





Centre for the Aids Programme of Research in South Africa (CAPRISA)

Salim Abdool Karim, Director and co-founder of the Centre for the Aids Programme of Research in South Africa (CAPRISA) has placed local HIV/Aids research on the global map and remains focused on cutting-edge innovations to find life-saving solutions

In 2012, when the world-renowned South African scientist, Professor Salim Abdool Karim, set out to place the country's medical research on the world map as the newly appointed president of the South African Medical Research Council, he was driven by two big questions: Why are South Africans dying... and what can I do to prevent them from dying?

He soon discovered that the council—trying to do too much—had focussed on vastly different research projects, so he narrowed down the scope of work to the highest priorities—investigating the reasons citizens were dying and finding ways to reduce deaths.

He retained only staff who focussed on research into the top 10 causes of death and grew the MRC's budget three-fold to around R700 million a year, in so doing revitalising the organisation during his three-year tenure. Being no mean feat, this exceptional accomplishment built on his experiences from a decade earlier in developing his own research centre of excellence in Durban.

Abdool Karim founded the Centre for the AIDS Programme of Research in South Africa (CAPRISA), a globally acclaimed not-for-profit research organisation, with his wife, Quarraisha Abdool Karim, in 2002, at the University of KwaZulu-Natal's Nelson R Mandela School of Medicine.

Abdool Karim's main research interests are in microbicides and vaccines to prevent HIV infection as well as implementing antiretroviral therapy in resource-constrained settings. He has an endowed professorship, entitled the "CAPRISA Professor of Global Health" at the Mailman School of Public Health at Columbia University, Pro-Vice-Chancellor (Research) at the University of KwaZulu-Natal and Adjunct Professor of Medicine at the Weill Medical College of Cornell University in New York.

Driven by a passion that runs deeper than intellect (a stirring in his spirit, which he describes as a "higher calling" for common good), clinical infectious diseases epidemiologist Abdool Karim has received 22 awards for his work, including the Kwame Nkrumah Continental Scientific Award from the African Union in Addis Ababa and the Platinum Lifetime Achievement Award from the Medical Research Council in 2015. In 2014, he was a member of the team that won the US Science and Technology Pioneers Prize. He also received the John F. W. Herschel Medal in recognition of Highly Distinguished Multidisciplinary Contributions to Science from the Royal Society of South Africa in 2013 and the Hero in Medicine Award from the International Association of Physicians for AIDS Care in 2008.

Abdool Karim plays a key role as a policy advisor to UNAIDS and the World Health

Organisation. He is the Chair of the UNAIDS Scientific Expert Panel and serves on the WHO HIV/TB Task Force and the WHO Expert Advisory Panel on Sexually Transmitted Infections and HIV.

But what's most striking about this world-renowned scientist, who has more than 300 published scientific papers and five registered scientific patents under his belt, is that he remains moved and motivated by his patients, mostly vulnerable, often abused KZN women, who carry the highest burden of HIV/Aids in the world and their desperation to be spared from becoming another statistic.

Abdool Karim desperately wants to give them the comforting words they long to hear from a caring research clinician, the response that says, "don't worry, everything is going to be okay" while, at the same time, providing the promise of protection, health and healing.

"The fact that young women in South Africa have the highest rates of HIV in the world is something we have known for 25 years and, in all those years, we have spent almost all of our time trying to find solutions to that problem. For the first 18 of these 25 years, we did study, after study, after study, but to no avail. I would call us the experts in failure. It took 18 years of failure before we succeeded."

"After the third, fourth or fifth time we failed, shouldn't we have just called it quits and gone home? My answer is a resounding 'no, we

can't!' because every time I see a young woman patient in the clinic and I see her desperation in trying to avoid HIV - and it hits you'.

Although it has taken decades, Abdool Karim and his team's research is now starting to impact the lives of all those trying to avoid HIV infection. In 2010, the CAPRISA 004 study showed that the antiretroviral drug, tenofovir, can prevent sexual transmission of HIV infection in women. In the study, tenofovir was applied as a gel before and after sex; with highest protection in those women who used it consistently. It is estimated that topical tenofovir could avert 1.3 million new HIV infections and over 800 000 deaths over the next two decades in South Africa.

