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Invasive meningococcal disease in England: annual laboratory confirmed reports for epidemiological year 2018 to 2019

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Laboratory confirmations

This report presents data on laboratory-confirmed invasive meningococcal disease (IMD) for the last complete epidemiological year, 2018/2019 [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 525 cases of IMD during 2018/2019 30% lower than the 754 cases reported in 2017/2018 (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 2018/2019 has remained stable at one per 100,000.

Incidence in infants decreased from 16 per 100,000 population in 2017/2018 to 9/100,000 in 2018/2019 (55/525 cases) and from 4/100,000 in children aged 1-4 years to 3/100,000 (74/525 cases) (figure 2). Young adults aged between 15 and 24 years accounted for 16% (n=82; 1/100,000) of all laboratory confirmed IMD in 2018/19 and those aged 25 years or older comprised 49% of cases (n=257; 1/100,000).

The distribution of IMD cases by capsular group is summarised in Table 1, with MenB accounting for 58% (305/525) of all cases, followed by MenW (n=113, 22%), MenY (n=59, 11%) and MenC (n=43, 8%). This was similar to the distribution in 2017/18; with 53% MenB (403/754), 26% MenW (n=194), 12% MenY (n=88) and 8% MenC (n=64).

* 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.

In 2018/2019, 305 individuals were confirmed with MenB, 24% lower than the 403 cases in the previous year. MenB was responsible for the majority of IMD cases in individuals under 25 years of age: infants (80%; 44/55), toddlers (80%; 59/74) and young adults (82%; 67/82) but, in line with previous years, contributed to a lower proportion (37% n =94/257) of cases in individuals aged 25+ years where other capsular groups were more prevalent (table 2).

Annual MenW cases decreased by 42% from 194 cases in 2017/2018 to 113 cases in 2018/2019 after peaking at 225 cases in 2016/2017. The number of MenC cases in 2018/2019 were 33% lower compared with 2017/2018 (43 and 64 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 decreased by 33% from 88 cases in 2017/2018 to 59 cases in 2018/2019 (table 1). Adults aged 25 years and older accounted for most MenY cases (83%; 49/59) (table 2).

The overall provisional IMD case fatality ratio (CFR) in England was 5.0% (26/525 during 2018/2019 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 annual vaccine coverage estimates (1 April 2018 to 31 March 2019), for those eligible for infant MenB immunisation were 92.0% for two doses by 12 months of age and 87.8% for the booster dose by 24 months of age [4]. The two-dose infant MenB schedule has been shown to be highly effective in preventing MenB disease in infants [5].

The previously reported increase in MenW cases [6,7] led to the introduction of MenACWY conjugate vaccine to the national immunisation programme in England [8,9]. Targeted catch-up with MenACWY vaccine began in August 2015 at which time it also replaced the existing time-limited MenC ‘freshers’ vaccination programme. MenC vaccine was also directly substituted with MenACWY vaccine in the routine adolescent school programme (school year 9 or 10) from autumn 2015.

Coverage for the first cohorts to be routinely offered MenACWY vaccine in schools from September 2015 and evaluated up to the end August 2018 was 86.2% (Year 9 in 2017/2018) and 84.6% (Year 10) [10]

[#] 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.

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].

All teenage cohorts remain eligible for opportunistic MenACWY vaccination until their 25th birthday and it is important that these teenagers continue to be encouraged to be immunised, particularly if they are entering Higher Educations Institutions.

Table 1. Invasive meningococcal disease in England by capsular group and laboratory testing method: 2017/2018 and 2018/2019

Capsular groups*	CULTURE AND PCR		CULTURE ONLY		PCR ONLY		Annual total	
	2017/2018	2018/2019	2017/2018	2018/2019	2017/2018	2018/2019	2017/2018	2018/2019
B	101	88	88	64	214	153	403	305
C	15	10	22	24	27	9	64	43
W	34	26	130	72	30	15	194	113
X	0	0	1	0	0	0	1	0
Y	12	10	55	43	21	6	88	59
Ungrouped~	0	0	0	0	2	1	2	1
Ungroupable~	0	1	2	3	0	0	2	4
Total	162	135	298	206	294	184	754	525

* No cases of group A and Z/E were reported in the time period shown.

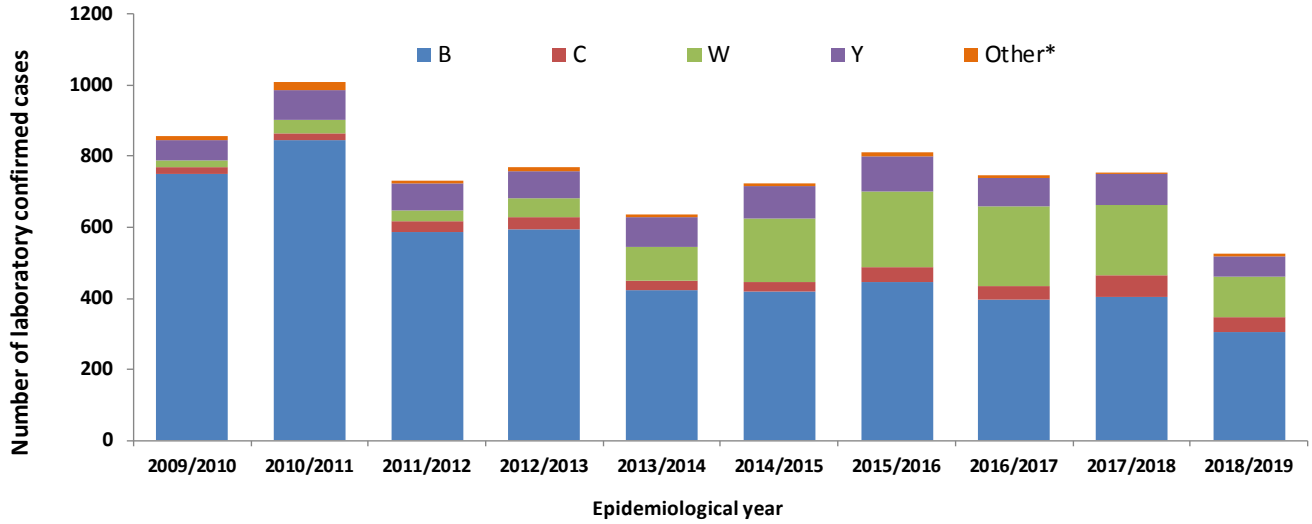
~ Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (ctrA) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

