



## Infection (news) report

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### Laboratory confirmed pertussis in England: data to end-August 2014

*This news report presents current pertussis activity to 31 August 2014, updating the previous report that included data to the end of May 2014 [1].*

The number of laboratory confirmed cases continued to increase between June and August 2014, in line with seasonal trends, and overall pertussis activity in England persists at raised levels compared to the years preceding the outbreak in 2012 (see figure). There have been nine deaths in infants born since the introduction of pertussis vaccination in pregnancy with six cases diagnosed in 2014 to the end of August. The mother had not been immunised in eight of the nine deaths in infants born after the pregnancy vaccination programme was introduced.

The immunisation programme for pregnant women continues to be important, particularly in light of the ongoing raised levels of pertussis in adults, older children and the recent infant deaths. There have also been recent key publications on the effectiveness and safety of the pertussis immunisation-in-pregnancy programme [2,3].

A level 3 incident was declared in April 2012 to coordinate the response to the ongoing increased pertussis activity observed in the third quarter of 2011 and extending into 2012 (see figure) [4]. In response to this ongoing outbreak, the Department of Health announced on 28 September [5,6] that pertussis immunisation would be offered to pregnant women from 1 October 2012 to protect infants from birth whilst disease levels remain high. Available data relating to the coverage, effectiveness and safety of the programme, its impact on disease and current epidemiology were considered by the Joint Committee on Vaccination and Immunisation (JCVI) at its June 2014 meeting and on the basis of these data it has advised that this programme should be continued for a further five years [7].

In infants under three months of age low numbers of cases have been sustained since December 2012 with fewer than 10 cases per month reported up to August 2013 and six or fewer reported each month between September 2013 and March 2014. Cases increased from April 2014, in line with expected seasonal increases, peaking at 21 cases in July; the highest

number of monthly cases since 23 reported in November 2012. The greatest reduction in disease since the peak in 2012, however, has been in infants under six months of age who are targeted by the maternal pertussis vaccination programme. Disease incidence has, as expected, continued to be highest in this age group but case reports are now in line with those seen before the 2012 peak. There have been six deaths reported in young babies (under 10 weeks) diagnosed with pertussis this year. Nine deaths have been reported in young babies with confirmed pertussis who were born after the introduction of the pregnancy programme on 1 October 2012. Eight of these nine babies were born to mothers who had not been vaccinated against pertussis, all of the nine babies were too young to be fully protected by vaccination themselves and none had received their first dose of pertussis-containing vaccine.

Pertussis activity in infants aged 6-11 months of age remained low. Confirmed pertussis also remains low in children aged 1-4 years and, whilst small numbers of cases were confirmed in those aged 5-9 years, these increased slightly from February 2014 and in the first eight months of 2014 exceeded the total in the same time period in 2013.

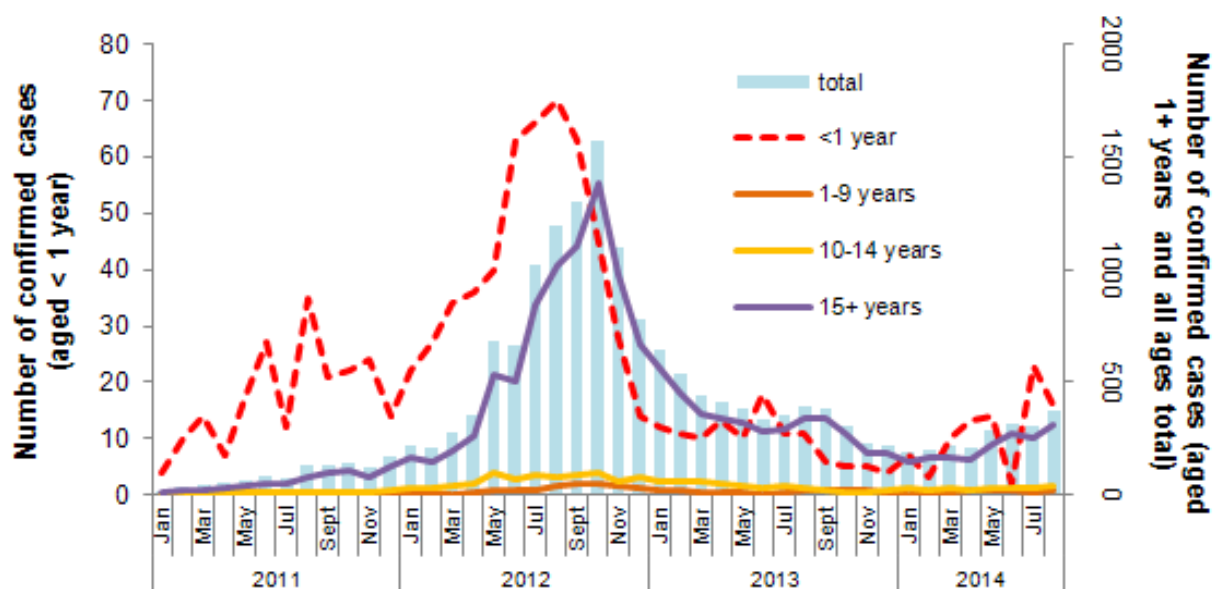
Pertussis activity in adolescents, teenagers and adults (aged from 10 up to and including 15 years of age) continues to decrease overall and total cases were lower in January to August 2014 when compared to the equivalent period in 2013 (table 1). A small seasonal peak was observed into August in those aged 15 years and over. Overall, confirmed cases of pertussis have been lower between January and August 2014 than in the first eight months of the two preceding years but cases continue to exceed those confirmed in years prior to 2012. This pertussis activity has been observed across all regions in England with relatively high numbers of cases in 2014 reported from Yorkshire and Humber and from Surrey, Sussex and Kent (table 2).

