

*By Quarraisha Abdool Karim, PhD*

Africa is plagued by many epidemics — from tuberculosis and HIV/AIDS to malaria and wild polio — but the continent has also worked for decades to fight these threats. The key to beating these deadly diseases is turning inward to existing expertise and finding locally driven solutions.

The recent COVID-19 pandemic has placed public health back in the global spotlight and has also served as a reminder that science is not undertaken in an ivory tower. Science shapes humanity because it takes place among us. COVID-19 has also showcased that no epidemic takes place in isolation. Through collaboration we can build on the foundations of our knowledge to bring forward innovative ways to address health challenges that benefit all of humanity.

This is not a new idea. In fact, it is something that we became all too familiar with during the AIDS pandemic.

Despair, pain, and loss were rampant during the 1980s and early 1990s, at the beginning of South Africa's HIV epidemic. Every weekend, white funeral tents in rural KwaZulu-Natal seemed to mushroom up and multiply, signifying the growing toll the virus was taking on the country.

Witnessing this helped catalyse me to undertake one of the earliest population-based studies that looked closely at this emerging health issue in South Africa. HIV prevalence was low at the time, with less than 1% of the population having been infected.

But lurking within the data was a shocking revelation: young women (15-24 years old) were six times more likely to be infected compared to their male counterparts.

We knew something had to be done. That meant understanding what had led to this striking disparity in risk. So, we began speaking to women from all parts of society to try and get a better sense of what they were experiencing.

Here's what we learned: power dynamics of relationships and sex were disrupting disease prevention. Women didn't have the ability to protect themselves because of the limited options available to them — options like condoms, that placed the responsibility of reducing risk in the hands of men.

Meanwhile, cases continued to surge in South Africa at an alarming rate, doubling

annually in the general population.

Existing methods to prevent HIV infection weren't going to cut it. Approaches designed in the global North were never going to be able to fully account for the needs of women in Africa. That's why new solutions had to be brought forward instead.

One way that we sought to empower women was through a gel that contained Tenofovir, an antiretroviral (ARV) medication. This innovative approach, shown in the CAPRISA 004 trial, enabled HIV-negative women to protect themselves from the virus. CAPRISA's research on PrEP was recently recognised by the VinFuture Prize as a lifesaving innovation from the global South.

Today, Tenofovir is taken daily as a pill for HIV prevention, a solution also known as pre-exposure prophylaxis (PrEP). It has been adopted by the World Health Organization (WHO) as a key prevention option for both women and men.

And it hasn't stopped there — a range of new anti-retroviral drugs and long-acting formulations, delivered as injections and implants, are currently being evaluated to expand prevention choices.

AIDS is no longer a fatal condition, instead it is chronic yet manageable. But we still see too many deaths and new HIV infections, particularly in marginalized populations. Two-thirds of all people living with HIV/AIDS are in sub-Saharan Africa and the region accounts for 60% of all new infections.

As we turn our focus towards other pandemics, such as COVID-19, we cannot afford to lose the gains made in HIV. It is a trap we fell into before — when early HIV work overshadowed TB efforts — and it is not one we can afford to be caught in again.

Even now, COVID-19 continues to draw on lessons from the decades of work that have been poured into our HIV/AIDS response. This includes leveraging existing testing tools to detect COVID, utilising clinical trial infrastructure to expedite vaccine development, calling on community engagement processes to educate the public, and relying on scientific expertise to guide governments in their response.

The AIDS pandemic has taught us that scientists, policy-makers, and civil societies cannot work in a vacuum. There must be a unity of purpose that galvanises the steadfast support of global leaders in governments and funding agencies across the

world.

Africa has the scientific leadership and intellectual capital to develop new technologies and interventions. This is something we have shown time and time again. If there is a problem, then local research is surely the best path toward finding a solution.

Pursuing this path of innovation requires funding that will support and promote the growth and expertise of Africa's scientists. Our inter-dependency and shared vulnerability underscores the importance of collaboration and resource-sharing both globally and regionally that must be used for the benefit of humanity. There is no time for complacency. We must ensure that solutions are tailored by local research to best benefit those in need.

Professor Quarraisha Abdool Karim is an infectious diseases epidemiologist and Associate Scientific Director of the Centre for the AIDS Programme of Research in South Africa (CAPRISA). She was a 2021 Laureate of the VinFuture Prize, in the 'Innovators from developing countries' category.