



Public Health
England

Protecting and improving the nation's health

Laboratory confirmed cases of pertussis in England: January to March 2020

Health Protection Report
Volume 14 Number 12
Advanced Access report published 23 June 2020

Laboratory confirmed cases of pertussis in England: January to March 2020

In England, there were 801 laboratory confirmed cases of pertussis (culture, PCR, serology or oral fluid) reported to the Public Health England (PHE) pertussis enhanced surveillance programme in the first quarter of 2020, from January to March (table 1). Total cases were 33% higher than those reported in the same quarter of 2019 (604 cases).

The maternal pertussis immunisation programme, introduced in response to the 2012 outbreak [1,2], became permanent from June 2019 [3] based on evidence of disease impact, high effectiveness and safety [4,5,6,7]. The recommended gestational age for vaccination is between 20-32 weeks, ideally after the 20-week scan, but the vaccine can be given as early as 16 weeks [3] for pragmatic reasons to ensure vaccination.

Following the outbreak peak in 2012 an overall decrease in pertussis was observed between 2013 and 2019. Relative increases in pertussis activity occurred in 2016 and 2019 consistent with pre-existing epidemiological trends of 3-4 yearly cyclical peaks (figure 1).

Between January and March 2020, 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 15 confirmed cases in this quarter compared to 12 and 9 cases in the same quarter in 2019 and 2018 respectively. Low numbers were reported in older infants aged 3-5 months (5 cases) and 6-11 months (4 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 first quarter of 2020 (24 cases) was similar in the equivalent period in 2019 (23 cases) and in 2018 (17 cases) (table 2).

There were no reported deaths in infants with pertussis confirmed between January and March 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 72.2% across the January to March 2020 quarter, 1.1% higher than the coverage for the same quarter in 2018/2019 [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 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, January to March 2020

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	3	11	1	0	15
3-5 months	1	3	1	0	5
6-11 months	1	1	2	0	4
1-4 years	7	5	7	16	35
5-9 years	1	2	19	21	43
10-14 years	1	8	59	52	120
15+ years	3	9	560	7	579
Total	17	39	649	96	801

* 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 2020 Q1

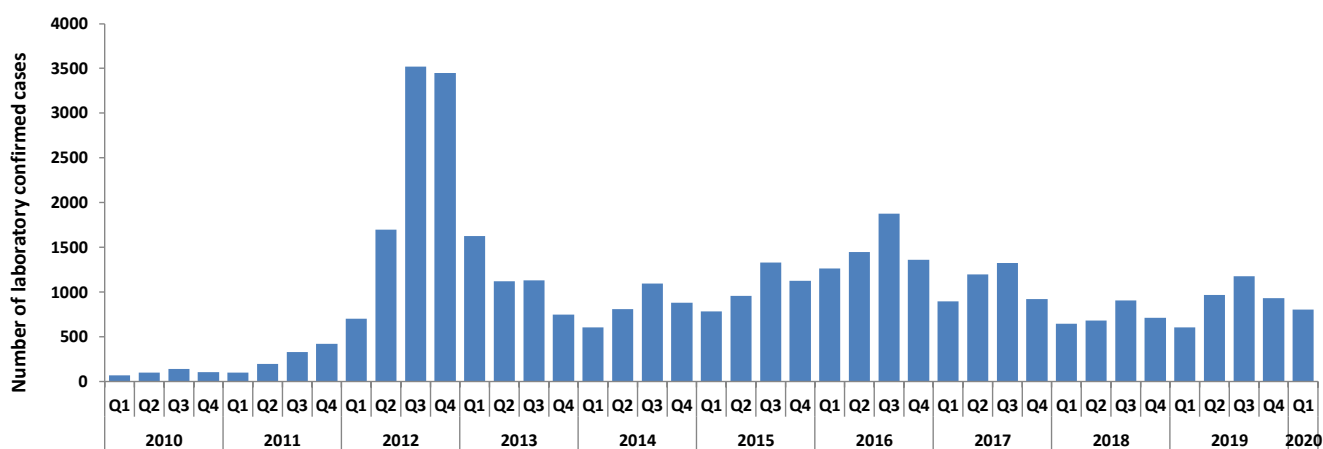


Table 2: Laboratory-confirmed cases of pertussis by age and year England, January to March: 2012 - 2020

Age group	2012	2013	2014	2015	2016	2017	2018	2019	2020
<3 months	70	26	12	16	35	31	9	12	15
3-5 months	11	7	5	6	9	6	4	7	5
6-11 months	2	0	3	2	5	0	4	4	4
1-4 years	4	20	6	14	15	11	13	16	35
5-9 years	13	29	24	39	77	37	30	44	43
10-14 years	98	175	79	82	121	89	65	92	120
15+ years	504	1368	473	622	1002	722	522	429	579
Total	702	1625	602	781	1264	896	647	604	801

References

1. [HPR 6\(15\)](#), 13 April 2012.
2. Department of Health: [Newborns to be protected against whooping cough](#). (press release, 28 September 2012).
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*. doi: 10.1093/cid/ciu821.
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 three years following introduction](#). *Clin Infect Dis*. 63 (suppl. 4): 236-243.
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\(10\)](#), 26 May 2020.
9. [HPR 11\(34\)](#), 29 September 2017.
10. PHE (2018): [Guidelines for the public health management of pertussis](#).

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-leading science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

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.

Public Health England, Wellington House, 133-155 Waterloo Road, London SE1 8UG
Tel: 020 7654 8000 www.gov.uk/phe
Twitter: [@PHE_uk](https://twitter.com/PHE_uk) Facebook: www.facebook.com/PublicHealthEngland

Queries relating to this document should be directed to: Immunisation and Countermeasures Division, National Infection Service, PHE Colindale, 61 Colindale Avenue, London NW9 5EQ immunisation@phe.gov.uk



© Crown copyright 2020

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v3.0. To view this licence, visit [OGL](https://www.ogilive.gov.uk). Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.

Published June 2020

PHE publications
gateway number: GW-1353

PHE supports the UN
Sustainable Development Goals

