Public Health England

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Impact of COVID-19 on childhood vaccination counts to week 4 in 2021, and vaccine coverage to December 2020 in England: interim analyses

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Main points

This series of reports presents an assessment of the extent of COVID-19-related impact on childhood vaccinations based on both (a) aggregated vaccine counts of dose 1 Hexavalent and dose 1 MMR vaccinations delivered to infants or children and (b) vaccine coverage data for dose 1, 2 and 3 Hexavalent and dose 1 MMR vaccines extracted from ImmForm.

This eleventh report, that includes vaccination counts data up to week 4 in 2021, and vaccine coverage data up to December 2020.

Vaccination counts

Vaccination counts for the first dose of Hexavalent (DTaP/IPV/Hib/HepB) in children aged 6 months and the first dose of MMR (Measles, Mumps, Rubella) in children aged 12 to 18 months were extracted from The Phoenix Partnership, which represents data from approximately 38% of GP practices in England. Vaccination counts to December indicate that:

- Hexavalent and MMR vaccination counts fell at the time of introduction of physical distancing measures in March 2020 (week 13) compared to the same period in 2019. This was followed by a rise from weeks 16 onwards which has stabilised and is comparable to vaccination counts prior to the COVID-19 pandemic
- in 2020, the number of counts continued to stabilise, though there have been slightly lower vaccination counts throughout the tiered restrictions (weeks 43 to 45) and the second national lockdown in the autumn (week 45 onwards)
- in 2021, overall vaccination counts for Hexavalent and MMR vaccine remain lower at 4.0 and 7.9 percentage points lower on week 4 in 2021 compared to week 4 in 2019. Vaccination counts were also 0.3 and 10.5 percent change lower on week 4 in 2021 compared to week 4 in 2020, respectively

Early vaccine coverage

Early vaccine coverage data uploaded on ImmForm is extracted at 6 months of age to assess vaccine coverage for Hexavalent vaccine doses 1 to 3, and at 18 months to assess vaccine coverage for MMR1. Vaccine coverage data extracted from ImmForm up to December 2020 indicates that:

- 85.4% of infants completed the 3-dose course of Hexavalent vaccine by 6 months of age – this is 2.7% fewer infants compared to December 2019. Data extracted in November and December 2020 also showed a fall in infants receiving Hexavalent dose 1 compared to monthly extracts from August to October 2020
- for children scheduled to receive MMR1 vaccine from March 2020 onwards, vaccine coverage measured at 18 months of age remains approximately 86% - this is 2% lower than 2019. The WHO coverage target for MMR1 is 95% coverage by 24 months

All children who have missed out on their routine vaccinations during the COVID-19 pandemic, remain eligible for their vaccines. As physical distancing and lockdown measures change throughout the course of the pandemic it is possible that there may be further impact on primary immunisations. It is therefore important for General Practitioners and local teams to continue offering routine immunisations, check that any infants or children impacted during the pandemic are rescheduled for their immunisation and, where required, consider implementing catch-up or recovery plans.

Official vaccine coverage estimates for England reflecting coverage from March 2020 onwards will be assessed during 2021 in the COVER (Cover of vaccination evaluated rapidly) when children reach their first, second, or fifth birthday.

Introduction

On 23 March 2020 (week 13), in response to the COVID-19 pandemic, physical distancing measures were introduced in England which included school closures, stopping gatherings, non-essential use of public transportation and individuals being advised to work from home [1, 2]. Advice from the Joint Committee on Vaccination and Immunisation (JCVI) on routine childhood immunisations stated that children should continue to receive vaccinations according to the national schedule throughout the lockdown [3]. Furthermore, on 14 October 2020 (week 42), a 3-tier approach was introduced where different regions in England were assigned varying according to defined tiers and from 5 November (week 45), England returned into nation-wide lockdown [4]. On 2 December, the national lockdown ended, and the local 3-tier approach was reinstated across the country [5]. However, due to the emergence of a new variant of COVID-19, cases and hospital admissions dramatically increased and the nation returned to lockdown on 5 January 2021 [6].

In England, childhood immunisations are offered according to the routine immunisation schedule [7]. Childhood vaccine coverage is routinely assessed in quarterly COVER (Cover of vaccination evaluated rapidly) programme reports for children who reached their first, second, or fifth birthday [8]. The COVER reports display the official vaccine coverage estimates for England. Although the most recent COVER report largely reflects vaccines administered prior to the end of 2019, before the COVID-19 pandemic started, it stated that a contributing factor to the observed decreases in coverage for some vaccines in some areas presented in the quarter may be due to some children who, having missed some of their routine immunisations when first scheduled but who otherwise might have caught up by their first, second or fifth birthday, having been impacted by the lockdown and/or local restrictions from late March 2020 onwards.

Due to the timing of data extractions for the COVER collection, it will not be possible to assess the full impact of COVID-19 on primary immunisations until later in 2021, when the official COVER statistics reflecting vaccines scheduled from March 2020 onwards are assessed.

The purpose of this report therefore is to provide an interim analysis using alternative data sources to assess the impact of COVID-19 on primary immunisations in England at a younger age than the routinely collected data. To evaluate the early impact of COVID-19 on the delivery of childhood vaccinations, 2 datasets have been analysed:

1. An assessment of aggregated weekly vaccination counts from 2019, 2020 and 2021 for dose 1 Hexavalent (Diphtheria, Tetanus, Pertussis (whooping cough), Polio, Haemophilus influenzae type b (Hib) and Hepatitis B) delivered to infants 6 months and younger and MMR1 (fist dose of Measles, Mumps and Rubella vaccine) to children between the ages of 12 and 18 months provided by the GP IT supplier The Phoenix Partnership (TPP)[1].

[1] TPP supplies SystmOne which is an electronic patient record used by more than 2,600 primary care practices in the UK

2. An early assessment of national vaccine coverage from aggregated GP vaccine coverage data for dose 1, 2 and 3 of Hexavalent vaccines at 6 months, and MMR1 at 18 months, collected monthly via ImmForm[2]. The ImmForm coverage data provides interim estimates of vaccine coverage ahead of the official COVER statistics covering cohorts impacted by COVID-19, assessed at 12 and 24 months of age, that will be published later in 2021.

