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Human papillomavirus (HPV) vaccination coverage in adolescents in England: 2021 to 2022

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Main points

From September 2019 the national Human papillomavirus (HPV) vaccination programme became universal with 12 to 13 year old males becoming eligible alongside females.

Since March 2020, the coronavirus (COVID-19) pandemic has led to some disruption of school-based immunisation programme delivery and the impact has varied by region and local authority. The biggest impact was observed in the 2019 to 2020 academic year when all schools were closed in the first national lockdown (1). Throughout the 2020 to 2021 academic year school attendance rates in England were lower than normal and in January 2021 schools were closed to all, except children of keyworkers and vulnerable children, with a phased reopening of secondary schools from March 2021. Staff absences in both schools and school-aged immunisation services (SAIS) also added to the disruption. Vaccine coverage in 2020 to 2021 improved significantly but was still not back up to pre-pandemic levels.

In the 2021 to 2022 academic year, school attendance rates in England remained lower than normal until the 'Living with COVID-19' guidance was implemented from February 2022 and all restrictions were lifted (2). In September 2021 the offer of COVID-19 vaccination was extended to all children aged 12 to 15 years and was delivered in secondary schools and other settings (3). In addition, the influenza immunisation programme was extended to all children in secondary schools (4). School-aged immunisation services (SAIS) were instrumental in supporting the delivery of all of these programmes under very challenging circumstances. It is likely that all of these factors combined impacted on the delivery of the routine adolescent immunisation programmes including the HPV programme. HPV vaccine coverage decreased by 7% in year 8 females and 8.6% in year 8 males in 2021 to 2022 when compared to the previous academic year. Dose 1 and completed course coverage increased in year 9 students, although it remains below pre-pandemic levels.

Year 10 data was collected and reported on the national scale for the first time and indicated improved coverage in that birth cohort compared to when it was measured when students were in year 9 in the 2020 to 2021 academic year, suggesting local catch-up activities have been increasing coverage in those students who had missed vaccinations during the COVID-19 pandemic.

The main points are summarised below and in [Table 1](#). In the 2021 to 2022 academic year HPV vaccine coverage was:

- 69.6% for dose 1 coverage in year 8 females compared with 76.6% in 2020 to 2021, 59.2% in 2019 to 2020, 88.0% in 2018 to 2019, 86.9% in 2017 to 2018 and 87.2% in 2016 to 2017
- 82.2% for dose 1 coverage in year 9 females which is a 5.6% increase from the reported coverage of 76.6% for the same cohort when they were in year 8 in the previous academic year
- 67.3% for dose 2 coverage in year 9 females compared with 60.2% in 2020 to 2021, 64.7% in 2019 to 2020, 83.9% in 2018 to 2019 and 83.8% in 2017 to 2018
- 62.4% for dose 1 coverage in year 8 males compared with 71.0% in 2020 to 2021
- 77.6% for dose 1 coverage in year 9 males which is a 6.6% increase from the reported coverage of 71.0% for the same cohort when they were in year 8 in the previous academic year
- 62.4% for dose 2 coverage in year 9 males compared with 54.4% in 2020 to 2021
- 86.5% for dose 1 coverage in year 10 females
- 81.5% for dose 1 coverage in year 10 males
- 76.9% for dose 2 coverage in year 10 females
- 70.9% for dose 2 coverage in year 10 males

Table 1. Comparison of HPV vaccine coverage between the 2020 to 2021 academic year and the 2021 to 2022 academic year by dose number, school year and sex

Academic year	Year 8 Female Dose 1	Year 8 Female Dose 2	Year 8 Male Dose 1	Year 8 Male Dose 2	Year 9 Female Dose 1	Year 9 Female Dose 2	Year 9 Male Dose 1	Year 9 Male Dose 2	Year 10 Female Dose 1	Year 10 Female Dose 2	Year 10 Male Dose 1	Year 10 Male Dose 2
2020 to 2021	76.6	12.7	71.0	11.9	82.9	60.2	78.2	54.4	51.0	41.8	n/a	n/a
2021 to 2022	69.6	10.7	62.4	9.8	82.2	67.3	77.6	62.4	86.5	76.9	81.5	70.9
Difference between years	-7.0	-2.0	-8.7	-2.1	-0.7	7.1	-0.6	8.0	35.4	35.1	n/a	n/a

Note 1. Year 10 data in 2020 to 2021 needs to be interpreted with caution as it was the first year this data was collected and coverage figures were estimated from approximately one-third of local authorities.

