

CASE STUDY

**Increasing coverage of COVID-19 vaccines in a fragile and conflict-affected setting: lessons for building resilient immunization services**

September 2023





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# Highlights

## Need:

Increased coverage of COVID-19 primary series vaccines to end the pandemic, and reduce morbidity and mortality in a fragile setting.

## WHO's solution:

A responsive and agile strategy, better targeting of people, and people-centred delivery of adult immunization services close to people's homes combined with childhood immunization and basic health care, through use of the existing polio network and community health workers to visit house to house with special focus on female household members and other vulnerable populations in marginalized settings.

## Impact:

The primary series COVID-19 vaccination coverage increased to over 41% by 31 December 2022, one of the highest among the countries classified as having fragile and conflict-affected situations. The increased coverage has led to economic as well as public health benefits, which have outweighed the investment made in the COVID-19 vaccination campaigns. Additional benefits include strengthening of the immunization delivery system to respond to outbreaks and improving childhood immunization and vaccination of zero-dose children.

## Moving forward:

It is important to maintain the improved immunization delivery system so as to enhance childhood immunization and support other efforts to build health system resilience.



It was a historical moment for Somalia on 16 March 2021. One day after the arrival of the first batch of COVID-19 vaccines, Somalia rolled out the first dose of this adult immunization programme inaugurated by HE Dr Fawziya Abikar Nur, the Minister of Health & Human Services of the Federal Government of Somalia.

*Photo credit: WHO/Ismail Taxta*

# Somalia's initial COVID-19 vaccines roll-out in 2021: setting in motion

Somalia was among the first countries in Africa to receive a batch of coronavirus disease 2019 (COVID-19) vaccines (300 000 doses) from the COVID-19 Vaccines Global Access (COVAX) system as early as 15 March 2021.<sup>1</sup> This vaccine was granted emergency use listing by the World Health Organization (WHO) on 15 February 2021. The country rolled out the first dose of the COVID-19 vaccines on 16 March 2021 at a fixed vaccination centre in Mogadishu. Somalia had no previous experience of organizing adult immunization programmes, and this was the largest ever vaccination drive in its history. The vaccination campaign took place against a

backdrop of continuing insecurity and conflict making the country's immunization services fragile and fragmented. As a result, the country has probably one of the lowest coverage rates for childhood immunization in the world.<sup>2</sup>



Throughout 2021, the country's COVID-19 vaccination progress was slow and stagnating – by 31 December, the country had only vaccinated 5.1% of its eligible population with primary series vaccines. ”

## Reflection on the 2021 experience: changing the vaccination landscape

The low uptake of COVID-19 vaccines in 2021 necessitated a change in strategy and a better understanding of the reasons for the slow uptake.

At the beginning of 2022, a national target was set to achieve 40% coverage of the primary series COVID-19 vaccines by the end of December 2022.

### Understanding the slow progress

The poor uptake of COVID-19 vaccines in Somalia in 2021 was attributed to: lack of proper planning and targeting; poor health care infrastructure; fragmented immunization services (only 50% of health facilities in the country were providing childhood immunization services at the time of deployment of COVID-19 vaccines); unpredictability in vaccine supply and delivery; inexperience in managing an adult immunization programme in the face of vaccine shortages globally; shortage of vaccinators and other essential personnel for immunization; inconvenient timing of vaccination services; long distances to reach to the vaccination centres; and high operational cost of roll-out.

<sup>1</sup> The first COVID-19 vaccination campaigns using COVAX doses began in Africa on 1 March 2021 in Ghana and Côte d'Ivoire.

<sup>2</sup> The diphtheria-tetanus-pertussis (DTP3) immunization coverage for 1-year-old children was 42% in 2022 against a global average of 84% (<https://data.who.int/indicators/i/F8E084C>).

The national vaccine deployment plan, which was developed in December 2020 in preparation for the roll-out of COVID-19 vaccines, was revised and more emphasis was placed on better microplanning, involving the local community and better targeting of the populations. Of

particular importance was organization of accelerated campaigns to rapidly increase uptake by reaching the targeted populations and delivering the vaccination services close to their homes.

