



WITHOUT A TEMPLATE: SOUTH AFRICA CONFRONTS COVID-19, 2020–2021 EPILOGUE: MANAGING VACCINE PROCUREMENT AND ROLLOUT

When the World Health Organization declared COVID-19 a pandemic on March 11, 2020, public health officials everywhere had to confront their worst nightmare: a new, airborne virus that was highly transmissible and caused serious disease, but for which there was neither a vaccine nor a treatment. Scientists were fairly certain that vaccines were within reach. Researchers had been working to defeat similar viruses by using new mRNA technologies, as well as more-conventional vaccine designs. Pivoting research and development to COVID-19 would take a little time, but likely not nearly as long as it would have just a few years earlier. However, once vaccines became available, global demand would surely outpace the rate of production.

Under those circumstances, how could South Africa swiftly obtain vaccines for its population? And how could it prepare to administer them quickly and effectively?

At the time of the WHO declaration, with no COVID-19 vaccine yet on the horizon, the South African health ministry's procurement unit was already in high gear, engaged in stabilizing supply chains for other health-care products that hospitals and clinics used. But the unit also began to assess the challenges it was likely to face when vaccines began to make their way through testing and then to market. Purchasing and distributing vaccines would be no easy matters.

One of the biggest stumbling blocks was the authorization to take risks with scarce resources. "We can't invest in a vaccine that is in development unless we know it works," health department procurement director Khadija Jamaloodien said, adding, "We had to wait for the clinical data to come out and be published in peer-reviewed journals before we could actually say, 'OK, this is the vaccine we are going to buy.'" In that respect, South Africa was constrained in the same way many other countries were. It could not gamble public money on which of the vaccines still in development would actually work. Further, purchasing decisions required scientific knowledge, which the government had not yet formally assembled. Jamaloodien's office also had to develop contacts with new vendors to assist with logistics, find finance, and ensure that more-powerful buyers did not upset the contracts South Africa had secured. Because most vaccines required cold storage and could expire quickly, deliveries had to be

carefully timed with inspection and distribution plans. There were also rumors that some provinces, worried about potential delays at the national level, were interested in making their own contingency purchases in coordination with the Department of Health.

While Jamaloodien's office worked to stabilize supply chains for essential medical supplies, global pharmaceutical companies initiated vaccine trials in South Africa, which had both a diverse population and the high-end scientific capacity to help carry out the research. The University of Witwatersrand led two of the trials: one in association with Oxford University, the Jenner Institute, and AstraZeneca and one with United States–based biotechnology firm Novavax, Inc.¹ A third trial—for a Johnson & Johnson vaccine—was due to start in September.² Johnson & Johnson also began to create a South African production facility for its vaccine, although at that point, none of the doses it intended to produce at the plant were designated for local use.

The procurement wheels began to move in September 2020, when three elements started to come together. First, the national government created a special vaccine advisory group to evaluate the evidence, make informed decisions about vaccine efficacy, and choose which of the vaccines Jamaloodien's office should purchase. Second, Gavi, the Vaccine Alliance, together with the World Health Organization and other partners, established COVID-19 Vaccines Global Access (COVAX), to help ease purchasing in a highly competitive market for a risky commodity. Third, Dr. Nicholas Crisp, a public health medicine specialist private-sector health system expert who had helped the government develop the business case for its national health insurance system reforms, began to assist with several aspects of the nascent vaccination campaign—especially coordinating the public and private sector logistics of receipt and distribution, which Jamaloodien led. He later described his role as “joining the dots and keeping the peace.”

The government announced its strategy on January 3, 2021, after several vaccines had cleared approval processes in the United States and other countries that had invested in their development. The goal was to vaccinate 67% of South Africa's population, or roughly 39.4 million people out of 58.8 million—a benchmark decision-makers considered well aligned with need, budget, and likely uptake. The national government asserted sole control over purchasing and distribution, sidelining the provinces. Jamaloodien's office would aim to draw 10% of vaccines from COVAX and purchase the rest on the market.

“The sourcing plan was very simple,” Jamaloodien said. “It was, take whatever vaccine you could get as quickly as you could get it, as long as the government's vaccine advisory group said it was effective.”

