Impact of the COVID-19 pandemic on meningococcal vaccine coverage and disease incidence in the UK

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BACKGROUND

- In response to the COVID-19 pandemic, from 23 March 2020, physical distancing and lockdown measures were introduced across the UK, including school closures, stopping of gatherings and non-essential use of public transportation, and individuals being advised to work from home¹
- These measures may reduce community transmission of vaccine-preventable diseases such as invasive meningococcal disease (IMD), but they also present a considerable challenge for GPs and community healthcare workers to deliver immunisations²

OBJECTIVES & METHODS

- We reviewed publicly available health surveillance data (available at the time of the analysis) for the UK to understand the impact of COVID-19 restrictions on IMD incidence and coverage of routine meningococcal vaccines
- These included*
- Public Health England (PHE) annual IMD incidence data in England for the epidemiological period 2019/2020³
- PHE epidemiological data for 2020/2021 (July 2020 to March 2021)^{4–6}
- IMD incidence statistics for Scotland (2020/2021)^{7–9}
- The COVER (Cover of vaccination evaluated rapidly) programme that analyses vaccine coverage data when children reach their first, second, or fifth birthdays; the most recent report is for January to March 2021^{10–11}
- PHE UK coverage data for the adolescent MenACWY vaccine for academic years 2019/2020, 2018/2019, 2017/2018, 2016/2017, and 2015/2016¹³⁻¹⁷
- To assess the early impact of COVID-19 on primary immunisations in England at a younger age than the COVER programme reports, PHE has estimated monthly coverage for the Hexavalent (DTaP/IPV/Hib/HepB) vaccine primary doses when children reach 6 months of age, and the first measles, mumps, rubella (MMR) vaccine dose when children reach 18 months of age, as proxies for routine primary immunisations scheduled <1 year of age and those scheduled ≥1 year of age, respectively¹²

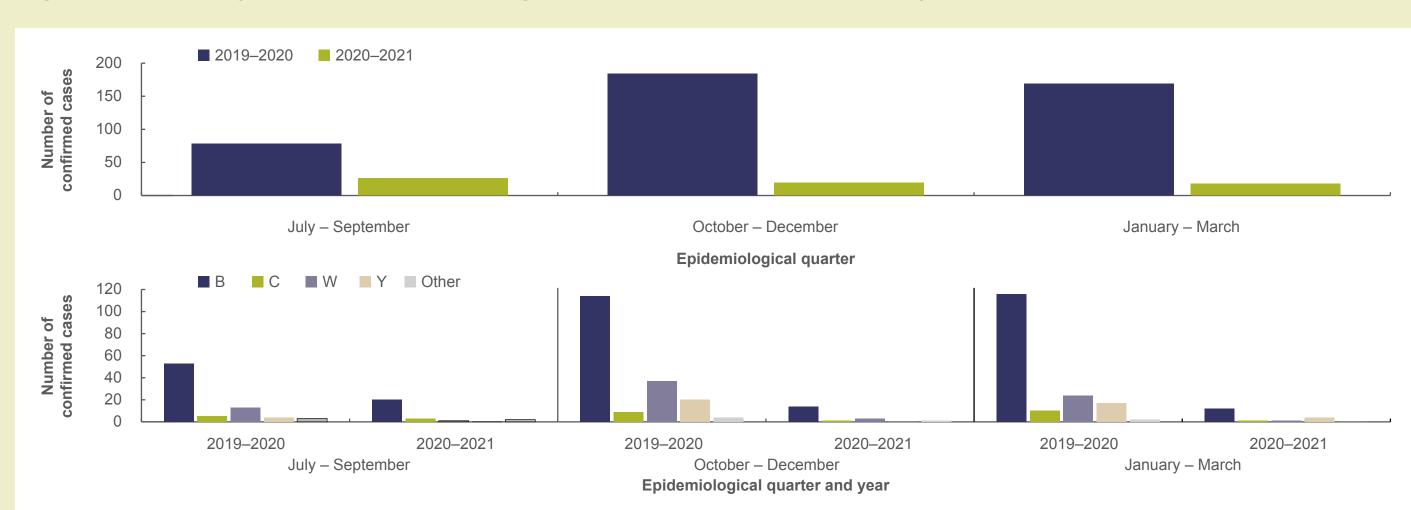
*IMD incidence statistics for Northern Ireland and Wales were not yet available for the 2020/2021 epidemiological year

