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Pertussis vaccination programme for pregnant women update: vaccine coverage in England, January to March 2021 and 2020 to 2021 annual coverage

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Introduction

This report presents pertussis vaccine coverage in pregnant women in England for the period January to March 2021, updating previous data reported for October to December 2020 [1]. This report also presents annual data from April 2020 until March 2021, where all the monthly data for the financial year were collated to determine annual vaccine coverage.

Following increased pertussis activity in all age groups, including infants under three months of age and the declaration of a national pertussis outbreak in April 2012 [2], pertussis vaccine has been offered to pregnant women since 1 October 2012 [3]. 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 [4]. In June 2014, the Joint Committee on Vaccination and Immunisation (JCVI) advised it should continue for a further 5 years [5]. In February 2016, the JCVI considered new evidence demonstrating that vaccination earlier in pregnancy would increase opportunities during pregnancy for vaccination, without detrimentally affecting the protection afforded to the infant [6,7]. Based on this, JCVI advised that vaccination could be offered from gestational week 16, although for operational reasons vaccination should ideally be offered from around 20 weeks, on or after the foetal anomaly scan [8]. This advice was implemented from April 2016 as was offering the vaccine through general practice as well as some maternity services. In 2019, following JCVI recommendation, the prenatal pertussis vaccine became a routine programme in England [9].

In response to the COVID-19 pandemic, nationwide social distancing measures were initiated from 23 March 2020. To minimise disruptions, guidance to continue routine vaccination programmes with priority given to time sensitive vaccines, such as prenatal pertussis vaccines, were outlined by NHS England at the beginning of the pandemic [10]. In addition, The Royal College of Nursing published guidance on the management of immunisation clinics, and Public Health England (PHE) produced resources promoting immunisations to pregnant women and young families [11,12].

Main points

This quarterly report evaluates pertussis coverage for women who delivered in the January to March 2021 quarter and became eligible for the prenatal pertussis vaccine from 16 weeks of pregnancy onwards.

Pertussis vaccine coverage in pregnant women for the fourth quarter of the 2020 to 2021 financial year ranged from 67.8% in January to 65.8% in February. The average coverage for the quarter was 66.7%, which was 5.5 percentage points lower than average coverage for the same quarter in the 2019 to 2020 financial year.

The annual vaccine coverage for the financial year 2020 to 2021 was 67.8%, which was 2.7 percentage points lower compared to the 2019 to 2020 financial year.

Methods

General practice (GP) level pertussis vaccine coverage data are automatically uploaded via participating GP IT suppliers to the ImmForm¹ website monthly and a separate annual extraction uploaded at the end of the financial year. ImmForm data are validated and analysed by PHE to check data completeness, identify and query any anomalous data and describe epidemiological trends.

Since April/May 2016 (implementation date varied by GP IT supplier) the following monthly (annual) data have been collected:

- denominator: number of women who delivered in the survey month (year), excluding miscarriages and stillbirths, regardless of gestational age
- numerator: number of women receiving pertussis vaccination between week 16 of pregnancy and delivery

Annual vaccine coverage was calculated by summing the 12 monthly numerators and denominators for the financial year (April 2020 to March 2021). This is different to reports showing annual data on and prior to the 2018 to 2019 financial year, where a separate annual extraction (based on the same coding specification) was used to report the annual coverage.

1. 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.

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 16 of pregnancy, regardless of the setting where the vaccine was administered
- where relevant, fields indicating stillbirth or miscarriage

Coverage by former Local Teams (based on the 2019 NHS England configurations) are also included in the attached [data tables](#) for trend comparisons.

Participation and data quality

All GP IT suppliers provided data for the January to March 2021 quarterly figures. National GP practice participation was at 98.6% (January 2021), 98.8% (February 2021), and 98.5 % (March 2021).

Results

Monthly pertussis vaccine coverage ranged across the quarter from 67.8% in January to 65.8% in February, with average coverage for the quarter at 66.7% (Table 1, Figure 1, see [data tables](#)). During January to March 2021, prenatal pertussis vaccine coverage by STP ranged from 29.4% (Cornwall and the Isles of Scilly Health & Social Care partnership STP, March) to 85.2% (Shropshire and Telford and Wrekin STP, January) (Table 1).