From that point, it was all hands on deck. The team grew to roughly 100 people, divided into three groups—one on COVAX and bilateral procurement, one on logistics, and one on implementation. Supplementing the small regular staff, many team members were on contract, as the race to purchase, receive, test, and distribute vaccines began.

The main challenge was to distribute vaccines to thousands of public and private vaccination sites, to ensure that any person (whether insured or not) could go to any vaccination site, and to see to it that vaccinators were trained and registered and were recording vaccinations accurately on the single national system (Electronic Vaccination Data System, or EVDS). With many people working remotely, and thousands of people in the field, WhatsApp groups became Crisp's main coordination tool.

Staff members threw themselves into the effort. "We had a can-do spirit," Jamaloodien recalled. "There were no slackers, no people who said, 'That's not my job.'"

Procuring through COVAX had several perceived advantages. Although wealthy countries could negotiate bilateral deals with vaccine manufacturers, many lower- and middle-income countries lacked the resources. By securing large batches of a variety of vaccines—some of them donated by wealthier countries—and sharing them with participating governments, COVAX could in theory reduce per-dose costs and therefore absorb some of the risks that might impede negotiations with first-time buyers—and enhance equity. "COVAX also shouldered the burden of identifying which vaccines worked," Jamaloodien said, "and it generated a lot of learning." Working through COVAX boosted a sense of social solidarity, she recalled, "a sense that all countries were pitching in to help one another."

Jamaloodien's office had earlier assisted the government to participate in COVAX. But it was not until late June 2021 that COVAX actually delivered the first 1.4 million doses of the Pfizer vaccine—out of 10.6 million owed.³ COVAX itself struggled as wealthy countries bought up most of the supply and as some promising vaccine candidates failed to deliver adequate protection or appeared to generate unwanted side effects.

Procuring vaccines directly from manufacturers posed a different set of challenges. Because demand outstripped supply, manufacturers often had buyers that would pay more than the stated price. In such a hot market, the steps in the procurement process had to move fast. "We had to make international payments in US dollars, which we had never done before," Jamaloodien said. "It was definitely a very big learning curve on how public finance works."

There were payment deadlines, and sometimes Jamaloodien's unit risked not meeting them—not because of lack of funds but because the internal government clearance process worked slowly. A private law firm was brought in to assist in contracting with the pharmaceutical companies. The plan was to vaccinate up to 300,000 people a day at peak delivery. However, supply lagged badly. Companies often failed to ship the number of doses specified in the contract, shipped late, or occasionally shipped doses in bad condition.

The Serum Institute of India delivered an initial shipment of the AstraZeneca vaccine on February 1, 2021. Desperate to protect health-care workers, a month later, researchers negotiated the release of 480,000 trial doses of the Johnson & Johnson vaccine then undergoing tests at several sites in

South Africa. With only a million doses administered by the end of May, however, Jamaloodien's procurement unit was under high pressure. The Johnson & Johnson vaccine was not available after contamination at a Baltimore, Maryland production facility, so a special effort was made to secure a single, short-expiry batch of the vaccine from the United States to address the immediate demand. Combined with other large shipments of US government-donated Pfizer vaccines, this measure gradually enabled the Department of Health to expand its distribution program, though not at the pace it had anticipated. Crisp said that by July 2021, the country was averaging 225,000 inoculations per day, but it was running out of stock.

The third crucial component of the program was to plan the rollout so as to enable vaccination teams to reach those eligible quickly and securely. As shipments arrived, the logistics group had to get the stock into cold storage in warehouses, check the potency, and arrange appropriate and secure transportation to vaccination sites. Even before that stage, however, the logistics staff had to work with stakeholders to define eligibility, identify vaccination sites, train personnel, arrange for on-site security, create and maintain a registration and information system, communicate with the public, work with insurers so they would help cover costs, and keep elected officials informed. Crisp also prepared briefings for the health minister, who reported to several interministerial committees, and he helped lead information sessions with other departments.

The logistics group initially identified 113 vaccination sites, later expanded to 3,000, including some mobile delivery points. The group used socioeconomic data to ensure equity in site selection and coordinated with provincial health officials. Initially, the group also set high priority on vaccinating essential government workers and employees of large manufacturers that generated much of the country's economic activity, such as mines. Gradually, availability expanded, though the program also had to contend with members of the public who stole vaccines to themselves sell or who created forgeries.

