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Invasive meningococcal disease in England: annual laboratory confirmed reports for epidemiological year 2017 to 2018

Health Protection Report
Volume 12 Number 38
26 October 2018

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Laboratory confirmations

This report presents data on laboratory-confirmed invasive meningococcal disease (IMD) for the last complete epidemiological year, 2017/2018 [1]. Epidemiological years run from week 27 in one year (beginning of July) to week 26 the following year (end of June)*. In England, the national Public Health England (PHE) Meningococcal Reference Unit (MRU) confirmed 755 cases of IMD during 2017/2018 – similar to the 748 cases reported in 2016/2017 (table 1).

In England, there has been an overall decline in confirmed IMD cases over the last two decades from a peak of 2,595 cases in 1999/2000. The initial decline in IMD cases was driven by the introduction of immunisation against group C (MenC) disease in 1999 which reduced MenC cases by approximately 96% (to around 30-40 cases each year). The overall incidence of total IMD has continued to decrease over the past decade from two per 100,000 in 2006/2007 to one per 100,000 since 2011/2012 [2]; this latter decline was mainly due to secular changes in MenB cases (figure 1).

Overall IMD incidence in 2017/2018 has remained stable at one per 100,000. Incidence in infants increased from 11 per 100,000 population in 2016/2017 to 16/100,000 in 2017/2018 (102/755 cases) and decreased from 5/100,000 in children aged 1-4 years to 4/100,000 (106/755 cases) (figure 2). Young adults aged between 15 and 24 years accounted for 16% (n=123; 2/100,000) of all laboratory confirmed IMD in 2017/18 and those aged 25 years or older comprised 46% of cases (n=346; 1/100,000).

The distribution of IMD cases by capsular group is summarised in Table 1, with MenB accounting for 54% (404/755) of all cases, followed by MenW (n=193, 26%), MenY (n=88, 12%) and MenC (n=64, 8%). This was similar to the distribution in 2016/17; with 53% MenB (397/748), 30% MenW (n=225), 11% MenY (n=80) and 5% MenC (n=37).

* When most cases of a disease arise in the winter months, as for IMD, epidemiological year is the most consistent way to present the data as the peak incidence may be reached before or after the year end. Using epidemiological year avoids the situations where a calendar year does not include the seasonal peak or where two seasonal peaks are captured in a single calendar year.

MenB was responsible for the majority of IMD cases in individuals under 25 years of age: infants (57%; 58/102), toddlers (83%; 88/106) and young adults (80%; 98/123) but, in line with previous years, contributed to a lower proportion of cases in individuals aged 25+ years where other capsular groups were more prevalent (Table 2).

Annual MenW cases decreased by 14% from 225 cases in 2016/2017 to 193 cases in 2017/2018, the first annual decrease reported since 2011/2012. The number of MenC cases in 2017/2018 remained low but increased by 73% compared with 2016/2017 (64 and 37 cases respectively). As previously reported, the number of MenC cases has gradually increased compared to recent years (average of 32 cases per annum between 2011/12 and 2015/16). MenY cases increased by 10% from 80 cases in 2016/2017 to 88 cases in 2017/2018 (table 1). Adults aged 25 years and older accounted for most MenY cases (75%; 66/88) (table 2).

The overall provisional IMD case fatality ratio (CFR) in England was 6.9% (52/755 during 2017/2018 based on ONS deaths with meningococcal disease as an underlying cause[#]).

Vaccine coverage

The introduction of a routine national MenB immunisation programme for infants was announced in June 2015 [3] with immunisation of infants starting from 1 September 2015. The latest vaccine coverage estimates for those eligible for infant MenB immunisation were 95.3% for one dose, 92.9% for two doses and 86.7% for the booster dose by 18 months of age (between January and March 2018) [4].

The previously reported increase in MenW cases [5,6] led to the introduction of MenACWY conjugate vaccine to the national immunisation programme in England [7,8]. MenACWY vaccine replaced the existing time-limited 'freshers' programme from August 2015 and was directly substituted for MenC vaccine in the routine adolescent schools programme (school year 9 or 10) from Autumn 2015. In addition a GP-based catch-up campaign was implemented for 2015 school leavers (aged 18 on 31 August 2015) who were prioritised for the first phase of the GP-based catch-up that began in August 2015. A second GP based catch-up campaign started in April 2016 targeting individuals born between 1 September 1997 to 31 August 1998 (2016 school leavers). The final catch-up campaign started in April 2017 for those born between 1 September 1998 to 31 August 1999 (2017 school leavers).

[#] Death data from the Office of National Statistics includes all deaths coded to meningitis or meningococcal infection as a cause of death and linked to a laboratory-confirmed case.

