

# Provincial Intra-Action Review of the COVID-19 Vaccination Programme: Opportunities to Improve Vaccine Response in North Kivu, Democratic Republic of Congo

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**Background:** Low levels of COVID-19 vaccination coverage in many countries prompted the use of rapid assessments to characterize barriers to vaccination and identify corrective measures. The World Health Organization recommended the use of intra-action reviews (IARs) to identify best practices, gaps, and lessons learned to make real-time improvements to the COVID-19 vaccination response.

**Objective:** The Democratic Republic of the Congo (DRC) implemented a national IAR in July 2021 that was poorly attended by the provincial health level, where vaccination activities are planned and implemented. To bridge this gap, we proposed sub-national IARs focused on COVID-19 vaccine program implementation at the provincial level.

**Methods:** Using the WHO methodology, we organized a four-day provincial IAR workshop and invited national, provincial and health zone Ministry of Health (MoH) representatives and private and non-governmental organizations involved in the provincial COVID-19 vaccination response. Participants were divided into six groups based on their expertise, affiliation, and role within the health system to assess and identify lessons learned, challenges and the solutions within each of the six technical areas: (1) coordination, planning and monitoring; (2) service delivery; (3) risk communication and community engagement; (4) adverse effects following immunization (AEFI); (5) logistics; (6) and data management, monitoring and evaluation.

**Results:** The first provincial COVID-19 IAR was conducted in Goma, North Kivu, from January 19–22, 2022. A total of 56 participants came from provincial and health zone offices, and non-governmental organizations. Through work group discussions, they identified best practices, challenges, and lessons learned, and made recommendations to improve implementation of vaccination activities and reach coverage targets. Activities were proposed to operationalize recommendations and address challenges to improve the provincial response.

**Conclusion:** This provincial IAR was a useful tool for reviewing progress and areas of improvement, while evaluating aspects of the COVID-19 vaccine rollout. It provided a means to share information with vaccination partners on areas of intervention, tailored to the local context.

**Keywords:** COVID-19, intra-action review, COVID-19 vaccination, public health preparedness and response, Democratic Republic of Congo, public health emergency management

## Introduction

In late 2020 and early 2021, the World Health Organization (WHO) provided emergency authorization of vaccine candidates for novel coronavirus disease 2019 (COVID-19), leading to global large-scale vaccination efforts, initially targeting persons most at risk for severe disease and death. The approved vaccines offered substantial protection against hospitalization and death and were a cornerstone of global response efforts.<sup>1,2</sup> As the response to COVID-19 evolved, lessons learned and best practices needed to be quickly shared and disseminated to strengthen ongoing response measures, including vaccination.<sup>3–5</sup>

In the Democratic Republic of the Congo (DRC), the first case of COVID-19 was reported on March 8, 2020 and as of August 7, 2023, a total of 97,697 confirmed cases, and 1468 deaths (case fatality rate: 1.5%) have been reported.<sup>6,7</sup> The true burden of disease and death from COVID-19 was likely much higher, given limited testing and underreporting. COVID-19 vaccination in DRC commenced in April 2021 with the support of WHO and the DRC *Programme Elargi de la Vaccination* (Expanded Programme for Immunization, EPI). Initial priority groups for vaccination were health-care workers, people over 55 years old, and those with comorbidities, representing approximately 20% of the total population.<sup>8</sup> In the first phase of the roll-out, vaccines were prioritized for the provinces experiencing the greatest burden of COVID-19 cases: Kinshasa, Kongo Central, North Kivu, and Haut Katanga.<sup>9</sup> However, the roll-out faced various challenges including with logistics, doses arriving with short expiration dates, vaccine hesitancy, and low uptake.<sup>10</sup> Vaccine safety became a particular public concern following the Ministry of Health pause on use of the AstraZeneca vaccine in the country after the identification of potentially associated adverse events. These factors contributed to DRC being among the countries with the lowest COVID-19 vaccination rates globally. Despite initial delivery of almost 1.8 million COVID-19 vaccine doses to the DRC in March 2021,<sup>11</sup> by July 2021 only 80,000 (<1%) doses had been administered. As of June 4, 2023, only 17.2% of the total population had received one or more doses of COVID-19 vaccine.<sup>6</sup>