Table 2. Invasive meningococcal disease in England by capsular group and age group at diagnosis: 2018/2019

Age groups	Capsular Group										Annual total	
	B		C		W		Y		Other*			
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
<1 year	44	14	2	5	6	5	3	5	0	-	55	10
1-4 years	59	19	3	7	11	10	1	2	0	-	74	14
5-9 years	31	10	2	5	3	3	1	2	0	-	37	7
10-14 years	10	3	5	12	3	3	1	2	1	20	20	4
15-19 years	35	11	0	-	4	4	0	-	2	40	41	8
20-24 years	32	10	1	2	4	4	4	7	0	-	41	8
25+ years	94	31	30	70	82	73	49	83	2	40	257	49
Total	305		43		113		59		5		525	

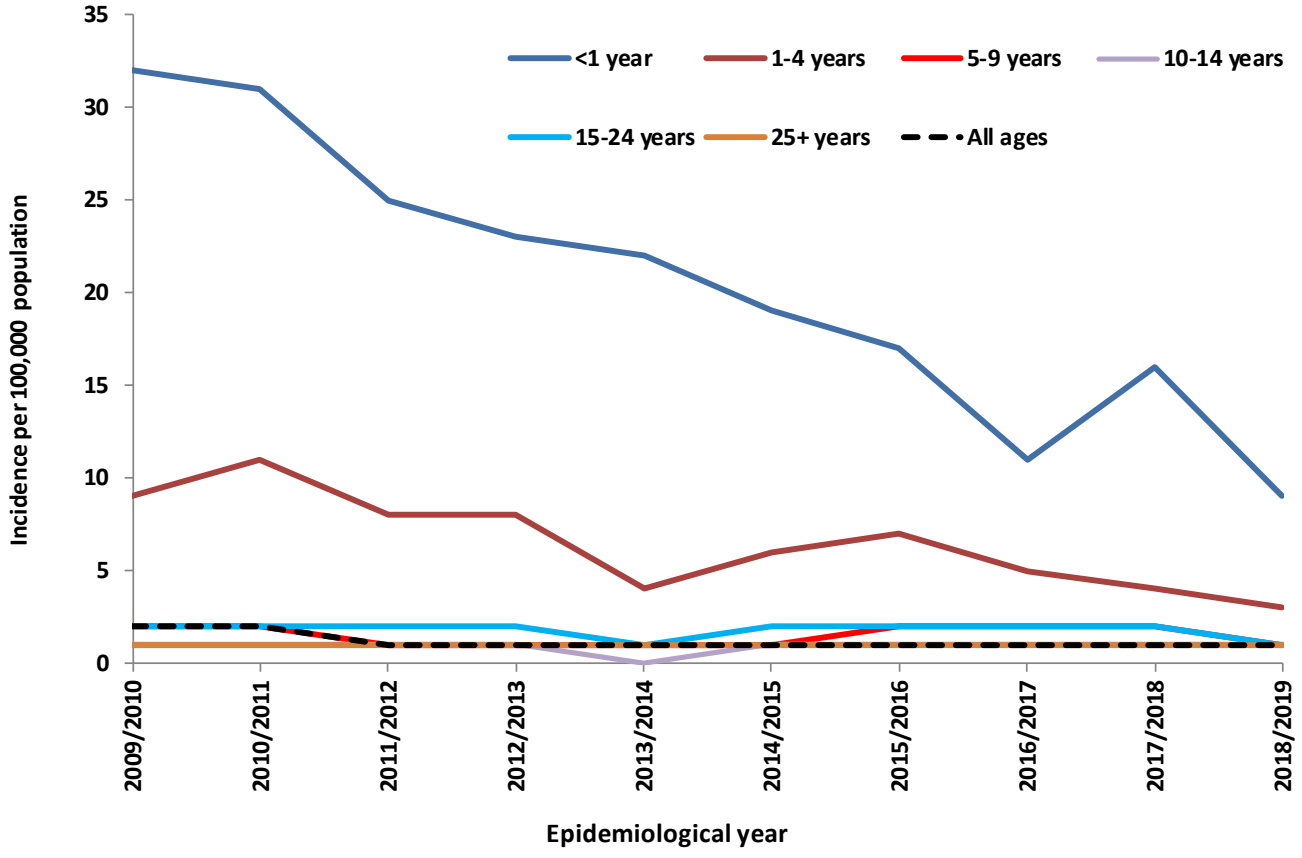
* Other includes ungrouped and ungroupable. Ungroupable refers to invasive clinical meningococcal isolates that were non-groupable, while ungrouped cases refers to culture-negative but PCR screen (ctrA) positive and negative for the four genogroups [B, C, W and Y] routinely tested for.

Figure 1. Invasive meningococcal disease in England by capsular group: 2009/2010 to 2018/2019



*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: 2009/2010 to 2018/2019



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