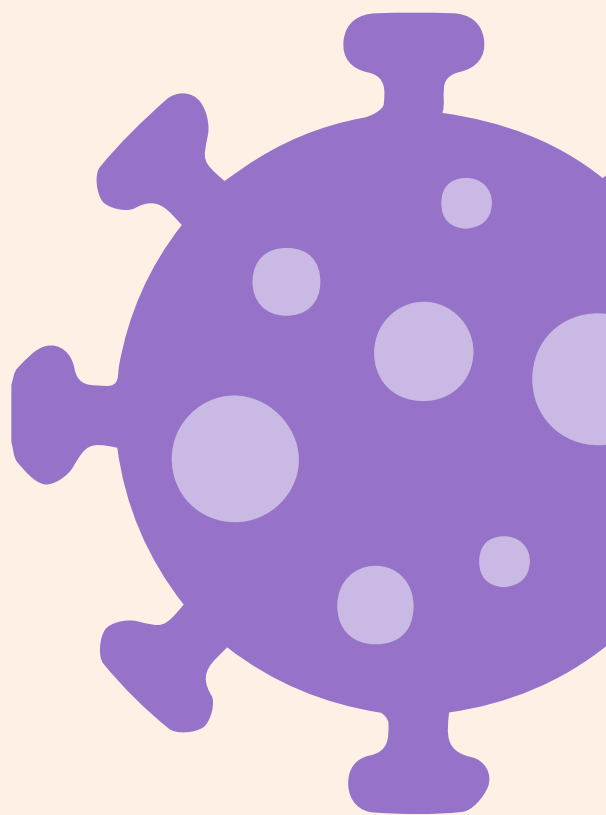
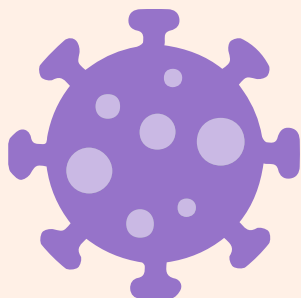


DATA GAPS IN THE COVID-19 RESPONSE

Findings from a mapping
exercise on access to
COVID-19 technologies



MARCH 2022







EXECUTIVE SUMMARY


In November 2021, an exercise was undertaken to populate a [mapping tool](#) examining access to COVID vaccines, therapeutics, and diagnostics, as well as certain health systems elements (“Phase 1”). Indicators included percentage of individuals vaccinated, turnaround time of PCR tests (defined as time between collection of biological sample and communication of results), the methods through which individuals are registered to receive COVID-19 vaccinations, availability of COVID rapid self-tests, and availability of psychosocial support for staff. Eight countries (Bangladesh, Liberia, Nepal, Nigeria, Peru, Somalia, Uganda and Ukraine) were chosen from four regions based on selected known COVID-19-related factors, in order to pilot the tool. Ukraine, for example, has the lowest COVID testing rates in Europe. At time of data collection, Peru had the highest COVID-19 death rate in the world and the world’s worst rate of children becoming orphans due to parents/caregivers dying of COVID-19.¹ Uganda went through a difficult second wave of COVID-19, with patients reporting catastrophic hospitalisation costs of up to fifty million shillings (USD\$14,000),² deterring health-seeking.


A mixed methods approach was used, including crowdsourcing, in-depth interviews with fifteen stakeholders both about the value of the tool and data to populate the tool, and secondary sources. A summary of key findings follows:

 **Value of the tool & data gaps.** Stakeholders were generally positive about the value of collecting COVID-19 data and maintaining the tool for reference but noted that several indicators would be difficult to find simply because neither governments, global health actors, nor NGOs were tracking them, or had different definitions for indicators. This included data on

whether homeless people were facilitated to receive COVID-19 vaccines, whether community health workers are salaried, and on PCR turnaround times, which vary even within countries.

 **Unmet vaccination targets driven by vaccine inequity.** Of all countries examined, only one (Peru), had reached the World Health Organization (WHO) target of having 40% of its population vaccinated by the end of 2021. At time of writing, three countries (Nigeria, Somalia, and Uganda) had not yet reached 5% vaccination rates. In Nigeria, vaccines with short shelf lives provided through the COVAX had expired.³ Despite short notification times from COVAX, Somalia consumed 90% of vaccines provided by COVAX.

 **Vaccine access impeded by poor operational support.** Vaccine dose deliveries in most instances are not accompanied by funding for outreach teams and community health workers (CHWs), set-up of vaccination centres, nor funding for charter flights for transport of vaccines. Gavi also needs to speed up replenishment of syringes in countries that have utilised domestic stocks meant for routine immunisation.

 **No structured psychosocial support for health care workers.** Overall, in the eight countries examined, there were no structured psychosocial programmes for health care workers. In Bangladesh, interviewees from medical research institutions said that while health staff could access mental health facilities for free, there was no structured program for frontline COVID-19 workers. In Liberia, a representative from Africa CDC said that



psychosocial support programs exist, however they are overstretched, and many are manned by unpaid volunteers.

No access to rapid self-tests, in contrast with the Global North. Only Ukraine reported being able to access rapid antigen self-tests, purchased online or through pharmacies at an average cost of USD\$8-15 per test.⁴ Self-tests are widely available in numerous Global North countries, and in the United Kingdom (UK) are provided for free on the National Health Service. WHO only released guidelines on self-tests in March 2022, and as WHO guidelines are often a prerequisite for deployment through the Global Fund and other aid agencies, this may have been a key barrier for access.

