



Infection report

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Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during January to March 2016 (Q1/2016)

In England there were 1266 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the first quarter of 2016, from January to March 2016 (table 1). Total cases were 62% higher than those reported in the same quarter of 2015 (781 cases).

The then HPA declared a national outbreak of pertussis (level 3 incident [1]) in April 2012 and, as a response to the ongoing outbreak and high number of infant deaths, the Department of Health announced the introduction of a temporary immunisation programme for pregnant women on 28 September 2012 [2]. From 1 April 2016 the recommended gestational age for vaccination was revised to between 16-32 weeks, and for operational reasons, should be offered from around 20 weeks on or after the foetal anomaly scan [3].

Pertussis vaccine coverage in pregnant women increased from 59.7% in January 2016 to 60.7% in March 2016. Coverage was 4.4% higher in March 2016 compared to March 2015, and 2016 is the first year of the programme where coverage has not declined during the first quarter [4].

Following the high levels of activity in 2012 (see figure), an overall decrease has been observed with slight increases in the third quarters of 2013, 2014 and 2015, in line with the usual seasonal pattern. Pertussis cases usually increase in the third quarter of each year and follow a recognised epidemiological pattern of 3-4 yearly cyclical peaks. The number of laboratory confirmed cases in the first quarter of 2016 was 13% higher than the 1124 reported during October to December 2015 (Q4). An increase into quarter 1 is not usually observed. This pattern of increase is consistent with that observed nationally heading into the 2012 peak (figure).

The greatest number of laboratory confirmed cases in England has persisted in individuals aged 15 years and over whilst disease incidence continues to be highest in infants <3 months. Confirmed cases in infants under 3 months in the first quarter of 2016 (35 cases) were more than double the 16 cases reported in the same quarter in 2015 (table 2). Two infants with pertussis confirmed between January and March 2016 died. Of the 16 infants who have died following confirmed pertussis disease and who were born after the introduction of the maternal programme on 1 October 2012, 14 have been born to mothers who had not been immunised against pertussis during pregnancy.

Total case numbers of pertussis in all age groups were higher in Q1 2016 than in Q1 2015 (table 2). Overall activity remained higher in all age groups from 1 year and older relative to the pre-2012 peak and exceeded all previous years in the 5-9 year age group. Ascertainment in those aged 5-16 years has improved with availability of oral fluid testing [5].

Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme are encouraging as a relatively low incidence has been maintained in this age group, with expected seasonal increases. It is important to be aware, however, that

raised levels of pertussis persist in older age groups and women should therefore continue to be encouraged to be immunised against pertussis during pregnancy (ideally between 20-32 weeks) in order to protect their babies from birth. The pertussis immunisation in pregnancy programme in England has shown high levels of protection against pertussis in babies born to vaccinated mothers [6,7]. The Medicines and Healthcare Products Regulatory Agency also found no safety concerns relating to pertussis vaccination in pregnancy based on a large study of nearly 18,000 vaccinated women with similar rates of normal, healthy births in vaccinated and in unvaccinated women [8].

The annual report for 2015 [9] provides details of appropriate laboratory investigation of suspected cases of pertussis which may be affected by the age of the suspect case and time since onset of their symptoms.

Table 1. Laboratory-confirmed cases of pertussis by age and testing method in England, January to March 2016.

Age group	Culture*	PCR	Serology	Oral fluid only	Total
<3 months	16	16	3	0	35
3-5 months	4	5	0	0	9
6-11 months	3	2	0	0	5
1-4 years	1	4	11	0	16
5-9 years	0	2	48	28	78
10-14 years	1	2	97	20	120
15+ years	3	3	993	4	1003
Total	28	34	1152	52	1266

* Culture confirmed cases may additionally have tested positive using other methods. Submission of all presumptive *B. pertussis* isolates is encouraged for confirmation of identity and to allow further characterisation for epidemiological purposes.

Total number of laboratory-confirmed pertussis cases per quarter in England, 2007 to 2016 (Q1).

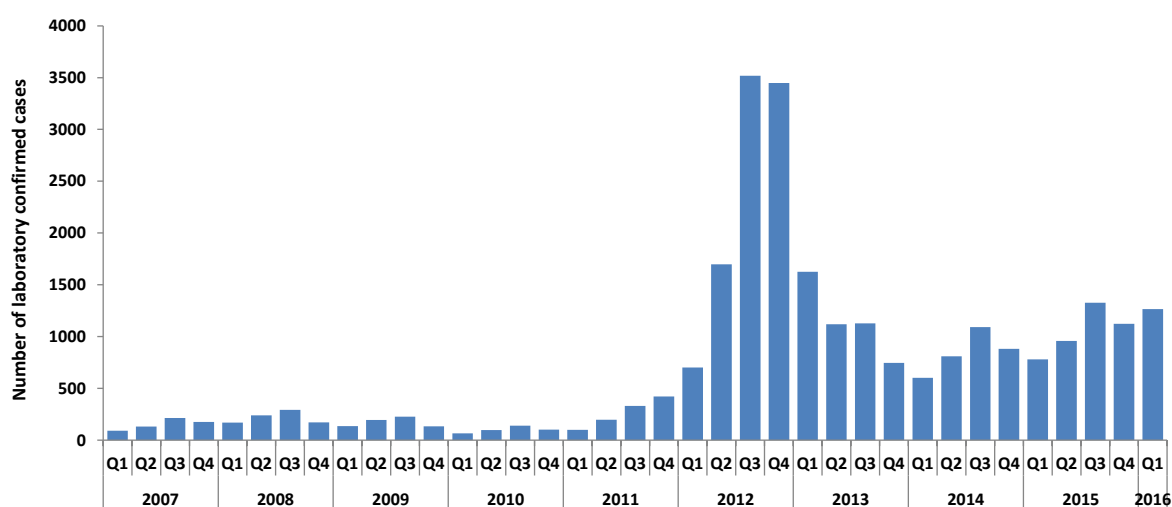


Table 2. Laboratory-confirmed cases of pertussis by age and year England, January to March: 2012-2016

Age group	2012	2013	2014	2015	2016
<3 months	70	26	12	16	35
3-5 months	11	7	5	6	9
6-11 months	2	0	3	2	5
1-4 years	4	20	6	14	16
5-9 years	13	29	24	39	78
10-14 years	98	175	79	82	120
15+ years	504	1368	473	622	1003
Grand Total	702	1625	602	781	1266

References

1. [National increase in laboratory-confirmed pertussis cases in England and Wales](#), *HPR* 6(15), 13 April 2012.
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5. [Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during October to December 2014](#), *HPR* 10(16), 6 May 2016.
6. G Amirthalingam, N Andrews, H Campbell, S Ribeiro, E Kara, K Donegan, N K Fry, E Miller, M Ramsay (2014). Effectiveness of maternal pertussis vaccination in England: an observational study. *Lancet* doi:10.1016/S0140-6736(14)60686-3
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