

Annual HPV vaccine coverage in England in 2010/2011

Routine programme for school year 8 females (12 to 13 years old)

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Contact Details	<p>Sukamal Das Vaccine Tracking Information Officer Immunisation, Hepatitis and Blood Safety Dept. Health Protection Agency 61 Colindale Avenue NW9 5HT 020 8327 6440 http://immunisation.dh.gov.uk/</p>
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1. Executive summary

Human papillomavirus (HPV) vaccine was introduced into the United Kingdom (UK) immunisation programme from September 2008 for females aged 12 to 13 years and up to the age of 18 years.

To assess the coverage of HPV vaccine in England, aggregated primary care trust (PCT) level data were collected using the Department of Health (DH) ImmForm website. Data were collected on the number of females vaccinated by the 151 PCTs (including PCT-based care trusts). ImmForm is designed and managed by DH. The Health Protection Agency (HPA) coordinates and manages the collection and reporting of national data on behalf of DH.

This third annual report on HPV vaccine coverage in England presents data for the academic year 2010/11 (Table 1) and provides a comparison with vaccine coverage achieved during the first two years of the programme (academic years 2008/09 and 2009/10), and with published data from selected international HPV vaccine programmes.

Key points:

- During the first three years of the HPV programme over 65% of all females born between 1 September 1990 and 31 August 1998 completed the three-dose course of HPV vaccination (Table 1), with the highest coverage achieved in the youngest cohorts.
- The high level of coverage achieved in 2008/09 and 2009/10 for the routine cohort has been exceeded in 2010/11 with 84.2% of 12- to 13-year-old females completing the three-dose course.
- More than 700,000 doses of vaccine were given through the routine and mop-up programmes during 2010/11.

Table 1 HPV vaccine coverage (three-dose course) of all routine and catch-up cohorts as at September 2011.*

Cohorts			Vaccine coverage %		
Cohort (born)	Age in years in academic year 2010/11	Number in cohort	At least one dose	At least two doses	All three doses
2010/11 estimates					
Routine cohort 8 (1 Sep 1997 to 31 Aug 1998)	12-13	297392	88.9	87.5	84.2
Updated 2009/10 estimates [increase in % due to mop up during 2010/11]					
Routine cohort 7 & mop up (1 Sep 1996 to 31 Aug 1997)	13-14	304747	85.9 [+1.6]	84.1 [+1.8]	80.9 [+4.5]
Routine cohort 1 & mop up (1 Sep 1995 to 31 Aug 1996)	14-15	304062	89.4 [-0.4]	87.7 [0.0]	84.4 [+0.3]
Catch-up cohort 6 & mop up (1 Sep 1994 to 31 Aug 1995)	15-16	306007	81.9 [+4.4]	79.6 [+4.4]	75.7 [+7.2]
Catch-up cohort 5 & mop up (1 Sep 1993 to 31 Aug 1994)	16-17	310595	78.4 [+0.8]	75.8 [+0.8]	70.8 [+2.2]
Catch-up cohort 4 & mop up (1 Sep 1992 to 31 Aug 1993)	17-18	319065	59.8 [+1.7]	55.9 [+2.8]	48.1 [+6.4]
2009/10 estimates (not updated in 2010/11)					
Catch-up cohort 3 (1 Sep 1991 to 31 Aug 1992)	18-19	323826	55.6	50.3	38.9
Catch-up cohort 2 (1 Sep 1990 to 31 Aug 1991)	19-20	328004	66.1	59.3	47.4
2009/10 - 2010/11 estimates combined					
All cohorts 2008/09 - 2010/11 (1 Sep 1990 to 31 Aug 1998)	12-20	2493698	75.4	72.1	65.8

* Estimates have been updated (where possible) to include mop up vaccinations of eligible females that had not received the full course of vaccinations

2. Introduction

The programme

The aim of the HPV vaccination programme is to reduce the incidence of cervical cancer in women. The objective of the HPV vaccination programme is to provide three doses of HPV vaccine to females before they reach an age when the risk of HPV infection increases and they are put at risk of cervical cancer.¹

The programme was implemented following advice from the Joint Committee on Vaccination and Immunisation (JCVI). JCVI recommended that the HPV vaccine should be offered routinely to females aged 12 to 13 years.² The committee also recommended a time-limited catch up vaccination of females aged 13 to 17 years.²

From the 2008/09 academic year, all females aged 12 to 13 years (school year 8) were offered the HPV vaccine routinely. By the end of 2010/11, all PCTs in England had offered HPV vaccine to girls and young women aged 14 up to 17 years who were outside the routine cohort.³

This, the third annual report on HPV vaccine coverage in England, presents national, strategic health authority (SHA) and primary care trust (PCT) level vaccine coverage data for the routine cohort, girls aged 12 to 13 years in the academic year 2010/11 (Table 1). It provides a comparison with coverage achieved for the routine cohort during the first two years of the programme (academic years 2008/09 and 2009/10) and with published data from selected international HPV vaccine programmes. Updated national vaccine coverage estimates are given for females who were born between September 1992 and August 1997 (cohorts 1, 4, 5, 6 and 7 who were aged 13 up to 18 years during 2010/11) (Table 1). The report also summarises the methods used for data collection, validation and analysis.

The disease

HPV is one of the most common sexually transmitted infections. It is the main cause of cervical cancer. There have been nearly 3000 cases of cervical cancer every year in the UK in recent years. HPV types 16 and 18 are associated with over 70% of cases worldwide,⁴ and around 80% of cases in England.⁵ It has been estimated that immunising females before they become infected will reduce cases of cervical cancer and is expected to prevent at least 60% of cases in the UK in due course.⁶

The vaccine

The HPV vaccine used routinely in the UK immunisation programme for all three years (2008/9 to 2010/11) is Cervarix®, which protects against HPV types 16 and 18. Three doses of vaccine are required.

3. Methods

Data

Data sources

The HPV vaccine coverage data were collected via the ImmForm website. The ImmForm system provides a manual online data submission function for PCTs, together with relevant survey information and guidance. It is designed and managed by DH. The HPA coordinates and manages the collection, validation, reporting and analysis of these data on behalf of DH. A more detailed explanation of the website can be found in Appendix 1.

