



Infection report

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Immunisation

Pertussis Vaccination Programme for Pregnant Women update: vaccine coverage in England, January to March 2016

Pertussis vaccine coverage in pregnant women increased from 59.7% in January 2016 to 60.7% in March 2016. Compared with March 2015, coverage was 4.4% higher in March 2016 and is the first year of the programme where coverage has not declined during the first quarter.

Introduction

This report presents pertussis vaccine coverage in pregnant women in England for the period January to March 2016, updating previous data reported for October to December 2015 [1].

Following increased pertussis activity in all age groups, including infants under three months of age, and the declaration of a national pertussis outbreak (level 3 incident) in April 2012 [2] [3], pertussis vaccine has been offered to pregnant women since 1 October 2012. Overall pertussis activity persists at raised levels compared to the years preceding the outbreak in 2012 however, reported incidence in young infants, the group targeted by the vaccine programme, is now comparable with before the 2012 peak. Between 1 October 2012 and 31 December 2015, 14 deaths have been reported in young babies with confirmed pertussis. Twelve of these 14 babies were born to mothers who had not been vaccinated against pertussis and both of the babies whose mothers had been vaccinated were delivered too close to vaccination to confer optimal passive protection in the infant [4].

The prenatal pertussis vaccination programme aims to minimise disease, hospitalisation and deaths in young infants, through intra-uterine transfer of maternal antibodies, until they can be actively protected by the routine infant programme with the first dose of pertussis vaccine scheduled at eight weeks of age [3]. In June 2014 the Joint Committee on Vaccination and Immunisation (JCVI) considered available data and based on the high effectiveness and safety of the programme, advised it should continue for a further five years [5]. In February 2016 the JCVI considered new evidence demonstrating that vaccination earlier in pregnancy would be likely to improve neonatal antibody levels and would increase opportunities during pregnancy for vaccination [6, 7]. Based on this, they advised that vaccination should ideally be offered from gestational week 16 (although for operational reasons, vaccination should be offered from around 20 weeks, on or after the foetal anomaly scan) [8]. This advice has been implemented from April 2016.

Further information on the history and epidemiology of the disease, recommendations on supply, storage and use of the vaccine, as well as guidance on contraindications, precautions and adverse reactions can be found in the "Immunisation against infectious disease" book (the [green book](#)), chapter 24 [8]. Additional background information for the programme can be found on the [PHE website](#) and on the vaccine coverage collection in the annual report: [Pertussis vaccine coverage in pregnant women April 2014 to March 2015](#).

Methods

General practice (GP) level pertussis vaccine coverage data are automatically uploaded via participating GP IT suppliers to the ImmForm* website on a monthly basis.

ImmForm data are validated and analysed by PHE to check data completeness, identify and query any anomalous data and describe epidemiological trends.

Monthly data are collected on the following:

- *Denominator*: number of women who delivered in the survey month at more than 28 weeks gestational age;
- *Numerator*: number of pregnant women who delivered after 28 weeks gestational age in the survey month that received a dose of pertussis-containing vaccine in the preceding fourteen weeks.

For accurate denominators to be extracted from GP IT systems by the automated survey and precise coverage estimates to be calculated, it is important that the medical records of all women who have given birth have the following fields completed:

- the date of delivery;
- the date of receipt of a pertussis-containing vaccine at or after week 28 of pregnancy, regardless of the setting where the vaccine was administered;
- where relevant, any record of a premature delivery occurring at less than 28 weeks gestational age.

GP data are aggregated by NHS England organisations (Clinical Commissioning Groups (CCGs), Area Teams (ATs) and NHS England Local Teams (LTs), and by Local Authorities (LAs).

Participation and data quality

One of four data suppliers, representing around a third of GP practices, extracted monthly data earlier than recommended between April 2015 and February 2016. This should not affect coverage but could result in some mothers who gave birth towards the end of the evaluation month not being captured in the monthly survey due to potential delays in updating the delivery date on her record. This data extraction error was amended for this GP IT supplier in the March 2016 monthly submission and the denominator increased by around 20% compared to the January and February submissions. This correction will also be reflected in data from this supplier in the annual prenatal pertussis survey 1 April 2015 – 31 March 2016, published later this year. Additionally, another data supplier, representing around 8% of GP practices, did not upload data for approximately 200 GP practices in February 2016 due to a technical error. These data are therefore provisional and to be interpreted with caution.