In July 2020, WHO issued guidelines to conduct intra-action reviews (IARs) specific to COVID-19 as a best practice for epidemic preparedness and response.<sup>4</sup> A country-led COVID-19 IAR is a facilitated process that allows response stakeholders to review the functional capacities of public health and emergency response systems at the national or subnational levels to identify best practices, gaps and lessons learned, and propose corrective measures for immediate remediation or sustained improvement of the COVID-19 outbreak response.<sup>5</sup> The WHO IAR methodology, with its emphasis on reviewing past performance to identify gaps and improve future response efforts, can document and help address the challenges with COVID-19 vaccine rollout.<sup>12</sup> A national IAR of the COVID-19 vaccination program in DRC was held from July 26–August 2, 2021, to identify challenges and make recommendations to improve vaccine coverage. However, many provincial level health authorities and stakeholders invited to this event were unable to attend, primarily due to the lack of available funds to support travel. This proved to be a barrier, given significant provincial-level contextual and operational differences. The structure of DRC's health system places substantial responsibilities on provincial EPI and health zone teams to interpret and adapt national guidance to local conditions and needs, which provided impetus for planning provincial-level IARs, starting with the provinces that had participated in the initial wave of COVID-19 vaccine rollout in DRC. Non-government organizations (NGOs) working at the subnational level play an important role in implementing vaccination strategies tailored to the local context, especially in rural, insecure, and inaccessible areas.<sup>9</sup>

North Kivu Province is located in the eastern region of the country and has over 10 million inhabitants. The province borders Rwanda and Uganda, and prior to the pandemic, an average of 95,000 people crossed the border each day. As of January 13, 2023, North Kivu had recorded 10,750 confirmed cases of COVID-19, the second highest provincial total after Kinshasa.<sup>7</sup> Insecurity, violence, community distrust, and conflict, have posed challenges to implementing COVID-19 vaccination efforts in North Kivu.<sup>13</sup> COVID-19 vaccination rollout in North Kivu started in May 2021. The first phase of vaccination targeted health-care workers, people aged 55 and over, and those with comorbidities, but eligibility was soon expanded to include anyone over 18. By January 2022, only 11.3% of adults in North Kivu had received at least one dose, 2.3% had received two doses and 4.5% of adults had completed their primary vaccination series.<sup>14</sup> Only 137 out of the 170 planned COVID-19 vaccination sites were operational up until February 2022, with none at a point of entry.<sup>13</sup> With high disease incidence, low vaccination rates, and among the first group of provinces to conduct COVID-19 vaccination campaigns in DRC, North Kivu was selected for the first provincial IAR. We report here on the experience of conducting an IAR in North Kivu, the first sub-national IAR in DRC, and the specific findings related to implementation of the COVID-19 vaccine campaign.

## Materials and Methods

The Ministry of Public Health, Hygiene and Prevention through the Expanded Program on Immunization (EPI) with support from RTI International (RTI) and the US Centers for Disease Control and Prevention (US CDC), conducted the first provincial IAR in North Kivu province from January 19–22, 2022. The provincial IAR in North Kivu focused on the vaccination pillar of the COVID-19 response with six technical focus areas: (1) coordination, planning and monitoring at country level; (2) vaccine service delivery; (3) risk communication and community engagement; (4) Monitoring of adverse events following immunization (AEFI); (5) logistics; (6) and data management, monitoring and evaluation. The main goals of the IAR were to identify lessons learned, challenges and the solutions related to roll-out of the COVID-19 vaccination campaign in the province, in order to make progress towards reaching vaccination coverage targets.