During 2010/11, PCTs submitted monthly cumulative data for females who had received at least one, at least two, or all three doses of vaccine in the routine cohort (school year 8, 12 to 13 year olds, cohort 8). The denominator for each PCT was estimated and fixed for the monthly collections, based on 2009/10 PCT school-roll data for each school year received from the Department for Education (DfE) (formerly the Department for Children, Schools and Families). The estimate was modified as appropriate, if requested by a PCT. The monthly surveys were considered as provisional, estimated data.

The annual survey is considered as the final data and provided the data for this report.

PCTs completed the annual survey on the ImmForm website at the end of the 2010/11 academic year. Where possible, PCTs were required to provide an actual denominator, to replace the estimated denominator used in the monthly surveys for the routine cohort (school year 8). Appropriate algorithms were developed for either a schools- or GP-based programme according to the guidance on completing the annual return provided on the DH website.⁷ The annual survey also required PCTs to provide a breakdown of the number of vaccinations given in different settings (i.e. school/GP practice/clinic, etc.) for the routine cohort. Additionally, where possible, PCTs provided an update on the vaccination of cohorts 1 and 7 (the previous two routine cohorts), and cohorts 4, 5, and 6 (youngest catch-up cohorts) from the 2008/09 and 2009/10 campaigns.

Data quality

All 151 PCTs in England submitted annual returns. Any PCT that provided annual denominators that varied from the original estimated monthly denominators or final population estimate for the 2009/10 by +/- 5% was contacted via email and asked to verify their data as part of data validation and quality assurance. The results of this process are provided in Appendix 2.

Definitions

The 2010/11 cohorts

During the third year of the HPV vaccination campaign, only one cohort was targeted for vaccination:

- **the routine cohort** (school year 8): females aged 12 to 13 years, born between 1 September 1997 and 31 August 1998.

In addition, vaccine continued to be offered to girls up to 17 years of age who had not received or completed their HPV vaccination by the end of 2009/10.

- **four 'mop up' cohorts:** the routine cohorts of 2008/09 and 2009/10, aged 13 to 15 in 2010/11 (school years 9 and 10), and the catch-up cohorts aged 15 to 18 in 2010/11 (school years 11 to 13,) born between 1 September 1992 and 31 August 1997.

Annual survey denominator

Depending on the type of programme the PCT ran, annual denominators for each cohort could be derived from one of three methods:

schools-based programme denominator: the school roll for the PCT as of 31 August 2011 was used. This was defined as all females in the appropriate school year attending school in the PCT (including those from the PCT's 'responsible population' and other PCTs), PLUS females in the PCT's 'responsible population' not otherwise offered the vaccine, such as those not on any school roll or those attending a school in another PCT without a schools-based programme.

non-schools-based programme denominator: all females in the appropriate birth cohort as of 31 August 2011 from the PCT's 'responsible population' only, EXCLUDING those on the school roll of neighbouring PCTs with schools-based programmes.

schools/non-schools mixed approach denominator: all females in the appropriate birth cohort as of 31 August 2011 from the PCT's 'responsible population' only, PLUS females not registered in the PCT that attend schools targeted for vaccination and EXCLUDING those on the school roll of neighbouring PCTs with similar schools based programmes.

A more detailed description of how the annual denominator was determined is available via the DH immunisation website.⁸

The PCT 'responsible population' for the HPV coverage data is defined as:

- all females in the appropriate age cohort registered with a GP practice whose practice forms part of the PCT, regardless of where they are resident, plus

- any females in the appropriate age cohort not registered with a GP, who are resident within the PCT's statutory geographical boundary.

For the purposes of the data collection, the term 'schools' includes all schools managed by a local authority, voluntary or private agents, grant maintained schools, sixth form colleges, pupil referral units, young offender units and residential units. An up-to-date list of educational establishments in England and Wales, maintained by the DfE can be found at www.edubase.gov.uk

To provide an estimate of the total number of girls eligible for vaccination since the programme started in September 2008, the denominators for cohorts 1 to 8 were summed to give an overall denominator for 2008 to 2011 (Table 1).

Annual survey numerators

For cohorts 1, 4, 5, 6, 7 and 8, the numbers of females who received at least one, at least two, or all three doses, within the period of 1 September 2008 to 31 August 2011 were counted. These were used as numerators to calculate vaccine coverage by dose, using the appropriate denominator as defined above.

To minimise the numbers of missed or double counted females, providing a more accurate estimate of HPV coverage, the numerators were corrected (where possible) by PCTs to record the number of vaccinations given to females included in the denominator irrespective of who delivered the vaccinations.

A detailed description of how annual numerators were determined is available via the DH immunisation website.⁸

The numerators for the setting in which vaccinations were given (e.g. school, GP practice, community clinic, or other settings) for the routine cohort were a simple count of doses administered per location, irrespective of whether dose one, dose two or dose three.

Coverage

The first annual report on HPV for 2008/09 used the term 'uptake' to describe the proportion of the eligible population who are vaccinated. In the 2009/10 report, the term 'uptake' was replaced with 'coverage' as this is more widely used in reporting the proportion of a target population known to have received the appropriate vaccine(s), and this term has also been used throughout this year's report.

User feedback

The DH and the HPA welcome feedback on this publication. This can be done either via the ImmForm website login (use the feedback facility, selecting HPV surveys) or alternatively email hpv@hpa.org.uk for comments on the data collection and reporting, immform@dh.gsi.gov.uk for comments on the website or other technical issues, or dhmail@dh.gsi.gov.uk for comments regarding policy.

4. Analysis and commentary

The data tables (pages 18-21) show the reported annual denominators and vaccine coverage of the first, second and third dose of HPV vaccine for females in England by SHA and PCT for the routine cohort in 2010/11. The range of vaccine coverage by dose is given at the national and SHA levels.

