



Infection report

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Vaccine-preventable infections

National rotavirus immunisation programme: preliminary data for England, October 2013 to September 2014

This report presents (i) monthly vaccine coverage data for children routinely offered rotavirus vaccine through the vaccination programme that commenced in July 2013 and (ii) recent numbers of laboratory reports of rotavirus infection in England. Vaccine coverage levels for the first cohorts of children offered this vaccine routinely in England show that high coverage was rapidly achieved and has been maintained; 92.6% of the children evaluated at 25 weeks of age between February and September 2014 had received the first dose and 87.5% had completed the two dose course based on data from 90% of all GP practices in England. Laboratory reports of rotavirus for the period July 2013 to June 2014 were 67% lower than the ten-season average for the same period in the seasons 2003/2004 to 2012/2013. The high coverage reported here for the first cohort of children to be offered this vaccine routinely in England suggests that a rapid reduction in the burden of rotavirus is achievable.

Background

The national rotavirus vaccination programme started in July 2013 [1] following the advice and recommendation by the Joint Committee on Vaccination and Immunisation (JCVI) [2]. Rotavirus is a very common and potentially serious infection of the large bowel, mainly affecting young babies. Nearly every child will have at least one episode of rotavirus gastroenteritis by five years of age. People of any age can be affected but the illness is more severe in young infants. Symptoms of gastroenteritis include vomiting, diarrhoea, stomach cramps and mild fever, which usually last for three to eight days. Some children, however, may develop severe gastroenteritis and become dehydrated, and require hospitalisation for rehydration. The rotavirus immunisation programme in the UK is expected to prevent a significant number of young infants from developing this infection. A published study [3] estimated that vaccinating a birth cohort of infants in England and Wales may prevent around 90,000 infections, about 10,000 hospitalisations and around two deaths due to rotavirus in that cohort over the first five years of life. It may also provide some additional protection to the wider population through herd immunity.

There are two rotavirus vaccines authorised for use by the European Medicines Agency, Rotarix® (manufactured by GSK) and RotaTeq® (manufactured by Sanofi Pasteur MSD). Rotarix® is the vaccine being used in the UK and this is a live attenuated vaccine which is administered orally to young infants. The aim of the rotavirus immunisation programme is to provide two doses of Rotarix® vaccine to infants from six weeks of age and before 24 weeks of age. The first dose of Rotarix® vaccine is offered at two months (approximately eight weeks) of age and the second dose at least four weeks after the first dose. The Rotavirus Green Book chapter summarises the history and epidemiology of the disease and provides detailed

recommendations on supply, storage and use of the vaccine, as well as guidance on contraindications, precautions and adverse reactions [4].

All PHE documents relating to the rotavirus vaccination programme for infants – including training slidesets, patient leaflets and factsheets – are accessible via the PHE Rotavirus Vaccination Programme for Infants series webpages [5].

Public Health England's Immunisation Information for Health Professionals home page can be found here: www.gov.uk/government/organisations/public-health-england/series/immunisation.

Vaccine coverage data collection

In order to rapidly assess rotavirus vaccine coverage a temporary sentinel surveillance programme was set up to extract monthly coverage data directly from GP systems for children who had just reached the upper age for receiving the vaccine (25 weeks) [1]. This early evaluation of vaccine coverage has provided assurance that the vaccine has been well accepted alongside the other childhood immunisations. This temporary surveillance programme for rotavirus coverage will eventually be replaced by data from the routine quarterly COVER (Cover of vaccination evaluated rapidly) reporting scheme which will assess vaccine coverage for all children in England aged 12 months using data extracted from Child Health Information Systems (CHIS) [1].

Vaccine coverage data for the rotavirus immunisation programme are submitted through the ImmForm website and are monitored, validated and analysed by PHE. Monthly automatic data uploads from sentinel GP practices with the appropriate extraction facilities allows collection with minimal or no burden to the NHS whilst providing quick and timely coverage figures [1]. Monthly data are collected on the following:

- ▶ *Denominator*: the number of infants in a GP practice who, in the survey month, reach 25 weeks of age;
- ▶ *Numerators*: number of infants in the denominator who received a) a first dose and b) a second dose of Rotarix® from six weeks of age up to 24 weeks of age, including vaccinations given by other healthcare providers.

GP practice participation has been high and ranged from 84% to 91% of all GP practices in England every month (each monthly survey represents between 44,000 and 50,500 children).

