EssentialMed

The Essential Medical Devices Foundation
www.essentialmed.org

Maiwut, South Sudan, ICRC-supported hospital intensive care unit. Nyamuoch holds her child Nyanene, who is suffering from respiratory distress. Access to medical oxygen is insufficient in Low-income countries causing a large number of preventable deaths. ©ICRC 2016, Albert Gonzalez Farran

Annual Report 2019

— Creating a world where access to the benefits of medical technology is universal —

New Exciting projects launched!

Every 49 seconds a child in respiratory distress dies simply because they lack sufficient oxygen to breathe. This is not even due to the new Corona virus but is the constant and sad reality in low-income countries. Hospitals and clinics suffer from chronic shortages of medical oxygen, which is essential for critical care and treatment of infectious disease such as pneumonia, or severe cases of Covid-19. Transportation of oxygen cylinders is expensive, and intermittent power means that existing devices designed to concentrate oxygen from room air are not reliable. Together with EPFL and with the Center for Public Health and Development in Kenya, the foundation is participating in an ambitious program to develop an innovative, reliable, and low-cost oxygen concentrator, together with a maintenance and training program. The goal is to ensure that every patient with respiratory distress has access to medical oxygen.

In the same vein, our foundation continues to support the deployment of x-ray imaging in low-income countries and especially in the Economic Community of West African States (ECOWAS) region. It has received a grant by the African Development Bank to conduct 3 important feasibility and impact studies on this topic.

Finally, I am very excited to announce the launch of an ambitious and potentially highly impactful preparation-project supported by the Botnar Foundation. Indeed, this project aims to boost the collaboration in entrepreneurship between Switzerland and Tanzania, by creating a bilateral flow of technology innovations and innovators. The foundation will be identifying unmet needs and innovators in the domain of child health. Young bright entrepreneurs will get access to one of Switzerland's best research and innovation ecosystems, at and around EPFL's campus, and be able to accelerate their inventions to scale. The foundation is proud to have been selected by the Botnar foundation for running this important assessment, and we look forward to being ready to propose a comprehensive and ambitious full program for the implementation phase to our sponsor.

Leveraging the vibrant youth in Africa and Switzerland to solve the most difficult issues with access to essential medical technologies, is in perfect alignment with the spirit of our foundation. We have no doubt that our approach can serve as a will have a large and lasting impact, not only in Tanzania but potentially in the whole of Africa.

Dr. Guy Morin
President of the Board

Tanzanian-Swiss Innovation and Entrepreneurship Initiative

Despite the growing number of innovation initiatives and research activities in Tanzania, there still is a gap between the results of those projects and practice. This program is aiming at bridging the gap by providing a framework for a continuous pipeline of projects identified as innovative, with a high social impact and focused on infants, children and adolescent in secondary urban regions in Tanzania.

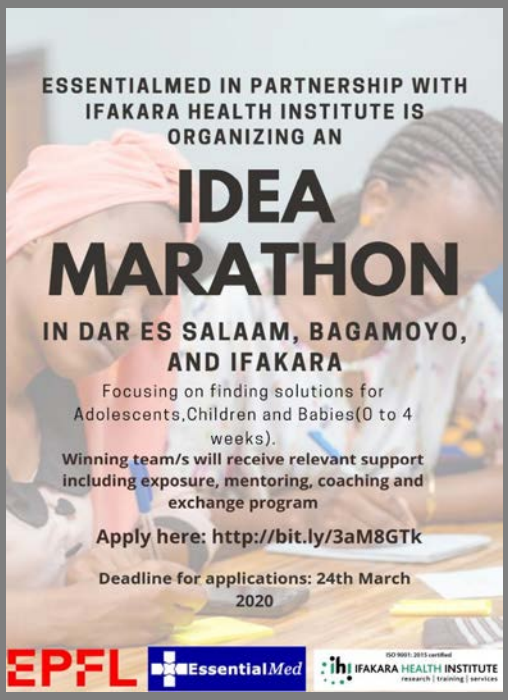
The program

The goal is to create and stimulate a coherent continuum of activities covering research and technology development, prototyping, local manufacturing capacity, entrepreneurial implementation, industrialization and scaling up capabilities. We will also explore the establishment of a bidirectional flow of talented entrepreneurs between Switzerland and Tanzania via an entrepreneurship in-residence program.

The 4th Industrial Revolution week event held in Dar es Salaam in October 2019. The foundation's program manager Narcisse Mavoha (fourth from the left) used that opportunity to meet and network with bright young local entrepreneurs. @Sahara Sparks 2019

Our approach is divided into five steps.

First, in creating a strong collaboration by setting up a local project team, thus reinforcing our understanding and overview of the innovation ecosystem in the targeted regions. We achieved this through several visits and especially by attending the Human Development Innovation Fund (HDIF) hackathon as well as the 4th industrial revolution event, gathering most of the leading innovation entities in Dar es Salaam and government leaders.



Second, we studied the local healthcare system and identified 5 districts level infrastructure hospitals that will be our partners for identification of unmet needs, prototyping and testing activities.

Third, through the organization of an idea marathon in 2020, we will collect and shortlist innovative solutions to the previously identified unmet needs. This list will be coupled and synthesized with the official Tanzania innovation projects list to be provided through the ministry of health.

Fourth, we will review the whole process, derive the lessons learned and document all the necessary improvement as this is going to be a repetitive process.

Fifth, together with our partner EPFL and the local partners in Tanzania, we will propose a full program implementation plan for the selected projects, which have the potential to radically improve the health of thousands. We will enable successful transfers of knowledge, technology and entrepreneurship skills all the way to the stage of solutions' implementation.

fondation BOTNAR

This project is funded by the Fondation Botnar (www.fondationbotnar.org).