Routine cohort 2010/11

In England, 84.2% of females aged 12 to 13 years who were eligible to routinely receive HPV vaccine in the academic year 2010/11 completed the three dose course (PCT range 56.4% to 95.3%): 87.5% received at least two doses and 88.9% received at least one dose (Table 1).

Coverage varied by SHA across England ranging from 88% (North West) to 75.6% (London) for third dose coverage. First dose coverage ranged from 92.2% to 80.1%; second dose from 91.4% to 78.9% (Figure 1).

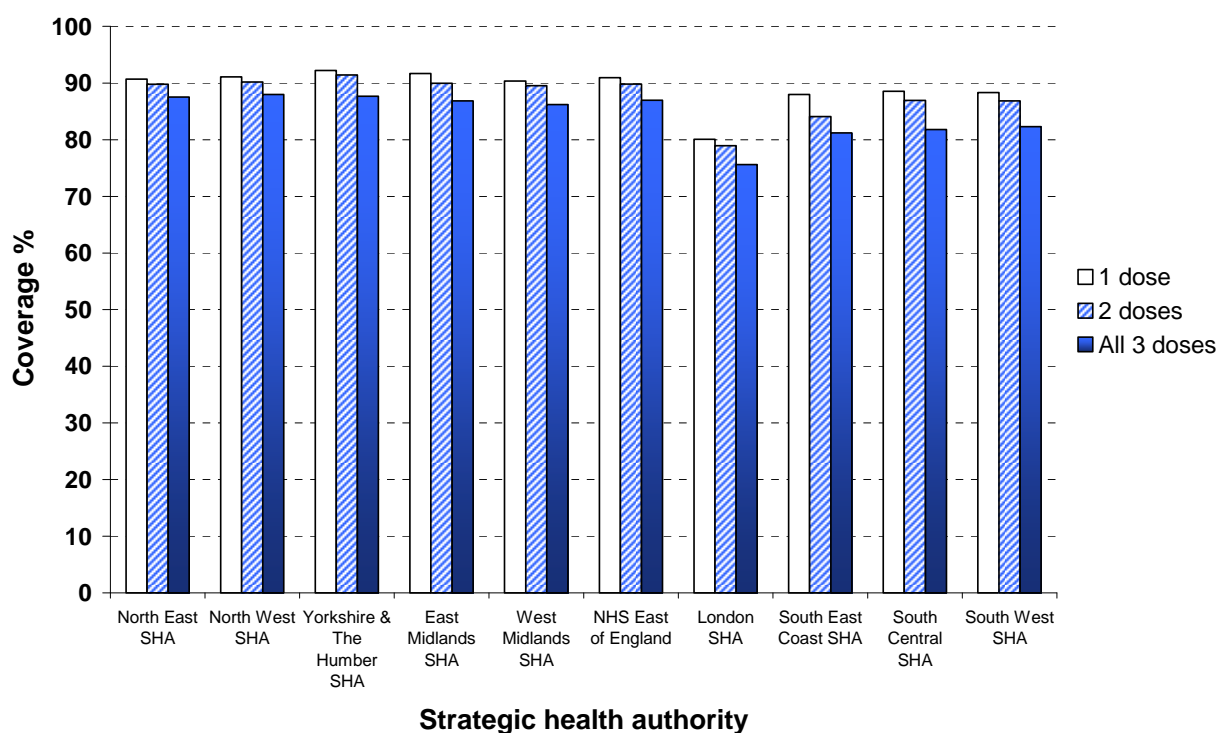


Figure 1. HPV vaccine coverage for 12- to 13-year-old females in England by dose and SHA in 2010/11

Setting for routine HPV vaccination delivery

Data were also provided for the routine cohort on the setting in which vaccinations were given (e.g. school, GP practice, community clinic, or other settings). All but two PCTs vaccinated the routine cohort using a schools-based programme, although a small proportion of late doses were given in general practice. Altogether, 88.6% of vaccinations were delivered in schools, and only 8.5% in GP practices. The majority of these were reported from two PCTs that chose to offer HPV vaccine through GP practices rather than in schools (Derbyshire County and Cornwall and the Isles of Scilly). A further 2.6% of 12 to 13 year olds were vaccinated in health clinics, and 0.3% were vaccinated in 'other' settings.

Comparison of vaccine coverage in 2008/09, 2009/10 and 2010/11 for the routine cohort (school year 8)

By August 2011, the three-dose HPV vaccine coverage in the 2010/11 routine cohort was 84.2%, the highest achieved in the three years of the HPV vaccination programme. This figure is 7.8% higher than that achieved for the 2009/10 routine cohort and 4.1% higher than that achieved for the 2008/09 cohort, when evaluated at the end of the academic year.^{9,10} Factors that may have helped improve vaccine coverage in the 2010/11 academic year include:

- **the scale of the programme** – during 2010/11 only one cohort of females was being offered HPV for the first time (school year 8) plus PCTs were offering 'mop up' vaccine to unvaccinated or partially vaccinated females in school years 9 to 13 (aged 13 up to 17 years). In 2009/10, PCTs were vaccinating five school year cohorts, one routine cohort and four school year cohorts in the catch-up programme. In the previous and first year (2008/09) two school year cohorts were targeted.^{9,10}
- **normalisation of the programme** – 2010/11 was the third year HPV vaccine was routinely offered to school year 8 females. Refinement of the delivery of the routine programme and increased awareness of this vaccine in the target cohort may have contributed to improved coverage as has been observed when new vaccines have been added to the childhood vaccination programme.

A comparison of provisional monthly coverage data collected over the course of the first three years of the programme shows that in 2010/11 a sharper increase in coverage for each dose was achieved compared with the previous two years. This strongly suggests that the routine programme was more efficiently delivered and that the first reason above is probably responsible for the higher coverage achieved for each dose by the end of the academic year (Figure 2).