Vaccine coverage data

Figure 1 shows coverage between October 2013 and September 2014. Although the vaccine programme was introduced in July 2013 the first cohort of children aged 25 weeks to be routinely scheduled rotavirus vaccine alongside other primary vaccines at two and three months of age were evaluated from January 2014. Children evaluated in the monthly surveys before then may have been offered the rotavirus vaccine opportunistically alongside their two and three month immunisations, or via a separate specific appointment. Children evaluated in November 2013 were the first monthly cohort eligible by age for the vaccine, as they were aged less than 15 weeks on 1st July when the programme started, however not as part of the routine scheduling.

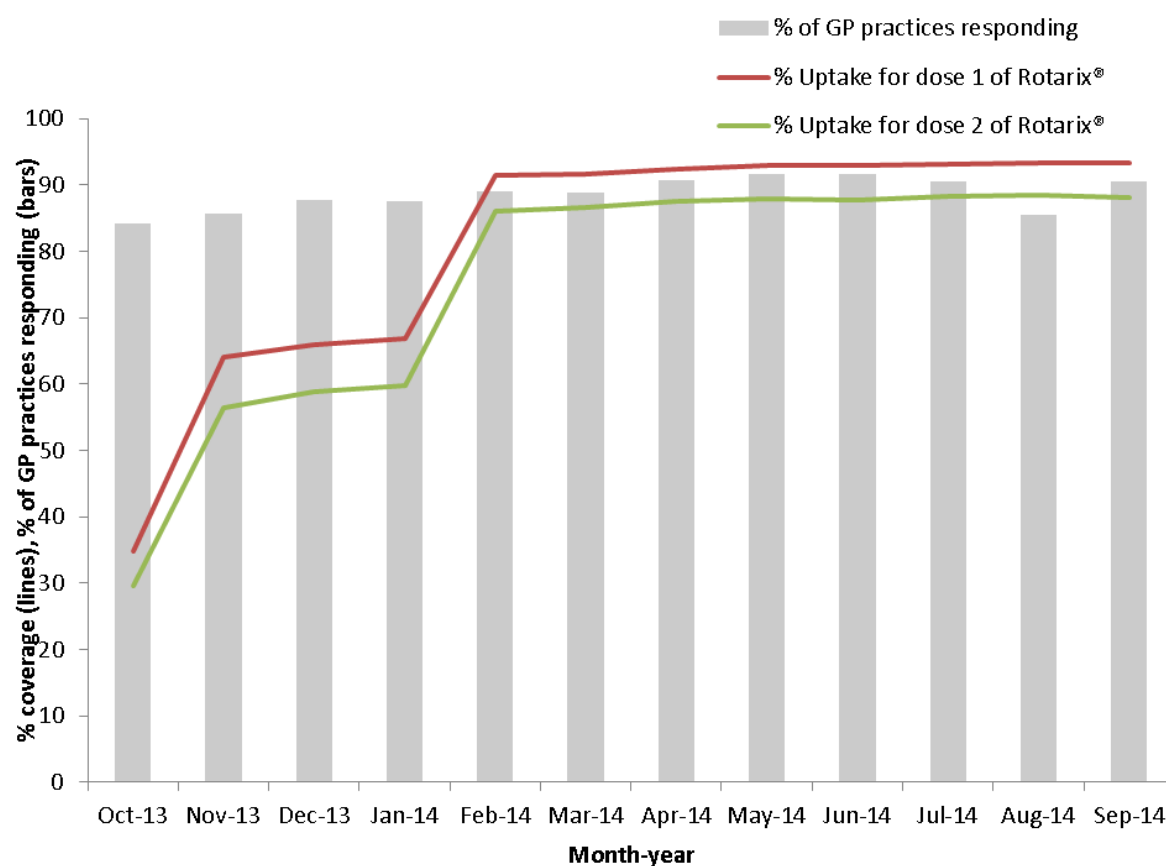
Rotavirus vaccine coverage data for children in the routine vaccination cohort (ie evaluated between February and September 2014) averaged 92.6% for one dose, and was above 93% from July through to September 2014 (table 1). Coverage for the two dose course averaged

87.5% between February and September 2014, and was above 88% from July through to September 2014 (table 2).

Seven of the 25 Area Teams (ATs) consistently reported coverage of the first dose above 80% from November 2013 onwards, but the majority of ATs reported lower coverage until February 2014, when coverage of the first dose was >85% for the first time across all ATs. Coverage was consistently above 84% for all ATs for the first dose from February to September 2014, with the majority of ATs reporting ≥90% coverage each month.