Unsalariated community health workers - COVID-19 opportunity costs. In Somalia, CHWs played a central role in bringing elderly people and mobile populations to points of vaccination. They could also play central roles in dissemination of self-tests, conducting rapid antigen tests, and improving access to COVID information. Countries examined did not have a formal registry to track CHWs, and most interviewees said 'some' were salariated. A 2020 rapid assessment showed that in Liberia, 100% of CHWs were compensated

for their work, and in Uganda, where there are up to 180,000 CHWs, 0 receive compensation.⁵

Question marks around access to new COVID-19 antivirals. Peru and Ukraine are excluded from the Medicines Patent Pool (MPP) molnupiravir and paxlovid licences. Ukraine has signed an agreement with Merck, Sharp, and Dohme for purchase of the originator medicines, but Peru is concerned about patents and pricing. At the time of writing, there was no data available on whether the six other countries (who are included in the MPP licence) had already gotten access to generic molnupiravir or paxlovid. In environments with poor vaccine equity, effective treatments are necessary to prevent deaths.

Lack of data on oxygen needs will hamper the effectiveness of multilateral oxygen support in 2022. Without more hospital-level data on access to medical oxygen and trained staff to operate and maintain oxygen supplies, there is a risk of further oxygen shortages and elevated COVID-19 death rates, especially in countries with low vaccine coverage and rapid transmission.



ADVOCACY MESSAGES

Based on the above, advocacy messages are as follows:

- ❁ **Demand transparency on vaccine deliveries** to enable health systems to prepare for deployment.
- ❁ Vaccine deliveries to be accompanied with **operational support**.
- ❁ **Robust test-and-treat strategies** needed in environments of poor vaccine equity.
- ❁ Governments to establish a **database of CHWs and budget to compensate them**.
- ❁ Poor engagement of CHWs **jeopardises deployment** of COVID-19 technologies – development banks should invest in CHW engagement.
- ❁ **Strengthened informatics and data systems**, including for reporting of antigen detection rapid diagnostic tests (AgRDTs) and the registration of CHWs.
- ❁ Provision of **structured psychosocial support** for healthcare workers, including CHWs.
- ❁ Countries to **expand self-testing** for COVID-19, based on WHO guidelines.
- ❁ Campaign for **compulsory licences** in lower and middle income countries (LMICs) with no access to voluntary licenses for new antivirals.
- ❁ Countries to expand eligibility for vaccination programs to **undocumented migrants**.



IN-DEPTH FINDINGS FROM DATA COLLECTION

ROLE OF COMMUNITY HEALTH WORKERS IN THE COVID-19 RESPONSE

According to the Centre for Global Development, 'CHWs may be responsible for at least a dozen different types of preventive, promotional and curative services, depending on the country and local context.'⁶ In the context of COVID-19, CHWs in Somalia, for example, played an important role in bringing elderly people and mobile populations to vaccination centres. They could also play an integral role to widespread dissemination of rapid antigen self-tests, and potentially to record results into applications on portable tablets, improving surveillance.

There is poor data, however, on CHWs generally, and on compensation given to CHWs, if any. In the countries we examined, most respondents said *some* are compensated, but others are volunteers. No figures were available on numbers of CHWs that were compensated in country. In Somalia, CHWs are engaged on a seasonal basis dependent on when there is fund availability – and given approximately USD\$40 per month.

In addition to delivering COVID-19-related services, CHWs play an important role in maintaining continuity of services for other disease areas. A 2021 multi-country study conducted in Sub-Saharan Africa found that CHWs who were equipped and prepared for the pandemic were able to maintain consistency and coverage of community-delivered care. Given that CHW roles are not professionalised, the paper also suggested that the 'opportunity cost of not professionalizing CHWs may be larger than previously estimated'.⁷

IntraHealth International, who reviewed the mapping tool, suggested that another health systems field be added - notably whether

a country has a digitised Human Resource Information System (HRIS) or paper-based personnel records kept at national/district level, which would make it difficult to access these records for surge capacity planning. It was also suggested by reviewers that the mapping tool include the proportion of health workers that are vaccinated against COVID-19, including CHWs.

Searches for secondary data, and enquiries made to country informants indicate that there is no consolidated data source on COVID-19 vaccinations among health workers, including CHWs. It will be important in Phase 2 of this project to collect any available data, whether quantitative or qualitative, and to ask governments to track this data.

Given CHW value, respondents suggested the need for development banks, including the World Bank, the Islamic Development Bank, and the African Development Bank, to invest in routine salaries for CHWs to enable a robust COVID-19 response.

PSYCHOSOCIAL SUPPORT FOR HEALTH WORKERS

In the countries examined, there was no evidence of structured psychosocial support for CHWs either through government or other NGO instruments.

There is increasing evidence about a growing range of mental health impacts among health workers. Research from Wuhan, China suggests that among Chinese health care workers exposed to COVID-19, there is a high risk of unfavourable mental health outcomes such as experiencing symptoms of depression, anxiety, insomnia, and distress.⁸ Studies have also found that these high degrees of burnout and pandemic-related work stresses



are resulting in increased resignations or increased intentions to resign among doctors and nurses.⁹ Given that health workers are the backbone of the pandemic and are essential to reduce deaths during COVID-19 surges, it is important for governments to invest in structured psychosocial support for staff, but as this study¹⁰ suggests, that approaches be flexible, and should provide options for peer and professional support.