Background to the HPV vaccination programme

On the advice of the Joint Committee on Vaccination and Immunisation (JCVI), an HPV national vaccination programme was introduced in 2008, to protect adolescent females against cervical cancer. At that time, a 3-dose schedule was offered routinely to secondary school year 8 females (aged 12 to 13) alongside a catch-up programme targeting females aged 13 to 18 (5).

In September 2014 (6) the programme changed to a 2-dose schedule based on evidence that showed that antibody response to 2 doses of HPV vaccine in adolescent females was as good as 3 doses. Public Health England (PHE) recommended the following:

- the first dose can be given at any time during school year 8
- the minimum time between the first and second dose should be 6 months
- for operational purposes a 12-month gap between the 2 doses is recommended, that is, the first HPV vaccine dose should be offered in year 8 (aged 12 to 13) and the second dose should be offered in year 9 (aged 13 to 14), as this reduces the number of HPV vaccination sessions required in school
- however, local needs should be considered when planning the programme

In England, the decision on when to offer the 2 HPV vaccine doses is made by NHS England (NHSE) commissioned providers and so some areas offer both doses in year 8 and others offer HPV dose 1 in year 8 and HPV dose 2 in year 9.

From September 2019 (7), 12 to 13 year old males became eligible for HPV immunisation alongside females, based on JCVI advice (7). This is the second year that males in year 9 have been offered the HPV vaccine.

In order to evaluate the roll-out of the HPV vaccine to males the vaccine coverage collection was changed to monitor coverage in males and females separately.

Extending the HPV vaccination programme to males has added resilience to the UK vaccination programme against fluctuations in vaccine uptake and to some extent is likely to mitigate the impact of the COVID-19 pandemic.

Methods and previous data collections

Full details of the cohort definitions and methodology can be found in the 2021 to 2022 HPV vaccine coverage [user guide](#) for data providers.

Data providers must use updated data sources (that is, school rolls for all types of schools or units plus children schooled at home or Child Health Information Systems (CHIS)) to identify all eligible females and males in the locality for the academic year. The 2020 to 2021 HPV vaccine coverage was calculated based on the total number of eligible females or males in the target population who had received dose 1 and/or dose 2 of the HPV vaccine for the academic year. Historical annual HPV vaccine coverage reports from academic year 2008 to 2009 to academic year 2020 to 2021 and associated data tables can be found on the [UK Health Security Agency \(UKHSA\) website](#).

2021 to 2022 was the first year that the data collection tool had the capability to capture dose 1 and dose 2 vaccine coverage for both males and females in all of the year 8, year 9 and year 10 birth cohorts.

The aim of including the optional year 10 collection was to attempt to update the coverage reported for the 2020 to 2021 academic year and assess the impact that catch-up activities have had on improving the low vaccine coverage reported in some areas in the 2019 to 2020 and 2020 to 2021 academic years due to the COVID-19 pandemic.

Local authority (8) level HPV vaccine coverage data up to 31 August 2022 was manually uploaded by data providers to the [ImmForm](#) (9) website retrospectively, from 1 September 2022 to 1 October 2022.

Results

This report presents annual HPV vaccine coverage data for the eighth year (2021 to 2022) of the 2-dose schedule.

The adolescent HPV immunisation programme is a school-based programme, with alternative provision in place for children who are not in mainstream schools. Data on vaccinations given outside of a school setting was submitted by 140 of 150 local authorities. The data tables associated with this report present the data broken down by NHS England region, UKHSA region, local team (LT) and local authority.

