



National Malaria Training Model

An Innovative, Cost-Effective, Scalable Solution



ACCORDIA
GLOBAL HEALTH FOUNDATION



Letter from the President

Dear Friends,

Although eradicated in some parts of the world, malaria continues to devastate much of sub-Saharan Africa. The 350 to 500 million people afflicted by the disease place an enormous burden on already strained health systems in the region. In African countries with a high malaria burden, an average of 40 percent of health resources are estimated to be spent on the fight against malaria. Most importantly, the estimated 1 million malaria-related deaths each year have a profound and unacceptable impact on society.

Yet, the disease is both preventable and treatable with the right tools, skills, and knowledge. In 2005, Accordia Global Health Foundation and ExxonMobil formed a partnership designed to develop innovative approaches to better prepare Africa's health professionals to prevent, diagnose, and treat malaria.

With a particular emphasis on reducing misdiagnosis and the overuse of precious antimalarial medications, the National Malaria Training Model demonstrates a cost-effective approach to reach health workers at every level of a healthcare system, and substantially improve the quality of care available to millions of women, men, and children.

The model was piloted, tested, and refined in Uganda, in partnership with the Infectious Diseases Institute, Makerere University. Following the success of a pilot program, the Ugandan Ministry of Health endorsed the model and incorporated it into Uganda's national malaria training activities. Thanks to the dedication of our partners, donors, colleagues, and other supporters, the National Malaria Training Model is now poised to be scaled up in other African countries.

This report reveals the keys to success in transforming an idea into an innovative approach that can be adapted to various settings.

Accordia Global Health Foundation would like to thank ExxonMobil for its unwavering commitment to addressing the devastating impact malaria has on sub-Saharan Africa – and, in doing so, saving countless lives. Malaria results in part from poverty, but it also perpetuates poverty. The efforts we make today to strengthen health systems in Africa help pave the way for a more vibrant African economy in the future.

Sincerely,

A handwritten signature in black ink that reads "Warner C. Greene". The signature is written in a cursive, flowing style.

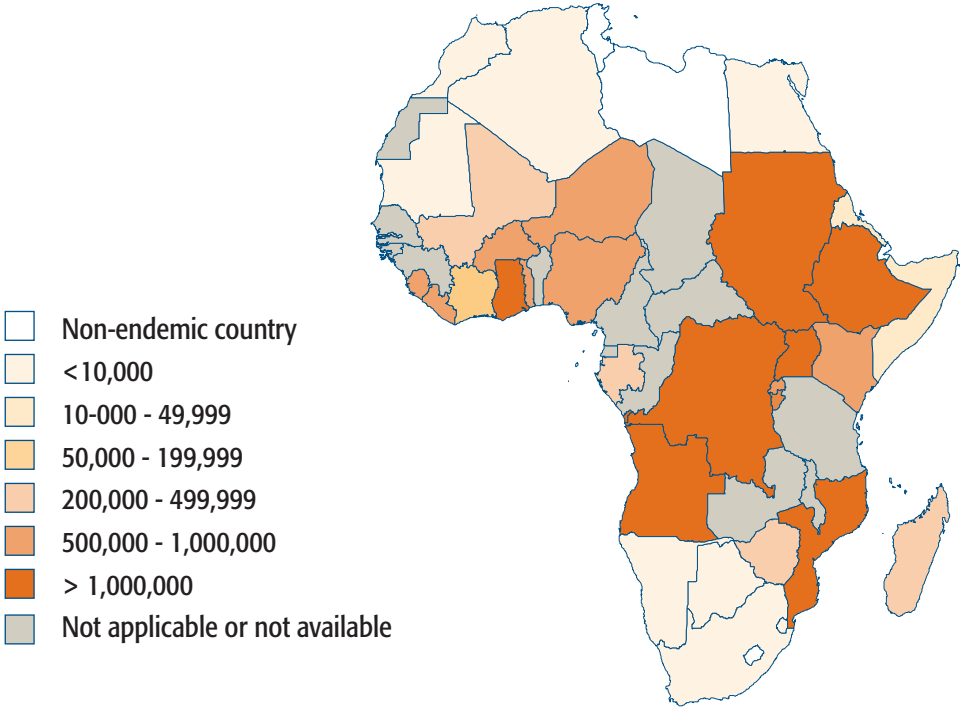
Warner C. Greene, MD, PhD
President, Accordia Global Health Foundation

The Critical Challenge

The procurement and distribution of insecticide-treated nets, increased indoor residual spraying, and highly effective antimalarial drugs, have reduced malaria-related deaths worldwide. These measures are now being implemented throughout Africa and are finally reaching the areas hardest hit by malaria. However, one critical obstacle remains: the lack of trained healthcare professionals skilled in the most effective protocols to diagnose, treat, and monitor the care of individuals who suffer from malaria.