ACCESS TO RAPID ANTIGEN TESTS (PROFESSIONAL USE AND SELF-TESTS)

Rapid antigen tests, whether administered by a trained healthcare worker, a trained community health worker, or for self-use, are widely used in the Global North. In some countries, like the UK, antigen rapid self-tests are provided for free and are available to be posted directly to homes. At time of writing, the most recent WHO guidelines for AgRDTs recommend that they be used for community testing of symptomatic individuals - and that no confirmatory test is required.¹¹ Given the emergence of new, effective oral antivirals that are administered for outpatient treatment, AgRDTs could play an important role for stopping COVID-19 deaths in areas with poor vaccine equity.

However, of all the countries examined, only Ukraine reported availability of self-tests for purchase in pharmacies. In Bangladesh, while there is a Standard Operating Procedure for professional use AgRDTs, self-tests are not recommended.

Numerous projects are ongoing in the countries examined to increase evidence on multiple use cases of professional use AgRDTs, self-tests, and the role of antigen rapid detection tests (RDTs) in test-and-treat strategies with novel antivirals. In Nigeria, both Population Services International and the Clinton Health Access Initiative (CHAI) are working on test and treat programmes involving AgRDTs that will end in Q3 2022. In Bangladesh, Interactive Research

and Development Global is working with the Foundation for Innovative New Diagnostics (FIND) to deliver AgRDTs in the workplace for garment factory workers. In Somalia, FIND is working with WHO Somalia to develop a national testing strategy and to train health workers and surveillance officers on testing with AgRDTs in health facilities and in communities; this project ended in Q4 2021. Also in Somalia, while there is no national regulatory agency, the government approved the use of AgRDTs for testing, including for testing close contacts of COVID-19 patients, resulting in a 20% increase in testing overall.

There are numerous AgRDT projects ongoing in Uganda, including FIND projects with Premise to understand population perceptions on access to COVID-19 testing (end date Q3 2022), FIND/Transaid projects to assess feasibility and acceptability of AgRDTs versus PCR among cross-border truck drivers (end date Q4 2022), FIND/PSI projects on service delivery models for antigen self-tests (end date Q3 2022), and on digitally-enabled community testing with AgRDTs with Uganda National Health Laboratories (UNHLS) (end date Q2 2022). It will be important in Phase 2 to document results of these various projects.

When asked whether those attending TB screening are offered COVID-19 AgRDTs, most informants said no, despite WHO recommendations to do so.¹²

Our data collection exercise occurred as WHO was being criticised for slow adoption of self-tests guidelines, often a prerequisite for deployment through international procurers such as the Global Fund.¹³ In March 2022, WHO released self-tests guidelines that stated self-tests 'should be offered in addition to professionally administered testing services'.¹⁴



PCR TESTS AND TURNAROUND TIMES

All countries examined have laboratories providing PCR testing. However, the extent of widespread availability of PCR testing and the length of time between sample collection and communication of results to individuals—an important indicator to prevent ongoing transmission, and to enable individuals to quickly link to care—are unclear. In Bangladesh, informants told us that PCR results take 24 hours to be communicated to individuals. In Somalia, informants said that while in many cases it takes 12-24 hours to communicate PCR test results to patients, there are numerous cases where results are unable to be communicated due to their locations being not known (due to individuals not having fixed addresses or contact details). This, too, points to the need for AgRDTs to minimise 'missing cases'.

In Liberia, it takes 3-5 days for the results to be communicated. However, no data is available on patient experiences and in Phase 2 it will be important to include patient populations in interviews.

WHO guidelines state that where results are delayed for more than 48 hours, symptomatic individuals should be administered with an AgRDT and a positive result need not be confirmed by PCR.¹⁵ Communication of results beyond 48 hours therefore is not ideal and suggests the need for increased staff capacity and/or the need for more decentralised laboratories. In Uganda, for example, two labs, Central Public Health Laboratories in Kampala and Uganda Virus Research Institute in Entebbe are conducting the majority of COVID-19 PCR testing and analysis - and it may be necessary to increase lab capacity outside these cities.

Some informants pointed to high costs associated with PCR tests. Given recent reviews in South Africa of PCR test prices and investigations uncovering price abuse by private labs,¹⁶ similar investigations may be necessary elsewhere to ensure fair pricing.

Respondents in Somalia explained that efforts were needed to communicate with PCR machine manufacturers to prioritise deliveries to countries in need, rather than following date of orders. At time of writing, a September 2021 order of a PCR machine for Somalia remains unfulfilled.

FACTORS INFLUENCING VACCINE ACCESS

Of all countries examined, only one (Peru), had reached the WHO target of having 40% of its population vaccinated by the end of 2021. At time of writing, three countries (Nigeria, Somalia, and Uganda) had not yet reached 5% vaccination rates. In Nigeria, vaccines with short shelf lives provided through the COVAX had expired.¹⁷ Despite short notification times from COVAX, Somalia consumed 90% of vaccines provided by COVAX.

Supply remains the core issue affecting vaccine access - i.e. the hoarding of vaccines by rich countries and insufficient tech transfer by manufacturers of mRNA vaccines. However, numerous other barriers remain. The lack of transparency provided by suppliers to the COVAX mechanism on delivery schedules compromises country planning for deployment. Furthermore, poor responsiveness to country enquiries¹⁸ has created an environment of distrust between governments and COVAX. Vaccine inequity is further compounded by short shelf lives of donations from high-income countries, meaning that countries often lack sufficient time to get vaccines in arms.¹⁹

In addition, country informants told us that in Somalia, it takes 6-8 weeks from Gavi's date of notice of deployment of vaccines to their arrival in Somalia, due to storage facilities being located in Nairobi rather than in Mogadishu, therefore requiring expensive charter flights to deliver the vaccines into Somalia. In Liberia, they were given slightly over 24 hours' notice until arrival of vaccine shipments. No information was available for Bangladesh, Nepal, Nigeria, Peru, Uganda, and Ukraine, and in Phase 2 of the project it



may be necessary to send official requests for information.

