

ANNUAL REPORT: 2016





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MESSAGE FROM LEADERSHIP

Every human life is sacred. Every child, whether born into a wealthy family in the United States or a poor family in Africa or Asia, deserves to have the opportunity to fulfill his or her potential free from premature death or debilitating disease. A good quality national health system that can accomplish these goals is essential to lift people from poverty. These are the beliefs that motivate CHAI and its people.

CHAI was founded on the principle that it was morally unacceptable that millions of people were dying each year of AIDS in Africa, Asia and the Caribbean while treatment was readily available in wealthier countries. We did not accept the arguments often made at that time that treating people with AIDS in resource-poor settings was too expensive or too complicated to be successful.

Working in partnership with governments in Africa, Asia and the Caribbean, with donor governments and foundations in North America and Europe and with other NGOs, CHAI has played a significant role in helping to save the lives of millions of HIV-infected people by lowering the cost of treatment and scaling up high-quality systems to deliver effective care around the world.

At the urging of our partner governments and donors, we have expanded our work to include scaling up efforts to prevent and treat malaria and tuberculosis, accelerating the rollout of lifesaving vaccines, reducing maternal and child mortality, enabling more effective family planning, educating health workers and improving health financing systems in resource-poor settings. In 2016, we also began work to

increase treatment for people suffering from cancer in Africa as well as a global program to cure people suffering from Hepatitis C.

CHAI has helped to bring modern business and management skills to the global health field. We have negotiated over 120 successful deals that have dramatically lowered the prices of drugs, diagnostic tests, vaccines, contraceptives and a variety of other essential health commodities. CHAI has helped governments build health management systems to deliver effective care, deploy efficient supply chains for vaccines, medicines and tests and create systems for conducting effective mentoring of health professionals. Our work has reached some of the most remote places on earth.

With an eye to sustaining CHAI's success in the future, CHAI has expanded its board of directors to 15. We are honored that a prestigious group of global health and business leaders from around the world have agreed to join us in our mission.

While our partner governments and community leaders deserve the primary credit for any achievements that we support and our role is to assist them, CHAI's staff remains at the heart of our work. People at CHAI are a diverse group, but we are united in our belief that improving the lives of people born into poverty and who suffer from poor health is a meaningful and moral way to live our lives. We continued to live this mission in 2016, and look forward to growing in 2017 and beyond to ensure that all people have access to quality health care, no matter where they live.

— The CHAI Leadership Team





OUR MISSION AND VALUES

Our mission is to save lives, reduce the burden of disease and strengthen health systems in developing countries. We operate with a core set of values that are fundamental to the success of our work.

We work with urgency.

People are dying unnecessarily from AIDS, malaria, tuberculosis and other treatable diseases and the world often responds too slowly. We understand that the faster we act, the more lives can be saved.

We work in cooperation with and at the service of partner governments.

We believe that to make programs sustainable and scalable, we need to strengthen the national government health systems by working with ministries of health. As we work closely with partner governments, we aim to build capacity so that our role is eventually unnecessary and programs are completely transitioned to the leadership of local partners.

We are a mission-driven organization.

We want people to work with us because they believe in our mission of saving lives, reducing the burden of disease and strengthening health systems. CHAI employee satisfaction comes primarily from the fact that we collectively succeed in advancing our mission.

We are frugal.

We feel that the donor money we raise should go as much as possible to saving lives directly rather than to compensating ourselves excessively, elaborate expenses or high overheads.

We operate with humility.

We do not actively publicize our work, independent of the publicity that our government partners request. We try to foster a culture of respect for the people we serve and for our local government partners.

We have an entrepreneurial and action-oriented culture.

We hire knowledgeable individuals and give them wide latitude to conceive of and execute programs. Some of our greatest accomplishments, large and small, were not planned centrally. We are willing to take risks and attempt to achieve goals that are substantial,

challenging and uncertain. We believe that the successes made possible by our risk-taking will more than outweigh the failures.

We operate based on trust and transparency.

We expect employees and partners to make ethical decisions, to work hard and to manage their own work. We try to minimize internal bureaucracy by not overburdening our people with too many managerial constraints.