Crisp said he placed a premium on communication in order to combat misinformation and vaccine hesitancy and to boost demand as more vaccine doses gradually materialized. At many stages of the program, he was on the air—on radio and television—up to nine times a day. But between the second half of 2020 and the main rollout beginning in mid-2021, interest appeared to diminish among those who had initially indicated in surveys that they wanted the vaccine. By the end of 2021, demand had dropped dramatically. By May 2022, the public seemed to have lost interest in COVID and vaccination demand plummeted still further. The vaccine program sometimes had to move short-expiry unused doses between delivery sites or attempt to donate or resell them to other countries.

Even the sharpest procurement and distribution strategy had to adapt to three predictable but largely unforeseen obstacles: the rapid emergence of virus mutations that soon rendered some of the vaccines less effective than

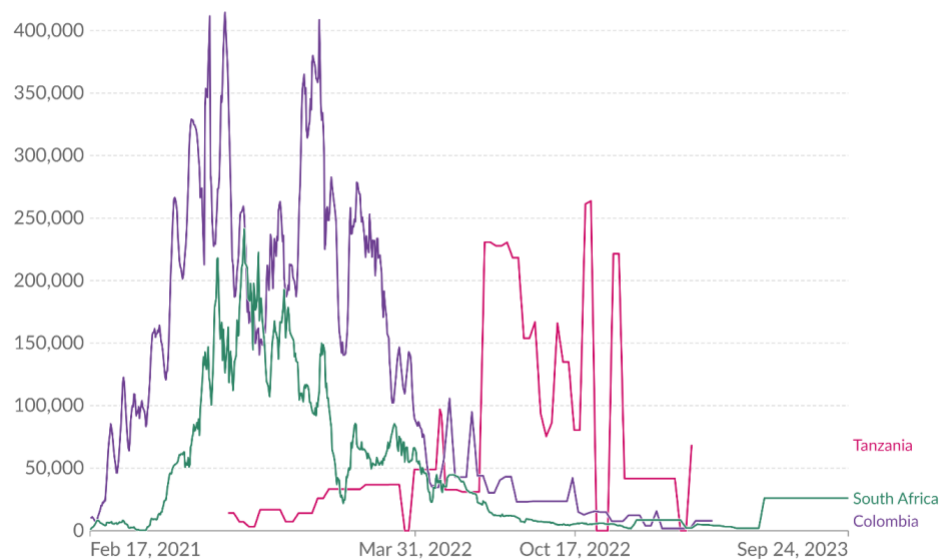
anticipated, pauses in production of some of the vaccines in order to study side effects, and supply constraints resulting from vaccine nationalism: both overbuying on the parts of certain wealthy countries and prohibitions against the international sale of vaccines produced in others. In the event a particular vaccine proved ineffective against some variants, the question was whether it provided sufficient protection against others to include it in the campaign or whether to dispose of it—and, in the latter instance, a second question: Who should bear the cost?

Pauses in production forced rapid changes in distribution plans as well as searches for sources of alternative vaccines. Coping with escalating public criticism during those periods challenged responders, who had to “cut out the noise” and do their jobs, Jamaloodien recalled. She and her team worked around the clock for well over a year, with no vacations. By May 2022, roughly a year after the first push to vaccinate people began in earnest, about 45% of South African adults were fully vaccinated, and about a third of the population as a whole had received at least an initial dose. In that regard, South Africa had underperformed Colombia, a country of roughly similar size and circumstances that reported vaccinating slightly more than 80% of its population, but South Africa outperformed much of the rest of the African region. In total, by mid 2023, the government had administered 39.3 million doses, with 22.9 million people receiving at least one dose and 19.6 million fully vaccinated, Crisp said.

Figure E1: Daily COVID-19 vaccine doses administered; South Africa compared with Colombia, a country with comparable characteristics; and Tanzania

Daily COVID-19 vaccine doses administered

7-day rolling average. All doses, including boosters, are counted individually.



Data source: Official data collated by Our World in Data

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It proved difficult to induce more South Africans to get the vaccine, however, and the overall vaccination rate stubbornly remained at about 40% through 2022 and 2023 (figures E1 and E2).