There are other supply-related factors that negatively affect access to vaccines. COVAX vaccine shipments arrive separately to syringes, which arrive by ship. As such, COVID-19 vaccination efforts utilise syringe stocks meant for routine immunisations. Country informants suggested that it was necessary for Gavi to keep track of in-country syringe stocks and ensure that there is a quick turnover to replenish syringes used.

In addition, in countries with low Ministry of Health budgets, vaccine deployments must be accompanied with operational costs. Respondents in Somalia said that transport costs of individuals to attend vaccination centres are not reimbursed, thus the need to fund outreach teams, charter flights, and setting up of vaccination centres. These operational costs could make a significant impact in addressing poor rural coverage of COVID-19 vaccines in Somalia.

Informants based at regional institutions informed us that communications and informational tools needed to be improved to address legitimate concerns people had about vaccines and that language around 'hesitancy' was unhelpful.

In Nigeria, less than 2% of the population has been vaccinated. Efforts are being undertaken to ramp up access and uptake - including the establishment of fixed vaccination posts at primary, secondary, and tertiary health facilities, as well as outreach posts outside health facilities, including in churches, mosques, markets, and malls.²⁰

In early 2022, the COVID-19 Vaccine Delivery Partnership was set up to increase uptake as supply concerns eased on the COVAX, and yet countries continued to have low vaccination rates. As early as August 2021 for example,

some countries have stated that they are 'losing momentum' in COVID-19 vaccinations,²¹ and this may be due to the delays in deployment. Under the Vaccine Delivery Partnership led by UNICEF, 34 countries have been identified for direct support on uptake, including Central African Republic, Kenya, Somalia, and Uganda.²² It is unclear at this stage what the support will encompass.

ACCESS TO OXYGEN

Lack of data continues to hamper an effective multilateral oxygen response. While the COVID-19 Oxygen Needs Tracker developed by PATH, CHAI, and Every Breath Counts estimates the daily need for oxygen for COVID-19 patients in LMICs, there are no estimates of how much of that need is currently being met. Of the countries examined, Ukraine had the highest daily need of medical oxygen (735,984 m³), followed by Peru (58,258 m³), and the remaining countries have all experienced rapidly rising oxygen needs during the pandemic.

Following local reports of large numbers of broken and idle oxygen plants in LMICs, including all the countries in this study, a crowdsourced mapping tool was developed to "find and fix" the broken plants. In Peru, at least three oxygen plants (Hospital Regional de Iquitos, Iquitos; Hospital II-2 Tarapoto, San Martin, and Tumbes Hospital, Tumbes) were listed, with five in Liberia, five in Uganda, and one in Nepal.

A Uganda Ministry of Health informant stated that as of November 2021, all oxygen plants are running well, including five in the central region, five in Eastern Uganda, two in the north, and five in the Western region. According to the informant, however, these plants have all run for more than four years and are at risk of wear and tear, thus it will be important for development partners to support the Ministry of Health to maintain them.



In August 2021, in Nigeria, the National Agency for the Control of AIDS issued a tender for the repair of oxygen plants.²³ This document listed 31 oxygen plants that need repair, including 9 in the North Central area. Out of this 9, 3 are in the Federal Capital Territory (Federal Medical Centre Jabi, NH Abuja, University of Abuja Teaching Hospital Gwagwalada). The next most affected area, according to the tender, is Southern Nigeria, with 8 plants requiring repair, including the Asaba Federal Medical Centre in Delta state, University of Benin Teaching Hospital in Edo state, University of Uyo Teaching Hospital in Akwa Ibom state, and University of Port Harcourt in Rivers state.

Although 86 broken plants have been reported, Every Breath Counts, who maintains the list, report that this is just the “tip of the iceberg.” For example, the lack of entries of broken oxygen plants for Bangladesh, Somalia, and Ukraine does not mean that all oxygen plants are operational in these countries.

While the Oxygen Taskforce co-chaired by Unitaid and Wellcome Trust was able to mobilise \$US600 million in oxygen supplies for LMICs in 2021, it requires more financing in 2022. Much more may be needed, especially in countries with rapid transmission of new variants and low vaccine and testing coverage.

Oxygen shortages continue to be reported in the study countries, most recently in Ukraine and Somalia in November 2021.

But without more hospital-level data on exactly what oxygen supplies and staff are needed in these countries, there is a risk of further oxygen shortages and elevated COVID-19 death rates, especially in countries with low vaccine coverage and rapid transmission.

ACCESS FOR RURAL POPULATIONS

Disaggregated data on access to COVID-19 technologies in rural populations is not widely available. In Phase 2 of the project, it will be

recommended that consultants reach out to WHO country offices for official data, as well as district and village health teams with official requests for qualitative information.

In Uganda, efforts are underway to provide vaccines to hard-to-reach populations. Given that 20% of the population receive COVID-19 information through word of mouth, authorities are using drones, street preachers and district and community leaders ‘with crucial messaging on COVID-19 and the need for vaccination.’²⁴ According to WHO Uganda, 80 community mobilizers have been partnered with village health teams in three districts to ramp up vaccination uptake.²⁵

In Nepal, as recently as June 2021, sherpa communities in rural locations near Mount Everest were struggling with COVID-19, with one report describing how:

“Entire households have fallen sick, but there is a shortage of healthcare workers, hospital beds and testing kits. There are only two rudimentary hospitals and five doctors serving the region’s 9,000 people, while just over 400 tests have been conducted since late April – nearly half of those have returned positive.”²⁶

In November 2021, the Nepalese Health Minister announced that he would hire more health workers to reach remote corners of the country and set up new vaccination centres. It will be important in Phase 2 of the project to follow-up with Nepalese government officials and health workers on the progress of these plans.²⁷ Informants in Somalia said that rural coverage of vaccines was poor – however, efforts are underway to train outreach teams to recruit individuals in rural areas into vaccination programs, and to tackle misinformation that vaccines are not provided for free.