Ten ATs consistently reported coverage of the second dose above 70% from November 2013 onwards, but the majority of ATs reported lower coverage until February 2014; coverage of the second dose was then consistently >78% for all ATs between February to September 2014. Four Area Teams reported >90% coverage for the second dose from February to September 2014.

Figure 1. Monthly rotavirus vaccine coverage at 25 weeks of age for 1st and 2nd dose, and the percentage of GP practices reporting, England, October 2013 to September 2014



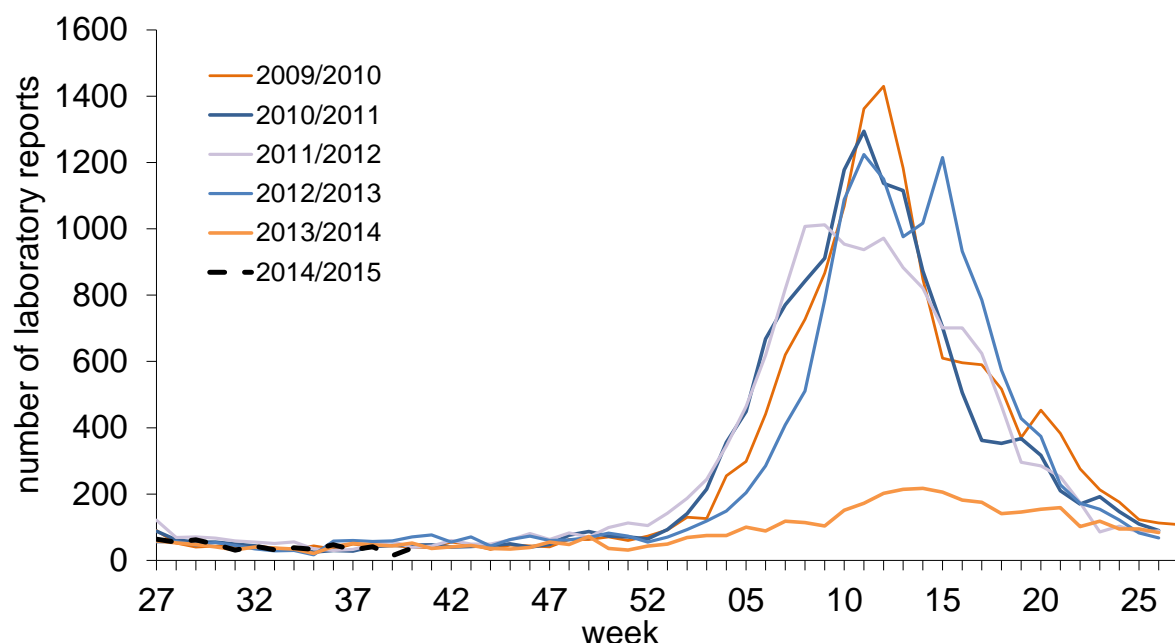
The percentage of GP practices in England included in the automated uploads increased from 84.1% in October 2013 to 89.0% in February 2014. It then fluctuated between 85.4% (August 2014) and 91.6% (May and June 2014) during the following seven months.

Laboratory reports of rotavirus infection

Rotavirus infection in the UK is seasonal occurring mostly in winter and early spring (January to March). Data on the number of laboratory reports of rotavirus in England have been collated for many years by PHE Gastrointestinal, Emerging and Zoonotic Infections Department (GEZI). For

the 2014/15 season to date (week 27 2014 to week 40 2014) the number of rotavirus laboratory reports in England are similar to the ten-season average for the same period in the seasons 2003/2004 to 2012/2013 (figure)[6]. For the 2013/14 season (week 27 2013 to week 26 2014) the number of rotavirus laboratory reports in England was 67 per cent lower than the 10-season average for the seasons 2003/2004 to 2012/13. The observed decrease in rotavirus activity 2013/2014 season is likely to be associated with the introduction of the oral vaccine in July 2013.

Figure 2. Seasonal comparison of laboratory reports of rotavirus 2009/2010 to 2014/15: England



Source: PHE GEZI

Note: In order to capture the winter peak of norovirus activity in one season, for reporting purposes, the rotavirus season runs from week 27 in year 1 to week 26 in year 2, i.e. week 27 2009 to week 26 2010, July to June

Rotavirus vaccines are already used to routinely vaccinate children in the US and many other countries. In the US, studies have shown that rotavirus-related hospital admissions for young children have been cut by more than two-thirds since rotavirus vaccination was introduced. The high vaccine coverage reported for the first cohort of children to be offered this vaccine routinely in England suggests that the UK could rapidly achieve a similar reduction in the burden of rotavirus.

