

GRAND CHALLENGES AFRICA

Inspiring innovation to address Africa's health and developmental challenges

GRAND CHALLENGES AFRICA – INNOVATION SEED GRANTS – Round 1 REQUEST FOR PROPOSALS

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Call closure date: 30th January 2017 18:00 GMT

Providing new impetus and solutions to meet the Sustainable Development Goal 3 (SDG3) targets for maternal, neonatal and child health.

The **African Academy of Sciences - Alliance for Accelerating Excellence in Science in Africa (AESA)** is launching a new Grand Challenge: *Providing new impetus and solutions to meet the Sustainable Development Goal 3 targets for maternal neonatal and child health (MNCH) in Africa*. These new grand challenge innovation grants will be issued and administered under the banner of **Grand Challenges Africa (GC Africa)**, a program implemented in partnership with the New Partnership for Africa's Development (NEPAD Agency) and the Bill & Melinda Gates Foundation (BMGF). Round 1 is a joint initiative of the GC Africa partners and Institut Pasteur of Paris.(IP). Please visit our website to learn more about GC Africa and it's partners.

This challenge focuses on **key targets** of the health SDG3 to stimulate new approaches, interventions, tools and new combinations of existing approaches to ensure that Africa progresses rapidly to address challenges in MNCH and to accelerate the pace of implementing interventions that can reduce maternal, neonatal and child deaths in Africa. GC Africa will build on the successes of other Grand Challenges programmes in India, Brazil and South Africa, as well as the strong base of African Grand Challenges grantees funded by the Bill & Melinda Gates Foundation, Grand Challenges Canada and USAID. The creation of GC Africa and the release of this first call will give African based scientists an opportunity to join this global platform of innovators

Program goal

This call is focused on the SDG3 targets with the overall objective of focusing African scientists to work in local and global partnerships on the ambitious but achievable goals of accelerating knowledge generation, developing and deploying interventions and innovations that will advance the prevention of maternal deaths, preterm birth and neonatal deaths and improve implementation of policies and innovations that will improve care for the mother and child in the first month of life. The ultimate goal of this challenge is to determine what precise packages of interventions should be delivered to which group of individuals (mother or infant or both) to reduce the burden of maternal and neonatal deaths in Africa.

Program objectives

We are looking for projects that:

1. Apply new technologies to enable rapid identification of exposures (communicable and non-communicable) that lead to poor outcomes in pregnancy, birth and in the first month of life.
2. Apply precision medicine approaches and techniques to identify microbes and other exposures in Africa that may increase susceptibility to non-communicable diseases (cancer, cardiovascular diseases etc.) in mothers and children under 5 years of age.
3. Provide innovative policy and clinical practice approaches and pathways that will enable the rapid and widespread adoption of:
 - Available well tested interventions whose update has been slow, but which would make profound impact if adopted and incorporated into ongoing MNCH programmes;
 - New innovations and technologies that can help Africa leapfrog and achieve rapid progress, in preventing maternal and neonatal deaths.
4. Design creative ways to engage the public, policy and decision makers to pay attention to Research & Development (R&D), to encourage governments to dedicate funding for African R&D

Funding for this call

Through this **GC Africa Innovation Seed Grants (GCA-ISG) call**, we will fund **African Investigators** and Africa-resident applicants who qualify based on the eligibility and inclusion criteria outlined in the **GCA Rules & Guidelines**. We are now accepting proposals for the first round of applications and are seeking innovative global health and development solutions from researchers resident in Africa who have the support of their affiliated/primary organization where they are affiliated, and where the major programme of work will be undertaken. Applications **MUST** be submitted through the **African Academy of Sciences Ishango Online Application Portal**. Grants will go to investigators in African countries, but we encourage partnerships with investigators in other countries, especially where the opportunity exists to build new or strengthen existing collaborations. We particularly request proposals that promote intra-African collaborations across geography, language, cultures and other divides, such as those that link the 9 Institut Pasteurs in Africa with other African institutions.

Applicants can be at any level of experience and working in any discipline, from any organization, including colleges and universities, government laboratories, research institutions, non-governmental, for profit, and non-profit organizations.

