



Public Health  
England

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# Laboratory confirmed cases of pertussis in England: July to September 2020

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# Laboratory confirmed cases of pertussis in England: third quarter 2020 report

In England, there were 35 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 2020, from July to September ([table 1](#)). Total cases were 97% lower than those reported in the same quarter of 2019 (1174 cases) ([figure 1](#)).

The COVID-19 pandemic and the implementation of social distancing measures and lockdown across the UK from 23 March 2020 has had a significant impact on the spread and detection of other infections including pertussis.

The national vaccination schedule recommends pertussis vaccination at 8, 12 and 16 weeks of age and a pre-school booster at 3 years and 4 months. In June 2019 the maternal vaccination programme became a routine programme. The maternal vaccination programme is recommended for pregnant women from 16 to 32 weeks of pregnancy, although the vaccine can be offered up to 38 weeks.

Between July and September 2020, the largest number of laboratory confirmed cases in England occurred 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 1 confirmed cases in this quarter compared to 29 and 15 cases in the same quarter in 2019 and 2018 respectively. One confirmed case was reported in older infants aged 3 to 5 months and there were no confirmed cases aged between 6 to 11 months 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 third quarter of 2020 (2 cases) were lower than the equivalent period in 2019 (47 cases) and in 2018 (33 cases) ([table 2](#)).

There were no reported deaths in infants with pertussis confirmed between July and September 2020. 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 66.7% across the July to September 2020 quarter, ranging from 1.6% lower in July to 2.9% September compared to coverage for the same quarter in 2019 [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 has declined since measures to control the spread of COVID-19 were introduced earlier this year. 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.

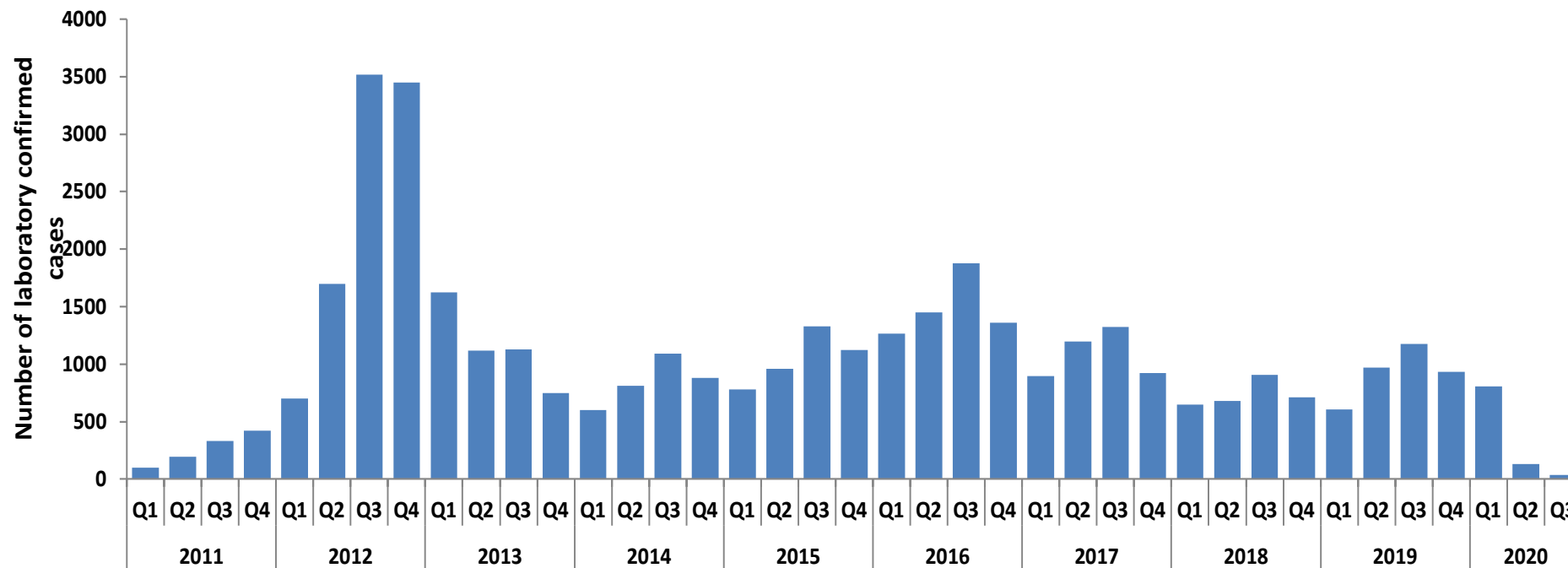
Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme continues to demonstrate that a low incidence has been maintained in this age group, with expected seasonal increases. It is important that women continue to be supported during the ongoing pandemic to access immunisation against pertussis during pregnancy (ideally between 20 to 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 2020**

