



Infection report

Volume 9 Number 11 Published on: 27 March 2014

Laboratory confirmed cases of pertussis reported to the enhanced pertussis surveillance programme in England during October to December 2014 (Q4/2014)

In England there were 882 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 2014, from October to December (see table). In line with seasonal patterns, this was a 19% decrease in the number of cases reported during the previous quarter (1094 in July to September 2014). Total cases were 18% higher than those reported in the same quarter of 2013 (747 cases between October and December 2013). There were 35 laboratory confirmed cases reported in Wales between October and December 2014, a 5% decrease in the number of cases reported in the previous quarter (n=37) and a 30% increase on the number of cases reported in the same quarter in 2013 (n=27).

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 and a high number of infant deaths, 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 December 2014, 62.3% had been immunised with a pertussis containing vaccine in pregnancy in England, the highest recorded coverage since the programme started [3]. From April 2014 the collection of vaccine coverage data has change from a manual to an automated system [4] and data for January to March 2015 will be published in June 2015.

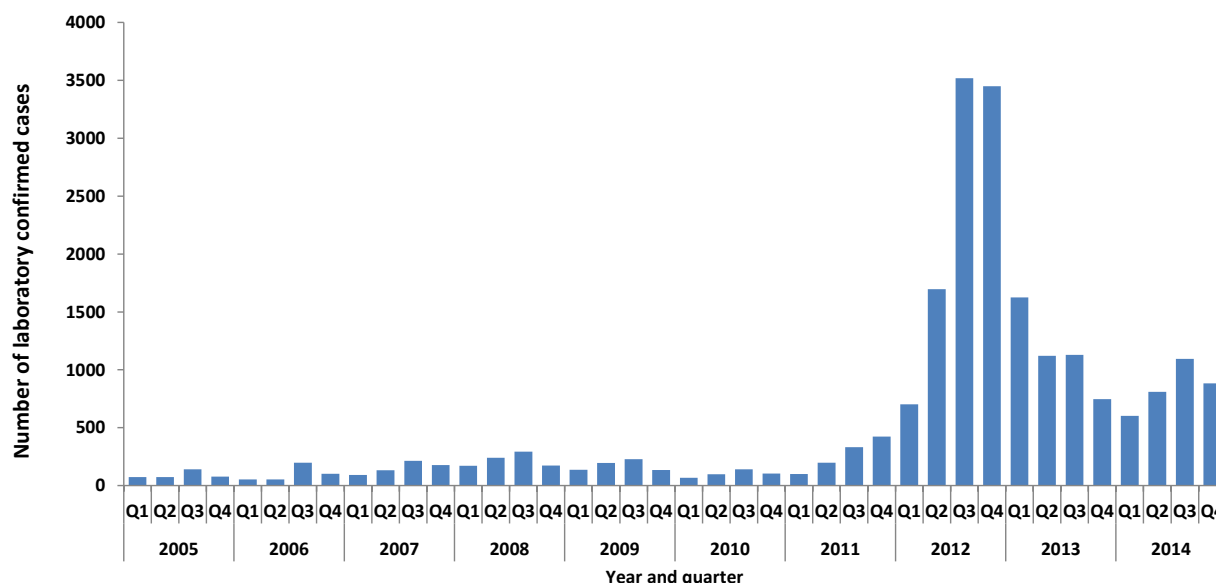
Following the high levels of activity in 2012, confirmed cases of pertussis first fell in the fourth quarter of 2012 and this decrease has continued overall with slight increases in the third quarters of 2013 and 2014, in line with the usual seasonal pattern. The highest number of laboratory confirmed cases in England has persisted in individuals aged 15 years and over whilst disease incidence continues to be highest in infants <3 months. The number of confirmed cases in infants less than 3 months in the fourth quarter of 2014 (13 cases) equalled the number of cases reported in the equivalent quarter in 2013. No deaths were reported in infants with laboratory confirmed pertussis tested between October and December 2014 in England.

Laboratory-confirmed cases of pertussis by age and testing method in England, October to December 2014

Age group	Culture	PCR	Serology	Oral fluid only	Total
<3 months	7	6	0	0	13
3-5 months	1	3	0	0	4
6-11 months	1	0	0	0	1
1-4 years	3	0	18	0	21
5-9 years	0	0	26	8	34
10-14 years	1	0	64	19	84
15+ years	4	0	716	5	725
Total	17	9	824	32	882

These surveillance 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 should 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 [5,6]. 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 [7].

Figure 1. Total number of laboratory-confirmed pertussis cases per quarter: England, 2005-2014



Laboratory investigation

Bordetella pertussis PCR testing for hospitalised cases <1 year old has been offered by the Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) at the Public Health England (PHE) Microbiology Services Division Colindale since 2002. From July 2014, PCR testing for all ages has been deployed to Lead PHE laboratories in a phased approach [8] and this form of testing is particularly encouraged in all children aged 1-4 years who present within 3 weeks of onset as serological results may be confounded by recent vaccination.

Serological investigation by estimation of anti-pertussis toxin (PT) IgG antibody levels for older children and adults are also provided by the RVPBRU. RVPBRU 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 2 weeks and have not been immunised against pertussis in the previous year.

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. "Pregnant women to be offered whooping cough vaccination", 28 September 2012. Department of Health website news story.
 3. Public Health England: <https://www.gov.uk/government/publications/pertussis-immunisation-in-pregnancy-vaccine-coverage-estimates-in-england-october-2013-to-march-2014>
 4. Public Health England: <https://www.gov.uk/government/publications/prenatal-pertussis-vaccine-uptake-surveys-data-collection-via-immform>
 5. Amirthalingam G, Andrews N, Campbell H et al. [Effectiveness of maternal pertussis vaccination in England: an observational study](#), *Lancet* 2014.
 6. 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](#). *Clinical Infectious Diseases* (online), 19 October.
 7. Donegan K, King B, Bryan P. [Safety of pertussis vaccination in pregnant women in the UK: observational study](#), *BMJ* 2014.
 8. Internal PHE communication: Briefing note 2014/07, 29 September 2014.
-