This report will summarise vaccination counts for dose 1 Hexavalent and MMR1 updated weekly from TPP in 2021 compared to 2019 and 2020 for the age groups stated above. This report will also summarise vaccine coverage extracted up to December 2020 for dose 1, 2 and 3 of Hexavalent vaccine at 6 months compared to coverage in 2019, and vaccine coverage up to December 2020 for dose 1 MMR at 18 months compared to 2019.

Target audience

This report is aimed for those who monitor and support the routine immunisation programme in England at both a local and national level.

[2] ImmForm is the system used by Public Health England to record vaccine coverage data for some immunisation programmes and to provide vaccine ordering facilities for the NHS

Methods

The Hexavalent and MMR vaccines were selected for these analyses as a proxy for routine primary immunisations scheduled before 1 year of age and immunisations scheduled from 1 year of age, respectively, to provide an initial indication of the impact of COVID-19 on all primary immunisation programmes.

Monitoring weekly vaccination counts provided by TPP

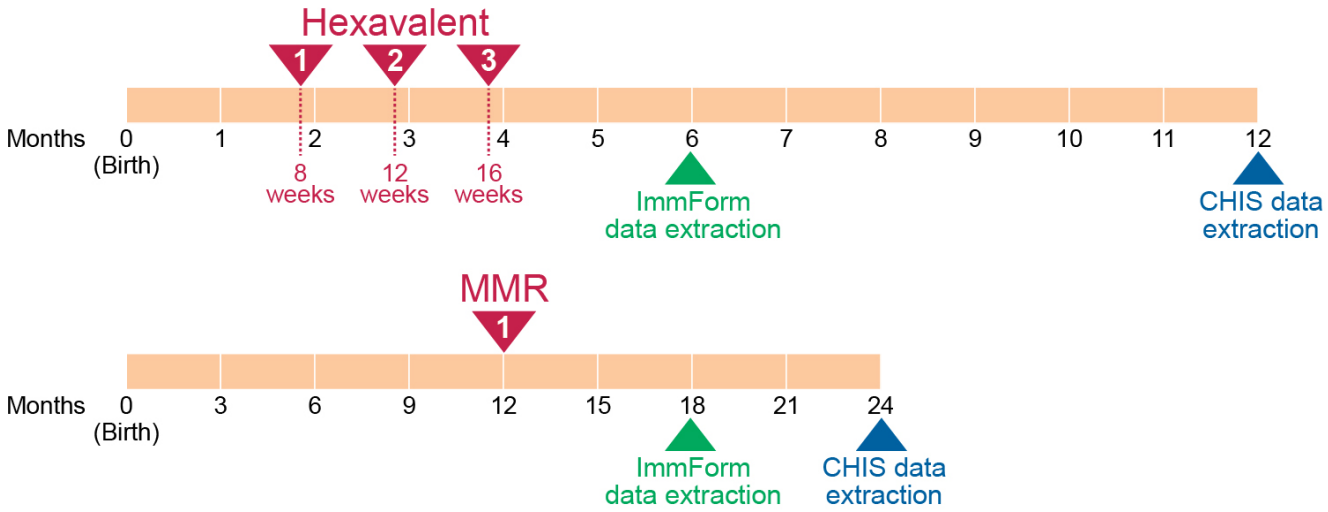
Aggregated weekly counts of the dose 1 Hexavalent delivered to infants 6 months and younger and dose 1 MMR to children between the ages of 12 and 18 months were provided by TPP for all weeks in 2019, 2020, and the first 4 weeks of 2021. Weekly trends in vaccination counts were compared between 2019, 2020 and 2021.

Early monitoring vaccine coverage

GP practice-level vaccine coverage data automatically uploaded via participating GP IT suppliers to the ImmForm website on a monthly basis was used to provide an early assessment of vaccine coverage for some of the routine childhood vaccinations. This data is validated and analysed by PHE to check data completeness, to identify and query any anomalous results, and to describe epidemiological trends. Vaccine coverage is calculated as the number of infants reaching a target age and receiving a vaccine(s) as a proportion of the total number of infants at the target age registered at the GP practice.

Vaccine coverage estimates were extracted from ImmForm on a monthly basis for all children who reached 6 months or 18 months of age in that calendar month. Vaccine coverage estimates for Hexavalent vaccines 1, 2 and 3 were estimated when children reached 6 months of age, whilst vaccine coverage estimates for MMR1 were estimated when children reached 18 months of age. Vaccine coverage estimates for a different cohort of children were therefore extracted each month. To assess the potential impact of COVID-19, we compared vaccine coverage data extracted from ImmForm from 2020 with the equivalent month in 2019. Figure 1 shows the recommended scheduled timing of the Hexavalent dose 1, 2 and 3, and MMR1 vaccinations, and compares the timing of the ImmForm and CHIS extractions.

Figure 1. Timeline from when infants are scheduled for their first, second and third dose of hexavalent vaccine and first dose of MMR vaccine and the time when ImmForm and CHIS data are extracted.



Tables A1 and A2 (Appendix) show how monthly ImmForm data extracted in 2020 relates to the recommended schedule for Hexavalent and MMR1 vaccines. Data from 2019 was extracted in the same way to enable the comparison between 2020 and 2019. If COVID-19 had impacted vaccine delivery in a specific calendar month, this would be reflected in the Immform data in different months depending on the particular vaccines effected. For example, if COVID-19 had impacted vaccinations scheduled in April 2020, we would expect to see this reflected in the ImmForm data in June 2020 for Hexavalent dose 3, July 2020 for Hexavalent dose 2, August 2020 for Hexavalent dose 1 and October 2020 for MMR1 (Tables A1 and A2).

Results

Vaccination counts provided by TPP

TPP represents approximately 38% of data for all practices in England. By week 4, vaccination counts from TPP general practices in 156 CCGs, that were in operation in from 2019 to 2021, were extracted and are shown in Table 1.