Results

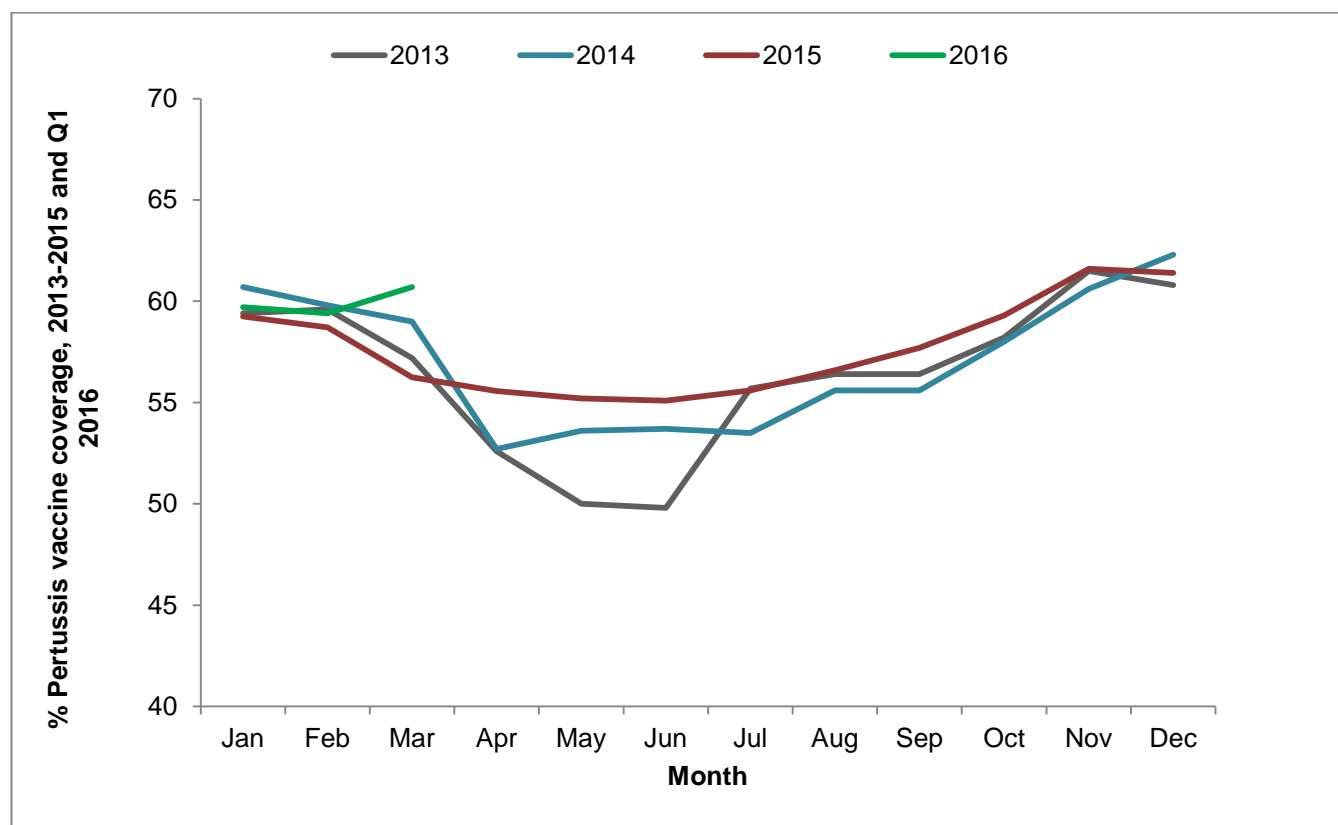
Between January and March 2016, data were provided for 95.3% of GP practices on average, ranging from 93.8% (February 2016) to 96.4% (March 2016).

* ImmForm is the system used by Public Health England to record vaccine coverage data for some immunisation programmes and to provide vaccine ordering facilities for the NHS

Pertussis vaccine coverage in pregnant women increased from 59.7% in January 2016 to 60.7% in March 2016 (figure 1). In each of the last 12 evaluations monthly coverage estimates have exceeded the previous year's estimate, with the exception of December 2015 where coverage was lower than December 2014.

Between January and March 2016, average vaccine coverage by NHS England AT ranged from 49.5% (London) to 70.3% (South Yorkshire and Bassetlaw) (see table 1 for monthly figures by AT). Vaccine coverage data by AT and CCG for the period April 2015 to March 2016 are presented in an [Appendix](#) associated with this report.

