




COMMENTARY



## Addressing an urgent global public health need: Strategies to recover routine vaccination during the COVID-19 pandemic

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### ABSTRACT

Routine vaccination has been severely impacted by the COVID-19 pandemic, with 37% of countries reporting continuing disruptions to vaccination services into 2021. These programs have been faced with the challenges of achieving high vaccination coverage rates (VCRs), as well as identifying and vaccinating those who missed recommended doses since the pandemic began. Declines in VCRs, even for short periods, can lead to an increase in disease outbreaks, place additional pressure on health systems, and leave communities across the world at risk of death and disease from vaccine-preventable diseases.

In the face of these disruptions, select governments are implementing promising approaches to address low VCRs, some of which represent innovative solutions to advance short-term, as well as longer-term program improvement. However, expanded action is urgently required to fully recover vaccination programs and strengthen vaccine system infrastructure. The COVID-19 pandemic provides a unique opportunity to modernize routine programs and corresponding infrastructure to meet today's and tomorrow's health challenges more effectively and efficiently. This can be achieved by prioritizing routine vaccination as an essential health service, improving access to vaccination across the life-course, strengthening data systems, ensuring sustainable immunization financing, and building confidence in vaccination.

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Unequivocally, SARS-COV-2 poses a significant health threat to global populations and warrants urgent coordinated action;<sup>1</sup> however, an indirect impact of the pandemic, namely the disruption of routine vaccination, must also be immediately addressed.<sup>2</sup> The COVID-19 pandemic has reversed years of progress to expand vaccination programs around the world, reach target vaccination coverage rates (VCRs), and achieve vaccine equity.<sup>2-4</sup> During this time, countries have struggled to recover routine vaccination programs by both delivering high VCRs and systematically identifying and vaccinating those who missed recommended doses.

Left unaddressed, declines in VCRs will cause a resurgence in disease outbreaks leaving communities across the world at risk of disease and death from vaccine-preventable diseases (VPDs).<sup>2,5</sup> Disruptions to routine vaccination could also lead to downstream consequences such as absenteeism at work,<sup>6,7</sup> decreased performance in school,<sup>6,8</sup> and antimicrobial resistance,<sup>6,9</sup> which could increase burdens on the health system. As the pandemic evolves, it is critical to maintain efforts to prevent other infectious diseases that can be averted through vaccination, avoid unnecessary societal costs, and protect the health of communities around the world.

Routine vaccination has been delayed or suspended in at least 68 countries since the pandemic began.<sup>10</sup> A recent World Health Organization (WHO) survey reported that more than one-third of countries have had continued disruptions to routine immunization programs in 2021.<sup>3</sup> These disruptions have put nearly

228 million people, mostly children, at risk for infectious diseases.<sup>3</sup> For adolescent and adult programs, early estimates indicate a substantial decline in VCRs,<sup>5,11</sup> but the full extent of the pandemic's impact is unclear due in part to lack of comprehensive data systems and additional barriers to vaccine infrastructure. The pandemic has also been especially debilitating for low and middle-income countries given their limited capacity to address COVID-19 alongside other health challenges, including the threat of other VPDs.<sup>5</sup> Vaccine uptake estimates from 2020 suggest that up to 17 million children – most from underserved or vulnerable communities – did not receive any vaccines, exposing and exacerbating health inequities related to vaccine access.<sup>2</sup>

Improving routine immunization program capacity is essential for countries to adeptly prevent, manage, and recover from outbreak-prone VPDs, as well as VPD-attributable longer-term cancers and diseases.<sup>12</sup> Key strategies must be implemented in order to strengthen routine immunization programs during and following the pandemic, including: prioritizing vaccination as an essential health service, improving access to vaccination, ensuring sustainable immunization financing, strengthening vaccine data systems, and building trust and confidence in vaccination. The COVID-19 pandemic has exposed cracks in existing vaccine program infrastructure, and while some countries have introduced policy and programmatic changes to recover routine programs, more must be done to strengthen these vulnerabilities, modernize vaccination programs, and protect vaccination now and in the future.

As the pandemic evolves, there is an urgent need for key stakeholders to take action to implement previously overlooked or underutilized initiatives to recover vaccination rates and bolster routine immunization programs.