We recognize our staff is our greatest asset.

Primarily, the talent and hard work of the exceptional individuals who work for CHAI drive our successes. We strive to support and protect our well-performing staff to grow and thrive within the organization and to enable them to have a major impact in fulfilling the mission that causes them to work at CHAI.

We foster diversity and inclusion.

As an inclusive workplace, we promote and integrate the principles of fairness, respect, equality and dignity into CHAI's culture. We take a firm stance against discrimination and harassment and foster an environment where people with a multiplicity of personal characteristics, including race, color, religion, sex or gender (including gender identity and gender expression), sexual orientation, ethnicity, national origin, age, disability, HIV status, political or interest group affiliation, genetic information, veteran status, marital status, parental or pregnancy status or any other characteristic, are embraced wholeheartedly and are valued for the perspective they bring to achieving our mission.



Alice Kang'ethe

Chief Operating Officer

I joined CHAI as a volunteer in February 2003. I had just graduated with a master's degree in economics from the London School of Economics and returned home to Kenya. While on the job hunt, a friend of mine volunteering with CHAI from McKinsey and Company asked if I would be interested in joining CHAI's team in Tanzania. Soon, I was working on the first ever HIV/AIDS care and treatment plan for the country.

At the time, very few developing countries battling HIV/AIDS had national care and treatment programs due to the high cost of treatment and the inadequacy of health systems. The focus and funding skewed towards HIV prevention and behavior change programs. There were only a few non-governmental actors supporting treatment. Many infected patients were dying.

Within a day of joining, I was asked to plan a conference that would bring together key stakeholders in the country to present and review the draft plan. I had no office, no title, no money, no team members co-located, and only a phone and a laptop in a hotel room in Dar es Salaam. My parents could not understand how I had taken up a volunteer position in health, having paid a lot of money for my postgraduate degree in economics.

I managed to pull together the meeting and, with the help of international experts CHAI assembled, in three months we presented the first national care and treatment plan to the President of Tanzania. It was then that I met our CEO, Ira Magaziner. I was planning on going back to Kenya, but Ira asked me to join our team in South Africa. I took up the challenge, this time with even more intensity.

In a span of six months I learned more than I had in my formal education. I lived and internalized CHAI's mission to save lives. People were dying in every hospital we visited from the lack of HIV/AIDS care. There was an urgent need to act and we had to put together the plans, secure funding and roll out programs in what others would describe as an unreasonable timeline. I was there during the revolution that shone the light on care

and treatment against all odds and CHAI's pioneering work in HIV/AIDS.

In need of a paying job, I joined KPMG Strategy after spending six months with CHAI. While at KPMG, I was part of the team appointed as the Local Fund Agent for the Global Fund to Fight AIDS, Tuberculosis and Malaria in the Eastern African region, helping to oversee a US\$320 million grant for Kenya. Within a year of working at KPMG, I learned that CHAI was planning to set up operations in Nairobi, Kenya. I was excited about the prospect to again join CHAI and soon became one of its first paid employees.

I started as an analyst on the Procurement (now Access) team where I helped countries to access competitively priced antiretroviral (ARV) drugs under the agreements that CHAI had negotiated. Having seen the devastation in Tanzania and South Africa, I was determined to see as many people as possible access HIV care and treatment. I had a firsthand appreciation of the direct correlation between lower prices and increased access for those in need.

I then became CHAI's first Deputy Country Director in Kenya. CHAI had been working with countries in the East African Region to provide access to lower priced ARVs, but had not yet established an office in Kenya. My role was fundamentally challenging but also allowed me to have great impact as a young African woman in a largely patriarchal society.

I set up the Kenya office including hiring my boss, the Country Director. I worked with the government to help bridge the health workforce gap that existed at the time and design a program that used donor funding to hire nurses and clinical officers on contract, allowing the government to build costs into their budgets over a period of three years and eventually absorb the staff. The program was a great success and, as a result, the Ministry of Health required all other partners willing to support the government with additional human resources to adopt this model.

