EssentialMed

The Essential Medical Devices Foundation
www.essentialmed.org

The final GlobalDiagnostiX prototype disclosed to the public in October 2018.

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Annual Report 2018

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

A major milestone achieved!

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A major step has been accomplished! In 2018, the foundation's flagship initiative was taken to the next level. The alliance of partners working on the Project GlobalDiagnostiX, which was initiated by the foundation back in 2010, has now delivered a final prototype of its affordable and robust digital X-ray machine, which was unveiled in presence of Federal Councillor Johann Schneider-Amman on October 29th. This great achievement resulted from the combined efforts of over 130 people in 20 research units in Switzerland and in Africa with experts from multiple disciplines: engineers, medical doctors, technicians, anthropologists and many more.

The foundation, which initiated the project in 2011, has been actively supporting the consortium with advice and expertise. The foundation also takes great pride in the fact that the project is not only a great research and technology development endeavour, but that it involves a strong entrepreneurial angle. A start-up has been created which will industrialize and deploy the technology. This start-up has just recently announced that it has raised the funding needed for taking this technology to the deployment stage.

Of course, the road to be travelled before this technology will be widely available to reinforce health systems across all low-income countries is still long, but we believe that a major landmark has been reached, and this is a cause for celebration. The Foundation still has an important role to play, with the development of training programs for the people who will use this new digital radiography technology.

We are comforted by this success, which encourages us to continue our efforts in all the projects we are conducting, hoping that they can ride the same wave of innovation for the benefit of the world's poorest people.

Dr. Guy Morin
President of the Board

Diagnostic imaging for the Global South

In spite of its crucial importance for diagnosis and treatment of health conditions such as traumatic injuries, tuberculosis and pneumonia, radiology remains out of reach for 2/3 of the world's people. Project GlobalDiagnostiX is addressing the problem of access to diagnostic imaging by developing an affordable and robust digital X-ray system adapted to the context of low-resource settings.

GlobalDiagnostiX

In 2018, the new prototype was finalized by an alliance of partners. EssentialMed contributed by providing guidance and expertise, notably in the domain of training (next page).

The project will now be taken to the next stage by the start-up that was created specifically for industrializing the technology.

From Left to right: Ed Bugnion, Vice president of EPFL, Bertrand Klaiber CEO of Pristem, Luciana Vaccaro, President of HES-SO, Catherine Hirsch, Director of Heig_VD, Federal Councilor Johann Schneider-Amman, Klaus Schönenberger. ©HES_SO, Guillaume Perret

www.globaldiagnostix.org

Diagnostic imaging capacity building in resource-poor settings

In most developing countries, the competence of health service and technical staff members in the domain of medical imaging is often poor. Training courses are inexistent or outdated, and poorly adapted to the new technologies.

Continuous Medical Imaging Training (CMIT)

At the beginning of 2018, the foundation responded to a call from the African Development Bank that opened a perspective for the sustainable implementation of the device GlobalDiagnostiX. The call required that the implementation strategy should include three field studies in Mali which would make it possible to evaluate the impact of the imaging device on health systems and their performance.

EssentialMed worked out a proposal for 2019-2020, combining CMIT training with the installation of the GlobalDiagnostiX digital X-ray system, and in addition, a frugal ultrasound device. For evaluation, three studies were planned, focusing on:

a) Disease reduction, outcome and impact in the short term.
b) A study of cost effectiveness and efficiency.
c) An environmental and social study to describe the needs related both toinfrastructure and to human ecosystems in and around medical imaging services.

The application to the African Development Bank was successful, and in April EssentialMed got a confirmed positive response.

Political troubles in Mali unfortunately slowed down the process of starting-up the work at the end of 2018 but activities will resume in 2019.

Teaching of medical imaging in Cameroon.

Newborn and child mortality, expanding the scope.

