The Impact of COVID-19 Pandemic on Paediatric Vaccination Coverage Rates

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Introduction and objectives

> The SARS-CoV-2 (COVID-19) pandemic, which began in March 2020, continues to impact many areas of public health, including the administration of routine paediatric vaccinations.[1]

> In the UK, the National Health Service (NHS) immunisation schedule includes the administration of the 6-in-1 vaccine, Rotavirus vaccine, meningitis B (MenB) and pneumococcal (PCV) vaccines to children under 1 year old, with a target vaccination coverage rate (VCR) of 95%.[2]

> Paediatric immunization data is routinely collected across the UK. This research therefore aimed to review the annual trends in vaccination coverage for these early paediatric vaccinations across regions within England, with particular focus on the pre- (2017–2019) and post- (2020–2022) COVID-19 eras.

Methods

> National immunization data from the United Kingdom (UK) Health Security Agency (HSA) on paediatric vaccination coverage were reviewed over the past five years (2017-2022) for vaccination coverage statistics at for children aged 1 year old.

> Annual national data were reported for all paediatric vaccinations for each cohort of children born within the preceding 12 months from March 31st of the reporting year. VCR data were also reviewed at a regional level within England.

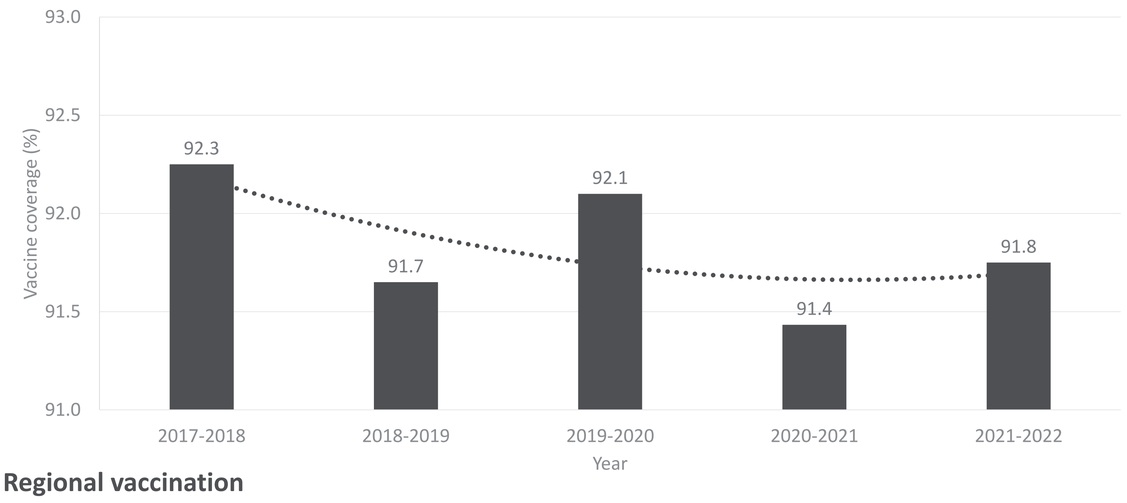
Results

National vaccination coverage

> Over the past five years, the national average VCR for all paediatric vaccines has fallen in England from 92.3% in 2017–2018 to 91.8% in 2021–2022 (**Figure 1**).[3-7]

> The national average VCR for all paediatric vaccinations remained below the 95% target set by the World Health Organisation for all years between 2017–2022.[3-7]

Figure 1. England national average VCR for paediatric vaccines, 2017–2022[3-7]



Regional vaccination

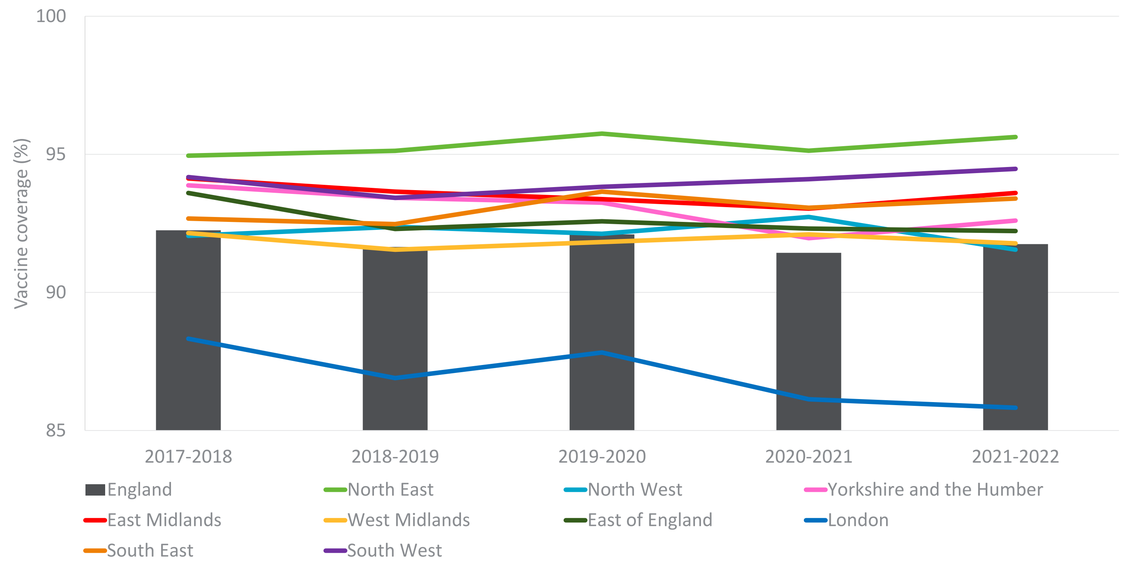
> While the national average VCR for paediatric vaccinations in England decreased slightly between 2017–2018 to 2021–2022, there were substantial regional variations (**Figure 2**).[3-75]