## Operational strategy to accelerate COVID-19 vaccination in 2022

- Shift the eligibility criteria for vaccination from high-risk groups (health care workers, elderly people and those with chronic medical conditions) to all people older than 18 years. Polio village volunteers and community health workers were engaged to carry out the strategy, and priority was given to female household members, internally displaced people and nomadic populations living in marginalized settings.
- Organize vaccination through community outreach posts close to the places where the targeted populations live, as well as at fixed vaccination posts used for both childhood and COVID-19 immunization.
- Combine the accelerated campaign for COVID-19 immunization with the routine childhood immunization programme, immunization of women of reproductive age and basic health care for immunocompromised children and women in marginalized settings.
- Introduce an electronic recording and reporting system to record information and track individuals for the second dose using SMS messages.
- Incentivize those receiving the COVID-19 vaccine with a “smart card” with a QR code showing all information of the recipient on a centralized database.

The health workers managing the community outreach posts and the community health workers wore colourful gowns during the vaccination campaigns and had an umbrella for their easy identification by community members. WHO also supported a study of vaccine hesitancy in health care workers<sup>3</sup> and its findings were used to adjust and adapt the strategy as other evidence suggested that the reasons for vaccine hesitancy among the general population would be the same.

As part of preparing for the accelerated campaign at the end of 2022, an estimation was made of the availability of the required doses of COVID-19 vaccines needed to achieve the national target of 40%, the funds required to cover operational costs and the cold-chain capacity. A lack of vaccinators was found as an important barrier, so people with a formal education not working in the public sector were recruited and trained to administer COVID-19 and childhood vaccines.

<sup>3</sup> COVID-19 vaccine acceptance and hesitancy in health care workers in Somalia: findings from a fragile country with no previous experience of mass adult immunization. *Vaccines (Basel)*. 2021;11(4):858. <http://doi.org/10.3390/vaccines11040858>

Once the microplans were finalized, surge vaccinators were recruited and trained, teams were assembled and the logistics – COVID-19 vaccines, cold chains at the remote locations and availability of funds – were secured, the accelerated campaigns went into full swing. In 2022, 18 accelerated campaigns were conducted compared with 13 in 2021, which involved 9673 teams (four times the number used in 2021) of about 40 000 surge staff (Table 1). The campaign particularly targeted vulnerable groups who are difficult to reach, for example, women in households and internally displaced people.

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The revised strategy for accelerated campaigns targeted the areas with low vaccination coverage and people living in such areas with no access to health care. Thousands of community health workers and village polio volunteers were assigned additional responsibilities to make house-to-house visits and identify people who needed to be vaccinated and refer them to the nearest community outreach teams.”

Table 1: Accelerated COVID-19 vaccination campaigns and outcomes, Somalia, 2021 and 2022

Year	Doses received, no.	Doses administered, no. (% of doses administered)	Accelerated campaigns, no	Doses administered in each campaign, mean no.	Operational cost per dose administered, US\$	Vaccination teams deployed, no.	Additional vaccinators deployed, no.	Eligible population fully vaccinated, %
2021	2 484 620	1 665 860 (67)	5	167 108	5	400	2178	5.1
2022	7 887 026	7 010 170 (89)	8	583 745	3	1678	39 623	36.6
<b>Total</b>	<b>10 371 646<sup>a</sup></b>	<b>8 676 030 (84)</b>	<b>13</b>	<b>NA</b>	<b>NA</b>	<b>2078</b>	<b>41801</b>	<b>41.7</b>

COVID-19: coronaviruses disease 2019; NA: not applicable.