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Table 1. Monthly rotavirus vaccine coverage for one dose (%) at 25 weeks of age by Area Team: England, October 2013 to September 2014

Area Team	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014
Cheshire, Warrington & Wirral (Q44)	37.9	78.4	77.7	77.8	93.2	91.7	91.5	90.8	91.4	92.0	92.9	94.5
Durham, Darlington & Tees (Q45)	21.3	39.3	41.3	39.5	93.7	94.5	96.1	95.1	95.5	95.4	95.9	96.4
Greater Manchester (Q46)	43.1	80.2	84.0	84.9	90.6	90.5	90.7	91.6	91.0	91.8	92.1	92.6
Lancashire (Q47)	45.8	92.4	91.5	93.2	90.9	93.1	93.9	94.6	95.3	94.6	95.2	96.1
Merseyside (Q48)	42.3	81.0	83.5	86.3	87.2	88.6	90.0	90.4	91.0	90.0	90.2	90.5
Cumbria, Northumberland, Tyne & Wear (Q49)	30.8	78.9	81.9	82.7	95.0	94.3	94.7	95.6	95.4	96.2	96.2	96.5
North Yorkshire & Humber (Q50)	23.0	39.9	41.5	40.6	95.5	95.3	95.3	95.8	95.0	95.7	96.2	96.1
South Yorkshire & Bassetlaw (Q51)	25.4	54.9	48.8	52.0	94.9	95.0	94.7	95.9	95.1	96.8	95.0	96.6
West Yorkshire (Q52)	12.0	25.9	24.4	24.9	94.5	94.2	94.7	95.2	93.9	94.4	94.9	95.3
Arden, Herefordshire & Worcestershire (Q53)	60.3	87.2	90.0	90.3	89.3	91.9	93.2	94.9	93.9	93.4	94.5	94.6
Birmingham & the Black Country (Q54)	28.7	67.0	71.4	72.2	90.0	89.7	90.9	91.4	92.8	92.9	93.3	93.6
Derbyshire & Nottinghamshire (Q55)	18.2	41.4	37.5	34.1	94.5	93.7	94.5	95.1	95.1	95.0	95.1	94.7
East Anglia (Q56)	22.9	43.0	41.8	41.1	94.5	93.2	95.8	94.3	94.6	95.1	95.6	95.5
Essex (Q57)	16.4	34.4	35.6	36.9	95.7	93.3	94.7	95.6	95.0	95.1	95.7	95.3
Hertfordshire & the South Midlands (Q58)	29.7	47.8	49.3	46.8	94.5	94.2	93.9	94.8	94.4	94.7	94.4	94.6
Leicestershire & Lincolnshire (Q59)	20.4	41.0	42.2	40.7	92.0	91.7	93.2	93.3	94.4	93.7	94.6	94.6
Shropshire & Staffordshire (Q60)	59.1	82.7	85.1	86.8	92.7	95.7	93.8	95.1	96.1	94.3	93.8	93.8
Bath, Gloucestershire, Swindon & Wiltshire (Q64)	25.4	43.2	42.8	45.2	92.9	93.9	94.1	93.4	93.3	94.8	94.4	94.7
Bristol, North Somerset, Somerset & South Gloucestershire (Q65)	50.7	85.3	86.8	87.5	89.9	88.4	88.7	92.2	92.3	91.5	92.4	92.4
Devon, Cornwall & Isles of Scilly (Q66)	38.1	66.8	67.2	67.5	85.8	88.1	89.3	90.9	88.1	90.8	89.5	84.3
Kent & Medway (Q67)	35.4	78.6	83.9	84.6	90.7	91.5	92.4	93.9	92.6	93.2	94.2	92.5
Surrey & Sussex (Q68)	42.0	66.5	68.3	70.2	91.3	90.5	92.7	93.2	93.0	93.1	92.4	92.8
Thames Valley (Q69)	40.3	86.4	90.4	90.2	92.7	92.2	92.5	94.2	93.5	93.4	92.9	93.7
Wessex (Q70)	44.7	71.1	70.2	74.3	93.3	93.2	93.8	95.0	94.6	95.2	95.6	93.5
London (Q71)	42.8	75.8	78.9	81.5	87.3	88.1	89.3	89.8	90.1	90.2	89.9	90.4
England	34.9	64.0	65.9	66.8	91.5	91.6	92.4	93.0	92.9	93.2	93.3	93.3
Monthly reported denominator	43,807	45,130	47,989	49,140	46,357	50,824	49,003	49,398	47,769	48,348	46,039	47,100

