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Laboratory confirmed cases of pertussis (England): October to December 2018

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In England, there were 714 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 2018, from October to December 2018 (table 1). Total cases were 23% lower than those reported in the same quarter of 2017 (923 cases) and 48% lower than the 1362 cases reported in this quarter in 2016.

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]. In June 2014 the Joint Committee on Vaccination and Immunisation (JCVI) recommended that the programme should continue for a further five years [3] based on UK evidence of impact, high effectiveness and safety and continuing high levels of disease [4,5,6,7]. 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].

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 have fallen further in 2018.

In the fourth quarter of 2018, 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 fourth quarter of 2018 (22 cases) than the equivalent periods in the previous three years (table 2).

The number of confirmed cases in infants under 3 months, who are targeted by the maternal immunisation programme, continues to remain low with 15 confirmed cases in this quarter compared to 21 and 18 cases in the same quarter in 2016 and 2017 respectively. Low numbers were reported in older infants aged 3-5 months (4 cases) and 6-11 months (3 cases) consistent with protection from primary vaccination offered at 2, 3 and 4 months of age.

There was one reported death in an infant with pertussis confirmed between October and December 2018. Of the 19 infants who have died following confirmed pertussis disease and who were born after the introduction of the maternal programme (on 1 October 2012), 17 were born to mothers who had not been immunised against pertussis during pregnancy.

Pertussis vaccine coverage for pregnant women averaged 71.7% across October to December 2018, 1.9 percentage points lower than coverage for the same period in 2017 but continuing at the higher levels seen since April 2016 [9]. This drop could represent a genuine decrease, or reflects an increase in vaccines being delivered in maternity settings, which is poorly recorded in primary care records. Extended eligibility criteria for the vaccine may have contributed to the increase in uptake observed over the last couple of years [10].

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 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 [8] 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 2018

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	4	11	0	0	15
3-5 months	0	4	0	0	4
6-11 months	1	1	1	0	3
1-4 years	1	3	10	5	19
5-9 years	0	1	18	7	26
10-14 years	0	0	47	21	68
15+ years	0	9	566	4	579
Total	6	29	642	37	714

* 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, 2009 to 2018

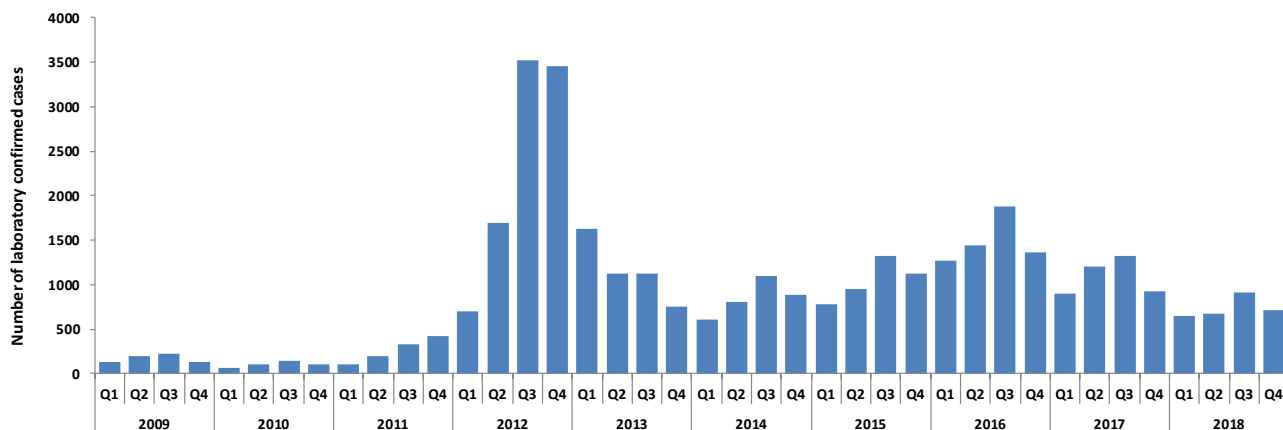


Table 2: Laboratory-confirmed cases of pertussis by age and year England, October to December only: 2012 to 2018

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

References

1. *HPR* 6(15), 13 April 2012.
2. Department of Health: [Pregnant women to be offered whooping cough vaccine \(news story, 28 September 2012\)](#).
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8. PHE website: Guidelines for the public health management of pertussis: <https://www.gov.uk/government/publications/pertussis-guidelines-for-public-health-management>
9. *HPR* 13(14), 26 April 2019.
10. *HPR* 11(34), 29 September 2017.

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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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