Throughout Africa, presumptive treatment is the standard of care in many health clinics – meaning that any patient presenting with a fever is treated for malaria without diagnostic confirmation. A health workforce that is not trained to properly diagnose malaria adds to the cost associated with treatment by over-prescribing, or worse, threatening the patient’s health through misdiagnosis. This over-prescription contributes to drug resistance and is known to render effective drugs obsolete, undermining lifesaving measures.

Number of Confirmed Malaria Cases, 2010





In sub-Saharan Africa, which accounts for over 90 percent of all malaria cases worldwide, a child dies of malaria every 30 seconds.

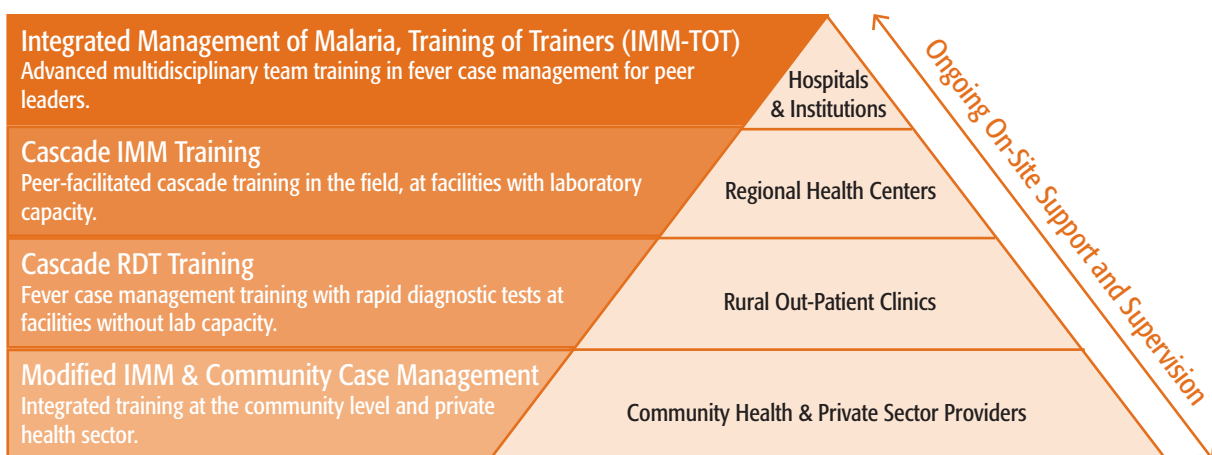


The National Malaria Training Model

With generous support from ExxonMobil beginning in 2005, Accordia and its flagship Ugandan institute and implementing partner, the Infectious Diseases Institute, developed a National Malaria Training Model to address the shortage of healthcare workers properly trained in fever case management.

The model is comprised of a set of training program components, each targeting healthcare workers in a different area of the healthcare system. All components train multidisciplinary teams together, to build trust and collaboration and to demonstrate the importance of each individual healthcare worker in providing patient care in the diagnosis and treatment of malaria. Understanding the critical importance to reinforce and sustain trainees' knowledge and skills once they return to their home institutions, the training model also incorporates post training follow-up support through the use of multidisciplinary mobile support teams. The model achieves its cost effectiveness through a proven "training-of-trainers" approach that enables the economical implementation at even the most rural clinics.

Comprehensive monitoring and evaluation of the training program revealed a marked improvement in the skill and performance of healthcare providers. The Ugandan Ministry of Health has endorsed the model and incorporated it in Uganda's national malaria training activities.





