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Beyond the cuts: Rethinking South African research dependencies amid funding uncertainty

Significance:

This Commentary provides an overview of the lived experiences of biomedical researchers in the face of sudden and unexpected funding cuts for biomedical research and health care in South Africa and beyond. It outlines the potentially devastating impact of the cuts on scientific progress, human health and livelihoods. We highlight the urgent need to rethink existing funding models. Consideration is given to potential alternative approaches to move away from historical dependencies, to ensure the sustainability and resilience of the South African research ecosystem.

Global funding cuts with local impact

The sudden and severe reduction of US federal support for specific research and healthcare programmes is causing great concern in the scientific community worldwide.[1-4] In parallel, geopolitical events are driving cuts to international aid from UK and European sources, exacerbating the situation in sub-Saharan Africa in particular.[5-7] We discuss how these recent developments are threatening the existence of long-standing research networks and exerting an emotional toll on the scientific community. We also consider the way forward, including approaches to sustain the research landscape while reducing South Africa's dependency on international funding.

Damage to research networks and relationships

Counter to the sudden 'Eureka' moment stereotype, scientific advances are often incremental – enabled by years of rigorous research, but also through extensive preparation, training and network building. Unexpected funding interruptions will likely irretrievably damage long-established stakeholder relationships built on trust and mutual benefit – with our trainees, study participants and the extended scientific community. For example, one of us co-leads an NIH-funded training grant focused on the implementation of a bioinformatics training programme. Bioinformatics is a multidisciplinary field, bringing together life sciences and powerful computational approaches, including AI tools, and is sorely needed to make sense of large data sets. This can translate research findings into new interventions for a range of health problems, including infectious and non-communicable diseases. However, there is a worldwide shortage of bioinformaticians.[8] In recognition of the global importance of this programme, it includes over 20 US partners, with relationships cultivated over several years. Cessation of funding for this programme will represent a major setback; besides the loss of support for 16 postgraduate students, it will negatively impact ongoing collaborative work.

We also have long-standing collaborations with US-based partners focused on well-established study cohorts in South Africa's Northern Cape Province, which has a high tuberculosis (TB) burden.[9] This work has uncovered important insights into the role of host genetic variants in predicting disease risk for TB.[10] We have carefully developed relationships with communities, fostering mutually beneficial partnerships through continuous engagement. Sudden disruption of funding will seriously impede research progress and reduce access to health checks. More importantly, it is likely to harm future interactions by leaving the community feeling abandoned and breaking trust.

One of us (C.J.K.) leads the South African Medical Research Council's (SAMRC) prestigious Genomics Platform. Established in 2019, the Platform has supported numerous studies, including large TB clinical trials (mostly funded through the NIH) that make up the bulk of their core business. Defunding is forcing researchers to either scale back or suspend their studies, thereby reducing the demand for the Platform's services, threatening its financial sustainability. As an intra-mural unit, the Genomics Platform receives SAMRC funding for its daily operations, including staffing. Unfortunately, the SAMRC itself is facing the consequences of the federal cuts, most notably highlighted by the termination of the SAMRC-led BRILLIANT consortium HIV clinical trial earlier this year. Approximately 28% of the SAMRC budget comes from US federal funding agencies. Losing this funding will impact research and development initiatives through the Genomics Platform. To mitigate the loss, the SAMRC would urgently need to explore alternative funding strategies. However, all is not lost, as recently diversifying service offerings and establishing partnerships with other genomics service providers has significantly reduced the costs of next-generation sequencing, making the Genomics Platform more accessible to a wider pool of users.

In summary, our personal experience outlined here reflects the broader community in which funding cuts are very likely to have devastating impacts on health outcomes, as communities will have reduced access to health resources and necessary medications. Further, biomedical researchers and healthcare workers are facing job losses, threatening their livelihoods at a time when the economy is already very constrained and unpredictable.

Mental toll on researchers

Scientists are human too, and the scientific community is experiencing significant mental strain in the face of enormous uncertainty. This situation is particularly acute among health researchers in South Africa, who are justifiably concerned about the future of their research. Many of us have dedicated our professional lives to improving the health and well-being of the communities we serve. There is therefore widespread discord among researchers as a result of a sudden misalignment between research topics and the shifting priorities of funding agencies. Researchers are also troubled by the perception that funding decisions do not take into account scientific merit and public health needs, with a sense of restricted academic freedom. The high likelihood of retrenchments as a consequence of funding cuts is raising fears that careers are at risk, contributing to a profound sense of

disruption in researchers' professional and personal lives.[3,4] These points collectively illustrate the significant mental health burden that is being experienced by the broader scientific community.

Rethinking South African dependencies

South Africa is the biggest recipient of NIH funding outside the USA. South Africa has a large burden of HIV and TB, along with well-developed research infrastructure and clinical trial sites[11,12]; it has therefore long been an attractive partner for US-based collaborators to deliver impactful outcomes. The flip side of this is that there has therefore been little incentive to leverage local funding sources. Although there have been numerous calls to establish sustainable local funding models, especially during the COVID-19 pandemic when countries had to become more self-reliant, maintaining a steady flow of research funds without international support has proven to be very challenging. Therefore, the threat of a sudden and complete halt of US federal funds to South Africa has caused great concern throughout the scientific community.[1] If support had been gradually phased out, the development and implementation of sustainable long-term solutions would have been more feasible. Unfortunately, in the short term, we are faced with an urgent need for contingency plans that would ensure the sustainability of current biomedical research being conducted in our country.[3] Longer term, there is a need for new approaches to ensure multiple levels of self-sufficiency[13], which could be achieved by an increased healthcare budget[3], strengthening links with industry partners and the private healthcare sector as well as continued integration amongst BRICS members. This is elaborated on in the recently published concept paper from the Africa Centres for Disease Control and Prevention (CDC), 'Africa's Health Financing in a New Era'.[14] This concept paper outlines a three-pronged approach to ensuring sustainable domestic investment in health: (1) increased domestic financing (urging countries to increase domestic spending on public health), (2) more innovative funding models (including "solidarity levies" and taxes on luxury goods and imports) and (3) blended financing (leveraging strategic combinations of public and private capital, including from foundations and philanthropic organisations). The recently established African Epidemic Fund provides a means to rapidly and flexibly deploy pooled funding to member countries to support outbreak preparedness and response.[15] Initiatives such as these could ultimately enhance the rate at which translational research is being performed, with the aim of establishing systems that effectively alleviate the burden placed on our public healthcare facilities.

As South Africans, we are known for our resilience, which may be the very characteristic that steers us beyond an era in which our research capabilities are mainly determined by external resources. An ideal outcome would be for local scientists to engage more with others working in similar fields, to remove the ingrained mentality of research silos, and to diversify research funding sources, whilst still attracting international support. In the meantime, striving for more common-interest partnerships to achieve the common good, and reciprocally beneficial collaborations for both the recipient and donor countries, should be strongly considered as a way forward.

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Declarations

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