Funding levels

The GC Africa –Innovation Seed grants will fund projects up to **USD \$100,000 for 2 years**. These awards are meant to provide an opportunity to test particularly bold, proof of concept ideas, including applying approaches from outside the fields indicated for this call. New approaches could be piloted as additions to ongoing projects. Winners of the GCA-ISG grants will have an opportunity to apply for follow-on, transition to scale funding in future but please note that support for phase II funding is **NOT** part of this call. Funded at up to \$1 million per four-year project, phase II awards require substantial preliminary data and are meant to provide an opportunity to develop, refine, and rigorously test combinations of activities, including sets of interventions for which some or all have previously shown promise in controlled or limited settings. We expect that successful projects funded under this call, and which demonstrate promising results, will have the opportunity to apply for Phase II funding either to GC Africa or directly to our partners including B&MGF, GCC and others identified on our online partnership platform the Grand Challenges Innovation Network (GCAiN).

Applicants must provide a comprehensive budget. In all cases, individual project budgets should be representative of the scope and magnitude of the proposed studies and carefully designed to get the best possible value out of the award. The applicant recipient institution, organization or company will also be required to provide assurances on their capacity to manage the grant through detailed letters of support from the appropriate research or innovation support office. AESA reserves the right to undertake due diligence site visits to organizations hosting successful candidates before making final awards.

Background to this Call

While great strides have been made in reducing mortality in Africa, maternal and neonatal mortality rates remain unacceptably high. Estimates show that over half the global maternal deaths and over three-quarters of neonatal deaths occur in sub-Saharan Africa^[1, 2]. More than half of maternal deaths are directly or indirectly attributed to infectious causes such as HIV, Malaria in pregnancy, sepsis, and sexually transmitted diseases (STIs) resulting in complications at birth that often lead to death. In addition, undiagnosed and untreated non communicable diseases (NCDs) such as type 2 diabetes and hypertension that often predate the pregnancy, are a leading cause of postpartum haemorrhage, preterm births and low birth weight. The close relationship between mothers and their infants results in shared aetiologies and as a result, around half of newborn deaths are due to mother transmitted infections, including tetanus^[3]. Critically, the risk of dying during the first day of life in Africa is close to 1% with the top three causes being infections, birth asphyxia and complications of preterm birth which together account for 88% of the newborn deaths^[4]. Effective interventions to help reduce this mortality would target management of labour and delivery, preterm births, timely diagnosis and treatment of infectious and non-communicable diseases, while also addressing malnutrition in both mothers and children.

What we are looking for:

To reach the objectives, we are looking for projects that propose innovation in the following areas:

- **Measurement tools:** Pilot tests of new measurement tools, such as those based on a new technology or new biomarkers to enable the timely diagnosis and treatment of maternal infections and NCDs that can lead to significant improvement of fetal and neonatal outcomes as well as prevent maternal mortality and morbidity
- **Intervention packages:** Tests of new interventions – especially combinations of interventions –that
 - 1) develop a new human cohort with unique advantages over existing cohorts, such as the potential

for developing a unique biorepository; or 2) add an activity, such as a prospective pilot trial of an intervention or new measurement tool, to ongoing work with a human cohort, including at sites of intervention trials and sites for public health surveillance

- **Analytical tools:** Pilot tests of new analytical tools that use existing biorepositories or existing health and development databases for retrospective analysis

We will give the highest priority to projects that:

- Build on ongoing work in some way, and that addresses well identified barriers and constraints to delivery of interventions and to implementation of locally-relevant programs.
- Incorporate multiple areas of innovation listed above, e.g. developing and/or testing new, single or multiple products or candidates, especially sets of interventions targeting combinations of outcomes spanning the spectrum of objectives outlined above for this call.
- Clearly incorporate measures of success reasonable for the timespan of the grant (24 months).
- Have a project plan whereby after two years- the end of phase I grant period- grantees will be in a position to explore how the results from their project could inform the design of a more extensive collaborative package of work that can be submitted for Phase II funding.
- Could contribute to a portfolio of funded projects that addresses a country's key priorities or regional challenges, diversity, including bringing more African women into the sciences, and the need to provide health equity for diverse vulnerable populations as captured by the SDG targets.
- Explain how proposed innovations and interventions will eventually be tested in communities so that they have the highest likelihood of being relevant for implementation more broadly in the country's public health system.