Figure 1. Monthly pertussis vaccination coverage (%) in pregnant women: England, 2013-2015 and Q1 2016.



Discussion

Pertussis vaccine coverage has increased during the first quarter of 2016, reaching 60.7% in March 2016. In previous years, coverage declined in the first quarter as the influenza season ended and GP practices reduced their amount of active calling and recalling of eligible pregnant women for both influenza and pertussis vaccines. Although data are provisional, this increasing coverage is encouraging.

As pertussis continues to circulate in the population, unprotected young infants continue to be at risk of infection and GPs and midwives should continue to encourage pregnant women to receive the pertussis vaccine, ideally between weeks 16 and 32 of their pregnancy (but up to week 38) to further reduce the incidence of pertussis in young infants [8]. Considerable variation in coverage between ATs has consistently been reported, with around a 20% difference between those with the highest coverage and those with the lowest coverage. Identifying examples of good practice in areas achieving consistently high coverage for pertussis vaccination during pregnancy and applying them to low coverage areas may help address this gap.

There are limitations to the data presented in this report. First, completeness of data is reliant on the recording of delivery dates in the mothers' medical records and comparison of this data with national data on live births, indicates these data represent about 60% of the population of pregnant women [9]. However, monthly variations in the denominator closely mirror the seasonal variation observed in national live births.

Second, the survey does not cover all GP practices in England and, although data for 95% of GP practices were on average provided, there may be differential completeness of the recording of delivery dates among GPs. Coverage may be overestimated if women who have received the vaccine are more likely to have their delivery date recorded. Furthermore, women not registered with a GP (and therefore less likely to be having regular contact with the health service prior to delivery) will not be captured by this reporting system.

Comparison with other data sources examined to estimate the vaccine coverage of this programme suggests that this methodology may be underestimating coverage [10]. If coverage, and ultimately the impact of the programme itself, is to be accurately monitored, it is essential that GPs and practice nurses ensure that vaccination and date of delivery are recorded in the patient's GP record.

Continued support in the delivery of this important programme has been sought from service providers (GP practices and maternity units), Screening and Immunisation Teams and Health Protection Teams and the improved coverage reported here suggests the delivery of this programme is becoming more routine. Screening and Immunisation Teams should continue to update service providers on the current epidemiology of the disease, the effectiveness of the vaccination programme and the need to maintain and improve coverage achieved thus far.

Table 1. Monthly pertussis vaccination coverage (%) in pregnant women by NHS England Area Team: England, January to March 2016

Area Team	Jan 2016	Feb 2016	Mar 2016
Cheshire, Warrington and Wirral (Q44)	67.5	65.3	66.6
Durham, Darlington and Tees (Q45)	61.1	59.7	61.8
Greater Manchester (Q46)	60.2	60.1	60.7
Lancashire (Q47)	62.0	61.3	62.1
Merseyside (Q48)	56.9	60.3	58.6
Cumbria, Northumberland, Tyne and Wear (Q49)	65.5	65.3	66.3
N Yorkshire and Humber (Q50)	68.3	66.7	68.7
S Yorkshire and Bassetlaw (Q51)	69.9	69.8	71.2
W Yorkshire (Q52)	65.1	60.6	63.8
Arden, Herefordshire and Worcestershire (Q53)	63.1	66.3	68.3
Birmingham and Black Country (Q54)	54.0	54.6	57.0
Derbyshire and Notts. (Q55)	65.4	66.8	66.4
East Anglia (Q56)	59.1	58.7	62.4
Essex (Q57)	55.1	53.9	56.5
Hertfordshire and the S Midlands (Q58)	58.9	56.8	59.4
Leicestershire and Lincolnshire (Q59)	57.2	52.4	56.4
Shropshire and Staffordshire (Q60)	68.0	68.4	68.2
Bath, Gloucestershire, Swindon and Wiltshire (Q64)	64.8	62.8	66.7
Bristol, N Somerset, Somerset and S Gloucestershire (Q65)	63.5	60.8	62.3
Devon, Cornwall and Scilly Isles (Q66)	56.7	57.2	59.3
Kent and Medway (Q67)	63.6	68.5	68.5
Surrey and Sussex (Q68)	64.5	65.5	65.4
Thames Valley (Q69)	62.7	60.4	61.7
Wessex (Q70)	68.5	68.8	67.4
London (Q71)	48.9	49.8	49.8
ENGLAND	59.7	59.4	60.7
Monthly reported denominator	34841	34067	37682

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2. *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*. HPR, 2012. **6**(15).
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