



# Childhood immunisations in India during the COVID-19 pandemic

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The COVID-19 pandemic has led to major disruptions in the delivery of essential health services including routine immunisation services in many countries, setting the stage for potentially serious population health effects. The WHO reported major disruptions to vaccination services in countries around the world, and estimated that approximately 80 million children under the age of 1 were living in countries where routine immunisation services were disrupted and could potentially be at risk of developing a vaccine-preventable illness.<sup>1</sup> Evidence from previous epidemics has demonstrated that even temporary interruptions of routine immunisation services can lead to secondary public health crises, such as outbreaks of vaccine-preventable diseases, amplifying morbidity and mortality.<sup>2</sup> This commentary explores the possible effects of the COVID-19 pandemic on routine immunisations in India.

Results from a survey of Indian paediatricians<sup>3</sup> amplify a growing chorus around the globe calling for a focus on vaccine-preventable illnesses, even as COVID-19 cases grow worldwide. This comes at a pivotal time in India's ongoing pursuit to improve immunisation coverage. The national immunisation programme run by the Government of India is one of the largest in the world, with an annual reach of over 26 million children and 29 million pregnant women.<sup>4</sup> Mission Indradhanush was launched in 2014 to extend this reach and achieve full immunisation for 90% of children, and the programme was further intensified in 2019.<sup>4 5</sup> While remarkable progress has been made, there is evidence of existing inequalities in coverage.<sup>6</sup>

Early in the pandemic, soon after the lockdown was announced, there were major disruptions in health services, especially in women and children's services. Movement restrictions were likely to have disrupted strategies used by Mission Indradhanush,

including community mobilisation, door-to-door campaigns and monitoring events. The National Health Mission's health management and information system reported a substantial decrease in routine immunisation services relative to the previous year, indicating that in March 2020 at least 100 000 and 200 000 children missed their BCG and pentavalent (diphtheria, tetanus, pertussis, hepatitis B and *Haemophilus influenzae* type b) vaccines, respectively.<sup>7 8</sup> Researchers modelled different scenarios and used the Lives Saved Tool (LiST, a mathematical modelling tool to estimate the impact of programme coverage of maternal, newborn and child health on mortality at a country level<sup>9</sup>) to demonstrate that widespread disruption to health systems could lead to substantial increases in maternal and child deaths.<sup>10</sup> In India they estimated that an additional 49 000 child deaths and 2300 maternal deaths in a month could be attributable to severely disrupted services.<sup>10</sup> Applying the current population demographic data in India, estimates suggested that eventually over 27 million children will miss out on diphtheria tetanus pertussis vaccines and other health services, resulting in a 40% increase in child mortality over the next year.<sup>11</sup> If vaccination services are not restored and barriers to access are not addressed, disparities will become more pronounced and the number of zero-dose children will likely increase. India currently accounts for 2.1 million of the 20 million unvaccinated and undervaccinated children globally (11%),<sup>12</sup> and the national lockdown has shown its potential to further exacerbate this problem. Without targeted campaigns and effort, there is a legitimate risk for a reversal of gains made through national programmes.

Experiences from past outbreaks provide lessons on the indirect impacts which can be even more harmful to health. Analyses from the West African Ebola outbreak in 2014–2015



suggest that the increased number of deaths caused by other infections such as measles, HIV and tuberculosis attributable to health system failures exceeded deaths from Ebola.<sup>2 13</sup> A sustained period of disrupted immunisation can result in the accumulation of susceptible individuals, which in turn can lead to disease outbreaks.<sup>14</sup> Given the disruptions and the realisation of the dire consequences, the Government of India declared immunisation an essential health service in April 2020 and issued guidelines for states to resume routine immunisation services.<sup>15</sup> In June 2020 India began a phased reopening of the economy, and the resumption of immunisation activities was appropriately structured based on local COVID-19 infection rates and restrictions. These activities were based on the WHO guidance urging nations to continue providing essential services along with COVID-19 mitigation and treatment measures in order to maintain public trust and minimise morbidity and mortality.<sup>16</sup>

Coordinated campaigns across India targeting children who missed critical routine vaccinations during the national lockdown, as well as targeting low-coverage areas, could prevent additional public health disasters. Prioritising measles vaccine catch-up would be most prudent given the outbreak potential with even marginal reduction in herd immunity.<sup>17</sup> Planning catch-up campaigns now is essential so providers can minimise the time children are at risk of vaccine-preventable diseases. Vaccination catch-up sessions could institute innovative strategies such as implementing appointment-only visits or designated walk-in clinics for healthy children, minimising overcrowding, separating immunisation visits from sick children visits, prioritising robust communication efforts which address caregivers' fears of contracting COVID-19, and sending reminders to caregivers of the importance of routine vaccinations.<sup>18</sup> In addition, healthcare strategies such as the Integrated Management of Newborn and Childhood Illnesses can strengthen their focus on immunisation. Empowering community health workers to trace children who missed vaccination appointments can help restore baseline vaccination levels. Catch-up vaccinations can also be given to children in contact healthcare facilities for acute or chronic illnesses.<sup>19</sup> There is growing evidence that the risk to benefit ratio is decidedly in favour of continuing vaccination services even when considering the consequences of doing so during the pandemic.<sup>20</sup> Gaining provider insights on effective strategies is essential to establishing context-specific mechanisms to prioritise catch-up for missed vaccines. In neighbouring country Pakistan, an analysis of predictors associated with immunisation during their lockdown showed that factors such as higher maternal education, facility-based births and early enrolment into the immunisation programme were associated with higher immunisation uptake.<sup>21</sup> Interventions targeted at sustaining these predictors could be effective means of engaging with caregivers to ensure catch-up for missed vaccines in India as well. A pulse survey from the WHO indicated

partial disruption of essential health services beyond immunisations in many regions of the world, particularly in lower-income countries,<sup>22</sup> which prompted a strong call to arms for health systems and governments to 'build back better' to incorporate health system resilience and maintain the provision of essential health services during and after the COVID-19 pandemic.<sup>23</sup>

The Government of India has recently worked on several strategies for health systems strengthening, including incorporating a coordinated programme for public health surveillance, which will help monitor outbreaks of vaccine-preventable diseases among other diseases.<sup>24</sup> In the context of the pandemic, the Government of India has approved COVID-19 vaccines and the nation has embarked on one of the largest and most ambitious immunisation campaigns in the world. Although children will not receive the COVID-19 vaccine at this time, their caregivers and healthcare providers who will receive the vaccine should be provided with targeted messages and reminders for childhood routine immunisations. In addition, liaising routine immunisation campaigns with the COVID-19 vaccine roll-out, particularly in hard-to-reach areas, would be beneficial, given India's vast human resources and immunisation experience. Concerted efforts are needed from governing and academic groups to ensure that routine immunisation and catch-up programmes are implemented to sustain gains in vaccination coverage and provide a robust blueprint for the national roll-out of the COVID-19 vaccine.

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