<sup>a</sup> The vaccines donated to Somalia include those received bilaterally from France (2 865 600 doses), United States of America (888 780 doses), Sweden (520 800 doses), Turkey (231 600 doses), China (231 000 doses), Germany (163 200 doses) and United Kingdom of Great Britain and Northern Ireland (149 760 doses). The country received 1 071 600 doses directly from the COVAX facility. Vaccines used in Somalia for COVID-19 include: COVID-19 Vaccine (Ad26.CO2-S [recombinant]) (Johnson & Johnson, 5 364 389 doses); VAXZEVRIA (AstraZeneca, 1 779 262 doses); COMIRNATY® (Pfizer, 801 524 doses); Inactivated COVID-19 Vaccine (Vero Cell) (Sinopharm, 374 877); CoronaVac (Sinovac, 207 294 doses); Covilo (89 761 doses) and Medigen (58 923 doses).

“  
Immunization is an effective intervention to halt the spread of COVID-19 and the dose donations, through the COVAX Facility, play an important role in enhancing equitable and safe access to the vaccines in Somalia. UNICEF is grateful to the Governments of France, Germany, Sweden, United Kingdom of Great Britain and Northern Ireland and the United States of America for their generous donations of COVID-19 vaccines to the Government of Somalia and expression of their commitments to support the Ministry of Health to end the pandemic through improving the uptake of the vaccine.”

**Mr Mohamed Ayoya**

UNICEF Country Representative, Somalia (2020-2021)



# Acceleration of COVID-19 immunization in 2022: achieving the target

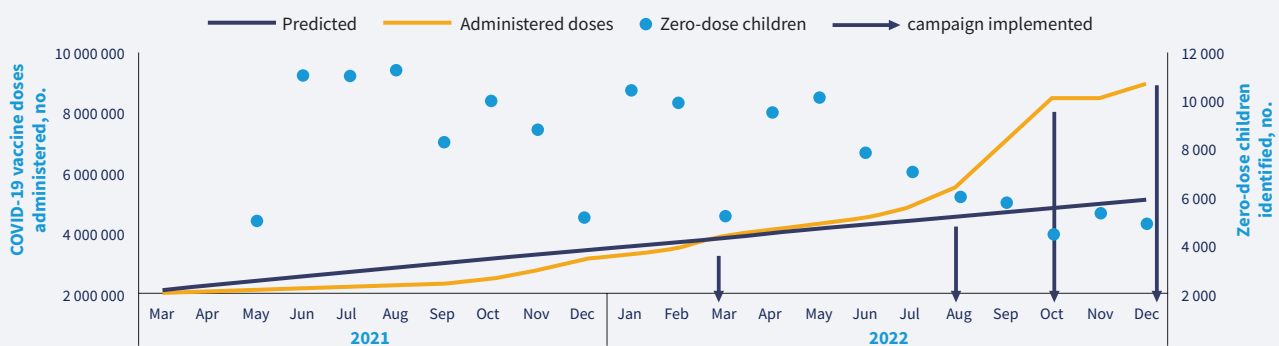
Somali turned the tide in 2022. By revising its strategy for accelerated uptake and implementing the lessons learnt from the experience in 2021 for delivery of COVID-19 vaccination, the country saw significant

progress. In 2022, during the acceleration phase of the COVID-19 vaccination drive, on average 583 745 doses of COVID-19 vaccines were administered as against 167 108 doses in the accelerated campaigns in 2021 (Figure 1).

## Achievements

- A total of 6 529 808 million people in Somalia completed the primary series of COVID-19 vaccines, representing 41.7% of the country’s eligible population (older than 18 years) fully vaccinated against COVID-19. Another 14% were partially vaccinated.
- Of the people who completed the primary series COVID-19 vaccines, 46% were females, 48% were internally displaced people, 16% belonged to the nomadic population and 16% were refugees.
- As the accelerated campaigns were integrated with routine immunization, 139 350 zero dose children were identified during the campaigns in 2021 and 2022 and received their first childhood vaccine, a remarkable achievement for a country where an estimated 174 000 zero dose children miss out routine immunization every year.
- More than 41 000 additional health workers were recruited and trained as a surge workforce for essential immunization services in the country.

Figure 1. Predicted and actual COVID-19 vaccine doses administered, and zero-dose children identified, Somalia 2021 ad 2022



COVID-19: coronavirus disease 2019.  
 Note: zero-dose children have not received any routine childhood vaccination.

