

# Variations and inequalities in coverage of routine vaccinations against invasive meningococcal disease in the UK and Ireland

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## BACKGROUND

- High vaccine uptake is crucial to the success of meningococcal vaccination programmes in the UK and Ireland
- National targets for vaccine coverage are  $\geq 95\%$

## OBJECTIVES & METHODS

- We reviewed publicly available vaccine coverage data for the UK and Ireland to understand variation in uptake of routine meningococcal vaccines

## RESULTS

### Geographical inequalities

- Annual national vaccine coverage rates (VCRs) for routine meningococcal vaccines vary across the UK and Ireland and are generally below 95% (Table 1)<sup>1-6</sup>
- Hib/MenC and MenB VCRs are highest in Scotland and Wales and lowest in England (Table 1)<sup>1,5</sup>
- MenACWY VCRs during the 2019/2020 school year will have been significantly impacted by school closures during the COVID-19 pandemic<sup>2,3,6</sup>
- In England, at the end of August 2019, MenACWY VCRs for the GP-based catch-up cohorts in older adolescents and young adults remained low at  $\sim 40\%$  (Table 1)<sup>4</sup>

**Table 1. VCR for Hib/MenC and MenB vaccines in the UK (2020/2021) and Ireland (2020); and school-administered MenACWY vaccine in the UK (2019/2020) and GP-based catch-up programme in England (to end August 2019)<sup>1-6</sup>**

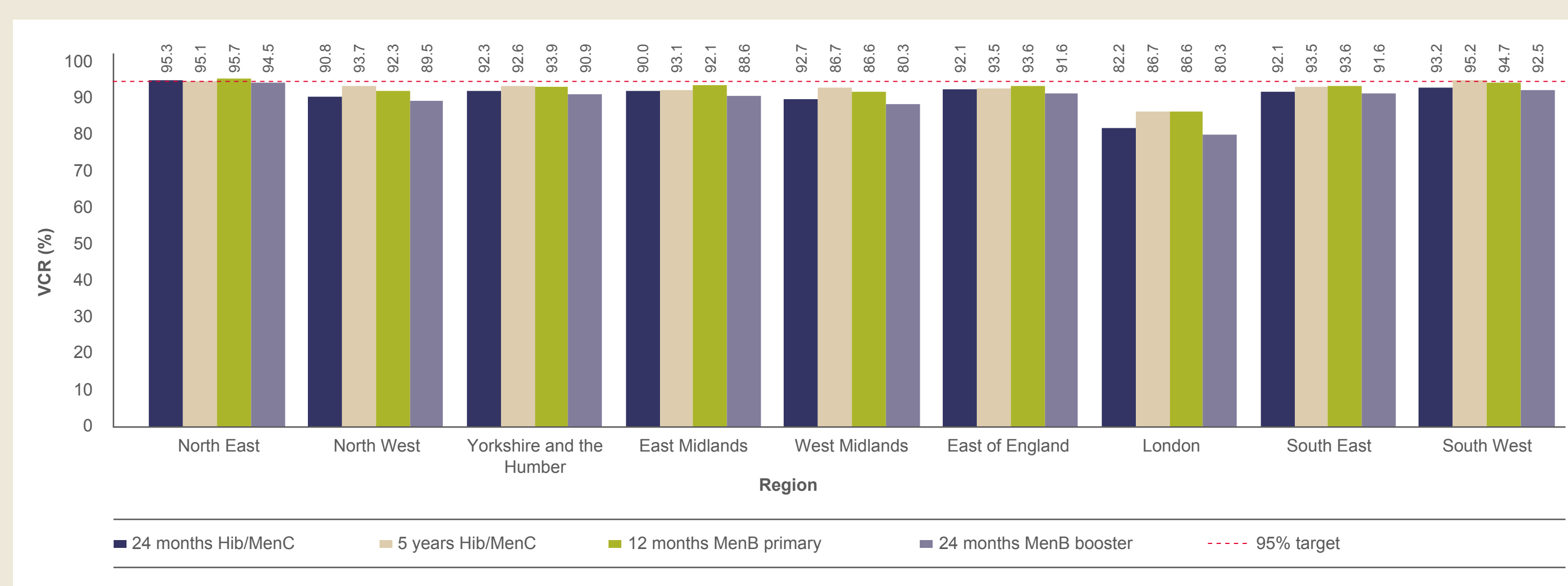
	VCR (%)							
	Hib/MenC		MenB		MenACWY			England and Wales Year 9, Scotland Year S3, Northern Ireland Year 11, Ireland 1st Year*
	Vaccinated by 24 months of age (booster)	Vaccinated by 5 years of age (booster)	Vaccinated by 12 months of age (primary)	Vaccinated by 24 months of age (booster)	GP Cohort 1 (born 01.09.96 -31.08.97)	GP Cohort 2 (born 01.09.97 -31.08.98)	GP Cohort 3 (born 01.09.98 -31.08.99)	
UK	90.7	92.8	92.6	89.7	60.3	NA	NA	NA
England	90.2	92.3	92.1	89.0	58.3	38.7	36.7	40.8
Wales	94.4	95.2	95.4	94.3	75.0	NA	NA	NA
Northern Ireland	91.9	95.3	94.6	91.8	64.5	NA	NA	NA
Scotland	95.0	96.0	96.3	94.5	71.6	NA	NA	NA
Ireland	88.0	NA	92.0	90.0	83.7	NA	NA	NA