ACCESS FOR DISPLACED PERSONS

Six out of eight countries examined have documented programs providing COVID-19 vaccines to refugees and internally displaced persons (IDPs), however the full scale of plans is unclear. Nepal has the most progressive policy out of countries examined, with displaced persons prioritised for vaccinations ahead of mortality-first and age priority vaccinations.

In Nigeria, a country with 143,000 IDPs,²⁸ in Cross River State in the South of the country, it was reported that 23,128 IDPs had received their second doses.²⁹ In Northeast Nigeria, a June 2021 situational analysis³⁰ conducted by the International Organization for Migration among over 110,000 IDP respondents found that 69% said that they would not get vaccinated even if the vaccine was free and available, with 20% of those saying that they had been advised against being vaccinated.³¹ Given that the federal government began a mass vaccination program among IDPs in the second week of December 2021,³² it will be important in Phase 2 of data collection to enquire as to specific activities to address any concerns that IDPs had, and the scale of the success of mass vaccination activities.

In Uganda, while official policy is that refugees are included in the vaccination drive, it has been reported that those with refugee cards have been turned away at vaccination centres.³³ Uganda is home to an estimated 1.4 million refugees and asylum seekers, mostly from Burundi, Democratic Republic of Congo (DRC), Rwanda, Somalia and South Sudan.³⁴ In Ukraine, only those with refugee status are eligible to receive vaccines, leaving approximately 5 million people ineligible to receive COVID-19 vaccines. These raise important questions about the right to health for undocumented persons, and those who have not received refugee status.

ACCESS TO NOVEL ANTIVIRALS

Novel antivirals, such as molnupiravir and paxlovid hold potential for outpatient treatments for COVID-19 and effective COVID-19 test and treat regimens when paired with rapid antigen tests. 2021 saw the finalisation of two voluntary licences on these drugs, brokered by the MPP, allowing for royalty-free access in 105 countries (molnupiravir) and 93 countries (paxlovid).³⁵

Two countries in this mapping exercise (Peru and Ukraine) are not included in either license – meaning that these countries will either have to purchase expensive originator versions or issue compulsory licences to override the patents. Based on informants, Ukraine has signed an agreement with MSD to purchase molnupiravir, whereas Peru has expressed interest to procure molnupiravir, but with concerns about patents and high prices.

Paxlovid has shown much higher efficacy when compared to molnupiravir,³⁶ however access in 2022 will be restricted by manufacturing capacity and IP. Pfizer has stated that it would only be able to produce 120 million doses in 2022,³⁷ many already having been procured by wealthy nations.



CONCLUSION

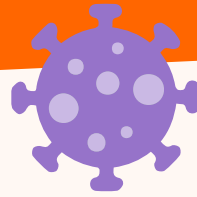
VALUE OF THE TOOL, AND NEXT STEPS TO ADDRESS DATA GAPS

Stakeholders and country informants were generally positive about the value of collecting COVID-19 data and maintaining the tool for reference – however noted that several indicators would be difficult to find simply because neither governments, global health actors, nor NGOs were tracking them, or had different definitions for indicators. This included data on whether homeless people were facilitated to receive COVID-19 vaccines, whether community health workers are salaried, and on PCR turnaround times, which vary even within countries.

FIND suggested that the consultants include an indicator on “are people able to access tests when they wanted them” given that a FIND study is collecting this data. Several informants pointed to the need to expand the list of countries included in the mapping tool – particularly the need to include countries such as South Africa and Tanzania due to access gaps there. In Phase 2, however, countries will be added based on strict parameters to be determined through consultation.