The IAR took place in two stages:

- i. **Pre-IAR:** On January 19 and 20, 2022, a preparatory workshop, involving 20 participants including facilitators, reviewed IAR aims, tools and methodology, described the facilitator role, and provided an overview of the epidemiology and vaccination response to COVID-19.
- ii. **IAR:** On January 21 and 22, 2022, the main workshop was held with 56 participants.

The primary tool used to implement the provincial IAR was the WHO IAR guide, adapted to the DRC context. The guide includes tools such as a facilitator guide, Terms of Reference/concept note template, agenda template, presentation template, note taking template, final report template; database of over 300 key questions to stimulate reflection and discussion, participant evaluation feedback form and spreadsheet, and a success story/best practices report template. These tools were introduced to facilitators during the Pre-IAR and utilized during the IAR.

The IAR brought together stakeholders involved in the COVID-19 vaccine rollout at the provincial and health zone levels in North Kivu. All organizations providing funding or implementation support to the COVID-19 vaccine rollout in the province were invited by the provincial EPI. Participants came from the provincial health office, health zone offices, EPI national and provincial offices of the Ministry of Health, and provincial representatives of the WHO, World Relief, United States Agency for International Development (USAID), International Organization for Migration (IOM), Medair, UNICEF and IMA World Health.

During the workshop, participants reviewed and analyzed the implementation of the first phase of COVID-19 vaccination roll-out in North Kivu. Participants were divided into six groups, one for each of the six technical focus areas based on their expertise, affiliation, and role within the health system. Each group was provided with a set of questions to promote discussion, derived from WHO's IAR guidance (see [Supplemental Materials](#)).<sup>5</sup> The first session focused on what had gone well with the vaccination roll-out, what had gone less well, and why. The second session dealt with identifying ideas for improving the next phase of the COVID-19 vaccination roll-out. The third session focused on the path forward, including creating an action matrix that included activities for improvement, defining the schedule for the implementation of activities by category and deadlines; designating focal points for overseeing the implementation of the various activities; and setting indicators for monitoring of progress. A team of rapporteurs prepared the daily summary that was presented and discussed in plenary the next day.

## Results

Results of the North Kivu IAR were categorized into best practices ([Table 1](#)), challenges ([Table 2](#)), and recommendations ([Table 3](#)).

### Best Practices

Best practices were organized according to the six technical focus areas. For coordination and planning, a best practice was including key organizations with ability to leverage existing infrastructure at the local level and to rapidly mobilize financial support for COVID-19 vaccination.

**Table 1** Summary of Selected Best Practices Reported by Each Technical Working Group

Best Practices			
<b>Coordination and Planning</b>	Active participation of organizations with existing infrastructure	Change in vaccination strategy from static centers to deployment of mobile teams	Flexibility in the deployment of vaccines and equipment between health zones
<b>Service Delivery</b>	Timely training and supportive supervision of health personnel	Mobile vaccination teams in prisons, military camps, and at borders	Availability and flexibility of service providers in remote and insecure areas
<b>RCCE</b>	Strong involvement of political-administrative authorities and religious leaders	Dialogue sessions with community members and groups supportive of COVID-19 vaccination	Advocacy from leaders of armed groups
<b>Logistics</b>	Access to ultra-cold chain equipment used during the Ebola outbreak	Use of temperature monitoring equipment devices	Safe disposal of waste from vaccination
<b>AEFI Monitoring</b>	Functionality of the passive adverse events following immunization (AEFI) monitoring system	Regular transmission of data from non-serious AEFIs	Advocacy initiative to improve the management of serious AEFIs
<b>Data Management and Monitoring &amp; Evaluation</b>	Capacity building of data managers	Use of tablets and private mobile phones for electronic transfer of vaccination data	Assistance from the national level