In this position, I also worked with my colleagues to launch the pediatrics HIV/AIDS care and treatment program in Kenya. Our

target was to get 1500 new children on treatment within one year. This experience drew on many of CHAI's strengths: brokering partnerships, expanding access to lifesaving products and taking on a high-risk project that had the potential for large-scale transformational impact.

I was then asked to lead a new effort as the Director of the Global Prevention of Mother-to-Child Transmission of HIV (PMTCT) in a number of countries in Asia and Africa. It was challenging to develop approaches to distinct issues in the two continents. In Asia, we came close to virtual elimination. In Africa however, we faced greater challenges. Many children born free of HIV contracted the virus while breastfeeding. It broke my heart. In order to break this cycle, CHAI determined it was necessary to provide full treatment for all HIV-positive pregnant women in Malawi. Although this decision was contrary to guidelines from the World Health Organization (WHO) at the time, this effort saved countless lives. Seven years later the WHO also adopted these guidelines. Amidst the challenges, there were successes. I remember visiting a facility in the mountains of Lesotho and found a couple that had just received a confirmatory test of a HIV-negative baby at 18 months. For me, there is no greater fulfillment!

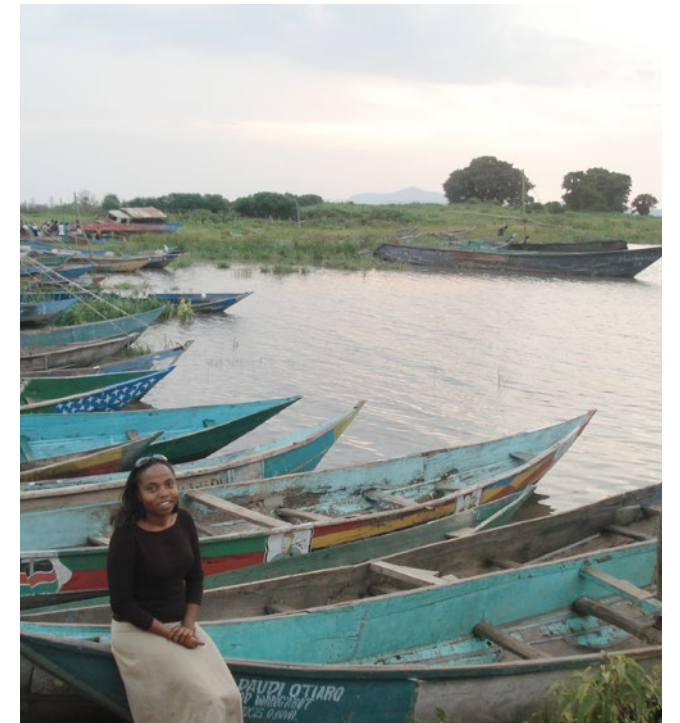
In 2009, I became CHAI's Regional Director for Southern Africa, overseeing work in Lesotho, Swaziland, Mozambique, Uganda, Zambia and Malawi. A year later, I was promoted to Executive Vice President in charge of Vaccine Delivery, Family Planning and Human Resources for Health. In that role, I led the team that worked with a number of countries to deliver vaccines to tackle pneumonia and diarrhea, two of the largest killers of children in developing countries. CHAI helped governments to rapidly introduce these vaccines and reach all targeted children. I also led the team that saw the rapid scale up of long-acting reversible contraceptives.

Now, as the Chief Operating Officer at CHAI, I aim to efficiently manage the CHAI matrix of country, program and operations teams with a focus on excellence in program performance. I would like to see us galvanize our efforts in maternal and child

“In a span of six months I learned more than I had in my formal education. I lived and internalized CHAI's mission to save lives.”

health. I am also eager to grow the next generation of leaders who will take over and help the world tackle the outstanding and potentially new challenges in global health.

I have had the opportunity to deliver bottom lines for corporations, but nothing compares to saving a life—especially someone who is less fortunate. Serving at CHAI has offered me this opportunity for which I will forever be grateful. I cannot think of any other organization that could have believed in me at such a young age. I have been proud to learn and grow alongside CHAI.