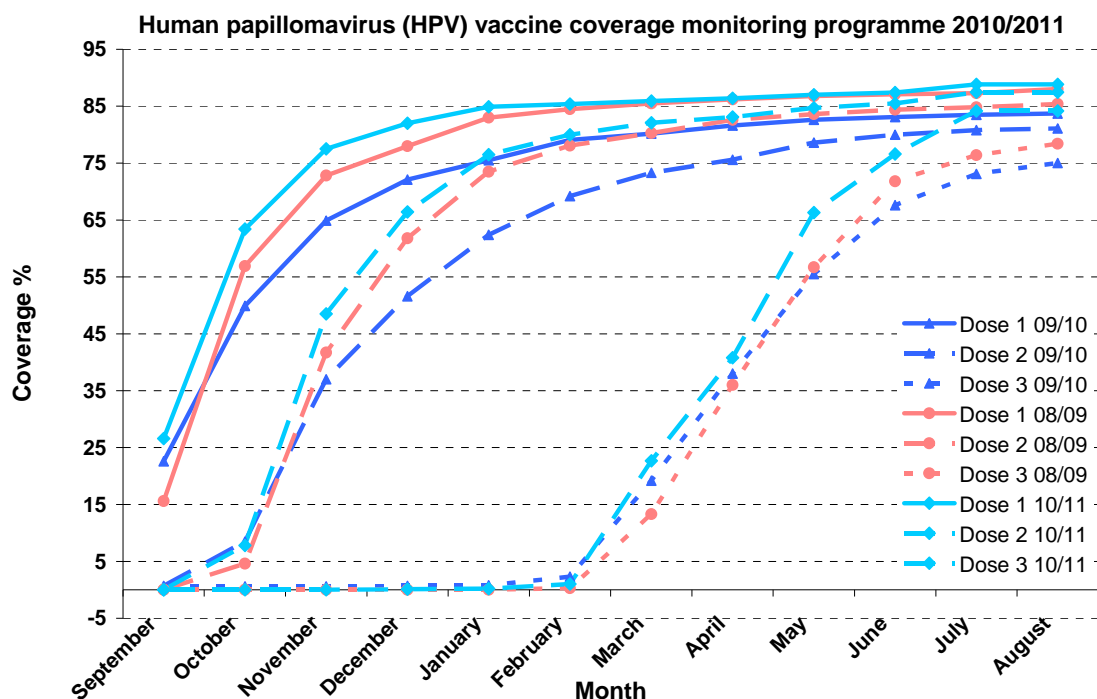


Figure 2. Comparison of HPV vaccine coverage for routine cohorts in 2008/09, 2009/10 and 2010/11 (provisional monthly data)

PCT coverage

Compared with 2008/09 and 2009/10, far more PCTs recorded high three-dose coverage in the routine cohort: three-dose coverage was 90% or greater for 43 (28.5%), between 80% and 89% for 73 (48.3%), and between 70% and 79% for 26 (17.2%). Only nine PCTs (5.9%) reported coverage under 70% and none reporting coverage below 50% (lowest 56%) (Figure 3).

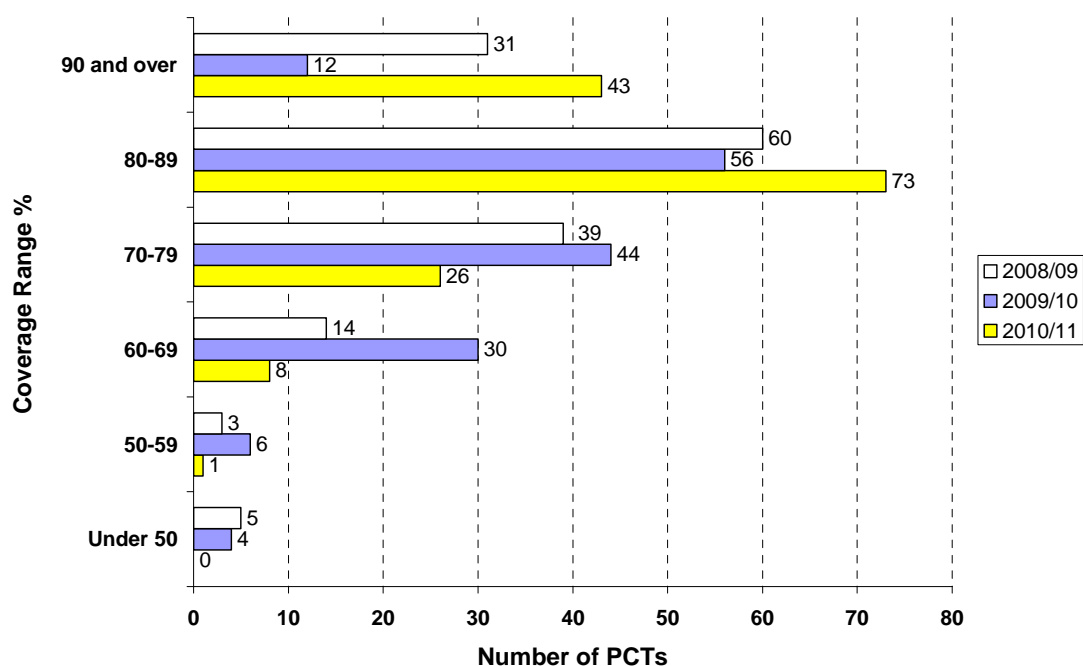


Figure 3. PCT coverage for third dose in the routine cohort (12 to 13 year olds) in 2008/09, 2009/10 (n=152) and 2010/11 (n=151)

Mop-up vaccinations of routine and catch-up cohorts: updated estimates of vaccine coverage for 2008/09 and 2009/10

Some females who were due to receive the complete course of HPV vaccinations during 2008/09 and 2009/10 actually received vaccine during 2010/11 in 'mop up' sessions. To quantify this, PCTs also provided updated annual coverage data on the two previous routine cohorts (the 2008/09 school year 8, born 1 September 1995 to 31 August 1996, and the 2009/10 school year 8, born 1 September 1996 to 31 August 1997), and three catch-up cohorts currently aged up to 18 years (born 1 September 1992 to 31 August 1995).

Compared with vaccine coverage achieved at the end of 2009/10,¹⁰ 2010/11 third dose coverage increased by 4.5% to 80.9% for those currently aged 13 to 14 years, by 0.3% to 84.4% for those aged 14 to 15 years, by 7.2% to 75.7% for those aged 15 to 16 years, by 2.2% to 70.8% for those aged 16 to 17 years, and by 6.4% to 48.1% for those aged 17 to 18 years (Table 1).