HPV vaccine coverage of the priming dose for year 8 females in 2021 to 2022 (born 1 September 2008 to 31 August 2009) was 69.6% in England, 7 percentage points lower than 2020 to 2021 and 18% lower than uptake pre-pandemic (2018 to 2019). Coverage by LT ranged from 61.6% (London) to 75.5% (South East (Hampshire, Isle of Wight and Thames Valley)). Coverage in all LTs was lower than coverage prior to the COVID-19 pandemic reported in the 2017 to 2018 and 2018 to 2019 academic years ([Figure 1](#)).

HPV vaccine coverage of the priming dose for year 8 males in 2021 to 2022 (born 1 September 2008 to 31 August 2009) was 62.4% in England, 8.7 percentage points lower than coverage reported in 2020 to 2021. Coverage by LT ranged from 52.5% in the South West (South West South)) to 68.7% in the South East (Hampshire, Isle of Wight and Thames Valley). National coverage for year 8 males was 7.2 percentage points lower than that in year 8 females this academic year. All LTs had vaccinated a greater number of females, with the greatest difference of 12.0 percentage points in the South West (South West South).

HPV vaccine coverage in England for the priming dose in year 9 females in 2021 to 2022 was 82.2%. This is a 5.6% increase from the reported coverage of 76.6% for the same cohort when they were in year 8 in the previous academic year.

HPV vaccine coverage in England for females completing a 2-dose HPV schedule by year 9 (born 1 September 2007 to 31 August 2008) was 67.3%. This is 7.1 percentage points higher than the 60.2% achieved in 2020 to 2021 but 20% lower than pre-pandemic (2018 to 2019). 2-dose coverage in year 9 females ranged from 56.8% (South West (South West North)) to 77.2% (South East (Hampshire, Isle of Wight and Thames Valley)) by LT in 2021 to 2022. Coverage in all LTs was lower than coverage prior to the COVID-19 pandemic reported in the 2017 to 2018 and 2018 to 2019 academic years ([Figure 3](#)).

HPV vaccine coverage in England for the priming dose in year 9 males in 2021 to 2022 was 77.6%. This is a 6.6 percentage point increase from the reported coverage of 71.0% for the same cohort when they were in year 8 in the previous academic year.

HPV vaccine coverage in England for males completing a 2-dose HPV schedule by year 9 (born 1 September 2007 to 31 August 2008) was 62.4%, an increase of 8.0 percentage points compared to the 2020 to 2021 academic year. Coverage in academic year 2021 to 2022 by LT ranged from 52.4% (South West (South West North)) to 73.8% (South East (Hampshire, Isle of Wight and Thames Valley)).

Data providers were asked to report an updated cumulative coverage for dose 1 and 2 in year 10 students, who first became eligible when they were in year 8 in 2019 to 2020, to assess the impact of catch-up in 2021 to 2022. Data providers covering 148 out of 150 local authorities provided a return and are included in this analysis.