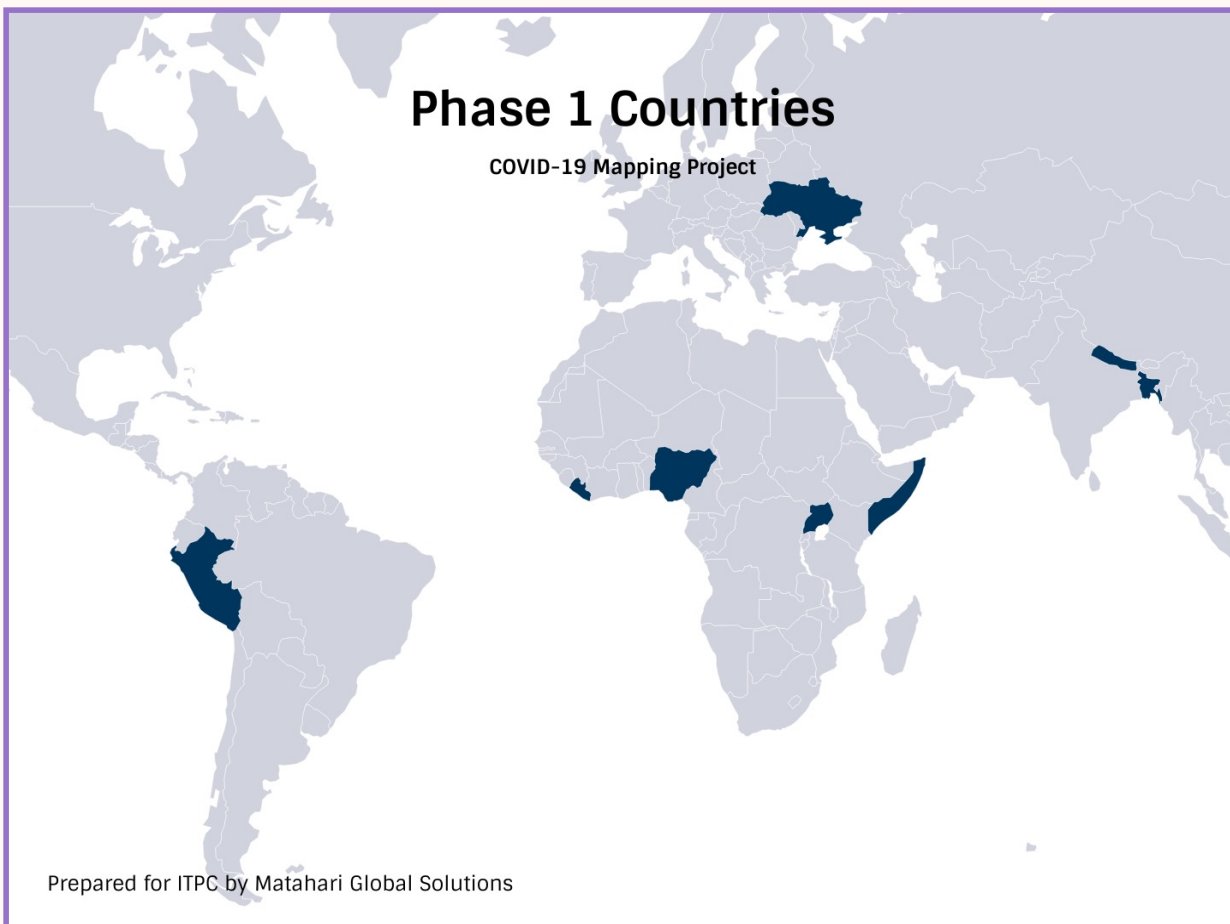
Overall, the following are a summary of key suggestions by key informants for Phase 2 of the mapping exercise:

1. **To interview rural health practitioners and WHO regional offices on access to COVID-19 technologies in rural populations. This would include a follow-up on the hiring initiatives in Nepal to increase vaccinations in rural populations.**
2. **To monitor if there have been any changes vis-à-vis right to health and vaccinations for undocumented migrants in countries examined, including Uganda and Ukraine.**
3. **To monitor purchases and prices of novel antivirals in Peru, Ukraine, and other MICs included in Phase 2.**
4. **To communicate advocacy messages resulting from this analysis to CSOs.**
5. **Given similarities in symptomology of COVID-19 and TB, to understand reasons why in many countries COVID-19 AgRDTs are not being offered to those attending TB screening.**
6. **To include an indicator on whether countries have digitised human resources systems, and whether those include CHWs.**
7. **To explore and understand support provided to countries through the Vaccine Delivery Partnership.**
8. **To expand the list of countries examined (see figure on following page).**



Phase 1 Countries

COVID-19 Mapping Project



Prepared for ITPC by Matahari Global Solutions



ENDNOTES

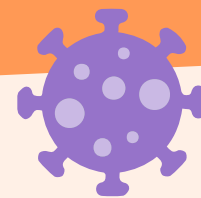
- 1 Camila Gianella Malca and others, 'How Peru became the country with the highest COVID death rate in the world' *The Conversation* (16 November 2021) <<https://theconversation.com/how-peru-became-the-country-with-the-highest-covid-death-rate-in-the-world-169779>> accessed 10 December 2021
- 2 Henry Wasswa, 'COVID-19: Uganda's Low Inpatient Numbers Mask High Community Infection as Desperate Patients Turn to Herbs' *BMJ* (9 August 2021) <<https://www.bmj.com/content/374/bmj.n1909>> accessed 10 December 2021
- 3 Edward Mcallister and Libby George, Stephanie Nebehay, 'Exclusive: Up to 1 million COVID vaccines expired in Nigeria last month' *Reuters* (8 December 2021) <<https://www.reuters.com/business/healthcare-pharmaceuticals/exclusive-up-1-million-covid-vaccines-wasted-nigeria-last-month-2021-12-08/>> accessed 10 December 2021
- 4 Liki 24, 'Тест на коронавірус (Coronavirus tests)' <<https://liki24.com/uk/search/test-na-koronavirus/>> accessed 10 December 2021
- 5 Lyudmila Nepomnyashchii, Carey Westgate, Ashley Wang, Helen Olsen, Prashant Yadav, Madeleine Ballard, 'Protecting Community Health Workers: PPE Needs and Recommendations for Policy Action' *Center for Global Development* (June 2020) <<https://www.cgdev.org/sites/default/files/protecting-community-health-workers-ppe-needs-and-recommendations-policy-action.pdf>>
- 6 Lyudmila Nepomnyashchii, Carey Westgate, Ashley Wang, Helen Olsen, Prashant Yadav, Madeleine Ballard, 'Protecting Community Health Workers: PPE Needs and Recommendations for Policy Action' *Center for Global Development* (June 2020) <<https://www.cgdev.org/sites/default/files/protecting-community-health-workers-ppe-needs-and-recommendations-policy-action.pdf>>
- 7 Madeleine Ballard, Helen Elizabeth Olsen, and others, 'Continuity of Community-Based Healthcare Provision During COVID-19: A Multi-Country Interrupted Time Series Analysis' *Preprints with the Lancet* (9 August 2021) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3820544> accessed 10 December 2021
- 8 Jianbo Lai and others, 'Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019' *JAMA Open Network* 2020;3(3):e203976 <<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763229>>
- 9 Julian Sheather and Dubhfeasa Slattery, 'The great resignation—how do we support and retain staff already stretched to their limit?' *BMJ Opinion* (September 2021) <<https://blogs.bmj.com/bmj/2021/09/21/the-great-resignation-how-do-we-support-and-retain-staff-already-stretched-to-their-limit/>> accessed 11 December 2021; Rawaih Falatah, 'The Impact of the Coronavirus Disease (COVID-19) Pandemic on Nurses' Turnover Intention: An Integrative Review' *Nursing Reports* 2021, 11, 787–810. <https://doi.org/10.3390/nursrep11040075>
- 10 Jo Billings, Nada Abou Seif, and others, 'What support do frontline workers want? A qualitative study of health and social care workers' experiences and views of psychosocial support during the COVID-19 pandemic' *PLoS ONE* 16(9): e0256454. <https://doi.org/10.1371/journal.pone.0256454>
- 11 WHO, 'Antigen-detection in the diagnosis of SARS-CoV-2 infection' (6 October 2021) <<https://www.who.int/publications/i/item/antigen-detection-in-the-diagnosis-of-sars-cov-2infection-using-rapid-immunoassays>> accessed 10 December 2021
- 12 WHO, 'Information Note: Tuberculosis & COVID-19' (May 2020) <<https://www.who.int/docs/default-source/documents/tuberculosis/infonote-tb-covid-19.pdf> <https://www.who.int/docs/default-source/hq-tuberculosis/covid-19-tb-clinical-management-info-note-dec-update-2020.pdf>> accessed 27 January 2022
- 13 Fifa A Rahman, Brook K Baker, and Carolyn Gomes, 'COVID Testing Equity: A Reflection Based on 1.5 Years in the ACT-Accelerator' *PLOS Global Public Health* (24 January 2022) <<https://speakingofmedicine.plos.org/2022/01/24/covid->