> The North East region consistently reported the highest average VCRs across all paediatric vaccines and London the lowest average VCRs for all vaccines across the study period.[3-7] However, during the COVID-19 era between 2019–2020 and 2021–2022, average VCRs decreased in both regions (95.8% to 95.6% in North East and 87.8% to 85.8% in London, respectively).[3-75]

> The greatest disparities in VCR between each region and the national average were reported in the post-COVID-19 era; 2021–2022 (+3.9% in North East and -5.9% in London). This difference had increased from 2017–2018 with the smallest disparity between each region and the national average (+2.7%- in North East and -3.9% in London).[3-7] Furthermore, the disparity had increased from the pre-COVID-19 era (2019–2020; +3.7% in North East and -4.3% in London).[3-75]

Results – Continued

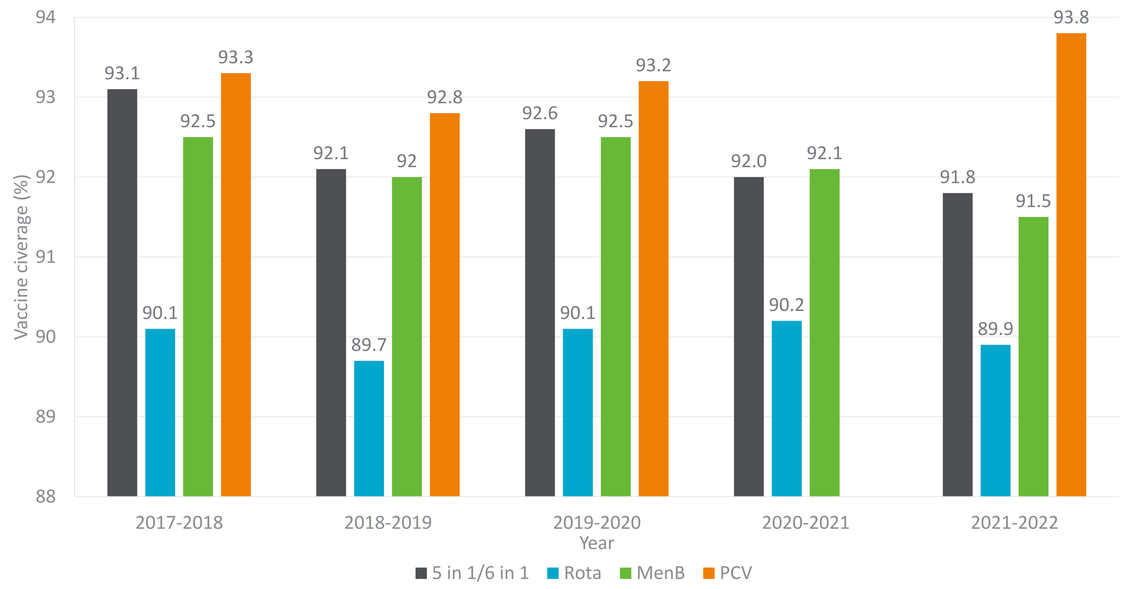
Figure 2. National and regional average VCR for paediatric vaccines, 2017–2022[3-7]



Coverage rates by vaccine

> National VCRs indicate that although a similar trend has been observed in all paediatric vaccinations over the past five years, VCRs for rotavirus immunization were substantially lower than other vaccines during this period (**Figure 3**).[3-7]

Figure 3. National VCR for paediatric vaccines, by vaccine 2017-2022*[3-7]