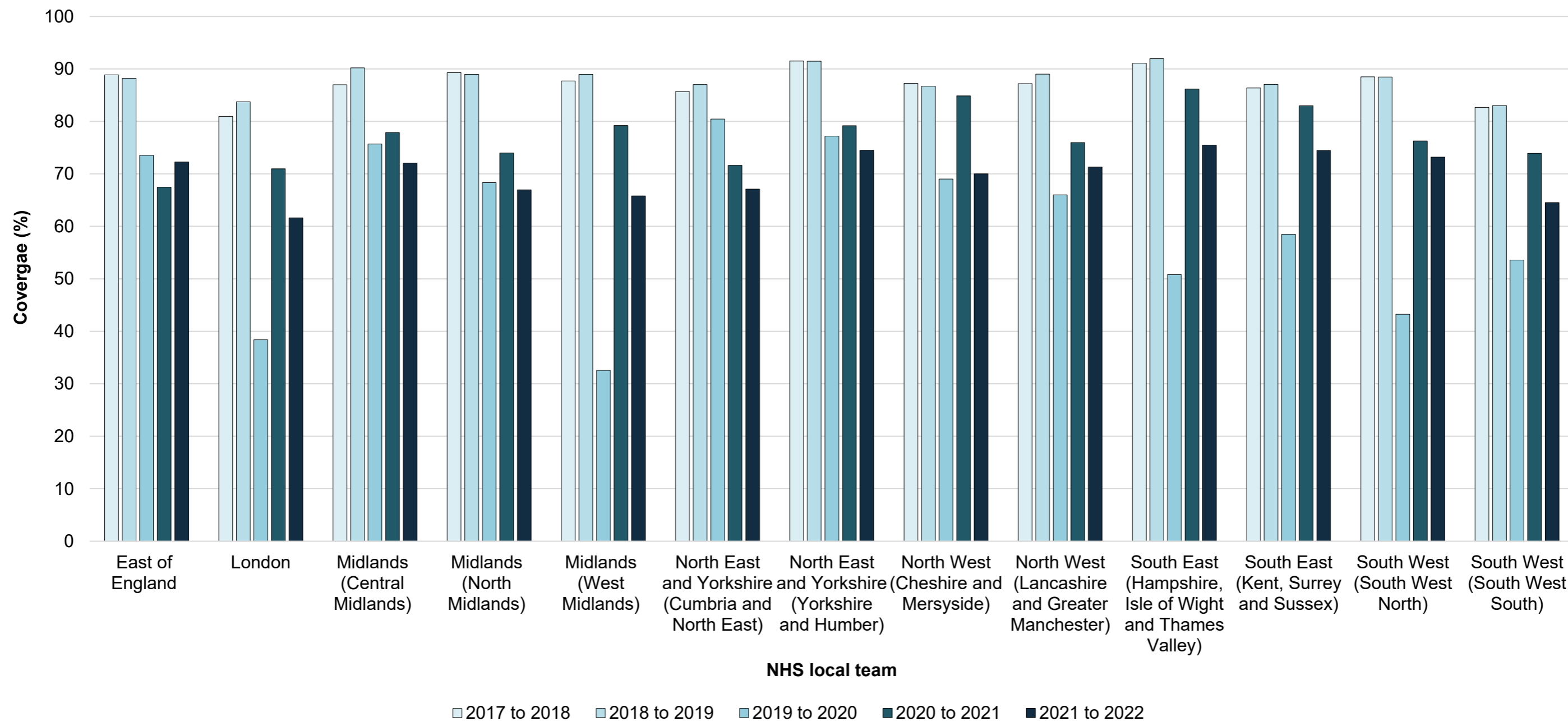
Coverage for HPV dose 1 in year 10 girls was 86.5%, representing an increase of 3.5 percentage points compared to the same cohort when coverage was measured at the end of year 9 in the 2020 to 2021 academic year. Coverage ranged by LT from 78.5% (London) to 91.3% (Cheshire and Merseyside, and South East (Hampshire, Isle of Wight and Thames Valley)). In 3 LTs, coverage has dropped marginally (0.3% to 2.3%) due to population movements in and out of the area. For the other LTs coverage increased between 0.7% (South East (Hampshire, Isle of Wight and Thames Valley)) and 11.7% (Yorkshire and Humber).

Coverage for HPV dose 1 in year 10 males was 81.5%, representing an increase of 3.3 percentage points compared to the same cohort when coverage was measured at the end of year 9 in the 2020 to 2021 academic year. Coverage ranged by LT from 72.3% (London) to 86.9% (South East (Hampshire, Isle of Wight and Thames Valley)). In 3 LTs, coverage has dropped marginally (0.2% to 0.9%) due to population movements in and out of the area. For the other LTs coverage increased between 0.3% (Cheshire and Merseyside) and 10.9% (Yorkshire and Humber).

Coverage for year 10 girls completing the 2-dose course was 76.8%, representing an increase of 16.4 percentage points compared to the same cohort when coverage was measured at the end of year 9 in the 2020 to 2021 academic year. Coverage ranged by LT from 65.1% (London) to 83.9% (South East (Hampshire, Isle of Wight and Thames Valley)). By LT coverage increased between 2.9% (South East (Kent, Surrey and Sussex)) and 32.3% (South West (South West North)).