**Table 2** Summary of Selected Challenges Reported by Each Technical Working Group

Challenges			
<b>Coordination and Planning</b>	Insufficient microplanning to target vaccination supply with local demand	Poor information flow between the provincial coordination and the lower levels	Insufficient supervision and mobilization of financial resources for the deployment of vaccines, including lack of payment for vaccine workers
<b>Service Delivery</b>	Absence of vaccination sessions in the sites, including due to lack of available vaccines	Late presentation of participants at vaccination sites	Low adherence to priority groups targeted for vaccination
<b>RCCE</b>	Weak involvement of the general population at the health zone level in sensitization and other mobilization activities	Low level of monitoring and evaluation of communication activities	Late response to the infodemic
<b>Logistics</b>	Unavailability of vaccines caused by stockouts or expired doses	Insufficiency of auxiliary supplies and accessory equipment for vaccination	Ultra-cold chain hardware installed but not functional
<b>AEFI Monitoring</b>	Lack of an active surveillance system for AEFI	Lack of notification of AEFIs in certain health zones	Low coverage in training and lack of motivation of focal points on AEFI in health zones
<b>Data Management and Monitoring &amp; Evaluation</b>	Noninvolvement of members of management teams in the management of vaccination data	Limited availability of tablets for entering vaccination data	Insufficient training and supervision of data teams within vaccination sites

**Table 3** Short-Term Recommendations from Each Technical Working Group

Short-Term Recommendations				
<b>Coordination and Planning</b>	Mobilize partners for alignment with COVID-19 vaccination activities	Adapt national level guidelines to create provincial plan for future vaccination campaigns	Organize supervision missions for COVID-19 vaccination activities from provincial health department to health zones	Advocate to revitalize the systematic payment of service providers at all levels
<b>Service Delivery</b>	Strengthen and maintain regular supervision at the level of vaccination sites	Conduct needs assessment of vaccination sites	Advocate for the provision of drones to supply vaccines in hard-to-reach and insecure areas	Reinforce preregistration of people to be vaccinated through the CAC
<b>RCCE</b>	Advocate to partners to mobilize funds for RCCE activities	Print and distribute existing communication tools for COVID-19 vaccination	Update the funding request form to include financial motivation for RCCE actors	–
<b>Logistics</b>	Develop a provincial vaccine deployment plan (PPDV)	Supply health structures with sufficient quantity of vaccines and other inputs	Advocate with provincial government and partners for the rehabilitation of the Butembo cold chain	Provide all vaccination sites with infection prevention and control supplies and AEFI kits
<b>AEFI Monitoring</b>	Identify a team specialized in monitoring AEFI	Make data collection tools available in all health zones and train personnel on AEFI surveillance	Make appropriate phone credits available to the teams in charge of AEFI surveillance	Organize active surveillance for AEFI in all health zones
<b>Data Management and Monitoring &amp; Evaluation</b>	Provide all vaccination sites with tablets, power supply, internet, and communication units	Organize data training sessions on the use of tablets for data management (collection, analysis and validation) in 4 sites (Goma, Beni, Butembo, Walikale)	Organize at least 3 formative data supervision visits annually in the health zones	Involve EPI in selection and specification of tablets and equipment

Flexibility was highlighted as a best practice across multiple technical areas. For service delivery, an example was the practice of switching to mobile vaccination teams to bring vaccination directly to target organizations and entities, including groups that otherwise would not have been able to travel to static vaccination sites, such as soldiers in military camps, prisoners, and people living in rebel-held areas. Another example was the practice of moving vaccines and auxiliary supplies directly between health zones, without requiring mobilization at the provincial level, which could take longer and require more resources to transport. The availability and flexibility of providers in North Kivu helped to ensure vaccination in remote and insecure areas. These efforts were complemented by advocacy for vaccination conducted through risk communication and community engagement activities supported by provincial political authorities, community groups supportive of vaccination, and armed-group leaders. Existing infrastructure, especially ultra-cold chain capacity acquired during the 2018–2020 Ebola virus disease epidemic, was utilized for distribution and storage of mRNA COVID-19 vaccines.