Transfer of HPV vaccination details to permanent health records

It is crucial that PCTs record the HPV vaccine status of girls and young women on the NHAIS (Exeter System), in addition to the local recording on Child Health Information Systems (CHIS) and GP clinical records. This information will be essential when the women are first invited for cervical screening at age 25, as by the time they become eligible, the evidence may point to different screening management regimens based on HPV vaccination status. There is wide variation in recording of the data nationally on the NHAIS, with the highest performing PCTs showing registration of over 70% and the lowest virtually 0%.¹¹

Annual UK HPV vaccine coverage 2010/11

Annual HPV vaccine coverage data for the routine cohort of females aged 12 to 13 years are available from equivalent reporting systems in all countries in the UK as shown in Table 2.¹²⁻¹⁴ Published data for 2009/10 are shown in brackets.¹⁰

Table 2. Annual UK HPV vaccine coverage for females aged 12 to 13 years (school year 8) by country in 2010/11 (2009/10)

Country	2010/11 HPV vaccine coverage %		
	At least one dose	At least two doses	Three doses
England	88.9 (84.3)	87.5 (82.3)	84.2 (76.4)
Scotland	91.8 (92.6)	90.2 (91.1)	81.0 (86.9)
Wales	88.4 (84.5)	86.8 (82.6)	82.5 (77.3)
Northern Ireland	87.4 (86.5)	86.7 (85.3)	84.6 (83.4)
UK	89.0 (85.0)	87.6 (83.1)	83.8 (77.5)

International HPV vaccine coverage

Eighteen European countries, four countries in the Americas (United States, Canada, Panama and Mexico), Australia, New Zealand and some low- and middle-income countries have now introduced HPV vaccination programmes.^{15,16} Different implementation dates for the introduction of the routine programme, vaccine schedules, target age groups, inclusion/exclusion of a catch-up programme, and methodology for assessing vaccine coverage make direct comparisons of vaccine coverage difficult. However, where estimates have been published, coverage of HPV vaccine for the routine England and UK programmes compares very favourably. Recently published data from Europe shows that in Spain (data from 18 of the 19 regions), the reported coverage during the first year of the programme was 77.3% for three doses in females aged 11 to 14 years¹⁷, in Denmark three-dose coverage for 12-year-old females was 79%¹⁵, and in Norway three-dose coverage was 63% for 11- to 12-year-old females¹⁵. In Panama, coverage in 2009 for three doses among females aged 10 years was 46%.¹⁸

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7. Data table

Table 3. Annual data, as submitted by PCTs, for first, second and third dose vaccine coverage by 31 August 2011

<u>HPV vaccination programme: annual data, as submitted by PCTs, for first, second and third dose vaccine coverage by 31 August 2011</u>							
Routine cohort, school year 8 girls (12 to 13 year olds)							
Organisation name	Total no. in cohort 8	Doses given since 1 April 2010					
		Dose one		Doses one and two		All three doses	
		Number	%	Number	%	Number	%
England	297392	264286	88.9	260157	87.5	250295	84.2
National vaccine uptake range			60.6-98.6		59.1-97.9		56.4-95.3
North East SHA	14355	13017	90.7	12885	89.8	12562	87.5
SHA vaccine uptake range			85.2-95.6		84.5-95.3		80.5-93.7
NEWCASTLE PCT	1405	1249	88.9	1219	86.8	1184	84.3
NORTH TYNESIDE PCT	1083	975	90.0	974	89.9	940	86.8
HARTLEPOOL PCT	572	530	92.7	530	92.7	516	90.2
STOCKTON-ON-TEES TEACHING PCT	1056	953	90.2	926	87.7	903	85.5
DARLINGTON PCT	591	561	94.9	555	93.9	544	92.0
GATESHEAD PCT	1119	953	85.2	946	84.5	901	80.5
SOUTH TYNESIDE PCT	826	753	91.2	740	89.6	735	89.0
SUNDERLAND TEACHING PCT	1597	1418	88.8	1406	88.0	1370	85.8
MIDDLESBROUGH PCT	742	706	95.1	698	94.1	670	90.3
COUNTY DURHAM PCT	2836	2508	88.4	2491	87.8	2459	86.7
REDCAR AND CLEVELAND PCT	820	778	94.9	772	94.1	740	90.2
NORTHUMBERLAND CARE TRUST	1708	1633	95.6	1628	95.3	1600	93.7
North West SHA	40719	37093	91.1	36724	90.2	35829	88.0
SHA vaccine uptake range			78.7-95.7		76.9-95.4		73.4-93.7
SALFORD PCT	1213	1011	83.3	998	82.3	978	80.6
STOCKPORT PCT	1665	1553	93.3	1539	92.4	1505	90.4
ASHTON, LEIGH AND WIGAN PCT	1765	1515	85.8	1496	84.8	1428	80.9
BLACKPOOL PCT	867	682	78.7	667	76.9	636	73.4
BOLTON PCT	1808	1698	93.9	1665	92.1	1474	81.5
WARRINGTON PCT	1207	1135	94.0	1123	93.0	1098	91.0
KNOWSLEY PCT	611	570	93.3	565	92.5	554	90.7
OLDHAM PCT	1512	1382	91.4	1373	90.8	1361	90.0
BURY PCT	1181	1078	91.3	1066	90.3	1031	87.3
TAMESIDE AND GLOSSOP PCT	1537	1462	95.1	1458	94.9	1440	93.7
CUMBRIA TEACHING PCT	2782	2530	90.9	2470	88.8	2438	87.6
NORTH LANCASHIRE TEACHING PCT	1723	1525	88.5	1506	87.4	1480	85.9
CENTRAL LANCASHIRE PCT	2600	2457	94.5	2437	93.7	2395	92.1
EAST LANCASHIRE TEACHING PCT	2183	2053	94.0	2043	93.6	2035	93.2
SEFTON PCT	1776	1611	90.7	1607	90.5	1599	90.0