Modelling in December 2021 suggested that the country needed to administer at least 18 750 doses of the vaccine every day in 2022 to reach more than 40% coverage by December 2022. In fact, 30 457 doses were administered a day in 2022, compared with on average only 6688 doses of COVID-19 vaccines administered a day in 2021. This number of injectable vaccine doses administered in 2022 was the highest in the history of the country in a single year.



**Somalia was one of the few countries in Africa to vaccinate more than 41% of its eligible population with the primary series COVID-19 vaccines by 31 December 2022 – a significant increase from the previous year. This increase in coverage was one of the highest among the 39 countries considered by the World Bank to have a fragile and conflict-affected situation<sup>4</sup>.**

## Additional benefits of the COVID-19 vaccination programme: strengthened services

The investment made to achieve high coverage for the COVID-19 vaccines also led to strengthening the country's immunization and vaccine delivery system. This remarkable increase in COVID-19 vaccine coverage in 2022

demonstrates that the low uptake in 2021 was likely due to poor planning and coordination, poor targeting of people and poor response capacity of vaccine delivery and services, rather than reluctance by the people themselves.

### Box 1. Added benefits of the investment in COVID-19 vaccination

- The COVID-19 vaccine campaign helped establish a functioning and resilient vaccine-delivery system that can be used to improve vaccination distribution for other diseases, such as measles, cholera and polio.
- A surveillance system set up to monitor adverse events after COVID-19 immunization can be applied to the childhood immunization programme and can help strengthen the health system.
- The increased vaccination rate has potentially also brought economic benefits for Somalia of up to US\$ 316 million – far more than the vaccine campaign cost.

<sup>4</sup> WHO presence in fragile and conflict affected situations (FCS), 2021. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/handle/10665/347261>). Classification of fragile and conflict-affected situations [Internet]. Washington, DC: World Bank; 2023 (<https://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations>).

In the medium and long term, the investment made in 2022 to accelerate the COVID-19 vaccination roll out helped to establish a functioning and resilient vaccine-delivery system that could be used to improve vaccination distribution for other diseases. For example, in 2022, despite the deepening health crisis and risk of famine in Somalia resulting from the drought, the country was able to vaccinate more than 2.9 and 3.2 million children younger than 5 years against measles and polio, respectively, 8.7 million children between 5 and 10 years against polio and more than 1.9 million people older than 1 year against cholera.

Furthermore, various structures that were built and lessons learnt during the capacity-building for the COVID-19 vaccination persist even after the COVID-19 intervention was completed. For example, efficient planning tools and strategies that were developed to reach internally displaced or nomadic people will be important also for future vaccination efforts.

The COVID-19 vaccination investment has also helped establish a surveillance system for reporting and monitoring adverse events after immunization,<sup>5</sup> which did not exist in the country before the COVID-19 vaccination programme. This system can be used for the childhood immunization programme and can help strengthen the health system.

A low vaccination rate in Somalia might lead to negative effects in other countries, whilst investing in the vaccination campaign may have yielded cross-country economic benefits potentially amounting to more than US\$ 100 million.

The roll-out of adult COVID-19 vaccination has strengthened Somalia's immunization system substantially even in the face of a protracted humanitarian crisis, drought and risk of famine, a remarkable achievement.



**A study on Somalia's vaccination coverage has suggested that the increased vaccination rate has not only yielded public health benefits, but also potentially economic benefits through economic growth in the country. The study showed that the increase in the vaccination rate from 5.2% to 41.7% would translate into an additional economic benefit of up to US\$ 316 million – far more than the costs of the vaccine campaigns<sup>6</sup>. There were also cross-country benefits from this successful vaccine roll-out.**

<sup>5</sup> Hamayoun M, Abdulrazak I, Farid M, Malik MR, Mohamud MF. Adverse events following introduction of the ChAdOx1 nCoV-19 vaccine in Somalia in 2021: findings from a fragile setting and implications for the future. *IJID Reg.* 2022;4:47–52. <http://doi.org/10.1016/j.ijregi.2022.06.001>