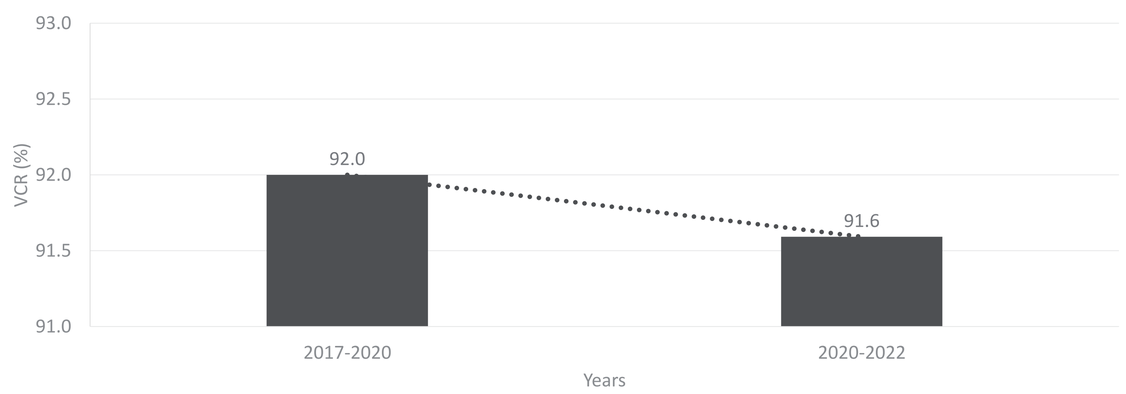
*PCV coverage data were unavailable for 2020–2021.

Comparison of pre- and post-COVID-19 vaccination eras

> Overall, national vaccination coverage data indicate that VCRs have decreased from the pre- to post-COVID-19 era (**Figure 4**).

> VCR fell for all paediatric vaccines from the pre- to post-COVID-19 era, except for PCV. The national average VCR for PCV increased from 93.2% in 2019–2020 to 93.8% in 2021–2022.[3-7]

Figure 4. National average VCR in the pre- (2017-2020) and post-COVID-19 (2020-2022) eras[3-7]



Discussion and Conclusion

> Disruption to paediatric vaccination because of the COVID-19 pandemic is likely to have caused some of the observed decreases in vaccine coverage seen in 2020–2021 and 2021–2022, compared to earlier years in the pre-COVID-19 era.[3-7]

> Although similar annual trends to previous years were reported across the country during the study period, post-COVID-19 VCRs indicate a substantial increase in disparity between the regions reporting the highest and lowest VCRs.

> This trend indicates that regions which have previously experienced barriers to paediatric vaccination uptake were adversely affected by the interruption to public health services caused by the COVID-19 pandemic.

> Cross-sectional research conducted during the pandemic indicated that while most parents (85.7%) considered paediatric vaccinations to be important, many parents indicated that the risk of their child acquiring a vaccine-preventable disease (VPD) was low due to pandemic control measures.[8]

> Public health information reiterating the value of vaccination in protecting against VPDs may combat the trend of declining VCRs in England.

> Understanding the barriers to vaccination that have been highlighted by the COVID-19 pandemic is crucial in addressing the trend in declining paediatric VCRs in England and to allow policymakers to appropriately target vaccination programmes to regions or groups with lower vaccination uptake.

References:
1. McQuaid F, Mulholland R, Sangpang Rai Y, et al. Uptake of infant and preschool immunisations in Scotland and England during the COVID-19 pandemic: An observational study of routinely collected data. PLOS Medicine. 2022;19(2):e1003916. **2.** UK Health Security Agency. The complete routine immunisation schedule from February 2022. https://www.gov.uk/government/publications/the-complete-routine-immunisation-schedule/the-complete-routine-immunisation-schedule-from-february-2022. Published 2022. Accessed 5th October, 2022. **3.** NHS Digital. Childhood Vaccination Coverage Statistics- England 2017-18. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2017-18. Published 2018. Accessed 5th October, 2022. **4.** NHS Digital. Childhood Vaccination Coverage Statistics - England 2018-19. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2018-19. Published 2019. Accessed 5th October, 2022. **5.** NHS Digital. Childhood Vaccination Coverage Statistics - England - 2019-20. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england---2019-20. Published 2020. Accessed 5th October, 2022. **6.** NHS Digital. Childhood Vaccination Coverage Statistics - 2020-21. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england---2020-21. Published 2021. Accessed 5th October, 2022. **7.** NHS Digital. Childhood Vaccination Coverage Statistics- England, 2021-22. https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/2021-22. Published 2022. Accessed 5th October, 2022. **8.** Bell S, Clarke R, Paterson P, Mounier-Jack S. Parents' and guardians' views and experiences of accessing routine childhood vaccinations during the coronavirus (COVID-19) pandemic: A mixed methods study in England. PLOS ONE. 2021;15(12):e0244049.