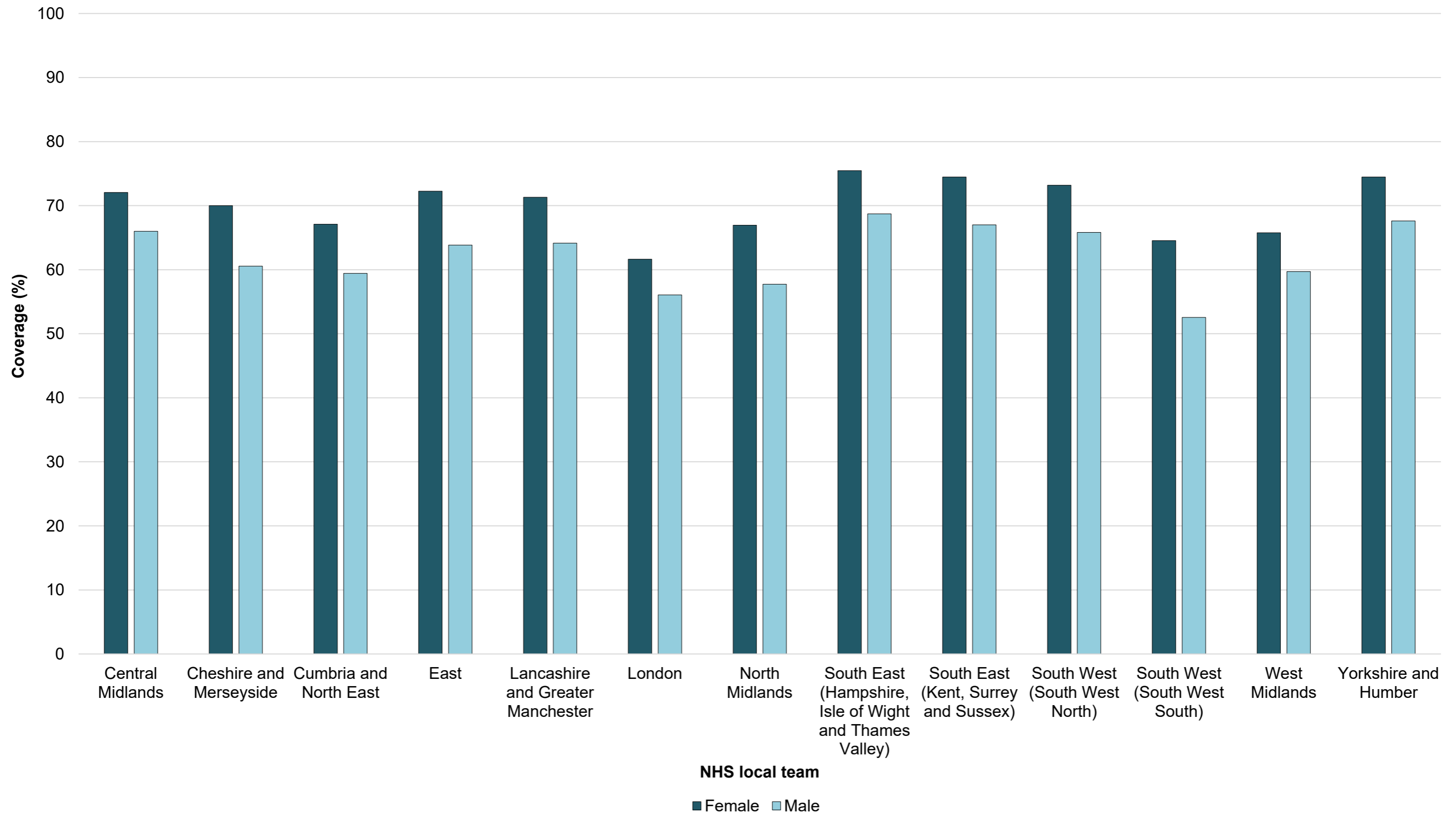
Coverage for year 10 males completing the 2 dose course was 70.9%, representing an increase of 16.3 percentage points compared to the same cohort when coverage was measured at the end of year 9 in the 2020 to 2021 academic year. Coverage ranged by LT from 62.1% (London) to 79.2% (South East (Hampshire, Isle of Wight and Thames Valley)). By LT coverage increased between 3.6% (Cumbria and North East) and 35.9% (NHS England South West (South West North)).