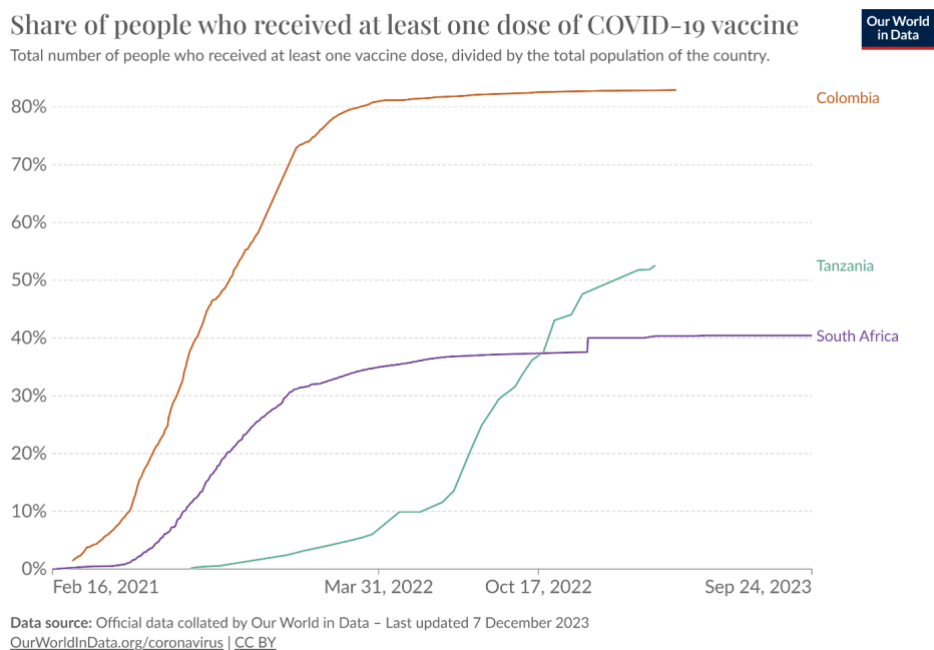
In a major study of vaccine hesitancy, people cited many reasons for not getting vaccinated, including concern about side effects, belief that vaccines had been developed and approved too rapidly to be trusted, or lack of trust in the government. Almost a third of those who had not received the vaccine said they were unsure whether they would do so, and about 15% said they would definitely not.⁴ About half of the adult population received at least one dose. “The reasons are pretty similar to the rest of the world,” Crisp said he told members of parliament. “We all have COVID fatigue—people are trying to get on with their lives after a very disruptive period, and they may believe that protection is no longer important.”⁵

In terms of speed in obtaining and delivering vaccines, South Africa got off to a slightly slow start compared with reference countries in Africa, such as its neighbor Botswana. However, it soon caught up, and during July 2021, it vaccinated more people per day than other countries in the region, displacing Morocco and Ethiopia as the star performer for a crucial period.⁶

The World Bank stepped in to ease the burden the vaccine program placed on South Africa’s budget. In 2022, the World Bank provided a loan to retroactively finance South Africa’s purchase of vaccines.⁷

With its strong scientific capacity, South Africa also became one of the first countries in Africa to manufacture vaccines. Biovac, a Cape Town–based

Figure E2: Share of people who received at least one dose of COVID-19 vaccine, South Africa compared with Colombia and Tanzania



company partly owned by the South African government, in the hope of easing constraints on supply, launched its manufacturing facility in 2023.⁸

Of the many lessons learned, at least three stood out. First, rules against advance purchases of products that were still in development, although understandable, slowed South Africa's ability to deliver vaccines—a difficulty legislative action eased in some countries and a fully functioning COVAX system could also have helped relieve. Second, establishing relationships with likely vendors in advance of an emergency could potentially lighten the procurement workload and increase success during periods of high stress. Third, the Department of Health lacked adequate capacity at the start of the pandemic to coordinate an emergency vaccination campaign at the scale required. The department secured Crisp's assistance and received much additional help from private sector volunteers, academics, and many donors, which helped save the day, but the need to plan for similar future events also belonged on the lessons-learned agenda.

There was no denying that leadership and personalities also played roles in an emergency vaccination campaign. Both Jamaloodien and Crisp underscored that point. "It's about personalities: individuals make it work or make it fail," Crisp said. "That's the intangible."

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