Table 2. Monthly rotavirus vaccine coverage for two doses (%) at 25 weeks of age by Area Team: England, October 2013 to September 2014

Area Team	Oct 2013	Nov 2013	Dec 2013	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014
Cheshire, Warrington & Wirral (Q44)	34.0	72.5	72.2	73.0	88.3	86.9	86.6	86.2	88.1	88.0	88.9	91.4
Durham, Darlington & Tees (Q45)	16.7	32.5	32.7	31.6	90.7	91.7	92.7	92.0	92.2	91.2	92.7	94.6
Greater Manchester (Q46)	37.6	73.1	76.9	77.9	84.2	84.3	84.9	85.6	84.2	86.2	86.0	86.9
Lancashire (Q47)	40.4	86.1	86.1	87.5	86.1	88.1	90.9	89.2	90.5	90.7	89.3	91.7
Merseyside (Q48)	36.0	73.4	76.7	78.0	78.4	82.0	82.5	83.1	85.1	82.5	83.1	82.8
Cumbria, Northumberland, Tyne & Wear (Q49)	27.3	74.2	76.9	77.1	90.1	89.4	90.3	90.1	92.6	92.4	92.6	92.1
North Yorkshire & Humber (Q50)	17.8	34.3	34.7	34.8	90.2	92.0	91.9	92.1	91.7	91.5	93.0	90.8
South Yorkshire & Bassetlaw (Q51)	21.2	46.6	40.8	42.4	90.9	90.8	89.5	91.0	90.0	91.7	90.6	91.4
West Yorkshire (Q52)	7.8	18.3	18.8	19.9	90.3	90.2	91.1	91.6	89.5	91.6	91.8	91.1
Arden, Herefordshire & Worcestershire (Q53)	53.8	80.2	84.5	85.7	83.9	87.7	88.9	90.5	89.4	88.5	88.7	89.8
Birmingham & the Black Country (Q54)	23.2	59.4	64.1	63.3	82.1	84.3	84.7	85.0	85.9	87.3	87.0	86.4
Derbyshire & Nottinghamshire (Q55)	13.1	31.8	29.2	26.5	89.8	89.2	90.3	91.0	91.1	91.2	91.3	89.5
East Anglia (Q56)	17.9	33.4	34.7	33.4	91.2	90.1	92.6	90.1	90.7	91.8	91.9	92.5
Essex (Q57)	12.0	27.3	29.3	29.8	91.5	89.2	90.9	91.4	91.4	92.0	92.8	91.6
Hertfordshire & the South Midlands (Q58)	23.7	37.3	39.8	37.5	90.9	91.1	91.1	91.9	91.7	91.6	91.0	91.9
Leicestershire & Lincolnshire (Q59)	16.2	31.7	33.1	33.9	89.2	88.1	90.4	90.0	91.1	90.7	90.8	91.7
Shropshire & Staffordshire (Q60)	54.6	77.1	81.1	82.0	87.9	91.8	90.3	91.4	92.5	90.1	90.9	89.4
Bath, Gloucestershire, Swindon & Wiltshire (Q64)	20.8	35.9	35.0	38.9	89.8	89.3	89.5	89.5	88.8	90.0	90.5	90.4
Bristol, North Somerset, Somerset & South Gloucestershire (Q65)	45.1	79.2	80.8	80.3	83.0	83.2	84.1	87.5	87.4	85.9	87.1	88.0
Devon, Cornwall & Isles of Scilly (Q66)	33.9	59.3	59.8	60.6	80.6	82.2	84.0	85.9	83.7	85.2	84.5	79.8
Kent & Medway (Q67)	30.9	70.9	77.9	78.6	83.8	86.5	86.4	89.2	87.0	87.6	88.9	87.1
Surrey & Sussex (Q68)	36.0	59.0	62.2	64.0	86.4	85.8	89.2	88.5	88.3	88.0	88.4	88.0
Thames Valley (Q69)	36.4	80.4	84.5	84.4	86.6	87.4	87.0	88.6	88.0	88.9	88.8	88.8
Wessex (Q70)	39.6	65.3	64.9	68.9	88.5	89.2	89.8	91.1	90.3	91.7	91.6	89.3
London (Q71)	36.1	67.6	70.1	73.1	79.8	80.6	82.3	82.6	82.2	83.3	82.6	82.8
England	29.6	56.4	58.8	59.7	86.0	86.5	87.5	87.9	87.7	88.3	88.4	88.1
Monthly reported denominator	43,807	45,130	47,989	49,140	46,357	50,824	49,003	49,398	47,769	48,348	46,039	47,100