Abdool Karim is now focussing on placing yet another lifesaving tool in the hands of women—an antibody that can hopefully be injected four times a year as a “kind of vaccine” known as passive immunisation, to provide protection against HIV.

“Probably the most exciting research we are doing now is (based on) a woman in KZN who naturally developed an amazingly powerful antibody. This antibody naturally kills a very wide range of different HIV strains and it's highly potent. We need very small quantities of this antibody to kill HIV,” he said.

“We sent one of our students to the United States to work at the National Institutes of Health (NIH) and she was able to identify the actual blood cell in patient CAPRISA 256 (the woman's code name) that makes this antibody,” he said. “Having identified that cell, the team cloned it and then genetically modified the antibody. Our partners at the NIH made a batch of a few grammes and our collaborators at Harvard injected it into monkeys before challenging the monkeys with a monkey variation of HIV. We were struck that, even at very low doses, the animals were protected against infection. The control animals get infected but the animals that got the antibodies don't.”

CAPRISA has partnered with the NIH and is currently in the process of manufacturing the antibody in the US at a cost of about USD 12 million for use in the first human trial, which he is planning to conduct in Durban next year.

“This is about finding new ways to stop the spread of HIV—antibodies are one tool, antiretrovirals are another—and each creates a new technology and approach to slowing the spread of HIV,” he said.

Abdool Karim is concerned that, despite earlier drives to fight HIV/Aids and increasing numbers of people receiving Antiretroviral Treatment (ART), complacency has crept in globally. UNAIDS estimates that there were between 2 million and 2.2 million new infections annually over the past three years and 2,1 million new infections last year.

“We are very pleased that UN Secretary-General Ban Ki-moon called a plenary session of the UN in May this year just to focus on HIV.



Quarraisha and I felt honoured to have been invited and asked to organise one session on scientific progress to end AIDS,” he said.

“That meeting reinvigorated the global effort on HIV because the message was simple—although we are increasing the number of patients on treatment, the number of new infections occurring in the world has remained almost static for several years,” he said.

Abdool Karim's eye is always focused on tomorrow.

“We have to always be thinking ahead because innovation is seldom achieved quickly. Right now we are busy planning studies which will produce results in 2022. So, in research, we need to work out what answers will be needed in 2022 and then work hard to start those studies now,” he said.

However, to come up with new ideas—even for experienced scientists - is not easy, which

is why his staff and the medical students he mentors must push the boundaries.

“We put a lot of emphasis here in CAPRISA on us challenging one another to think differently and avoiding yes-men and like-mindedness. If everybody starts thinking the same then you don't challenge yourself to look at a problem differently. Great discoveries come from those willing to look at a problem in a different way and come up with solutions few others have considered,” he said.

Abdool Karim speaks fervently of the three leadership lessons – integrity, perseverance and pursuing excellence - which govern his life and have contributed to his success.

“If you don't have integrity, nothing else matters, because people just don't trust you. As a leader, your word must be your bond. So, if I commit to doing something, it will be done. Absolute honesty is essential to command people's respect,” he said.

“To find new solutions to old problems through research, you must persevere - you can't let some little wrinkle slow you down and say 'okay I'm giving up'. If you are leading a team that is expected to deliver on their undertaking, everyone must be clear they cannot quit when there is an obstacle on the path: you stay the course and work at it until you solve the problem.

It's the third lesson on excellence, however (coupled with perseverance) that is probably a key element of great leaders. This philosophy of trying to do better each day in search of excellence is central to whether further groundbreaking research will emanate from CAPRISA in the future.

“When you come to work today you must say to yourself, 'What am I going to do today, better than I did yesterday?’

“If you do the same thing that you did yesterday then the organisation is not going forward - you will simply be treading water. If you tread water then you go backwards, because the rest of the world is moving forward. We move forward by putting a strong emphasis on continually seeking to do better.

“Our goal in CAPRISA is akin to a higher calling. I'm not doing something that is going to benefit me or you, it is going to benefit our children and that's the calling, you stay the course, you do what it takes. We need to ensure that we make the world a better place for the next generation,” he concludes. 🌱