Table 1. Vaccination counts for Hexavalent and MMR vaccines in 2019, 2020 and 2021

Vaccine	Cumulative counts to week 4 2019	Cumulative counts to week 4 2020	Cumulative counts to week 4 2021*
Dose 1 Hexavalent	17,510	15,478	13,279
Dose 1 MMR	17,304	16,002	12,911

*Please note lower numbers in 2021 are due to week 1 only included 3 days as 2020 had 53 weeks

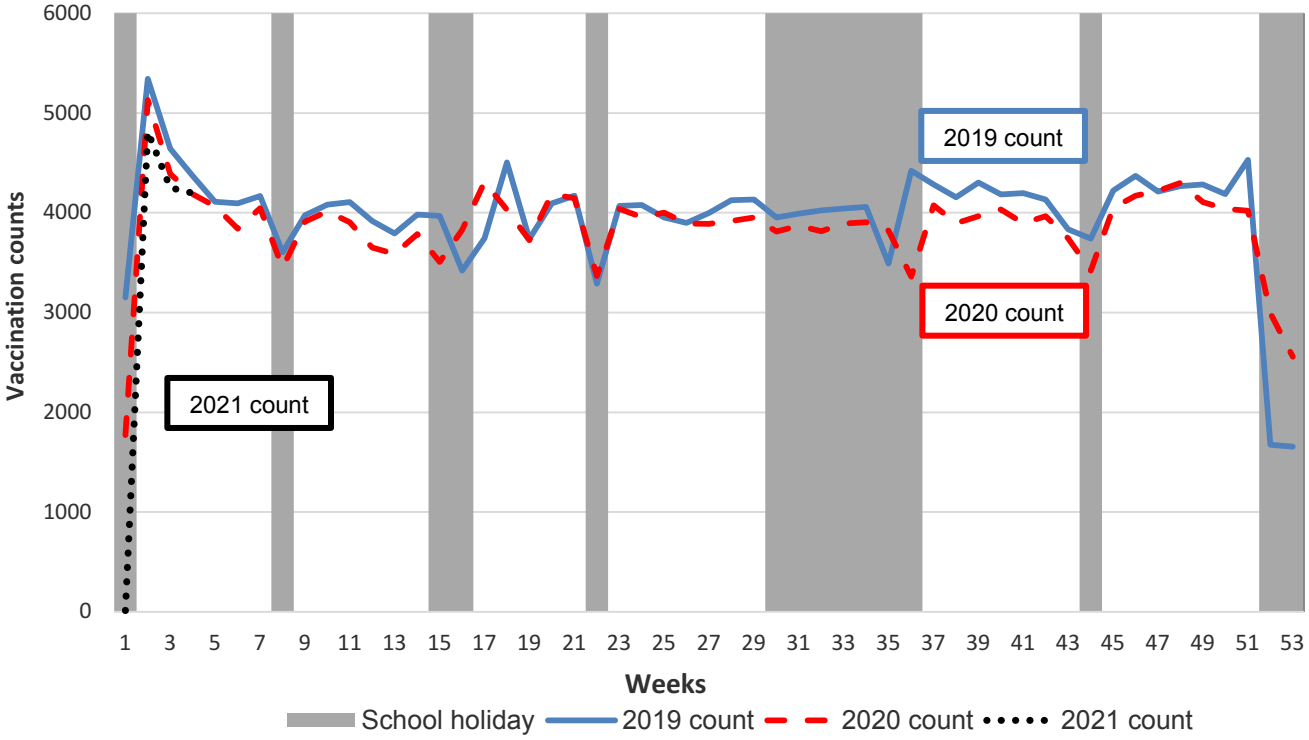
The weekly data (Figures 2 to 4) shows that for both Hexavalent 1 and MMR 1, vaccination counts decreased substantially in the first weeks after the introduction of physical distancing compared to the same period in 2019 (weeks 13 to 15). Vaccination counts then increased in 2020 weeks 16 and 17 despite physical distancing measures remaining in place [1].

Since week 17, in 2020, vaccination counts for both MMR1 and Hexavalent remain stable with no indication of sudden drops in immunisations delivered during the tiered restrictions (weeks 43 to 45) or during the introduction of the second national lockdown (weeks 45 onwards).

A drop in counts has been observed in Hexavalent coverage for week 4 in 2021 compared to the same week in 2019 and should continue to be monitored in upcoming weeks. Direct comparisons for the weekly data between 2019, 2020 and 2021 should be made with caution since the days do not map the same weeks (week 1 data for 2021 only accounts for 3 days).

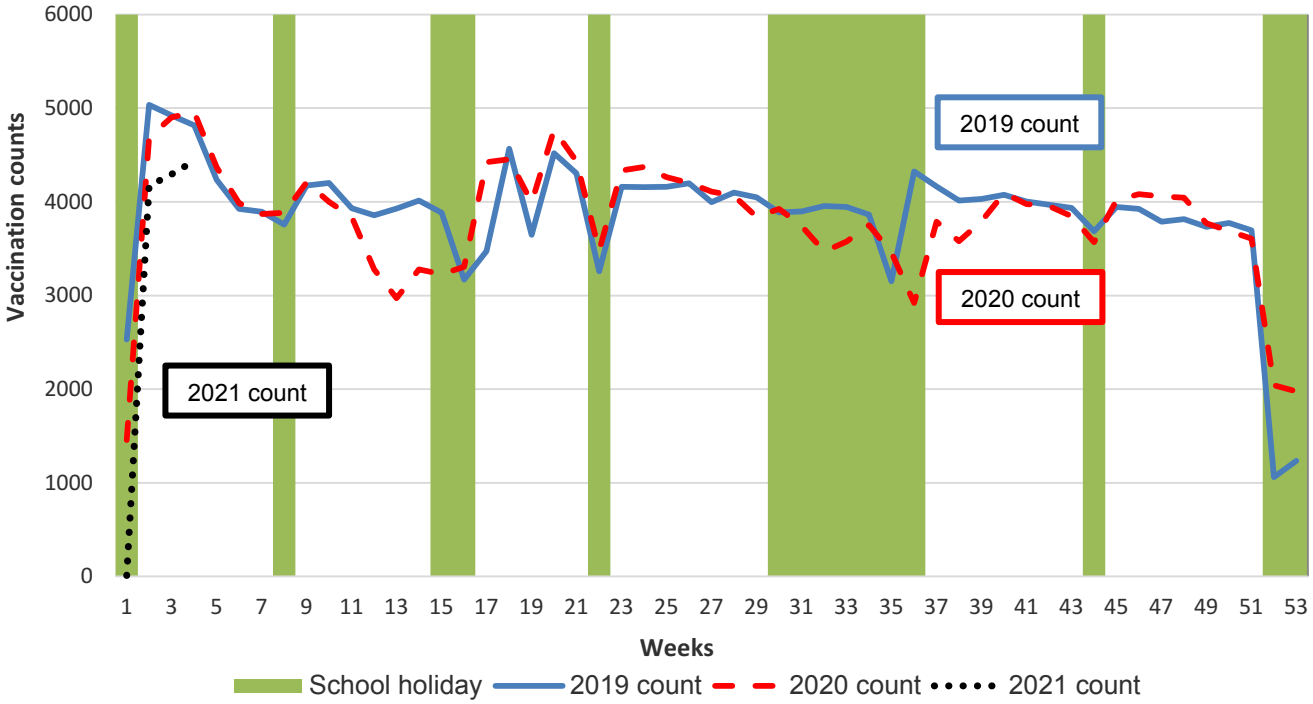
It is also important to note that school holidays and bank holidays occur in different weeks in 2019, 2020 and 2021, and therefore can cause weekly differences. Decreases in vaccination counts have been observed in 2019 and 2020 during school holidays, which may be in different weeks (Figures 2 to 5) and will likely be observed in 2021.

