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Invasive meningococcal disease in England: annual laboratory confirmed reports for epidemiological year 2016 to 2017

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Laboratory confirmations

This report presents data on laboratory-confirmed invasive meningococcal disease (IMD) for the last complete epidemiological year, 2016/2017 [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 747 cases of IMD during 2016/2017 – an 7.9% decrease from the 811 cases reported in 2015/2016 (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 2016/2017 has remained stable at one per 100,000. Incidence in infants decreased from 17 per 100,000 population in 2015/2016 to 11/100,000 in 2016/2017 (72/747 cases) and from 7/100,000 in children aged 1-4 years to 5/100,000 (143/747 cases) (figure 2). Young adults aged between 15 and 24 years accounted for 18% (n=137; 2/100,000) of all laboratory confirmed IMD in 2016/17 and those aged 25 years or older comprised 43% of cases (n=322; 1/100,000).

* 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.

The distribution of capsular groups causing IMD by capsular group is summarised in Table 1, with MenB accounting for 53% (396/747) of all cases, followed by MenW (n=225, 30%), MenY (n=80, 11%) and MenC (n=37, 5%). This was similar to the distribution in 2015/16; with 55% MenB (447/811), 26% MenW (n=211), 13% MenY (n=103) and 5% MenC (n=42).

In 2016/2017 the number of MenB cases decreased by 11% from 447 cases in 2015/16 to 396 cases. MenB was responsible for the majority of IMD cases in individuals under 25 years of age: infants (65%; 47/72), toddlers (78%; 111/143) and young adults (66%; 91/137) but contributed to a lower proportion of cases in individuals aged 25+ years, where other capsular groups were more prevalent (Table 2).

Annual MenW cases increased from 211 cases in 2015/2016 to 225 cases in 2016/2017 (7% rise); this was a smaller increase than recent epidemiological years (85% increase in 2014/2015 and 20% increase in 2015/2016).

The numbers of MenC cases in 2016/2017 decreased by 12% compared to 2015/2016 (37 and 42 cases respectively). Whilst confirmed MenC cases remain relatively low, they have increased slightly compared to recent years (average of 31 cases per annum between 2010/11 and 2014/15). MenY cases decreased by 22% from 103 cases in 2015/2016 to 80 cases in 2016/2017 (table 1). Adults aged 25 years and older accounted for most MenY cases (79%; 63/80) (table 2).

The overall provisional IMD case fatality ratio (CFR) in England was 5.6% (42/747 during 2016/2017 based on ONS deaths with meningococcal disease as an underlying cause[#].

[#] 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.

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 95.6% for one dose and 92.6% for two doses by 52 weeks of age (evaluated to the end of July 2017) [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). All these cohorts will remain eligible for MenACWY vaccination until their 25th birthday.

National cumulative MenACWY vaccine coverage to the end of August 2017 was 29.4% for the third GP based catch-up cohort (2017 school leavers), 12% higher than coverage for 2016 school leavers at the same time point the previous year (17.4%). Coverage reached 35.5% for for 2016 school leavers and was 39.7% for 2015 school leavers by August 2017 [9]. It is important that these teenagers continue to be encouraged to be immunised, particularly if they have entered Higher Educations Institutions. Coverage for the first cohorts to be routinely offered MenACWY vaccine in schools from September 2015 and evaluated up to the end August 2016 was 77.2% (Year 10) and 84.1% (Year 9) [10].

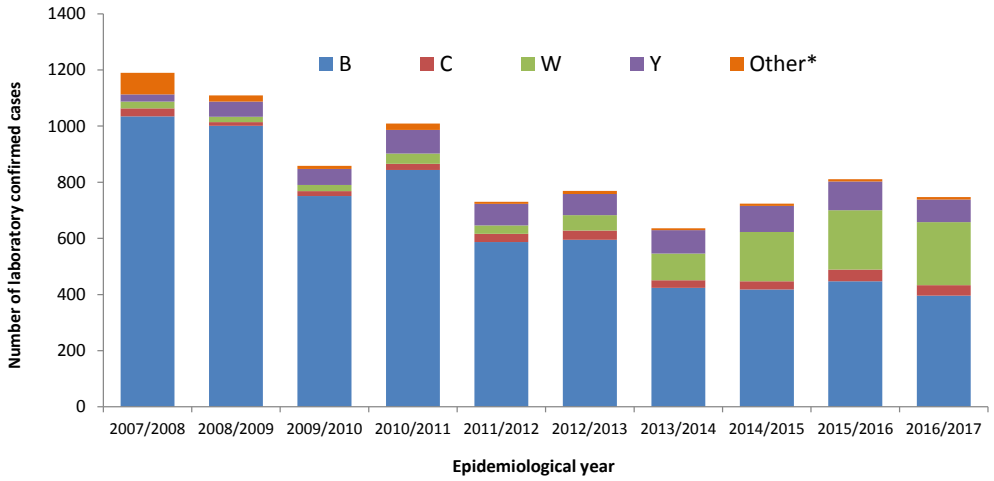
The impact of the MenACWY teenage vaccination and the MenB infant programme continue to be monitored. A first assessment of the infant MenB programme [11] and MenACWY vaccination in the 2015 school leaver cohort have been published [12].

