

intensive outreach vaccination efforts instead of an increase in demand. One year since the onset of the pandemic, the average daily immunization doses administered through outreach increased by 121 percent above baseline estimates. In contrast, vaccines administered at immunization clinics were still 22 percent below baseline. The example of Pakistan shows LMICs can successfully deploy mitigation strategies to catch up with missed children during Covid-19 and sustain routine childhood immunizations to close immunity gaps.

Key messages:

- Although the lockdown resulted in a 53% drop in immunizations, at the 1-year mark since the pandemic started, 76% of children who missed immunizations are vaccinated.
- Pakistan data shows LMICs can rectify routine immunization coverage and immunity gaps and rebound successfully to their pre-COVID-19 coverage rates.

1-year impact of COVID-19 on childhood immunizations in Pakistan: analysis of >3.7 million children

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Covid-19 has universally disrupted primary health care, but routine childhood immunizations are one the most affected services. We analyzed big data in vaccines for measuring the 1-year impact of Covid-19 on outline childhood immunizations for the 48 million population in the Sindh province of Pakistan. We extracted and analyzed >3.7m real-time immunization records of 0-23 months old children from the Sindh Government's Electronic Immunization Registry (EIR). Using a 6-month baseline preceding the COVID-19 lockdown, we quantified the lockdown's (March 23-May 9, 2020) impact on daily immunization rates by geographical area and the change in coverage rates at the one-year mark since the lockdown. The lockdown resulted in 53% drop in the number of immunizations. The impact in rural areas as more than in urban areas (54.9% decline vs 47.5% decline from baseline), and slums had a slightly larger decrease in immunization coverage than non-slum areas (53.8% vs. 51.3%). Of 1,246,321 children who missed immunizations during first year of the pandemic, 76% of these children were eventually vaccinated by the end of March 2021. Similarly, of the 417,553 children who had dropped out during the initial 7-week national lockdown (March 23-May 10, 2020), 79% were immunized by March 2021. Our analysis of EIR data shows that the catch-up and recovery of coverage rates have primarily been driven through