Figure 2: Weekly dose 1 Hexavalent vaccination counts in infants younger than 6 months in TPP practices open in both 2019 and 2020, or both 2019 and 2021, in England; 2019, 2020 and 2021*



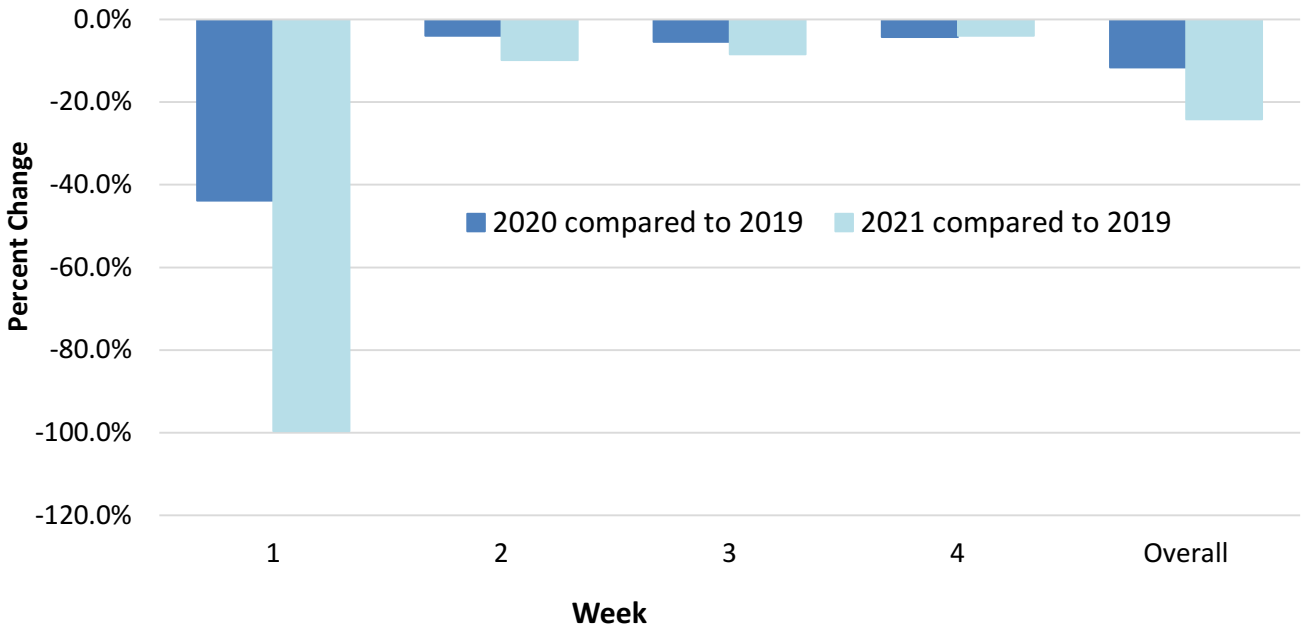
* School holidays (often coinciding with family holidays) for are for the 2020 calendar year. These holidays may vary slightly by year and by local area. School holidays for the 2019/20 academic year were in weeks 43, 52, 53, 1, 8, 15, 16, 19, 22, 30 to 36. School holidays for the 2020/21 academic year are in weeks 44, 52, 53, 7, 13, 14, 18, 22, 29 to 35.

Figure 3: Weekly dose 1 MMR vaccination counts in infants aged 12 to 18 months in TPP practices open in both 2019 and 2020, or both 2019 and 2021, in England; 2019, 2020 and 2021*



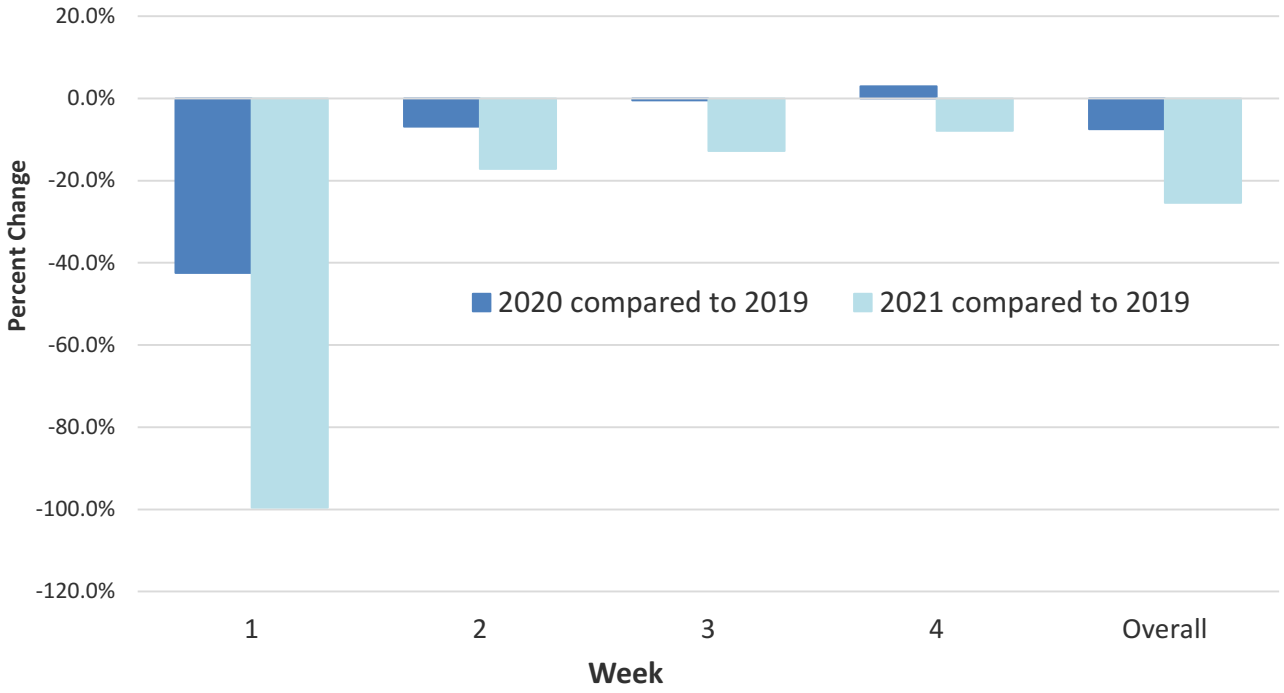
* School holidays for are for the 2020 calendar year. These holidays may vary slightly by year and by local area. School holidays for the 2019/20 academic year were in weeks 43, 52, 53, 1, 8, 15, 16, 19, 22, 30 to 36. School holidays for the 2020/21 academic year are in weeks 44, 52, 53, 7, 13, 14, 18, 22, 29 to 35.