National cumulative MenACWY vaccine coverage to the end of March 2018 was 39.8% for the third GP based catch-up cohort (2017 school leavers), 6.8% higher than the second GP based catch-up at the same time point the previous year (33.0%). Coverage reached 36.8% for 2016 school leavers and was 39.5% for 2015 school leavers by March 2018 [9]. The current cohort of school leavers in 2018 were offered MenACWY vaccine in a schools-based programme and achieved better uptake, evaluated up to the end August 2017 at 71.4% [10]. It is important that all of these teenagers and young adults continue to be encouraged to be immunised, particularly if they have entered university. They will remain eligible for MenACWY vaccination until their 25th birthday. Younger cohorts offered MenACWY through the routine or catch-up programmes have achieved high levels of uptake at 79.0 - 84.1% [10].

In October 2018 the Joint Committee on Vaccination and Immunisation (JCVI) released a statement advising that the Department of Health and Social Care, Public Health England and the Chief Medical Officer will be supporting efforts to improve MenACWY vaccine coverage in young adults aged 18 to less than 25 years who are eligible for vaccination. It is anticipated that efforts to improve MenACWY vaccine coverage in this age group will lead to a reduction in cases of MenC and MenW disease across the population [11].

The impact of the MenACWY teenage vaccination and the MenB infant programme continues to be monitored. A first assessment of the infant MenB programme [12] and MenACWY vaccination in the 2015 school leaver cohort have been published [13].

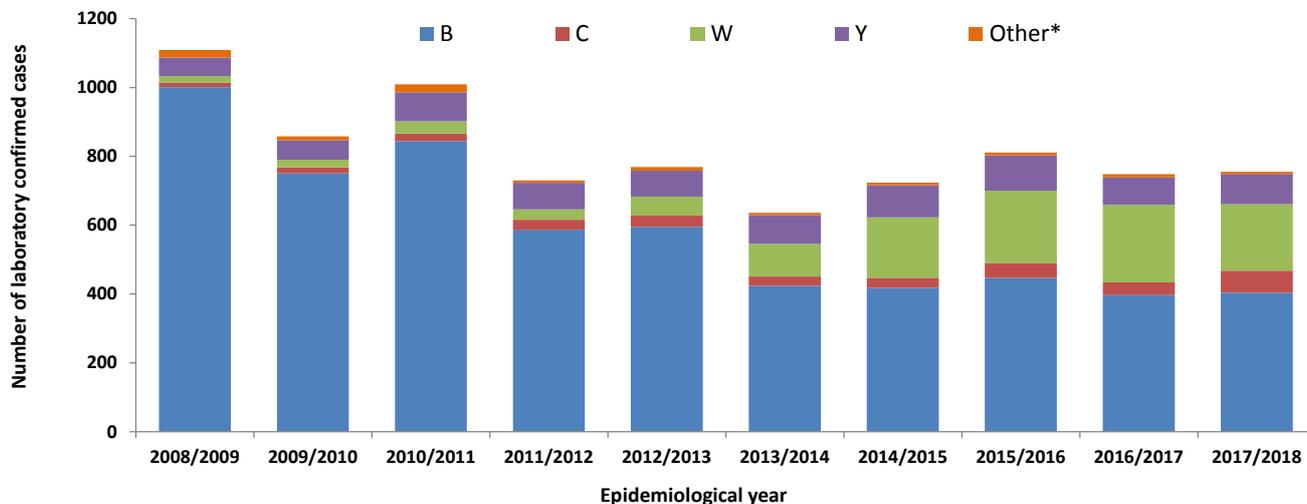
Table 1. Invasive meningococcal disease in England by capsular group and laboratory testing method: 2016/2017 and 2017/2018

Capsular groups*	CULTURE AND PCR		CULTURE ONLY		PCR ONLY		Annual total	
	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018	2016/2017	2017/2018
B	100	101	82	88	215	215	397	404
C	10	15	14	22	13	27	37	64
W	43	34	146	129	36	30	225	193
X	0	0	0	1	0	0	0	1
Y	11	12	56	55	13	21	80	88
Z/E	1	0	0	0	0	0	1	0
Ungrouped	0	0	0	0	7	2	7	2
Ungroupable**	0	0	1	3	0	0	1	3
Total	165	162	299	298	284	295	748	755

* No cases of group A were reported in the time period shown.

** Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (ctrA) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

Figure 1. Invasive meningococcal disease in England by capsular group: 2008/2009 to 2017/2018



*Other includes capsular groups: A, X, Z/E, ungrouped and ungroupable. Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (ctrA) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

Figure 2. Incidence of invasive meningococcal disease in England: 2008/2009 to 2017/2018

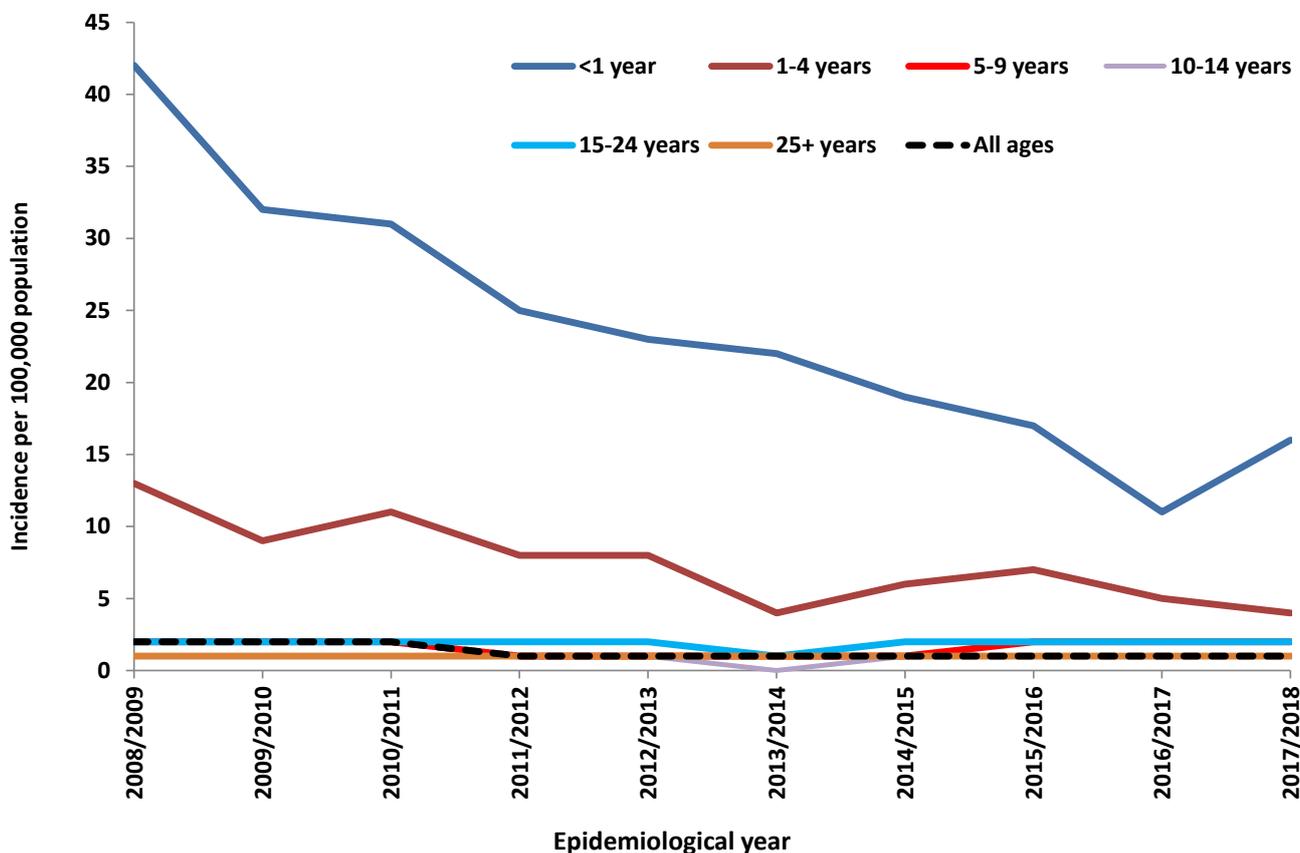


Table 2. Invasive meningococcal disease in England by capsular group and age group at diagnosis: 2017/2018

Age groups	Capsular Group										Annual total	
	B		C		W		Y		Other*			
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
<1 year	58	14	15	23	24	12	4	5	1	17	102	14
1-4 years	88	22	4	6	11	6	3	3	0	-	106	14
5-9 years	41	10	6	9	1	1	4	5	2	33	54	7
10-14 years	16	4	3	5	2	1	3	3	0	-	24	3
15-19 years	75	19	1	2	5	3	4	5	0	-	85	11
20-24 years	23	6	0	-	9	5	4	5	2	33	38	5
25+ years	103	25	35	55	141	73	66	75	1	17	346	46
Total	404		64		193		88		6		755	

*Other includes group X, ungrouped and ungroupable. Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (ctrA) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

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1. Data source: PHE Meningococcal Reference Unit, Manchester.
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Published: October 2018

PHE publications

gateway number: 2018561

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