Figure 1. Dose 1 (priming) HPV vaccine coverage by NHS local team for the routine female cohort (year 8) academic year 2017 to 2018 up to academic year 2021 to 2022 in England



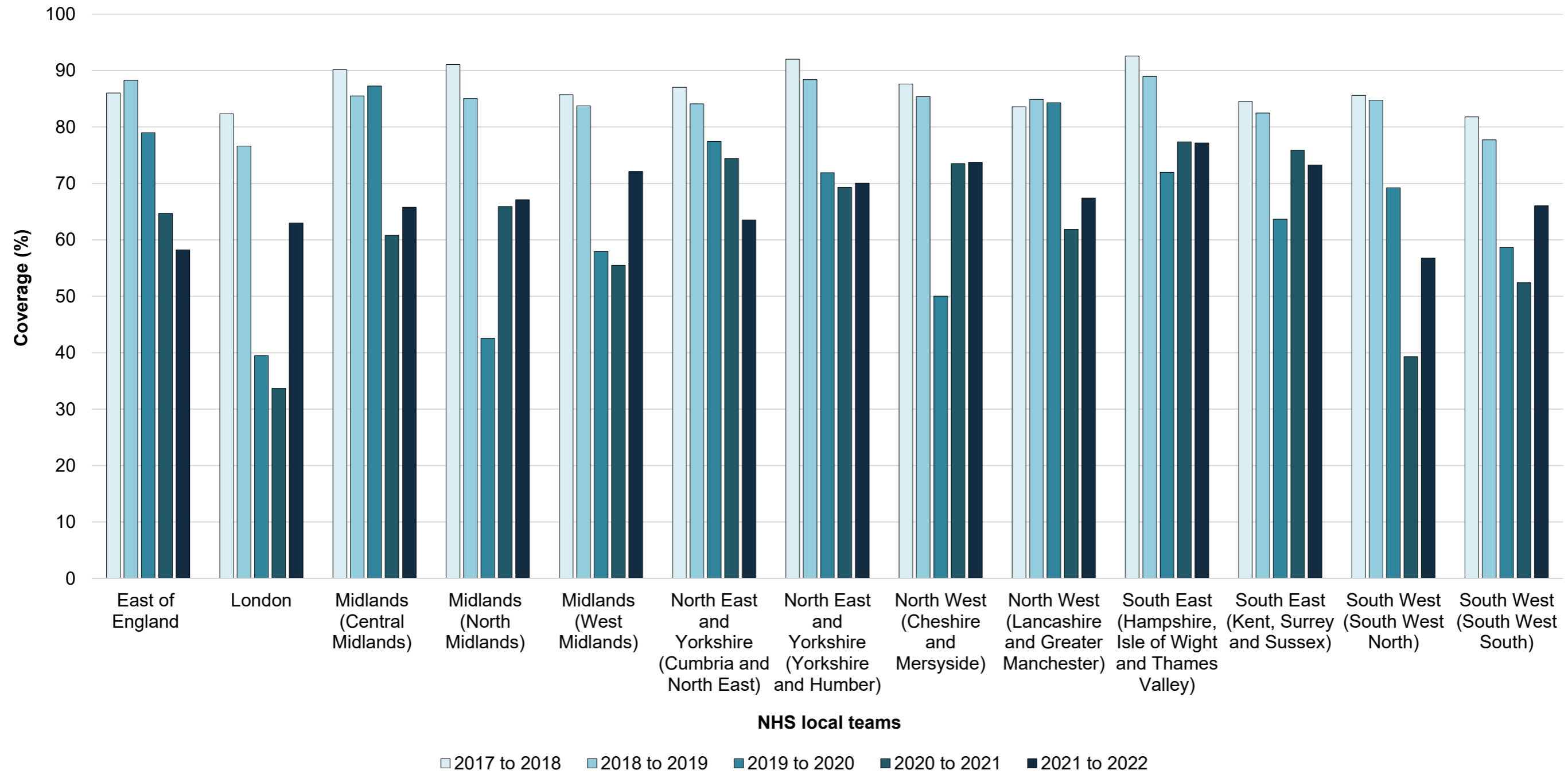
The dose 1 (priming) HPV vaccine coverage for the routine female cohort (year 8) in all but one LT (East of England) in 2021 to 2022 was lower than coverage reported in the 2020 to 2021 academic year, and remains lower than pre pandemic levels reported for the 2017 to 2018 and 2018 to 2019 academic years. Coverage by LT ranged from 61.6% (London) to 74.5% (South East – Hampshire, Isle of Wight and Thames Valley, and South East – Kent, Surrey and Sussex).