Though participants commented that AEFI surveillance functioned adequately, AEFI data or related actions were not directly reviewed or discussed during the IAR. The provincial minister of health signing a decree allowing for management of serious side effects was seen as a high-level endorsement of the vaccination campaign. Finally, for data management, it was reported that there had been substantial capacity strengthening at the provincial level, and the use of tablets for collecting data was described as a best practice.

## Challenges

The challenges highlighted by the working groups provided insights into the reasons for the low level of COVID-19 vaccination coverage in the province. For service delivery, participants reported lack of compliance to vaccination of priority

groups. Indeed, due to low demand for vaccination and approaching expiration of vaccines, it was later decided to allow any adult (18 years old or older) who presented to the vaccination site to be vaccinated, even if they were not in a priority group. However, there was also not optimal uptake among the priority groups even when specifically targeted by mobile vaccination teams, suggesting a larger challenge with motivating high-risk individuals to be vaccinated. The RCCE working group noted a lack of engagement with some key community groups, such as women's groups, as a challenge, along with weak community involvement in general.

Logistical constraints were a critical barrier, perhaps most notably with respect to vaccines being unavailable, due to periodic stock outs (AstraZeneca and Moderna) and expiration (Moderna). Review of the monitoring system for cold chain materials revealed that some of the ultra-cold chain equipment was not functional, even though it was installed at the vaccination sites. Vaccination teams lacked some accessories and auxiliary supplies required for vaccination, including materials for infection prevention and control, and tablets for data collection. Teams lacked kits for clinically managing adverse events, and hard copy notification and investigation forms for AEFI cases.

Financial resources for staff travel per diems were not always available, especially at the health zone level. Non-payment of per diems resulted in poor motivation of service providers to implement vaccination activities, including lack of AEFI investigation and reporting. During the IAR, it was reported that only 8 out of 34 health zones in North Kivu were currently reporting AEFI cases.

Data management staff were not sufficiently compensated or trained to register vaccine doses administered, AEFIs reported and tracking stock of vaccines. A need for additional managerial support was identified across all levels of the system, and especially for supervision of data management tasks at vaccination sites. Routine electronic data validation and consolidation was absent across all levels, despite intentions to hold regular sessions for this purpose, due to a failure to hold any trainings for District Health Information System (DHIS) 2 data validation at the national or provincial level. Tablets were not available in all sites for real-time data collection as only 70 tablets were available for 137 operational vaccination sites. Instead, data compilation was manually done in Excel spreadsheets that were laborious to complete and transmit. Additionally, health zone medical personnel did not have their own accounts in the DHIS2 COVID Tracker platform in order to view or analyze their own data.

## Recommendations

A number of recommended actions were identified to promote efforts to overcome the observed barriers and gaps. Select recommendations prioritized for short-term action are summarized in [Table 3](#).

One of the key short-term recommendations was for the province to develop a provincial campaign plan, based on national directives, before proceeding with future vaccination campaigns. During the national COVID-19 vaccination campaign, the province organized its first campaign without a provincial plan in place, citing a lack of time or resources for planning. Additional recommendations included the organization of active surveillance for AEFI in all health zones; printing existing communication guides to disseminate to RCCE actors; ensuring tablets and other data collection tools are distributed to all vaccination sites; and organization of data training sessions on the use of tablets and the analysis and validation of data in four health zone pools (Goma, Beni, Butembo, Walikale).

