



Public Health  
England

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# Laboratory confirmed cases of pertussis in England: October to December 2019

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# Laboratory confirmed cases of pertussis in England: October to December 2019

In England, there were 933 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the fourth quarter of 2019, from October to December (table 1). Total cases were 31% higher than those reported in the same quarter of 2018 (714 cases) and similar to the 923 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 then 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.

Between October and December 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 aged under 3 months.

The number of confirmed cases in infants under 3 months, who are targeted by the maternal immunisation programme, continues to remain low with 19 confirmed cases in this quarter compared to 15 and 18 cases in the same quarter in 2018 and 2017 respectively. Low numbers were reported in older infants aged 3-5 months (5 cases) and 6-11 months (3 cases) consistent with protection from primary vaccination offered at 2, 3 and 4 months of age. Therefore, the number of cases in infants aged less than 1 year in the fourth quarter of 2019 (27 cases) was similar in the equivalent period in 2018 (22 cases) and in 2017 (28 cases) (table 2).

There were no reported deaths in infants with pertussis confirmed between October and December 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 72.1% across the October to December 2019 quarter, 0.4% higher than the coverage for the same quarter 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.

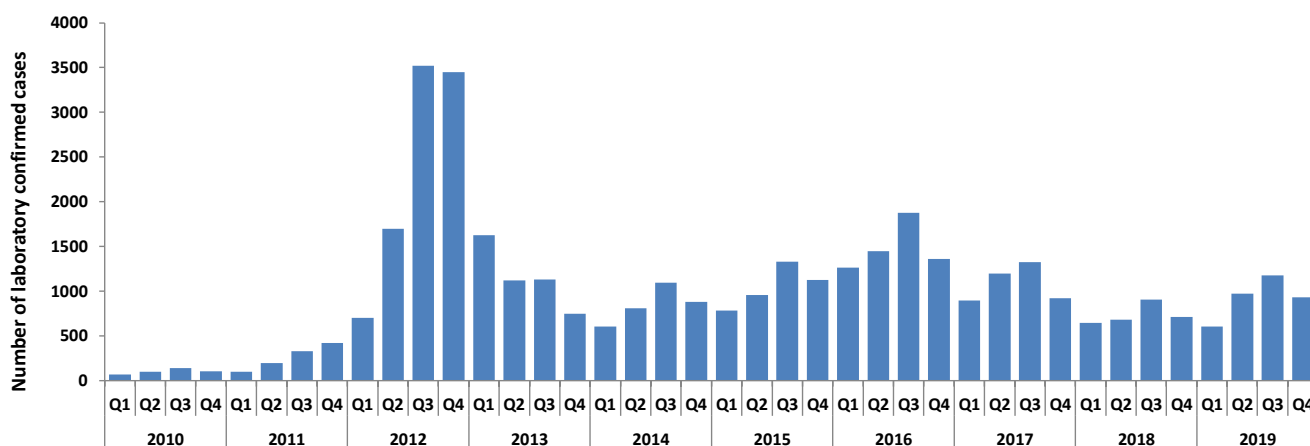
Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme continues to demonstrate that a low incidence has been maintained in this age group, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis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

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	6	13	0	0	19
3-5 months	1	4	0	0	5
6-11 months	2	1	0	0	3
1-4 years	1	6	7	16	30
5-9 years	1	0	19	21	41
10-14 years	0	3	50	42	95
15+ years	9	13	708	10	740
Total	20	40	784	89	933

\* 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**



**Table 2: Laboratory-confirmed cases of pertussis by age and year England, October to December: 2012 - 2019**

Age group	2012	2013	2014	2015	2016	2017	2018	2019
<3 months	72	13	13	32	21	18	15	19
3-5 months	10	1	4	4	10	7	4	5
6-11 months	5	0	1	2	5	3	3	3
1-4 years	45	24	21	20	27	15	19	30
5-9 years	59	24	34	56	50	32	26	41
10-14 years	240	47	84	88	100	57	68	95
15+ years	3018	638	725	923	1149	791	579	740
Total	3449	747	882	1125	1362	923	714	933

## References

1. *HPR* 6(15), 13 April 2012.
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3. Joint Committee on Vaccination and Immunisation minutes.
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8. *HPR* 14(4), 25 February 2020.
9. *HPR* 11(34), 29 September 2017.
10. PHE website: Guidelines for the public health management of pertussis:  
<https://www.gov.uk/government/publications/pertussis-guidelines-for-public-health-management>

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