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SECOND PHASE OF CONSORTIUM DRIVING BIOSTATISTICAL RESEARCH EXCELLENCE IN AFRICA LAUNCHED.

October 17th, 2023, Nairobi, Kenya, African institutions, including two northern partners, jointly launched the second phase of the Sub-Saharan African Consortium for Advanced Biostatistics (SSACAB II) training programme. The consortium aims to drive biostatistical research excellence to enable robust health systems and interventions that culminate in better health outcomes on the continent.

Biostatistics plays a crucial role in the field of public health and biomedical research. Its main purpose is to analyse and interpret data related to living organisms and health. By applying biostatistical methods to biological and health-related data, biostatisticians help researchers draw meaningful conclusions, identify patterns, and make informed policy decisions. Biostatistics is used to study the distribution of diseases, analyse risk factors, and evaluate the effectiveness of interventions.

However, despite its paramount significance in shaping public health policies in Africa, the continent grapples with a critical shortfall marked by a scarcity of biostatisticians and inadequately equipped facilities. This scarcity has cast a shadow over the formulation and execution of health policies on the African continent. Furthermore, the migration of biostatisticians to sectors like finance, insurance, and energy, where the demand for statistical expertise is robust, exacerbates the capacity challenges within the health sector.

The DELTAS Africa Sub-Saharan Africa Consortium for Advanced Biostatistics (SSACAB II) programme is part of the Developing Excellence in Leadership, Training, and Science in Africa (DELTAS Africa) initiative, which supports African-led research and scientific leadership to address health and development challenges on the continent. The programme is implemented by the Science for Africa Foundation (SFA Foundation) with support from Wellcome and the UK Foreign Commonwealth and Development Office (FCDO).

LEADERSHIP & PARTNERS

Tobias Chirwa, the Director of SSACAB, Associate Professor and Head of the University of the Witwatersrand, Johannesburg, School of Public Health is one of the 14 world class research leaders in Africa that was funded to drive locally relevant health research. With US\$4.4M on, DELTAS Africa SSACAB II will build biostatistical research excellence in Sub-Saharan Africa through regional hubs and contribution towards policy development to improve population health. SSACAB II will contribute relevant policy advice in communicable and non-communicable diseases, such as HIV, TB, malaria and COVID-19, and mental health and Maternal, Neonatal and Child Health using seven biostatistical research questions.

The DELTAS Africa SSACAB II Consortium (2023- 2027) is made up of African partners which are : Prof. Romain Glele Kakai -University of Abomey-Calavi, Benin (UA-C), Prof. Samson Kinyanjui - KEMRI-Wellcome Trust Research Programme, Kenya (KWTRP), Prof. Samuel Manda -University of Pretoria, South Africa (UP) with the South Africa Medical Research Council (SAMRC), Prof. Henry Mwambi - University of KwaZulu-Natal, South Africa (UKZN) and Prof. Ann Mwangi of Moi University, Kenya, and Northern Partners. The northern partners are: Prof. Jim Todd -London School of Hygiene and Tropical Medicine, United Kingdom (LSHTM), and Prof. Daniel Orbeski-

University Medical Center Utrecht, Netherlands (UMCU Utrecht).

ABOUT DELTAS Africa – BRIEF INTRODUCTION

The Developing Excellence in Leadership, Training, and Science in Africa (DELTAS Africa) is a long-term, multimillion dollar initiative launched in 2015 to support collaborative consortia led by Africa-based scientists to amplify Africa-led development of world-class research and scientific leaders on the continent, while strengthening African institutions. DELTAS Africa generates data and evidence driven by world class science leaders working in conducive and enabling environments to inform policy and Africa's development agenda. DELTAS Africa seeks to produce researchers who drive locally relevant and high-quality health research impacting on science, policy and practice in Africa and contributing to improved health and sustainable development on the continent and globally.

DELTAS Africa is implemented by the Science for Africa Foundation (SFA Foundation) with support from Wellcome and the UK Foreign Commonwealth and Development Office (FCDO).

"The DELTAS Africa SSACAB II programme stands as a collaborative beacon, uniting African and Northern partner institutions in a dedicated effort to elevate biostatistical skills across the African region. With a robust biostatistical network, SSACAB is creating a career pathway for researchers armed with advanced biostatistical skills, and fostering expertise that spans the Sub-Saharan African continent. SSACAB's impact resonates through provision of training, data analysis, and invaluable support to other DELTAS Africa consortia. It is not just about numbers; it is about cultivating professional research environments, strengthening training, fostering mentorship, collaborating with policymakers and community stakeholders, to ultimately produce world-class biostatistical research to answer pressing public health challenges that Africa is facing. SSACAB is not just an initiative; it is a transformative force in the realm of biostatistics and public health," says Prof. Tobias Chirwa.