Figure 2. Dose 1 (priming) HPV vaccine coverage by NHS England local team for the routine female and male cohort (year 8) in academic year 2021 to 2022 in England



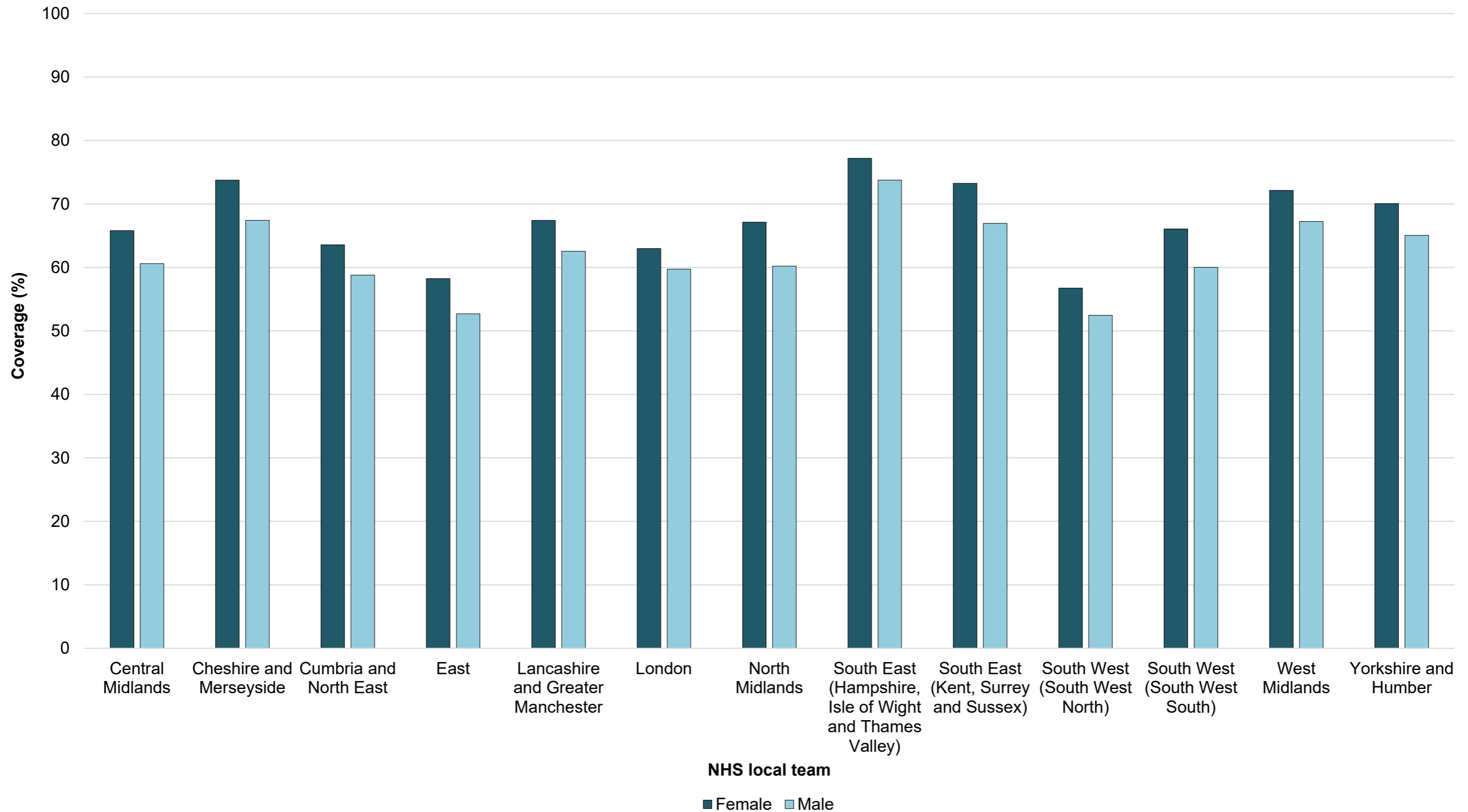
The dose 1 (priming) HPV vaccine coverage for the routine female cohort (year 8) was higher than the dose 1 (priming) HPV vaccine coverage for the routine male cohort (year 8) in all local teams in the 2021 to 2022 academic year.

