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Laboratory confirmed cases of pertussis (England): July to September 2017

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In England there were 1322 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the third quarter of 2017, from July to September 2017 (table 1). Total cases were 29% lower than those reported in the same quarter of 2016 (1875 cases) and similar to the 1327 cases reported in the third quarter of 2015.

The 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]. Following the high levels of activity in 2012 an overall decrease in pertussis was observed between 2013 and 2015. A relative increase in pertussis activity occurred in 2016 consistent with pre-existing epidemiological trends of 3-4 yearly cyclical peaks (Figure 1). 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].

In the third quarter of 2017, the greatest number of laboratory confirmed cases in England continues in individuals aged 15 years and over although the highest disease incidence persists in infants <3 months. Pertussis activity in all infants <1 year of age was lower in the third quarter of 2017 (58 cases) than 2016 (79 cases) and 2015 (74 cases) but higher than the equivalent periods in 2013 and 2014 (28, 56 cases respectively) (table 2).

Confirmed cases aged 6-11 months were higher (35 cases) in 2016 than in any year since the introduction of enhanced surveillance in 1994. There were seven laboratory confirmed cases in the third quarter of 2017 compared to 19 in 2016 bringing the total to 14 cases in the first three quarters of 2017 compared to 30 in the equivalent period in 2016 (Table 2). This infant age group is known to have high levels of protection after completion of the primary immunisation programme.

Overall activity remains higher in all age groups from 1 year and older, relative to years preceding the pre-2012 peak. Ascertainment in those aged 5-16 years has improved with availability of oral fluid testing since 2013 (See the Pertussis Annual Report (England) for 2015 [4] for details of appropriate laboratory investigation of suspected cases of pertussis which is affected by the age of the suspect case and time since onset of their symptoms.).

The pertussis immunisation in pregnancy programme in England has shown high levels of protection against pertussis disease and death in babies born to vaccinated mothers [5,6,7]. 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].

Pertussis vaccine coverage averaged 72.1% across April and June 2017. Extended eligibility criteria for the vaccine may have contributed to the increase in uptake observed in recent months [9]. Vaccine coverage in 2017 remains at the highest level recorded relative to corresponding time points in all previous years.

There have been no reported deaths in infants with pertussis confirmed between January and September 2017. Of the eighteen infants who have died following confirmed pertussis disease and who were born after the introduction of the maternal programme (on 1 October 2012), 16 were born to mothers who had not been immunised against pertussis during pregnancy.

Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme continues to demonstrate that 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 groups aged 1 year and older. The increase in coverage is extremely encouraging and women should continue to be supported in accessing immunisation against pertussis during pregnancy (ideally between 20-32 weeks) to optimise protection for their babies from birth.

Table 1: Laboratory-confirmed cases of pertussis by age and testing method in England, July to September 2017.

Age group	Culture*	PCR	Serology	Oral fluid only	Total
<3 months	10	29	0	0	39
3-5 months	5	7	0	0	12
6-11 months	1	6	0	0	7
1-4 years	6	10	11	0	27
5-9 years	1	3	30	18	52
10-14 years	2	1	75	21	99
15+ years	7	16	1062	1	1086
Total	32	72	1178	40	1322

* 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.

Figure 1: Total number of laboratory-confirmed pertussis cases per quarter in England, 2008 to 2017 (Q1 – Q3).

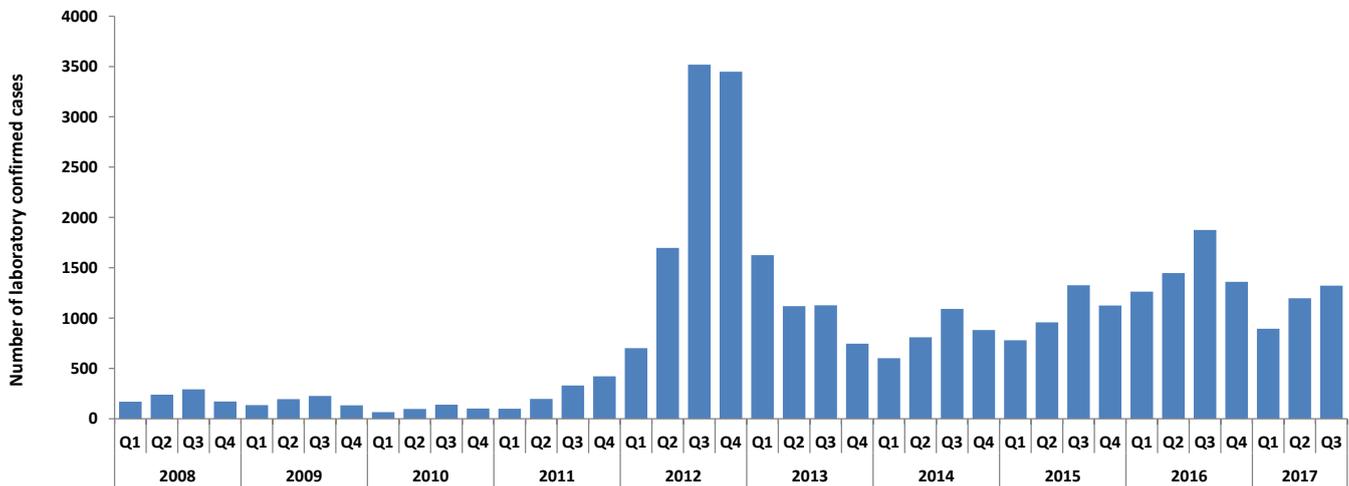


Table 2: Laboratory-confirmed cases of pertussis by age and year England, July to September: 2012 - 2017

Age group	2012	2013	2014	2015	2016	2017
<3 months	147	21	47	51	49	39
3-5 months	37	4	4	18	11	12
6-11 months	15	3	5	5	19	7
1-4 years	42	13	13	22	42	27
5-9 years	67	27	33	75	96	52
10-14 years	252	88	99	129	126	99
15+ years	2959	973	892	1027	1532	1086
Total	3519	1129	1093	1327	1875	1322

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Health Protection Report is a national public health bulletin for England and Wales, published by Public Health England. It is PHE's principal channel for the dissemination of laboratory data relating to pathogens and infections/communicable diseases of public health significance and of reports on outbreaks, incidents and ongoing investigations.

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