The total number of women delivering in December (denominator) was lower compared to denominators in October and November 2020, as well as to December 2019 ([data tables](#)). However, from January 2021 onwards, the number of women delivering has since increased each successive month between January and March 2021 ([data tables](#), Table 1).

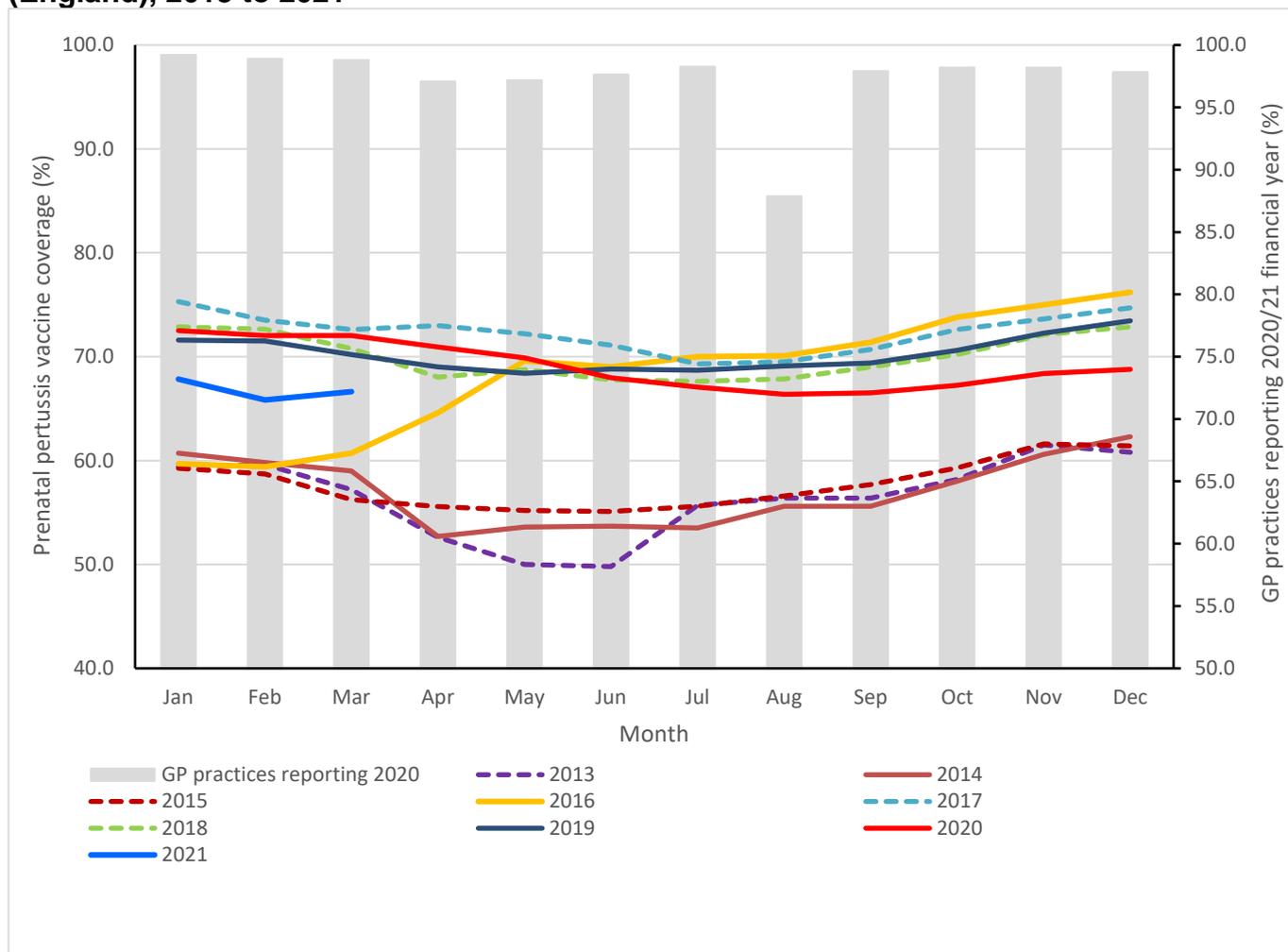
Table 1. Monthly pertussis vaccination coverage (%) in pregnant women by STP: England, January to March 2021