- [testing-equity-a-reflection-based-on-1-5-years-in-the-act-accelerator/](#)> accessed 10 February 2022
- 14 WHO, 'Use of SARS-CoV-2 antigen-detection rapid diagnostic tests for COVID-19 self-testing' (9 March 2022) <https://www.who.int/publications/i/item/WHO-2019-nCoV-Ag-RDTs-Self_testing-2022.1> accessed 29 March 2022
 - 15 WHO, 'Recommendations for national SARS-CoV-2 testing strategies and diagnostic capacities' (25 June 2021) <<https://www.who.int/publications/i/item/WHO-2019-nCoV-lab-testing-2021.1-eng>> accessed 11 December 2021
 - 16 Alex Patrick, 'Covid-19 PCR test costs reduced after commission finds price 'abuse' by private labs' Sunday Times (12 December 2021) <<https://www.timeslive.co.za/news/south-africa/2021-12-12-covid-19-pcr-test-costs-reduced-after-commission-finds-price-abuse-by-private-labs/>> accessed 12 December 2021
 - 17 Edward Mcallister and Libby George, Stephanie Nebehay, 'Exclusive: Up to 1 million COVID vaccines expired in Nigeria last month' Reuters (8 December 2021) <<https://www.reuters.com/business/healthcare-pharmaceuticals/exclusive-up-1-million-covid-vaccines-wasted-nigeria-last-month-2021-12-08/>> accessed 10 December 2021
 - 18 Rosa Furneaux and others, 'How COVAX failed on its promise to vaccinate the world' The Bureau of Investigative Journalism (8 October 2021) <<https://www.thebureauinvestigates.com/stories/2021-10-08/how-covax-failed-on-its-promise-to-vaccinate-the-world>> accessed 11 December 2021
 - 19 Reuters, 'WHO exec: donated COVID-19 vaccines with short shelf life 'major problem'' Reuters (9 December 2021) <<https://www.reuters.com/world/who-exec-donated-covid-19-vaccines-with-short-shelf-life-major-problem-2021-12-09/>> accessed 11 December 2021
 - 20 WHO Nigeria, 'Osun state adopts integrated strategies, targets over two million residents for COVID-19 vaccination' (3 December 2021) <<https://www.afro.who.int/news/osun-state-adopts-integrated-strategies-targets-over-two-million-residents-covid-19?country=979&name=Nigeria>> accessed 10 December 2021
 - 21 Daily Maverick, 'South Africa is 'losing momentum' in its vaccination drive' (13 August 2021) <<https://www.dailymaverick.co.za/article/2021-08-13-south-africa-is-losing-momentum-in-its-vaccination-drive/>> accessed 29 March 2022
 - 22 UNICEF, 'COVID-19 Vaccine Delivery Partnership: Update for the UNICEF Executive Board' (February 2022) <https://www.unicef.org/executiveboard/media/10176/file/2022-COVID-19_country_readiness-Chaiban-PPT-EN-2022.02.21.pdf> accessed 29 March 2022
 - 23 Federal Government of Nigeria, 'Bidding Document for the Repair of Oxygen Plants in Federal Tertiary Hospitals in Nigeria' (August 2021) <<https://naca.gov.ng/wp-content/uploads/2021/08/2021.08.02-SBD-for-Oxygen-Plant-Repair.pdf>> accessed 12 December 2021
 - 24 WHO Uganda, 'Driving vaccine demand in Uganda's hard-to-reach communities' (29 October 2021) <<https://www.afro.who.int/news/driving-vaccine-demand-ugandas-hard-reach-communities>> accessed 11 December 2021
 - 25 WHO Uganda, 'Driving vaccine demand in Uganda's hard-to-reach communities' (29 October 2021) <<https://www.afro.who.int/news/driving-vaccine-demand-ugandas-hard-reach-communities>> accessed 11 December 2021
 - 26 Roshan Sedhai and Zaheera Rasheed, 'Fear and panic' as COVID ravages Nepali villages near Mt Everest' (11 November 2021) <<https://www.aljazeera.com/news/2021/6/17/nepal-sherpa-villages-reeling-from-covid-as-climbing-season-ends>> accessed 11 December 2021
 - 27 <<https://www.aljazeera.com/news/2021/11/11/nepal-covid-vaccination-adults-mid-april-health-minister>> accessed 11 December 2021
 - 28 Internal Displacement Monitoring Centre <<https://www.internal-displacement.org/countries/nigeria>> accessed 10 December 2021
 - 29 WHO Nigeria, 'Leaving no one behind' – Cross River targets refugees for COVID-19 vaccination' (2 July 2021) <<https://reliefweb.int/report/nigeria/leaving-no-one-behind-cross-river-targets-refugees-covid-19-vaccination>> accessed 8 December 2021