Model Components and Modules

Integrated Management of Malaria (IMM) and Training of Trainers (TOT)

Integrated Management of Malaria is a six-day intensive course that trains teams of health workers in the advanced care and prevention of malaria. The team training approach is particularly effective at improving malaria case management systems by encouraging team building, communication, and trust among the entire treatment team. A tailored, supplemental module, the IMM-TOT targets peer leaders capable of leading training courses in the field and contains advanced leadership and adult education methodology components.

Cascade IMM

The five-day Cascade IMM training is facilitated on-site by peer leader graduates of the IMM-TOT module who are stationed at secondary health clinics with the capacity for malaria microscopy. The peer-facilitated, or cascade, training is as effective at changing behavior and refining patient care in basic fever case management as classroom based courses and is a more cost-effective approach when considering training on a national level.

Cascade Fever Case Management with Rapid Diagnostic Tests

Lasting three days, this on-site, peer-facilitated course provides training in the effective use of RDT within the broader context of good fever case management for health workers at clinics without sufficient capacity for microscopy. Effective RDT implementation is clinically safe and effective, particularly as compared to standard-of-care presumptive treatment.

Home-Based Fever Management (HBM)

The HBM module trains community health workers in the field to administer RDT and appropriately dispense artemisinin combination therapy (ACT) safely and correctly. By training community health workers to identify and treat symptoms, HBM aims to reduce mortality and morbidity in children under five and improve family health in rural areas. This module strengthens the WHO's Integrated Community Case Management (ICCM) strategy for diagnosing and treating malaria, pneumonia, and diarrheal disease for children under five at the community level by integrating components of the National Malaria Training Model into the ICCM training curriculum.

Modified IMM

The Modified IMM module adapts and extends the National Malaria Training Model to private sector clinics to improve the quality of malaria treatment and fever case management in these facilities. As the main suppliers of medicines for the treatment of uncomplicated malaria in many parts of Africa, improving private sector knowledge and changing practices for these providers raises the quality of care provided outside of the public health system.

On-Site Support and Supervision (OSS)

OSS is provided by mobile support teams to reinforce improved clinical and laboratory behavior after the delivery of training courses, and to enable the development of training capacity among peer leaders in the field. The team consists of a medical or clinical officer, district-based MOH staff, a lab technician, and a data management specialist. The ongoing support services this team provides sustain the implementation of enhanced skills and practices and provide an improved and lasting system of care for malaria.

A Model for all of Africa

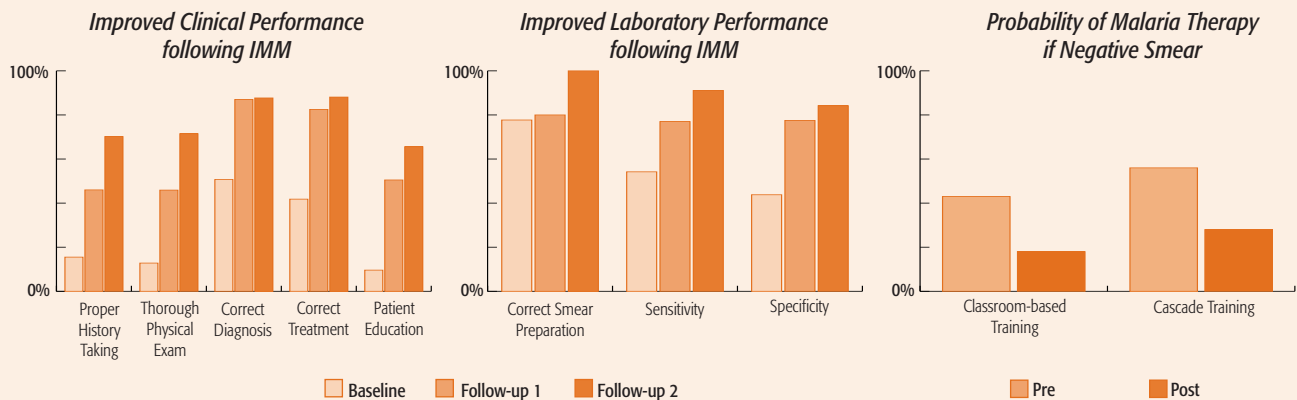
Accordia Global Health Foundation identified key issues that prevented excellence in malaria prevention, diagnosis, and treatment - a lack of trained health workers, high costs from overprescribing antimalarials, limited resources for staff training - and designed a set of modules to address these challenges.

