



Public Health  
England

Protecting and improving the nation's health

# Laboratory confirmed cases of pertussis in England: October to December 2020

Health Protection Report  
Volume 15 Number 8  
11 May 2021

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

## Main points

In England, there were 20 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 2020, from October to December (table 1). Total cases were 98% lower than those reported in the same quarter of 2019 (933 cases) (figure 1).

The coronavirus (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.

## Background and update

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.

The maternal pertussis immunisation programme was introduced in response to the 2012 outbreak [1,2] and became permanent from June 2019 [3] based on evidence of disease impact, high effectiveness and safety [4,5,6,7]. Maternal vaccination is recommended for pregnant women from 16 to 32 weeks of pregnancy, although the vaccine can be offered up to 38 weeks.

The number of confirmed cases in infants under 3 months, who are targeted by the maternal immunisation programme, continues to remain low with no confirmed cases in this quarter compared to 19 and 15 cases in the same quarter in 2019 and 2018 respectively. There were also no confirmed cases aged between 3 and 11 months consistent with protection from primary vaccination offered at 2, 3 and 4 months of age. This is the first quarter that no confirmed cases in infants aged less than 1 year have been reported since the introduction of enhanced surveillance in 1994. In the same quarter of 2019 and 2018, 27 and 22 cases respectively were reported in infants aged less than 1 year (table 2).

Between October and December 2020, 65% (13 cases) of laboratory confirmed cases in England occurred in individuals aged 15 years or older.

There were no reported deaths in infants with pertussis confirmed between October and December 2020. The last pertussis related death of an infant was reported in the second quarter (April to June) of 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 68.0% across the October to December 2020 quarter, 4.1 percentage points lower than the average coverage for the same quarter in 2019 [8].

The impact of the pandemic on healthcare services has possibly resulted in vaccine coverage this quarter to be lower than any previous October to December coverage estimates since April 2016. This could be due to a potential increase in the delivery of the vaccines through maternity units, during the pandemic, which may not have been captured completely in the survey and therefore resulted in an underestimation of coverage. Furthermore, the denominator for December 2020 was lower compared to denominators in October and November 2020, as well as to December 2019. This decrease may be related to a number of factors related to the pandemic including the introduction of social distancing and lock down measures introduced from March 2020 when most of these women would have conceived [8].

Overall pertussis activity has declined since measures to control the spread of COVID-19 were introduced in March 2020. Ascertainment in those aged from 5 up 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 from 2 up to 17 years. See the guidelines for the public health management of pertussis [9] 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.

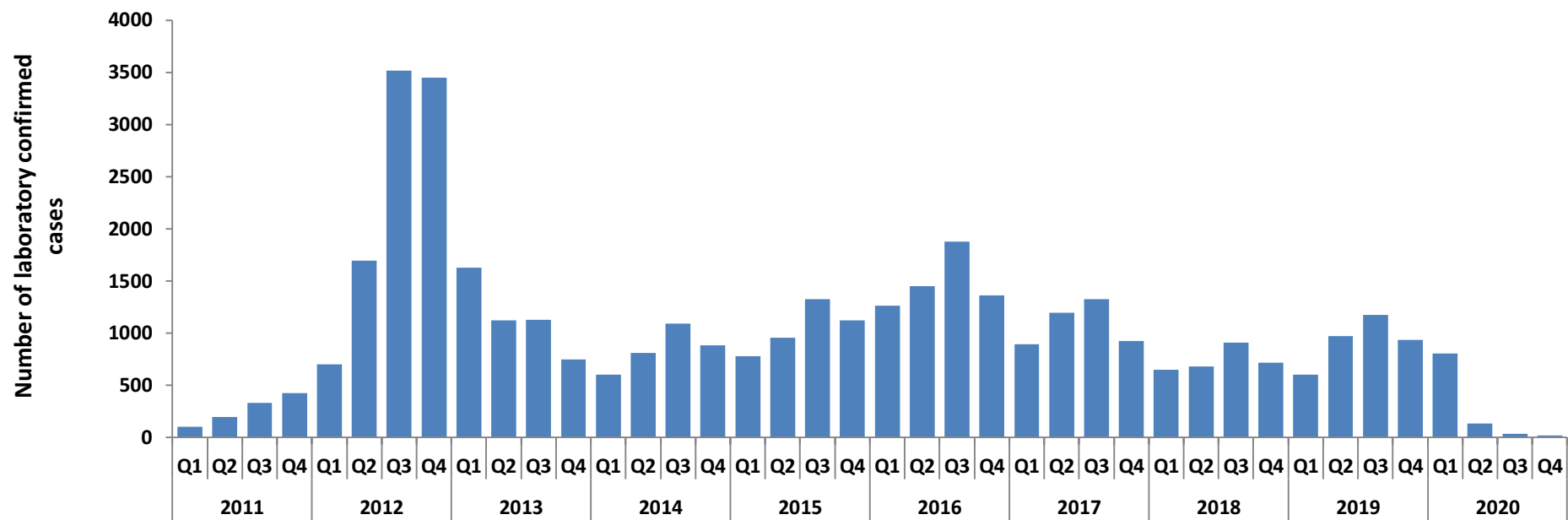
Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme demonstrated that a low incidence had been maintained in this age group, with expected seasonal increases. COVID-19 control measures have since added to these observed effects. It is important that women continue to be supported during the ongoing pandemic to access immunisation against pertussis during pregnancy (ideally between 20 and 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 2020**

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	0	0	0	0	0
3 to 5 months	0	0	0	0	1
6 to 11 months	0	0	0	0	0
1 to 4 years	0	1	0	1	2
5 to 9 years	0	0	0	1	1
10 to 14 years	0	0	1	3	4
15+ years	0	1	12	0	13
Total	0	2	13	5	20

\* 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**



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

<b>Age group</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<3 months	72	13	13	32	21	18	15	19	0
3 to 5 months	10	1	4	4	10	7	4	5	0
6 to 11 months	5	0	1	2	5	3	3	3	0
1 to 4 years	45	24	21	20	27	15	19	30	2
5 to 9 years	59	24	34	56	50	32	26	41	1
10 to 14 years	240	47	84	88	100	57	68	95	4
15+ years	3018	638	725	923	1149	791	579	740	13
<b>Total</b>	<b>3449</b>	<b>747</b>	<b>882</b>	<b>1125</b>	<b>1362</b>	<b>923</b>	<b>714</b>	<b>933</b>	<b>20</b>

## References

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3. [Joint Committee on Vaccination and Immunisation minutes](#).
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8. Health Protection Report 15(4), 23 February 2021.
9. [Pertussis vaccination programme for pregnant women update: vaccine coverage in England, October to December 2020](#).
10. PHE website. [Guidelines for the public health management of pertussis](#).

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Published: May 2021

PHE gateway number: GOV-8276



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