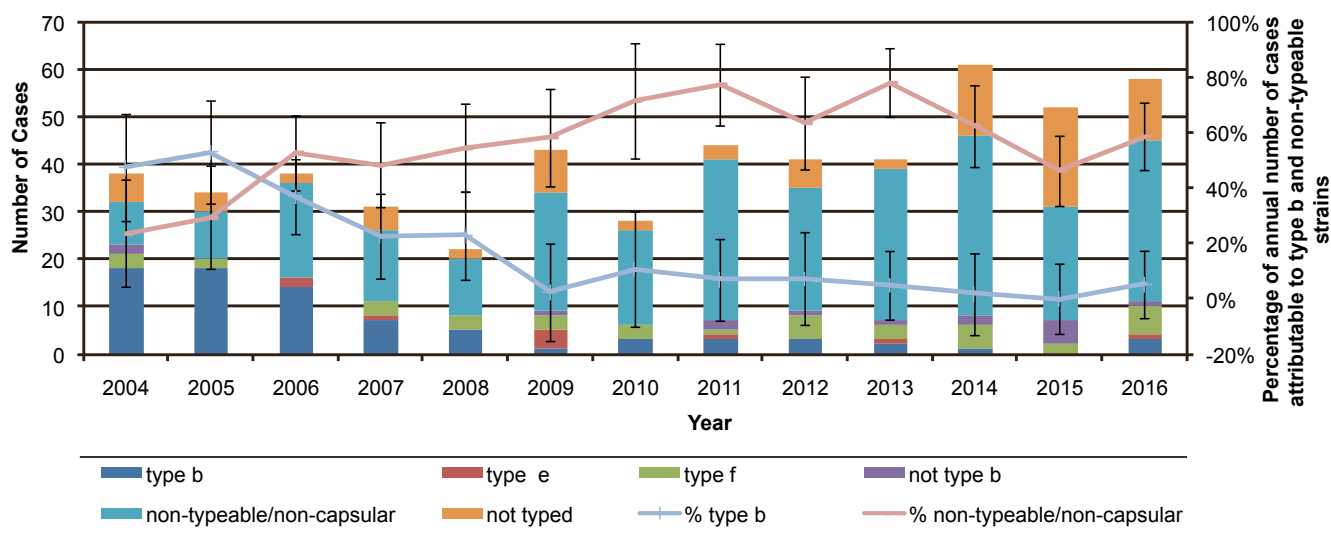


Figure 1. Number of invasive *H. influenzae* cases and proportion of cases attributable to type b and non-typeable strains with 95% confidence intervals, Ireland, 2004-2015

The M:F ratio has been observed to vary considerably in recent years with a 1:1 ratio recorded in 2015 and 1.8:1 in 2014 (Figure 3).

Between 2004 and 2016, a period of 13 years, the fewest quarterly number of cases has been in the third quarter on eight occasions (Figure 3).

Incidence of disease in 2016 was highest in the HSE M area (2.1/100,000) with the lowest in the HSE SE area (0.98/100,000) (Table 2). No HSE area had an incidence rate that was significantly different from the national rate (Figure 4).

A breakdown by clinical diagnosis for all cases by age group between 2004 and 2016 is presented in Table 3. In 2016, 17.2% (n=10/58) of cases did not have a clinical diagnosis recorded.

Two deaths were reported among the 58 cases in 2016; both aged 80-84 years. The cause of death in one was not caused

by the *H. influenzae* infection itself and in the other, it was not known. Both had a confirmed non-typeable infection with pneumonia.

In 2016, there were three cases of *H. influenzae* type b (Hib) reported compared to none in 2015. In 2014, only one case of Hib occurred, with two cases in 2013 and 18 cases notified in both 2004 and 2005. Between Q3-2007 and Q4-2016, a nine and a half year period, only one true Hib vaccine failure was reported, highlighting the continuing positive impact that the Hib booster catch up campaign has had in Ireland.

Since September 2008, the Hib booster dose has been administered at 13 months of age as part of the routine childhood immunisation schedule in addition to the three doses given during infancy (at 2, 4 and 6 months of age). Furthermore, vaccination is routinely recommended for those at increased risk of Hib disease due to underlying medical conditions or treatments.