Throughout the model's implementation, the modules were monitored and evaluated to determine best practices that could be utilized in other African settings. The results, detailed below, demonstrate that the National Malaria Training Model is a comprehensive, scalable capacity-building program that improves fever case management and controls costs. While individual components of this model may require adaptation for other national settings, Accordia believes that the overall national package is sound and exportable.

Challenge: Most cases of fever in Africa are presumptively treated as malaria, resulting in significant misdiagnosis, overuse of antimalarials, and delays in treatment of actual causes of fever - all of which is perpetuated by a lack of trust and collaboration among health workers in various disciplines in the health system.

Solution: An innovative, team approach to malaria case management training improves prevention, diagnosis, and treatment using WHO guidelines.

Demonstrated Results: Following the training intervention, performance among laboratory professionals and clinicians improved across all areas.



Health and Cost Benefits

Analysis of the effect of the National Malaria Training Model in pilot districts throughout Uganda reveal significant improvement to healthcare practice. As indicated in the charts below, data collected before and after our training suggest that it significantly improved proper history taking, thorough physical exams, correct diagnoses, and treatment of patients with malaria. Data also indicates improved treatment of patients who previously would have been misdiagnosed with malaria. Using published estimates of the reduction in mortality associated with these improvements, we estimate that the pilot phase of our program saved 137 lives annually at 8 Ugandan health centers.

In addition to the health benefits gained through improved fever case management, analysis revealed that significant cost savings resulted from the decreased amount of antimalarial medicines administered to patients who tested negative for malaria. Based on calculations incorporating the total cost of the program, savings from reduced antimalarial use, and estimates of the lives saved due to proper diagnosis and treatment, our analysis suggests that the training resulted in a cost of less than \$200 per life saved.

Challenge: A lack of microscopy capacity in many remote areas results in overuse of antimalarials and misdiagnosis of febrile illnesses.

Solution: Implementation of effective rapid diagnostic test (RDT) and appropriate fever case management training improves diagnosis and reduces presumptive treatment.

Demonstrated Results: Following Cascade RDT training, there was a significant reduction of unnecessary antimalarials and a virtually perfect targeting of antimalarial prescriptions.

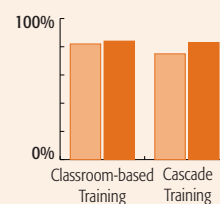
	Site		
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Proportion of patients with fever for whom RDT was performed	99% (n=602)	98% (n=1073)	98% (n=1809)
Patients with positive RDT who received antimalarial prescription	100% (n=191)	99% (n=487)	99% (n=1308)
Patients with negative RDT who received antimalarial prescription	0.5% (n=409)	0.2% (n=616)	0.8% (n=513)

Challenge: Centralized training is logistically challenging and costly.

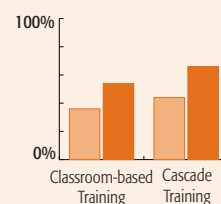
Solution: The training of trainers course equips peer leaders to more economically roll out training in rural areas.

Demonstrated Results: Peer-facilitated training at secondary health clinics demonstrated performance improvements equal to those achieved through centralized classroom-based training.