<sup>6</sup> Case study: Covid-19 vaccine delivery partnership, Oxford: Oxford Economics; 2023, pp 8–16 ([https://www.oxfordeconomics.com/wp-content/uploads/2023/07/Good-Practices-Global-public-health.pdf?pi\\_content=48b7a5e97ec2e7ab5f6a882f523c729fd4be05c4e310fb72e0fe9cf4553768e9](https://www.oxfordeconomics.com/wp-content/uploads/2023/07/Good-Practices-Global-public-health.pdf?pi_content=48b7a5e97ec2e7ab5f6a882f523c729fd4be05c4e310fb72e0fe9cf4553768e9)).

## Lesson learnt: building health system resilience

A number of factors contributed to the success of the primary series COVID-19 vaccines:

(i) better microplanning and better targeting of populations; (ii) use of both fixed and community vaccination posts, as well as marketplaces and border crossings, thereby bringing vaccination services close to where people live; (iii) use of innovative approaches, such as a mobile

application for real-time registering, targeting, tracking and monitoring the coverage against the planned target; and (iv) integration of immunization services for COVID-19 with the childhood immunization programme – mothers coming to vaccinate their children were given COVID-19 vaccines and vice versa.

### Lessons learnt



Bundling of vaccines and delivery of immunization services close to the people's homes can improve access to immunization for high-risk and marginalized populations in hard-to-reach areas.



Investment in COVID-19 vaccination in fragile countries can have additional benefits for building a resilient immunization and vaccine-delivery system, if investment is used to address the gaps in health system.



Experiences from the adult immunization programme for COVID-19, especially the reasons for vaccine hesitancy, can help improve epidemic and pandemic readiness.



**Integrating the adult immunization services with childhood vaccines and using the community vaccination outposts and outreach services can pay dividends in settings where large cohorts of children are living in marginalized settings without access to such services.**



During the accelerated campaigns, the immunization services for COVID-19 were combined with essential health care such as distribution of micronutrient supplements, iron and folic acid for children and pregnant and lactating women and tetanus toxoid vaccination for women of child-bearing age, thus providing greater public health benefits.

The operational cost for vaccination services has been high owing to the complex and challenging operating environment because of poor infrastructure, lack of appropriate cold-chain capacity and access constraints due to security issues. This challenge will remain for any future mass immunization programmes.

By introducing electronic data collection tools such as CommCare<sup>7</sup> every person receiving a COVID-19 vaccine was electronically registered. Use of this mobile application by frontline health workers managing the vaccination posts has strengthened the performance, efficiency and outcomes of the vaccination programme. This tool also enabled field supervisors to provide regular feedback to the vaccination teams on their coverage and performance, identify gaps against the set target and quickly redeploy vaccines and vaccinators when demand was high in certain communities and maintain a focus on low-performing districts. This application is being used to introduce an electronic vaccination registration for childhood immunization in the country and to track and monitor adverse events in each person after vaccination.

Although the community vaccination posts were located close to the settlements of the marginalized populations, it was the community health workers, most of whom were women, who visited each household in the areas and made

sure that all eligible people including children and women went to these posts and received the services. Their involvement led to identifying more than 139 000 zero-dose children.

The 780 village polio volunteers, who are part of country's polio network, proved helpful in managing immunization services during the pandemic. Their local knowledge and acceptance in the community led to rapid scaling up of vaccination coverage.

The considerable investment in vaccination against COVID-19 has strengthened the Somalia health system and immunization delivery systems and infrastructure for routine immunization in the following ways.

- Strengthened national regulatory systems.
- Improved vaccine delivery chain, including the creation and maintenance of an efficient and environmentally friendly cold chain and a good quality, large-capacity storage infrastructure.
- Digitalized registration and vaccine information systems for tracking vaccines and monitoring vaccination side-effects.
- Establishment of health care waste management systems including injection safety at health facilities.
- Establishment of effective pharmacovigilance for routine immunization.
- Development of a health communication strategy to tackle vaccine hesitancy for other diseases, especially hesitancy in childhood immunization.
- Delivery of other priority health interventions for mothers and children in combination with delivery of COVID-19 vaccines.

