Public Health England

Health Protection Report
weekly report

Infection report

Volume 8 Number 37 Published on: 26 September 2014

Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during April to June 2014 (Q2/2014).

In England there were 811 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 2014, from April to June (table 1). This was a 34% increase in the number of cases reported during the previous quarter (603 in January to March 2014) and a 28% decrease on cases reported in the same quarter of 2013 (1120 cases between April and June 2013). There were 28 laboratory confirmed cases reported in Wales between April and June 2014, a 56% increase in the number of cases reported in the previous quarter (n=18) and a 43% decrease on the number of cases reported in the same quarter in 2013 (n=49).

Typically pertussis activity peaks in quarter 3 and then declines (figure 1). The continued increase observed in each successive quarter between the first quarter of 2011 and third quarter of 2012 was unusual. The HPA declared a national outbreak of pertussis (level 3 incident [1]) in April 2012 and, as a response to the ongoing outbreak, the Department of Health announced the introduction of a temporary immunisation programme for pregnant women on 28 September 2012 [2]. The most recent PHE figures report that of the mothers due to give birth in January, February and March 2014, 60.7%, 59.7% and 58.9% respectively had been immunised with a pertussis containing vaccine in pregnancy in England [3]. From April 2014 coverage data has been collected electronically [4] and data for 2014 Q2 and Q3 will be published later this year.

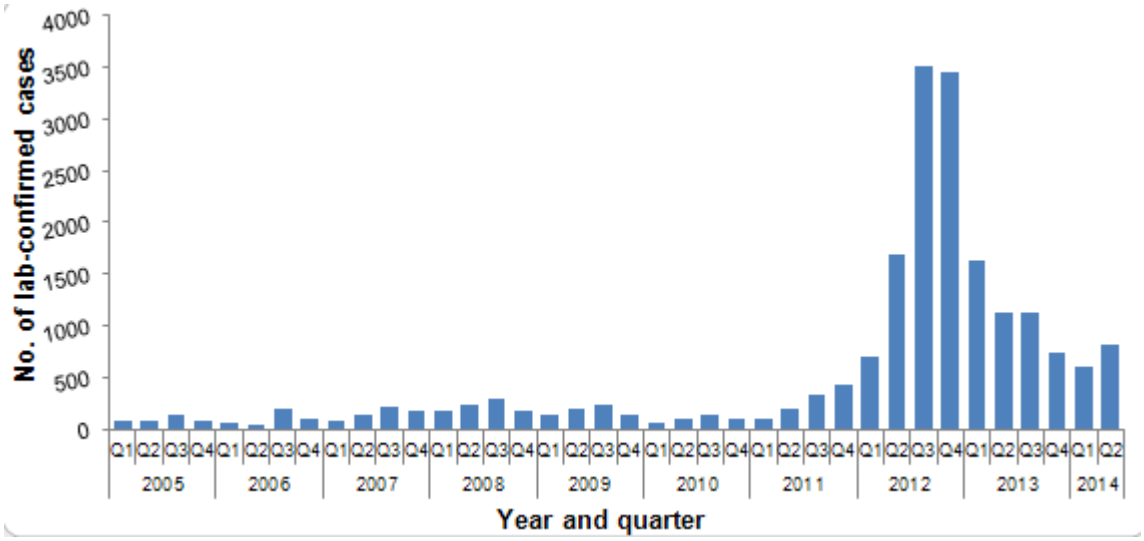
Following the high levels of activity in 2012, confirmed cases of pertussis first fell in the fourth quarter of 2012 and this decrease has continued overall with slight increases in the third quarter of 2013 and in Q2 of 2014, in line with the usual seasonal pattern. The highest number of laboratory confirmed cases in England has persisted in individuals aged 15 years and over whilst disease incidence continues to be highest in infants <3 months. Confirmed cases in infants less than 3 months were similar in the second quarter of 2014 (26 cases) and the equivalent quarter in 2013 (25 cases) and 117% higher than the first quarter of 2014 (12 cases). Four deaths were reported in infants with laboratory confirmed pertussis tested between April and June 2014 in England.