Figure 4: Percent change in dose 1 Hexavalent (in infants under 6 months) counts in 2021 compared to 2019 and counts in 2020 compared to 2019, by week in TPP practices open in 2019, 2020 and 2021 in England



* Direct comparisons for the weekly data between 2019, 2020 and 2021 should be made with caution since the days do not map the same weeks (week 1 data for 2021 only accounts for 3 days)

Figure 5: Percent change in dose 1 MMR 1 vaccination (in infants ages 12 to 18 months) counts in 2021 compared to 2019 and counts in 2020 compared to 2019, by week in TPP practices open in 2019, 2020 and 2021 in England



* Direct comparisons for the weekly data between 2019, 2020 and 2021 should be made with caution since the days do not map the same weeks (week 1 data for 2021 only accounts for 3 days)

Early vaccine coverage assessment in England

Monthly vaccine coverage data are available on ImmForm for at least 92% of general practices since January 2019, and for more than 95% of practices for most of this period.

Hexavalent Vaccine

Comparing early vaccine coverage estimates for 2020 to those for 2019 shows there has been a decrease in vaccine coverage measured at 6 months of age for Hexavalent doses 1, 2 and 3 since April 2020 (Table 2). Of the 3 vaccine doses, the largest percentage decrease was seen in Hexavalent 3 vaccine, indicating a substantial decrease in the percentage of children who complete the full 3 vaccine course by 6 months of age.

Table 2. Vaccine coverage for dose 1, 2 and 3 of the Hexavalent vaccine by survey month (extracted at 6-month age cohorts) in 2019 and 2020

Survey month	Hexavalent dose 1 (%)			Hexavalent dose 2 (%)			Hexavalent dose 3 (%)		
	2019	2020	Percentage point difference 2020 compared to 2019	2019	2020	Percentage point difference 2020 compared to 2019	2019	2020	Percentage point difference 2020 compared to 2019
January	96.1	96.2	0.1	93.5	93.7	0.3	87.7	88.5	0.8
February	95.9	96.3	0.4	93.1	93.8	0.7	87.2	88.4	1.2
March	96.0	96.6	0.6	93.4	94.0	0.5	88.1	88.6	0.5
April	96.2	95.9	-0.3	93.9	92.4	-1.5	88.8	84.1	-4.7
May	96.5	96.0	-0.5	94.3	92.0	-2.3	89.4	83.9	-5.5*
June	96.2	95.8	-0.4	93.9	91.9	-2.0*	88.8	85.3	-3.5*
July	96.4	95.6	-0.8*	94.0	92.4	-1.6*	89.1	86.5	-2.7*
August	96.3	95.9	-0.4*	94.0	93.3	-0.7*	89.0	87.6	-1.4*
September	96.4	96.0	-0.4*	93.9	93.3	-0.6*	88.9	87.1	-1.8*
October	96.2	95.9	-0.3*	93.9	93.0	-0.9*	89.2	86.3	-3.0*
November	96.1	95.5	-0.6*	93.6	92.5	-1.1*	88.7	85.8	-2.9*
December	96.2	95.7	-0.6*	93.7	92.5	-1.3*	88.1	85.4	-2.7*

* Indicates cohorts of infants scheduled to receive their vaccine from March 2020 onwards

Infants who were scheduled from 8 weeks of age for dose 1 Hexavalent vaccine in March 2020 onwards are reflected in the ImmForm vaccine coverage estimates at 6 months of age from July 2020 onwards. Hexavalent 1 coverage trends for 2020 are broadly similar compared to 2019, with the largest decrease of 0.8 percentage points seen in the July 2020 data for infants scheduled to receive this vaccine in March 2020 (Figure 6). This has been followed by a decrease of 0.6 percentage points in the November and December 2020 data for infants scheduled to receive this vaccine in July and August 2020 (Figure 6).