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	1	0	0	0	1
3 to 5 months	0	0	1	0	1
6 to 11 months	0	0	0	0	0
1 to 4 years	0	0	1	0	0
5 to 9 years	0	0	0	0	0
10 to 14 years	0	0	3	0	3
15+ years	0	0	27	2	29
Total	1	0	32	2	35

\* 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, 2011 to 2020 (Q1 to Q3)**



**Table 2: Laboratory-confirmed cases of pertussis by age and year England, July to September: 2012 to 2020**

Age group	2012	2013	2014	2015	2016	2017	2018	2019	2020
<3 months	147	21	47	51	49	40	15	29	1
3 to 5 months	37	4	4	18	12	12	11	12	1
6 to 11 months	15	3	5	5	18	7	7	6	0
1 to 4 years	42	13	13	22	42	28	40	72	1
5 to 9 years	67	27	33	75	96	52	41	72	0
10 to 14 years	252	88	99	129	126	99	73	125	3
15+ years	2959	973	892	1027	1532	1086	720	856	29
Total	3519	1129	1093	1327	1875	1324	907	1174	35

## References

- 1 HPR 6(15), 13 April 2012.
- 2 Department of Health (2012). [Pregnant women to be offered whooping cough vaccine \(news story, 28 September\)](#).
- 3 [Joint Committee on Vaccination and Immunisation minutes](#).
- 4 G Amirthalingam, N Andrews, H Campbell, S Ribeiro, E Kara, K Donegan, et al (2014). Effectiveness of maternal pertussis vaccination in England: an observational study. *The Lancet*.
- 5 Dabrera G, Amirthalingam G, Andrews N et al (2014). A case-control study to estimate the effectiveness of maternal pertussis vaccination in protecting newborn infants in England and Wales, 2012–2013. *Clin Infect Dis*.
- 6 Amirthalingam G, Campbell H, Ribeiro S, Fry NK, Ramsay M, Miller E, Andrews N (2016). Sustained effectiveness of the maternal pertussis immunization program in England 3 years following introduction. *Clin Infect Dis*.
- 7 Donegan K, King B, Bryan P (2014). Safety of pertussis vaccination in pregnant women in UK: observational study. *BMJ* 349: g4219.
- 8 HPR 14(23), 8 December 2020.
- 9 HPR 11(34), 29 September 2017.
- 10 PHE (2018): [Guidelines for the public health management of pertussis](#).

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Public Health England  
Wellington House  
133-155 Waterloo Road  
London SE1 8UG  
Tel: 020 7654 8000

Website: [www.gov.uk/phe](http://www.gov.uk/phe)

Twitter: [@PHE\\_uk](https://twitter.com/PHE_uk)

Facebook: [www.facebook.com/PublicHealthEngland](https://www.facebook.com/PublicHealthEngland)

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Prepared by:  
Immunisation and Countermeasures Division  
PHE National Infection Service

For queries relating to this document, please contact: [immunisation@phe.gov.uk](mailto:immunisation@phe.gov.uk)

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