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WIRRAL PCT	1945	1862	95.7	1856	95.4	1820	93.6
LIVERPOOL PCT	2501	2166	86.6	2135	85.4	2069	82.7
HALTON AND ST HELENS PCT	1608	1499	93.2	1482	92.2	1452	90.3
WESTERN CHESHIRE PCT	1222	1132	92.6	1123	91.9	1105	90.4
CENTRAL AND EASTERN CHESHIRE PCT	2699	2521	93.4	2513	93.1	2497	92.5
HEYWOOD, MIDDLETON AND ROCHDALE PCT	1306	1208	92.5	1207	92.4	1187	90.9
TRAFFORD PCT	1442	1264	87.7	1260	87.4	1260	87.4
MANCHESTER PCT	2534	2236	88.2	2195	86.6	2098	82.8
BLACKBURN WITH DARWEN TEACHING CARE TRUST PLUS	1032	943	91.4	940	91.1	889	86.1
Yorkshire & The Humber SHA	29946	27620	92.2	27381	91.4	26253	87.7
SHA vaccine uptake range			88.0-97.9		87.1-97.5		80.6-95.1
NORTH LINCOLNSHIRE PCT	926	851	91.9	846	91.4	800	86.4
ROTHERHAM PCT	1689	1521	90.1	1505	89.1	1425	84.4
CALDERDALE PCT	1404	1295	92.2	1259	89.7	1166	83.0
BARNSELY PCT	1151	1127	97.9	1122	97.5	1074	93.3
LEEDS PCT	3949	3774	95.6	3759	95.2	3633	92.0
KIRKLEES PCT	2465	2169	88.0	2148	87.1	2078	84.3
WAKEFIELD DISTRICT PCT	2037	1903	93.4	1883	92.4	1824	89.5
SHEFFIELD PCT	2801	2632	94.0	2627	93.8	2602	92.9
DONCASTER PCT	1683	1612	95.8	1602	95.2	1600	95.1
NORTH YORKSHIRE AND YORK PCT	4599	4112	89.4	4050	88.1	3707	80.6
EAST RIDING OF YORKSHIRE PCT	2040	1895	92.9	1881	92.2	1775	87.0
HULL TEACHING PCT	1352	1232	91.1	1209	89.4	1120	82.8
BRADFORD AND AIREDALE TEACHING PCT	3000	2711	90.4	2704	90.1	2670	89.0
NORTH EAST LINCOLNSHIRE CARE TRUST PLUS	850	786	92.5	786	92.5	779	91.6
East Midlands SHA	25183	23130	91.8	22699	90.1	21882	86.9
SHA vaccine uptake range			87.4-95.0		85.7-93.6		73.7-92.6
NOTTINGHAM CITY PCT	1495	1353	90.5	1341	89.7	1302	87.1
BASSETLAW PCT	660	599	90.8	580	87.9	580	87.9
DERBYSHIRE COUNTY PCT	3795	3386	89.2	3279	86.4	2797	73.7
DERBY CITY PCT	1505	1408	93.6	1394	92.6	1373	91.2
NOTTINGHAMSHIRE COUNTY TEACHING PCT	3558	3379	95.0	3331	93.6	3218	90.4
LINCOLNSHIRE TEACHING PCT	4227	3788	89.6	3748	88.7	3647	86.3
LEICESTERSHIRE COUNTY AND RUTLAND PCT	4054	3796	93.6	3783	93.3	3752	92.6
LEICESTER CITY PCT	1710	1495	87.4	1465	85.7	1453	85.0
NORTHAMPTONSHIRE TEACHING PCT	4179	3926	93.9	3778	90.4	3760	90.0
West Midlands SHA	32188	29084	90.4	28817	89.5	27743	86.2
SHA vaccine uptake range			75.1-96.9		74.2-95.0		71.3-92.3
HEREFORDSHIRE PCT	1010	841	83.3	830	82.2	761	75.3
SOUTH BIRMINGHAM PCT	2541	2357	92.8	2339	92.1	2258	88.9
SHROPSHIRE COUNTY PCT	1731	1571	90.8	1565	90.4	1532	88.5
WALSALL TEACHING PCT	1724	1617	93.8	1603	93.0	1519	88.1
COVENTRY TEACHING PCT	1826	1614	88.4	1604	87.8	1552	85.0
TELFORD AND WREKIN PCT	977	890	91.1	883	90.4	864	88.4
WOLVERHAMPTON CITY PCT	1370	1241	90.6	1211	88.4	1155	84.3
HEART OF BIRMINGHAM TEACHING PCT	1604	1204	75.1	1190	74.2	1144	71.3
DUDLEY PCT	1906	1770	92.9	1762	92.4	1760	92.3