STP code	Sustainability Transformation Partnership (STP)	Jan-21	Feb-21	Mar-21
QE1	Healthier Lancashire And South Cumbria	69.5	68.6	67.2
QF7	South Yorkshire And Bassetlaw	69.5	70.1	69.3
QGH	Herefordshire And Worcestershire	67.9	71.7	72.6
QH8	Mid And South Essex	68.4	71.0	70.9
QHG	Bedfordshire, Luton And Milton Keynes	65.9	65.6	65.4
QHL	Birmingham And Solihull	57.7	50.8	55.3
QHM	Cumbria And North East	78.0	73.4	75.5
QJ2	Joined Up Care Derbyshire	81.2	74.8	74.8
QJG	Suffolk And North East Essex	71.0	67.1	69.8
QJK	Devon	76.9	70.8	77.0
QJM	Lincolnshire	66.7	60.9	61.2
QK1	Leicester, Leicestershire And Rutland	65.5	65.4	65.6
QKK	Our Healthier South East London	58.5	56.8	57.4
QKS	Kent And Medway	75.7	72.0	72.7
QM7	Hertfordshire And West Essex	71.2	66.6	67.0
QMF	East London Health And Care Partnership	41.3	42.6	41.2
QMJ	North London Partners In Health & Care	35.5	38.9	37.6
QMM	Norfolk And Waveney Health & Care Partnership	81.2	81.3	81.6
QNC	Staffordshire And Stoke On Trent	70.3	68.8	70.1
QNQ	Frimley Health & Care Ics	70.8	68.2	67.9
QNX	Sussex And East Surrey	75.9	71.9	75.3
QOC	Shropshire And Telford And Wrekin	85.2	81.5	82.5
QOP	Greater Manchester Health & Social Care Partnership	64.6	61.6	66.2
QOQ	Humber, Coast And Vale	80.8	79.5	80.0
QOX	Bath And North East Somerset, Swindon And Wiltshire	80.3	82.0	83.0
QPM	Northamptonshire	53.3	55.2	48.5
QR1	Gloucestershire	71.5	68.5	71.5
QRL	Hampshire And The Isle Of Wight	66.4	61.0	62.5
QRV	North West London Health & Care Partnership	56.5	50.7	54.0
QSL	Somerset	78.4	75.6	71.0
QT1	Nottingham And Nottinghamshire Health And Care	70.9	75.7	72.9

STP code	Sustainability Transformation Partnership (STP)	Jan-21	Feb-21	Mar-21
QT6	Cornwall And The Isles Of Scilly Health & Social Care Partnership	31.1	29.8	29.4
QU9	Buckinghamshire, Oxfordshire And Berkshire West	78.8	74.3	73.4
QUA	The Black Country And West Birmingham	60.3	60.5	61.6
QUE	Cambridgeshire And Peterborough	64.1	62.2	63.6
QUY	Bristol, North Somerset And South Gloucestershire	75.1	74.7	74.5
QVV	Dorset	79.9	82.8	79.7
QWE	South West London Health And Care Partnership	61.2	65.3	63.4
QWO	West Yorkshire And Harrogate Health & Care Partnership	74.5	74.7	75.2
QWU	Coventry And Warwickshire	68.2	66.9	67.3
QXU	Surrey Heartlands Health & Care Partnership	73.4	72.3	73.9
QYG	Cheshire And Merseyside	67.7	65.6	67.6
England		67.8	65.8	66.6
Monthly denominator		31,335	35,121	38,429

Monthly national coverage this quarter was between 3.4 percentage points lower in January to 6.2 percentage points lower in February, compared to monthly national coverage reported for the same quarter in the 2019 to 2020 financial year. Coverage between January and March 2021 was the lowest compared to previous January to March coverage estimates post April 2016 (Figure 1).