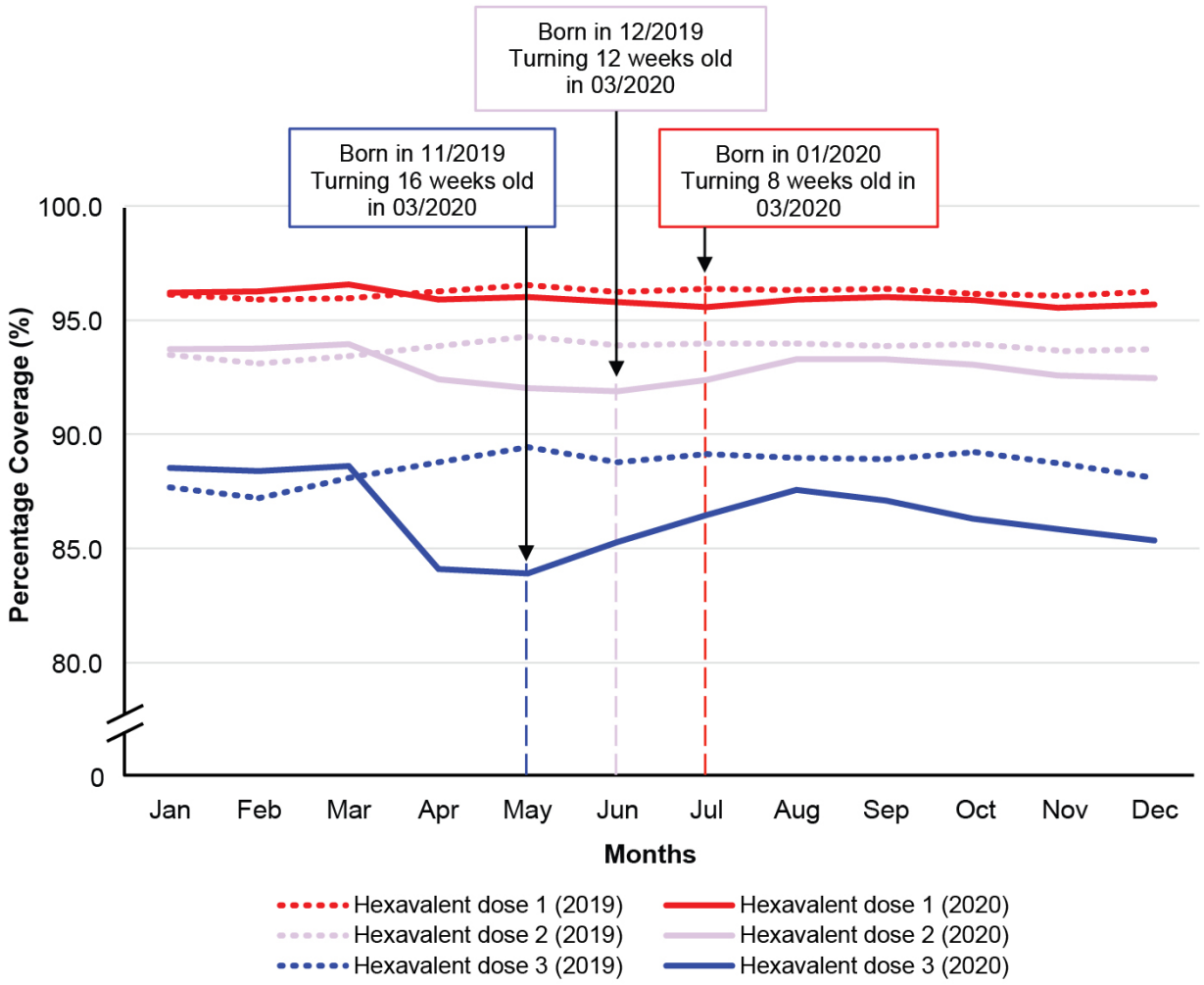
Infants scheduled from 12 weeks of age for dose 2 Hexavalent vaccine from March 2020 onwards are reflected in June ImmForm coverage data onwards. Vaccine coverage for dose 2 Hexavalent in June and July 2020 was lower than coverage estimates in June and July 2019, indicating that infants scheduled for their second dose of Hexavalent vaccine in March and April have most likely been impacted by COVID-19. Infants turning 6-months-old in the August-to-October extracts on ImmForm and who were scheduled for dose 2 Hexavalent in May and July appear less impacted by COVID-19 and coverage is more aligned with the 2019 estimates (Figure 6). However, this has been followed by a slight decrease in coverage of 1.1 and 1.3 percentage points in the November and December 2020 data, respectively, for infants scheduled to receive their second dose of Hexavalent vaccine from August and September 2020.

Infants scheduled from 16 weeks of age for dose 3 Hexavalent vaccine from March 2020 onwards are reflected in May ImmForm coverage data onwards. Vaccine coverage for dose 3 Hexavalent in May 2020 was substantially lower compared to coverage in May 2019, indicating that infants scheduled for their third dose of Hexavalent in March have most likely been impacted by COVID-19. Infant scheduled for dose 3 Hexavalent vaccine from April to July (turning 6-months-old in the June to September extracts on ImmForm, respectively) still appear impacted by COVID-19 though the percentage decrease is smaller than in previous months (Figure 6). However, Hexavalent coverage for dose 3 from September to December 2020 (infants scheduled for dose 3 Hexavalent in July through to October 2020) is again indicating a downward trend in coverage.

Hexavalent coverage for dose 2 in April and May 2020 and for dose 3 in April 2020 is lower than coverage during these months in 2019. These reflects hexavalent vaccines that were scheduled for administration before the national lockdown in England was introduced in March 2020 indicating that these children may have missed their initial scheduled vaccination appointment, but were potentially unable to catch-up by 6 months of age as the social distancing measures began (Figure 6).

Similarly, reduced completed coverage may yet be seen among those infants who were scheduled to receive their first dose of Hexavalent vaccine during April and May (when the social distancing measures were still in place) but missed or otherwise delayed that opportunity.

Figure 6: Vaccine coverage for dose 1, 2 and 3 of the Hexavalent vaccine by survey month in 2019 and 2020



MMR1 Vaccine

Comparing vaccine coverage estimates measured at 18 months of age for MMR1 for 2020 to 2019, there was a monthly decrease from April 2020 onwards. From August 2020 onwards, the decrease has been approximately 2% (Table 3 and Figure 7).

The August ImmForm coverage data reflects children first scheduled for MMR1 at 12 months of age from February 2020 onwards (before the national lockdown). The 2.1% decrease in this cohort indicates that these children may have missed their initial scheduled vaccination appointment, but were potentially unable to catch-up by 18 months of age as social distancing measures began.

Children scheduled from 12 months of age for MMR1 from March 2020 onwards are reflected in September ImmForm coverage data onwards. Vaccine coverage for MMR1 between September and December 2020 was lower than coverage estimates between September and December 2019, indicating that infants scheduled for their MMR1 vaccine between March and June have most likely been impacted by COVID-19. The impact of COVID-19 on MMR1 coverage will continue to be monitored in the January 2021 extract which will reflect children that turned 12 months in July 2020.