Table 1. Invasive meningococcal disease in England by capsular group and laboratory testing method: 2015/2016 and 2016/2017

Capsular groups*	CULTURE AND PCR		CULTURE ONLY		PCR ONLY		Annual total	
	2015/2016	2016/2017	2015/2016	2016/2017	2015/2016	2016/2017	2015/2016	2016/2017
B	111	100	80	82	256	214	447	396
C	9	10	21	14	12	13	42	37
W	35	43	142	146	34	36	211	225
Y	22	11	67	56	14	13	103	80
Z/E	0	1	1	0	0	0	1	1
Ungrouped	0	0	0	0	6	7	6	7
Ungroupable**	0	0	1	1	0	0	1	1
Total	177	165	312	299	322	283	811	747

* No cases of A or X 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: 2006/2007 to 2015/2016



* "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: 2007/2008 to 2016/2017

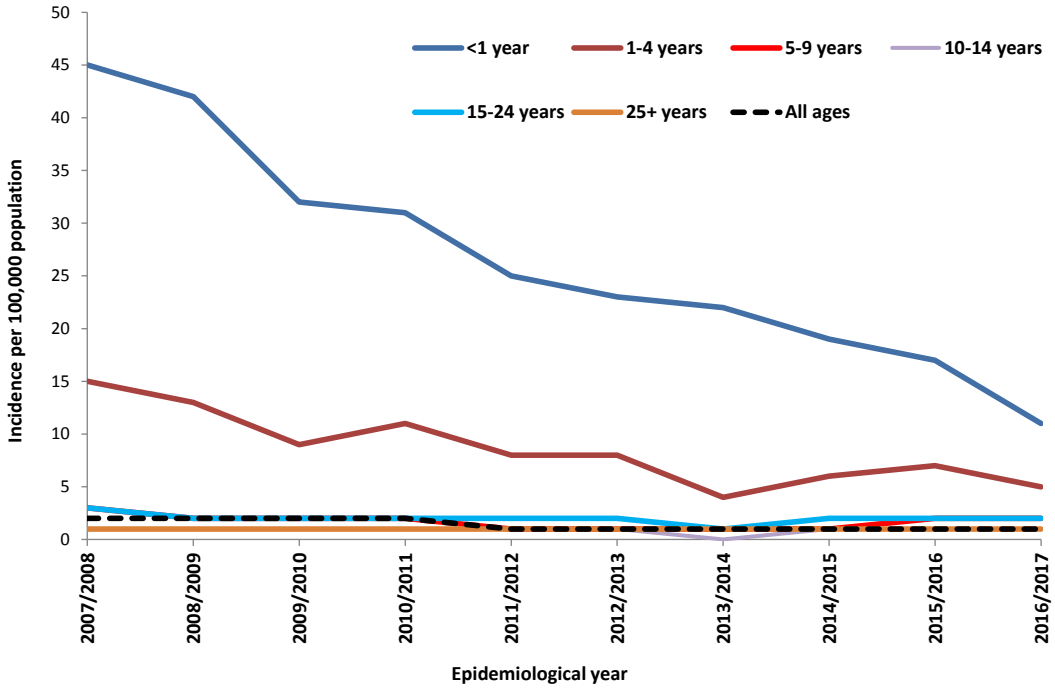


Table 2. Invasive meningococcal disease in England by capsular group and age group at diagnosis: 2016/2017

Age groups	Capsular Group										Annual total	
	B		C		W		Y		Other*			
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
<1 year	47	12	4	11	17	8	1	1	3	33	72	10
1-4 years	111	28	2	5	29	13			1	11	143	19
5-9 years	39	10	4	11	5	2	3	4	1	11	52	7
10-14 years	10	3	2	5	4	2	5	6			21	3
15-19 years	57	14	2	5	19	8	6	8	3	33	87	12
20-24 years	34	9	1	3	12	5	2	3	1	11	50	7
25+ years	98	25	22	59	139	62	63	79			322	43
Total	396		37		225		80		9		747	

* ”Other” includes Z/E, ungrouped and ungroupable.

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