■  $\geq 95\%$  VCR target; □  $< 95\%$  VCR target; NA, not available

\*These data will have been impacted by the COVID-19 pandemic, with not all areas able to complete the school-based vaccination programmes during the 2019/2020 academic year due to school closures to control the spread of the virus

- Meningococcal VCRs also vary by region within each nation<sup>1-6</sup>
- In England, during epidemiological period 2020/2021, Hib/MenC and MenB VCRs were lowest in London (80.3%–86.7%) and highest in the North East (94.5%–95.7%), with only 2 out of 9 regions (North East and South West) achieving  $\geq 95\%$  for any one of the vaccines (Figure 1)<sup>1</sup>

**Figure 1. Regional VCRs for childhood Hib/MenC (assessed at 24 months of age and 5 years of age) and MenB vaccines (primary doses assessed at 12 months of age and booster dose assessed at 24 months of age) in England, 2020/2021<sup>1</sup>**



### Socioeconomic inequalities

- Deprivation is one factor that can influence a parent/guardian's decision to immunise their child<sup>7</sup> and socioeconomic inequalities in childhood VCRs have been observed in the UK<sup>7-9</sup>
- In Wales, between 2017/2018 and 2018/2019, socioeconomic inequities in routine immunisation uptake in 2–5-year-olds widened; in 2018/2019 the proportion of children who were up-to-date with immunisations was higher in the least deprived versus most deprived areas (Table 2)<sup>8</sup>

**Table 2. Percentage of children in Wales who had completed routine immunisations by key birthdays\* in 2017/2018 compared to 2018/2019; and the difference (inequality gap) in percentage of children who are up to date with routine immunisations<sup>8</sup>**

Measure	National level uptake		Difference in % uptake in highest and lowest uptake quintiles <sup>1</sup>	
	2017–2018	2018–2019	2017–2018	2018–2019
Up to date by age 1 year	94.8	94.5	2.7	3.0
Up to date by age 2 years	92.9	92.6	2.9	3.5
Up to date by age 4 years	84.9	87.2	6.2	9.2
Up to date by age 5 years	87.6	90.4	3.6	5.0
Up to date by age 15 years	74.5	77.4	6.7	6.1

■ Increased uptake and decreased inequality; □ Decreased uptake and increased inequality

\*Vaccinations included in the calculation:

**Up to date by age 1 year of age:** third dose of 6-in-1 vaccination against DTaP/IPV/Hib/BBV, second dose of PCV and second dose of MenB vaccine.

