Disruptions to childhood immunisation due to the COVID-19 pandemic

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In *The Lancet*, Kate Causey and colleagues[1] report their estimates of the disruptions to routine childhood immunisation coverage for the third-dose diphtheria-tetanus-pertussis (DTP3) vaccine and first-dose measles-containing vaccine (MCV1) at the global, regional, and national levels due to the COVID-19 pandemic. These modelled estimates are of importance to national immunisation programmes for planning and implementing catch-up vaccination services to close the immunity gaps and prevent vaccine-preventable disease outbreaks.[2] The urgent need for catch-up vaccination efforts is conspicuous for most contagious childhood diseases, including measles and pertussis.[3]

Although the direct health effects of the COVID-19 pandemic have been devastating, the indirect effects on health-care systems and services have been colossal globally. These indirect effects include the disruption to childhood immunisation services in at least 85 countries during 2020, which has affected around 80 million children younger than 1 year of age.[4,5] WHO issued interim guidance in March, 2020, on immunisation activities during the COVID-19 pandemic, which recommended continuation of routine immunisation services and a temporary suspension of mass vaccination campaigns.[6] The programmatic guidance on continuing routine immunisation services was also supported by a benefit–risk analysis that inferred that the health benefits of sustaining routine immunisation services far outweigh the excess risk of SARS-CoV-2 infections during the clinical visits.[7] However, routine immunisation services were disrupted at higher levels than other essential health services during 2020.[8]

Causey and colleagues[1] provide, to our knowledge, the first modelled quantitative assessment of disruptions to routine immunisation services throughout 2020 at the global, regional (seven Global Burden of Disease super-regions), and national (204 countries and territories) levels. They did an evidence synthesis of mobility trends and monthly estimates of country-reported data and supplementary sources (the published literature, ministry of health websites, and media reports) on DTP3 and MCV1 dose administration. The authors inferred that the disruptions to childhood immunisation were relatively high during the early months of the COVID-19 pandemic, but recovered close to expected levels by the end of 2020. In comparison with pre-pandemic expected projections, the authors estimated that an additional 8·5 million (95% uncertainty interval 6·5–11·6) children missed DTP3 doses and an additional 8·9 million (5·7–13·7) children missed MCV1 doses during 2020. Furthermore, the authors estimated that, from January to December, 2020, 30·0 million (27·6–33·1) children missed DTP3 doses and 27·2 million (23·4–32·5) children missed MCV1 doses. Globally, monthly disruptions were the highest in April, with 4·6 million (4·0–5·4) children missing DTP3 doses and 4·4 million (3·7–5·2) children missing MCV1 doses.

Causey and colleagues[1] used data from 94 countries and, to account for locations without monthly data on vaccination coverage, they used changes in mobility patterns as a proxy to estimate the disruptions to routine immunisation services. As empirical estimates of the disruptions to childhood immunisation become available for more locations, the study will need to be revisited to validate the methods and revise the estimates of DTP3 and MCV1 coverage to infer location-specific immunity gaps in need of catch-up vaccination efforts. The current estimates are not disaggregated by sex and ethnicity; estimates of the disruptions to immunisation by sex and ethnicity are important future requirements, as these will allow improved planning and targeting of catch-up vaccination services among disproportionately affected subpopulations. As multiple waves of the COVID-19 pandemic could have affected routine immunisation in 2021 and might continue to affect vaccination programmes beyond 2021, temporal expansions of the modelling estimates will also be valuable.

Vaccines save millions of lives each year and have been a cost-effective intervention to reduce disability and mortality, especially among children, while improving health equity across low-income, middle-income, and high-income countries.[9] The Vaccine Impact Modelling Consortium has estimated that, since the inception of Gavi, the Vaccine Alliance in 2000, 37 million deaths have been averted by vaccination against ten select

pathogens in 98 low-income and middle-income countries between 2000 and 2019, and an additional 32 million lives could be saved between 2020 and 2030.[10] The disruptions to childhood immunisation due to the COVID-19 pandemic jeopardise the decades of efforts to enhance vaccine access and coverage, while compounding the existing global challenge of 20 million under-immunised children each year, of whom more than 13 million did not receive any vaccines during their first year of life even before the pandemic in 2018.[11]

Although physical distancing measures due to the COVID-19 pandemic might have reduced the transmission of childhood infectious diseases, the risk of vaccine-preventable disease outbreaks among children will increase as COVID-19-related mitigation measures are lifted.[12] Therefore, we commend Causey and colleagues[1] for generating this timely evidence and these modelled estimates of disruptions to childhood immunisation as a result of the COVID-19 pandemic, which are important for inferring immunity gaps and epidemiological risk assessment of vaccine-preventable disease outbreaks among children in the future. We recommend national immunisation programmes to act upon this valuable evidence for planning and implementation of catch-up vaccination services to close the immunity gaps, to avoid reversing the substantial gains from childhood immunisation in reducing mortality and morbidity globally.

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