Medical imaging in Africa

One of the great successes of the EssentialMed foundation was the initiation and launch of the GlobalDiagnostiX project, which aimed at developing and deploying the world's first advanced x-ray imaging system specifically designed to function in harsh environments. The foundation continues to support access to this essential medical instrument via technology transfer and capacity building in the in the Economic Community of West African States (ECOWAS) region – 3 studies about feasibility and impact of this new technology health systems have been started.

First mission in Bamako – Mali – end of August 2019

We started this project financed by the African Development Bank (ADB) together with our local Malian partner, the NGO KB-INNOVATECH. During this mission, we worked out principally four topics:

a) We established the protocol and the agenda of the first 2 studies related to the pre-feasibility study: the initial situation of equipment for medical imaging and performance in the 3 pilot sites defined by the ministry of health (Gabriel Touré hospital, reference hospital in Bamako, actually waiting for improving their equipment of medical imaging; Regional Hospital in Segou; and District Hospital in Koutiala). The visit of these rural pilot sites is planned to be done at the next mission in Mali.

b) We met and organized the partnerships for the research and its implementation, notably with the representatives of the Ministry of Health (MoH), the University of Bamako (medical information systems for telemedicine) and the association of radiology technicians which is highly interested to collaborate. An important event was the presentation and discussion of our project with the members of the pilot committee of MoH in charge of this project.

c) We met as well the responsible of the ADB in Mali to discuss the details of the implementation of the program.

d) We finalized the tripartite convention between the MoH, KB-INNOVATECH and our EssentialMed Foundation which was then signed by the director general of the MoH.

Meeting of our team with the pilot committee of Ministry of Health in Bamako

Reducing newborn and child mortality

The lack of access to thermal management and oxygen in primary health care facilities are the leading causes of newborn and child mortality. Improving access to these essential cares involves the development of complete value chains, relying on robust medical devices as well as sustainable deployment models for the delivery of maintenance and training services. The EssentialMed Foundation is involved, with EPFL's EssentialTech Centre, in the development of a neonatal incubator, oxygen concentrator, as well as their associated deployment models.

GlobalO$_2$ and GlobalNeoNat projects

The **GlobalO2** project aims at improving access to oxygen, in particular for children and newborns, by developing a new model for the delivery of oxygen to hospitals. Whereas health facilities currently have to choose between procuring oxygen cylinders or oxygen concentrators as their main source of oxygen – each solution having advantages and drawbacks – the proposed idea is that the health facilities would procure the necessary amount of oxygen to cover their needs, and the provider is responsible to select the most appropriate solution for an uninterrupted access to this oxygen. The GlobalO2 project thus relies on the development of an ultra-robust oxygen concentrator on one hand, and on the other an innovative, sustainable deployment model for the procurement of oxygen, maintenance of medical devices and training of clinical and technical staff.

This project is a collaboration between EPFL's EssentialTech Centre, the Center for Public Health and Development (CPHD) in Kenya and the EssentialMed Foundation.

A project manager was hired by the Foundation to handle the development of the necessary training modules as well as their sustainable deployment model. This position is funded by Sandoz/Novartis Social Business. A visit to Kenya is also scheduled in early 2020 to better understand the local context and needs, as well as to strengthen the ties with CPHD.

A 19-month baby with his mother in hospital, where he is receiving treatment for sever pneumonia.
© Save The Children

In the frame of the **GlobalNeoNat** project, the development of the neonatal incubator at EPFL was taken over by a new project manager in 2019. Her task will be to finalize the academic phase of the project and to make the transition towards the industrialization of the incubator. Fundraising efforts by this project manager involve the EssentialMed Foundation for the training of the clinical staff.

User testing of the incubator design at CHUV.
© EPFL EssentialTech Centre

About the foundation

The aim of the Foundation is to foster universal, sustainable and equitable access to the benefits of health technology in general, and to medical devices and instrumentation in particular.

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The foundation strives to reduce the global inequalities in access to health technologies. Paying attention to the specific needs of impoverished populations, the foundation makes every possible effort to provide access to affordable technologies which are adapted to the needs of local communities.

Since 2010, the foundation has been formally registered in the Register of Commerce of Canton Vaud, Switzerland, and is recognized as a non-profit organization. As required by law, the foundation is under the supervision of the Swiss Federal Authority for Surveillance of Foundations.

Oxygen is key in medicine. It is crucial in surgery and it saves lives of patients with severe respiratory distress such as children with pneumonia or people infected by Covid-19. Cylinders are not always adequate and often represent a dangerous and expensive solution. Biyem-Assi, Cameroun 2012, ©EssentialMed.

The foundation's people:

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Thanks to our sponsors, partners and friends

The EssentialMed Foundation would like to express its gratitude to Fondation Botnar, the African Development Bank and Sandoz/Novartis Social Business for their support. Very special thanks go to the EPFL, and in particular to its EssentialTech Centre for its great support.

We are particularly grateful to the interns, volunteers and employees of the foundation: they are the foundation's life-blood; they are at the heart of our success in promoting our vision of universal access to life-saving technologies.

Finally, we want to thank all the people who believed in this initiative and helped us spread the word.

If you would like to help the foundation as well:

Make a high and durable impact, with a donation to the EssentialMed foundation.
The EssentialMed foundation is recognized by the Swiss government as of public interest, and will provide a receipt allowing you to claim a tax deduction, if provided for by your country's law.
EssentialMed holds your privacy in the highest regard and does not share your personal information with any third parties.

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