The pertussis vaccination in pregnancy programme continues to be important for the prevention of serious disease and death in young babies. To optimise protection of their babies, women should ideally be immunised between 28-32 weeks gestation but may be immunised up to week 38 of pregnancy. Pregnant women who remain unprotected can be offered vaccination after 38 weeks as can new mothers who have not been vaccinated in pregnancy. Vaccination at this stage is not ideal, however, as it would potentially only directly protect the mother against disease and thereby just reduce the risk of exposure to her infant.

Approximately 60% of all pregnant women in England are currently being vaccinated in pregnancy [8]. This is important because around 75% of all cases of pertussis in babies occur before they can be protected by even the first dose of infant vaccine and when there is a high

risk of serious disease. The babies that have died from pertussis in England over recent years all acquired pertussis in the first few weeks of life and eight of nine babies who died between January 2013 and August 2014 were born to mothers who were not vaccinated during pregnancy. Information generated from the pertussis immunisation in pregnancy programme in England has shown high levels of protection against disease in babies born to vaccinated women. Babies born to women vaccinated at least a week before delivery had a 91% reduction in the risk of disease in their first weeks of life when compared to babies whose mothers had not been vaccinated [2]. In addition, no safety concerns were found relating to pertussis vaccination in pregnancy in a study undertaken by the Medicines and Healthcare Products Regulatory Agency [3].

### Provisional number of laboratory confirmed cases of pertussis in England by age group and month: January 2011 to August 2014



**Table 1. Provisional number of laboratory confirmed cases in England, 2008-2014 by age group: January to August**

Year	Month	<3 months	3-5 months	6-11 months	1-4 years	5-9 years	10-14 years	15+ years	All ages
2008	Jan - Aug	135	24	6	18	13	103	311	610
2009	Jan - Aug	75	19	1	18	19	67	277	476
2010	Jan - Aug	40	7	2	7	9	30	151	246
2011	Jan - Aug	101	19	6	8	11	61	294	500
2012	Jan - Aug	285	58	15	35	89	483	3655	4620
2013	Jan - Aug	66	23	7	36	64	362	2933	3491
2014	Jan - Aug	69	10	9	24	77	233	1678	2100

**Table 2. Provisional number of laboratory confirmed cases in England, 2008-2014 by PHE Region and PHE Centre: January to August**

	2008	2009	2010	2011	2012	2013	2014
PHE Region and Centre	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug	Jan - Aug
London	68	62	29	55	348	362	325
Anglia and Essex	46	41	11	41	375	291	164
East Midlands	42	38	13	53	509	389	160
South Midlands and Hertfordshire	19	9	7	28	214	109	85
West Midlands	56	30	10	32	320	283	177
Midlands and East of England Total	163	118	41	154	1418	1072	586
Cheshire and Merseyside	31	22	8	14	75	119	60
Cumbria and Lancashire	19	30	22	32	95	82	31
Greater Manchester	18	8	9	11	126	75	51
North East	34	14	28	46	193	188	47
Yorkshire and Humber	41	36	26	37	568	388	300
North of England Total	143	110	93	140	1057	852	489
Avon, Gloucestershire and Wiltshire	72	49	14	42	593	342	118
Devon, Cornwall and Somerset	32	24	28	20	198	200	81
Sussex, Surrey and Kent	43	50	13	53	540	435	275
Thames Valley	56	39	21	22	173	85	101
Wessex	33	24	7	14	293	143	125
South of England Total	236	186	83	151	1797	1205	700
England Total	610	476	246	500	4620	3491	2100

## References

1. Confirmed pertussis cases in England and Wales: update to end-May 2014, *HPR* 8(28): news, 18 July 2014.
2. Amirthalingam G, Andrews N, Campbell H, *et al.* Effectiveness of maternal pertussis vaccination in England: an observational study, *Lancet* 2014.
3. Donegan K, King B, Bryan P. Safety of pertussis vaccination in pregnant women in the UK: observational study, *BMJ* 2014.
4. A level 3 incident is the third of five levels of alert under the HPA's Incident Reporting and Information System (IERP) according to which public health threats are classified and information flow to the relevant outbreak control team is coordinated. A level 3 incident is defined as one where the public health impact is significant across regional boundaries or nationally. An IERP level 3 incident was declared in April 2012 in response to the ongoing increased pertussis activity. (See *HPR* 6(15)).
5. "Pregnant women to be offered whooping cough vaccination", 28 September 2012. Department of Health website.
6. "HPA welcomes introduction of whooping cough vaccination for pregnant women as outbreak continues", HPA press release, 28 September 2012, HPA legacy website.
7. Joint committee of Vaccination and Immunisation minutes.
8. Pertussis Vaccination Programme for Pregnant Women: vaccine coverage estimates in England, October 2012 to March 2014 (PHE statistics).