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SANDWELL PCT	1601	1552	96.9	1521	95.0	1420	88.7
BIRMINGHAM EAST AND NORTH PCT	2135	1725	80.8	1711	80.1	1663	77.9
NORTH STAFFORDSHIRE PCT	1222	1115	91.2	1115	91.2	1101	90.1
STOKE ON TRENT PCT	1277	1197	93.7	1189	93.1	1160	90.8
SOUTH STAFFORDSHIRE PCT	3443	3210	93.2	3194	92.8	3079	89.4
WORCESTERSHIRE PCT	3154	2933	93.0	2900	91.9	2836	89.9
WARWICKSHIRE PCT	3045	2747	90.2	2728	89.6	2597	85.3
SOLIHULL PCT	1622	1500	92.5	1472	90.8	1342	82.7
NHS East of England	33977	30904	91.0	30521	89.8	29554	87.0
SHA vaccine uptake range			83.3-98.6		83.0-97.9		77.4-95.3
LUTON PCT	1209	1041	86.1	1041	86.1	1002	82.9
SOUTH EAST ESSEX PCT	2254	1877	83.3	1871	83.0	1783	79.1
BEDFORDSHIRE PCT	2433	2315	95.2	2258	92.8	2226	91.5
PETERBOROUGH PCT	1159	1052	90.8	1048	90.4	1009	87.1
CAMBRIDGESHIRE PCT	3331	3034	91.1	3026	90.8	3023	90.8
NORFOLK PCT	4128	3706	89.8	3644	88.3	3197	77.4
GREAT YARMOUTH AND WAVENEY PCT	1175	1098	93.4	1093	93.0	1078	91.7
SUFFOLK PCT	3367	3127	92.9	3114	92.5	3087	91.7
WEST ESSEX PCT	1441	1309	90.8	1296	89.9	1230	85.4
NORTH EAST ESSEX PCT	1709	1685	98.6	1673	97.9	1628	95.3
MID ESSEX PCT	1941	1911	98.5	1762	90.8	1759	90.6
SOUTH WEST ESSEX PCT	2560	2363	92.3	2357	92.1	2325	90.8
HERTFORDSHIRE PCT	7270	6386	87.8	6338	87.2	6207	85.4
London SHA	41342	33105	80.1	32635	78.9	31252	75.6
SHA vaccine uptake range			60.6-94.3		59.1-93.1		56.4-89.8
HAVERING PCT	1467	1301	88.7	1292	88.1	1251	85.3
KINGSTON PCT	1026	664	64.7	652	63.5	627	61.1
BROMLEY PCT	1986	1667	83.9	1646	82.9	1607	80.9
GREENWICH TEACHING PCT	1229	1026	83.5	1002	81.5	945	76.9
BARNET PCT	1853	1206	65.1	1173	63.3	1141	61.6
HILLINGDON PCT	1666	1416	85.0	1407	84.5	1390	83.4
ENFIELD PCT	1695	1268	74.8	1244	73.4	1209	71.3
BARKING AND DAGENHAM PCT	1042	870	83.5	865	83.0	852	81.8
CITY AND HACKNEY TEACHING PCT	1263	766	60.6	747	59.1	712	56.4
TOWER HAMLETS PCT	1270	1053	82.9	1018	80.2	992	78.1
NEWHAM PCT	1653	1492	90.3	1486	89.9	1484	89.8
HARINGEY TEACHING PCT	1199	901	75.1	888	74.1	854	71.2
HAMMERSMITH AND FULHAM PCT	905	691	76.4	680	75.1	674	74.5
EALING PCT	1624	1287	79.2	1273	78.4	1243	76.5
HOUNSLOW PCT	1304	1084	83.1	1074	82.4	1051	80.6
BRENT TEACHING PCT	1442	1239	85.9	1234	85.6	1192	82.7
HARROW PCT	1145	896	78.3	891	77.8	871	76.1
CAMDEN PCT	1046	757	72.4	745	71.2	703	67.2
ISLINGTON PCT	735	693	94.3	684	93.1	651	88.6
CROYDON PCT	1979	1595	80.6	1572	79.4	1500	75.8
KENSINGTON AND CHELSEA PCT	585	384	65.6	378	64.6	362	61.9
WESTMINSTER PCT	987	805	81.6	788	79.8	780	79.0
LAMBETH PCT	974	816	83.8	814	83.6	799	82.0
SOUTHWARK PCT	1341	1025	76.4	980	73.1	852	63.5
LEWISHAM PCT	1237	899	72.7	888	71.8	851	68.8
WANDSWORTH PCT	1114	892	80.1	881	79.1	857	76.9

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RICHMOND AND TWICKENHAM PCT	946	821	86.8	816	86.3	699	73.9
SUTTON AND MERTON PCT	2150	1851	86.1	1844	85.8	1732	80.6
REDBRIDGE PCT	1557	1379	88.6	1353	86.9	1264	81.2
WALTHAM FOREST PCT	1350	1055	78.1	1042	77.2	1002	74.2
BEXLEY CARE TRUST	1572	1306	83.1	1278	81.3	1105	70.3
South East Coast SHA	26277	23119	88.0	22092	84.1	21332	81.2
SHA vaccine uptake range			83.9-91.5		77.4-90.8		72.7-90.4
MEDWAY PCT	1715	1463	85.3	1421	82.9	1333	77.7
BRIGHTON AND HOVE CITY PCT	1275	1137	89.2	1130	88.6	1083	84.9
SURREY PCT	6686	5787	86.6	5516	82.5	5434	81.3
WEST SUSSEX PCT	4508	4050	89.8	4022	89.2	3914	86.8
EAST SUSSEX DOWNS AND WEALD PCT	1893	1725	91.1	1670	88.2	1589	83.9
HASTINGS AND ROTHER PCT	1125	1029	91.5	1021	90.8	1017	90.4
WEST KENT PCT	4448	4044	90.9	3733	83.9	3596	80.8
EASTERN AND COASTAL KENT PCT	4627	3884	83.9	3579	77.4	3366	72.7
South Central SHA	23942	21195	88.5	20809	86.9	19637	82.0
SHA vaccine uptake range			79.9-93.8		78.7-93.0		71.1-90.9
MILTON KEYNES PCT	1429	1263	88.4	1238	86.6	1229	86.0
PORTSMOUTH CITY TEACHING PCT	1053	988	93.8	967	91.8	893	84.8
SOUTHAMPTON CITY PCT	1194	954	79.9	940	78.7	849	71.1
HAMPSHIRE PCT	7583	6677	88.1	6567	86.6	5737	75.7
BUCKINGHAMSHIRE PCT	3204	2823	88.1	2757	86.0	2757	86.0
OXFORDSHIRE PCT	3482	3238	93.0	3198	91.8	3164	90.9
BERKSHIRE WEST PCT	2728	2478	90.8	2410	88.3	2370	86.9
BERKSHIRE EAST PCT	2530	2082	82.3	2045	80.8	1973	78.0
ISLE OF WIGHT NHS PCT	739	692	93.6	687	93.0	665	90.0
South West SHA	29463	26019	88.3	25594	86.9	24251	82.3
SHA vaccine uptake range			75.8-97.2		74.2-96.2		64.4-94.8
SOUTH GLOUCESTERSHIRE PCT	1545	1335	86.4	1315	85.1	1262	81.7
PLYMOUTH TEACHING PCT	1489	1268	85.2	1261	84.7	1141	76.6
BATH AND NORTH EAST SOMERSET PCT	1199	1047	87.3	1036	86.4	1004	83.7
SWINDON PCT	1144	1101	96.2	1100	96.2	1085	94.8
NORTH SOMERSET PCT	1065	1035	97.2	1023	96.1	1005	94.4
GLOUCESTERSHIRE PCT	3415	3050	89.3	2981	87.3	2940	86.1
BRISTOL PCT	2120	1607	75.8	1572	74.2	1464	69.1
WILTSHIRE PCT	2780	2583	92.9	2574	92.6	2493	89.7
SOMERSET PCT	2951	2775	94.0	2735	92.7	2618	88.7
DORSET PCT	2400	2185	91.0	2156	89.8	1994	83.1
BOURNEMOUTH AND POOLE TEACHING PCT	1668	1470	88.1	1460	87.5	1415	84.8
CORNWALL AND ISLES OF SCILLY PCT	2951	2391	81.0	2280	77.3	1900	64.4
DEVON PCT	3987	3485	87.4	3436	86.2	3329	83.5
TORBAY CARE TRUST	749	687	91.7	665	88.8	601	80.2