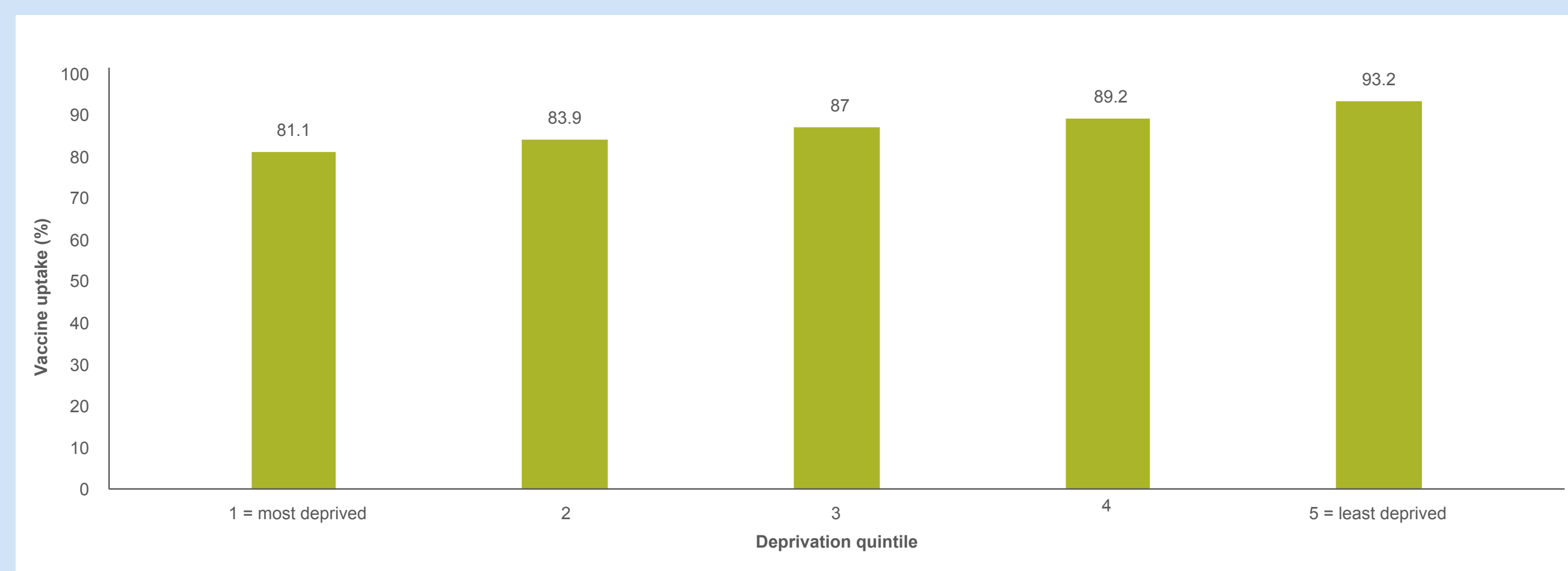
**Up to date by age 2 years:** third dose of 5-in-1 vaccine (DTaP/IPV/Hib), first dose of MMR vaccine, third dose of PCV, third dose of MenB and Hib/MenC booster vaccine.

**Up to date by age 4 years:** 4-in-1 DTaP/IPV booster vaccine, second dose of MMR vaccine and Hib/MenC booster vaccine. Up to date by age 5 years: 4-in-1 DTaP/IPV booster vaccine, second dose of MMR vaccine and Hib/MenC booster vaccine. Up to date by age 15 years: 3-in-1 Td/IPV booster vaccine, second dose of MMR vaccine, and MenACWY vaccine.

<sup>1</sup>National quintiles of deprivation are calculated according to the lower super output area (LSOA) rankings contained in the Welsh Index of Multiple Deprivation (WIMD 2014). Quintile 1 refers to children who were living in the most deprived fifth of LSOAs in Wales and quintile 5 refers to children who were living in the least deprived fifth of LSOAs in Wales. During 2018–2019, the proportion of children who were up to date with immunisations was highest in those who resided in the least deprived areas of Wales (Quintile 5) and lowest in those residing in the most deprived areas of Wales (Quintile 1).

- In Scotland, immunisation uptake data for year-end 2020 show a deprivation effect for all childhood and adolescent routine vaccines, with rates increasing across deprivation quintiles from the most to the least deprived<sup>7</sup>
- In 2019/2020, by the end of school year S4, 81.1% of pupils had received the MenACWY vaccine in most deprived vs 93.2% in least deprived areas (Figure 2)<sup>7,9</sup>

**Figure 2. MenACWY immunisation uptake rates in Scotland by the end of the school year S4 in 2019/2020 by deprivation<sup>7,9</sup>**



<sup>1</sup>Scottish Index of Multiple Deprivation (SIMD) 2020v2 Scotland level population weighted quintile

## CONCLUSIONS

- Across the UK and Ireland, meningococcal VCRs vary both nationally and locally, and socioeconomic inequalities in coverage also exist
- Variations and inequalities in VCRs may have increased during the COVID-19 pandemic and leave unvaccinated children vulnerable to IMD
- It is important to understand local drivers for low uptake and share best practice initiatives to help underachieving areas improve coverage

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## ABBREVIATIONS

**DTaP**, diphtheria, tetanus and acellular pertussis  
**Hib**, hepatitis B vaccine  
**Hib**, *Haemophilus influenzae* type b  
**IPV**, inactivated poliovirus vaccine  
**MenACWY**, meningococcal serogroups A, C, W and Y  
**MenB**, meningococcal serogroup B  
**MenC**, meningococcal serogroup C  
**MMR**, measles, mumps and rubella  
**PCV**, pneumococcal conjugate vaccine  
**Td**, tetanus, diphtheria (reduced quantity)  
**VCR**, vaccine coverage rate