RESULTS

Impact of COVID-19 on IMD incidence

- In England, 461 confirmed cases of IMD were reported during the 2019/2020 epidemiological year, a 12% decrease from the 526 cases reported in 2018/2019³
- PHE epidemiological data show that confirmed cases of IMD have been consistently and substantially lower across all meningococcal capsular groups than during the equivalent periods during 2019/2020 (Figure 1)^{4–6}
- IMD incidence statistics for Scotland show similar decreases in reported cases since the beginning of the COVID-19 pandemic
- The number of reported IMD cases was 68.8% (5 vs 16 cases) lower during October–December 2020 than during the equivalent period in 2019 and 90.0% (2 vs 20 cases) lower during January and March 2021 than reported during the same period in 2020^{7–9}

Figure 1. Quarterly confirmed IMD in England; 2019/2020 and 2020/2021)4-6



Impact of COVID-19 on meningococcal vaccine coverage: COVER programme

- The most recently published quarterly PHE COVER report for January to March 2021 includes MenB and Hib/MenC vaccinations scheduled following implementation of COVID-19 restrictions (Table 1)¹¹
- Vaccine coverage was lower during January to March 2021 compared with the equivalent period in 2020 in the UK and across the devolved nations except for Scotland^{10,11}
- While these decreases in coverage may be natural fluctuations, COVID-19 restrictions may have also contributed

Table 1. UK COVER quarterly statistics for meningococcal vaccine coverage: Jan-Mar 2020 and Jan-Mar 2021^{10,11}

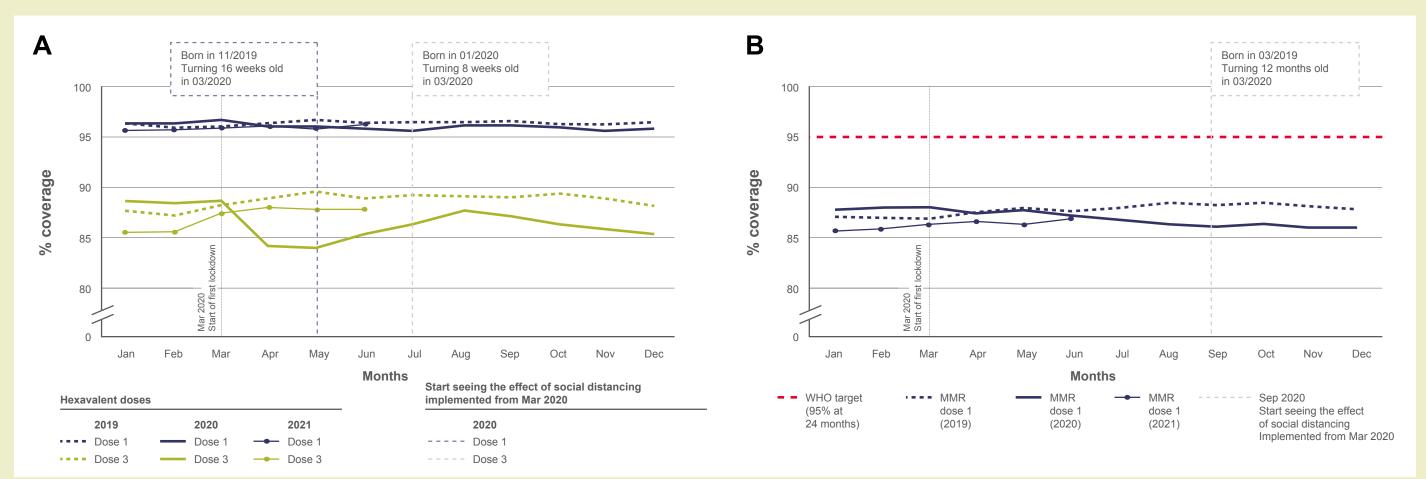
	MenB dose ^a			MenB booster ^b			Hib/MenC ^b		
	Jan–Mar 2020*	Jan–Mar [†] 2021	% point change	Jan–Mar [‡] 2020	Jan–Mar [§] 2021	% point change	Jan–Mar [‡] 2020	Jan–Mar [§] 2021	% point change
UK	93.3%	92.3%	-1.0%	89.9%	89.20%	-0.7%	91.3%	89.90%	-1.4%
England	92.8%	91.8%	-1.0%	89.3%	88.50%	-0.8%	90.9%	89.20%	-1.7%
Scotland	96.1%	96.4%	0.3%	93.8%	94.50%	0.7%	94.6%	95.00%	0.4%
Wales	96.0%	95.2%	-0.8%	94.4%	93.9%	-0.5%	94.6%	94.00%	-0.6%
Northern Ireland	95.0%	94.4%	-0.6%	92.1%	91.20%	-0.9%	92.3%	91.70%	-0.6%

