Public Health England

Protecting and improving the nation's health

Laboratory confirmed cases of pertussis (England): April to June 2018

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In England there were 677 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the second quarter of 2018, from April to June 2018 (table 1). Total cases were 43% lower than those reported in the same quarter of 2017 (1198 cases) and 53% lower than the 1448 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 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) and cases fell again in 2017.

In the second 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 second quarter of 2018 (20 cases) than the equivalent periods in 2012 to 2017 (table 2).

Confirmed cases aged 6-11 months were higher (34 cases) in 2016 than in any year since the introduction of enhanced surveillance in 1994. Laboratory confirmed cases in this age group were 50% lower (17 cases) in 2017 and seven confirmed cases were reported in the first six months of 2018. This infant age group is known to have high levels of protection after completion of the primary immunisation programme.

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 affected by the age of the suspect case and time since onset of their symptoms.

Pertussis vaccine coverage for pregnant women averaged 72.1% across January to March 2018, 1.7% lower than coverage for the same period in 2017 but continuing at the higher levels seen since April 2016 [9]. Extended eligibility criteria for the vaccine may have contributed to the increase in uptake observed over the last couple of years [10].

There have been no reported deaths in infants with pertussis confirmed between January and June 2018 and there were no deaths in infants with pertussis confirmed in 2017. Of the eighteen infants who have died following confirmed pertussis disease and who were born after the introduction of the maternal programme (on 1 October 2012), 16 were born to mothers who had not been immunised against pertussis during pregnancy.

Surveillance data in young infants following the introduction of the pertussis immunisation in pregnancy programme continues to demonstrate that a relatively 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, April to June 2018.

Age group	Culture*	PCR	Serology	Oral fluid only	Total
<3 months	4	6	0	0	10
3-5 months	1	6	0	0	7
6-11 months	0	2	1	0	3
1-4 years	1	5	7	1	14
5-9 years	1	3	20	17	41
10-14 years	1	0	66	14	81
15+ years	4	10	500	7	521
Total	12	32	594	39	677

* 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, 2008 to Q2 2018.

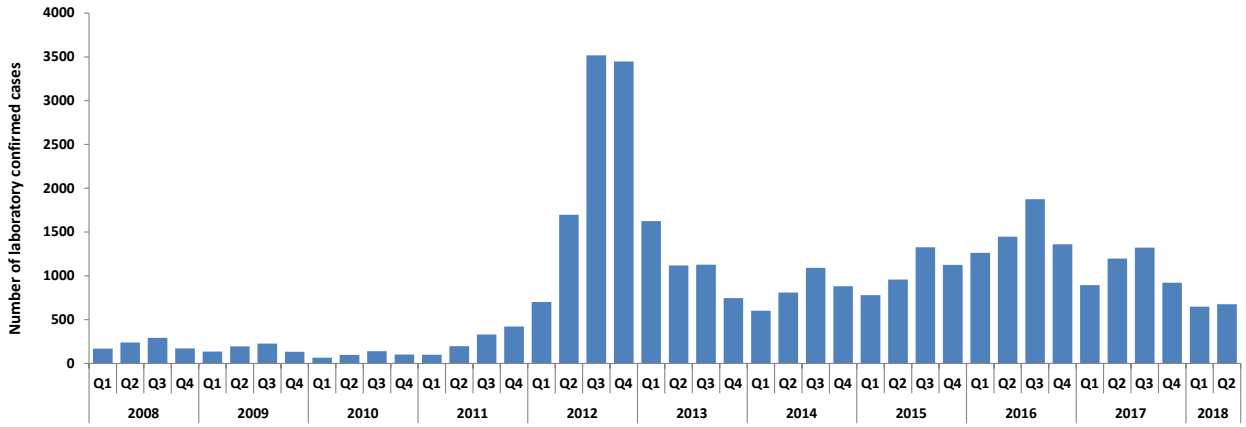

Table 2: Laboratory-confirmed cases of pertussis by age and year England, April to June only: 2012 - 2018

Age group	2012	2013	2014	2015	2016	2017	2018
<3 months	118	25	26	31	50	26	10
3-5 months	16	12	1	4	16	12	7
6-11 months	5	4	2	4	6	7	3
1-4 years	12	8	8	14	33	21	14
5-9 years	36	19	37	48	82	77	41
10-14 years	216	119	89	138	157	124	81
15+ years	1294	933	647	719	1104	931	521
Total	**1697**	**1120**	**810**	**958**	**1448**	**1198**	**677**

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9. *HPR* **12**(27), 27 July 2018.
10. *HPR* **11**(34), 29 September 2017.

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health, and are a distinct delivery organisation with operational autonomy to advise and support government, local authorities and the NHS in a professionally independent manner.

About *Health Protection Report*

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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