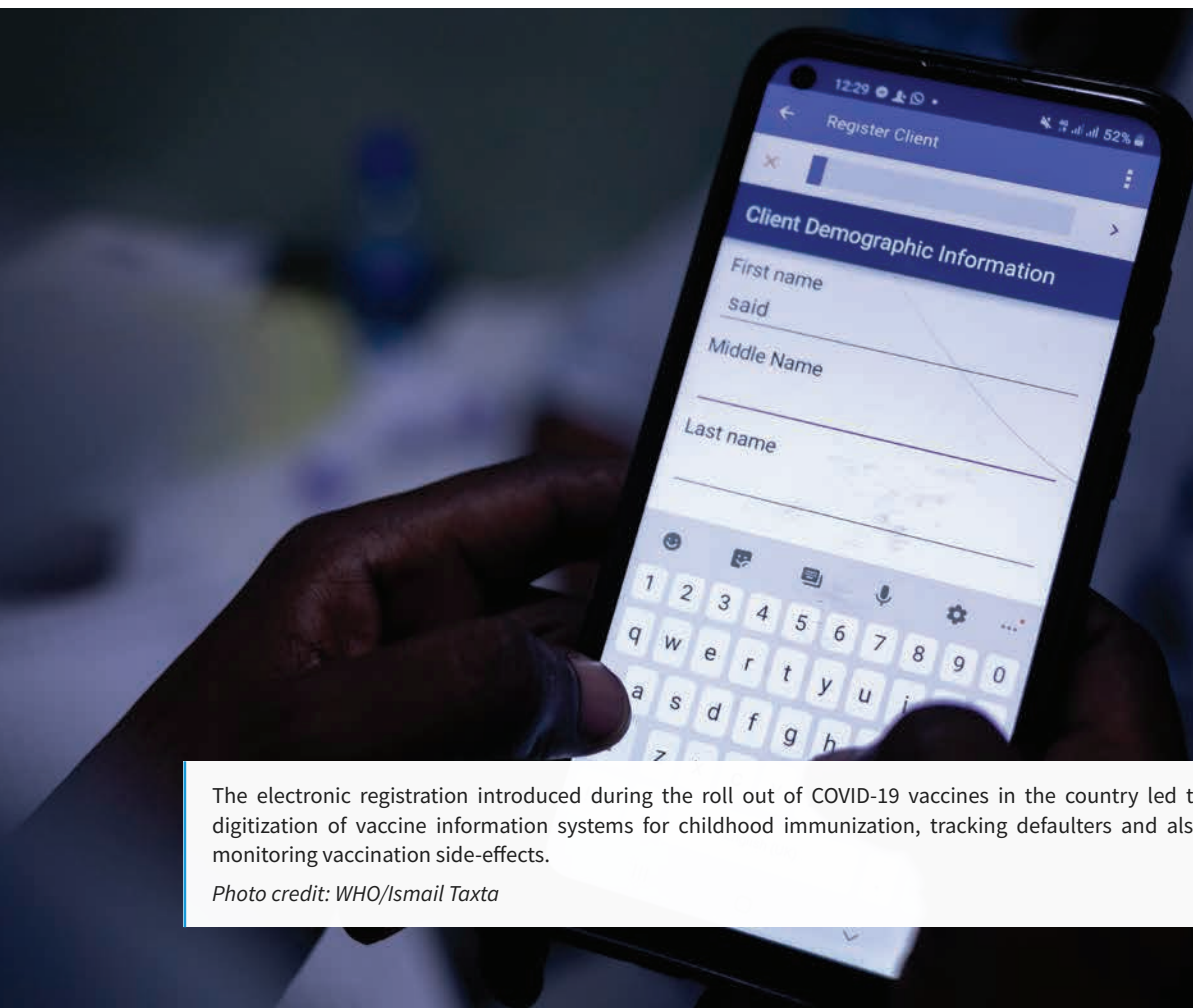
<sup>7</sup> CommCare ([www.commcarehq.org](http://www.commcarehq.org)) is a customizable, open-source mobile platform that enables non-programmers to build mobile applications for data collection and a variety of other functions.