### Promising approaches to recover and improve routine vaccination

Several countries have implemented promising approaches to address disruptions to routine vaccination programs by enacting policy changes and altering day-to-day programmatic operations that could serve as examples for countries seeking to recover routine vaccination. Policy and programmatic changes have included:

- **Prioritizing routine vaccination as an essential health service across the life-course:** Several countries have specifically focused on routine vaccination during the pandemic. For example, certain vaccinations have been prioritized for older adults who are homebound or who are in long-term care facilities in Norway<sup>13</sup> and for children and adolescents under age 15 years in Brazil.<sup>14</sup> In Southeast Asia, countries have developed national guidelines and action plans to continue vaccination and VPD surveillance during the pandemic, along with plans to monitor implementation of these guidelines.<sup>15</sup> Through these efforts, countries were able to quickly recover VCRs; most countries even recorded similar VCR levels from July-September 2020 as reported during the same time period in 2019.<sup>15</sup>
- **Expanding access to vaccination services through non-traditional vaccinators:** Engaging non-physician health professionals as vaccinators has the potential to improve access to services,<sup>16,17</sup> specifically for people who cannot reach traditional vaccination points such as clinics and schools. Even prior to the pandemic, pharmacists have served as vaccinators for certain routine vaccinations in countries around the world.<sup>18</sup> Other non-physician health professionals including dentists, paramedics, and maternal care providers have also historically recommended or administered vaccines.<sup>19–21</sup> Countries such as the United States and New Zealand have established policies to allow pharmacists to administer certain routine vaccinations during the COVID-19 pandemic.<sup>22,23</sup> In the United Kingdom, they have expanded the range of healthcare workers who can deliver certain vaccinations to include midwives, physiotherapists, and paramedics, in addition to pharmacists and physicians.<sup>24</sup>
- **Leveraging alternative sites for vaccination services:** The WHO has noted that vaccines may be administered at alternative locations to support increased access to vaccination.<sup>25</sup> Examples have been observed for vaccination programs across the life-course. In Australia, an opportunistic vaccination program aimed to address access barriers due to pandemic restrictions by providing certain in-home vaccinations for infants, children and adolescents 18 years of age or younger.<sup>26</sup> In the United Kingdom, a school nursing

service established drive-thru vaccination clinics to maintain services for certain routine vaccinations, including for adolescents.<sup>27</sup> Similarly, officials in El Salvador and Bolivia began vaccinating at banks and nursing homes in part to improve access for older adults, and governments in Brazil and Chile have implemented drive-thru vaccination services.<sup>28</sup> Vaccination at non-clinical sites has been implemented to address challenges associated with vaccination at health facilities and schools, including decreased demand for fear of COVID-19 exposure, school closures, and decreased staff availability due to the COVID-19 pandemic response.<sup>5,29,30</sup>

- **Utilizing digital technologies to improve program performance:** Where feasible, digital technologies developed prior to the pandemic can be implemented to improve routine immunization programs. For example, in Indonesia, a digital technology system has been implemented in certain areas to strengthen vaccination supply chain by enabling digital, real-time monitoring of cold-chain logistics and digitizing supply and temperature monitoring across vaccine cold chain points.<sup>31</sup> This system, first implemented in 2018, has linked over 2,700 integrated health centers and private practices to date and has significantly reduced vaccine stockouts and overstock.<sup>31</sup> Similarly, in Pakistan, a digital vaccination registry system was scaled up in the Sindh province in 2017 to collect and track real-time data on vaccination status, geographic location, and biographical data.<sup>32</sup> This digital tool has enabled program officials to monitor gaps in coverage during the COVID-19 pandemic, locate populations at risk of VPDs by identifying areas with under- and unvaccinated children, and improve resource allocation by referring caregivers to less crowded health facilities.<sup>32</sup>

For these promising approaches to become impactful at scale, within and across countries, they must be evaluated for effectiveness and impact. If successful, policy and programmatic changes should be considered for long-term use and shared systematically for implementation or adaptation by other countries. Identifying evidence-based strategies to strengthen routine vaccination is critical to informing public health policy and providing equitable access to vaccination both during and following the COVID-19 era.<sup>25,33,34</sup> When promoting certain strategies to improve vaccination programs and VCRs, it is important to consider that successful interventions depend on strong health system infrastructure and investment, which varies across the globe and can inhibit access to health services such as vaccination.

### More must be done to recover and improve routine vaccination rates

While promising practices are being implemented across the globe, more must be done to fully recover and improve routine vaccination rates and modernize vaccine system infrastructure to strengthen programs and prevent future disruptions.