Footnote: Derbyshire County and Cornwall and Isles of Scilly PCTs used GP-based delivery

8. Appendices

Appendix 1 ImmForm website

The HPV vaccine-uptake collection was facilitated by the ImmForm website. The ImmForm system provides a manual online data submission function for PCTs, together with relevant survey information and guidance, designed and managed by DH. The HPA coordinates and manages the collection, reporting and analysis of national data on behalf of DH. The website can be accessed at www.immform.dh.gov.uk. Further information about the ImmForm website can be found at www.dh.gov.uk/en/Publichealth/Immunisation/immform/index.htm.

All returns from PCTs were web-based (manual entry online) and no paper returns were accepted. An online version of the data entry survey page was made available to GPs to allow them to complete and send it to their PCT data-provider for manual submission via the ImmForm website.

A letter sent to all PCT HPV data-providers before the start of the monitoring period outlined the collection and dataset requirements. In addition, PCTs and GPs were sent a user guide on the HPV survey, with a 'questions and answers' section and a step-by-step guide on how to log-on, enter data and change their password. The user guide was updated and re-issued for the 2010/11 campaign and can be found at: www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_120004.pdf.

The website was open to GPs and PCTs at the start of each month, in line with the schedule shown in Table 4. PCTs and GPs had ten working days to provide cumulative data on their vaccine uptake.

Data entered for each collection month was cumulative. GPs and PCTs could view their data at any time but only had read/write access when the survey was open for data submission. PCTs could see which practices had entered (or failed to enter) data by running a non-responder report at any time before the data entry window closed for each monthly collection, enabling follow-up of any outstanding data. In addition, PCTs could extract data into Excel for analysis, view uptake rates and compare its own performance anonymously with other PCTs/SHAs, validate the data on point of entry and correct any errors before making a final submission.

Table 4. Dates for data collection for PCTs and GP practices**Monthly survey**

Month	Start collection	End collection
September 2010	Friday 01 October 2010	Thursday 14 October 2010
October 2010	Monday 01 November 2010	Friday 12 November 2010
November 2010	Wednesday 01 December 2010	Tuesday 14 December 2010
December 2010	Tuesday 04 January 2011	Monday 17 January 2011
January 2011	Tuesday 01 February 2011	Monday 14 February 2011
February 2011	Tuesday 01 March 2011	Monday 14 March 2011
March 2011	Friday 01 April 2011	Thursday 14 April 2011
April 2011	Tuesday 04 May 2011	Monday 17 May 2011
May 2011	Tuesday 01 June 2011	Monday 14 June 2011
June 2011	Thursday 01 July 2011	Wednesday 14 July 2011

Annual survey

Year	Start collection	End collection
1/9/2010 to 31/8/2011	Thursday 01 September 2011	Wednesday 28 September 2011

Appendix 2 Denominator data quality

Routine cohort: year 8 (12 to 13 years)

Twenty-eight PCTs provided an actual annual denominator that varied from the original estimated monthly denominator exceeded $\pm 5\%$. For 21 PCTs this variance was between $\pm 5\text{--}9\%$, for six it was between $\pm 10\text{--}12\%$, and for one it was more than -20% . Each of these PCTs were contacted via email and asked to verify their actual denominator as part of data validation and quality assurance. Two PCTs recalculated the annual denominator using the DH algorithm⁽¹¹⁾ and the revised figure was within $\pm 5\%$ of the original estimate, two PCTs reverted to using the original denominator estimate (school roll), and the remaining 24 PCTs provided justification for the variance based on either manual or CHIS validation exercises.

'Mop up' cohorts: cohorts 1, 4, 5, 6, 7 (13 to 14 years up to 18 years)

The quality of the data for the 'mop-up' cohorts was less robust than that of the routine cohort and many PCTs were able to provide updated estimates for the number of doses given but unable to provide an updated estimate for the denominator for these cohorts. A small number of PCTs were unable to provide updated denominators or numerators for some/all 'mop up' cohorts and in these instances the data submitted for the 2009/10 annual collection was used as an approximation (Table 5). For this reason, only national estimates for updated coverage in these cohorts are published.

Table 5. Number of PCTs where 2009/10 data was used to calculate the 2010/11 estimates, by cohort

Cohort (dates of birth)	Age in academic year 2010/11 (years)	Number of PCTs where 2009/10 data used for 2010/11 estimate calculation
Mop up cohort 7 (1 Sep 1996 to 31 Aug 1997)	13 to 14	13
Mop up cohort 1 (1 Sep 1995 to 31 Aug 1996)	14 to 15	17
Mop up cohort 6 (1 Sep 1994 to 31 Aug 1995)	15 to 16	10
Mop up cohort 5 (1 Sep 1993 to 31 Aug 1994)	16 to 17	11
Mop up cohort 4 (1 Sep 1992 to 31 Aug 1993)	17 to 18	15