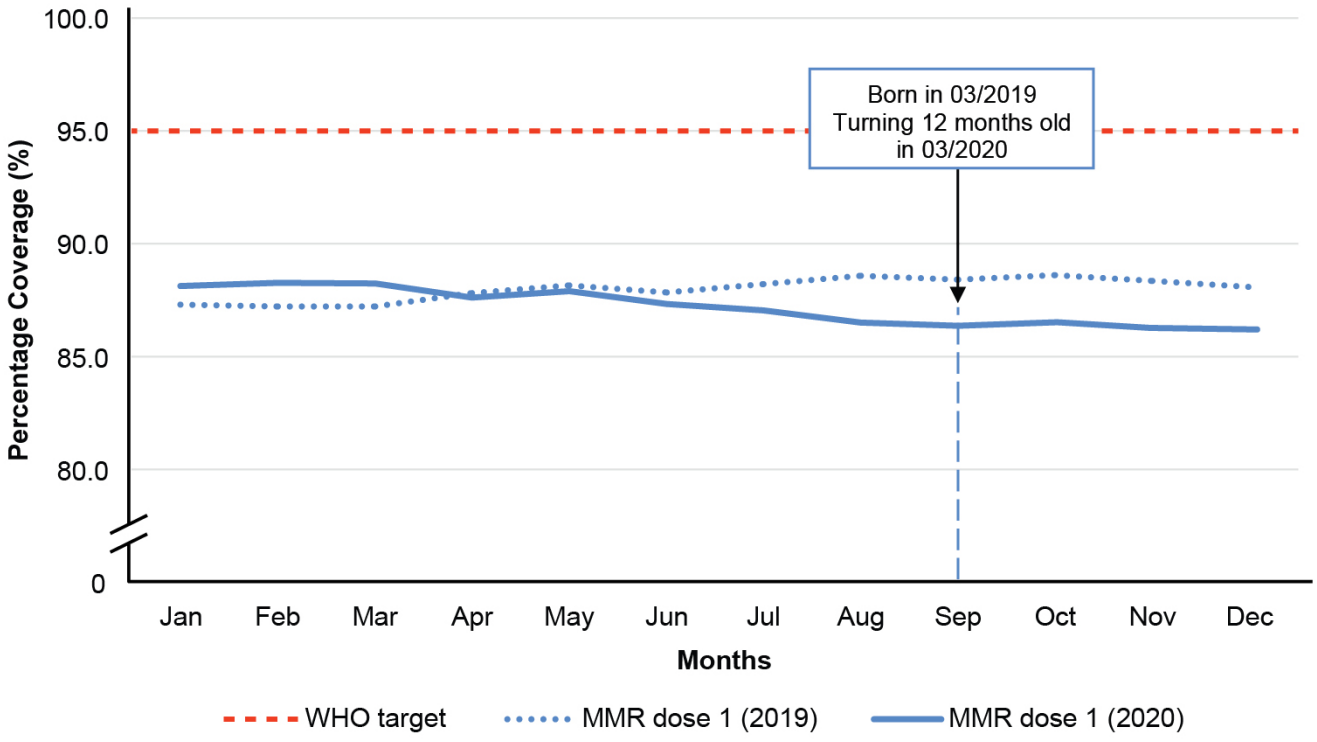
In both 2019 and 2020, MMR1 coverage is substantially below the WHO target of 95% coverage at 24 months.

Table 3. Vaccine coverage for dose 1 of the MMR vaccine by survey month (extracted at 18-month age cohorts) in 2019 and 2020

	MMR dose 1 (%)		
Survey month	**2019**	**2020**	**Percentage point difference 2020 compared to 2019**
January	87.3	88.1	0.8
February	87.2	88.3	1.0
March	87.2	88.2	1.0
April	87.8	87.6	-0.2
May	88.2	87.9	-0.3
June	87.8	87.3	-0.5
July	88.2	87.1	-1.1
August	88.6	86.5	-2.1
September	88.4	86.4	-2.0*
October	88.6	86.5	-2.1*
November	88.4	86.3	-2.1*
December	88.1	86.2	-1.9*

* Indicates cohorts of infants scheduled to receive their vaccine from March 2020 onwards

Figure 7: Vaccine coverage for MMR1 at 18 months of age by survey month in 2019 and 2020



Discussion

This report presents an early indication of the impact of COVID-19 on routine childhood immunisations in England, using data from vaccine counts and early vaccine coverage data. The purpose of this report is to provide early coverage estimates to those who monitor and support the routine immunisation programme at both a local and national level, before the official 12 and 24 month estimates of vaccine coverage during the COVID-19 pandemic are analysed by the COVER programme.

Together the vaccine counts data and the vaccine coverage data both point towards a substantial decrease in children receiving routine childhood immunisations in 2020 compared to 2019. Since April 2020, fewer infants have completed the full course of 3 Hexavalent vaccines by 6 months of age, and fewer children have received MMR1 by 18 months of age. The initial decrease in vaccination may be associated with COVID-19 messaging about staying home initially overwhelming the messaging that the routine immunisation programme was to remain operating as usual [1]. Additionally, anecdotal information indicated that in some areas, to ensure safe and best practice, GPs had to reschedule appointments in the initial weeks to ensure social distancing within GP practices. Since the initial weeks, overall, decreased vaccination coverage and lower counts have continued throughout the pandemic.

Vaccine Counts

At the introduction of the physical distancing measures on 23 March 2020 (week 13), vaccination counts for MMR1 and dose 1 Hexavalent fell compared to 2019. Vaccination counts for both vaccines began to rise in weeks 16 and 17 and were comparable to 2019 counts, and to counts in 2020 prior to the COVID-19 pandemic, indicating that the initial drop had recovered. Vaccination counts do seem to have remained stable in the tiered restrictions and during the second lockdown. However, the overall vaccination counts in 2021 for dose 1 Hexavalent and MMR1 vaccines are still lower than the 2019 and 2020 counts indicating fewer vaccines have been delivered.

Vaccine Coverage

Early assessment of age-specific vaccine coverage allows local areas to assess performance before children reach the age that formal vaccine coverage is evaluated, therefore giving local teams an opportunity to catch-up where shortfalls have been identified.

Whilst vaccine coverage for Hexavalent 1 in 2020 is broadly similar to vaccine coverage in 2019, Hexavalent doses 2 and 3 coverage is lower in 2020 compared to 2019, indicating fewer children have completed the full course. Whilst the size of the decrease in vaccine coverage was smaller in the August and September monthly extracts, it is concerning that coverage for Hexavalent dose 3 fell again in the October, November and December monthly extracts.