The COVID-19 pandemic has illustrated the importance of resilient health systems, which applied through the lens of vaccination programs, have the ability and capacity to “withstand major shocks and disruptions, quickly adapt to changing circumstances, and maintain high vaccine uptake and acceptance over time.”<sup>35,36</sup> The pandemic has exposed existing weaknesses in health systems that predated COVID-19 and offers an opportunity for action. This moment provides the imperative for policy stakeholders to implement substantive changes to maintain services in the face of current and future health threats and build resilient vaccination programs to support vaccination for people across all ages and throughout the changing circumstances of their lives. Immediate actions that policy stakeholders can take to support efforts to recover and improve vaccination rates include:

- (1) **Prioritize routine vaccination as an essential health service across the life-course.**<sup>12,33</sup> The WHO has identified routine vaccination as an essential health service that must be safeguarded for continuity where possible or reinstated as soon as local conditions allow.<sup>12</sup> A small number of countries have prioritized vaccination across the life-course or have bolstered adult vaccination in response to the pandemic. Policymakers should ensure vaccination services remain a priority, actively encourage uptake, and promote the importance of routine vaccinations across all ages and circumstances.
- (2) **Improve access to routine vaccination services through expanded delivery systems.** With physical access to vaccination identified as a significant barrier to uptake during the pandemic, vaccination programs must be convenient and meet patients where they are. This could include increasing access points to services by identifying alternative sites for vaccination, such as drive-thru clinics or schools, or could include expanding scope of practice to authorize alternative health professionals, such as pharmacists, to administer vaccinations.<sup>23,37,38</sup> Efforts should also be made to guarantee adequate human resources to ensure operational capacity, considering additional resources required for parallel COVID-19 vaccination, social distancing measures, and reaching individuals who missed recommended routine vaccinations in earlier phases of the pandemic.
- (3) **Ensure financing for vaccination programs.** To recover and improve VCRs above and beyond pre-pandemic levels, it will be critical to secure short- to medium-term health sector financing for routine immunization programs.<sup>39</sup> In doing so, policymakers should ensure that these investments strengthen broader vaccination systems and equip vaccination programs to adequately respond to public health needs.<sup>40</sup> Key actions include building political will and consensus, updating budgetary space for health programs including vaccination, and developing evidence-based strategies for resource allocation.<sup>39</sup> Governments and key stakeholders must also act now to ensure sustained investment in vaccination program infrastructure and reinforce efforts to

build strong and resilient public health systems. A strong commitment to sustainable immunization financing is needed both to improve performance of routine immunization programs and to enable programs to respond more efficiently and effectively to existing and emerging infectious disease threats.<sup>40</sup>

- (4) **Strengthen vaccine data systems.** The pandemic has demonstrated the critical role that strong data systems can play in monitoring disease incidence, vaccination campaigns, and areas of risk. At the individual level, vaccine data systems, also referred to as immunization information systems, can determine what vaccines an individual may need and can be useful for reminder/recall interventions.<sup>41</sup> At the population level, vaccine data systems can enable programs to monitor vaccination trends, identify gaps in vaccination, and develop targeted vaccination initiatives.<sup>41,42</sup> Data systems should be enhanced to identify high-risk populations for disease outbreaks and plan catch-up vaccination programs to not only recover VCRs to pre-pandemic levels, but to also ensure that individuals who missed recommended vaccinations are identified and offered vaccinations.<sup>43,44</sup> These data systems should also be designed with technical features to facilitate secure information sharing with other entities and enable data collection for vaccinations across the life-course.<sup>43</sup>
- (5) **Build trust and confidence in vaccination.** Vaccine hesitancy, a continual threat to routine vaccination,<sup>45</sup> has intensified in certain regions around the world during the COVID-19 pandemic.<sup>46</sup> To improve confidence in vaccination, health stakeholders should assess local causes of vaccine hesitancy, adapt communication strategies to address mis- and dis-information, and collaborate with trusted community members to promote vaccine acceptance.<sup>12,47,48</sup>

Actions today will determine the course of global vaccination in the coming years, including the ability to achieve the UN Sustainable Development Goals, the WHO’s Immunization Agenda 2030, reach universal health coverage, address health inequities, and protect global health security.<sup>43,49,50</sup> In reaching toward these ambitious goals, vaccination programs will require the resources, capabilities, and agility to enable policy and programmatic changes to be implemented and sustained over time.

The COVID-19 pandemic has challenged the global health community to reimagine routine immunization programs and to think creatively about ways to recover and improve coverage rates. It is important that the global health community maintain an innovative mindset, to continue to adapt and evolve routine immunization programs to meet community needs, especially in vulnerable and underserved populations, to ultimately ensure that no one is left behind.

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