

South African Medical Research Council: A vibrant organization making impact in Africa and beyond

The South African Medical Research Council (SAMRC) is at the forefront of responding to South Africa's evolving quadruple burden of disease. South Africa faces a cocktail of four colliding epidemics namely: maternal, newborn and child health, HIV/AIDS and TB, non-communicable diseases, and violence and injury.

As part of the Glo-PID-R Network, the SAMRC enables leading researchers to collaborate with African countries experiencing global public health threats. The SAMRC is funding research to develop rapid point-of-care (POC) diagnostic assay for Ebola virus infection. No doubt that the development of POC tests would vastly improve the rapid detection of infected patients, clinical decisions and timely implementation of containment measures and patient management. The technology, if successful, can easily be adapted for other infections responsible for international public health emergencies.

A major focus of the SAMRC is placed on responding to the top ten causes of death, disability and associated risk factors in South Africa and the sub-continent. In the area of **maternal, newborn and child health**, some of the major breakthroughs include an innovative wave Doppler device, known as Umbiflow, used to measure the resistance index in the umbilical cord to determine the level of risk of the pregnancy. Umbiflow can be used by midwives and GPS in mobile, rural and resource-constrained primary health care settings.

The SAMRC's research translation initiatives assisted the South African government to introduce the new Basic Antenatal Care Plus programme that has led to an approximately 50% increase in detection of pregnant women with hypertension.

The SAMRC's Strategic Health Innovation Partnerships Grand Challenges program, partnered with Gates Foundation's Grand Challenges in Canada, Brazil, India, Grand Challenges Africa and US, to focus on maternal and child health - essentially - the last trimester and the first 28 days of life. The topic was selected to align with the Bill & Melinda Gates Foundation's "Saving Live's at Birth" program, with the aim of addressing the abnormally high mortality rate of babies and mothers in Africa who typically die through HIV, hemorrhage, infection and hypertension.

HIV/AIDS, TB and other infectious diseases

The SAMRC is at the forefront of cutting-edge research and innovation to tackle the HIV epidemic. Several leading diagnostic laboratories in Africa and developed countries are using Exatype, a SAMRC funded innovation and platform that provides rapid, accurate HIV drug resistance analysis at affordable rates for routine HIV drug resistance testing. Their research has demonstrated the effectiveness of the national program to Prevent Mother-to-Child-Transmission of HIV at six-weeks and 18 months post-delivery, and has impacted national policy.

Over the past decade, they have funded ground breaking research into several aspects of HIV and AIDS. In 2016, they partnered with the P5, a public private partnership including the NIH and the Bill and Melinda Gates Foundation (BMGF) and the HIV Vaccine Trials Network (HVTN) and a number of researchers to launch the world's first HIV vaccine efficacy study in seven years at 15 research sites across the country.

In 2017, the SAMRC in partnership with Johnson and Johnson, the NIH, the BMGF and the HVTN embarked on a new proof-of-concept study called Imbokodo, which is enrolling 2,600 HIV-negative women aged 18

to 35 years in sub-Saharan Africa. Their HIV Prevention Research Unit is also participating in a number of vaccine trials supported by international partners. The trials are conducted among six different communities in the greater Durban area.

Programs and partnerships are a part of furthering their mission, among other flagship programs and partnerships, the SAMRC has invested R45 million per annum to a joint program with the U.S.-NIH for biomedical research, the South African Minister of Health Dr Motsoaledi approved the second phase of this Collaborative Programme.

Their UCT's Institute of Infectious Disease and Molecular Medicine, is hosting Africa's first integrated drug discovery platform whose H3D Centre is focused on translating basic science knowledge into potential innovative new medicines to treat malaria, tuberculosis and combating antimicrobial resistance caused by bacterial that has become resistant to conventional antibiotics.

In addition, their studies on influenza vaccination in pregnant women informed decision making to recommend for the prioritization of pregnant women with seasonal influenza vaccine.

Apart from several research outcomes that have influenced policy and guidelines, the SAMRC's research informed the WHO Roadmap for Zoonotic Tuberculosis, a multisectoral guide for addressing zoonotic tuberculosis in people and bovine tuberculosis in animals.

Non-communicable diseases

The discovery of a gene that causes sudden cardiac death was lauded as the biggest breakthrough since Dr Chris Barnard's first heart transplant. Through a global collaboration, a new gene was identified that is a major cause of sudden death among young people and athletes.

Researchers also demonstrated that reducing salt content of bread can save 6400 lives from stroke and ZAR300 million in health care costs. This contributed to regulations on salt content of designated foods.

The SAMRC hosts SAPRIN, part of the Department of Science and Technology South African Research Infrastructure Roadmap, and the largest network of Health and Demographic Surveillance centers that monitor the health and socio-economic wellbeing of the South African population with the aim of improving their health.

Understanding environmental risks to population health is also an integral research stream at the SAMRC, their Environment and Health Intramural Research Unit, investigates serious health risks such as climate change and rising heat, lead poisoning, air pollution, environmental exposures from living near mining land, and other health hazards specific to urban environments.

Violence and injury

The SAMRC is implementing a £25 million global research program on the prevention of gender-based violence. The What Works to Prevent Violence Against Women and Girls Programme (2013 to 2019), which is working on developing evidence-based prevention interventions and evaluating them in 13 countries in Africa, the Middle East and Asia.

Their research also influenced policy in the baseline research in Ituri Province, Democratic Republic of Congo, on faith engagement, gender norms and violence against women and girls in conflict-affected communities; further, showing their impact across the African continent.

Other exciting cross-cutting innovations and programs include the African Genomics Centre – a first for the African continent – already under construction at the SAMRC head office in Cape Town. These state-of-the-art labs launched through a partnership with Beijing Genomics Institute, a leader in genetic science and DNA sequencing, sets the course to develop personalized medicine for African populations who offer the greatest genetic diversity and opportunities to address Africa’s disease burden.

SAMRC hosts Cochrane South Africa which is coordinating PACTR and SANCTR clinical trial registries. Along with Cochrane authors in the African region, Cochrane South Africa established the Cochrane African Network to increase and promote the use of evidence-informed healthcare in the African region.

Now in their 50th year, the SAMRC is a truly vibrant organization making impact in Africa and beyond.

About SAMRC

As a responsive health research organization, the SAMRC focuses on conducting and funding health research, innovation, development and research translation. Aligned to the national context, the SAMRC supports the National Department of Health, National Development Plan (NDP) Outcome 2, for “a long and healthy life for all South Africans.” Through their 11 intramural research units based at their main offices in Cape Town and regional offices in Pretoria/Johannesburg and Durban, 19 extramural research units, several collaborating centres and strategic projects and initiatives including recipients of Self-Initiated Research Grants based at several universities across the country, the SAMRC researchers are conducting and enabling research to respond to the burden of disease including disease outbreaks.