Furthermore, an observed drop in Hexavalent dose 1 coverage has been observed in December 2020 compared to December 2019.

Vaccine coverage for MMR1 in 2020 is lower than 2019, and in both years, coverage is far short of the WHO target of 95% by 24 months. Coverage measured at 18 months of age is only just beginning to monitor children who were scheduled to receive the vaccine in the initial months of lockdown.

Although data presented in the most recent COVER report largely reflects vaccines administered prior to the end of 2019, before the COVID-19 pandemic started, children who missed some of their routine immunisations when first scheduled and otherwise might have caught up by the first, second or fifth birthday, may have been impacted by the lockdown and/or local restrictions from late March onwards. This data aligns with our findings in Hexavalent and MMR vaccine coverage at 6 and 18 months among children eligible prior to the pandemic.

Strengths and limitations

This interim analysis of early vaccine coverage for children before they reach the target ages of 12 and 24 months used for routine surveillance systems provides a timelier assessment of the impact of COVID-19 on primary immunisations in England. The report helps monitor national level vaccine coverage throughout the pandemic.

The vaccination counts data presented in this report was the first available data extracted to monitor the impact of COVID-19 on primary immunisations in England. Weekly vaccination counts do show an early assessment and may predict future drops in vaccine coverage extracted in later ImmForm extracts. However, it is important to note that the data is only from one GP IT supplier (TPP) and coverage estimates cannot be calculated without age-specific denominator data. Additionally, some regions are less represented than others and therefore do not represent data for all of England. This data should therefore be viewed with some caution and will not necessarily reflect vaccination count trends at a local level. The drop-in vaccination counts may be explained by a slightly smaller cohort or a small decline in coverage [2].

Vaccine coverage estimates from ImmForm show early estimates of vaccine coverage. This data allows for local performance management where areas can assess which cohorts may require further follow-up for vaccination. Vaccine coverage estimates are extracted by GP IT suppliers, based on a set list of SNOMED CT codes, therefore these estimates only reflect coverage for children registered with a GP practice, and that have correct coding in their GP record. Furthermore, the ImmForm data is experimental data and to date has only been used for performance management purposes - it is not validated at the GP practice level. Smaller areas may see greater differences in coverage due to smaller numbers.

Conclusion

Future weekly vaccination counts data from TPP and monthly ImmForm collections will continue to monitor any impact of COVID-19 on early vaccine coverage. Vaccine coverage will vary across the country and local areas can monitor early estimates of coverage in their areas using ImmForm and other data sources to identify areas needing more support.

As physical distancing measures change throughout the course of the pandemic and the risk of other infectious diseases circulating increases it is of utmost importance that GPs continue offering routine immunisations, check and recall those who have not received a vaccine and, where required, recovery plans should be set in place to address any drop in vaccine coverage observed since the beginning of the pandemic.

Local areas should engage with specific cohorts of infants and children who may have been affected when social distancing measures were introduced, to ensure that they are rescheduled for their immunisations. These children will remain eligible and will be assessed in the appropriate age-specific routine quarterly coverage estimates in the COVER publication.

References

1. Public Health England (2020). Cover of vaccination evaluated rapidly programme

2. McDonald HI, Tessier E, White JM, Woodruff M, Knowles C, Bates C, et al (2020). Early impact of the coronavirus disease (COVID-19) pandemic and physical distancing measures on routine childhood vaccinations in England, January to April 2020. *Eur. Surveill*. 25(19) (14 May).

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7. Public Health England (2020). Routine Immunisation Schedule

8. JCVI (2020). Statement from JCVI on immunisation prioritisation

Appendices

Table A1. Monthly data extracts from ImmForm survey for Hexavalent vaccine, showing month of birth and the month vaccine is first due.

Hexavalent Vaccine					
Month data is extracted from ImmForm	**Age at which data is extracted**	**Month of birth**	**Month vaccine first due**		
			Dose 1 (8 weeks old)	Dose 2 (12 weeks old)	Dose 3 (16 weeks old)
Jan 2020	6 months	Jul 2019	Sep 2019	Oct 2019	Nov 2019
Feb 2020	6 months	Aug 2019	Oct 2019	Nov 2019	Dec 2019
Mar 2020	6 months	Sep 2019	Nov 2019	Dec 2019	Jan 2020
Apr 2020	6 months	Oct 2019	Dec 2019	Jan 2020	Feb 2020
May 2020	6 months	Nov 2019	Jan 2020	Feb 2020	Mar 2020
Jun 2020	6 months	Dec 2019	Feb 2020	Mar 2020	Apr 2020
Jul 2020	6 months	Jan 2020	Mar 2020	Apr 2020	May 2020
Aug 2020	6 months	Feb 2020	Apr 2020	May 2020	Jun 2020
Sep 2020	6 months	Mar 2020	May 2020	Jun 2020	Jul 2020
Oct 2020	6 months	Apr 2020	Jun 2020	Jul 2020	Aug 2020
Nov 2020	6 months	May 2020	Jul 2020	Aug 2020	Sep 2020
Dec 2020	6 months	Jun 2020	Aug 2020	Sep 2020	Oct 2020

Table A2. Monthly data extracts from ImmForm survey for MMR1 vaccine, showing month of birth and the month vaccine is first due.

MMR1			
Month data is extracted from ImmForm	**Age at which data is extracted**	**Month of birth**	**Month vaccine first due**
Jan 2020	18 months	Jul 2018	Jul 2019
Feb 2020	18 months	Aug 2018	Aug 2019
Mar 2020	18 months	Sep 2018	Sep 2019
Apr 2020	18 months	Oct 2018	Oct 2019
May 2020	18 months	Nov 2018	Nov 2019
Jun 2020	18 months	Dec 2018	Dec 2019
Jul 2020	18 months	Jan 2019	Jan 2020
Aug 2020	18 months	Feb 2019	Feb 2020
Sep 2020	18 months	Mar 2019	Mar 2020
Oct 2020	18 months	Apr 2019	Apr 2020
Nov 2020	18 months	May 2019	May 2020
Dec 2020	18 months	Jun 2019	Jun 2020

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Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, research, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

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