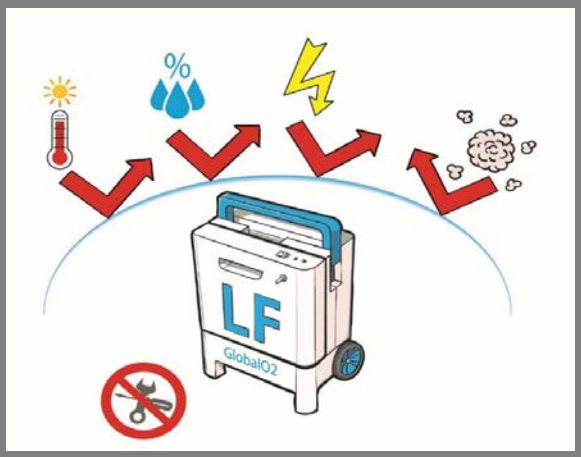
Existing neonatal incubators often do not function properly in hospitals in developing countrie. This dramatically limits the chances of survival for premature babies. A reliable, robust device capable of maintaining a constant temperature despite frequent power cuts needs to be developed.

Access to oxygen is lacking in low and middle income countries. Therefore, child mortality linked to pneumonia is still unacceptably high.

Incubator and oxygen concentrator

The Neonatal Incubator project has been progressing slowly, due to the difficulty of raising funds for this project. However, EPFL's EssentialTech team has moved forward and has been able to develop a new type of heat exchanger based on phase-change material. This innovation, which was patented by EPFL, will allow the incubator to continue providing warmth to the baby in spite of the frequent power outages that plague health systems in hospitals in low-income countries.

A second project addresses the problem of pneumonia, which is still the cause of close to 20% of child mortality in the world. The provision of medical oxygen is a life-saving intervention, but unfortunately, it is more often than not completely unavailable in these contexts. Existing "oxygen concentrators" are too fragile and too expensive. The project thus involves the development of an oxygen concentrator adapted for use in low-income countries, in conjunction with a sustainable upskilling initiative for oxygen therapy. Oxygen is also important for other applications, for example in anaesthesia for surgical interventions.



Concept of an ultra-robust and sustainable oxygen concentrator. This new device will be developed by a consortium of Swiss, American and African partners. ©EPFL,EssentialTech

The alliance of partners has been reinforced, under the leadership of EPFL. Partners interested in funding the project have stepped forward, and the project will be formally started in 2019.

An example: Tanzania.

In this country, pneumonia is the leading cause of death in children under five. According to UNICEF about 55% of children under five taken to health providers present with suspected pneumonia. The Tanzanian government aims to reduce child mortality by 80% by 2030. However, whereas over the last 13 years HIV/AIDS deaths have decreased by 80%, there has only been a 5% reduction in pneumonia-related deaths. Therefore, pneumonia is a clear and urgent target towards decreasing child mortality. Studies have proven that reliable access to oxygen can improve clinical outcomes for children suffering from severe pneumonia and other respiratory diseases. In one study in Papua New Guinea, oxygen therapy provided to treat hypoxemia in hospitals resulted in a 35 percent reduction in deaths from severe pneumonia.

Our target is to reduce death from severe pneumonia in children by 50%.

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.

Essential*Med*

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 concentrators, which are so important for helping reduce child mortality related to pneumonia, are standing around, dysfunctional, in a Tanzanian hospital. Humidity is especially damaging to these devices. ©Klaus Schönenberger

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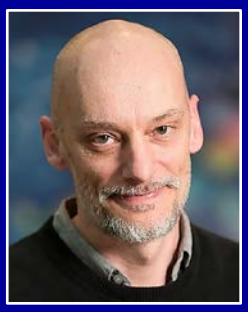
Executive Leadership



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Thanks to our sponsors, partners and friends

The EssentialMed Foundation would like to express its gratitude to the Symphasis foundation for its substantial support. Very special thanks go to the EPFL, and in particular to its Cooperation & Development Center (CODEV) 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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