Table 1. Number and incidence rates of invasive *H. influenzae* cases by serotype and age group, Ireland, 2016

Age Group	type b	type e	type f	not type b	non-typeable/ non-capsular	not typed (all)	not typed, PCR only diagnosis	not typed	Total	ASIR
<1	1	0	0	1	2	3	3	0	7	11.24
1-4	0	0	0	0	3	1	1	0	4	1.49
5-9	0	0	0	0	0	1	1	0	1	0.28
10-14	0	0	1	0	0	0	0	0	1	0.31
15-19	0	0	0	0	1	0	0	0	1	0.33
20-24	0	0	0	0	3	0	0	0	3	1.10
25-34	0	0	0	0	5	1	0	1	6	0.91
35-44	0	1	0	0	5	0	0	0	6	0.80
45-54	0	0	2	0	2	0	0	0	4	0.64
55-64	2	0	1	0	1	0	0	0	4	0.79
65+	0	0	2	0	12	7	1	6	21	3.29
Total	3	1	6	1	34	13	6	7	58	1.22
CIR	0.06	0.02	0.13	0.02	0.71	0.27	0.13	0.15	1.22	-

CIR, crude incidence rate per 100,000 total population; ASIR, age specific incidence rate per 100,000 population; ASIR values calculated using Census 2016 data

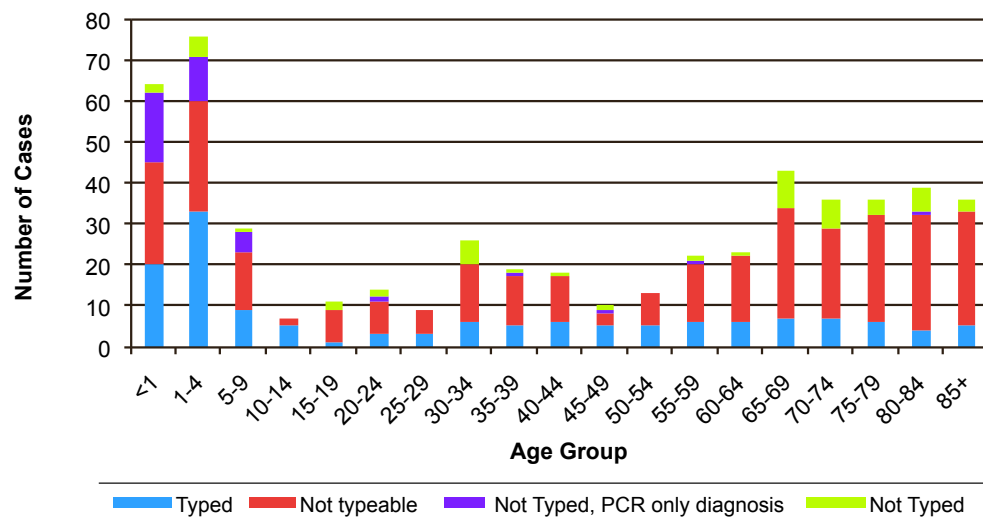


Figure 2. Number of *H. influenzae* cases by age group and type*, Ireland, 2004-2016

* Typed includes b, e, f, not-b

Table 2. Incidence rates per 100,000 population of invasive *H. influenzae* by HSE area, Ireland, 2004-2016

HSE Area	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
E	1.07	1.00	0.87	0.80	0.53	0.74	0.56	1.11	1.11	0.62	0.93	1.52	1.11
M	1.19	1.19	0.40	1.19	0.79	1.06	0.35	1.06	0.35	1.42	1.71	0.34	2.05
MW	0.83	0.28	0.83	0.55	0.83	2.11	0.53	0.53	1.05	0.79	2.08	1.04	1.30
NE	0.25	1.27	0.25	0.00	0.00	0.23	0.45	1.59	0.91	1.36	1.52	0.87	1.08
NW	0.42	0.00	2.11	0.42	0.00	0.39	0.39	0.77	0.77	1.16	0.39	0.78	1.95
SE	1.08	0.43	0.87	1.08	0.65	1.00	1.00	0.80	1.21	1.00	2.35	1.18	0.98
S	1.13	0.32	1.29	0.32	0.64	1.20	1.05	0.30	0.60	0.90	1.16	0.72	1.01
W	0.48	1.45	0.72	1.45	0.48	1.12	0.22	1.35	0.45	0.90	0.88	0.88	1.32
Ireland	0.90	0.80	0.90	0.73	0.52	0.94	0.61	0.96	0.89	0.89	1.28	1.09	1.22

Table 3. Number of invasive *H. influenzae* cases by clinical diagnosis, Ireland, 2004-2016