^a12-month COVER data of MenB 16-week vaccine dose scheduled *between May and July 2019 and [†]between May and July 2020; ^b24-month COVER data of MenB and Hib/MenC 12/13-month vaccine doses scheduled [‡]between January to March 2019 and [§]between January to March 2020

Early impact of COVID-19 on routine childhood immunisations in England

- Hexavalent vaccine doses 1 and 3 are scheduled at the same appointment as the 8-week and 16-week primary MenB vaccine doses, respectively, and the first dose of the MMR vaccine is scheduled at the same appointment as the 12–13-month MenB booster vaccine and the Hib/MenC vaccine
- At the time of this review, the most recently published analysis included vaccine coverage extracted up to June 2021 (Figure 2)¹²
- There has been a decrease in coverage for Hexavalent vaccine doses 1 and 3, measured at 6 months of age, in every month since April 2020 when compared to 2019 (Figure 2A)
- There has been a decrease in coverage of dose 1 of the MMR vaccine, measured at 18 months of age, since April 2020 (Figure 2B)
- the largest decreases of 2.0 to 2.1 percentage points compared to 2019 were observed in August to November 2020, reflecting children eligible for MMR vaccine in the early months of the first lockdown
- These data point towards a sustained decrease in children receiving routine childhood immunisations in 2020 and 2021 compared to 2019 though the size of the decrease in vaccine coverage has been increasingly smaller from January 2021 onwards¹²

Figure 2 A) Vaccine coverage for dose 1 and 3 of the Hexavalent vaccine (extracted at 6-month age cohorts) and B) for dose 1 of the MMR vaccine by survey month (extracted at 18-month age cohorts), by survey month in 2019, 2020 and 2021¹²



Impact of COVID-19 on the routine adolescent MenACWY vaccine

UK coverage of the adolescent, school-administered MenACWY vaccine, assessed at the end of each academic year, was significantly lower during the 2019/2020 academic year than previous years (Table 2)¹³⁻¹⁷

Table 2. UK MenACWY vaccine coverage for academic years 2019/2020, 2018/2019, 2017/2018, 2016/2017, and 2015/2016¹³⁻¹⁷

	MenACWY vaccine coverage								
Region & school year	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020				
England Year 9	84.1%	83.6%	86.2%	88.0%	58.2%				
Scotland Year S3	82.1%	81.9%	81.9%	82.1%	71.6%				
Wales Year 9	75.5%	82.5%	84.4%	83.9%	75.0%				
Northern Ireland Year 11	79.4%	79.0%	76.8%	75.6%	64.5%				
United Kingdom	82.9%	83.2%	85.5%	86.9%	60.3%				

CONCLUSIONS

- The incidence of IMD cases has significantly declined during the COVID-19 pandemic, most likely due to measures implemented to prevent its spread
- However, meningococcal vaccine coverage has also decreased, potentially leaving many vulnerable once COVID-19 restrictions ease
- It is vital that routine immunisations continue to be offered/rescheduled and catch-up plans implemented to prevent outbreaks of IMD in the future
- Physical distancing and lockdown measures have continued to change throughout the pandemic, so there may be a further impact on routine immunisations and IMD incidence

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ABBREVIATIONS

COVER, Cover of vaccination evaluated rapidly DTaP, diphtheria, tetanus and acellular pertussis HepB, hepatitis B virus Hib, Haemophilus influenzae type b IMD, invasive meningococcal disease 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 PHE, Public Health England VCR, vaccine coverage rate

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