

# THE LANCET

## Global Health

### Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Shet A, Carr K, Danovaro-Holliday MC, et al. Impact of the SARS-CoV-2 pandemic on routine immunisation services: evidence of disruption and recovery from 170 countries and territories. *Lancet Glob Health* 2021; published online Dec 21. [https://doi.org/10.1016/S2214-109X\(21\)00512-X](https://doi.org/10.1016/S2214-109X(21)00512-X).

## Supplementary Methods

### *Regional data from WHO Regional Offices*

Regional offices from the six WHO Regions collected information from their respective Member States with data points pertaining to the status of routine immunization within the context of the COVID-19 pandemic. Data collection instruments included web-based surveys, spreadsheets, and free-text reports. The instruments were developed and implemented by the regions, and were not standardised across region.

Data for April 2020 were extracted and reports of disruption to routine immunization were mapped to a predefined set of indicators, including the following: routine immunization sessions; vaccine supply; demand for immunization services; and, health workforce availability. In instances where the data collection instrument did not include a predefined indicator, respondents may have self-reported the information via a free-text field, in which case it was extracted and incorporated into the analysis of that region. If no information on an indicator was available, either directly or indirectly through free text, it was reported as unavailable.

### *Administered doses data of selected vaccines*

The WHO Regional Offices of Africa, the Americas, Eastern Mediterranean, South East Asia, and the Western Pacific collected data on number of vaccine doses administered in 2019 (collected prior to the pandemic) and 2020 from countries. The WHO European Regional office did not have a mechanism to collect these data. There was variation in data availability, and the number of countries with data available tapered from 95 in January to 54 in December.

### *Pulse Surveys on Immunization Activities*

Survey questions explored the perceived status of routine immunization services, supplementary immunization activities (SIAs) and measles surveillance, as well as the factors driving disruption. Respondents were asked for specific details around plans for reaching children who may have missed vaccination due to the pandemic. Information on vaccination campaigns and vaccine-preventable disease (VPD) surveillance was not sought, as other monitoring mechanisms had been put in place.

Pulse survey responses were analyzed using two approaches. The first sought to derive a single characterization of immunization disruption per country by accounting for instances where more than one individual responded from the same country. For the purpose of maintaining national representation, analysis was restricted to those who indicated they work at the national level and a single status for the country was calculated based on the majority of responses. Descriptive statistics were performed and results were expressed as frequencies and proportions of reporting countries. The second analytical approach included all respondents working at the national and subnational level, and was used to assess factors driving disruption, status of vaccine supply, catch-up activities, and awareness of tracking mechanisms for rumors and misinformation. Descriptive statistics were performed, weighted by the number of

respondents per country to account for countries over-represented among respondents. Results were expressed as weighted proportions of survey respondents.

**Supplementary table 1:** Weighted mean relative difference in third dose of diphtheria-tetanus-pertussis vaccine (DTP3) and first dose of measles-containing vaccine (MCV1) administered in the months of January through December 2020 compared to 2019 globally and by WHO Region.

	AFR		AMR		EMR		SEAR		WPR	
	DTP3	MCV1	DTP3	MCV1	DTP3	MCV1	DTP3	MCV1	DTP3	MCV1
<b>Jan</b>	2.5	-0.7	-3.0	-2.7	-4.9	-1.4	11.7	17.2	-14.2	-21.4
<b>Feb</b>	2.1	1.7	-2.4	3.2	-3.7	6.6	7.6	7.7	-14.2	-21.4
<b>Mar</b>	-1.9	-2.1	-7.6	-5.4	-27.2	-16.0	-15.0	-25.4	-32.5	-39.0
<b>Apr</b>	-9.2	-9.9	-23.4	-28.5	-49.6	-26.5	-58.0	-57.9	-38.4	-43.6
<b>May</b>	-7.5	-4.8	-28.9	-29.3	-43.2	-23.0	-28.1	-12.7	-	-
<b>Jun</b>	1.6	5.9	-28.9	-16.0	-15.6	-4.9	-7.5	3.0	-	-
<b>Jul</b>	-1.1	-3.0	-30.9	-20.5	-10.8	-6.2	-3.2	-8.8	-	-
<b>Aug</b>	1.6	-2.9	-16.5	-10.6	-0.9	1.8	-0.9	-7.7	-	-
<b>Sep</b>	5.7	6.6	4.8	16.7	2.7	3.4	1.3	-4.4	-	-
<b>Oct</b>	2.8	2.7	-	-	12.9	15.4	2.1	-2.9	-	-
<b>Nov</b>	4.7	3.7	-	-	13.2	13.8	3.9	0.3	-	-
<b>Dec</b>	15.5	21.5	-	-	16.5	9.0	-7.1	-8.0	-	-

Average relative difference in third dose of diphtheria-tetanus-pertussis and first dose of measles-containing vaccine administered in 2020 compared to 2019 weighted by surviving infants. AMR: Region of the Americas; AFR: Region of Africa; EMR: Region of Eastern Mediterranean; SEAR: Region of South East Asia; WPR: Region of the Western Pacific. Source: Analysis of administrative data of vaccine doses given, and United Nations Population Division (UNDP) data for surviving infants per country. Dashed line indicates that data were unavailable.