Clinical diagnosis	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Septicaemia	8	14	13	6	3	9	9	11	11	14	15	14	18
Pneumonia	5	0	3	6	3	8	5	12	12	4	12	8	12
Other	1	2	1	0	0	0	0	3	4	7	7	3	9
Bacteraemia (without focus)	1	0	1	1	2	0	0	3	5	6	9	8	6
Meningitis	3	9	3	2	2	2	1	3	2	2	7	3	1
Epiglottitis	1	3	3	1	1	0	2	0	0	3	1	1	1
Cellulitis	1	1	2	1	1	0	0	1	0	0	0	1	1
Meningitis & septicaemia	1	0	1	0	1	1	1	1	1	0	0	2	0
Septic arthritis	0	1	0	0	1	0	0	0	0	0	0	0	0
Osteomyelitis	1	0	0	0	0	0	0	0	0	0	0	0	0
Not specified	16	4	11	14	8	23	10	10	6	5	10	12	10
Total	38	34	38	31	22	43	28	44	41	41	61	52	58
% Not specified	42.1%	11.8%	28.9%	45.2%	36.4%	53.5%	35.7%	22.7%	14.6%	12.2%	16.4%	23.1%	17.2%

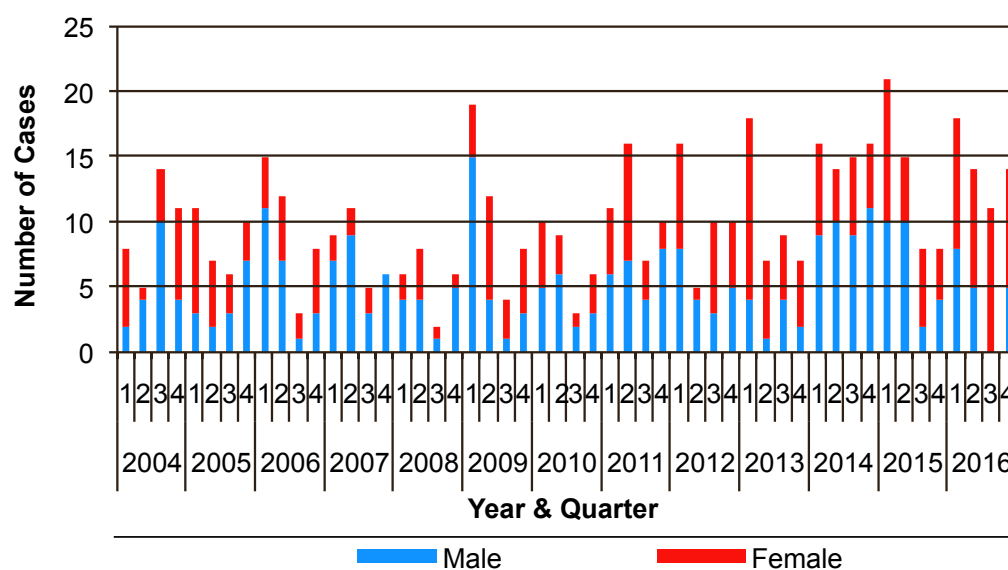


Figure 3. Number of *H. influenzae* cases by year/quarter and gender, Ireland, 2004-2016

The figures presented in this summary are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 9th November, 2017. These figures may differ from those published previously due to on-going updating of notification data on CIDR.

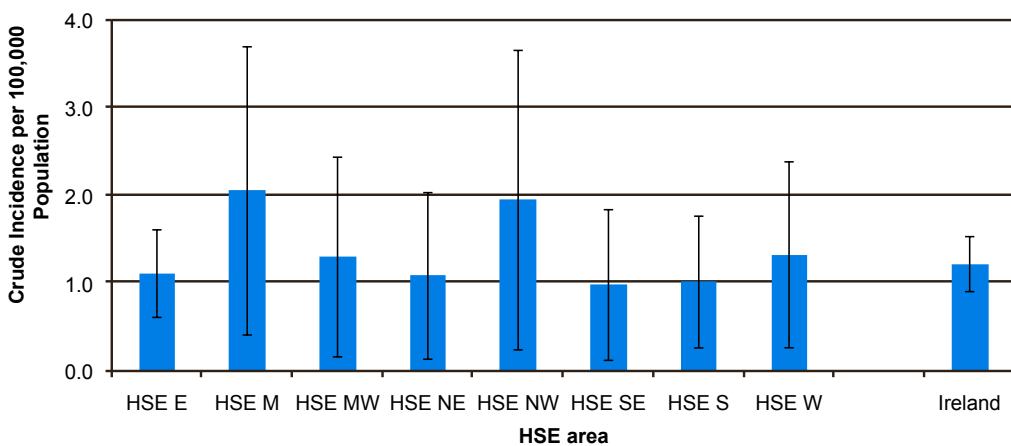


Figure 4. Crude incidence rates per 100,000 population with 95% confidence intervals for H. influenzae notifications by HSE area, Ireland, 2016 (Incidence rates based on Census 2016 data)