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Annual Report 2020

— *Universal access to medical technologies* —

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Access to oxygen is of crucial importance!



In 2018, our Foundation launched a new project, together with its partners, to improve access to oxygen in low-resource settings. This was sparked by the observation that despite the ubiquitous need for oxygen, from newborn units to the treatment of chronic obstructive pulmonary diseases (COPD) for elderly people, through pneumonia and tuberculosis, and despite its equally ubiquitous availability in industrialized countries, oxygen is still unacceptably difficult to access in low- and middle-income countries.

In 2019, we obtained a seed funding for this project from Novartis Social Business, to develop a partnership with the EPFL EssentialTech Centre and other stakeholders. The GlobalO2 project could take off thanks to this seed funding, together with the Center for Public Health and Development in Kenya.

In 2020, as the whole world faced the covid-19 pandemic and realized why oxygen is considered an essential medicine, the project was awarded an important funding from Unitaid. Although it is sad that it took such an extreme event for decision makers to realize the need to fund such a project, we are proud that our ability to identify needs and propose relevant solutions has been recognized. We now look forward to the implementation of this project with our strong partners, in Switzerland and Kenya, following our core principles: comprehensive need assessment, technology development and transfer, capacity building through training, advocacy with health authorities and other relevant stakeholders, and the provision of a sustainable business model.

This past year has also been challenging for our other projects, especially in Mali where we were reminded that political instabilities and uncertainties are inherent parts of the life of the people we work with. The ability to keep going despite all these events, not letting go, is however also part of our mentality, and we look forward to our technology dissemination project in this country coming to a final step with very interesting results and learnings.

Lastly, our project to strengthen the innovation ecosystem in Tanzania came to a successful completion and transfer to our technological partner EssentialTech for the further development of promising ideas. We are thus particularly proud this year that in the midst of all the questions raised by the pandemic, we were able to progress significantly with our projects, and we look forward to the coming year.

A handwritten signature in blue ink, appearing to read 'Guy Morin', written in a cursive style.

Dr. Guy Morin
President of the Board

About the foundation

The Essential Medical Devices Foundation is committed to developing and deploying effective, high-quality and affordable medical devices, adapted to the needs of impoverished communities across the globe. 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. We know however that the mere existence of medical technologies does not in itself improve the quality of care provided to patients, that several steps must be taken care of to ensure that these technologies can deliver their intended impact – improving the quality of care and the quality of life of the patients, reducing morbidity and mortality.

First of all, these technologies have usually been developed for a specific context – usually that of high-income countries – with assumptions regarding the availability of some infrastructures and services, as well as the ability to pay for these technologies. The context in many low- and middle-income countries is very different and requires an adaptation of these technologies, if not a completely new development, to enable them to work effectively and appropriately.

Then, these effective technologies need to be deployed, so that they are accessible for the targeted healthcare facilities. This accessibility is not only meant in a physical sense, but also in terms of financial affordability of the devices, even in the long term.

Finally, healthcare workers and biomedical engineers involved in the use of these technologies must be provided with the appropriate training and resources to ensure medical technologies can be effectively used to provide medical care.

So, by ensuring that each of these aspects is appropriately addressed, the EssentialMed Foundation ensures that essential medical technologies effectively reach their intended outcomes and impacts of providing universal, quality health care to patients, thus reducing morbidity and mortality globally.



GlobalDiagnostiX, an example of a project where the EssentialMed Foundation contributed at several key moments: Need assessment and creation of an alliance of partners for the development of this innovative x-ray machine; participation in the technology transfer from academia to industry following the successful R&D phase; development of training programs to strengthen the radiography workforce.

Tanzanian-Swiss Innovation and Entrepreneurship Initiative

The goal of the initiative was 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. The objective is to also explore the establishment of a bidirectional flow of talented entrepreneurs between Switzerland and Tanzania via an entrepreneurship in-residence program.

The program

To date, EssentialMed has built a strong local relationships and a good understanding of the innovation ecosystem in Tanzania. These efforts include the identification of six hospitals with district level infrastructures in various key regions in the country. The six hospitals were selected in Kilombero (St Francis hospital), Dar es Salaam (Amana, Mwananyamala and Temeke hospitals), Pwani (Bagamoyo hospital) and Tanga (Bombo hospital) and potentially impacting more than 4 million people. These hospitals served henceforth as our partners in identifying unmet needs, and will be potential sites for running prototyping and testing activities.



Due to the covid19 pandemic restrictions we had to rely on local senior consultants. (e.g. upfront Eng. Omar Bakari leading a training session to help the selected entrepreneurs building the first proposal for their projects.

We have setup a team of two project managers and a senior consultant in Tanzania.

Despite the Covid-19 pandemic restrictions the team has helped to plan a local field research study involving 65 participants to identify the unmet needs (together with the selected hospitals) and potential innovative solutions that can address them. In total innovative 22 projects were identified of which 10 are mature enough. Workshops were organized to help them prepare for their next step: the prototyping.



Moreover, a pool of 25 entrepreneurs are considered as potential candidates for an entrepreneurship in-residence program to be setup by our partners at EPFL.

This project has been successfully handed over to EPFL where it will be implemented under the leadership of the EssentialTech centre as planned. The EssentialMed foundation would like to thank fondation Botnar for its support along these 15 months and especially during the Covid19 Pandemic.



Medical imaging in Africa

The first project of 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. Now that this project has been successfully transferred to a startup company, the foundation continues to support access to this essential medical instrument with support from the African Development Bank (ADB).

Lock-down due to Covid-19 and a coup in Mali slows down operations.