## Conclusion: mass immunization for adults can contribute to other health system goals

The COVID-19 vaccination effort together with immunization in response to polio, measles and cholera outbreaks and the scale up of routine childhood immunization represent the largest vaccination drive in the history of Somalia, both in numbers of doses administered, costs and results achieved.



**Somalia's experience with COVID-19 vaccination shows that any mass immunization for adults can be successfully implemented even in fragile, insecure and hard-to-reach settings and where other emergencies are ongoing, such as drought. At the same time, such investment can contribute to achieving other health system goals including improved childhood immunization programmes.** ”



The electronic registration introduced during the roll out of COVID-19 vaccines in the country led to digitization of vaccine information systems for childhood immunization, tracking defaulters and also monitoring vaccination side-effects.

*Photo credit: WHO/Ismael Taxta*



**We remain thankful to our donors and partners for their valuable support to Somalia in our fight against COVID-19. The vaccines have helped other countries slow down the transmission and infection rate and we are confident they will do the same for our population. With the support from various Governments and COVAX facility, we can ramp up our efforts to ensure more Somalis have access to the life-saving vaccines. It is only when we join forces that we become strong enough to stamp out diseases, like COVID-19, from Somalia and the rest of the countries all over the world.** ”

**Dr Fawziya Abikar Nur**

Minister of Health and Human Services, Federal Government of Somalia

## Further reading

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- German Humanitarian Assistance
- European Union
- European Commission's Humanitarian Aid Office (ECHO)
- The COVAX Facility
- The Bureau for Humanitarian Assistance of the U.S. Agency for International Development (BHA/USAID)
- The Government of Canada (through The Access to COVID-19 Tools (ACT) Accelerator)
- The Governments of China, France, Germany, Sweden, Turkey, United Kingdom of Great Britain and Northern Ireland and the United States of America who donated COVID-19 vaccines to the Government of Somalia either bilaterally or through the COVAX facility.
- The United Nations Central Emergency Response Fund
- The World Bank



**I work 6 days a week at the Banadir Hospital – and feel like this is the busiest COVID-19 vaccination site in the country. In the beginning, most of the people were elderly, but nowadays, more young people aged between 20 and 40 years are coming to get vaccinated. For some reason though, we have been seeing more men than women taking the vaccines. Sometimes I do meet people who do not want to get vaccinated. But it is my job to convince them to trust the vaccine. I explain to them the benefits of vaccination and tell them I took it too. Initially, I was a nurse, but before the first COVID-19 vaccines came to Somalia, the Government and WHO trained health professionals like me to administer COVID-19 vaccines safely. Today, I am happy and proud to be a vaccinator, as I feel I am working to combat deadly diseases like COVID-19. I really feel like I am contributing to my community.**

**Ms Aisha Ikram Mohammed**

Nurse, Banadair Hospital





“

If we can end the pandemic in Somalia, we can end it everywhere. The country's fragile health system, high number of its population, especially high-risk people, still to be vaccinated can make the virus more transmissible and we risk emergence of a new variant of the virus in the country if we cannot roll out the vaccination programme against COVID-19 with speed and scale. The vaccines against the COVID-19 are remarkably safe and effective. These are our only hopes to end the pandemic from Somalia and elsewhere. ”

**Dr Sk Md Mamunur Rahman Malik**  
WHO Representative and Head of Mission, Somalia



Thousands of community health workers and village polio volunteers were deployed during the accelerated campaigns to visit house-to-house in the camps of internally displaced people as well as in other marginalized settings to increase the uptake of COVID-19 vaccines amongst this high-risk population.

*Photo credit: WHO/Ismail Taxta*



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