Examples of what we will consider funding:

- Rapid diagnosis of infectious/microbial pathogens that lead to preterm births
- Relation between undiagnosed NCDs in pregnant women and complicated births and low birth weight
- Relation between long term exposure to microbes (pathogenic or non-pathogenic) and maternal and neonatal mortality.
- Neonatal sepsis (ideally bacteria/virus specific and even with Anti-Microbial Resistance, AMR patterns);
- Common metabolic disruptors/predictors such as glucose, acidosis, electrolytes;
- Predictors of occurrence and severity of encephalopathies in Africa;
- Contributors to common problems that afford a treatment/prevention option like ABO/Rh blood typing, apnea/oxygen etc.
- Measures of fetal and sickle hemoglobin
- Wearable sensors for Heart Rate /Respiratory Rate/BP/EEG/Temperature etc.
- Interventions that encourage high coverage of known effective interventions to reduce maternal and neonatal mortality such as tetanus vaccination, antibiotic therapy to treat infections in mothers, screening for diabetes and hypertension.
- Systems approaches to identify predictors of poor outcome in mothers and babies to allow for targeted interventions.
- Studies aimed at understanding vaginal and neonatal microbiomes in relation to the burden of preterm birth sequelae, stunted postnatal growth, and impaired cognitive development as a result of alterations to the neonatal microbiomes.
- Relation between long- term treatment of chronic diseases such as HIV and poor neonatal outcome.
- Policies and health management approaches that allow widespread adoption of well proven technologies such as vaccine rollouts, screening opportunities, treatment compliance, especially those that target adolescent girls and young mothers.

This call is not intended to support projects that focus on:

- Basic research that does not provide a clear path to development and testing of prevention, diagnosis and treatment strategies
- Projects without the potential to expand in scale to provide solutions to a greater number or diversity of people
- Projects lacking metrics to determine success or failure and to allow decisions about the appropriateness of follow-on/phase II funding
- Solutions that are only slight improvements over existing approaches e.g., replication of an approach in a new geography in the absence of added innovation.
- Projects that cannot be implemented in LMIC countries in Africa.

Promoting Intra-African and global collaborations

This request for proposals seeks to encourage scientific collaborations between African researchers, and between different organizations across the continent. We therefore seek to encourage data sharing between individually funded projects. We expect that such sharing will help to ensure that the goals of the innovative approaches in individual projects are ultimately integrated with each other. Furthermore, we expect that sharing experimental methods, data, and resources will ultimately improve the ability to compare and validate local research findings and to develop innovations, interventions and products that can have impact at a greater scale. The reviewers to this call will evaluate how well applications address these requirements. Collaborative efforts include:

- **Short visits:** between African institutions that are focussed on exploring a new collaboration, strengthening existing ones, executing a new program of work etc. Applicants can request up to \$10,000 additional funds towards this goal but only AFTER they have been awarded a phase I grant.
- **Cohort harmonization:** when collaborating with projects with existing cohorts or establishing new cohorts, investigators will be expected to participate, whenever possible, in cohort harmonization. Study sites will be expected to develop and follow standard operating procedures and quality control protocols for specimen collections and participate in the establishment of a minimum common set of data and specimens to be collected across the program.
- **Data sharing:** Projects will submit a data sharing plan that is equitable, ethical, and efficient.

ABOUT GRAND CHALLENGES

Grand Challenges is a family of initiatives fostering innovation to solve key problems in global health and development for those most in need. It seeks to establish a portfolio of projects with complementary approaches that encompass multiple types of innovation, including innovation in biological research, medical health technology and product development, service delivery, and behaviour change. Grand Challenges initiatives therefore seek to engage diverse investigators, including those outside of the areas that might traditionally be associated with the initiative. The challenge also encourages partnerships that bring together investigators from diverse organizations, including for-profit institutions, non-governmental organizations, academic and health research institutions, foundations, and civil society groups. Today, a variety of funding partners use “Grand Challenges” to accelerate research, creating an expanding network of funding and research partnerships spanning diverse topics ([Bill & Melinda Gates Foundation](#), [Grand Challenges Canada](#), [United States Agency for International Development](#), [Grand Challenges Brazil](#), [Grand Challenges India](#), [Grand Challenges South Africa](#)). The latest addition to the Grand Challenges family is Grand Challenges Africa, which was founded by the African Academy of Sciences and NEPAD, encompassing the entire continent, and launched in [2015 to run under AESA](#).

Please contact GCAfrica@aasciences.ac.ke if you need any clarification or encounter any difficulties as you use the online system.

References

1. Alkema, L., et al., *Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group*. Lancet, 2016. **387**(10017): p. 462-74.
2. Bhutta, Z.A., et al., *Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost?* Lancet, 2014. **384**(9940): p. 347-70.
3. Lawn, J.E., et al., *Born too soon: accelerating actions for prevention and care of 15 million newborns born too soon*. Reprod Health, 2013. **10 Suppl 1**: p. S6.
4. Lawn, J.E., et al., *Every Newborn: progress, priorities, and potential beyond survival*. Lancet, 2014. **384**(9938): p. 189-205.