Activities for longer-term implementation emphasized RCCE efforts. Specifically, the need to strengthen the capacities of community relays (RECOs) and members of community action committees (CACs) in communication specifically related to advocating for vaccine uptake and overcoming hesitancy. Building capacity of community-level actors would allow a transition from a mass media communication model to direct interpersonal community-level strategies such as integrating RCCE elements into the activities of women's organizations and organizing persuasion panels, similar to community-based focus group discussions, that target groups prioritized for vaccination. Finally, it was suggested that community members active on social media platforms could be engaged at the health zone level to address misinformation and rumors. To respond to the lack of a system for managing serious adverse events after vaccination, implementation of the national policy of subsidizing hospitalization and treatment for case management of serious AEFI cases was recommended. Having subsidized health care might also help assuage some concerns related to the risk of adverse effects as a result of taking the vaccine and improve uptake.



## Discussion

While the majority of countries in the African region have conducted national level IARs related to their COVID-19 response efforts,<sup>15</sup> to our knowledge the IAR in North Kivu was the first to apply the IAR methodology at a sub-national level to assess the on-going COVID-19 vaccination campaign. The North Kivu province's historical challenges related to security, health emergencies, natural disasters, and mobile cross-border populations make it a unique setting to implement DRC's first provincial COVID-19 vaccination IAR. The provincial IAR conducted in North Kivu was an effective process to collectively identify opportunities and challenges of the COVID-19 vaccination roll-out in this setting. The inclusion of diverse stakeholders from public and private health facilities, local and international NGOs, and donors, at multiple levels of the health system, ensured that the discussion of successes, challenges, and recommendations covered a broad and diverse range of roles within the vaccine rollout.

While many of the effective practices and opportunities identified during the North Kivu IAR were similar to those identified at the national level, specific strategies, such as the utilization of mobile vaccination teams and placement of vaccination sites near borders, were aligned to the local context of high migration and insecurity. For example, the civil instability in North Kivu led to deployment of numerous military personnel throughout the province. The crowded living conditions of soldiers was identified as a risk factor facilitating the transmission of COVID-19. While the vaccination campaign was initially successful in reaching high-level military officials based in Goma, uptake among the enlisted soldiers was low. The deployment of mobile vaccination teams directly to the military camps was an effective tool for providing access to vaccines for soldiers and was highlighted by the IAR as an effective strategy for delivering vaccines in the North Kivu context. The use of mobile teams, in addition to fixed vaccination sites, was also mentioned as an exemplary practice by other countries, such as Niger and Mozambique, in their national COVID-19 vaccination IAR reports. Mobile teams were related generally to expanding accessibility rather than specifically addressing hard-to-reach populations, or overcoming challenges associated with insecurity, suggesting that this could be a strategy employed more widely in these settings.<sup>16–18</sup>

The experience with mobile teams in North Kivu also demonstrated how providing easier access to vaccines can improve uptake. In North Kivu, as well as nationally, the lack of robust early uptake among prioritized groups led to an early decision to expand eligibility to all adults, which perhaps needed to be coupled with stronger community engagement efforts to explain the changed eligibility rules, and to encourage greater uptake. In other provinces of DRC, RCCE efforts were stalled due to lack of payments to commune and local communication teams, insufficient training, and lack of material resources such as data collection forms and tablets; these same challenges were also identified by the North Kivu vaccine IAR.<sup>19</sup> The IAR also identified several specific challenges centered around vaccine campaign implementation. A major challenge, which had also been highlighted at the national IAR, was the issue of COVID-19 vaccination misinformation and ineffective management of the COVID-19 infodemic.<sup>20</sup> The lack of timeliness in responding to the infodemic was in part attributed to the lack of trained personnel able to develop and implement strategies to respond to false rumors and other sources of misinformation. This spread of misinformation regarding vaccine efficacy and safety, and limitations in resources to address misinformation, may partially explain the low demand for vaccination, both in North Kivu as well as in DRC overall. Given North Kivu's history of instability and community distrust of governmental authorities, there may be additional concerns over the perniciousness of misinformation in this setting, and greater efforts may need to be taken to train local and provincial actors to ensure they have the skills and tools to not only address misinformation but anticipate community concerns with appropriately tailored positive messaging. The IAR highlighted several longer-term recommendations to this end, including greater emphasis on social media engagement.