- 30 Displacement Tracking Matrix, 'Nigeria — COVID-19 Situational Analysis 6: North East (June 2021)' <<https://dtm.iom.int/reports/nigeria---covid-19-situational-analysis-6-north-east-june-2021>> accessed 10 December 2021
- 31 Displacement Tracking Matrix, 'Nigeria — COVID-19 Situational Analysis 6: North East (June 2021)' <<https://dtm.iom.int/reports/nigeria---covid-19-situational-analysis-6-north-east-june-2021>> accessed 10 December 2021
- 32 Ayodeji Owolabi, 'The federal government, on Thursday, began the mass vaccination of internally-displaced persons (IDPs)' The Cable (10 December 2021) <<https://www.thecable.ng/photos-fg-begins-mass-vaccination-of-idps-against-covid>> accessed 10 December 2021
- 33 Gavi, 'Refugees included in Uganda's COVID-19 vaccine drive' (3 August 2021) < <https://www.gavi.org/vaccineswork/refugees-included-ugandas-covid-19-vaccine-drive>> accessed 12 December 2021
- 34 Internal Displacement Monitoring Centre, 'Uganda' < <https://www.internal-displacement.org/countries/uganda>> accessed 12 December 2021
- 35 'Pfizer and the Medicines Patent Pool (MPP) Sign Licensing Agreement for COVID-19 Oral Antiviral Treatment Candidate to Expand Access in Low- and Middle-Income Countries' (16 November 2021) <<https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-medicines-patent-pool-mpp-sign-licensing>> accessed 13 December 2021
- 36 Melody Schreiber, 'Covid pills are 'very promising' – but what are the challenges in using them?' The Guardian (28 December 2021) <<https://www.theguardian.com/us-news/2021/dec/28/covid-pills-challenges-paxlovid-molnupiravir>> accessed 10 February 2022
- 37 Kevin Dunleavy, JPM 2022: Pfizer CEO eyes 50% boost to Paxlovid production – and capacity expansions, too' FiercePharma (10 January 2022) < <https://www.fiercepharma.com/pharma/jpm-2022-pfizer-bumps-paxlovid-production-estimate-to-120-million-for-year-while-also>> accessed 10 February 2022



ABOUT ITPC

The International Treatment Preparedness Coalition (ITPC) is a global network of people living with HIV, community activists and their supporters working to achieve universal access to HIV treatment and other life-saving medicines.

Intellectual property and access to medicines
([#MakeMedicinesAffordable](#))

Community monitoring and accountability
([#WatchWhatMatters](#))

Treatment education, demand creation and technical capacity-building
([#BuildResilientCommunities](#))

To learn more about ITPC and our work, visit itpcglobal.org.

ABOUT WATCH WHAT MATTERS

Watch What Matters is a community monitoring and research initiative that gathers data on access to and quality of HIV treatment globally. It fulfils one of ITPC's core strategic objectives, to ensure that those in power remain accountable to the communities they serve. Watch What Matters aims to streamline and standardize treatment access data collected by communities – helping ensure that data is no longer collected in a fragmented way and that it reflects the issues and questions that are most important to people living with and affected by HIV. It relies on a unique model that empowers communities to systematically, routinely collect and analyze qualitative and quantitative data on access barriers, and use it to guide advocacy efforts and promote accountability.

ABOUT THIS PUBLICATION

ITPC's 2022 "Data Gaps in the COVID-19 Response: Findings from a mapping exercise on access to COVID-19 technologies" publishes the findings of an exercise undertaken in November 2021 to populate a mapping tool examining access to COVID-19 vaccines, therapeutics, and diagnostics, as well as certain health systems elements in eight countries (Bangladesh, Liberia, Nepal, Nigeria, Peru, Somalia, Uganda and Ukraine).

CO-ORDINATION

Authors

Dr Fifa A Rahman (Matahari Global Solutions)

Dr Lucy Kanya (LSE)

Dr Charles Ebikeme (LSE)

Reviewers

Leith Greenslade (Every Breath Counts)

Stijn Deborggraeve (MSF Access)

Tracy Swan (ITPC)

Helen Etya'ale (ITPC)

FOR MORE INFORMATION

Please contact us at admin@itpcglobal.org