A formal start of the program in March was prevented by the Covid-19 pandemic as well as a serious political crisis due to a coup against the government. In the second semester of 2020, the country was able to return to a more peaceful situation. EssentialMed started the negotiations with the ADB for their project. Together with KB-INNOVATECH, a Malian NGO and a partner in the project, our foundation revised the planning. The project should be restarted in 2021.

The foundation adapted the protocol and the agenda of the first 2 pre-feasibility studies. These studies aim to analyze the situation and performance of medical imaging equipment in 3 pilot sites. These sites were defined by the ministry of health: the Gabriel Touré hospital in Bamako, the regional hospital in Segou, and the district hospital in Koutiala. An online study will also be conducted in a series of additional hospitals identified by the malian association of radiology technicians.

So the first phase of the project will be realized during 2021, Covid-19 and political situation in Mali permitting. The second phase which involves the implementation of GlobalDiagnostiX and a commercially available ultrasound imaging system is planned to start at the beginning of 2022. The final phase consists in analyzing the impact of the second phase.



The presentation of the GlobalDiagnostiX system to the pilot-committee of the ministry of health in Mali.

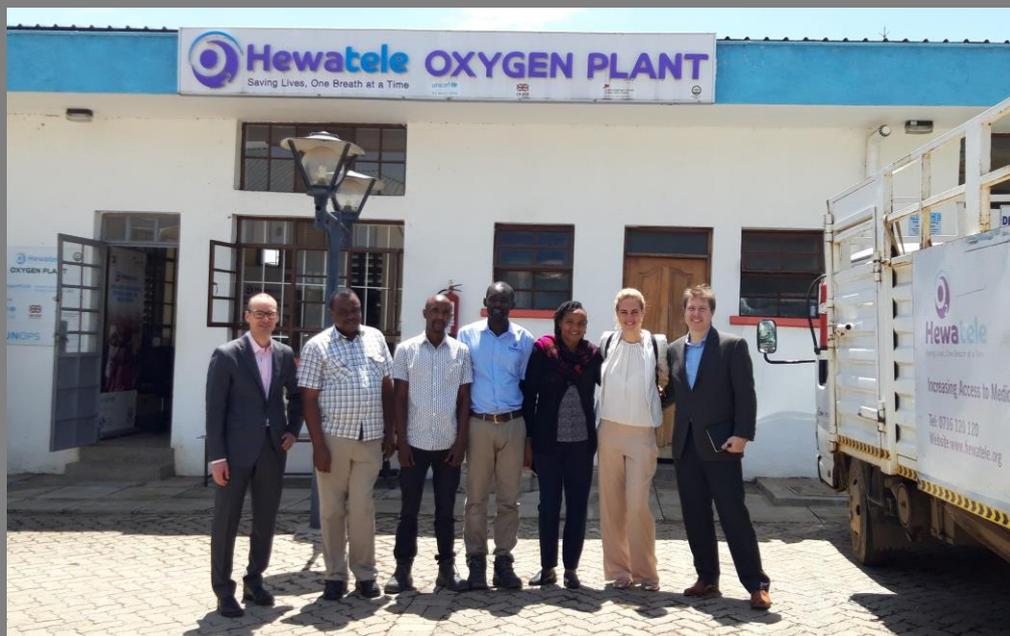
Improving access to oxygen

The need to improve access to oxygen in many remote healthcare facilities, and sometimes even larger urban ones, had been identified long before the covid-19 pandemic. This last year however, the number of critical situations increased dramatically, making even more evident the need for an efficient and sustainable solution to provide oxygen to primary healthcare facilities.

The GlobalO₂ project

In this project, the EssentialMed Foundation partners with EPFL's EssentialTech Center, and the Center for Public Health and Development (CPHD) an NGO in Kenya. The consortium aims to develop an integrated solution combining oxygen delivery devices (in particular an oxygen concentrator) including maintenance as well as staff training. In 2020, funding was secured from Unitaid for the pilot phase of the project (2021-2022), where the consortium will deploy off-the-shelf devices to 20 healthcare facilities in one county in Western Kenya (Bungoma). This will allow assessing the need for oxygen at different levels of care, evaluating the impact of the introduction of oxygen services in primary healthcare facilities on the current clinical practices, and exploring the possible payment mechanisms that can be relied upon for a potential "fee-for-service" model.

EssentialMed is in charge of developing the training programs for clinical as well as technical staff involved in the use of the oxygen delivery infrastructure and the management of patients with respiratory problems. The Foundation is also involved in the development of the "fee-for-service" model, since the training will be included in the overall provision of oxygen as a service and the whole model must be self-sustainable. Two EPFL labs will be responsible for developing innovative solutions to improve specific components of the oxygen concentrator (the power supply and the nitrogen-filtering sieve beds) to make them more robust and more suitable for the targeted healthcare facilities. The EssentialTech Centre is in charge of the project management, the system engineering for the concentrator development, and the integration of the different components of the business model. CPHD will be the implementing partner in Kenya, providing their extensive experience in providing oxygen cylinders to hospitals across the country, as well as in procuring and installing oxygen-related products.



Members of the GlobalO₂ team and plant staff visiting an oxygen plant in Nairobi, Kenya. The plant was built and is managed by Hewa Tele, a social enterprise created by CPHD.

The foundation's people:

Foundation Board

Dr Guy Morin, President

Prof Marcel Tanner

Prof René Salathé

Dr Gérard Escher

Dr Alex Dépraz

Team

Dr Klaus Schönenberger, Chief Executive Officer

Dr Solomzi Makohliso, Chief Strategy Officer

Bertrand Klaiber, Chief Operating Officer

Dr Beat Stoll, Chief Medical Officer

Matthieu Gani, Project Manager

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. 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. We 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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