The IAR also made a recommendation to provide sufficient quantities of vaccines according to the demand for the type of vaccine available, suggesting that microplanning will be an important activity to prioritize in the future. Due to multiple types of COVID-19 vaccines becoming available at different times with differing requirements for proper storage, management of appropriate quantities of each vaccine was a significant logistical challenge. Furthermore, given the weak demand for vaccination it was difficult to quantify and allocate appropriate number of doses from the central level. High levels of population mobility in settings like North Kivu, which sit at the border with other countries, may also drive greater demand specifically for single-dose, rather than multi-dose, vaccines.<sup>21</sup> These issues further complicate the procurement and delivery of appropriate numbers of doses, at the right times, for optimum roll-out; these operational

costs, and how best to manage them, was a substantial subject of discussion during the IAR, underscored by concerns over late and insufficient mobilization of financial resources, and weak coordination of vaccination activities specifically at the provincial level. While some countries, such as South Sudan, have reported leveraging existing humanitarian supply chains and infrastructure to overcome this issue.<sup>22</sup> most others described logistical and operational barriers, including for maintaining cold chain and costs for transportation, as significant challenges.<sup>23–25</sup> In this way, the situation in North Kivu, and DRC more broadly, illustrates the difficulties many African countries face rolling out such large-scale vaccination activities.

In addition to the utility of discussing and developing recommendations, IAR's provide value as a snapshot in time of the vaccine roll-out, so that adjustments can be made where needed and against which future progress, can be measured. Monitoring and follow-up of the IAR recommendations include in-person site visits to discuss the status of the recommended actions with provincial and health zone leadership and the need for future reviews following additional phases of the COVID-19 vaccine campaign. Partners are also continuing to provide technical and logistical support to the COVID-19 supervision committees, as well as contributing to bi-weekly calls between the national and provincial levels to assist with following up on the IAR recommendations.

Notwithstanding, the provincial IAR methodology is subject to a number of limitations, and any results and recommendations should be interpreted accordingly. Firstly, the IAR, although informed by quantitative data, is qualitative by nature. Identification of challenges and solutions is not purely objective, and their discussion is subject to social, political, and other sensitivities. There is also a lack of standardized indicators to measure improvement based on recommendations identified during the exercise, which makes monitoring and evaluating COVID-19 vaccine delivery performance over time and across provinces difficult. Additionally, at the time of the IAR, DRC lacked a central data collection method and platform for COVID-19 vaccination information. It is possible that the exercise was based on incomplete data or data of varying quality.

## Conclusion

The Intra-Action Review of the COVID-19 vaccine program implementation in DRC's North Kivu province in January 2022 identified best practices as well as gaps and included recommendations to improve uptake of the COVID-19 vaccine within the response framework. The success of the effort led to further IARs implemented in other provinces in 2022 and early 2023, including Haut Katanga, Kasai Oriental, Kongo Central, Lualaba, and Haut Lomami, providing opportunities for a broader analysis of the utility of provincial IARs, and even development of standardized indicators to be used during future response efforts. During this same period, the National Technical Coordination Committee for COVID-19 Vaccination developed Phase 2 of the National Plan for the Deployment of the COVID-19 Vaccine (August – December 2022) with a stated aim to conduct IARs in 80% of DRC's provinces.<sup>26</sup> Although DRC planned to conduct repeat IARs to review the progress towards implementation of recommended actions and evaluate future phases of the ongoing COVID-19 vaccine campaign, due to funding constraints, the only province to conduct a repeat IAR was Haut Katanga.

While some of the North Kivu IAR's findings reflected themes that were also relevant at the national level, it also highlighted local context and factors, which may not surface in a national review. Finally, the provincial IAR provided a platform for provincial-level actors to directly participate in a review of COVID-19 vaccination while providing invaluable on-the-ground perspectives to propose practical solutions to improve vaccination activities.

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