DELTAS Africa SSACAB II programme has developed seven biostatistical research questions (RQ) relating to urgent health needs in Sub-Saharan Africa:

The Lead Institution, Wits University leads research in machine learning and planetary health. They partner with UMCU, Utrecht in exploring Artificial Intelligence for disease prevention and personalized treatment in Africa with Wits Global Change Institute (GCI). Climate change is already putting public health in SSA under severe pressure. Understanding the direct, indirect and combined consequences of increased climate variability and changes on malnutrition, infectious diseases and susceptibility to communicable diseases is essential for designing programs to minimise the health risks of climate variability and change. They will also investigate patterns of critical diseases in Africa and how they respond to predicted climate and environmental changes impact on public health and development outcomes. Wits University and UMCU, Utrecht, will establish a machine learning training hub aimed at biostatisticians, informaticians and public health professionals to address these research themes.

UA-C will lead the research aimed at understanding the association between individual characteristics, environmental shifts, and the beginning of diseases in people. They will identify underlying causes of disease outbreaks, especially global or large-scale epidemics, and provide evidence for prevention and control.

Moi University, takes the lead in exploring the analysis of observational data in public health situations where conducting randomized controlled trials (RCTs) is not practical. Clinical trials are the gold standard for many treatments and prevention interventions. However, ethical issues arise when these interventions have already been used. Other ways of designing studies and analysing counterfactuals are therefore

needed. Observational studies offer an alternative but threats to their validity and suitability in decision making requires caution. Focus will be on methods to address the principal concern in observational studies which are a potential for bias.

UKZN leads on missing data, addressing methods for health research with incomplete data. Data generated from health research studies in Africa are often faced with missing information. Inferior methods have been used which are known to create biased information. UKZN will focus on the development, evaluation, and promotion of standard, flexible, methods that are valid under missing at random mechanism.

KWTRP leads the bioinformatics theme for -omics data analysis and will investigate big data related to a specific health issue prevalent in the region thereby contributing valuable insights for designing targeted interventions or personalized healthcare strategies for communicable and non-communicable diseases at the molecular level.

UP and SAMRC will lead data triangulation and evidence synthesis and will develop biostatistical methods in this theme. SSA has generated health data that cut across the identified health challenges, but these diverse data have often not been used to provide effective solutions for health programs, policies and implementation. This research will apply and develop biostatistical methods including theory of triangulations and innovative meta-analyses.

LSHTM and UMCU, the two northern partners will offer support, senior statistical advice and co-supervision of fellows across all themes.

DELTA Africa SSACAB II follows an initial five-year successful programme. The success of the initial phase (2015-2022) included, for example, increased research and training for both faculty and postgraduate students in nine African Universities and creating standardized biostatistical courses and a pipeline for training from Masters, PhD to Post-Doctoral training.

"In this second phase, SSACAB II will apply for additional accreditation of our biostatistics courses under the Royal Statistical Society (RSS) accreditation scheme. The accreditation of our courses provides external validation to the wider world and gives the students confidence that what they learn is of world class quality. This will drive the quality of courses throughout Sub-Saharan Africa exposing lecturers and institutions to the international systems for degree recognition," says Prof. Jim Todd, LSHTM Northern Partner and Executive Committee Member of the DELTA Africa SSACAB Consortium.

In the first phase of the programme the consortium increased collaboration with policymakers, community stakeholders and international statistical societies.

"Our SSACAB staff and fellows are part of and linked to statistical societies and networks both locally and internationally such as the South African Statistical Association (SASA), the Sub-Saharan Africa Network (SUSAN) of the International Biometric Society (IBS) and others. Through such interactions and during scientific meetings and conferences we have been able to share research findings with policymakers and community stakeholders," says Prof. Henry Mwambi, UKZN Partner Lead and Executive Committee member of the DELTA Africa SSACAB II Programme.

DELTA Africa SSACAB I fellows have contributed to Africa's scientific quality and productivity, the first phase of the programme boasts the production of over 65 peer reviewed journal articles focusing on various public health challenges. Some of these fellows who published this impactful work through their MSc and PhD research won several prizes for scientific excellence. This commitment has led to the strengthening of biostatistical research capacity and information for

evidence-based policy decision making for the betterment of Africa's public health.

"SSACAB is committed to training and supporting ambitious research fellows across Africa who are able to undertake biostatistical research that tackles some of the most pressing health challenges. We are pleased to be working with the SFA Foundation, FCDO, UK and Wellcome to support high-quality, biostatistical research excellence for Africa's development," said Prof. Eustasius Musenge Co-Director of SSACAB II programme and Associate Professor at Wits School of Public Health.

SSACAB I also used the DELTAS Africa platform to apply successfully for additional grants. The total extra grant funding of \$1.5M was received from GlaxoSmithKline Research & Development, NIH D43 grants in collaboration with the University of North Carolina at Chapel Hill and University of Maryland to train additional MSc and PhD fellows in various areas affecting public health in Africa.

About the SSACAB II programme

DELTAS Africa SSACAB II brings together numerous African and Northern academic and research institutions to develop and improve biostatistical skills among researchers. The ultimate goal of our consortium is to create research nodes of excellence to grow the discipline and a biostatistical network to nurture researchers (MSc, PhD and Post-Doctoral Fellows) with advanced skills and expertise by providing funding for training and mentorship. The consortium emphasises the use of open access data generated through demographic and health surveillance sites and health research in the African region.

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