Probability of Appropriate Therapy if Treated for Malaria



Probability of Blood Smear if Suspected of Malaria



Pre Post



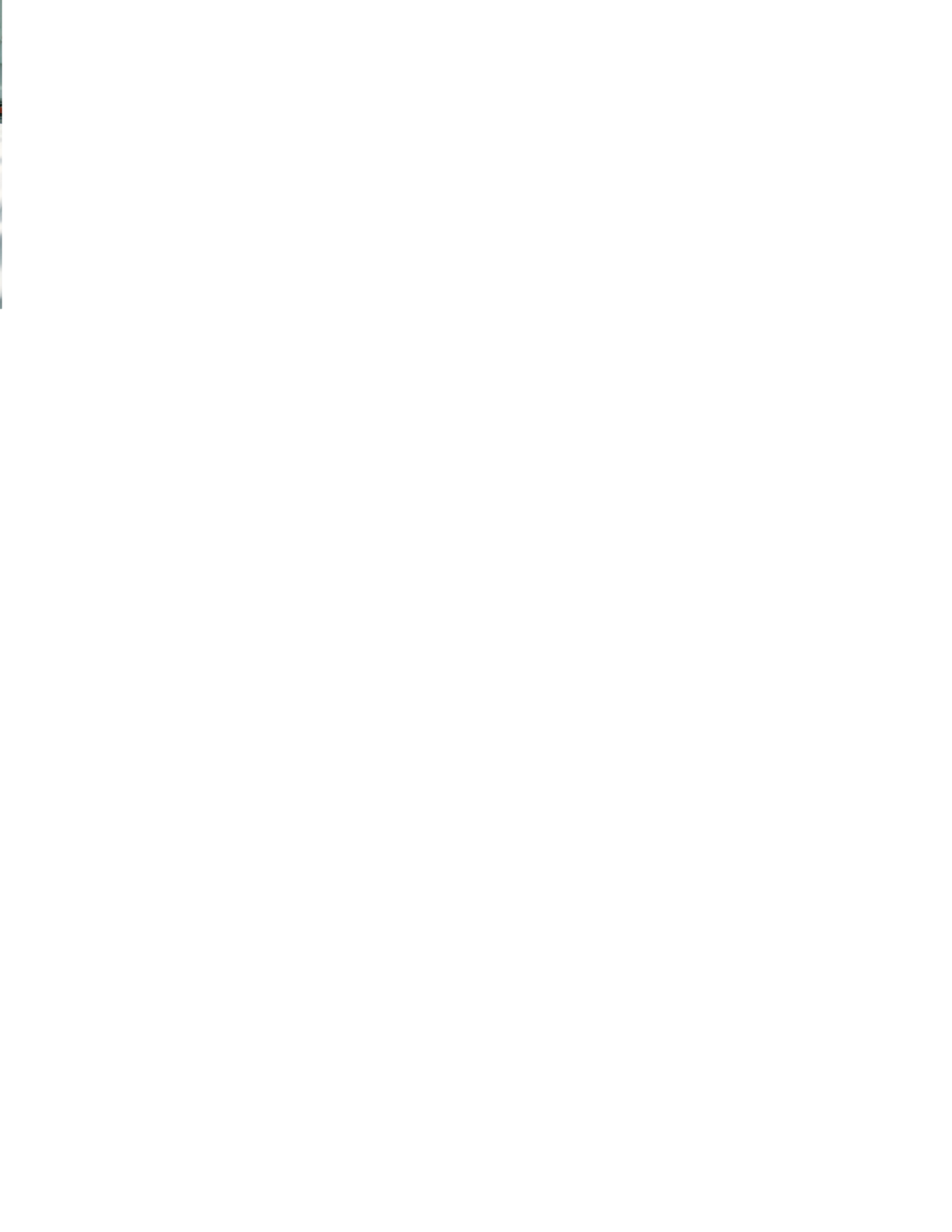


Accordia Global Health Foundation is a non-profit organization dedicated to achieving its vision of a vibrant, healthy Africa where every individual can thrive. We work in partnership with individuals, corporations, foundations, nongovernmental organizations, and governments from around the world - bringing private sector discipline and academic rigor to our global health programming. Our programs enhance local healthcare capacity to promote and deliver consistent quality of care and strengthen academic medical institutions to train healthcare professionals and nurture young African researchers.

In 2001, Accordia and its partners established the Infectious Diseases Institute (IDI) in Kampala, Uganda. Operating at the intersection of training, research, and advanced clinical care, this world class center of excellence enables continuous innovation and responsiveness to the region's most pressing health concerns.

Accordia is working to replicate this Center of Excellence throughout Africa, creating a network of complementary institutions, and fundamentally transforming the health landscape in Africa.







ExxonMobil



Accordia Global Health Foundation
1101 14th Street NW, Suite 801
Washington, DC 20005
(p) 866.451.2001
(f) 202.534.1220
www.accordiafoundation.org

Photos courtesy of Emily Collins, Nancy Farese, Accordia Global Health Foundation, and the Infectious Diseases Institute