



Public Health  
England

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# Laboratory confirmed cases of pertussis (England): July to September 2019

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## Laboratory confirmed cases of pertussis in England: July to September 2019

In England, there were 1176 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 2019, from July to September (table 1). Total cases were 30% higher than those reported in the same quarter of 2018 (907 cases) and 11% lower than the 1324 cases reported in this quarter in 2017.

A national outbreak of pertussis [1] was declared by the HPA in April 2012 and, as a response to the ongoing outbreak, the Department of Health (DH) introduced a temporary immunisation programme for pregnant women from October 2012 [2].

From 1 April 2016, the recommended gestational age for vaccination was revised to ideally between 20-32 weeks but can be given as early as 16 weeks [3].

In June 2019, the Joint Committee on Vaccination and Immunisation (JCVI) recommended that the maternal vaccination programme continue as a routine programme [3].

Assessments of the impact, effectiveness and safety of the temporary maternal vaccination programme have been published [4,5,6,7].

Following the outbreak peak 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); cases fell in 2017 and 2018. The total number of confirmed cases reported between January and September 2019 (Q1 - Q3) was 23% higher (2750 cases) than the 2234 cases reported in the same period in 2018 and 20% lower than the first three quarters of 2017 (3417 cases)\*.

Between July and September 2019, 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. The number of cases in infants aged less than 1 year was 42% higher in the third quarter of 2019 (47 cases) compared to the same period in 2018 (33) but was lower than in the equivalent periods in 2017 (59 cases) and 2016 (79 cases) (table 2).

\* Note: Percentages corrected in April 2020.

The number of confirmed cases in infants under 3 months, who are targeted by the maternal immunisation programme, continues to remain low with 29 confirmed cases in this quarter compared to 15 and 40 cases in the same quarter in 2018 and 2017 respectively.

Low numbers were reported in older infants aged 3-5 months (12 cases) and 6-11 months (6 cases) consistent with protection from primary vaccination offered at 2, 3 and 4 months of age.

There were no reported deaths in infants with pertussis confirmed between July and September 2019. Of the 20 infants who have died following confirmed pertussis disease and who were born after the introduction of the maternal programme (on 1 October 2012), 18 were born to mothers who had not been immunised against pertussis during pregnancy. Calculated maternal vaccine effectiveness against death in their infant from pertussis is very high at around 95% [6].

Pertussis vaccine coverage in pregnant women averaged 68.7% across the April to June 2019 quarter and 69.1% across the July to September 2019 quarter, slightly higher than the reported coverage for the same quarters in 2018 [8]. An increase in vaccines being delivered in maternity settings, which is poorly recorded in primary care records, may have contributed to the slight overall fall in coverage levels observed since 2017 [9].

Overall pertussis 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 to <17 years has improved with availability of oral fluid testing since 2013. From 1 May 2018, the availability of oral fluid testing was extended to all children aged 2 to <17 years. See the guidelines for the public health management of pertussis [10] for details of appropriate laboratory investigation of suspected cases of pertussis which is informed by the age of the suspected case and time since onset of their symptoms.

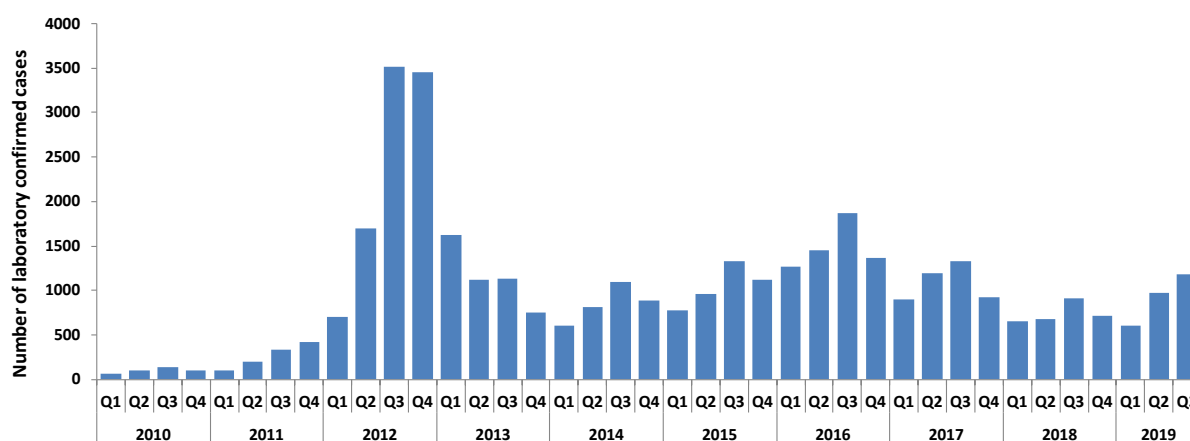
Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme continues to demonstrate that a low incidence has been maintained in this age group, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in groups aged 1 year and older. 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 2019**

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	13	16	0	0	29
3-5 months	4	8	0	0	12
6-11 months	2	4	0	0	6
1-4 years	7	20	14	31	72
5-9 years	1	4	33	34	72
10-14 years	1	3	67	54	125
15+ years	6	19	822	11	858
Not known	0	0	0	2	2
<b>Total</b>	<b>34</b>	<b>74</b>	<b>936</b>	<b>132</b>	<b>1176</b>

\* Culture confirmed cases may additionally have tested positive by any other method, PCR confirmed cases may have additionally tested positive by serology or OF and serology confirmed cases may also have been confirmed by OF. 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, 2010 to 2019 (Q3)**



**Table 2: Laboratory-confirmed cases of pertussis by age and year England, July to September only: 2012 - 2019**

Age group	2012	2013	2014	2015	2016	2017	2018	2019
<3 months	147	21	47	51	49	40	15	29
3-5 months	37	4	4	18	12	12	11	12
6-11 months	15	3	5	5	18	7	7	6
1-4 years	42	13	13	22	42	28	40	72
5-9 years	67	27	33	75	96	52	41	72
10-14 years	252	88	99	129	126	99	73	125
15+ years	2959	973	892	1027	1532	1086	720	858
Not known	0	0	0	0	0	0	0	2
<b>Total</b>	<b>3519</b>	<b>1129</b>	<b>1093</b>	<b>1327</b>	<b>1875</b>	<b>1324</b>	<b>907</b>	<b>1176</b>

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3. Joint Committee on Vaccination and Immunisation minutes.
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7. Donegan K, King B, Bryan P (2014). Safety of pertussis vaccination in pregnant women in UK: observational study. *BMJ* 349:g4219.
8. *HPR* 13(41), 2 December 2019.
9. *HPR* 11(34), 29 September 2017.
10. PHE website: [Guidelines for the public health management of pertussis](#).

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