Figure 3. Dose 2 (completed course) HPV vaccine coverage by NHS local team for the routine female cohort (year 9) academic year 2017 to 2018 up to academic year 2021 to 2022 in England



Second dose coverage in year 9 females ranged from 56.7% (South West (South West North)) to 77.2% (Hampshire, Isle of Wight and Thames Valley) by LT in the 2021 to 2022 academic year and remains lower than pre-pandemic levels in all areas.

Figure 4. Dose 2 HPV vaccine coverage by NHS England local team for the routine female and male cohort (year 9) in academic year 2021 to 2022 in England



Second dose HPV vaccine coverage for the routine female cohort (year 9) was higher than the dose 2 HPV vaccine coverage for the routine male cohort (year 9) in all LTs in the 2021 to 2022 academic year.

Factors affecting HPV vaccine coverage estimates in academic year 2021 to 2022

The routine school-aged HPV immunisation programme was delivered throughout England in the 2021 to 2022 academic year and was delivered alongside an ongoing offer of catch-up for the cohorts who missed out on their vaccines in the 2019 to 2020 and 2020 to 2021 academic years.

NHSE-commissioned, school-aged immunisation providers covering 3 local authorities (Solihull, Birmingham and Milton Keynes) reported that they were not able to offer the first HPV vaccine dose to all eligible children in school year 8. Eight local authorities reported that they were not able to offer any second doses of vaccine to eligible children in year 9, these were Bath and North East Somerset, Blackburn with Darwen, East Riding of Yorkshire, Halton, Lambeth, Sandwell, Warrington and Wolverhampton. Year 10 catch-up was complete in 75 local authorities.

Coverage (of 1 and/or 2 doses) may be over or under-estimated for some local authorities due to movement of students in and out of schools during the academic year not being accurately reflected in the denominators and/or numerators for some data providers.

An increased denominator (greater than 10%) was reported in 9 local authorities for year 8 females and 9 local authorities for year 8 males when compared to the 2020 to 2021 year 8 cohorts. Consequently, local coverage in some of these areas may appear to be lower when the cohort size is larger.

HPV vaccine coverage in 2021 to 2022 is still not back up to pre-pandemic levels and there is significant regional and local variation. Some of the reported reasons for this are listed here:

- lower attendance rates in schools during high COVID-19 incidence periods
- challenges due to offer of COVID-19 vaccines for 12 to 15 year olds in secondary schools in the 2021 to 2022 academic year
- reduced consent return rates in some areas
- reports of vaccine hesitancy in some areas
- increased workload due to flu vaccine administration during the autumn term

References and notes

1. Department for Education (DfE) (2021). 'Attendance in education and early years settings during the coronavirus (COVID-19) pandemic (November)'
2. DfE (2022). 'Attendance in education and early years settings during the coronavirus (COVID-19) pandemic (July)'
3. DHSC (2021). 'Universal vaccination of children and young people aged 12 to 15 years against COVID-19'
4. DHSC (2021). 'National flu immunisation programme 2021 to 2022 letter'
5. JCVI (2008). 'Statement on human papillomavirus vaccines to protect against cervical cancer (July)'
6. PHE, DH, NHS England (2014). Tripartite letter
7. JCVI (2018). 'Statement on HPV vaccination (July)'
8. For the purpose of this report, City of London and Hackney local authorities are counted as one local authority because their data is submitted together on ImmForm.
9. ImmForm is the system used by UKHSA to record vaccine coverage data for some immunisation programmes and to provide vaccine ordering facilities for NHS England.

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