Table 1. Laboratory-confirmed cases of pertussis by age and testing method in England, April to June 2014.

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	14	11	1	–	26
3-5 months	1	–	–	–	1
6-11 months	–	1	1	–	2
1-4 years	1	2	6	–	9
5-9 years	1	1	29	6	37
10-14 years	1	–	79	9	89
15+ years	3	10	628	6	647
Total	21	25	744	23	811

These early data in young infants following the introduction of a programme to immunise pregnant women are encouraging as a relatively low incidence has been maintained, with expected seasonal increases. It is important to be aware, however, that raised levels of pertussis persist in older age groups and women therefore continue to be encouraged to be immunised against pertussis during pregnancy in order to protect their babies from birth. The pertussis immunisation in pregnancy programme in England has shown high levels of protection against pertussis in babies born to vaccinated mothers [5]. The Medicines and Healthcare Products Regulatory Agency also found no safety concerns relating to pertussis vaccination in pregnancy based on a large study of nearly 18,000 vaccinated women with similar rates of normal, healthy births in vaccinated and in unvaccinated women [6].

Figure 1. Total number of laboratory-confirmed pertussis cases per quarter in England, 2005 to 2014 (Q2).



Laboratory investigation

Bordetella pertussis PCR (for hospitalised cases <1 year old) and serological investigation by estimation of anti-pertussis toxin (PT) IgG antibody levels for older children and adults are provided by the Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) at the Public Health England (PHE) Microbiology Services Division Colindale. The PCR service for hospitalised infants under one year requires either a pernasal swab or nasopharyngeal aspirate to be sent as soon as possible post-onset; for the pertussis serology service for older children and adults not less than 400 µl of separated serum should be sent at least 2-3 weeks post-onset. Serology testing is not suitable for any individual who has been immunised against pertussis in the last year. The laboratory also encourages submission of all *Bordetella pertussis* isolates for confirmation and national surveillance purposes. The RVPBRU is also offering an oral fluid (OF) testing service for clinically suspected cases reported to local Health Protection Teams, who are aged between 5-16 years (<17yrs) and have been coughing for more than two weeks and have not been immunised against pertussis in the previous year. A PCR community testing pilot for all age groups began at the end of May 2013 and requires a nasopharyngeal swab, throat swab and OF swab to be sent to RVPBRU for testing; this continues in participating areas. From 1 July 2014, community PCR testing using nasopharyngeal swabs was introduced for patients of any age presenting within the first three weeks of onset of symptoms.

Further information is available in the PHE Microbiology Services Colindale Bacteriology Reference Department User Manual at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340615/BRDW0078.01_Bacteriology_Reference_Dept_User_Manual_.pdf

References

1. *Health Protection Report* **6**(15), 13 April 2012 http://webarchive.nationalarchives.gov.uk/20140714084352/http://www.hpa.org.uk/hpr/archives/2012/news1512.htm
2. Department of Health: https://www.gov.uk/government/news/pregnant-women-to-be-offered-whooping-cough-vaccination
3. Public Health England: https://www.gov.uk/government/publications/pertussis-vaccine-uptake-in-pregnant-women-october-2012-to-march-2014
4. Public Health England: https://www.gov.uk/government/publications/prenatal-pertussis-vaccine-uptake-surveys-data-collection-via-immform
5. Effectiveness of maternal pertussis vaccination in England: an observational study. Amirthalingam G, Andrews N, Campbell, Ribeiro S, Kara E, Donegan K, *et al*. *The Lancet*, 2014. doi:10.1016/S0140-6736(14)60686-3.
6. Donegan K, King B, Bryan P. Safety of pertussis vaccination in pregnant women in UK: observational study. *BMJ* 2014, **349**: g4219.