Figure 1. Monthly pertussis vaccination coverage (%) in pregnant women (England), 2013 to 2021



Notes

1. New IT specification implemented in March/April 2016 [13]; coverage reported prior to this date is likely to have been underestimated
2. Women first offered pertussis vaccine from 20 weeks gestational age in April 2016 would have been expected to deliver in August 2016
3. Data from one of the largest IT suppliers were missing in April 2017
4. Data from the smallest IT supplier was excluded between July 2017 and September 2018, and in August to September 2019

Discussion

The number of confirmed cases in infants under three months, who are targeted by the maternal immunisation programme, continues to remain low with no confirmed case between October and December 2020 compared to 19 and 15 cases in the same quarter in 2019 and 2018 respectively. Whilst overall pertussis activity has declined since measures to control the spread of COVID19 were introduced, it continues to be important to encourage women to be immunised against pertussis at the optimal time during pregnancy in order to protect their babies from birth [14].

This quarterly report evaluates pertussis vaccine coverage for women who delivered in the January to March 2021 quarter and therefore would have become eligible for the vaccine after the initiation of the first lock down period, starting from March 2020, in response to COVID-19. On October 2020, a 3-tier approach was introduced whereby different controls were applied to different regions in England according to defined tiers; from November 2020, England returned to nation-wide lockdown. The continuation of the pandemic and its impact on the healthcare services has possibly resulted in vaccine coverage this quarter being lower than any previous January to March period since April 2016. It is uncertain whether a change in the delivery of prenatal pertussis vaccines through maternity units has occurred during the pandemic. Vaccinations recorded in maternity units may not have been captured completely in this survey, if they were not transferred to the mothers' GP records, and therefore may have resulted in an underestimation of coverage.

Furthermore, the denominator for December 2020 was lower compared to denominators in October and November 2020, as well as to December 2019. This decrease may be attributable to a number of factors related to the pandemic, including the introduction of social distancing and lock down measures introduced from March 2020 when most of these women would have conceived. However, the denominators have since increased each successive month between January and March 2021, suggesting birth rates returning to normal levels as the first lockdown eased.

Overall, monthly prenatal pertussis vaccine coverage for the January to March 2021 quarter decreased from 67.8% in January to 65.8% in February, and then increased to 66.6% in March 2021. Between January to March 2021, the difference between the highest and lowest STP coverage for each month was around 53 percentage points, which is similar to that observed for the October to December 2020 quarter. Additionally, average annual prenatal pertussis vaccine coverage over the 2020 to 2021 financial year was 2.7, and 1.0, percentage points lower compared to average annual coverage reported in the 2019 to 2020 financial year, and in the 2018 to 2019 financial year, respectively. Sharing learning across the country, including those measures that have been successful in mitigating impact of social distancing, may help address any gaps in coverage for future cohorts of pregnant women.

Limitations to the data presented in this report may explain observed variability in coverage at the local level and over time. First, completeness of data is reliant on the recording of delivery dates in the mothers' medical records and comparison of these data with national data on maternities [15] indicate that in 2016, prior to the implementation of the revised IT specification, these data represented about 65% of the population of pregnant women. A recent study in England suggests that maternity notes regarding pregnancy and delivery are often scanned or archived, rather than coded in an extractable format [16].

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. The continued high coverage reported here, albeit with an observed decline, most likely due to the pandemic, suggests the delivery of this programme has become embedded in the national immunisation programme since 2019. Screening and Immunisation Teams should continue to update service providers on the current epidemiology of the disease and the need to maintain and improve coverage achieved thus far. If coverage, and ultimately the impact of the programme itself, is to be accurately monitored, it is essential that GPs and practice nurses continue to ensure that vaccination and date of delivery are recorded in the patient's GP record. In areas that have commissioned maternity units to offer pertussis vaccines in pregnancy, it is important that providers ensure doses of vaccines given to individual women are also communicated to the woman's GP. Maternity units not offering pertussis vaccines to pregnant women should continue to discuss its importance, making use of available resources [17], and signpost the woman to her GP to receive the vaccine.

GPs, practice nurses, obstetricians and midwives should continue to encourage pregnant women to receive the pertussis vaccine, ideally between weeks 20 and 32 of their pregnancy (but up to term) to optimise protection for their babies from birth [8] and pre-natal pertussis vaccinations should be maintained throughout the COVID-19 pandemic [10,11,12].

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