ALICE KANG'ETHE PREPARING TO CROSS LAKE VICTORIA IN WESTERN KENYA EARLY IN HER TENURE AT CHAI. THE REGION HAD RECORDED THE HIGHEST HIV PREVALENCE IN THE COUNTRY.



Dr. Mphu Ramatlapeng

Executive Vice President of HIV/AIDS, TB, and Health Financing

As I think back over the past two decades, I will always remember the spring of 1998, when I was working as a clinician in Lesotho. It was the moment when we began to realize the terrible impact that HIV would have on our country. My patients were growing sicker by the day, and at times I thought there wouldn't even be any more patients to care for within a few years. Walking through the streets of our capital city Mafeteng, I could begin to tell apart the ones who were sick and wouldn't make it. We thought it was the end.

The progress made since those early days in Lesotho—and around the world—is worth celebrating. I have been proud and humbled to be a part of the global health community through my work in CHAI. I've seen firsthand the commitment and tireless work of people around the world—governments, NGOs, the medical community, the private sector, and so many more—collaborating to do the impossible, and to put an AIDS-free generation within our reach.

When I first joined CHAI as the Country Director in Lesotho in 2005, the organization was considered a newcomer to the world of global health. It was evident early on that CHAI's approach to solving problems and delivering care was very different from the status quo. During the early times, we were based in Lesotho's Ministry of Health. We were part of the team, advised the staff and proposed new ideas and solutions. I can thank CHAI and its culture for teaching me and others to listen and to be patient. We fostered a deep partnership that would eventually show in our work.

CHAI Lesotho introduced lab and clinical mentoring and soon persuaded the Government of Lesotho to introduce a nurse-initiated antiretroviral therapy (ART) program, dramatically shifting the number of patients accessing treatment. While we made progress with adults, the lack of antiretroviral (ARV) drugs for children was disturbing. We were forced to take desperate actions to try to save the lives of children living with HIV; we crushed the adult HIV tablets and mixed them in syrup so babies could swallow them without choking. With this treatment, some of these babies lived. For many others, it was too late. One of

my proudest accomplishments was the introduction in 2005 of a pediatric ARV formulation. Two years later, we assisted the country with preventing of mother-to-child transmission of HIV.

After serving as a Minister of Health of Lesotho from 2007 to 2012 and Vice Chairman of the Global Fund, I rejoined CHAI. I had initially thought of joining another organization, but after examining all possibilities I realized none were like CHAI. CHAI embodies the type of excellence, vision and values that many espouse but only the very few actually live. The goal of saving lives is very bold and yet it is humbling to see so many CHAI colleagues strive to do so every day.

In my role as Executive Vice President, I am responsible for overseeing our global HIV, TB and Health Finance strategies. I face enormous challenges, along with our teams around the world. But with hard work, close cooperation with our partners and commitment to the important mission of saving lives, we have achieved success and transformational changes that I believe will continue to have an impact for years to come.

We have worked tirelessly to create the fiscal space to scale up critical prevention and treatment interventions. We have collaborated with our partner countries to improve the effectiveness of both adult and pediatric ART and scaled up high-impact prevention interventions, including voluntary medical male circumcision, elimination of mother-to-child transmission of HIV and treatment as prevention.

We have successfully assisted and persuaded our partner governments to roll out only proven interventions and to cut programs that were not yielding results, even if they were popular. The good examples of the work we do as CHAI are many, and so are the challenges. When the path ahead feels overwhelming, I think back to the miracle of those men and women coming back to life. I can never forget the catastrophe of the early days. I lived it! In all of that hopelessness and uncertainty, we found incredible ambition.



Dr. Yigeremu Abebe Asemere

Vice President and Country Director, Ethiopia

When I finished my undergraduate medical school training some 35 years ago, I was assigned to work in military health services in a hospital in Eritrea (then part of Ethiopia). After working for two years as general practitioner, I joined my postgraduate study in internal medicine. It was then that I started my lifelong fight against one of the most devastating epidemics in human history of diseases: AIDS.

In Ethiopia, the first HIV-positive blood was collected in 1984 and the first cases of AIDS were reported in 1986. The Ethiopian health community first openly discussed AIDS when a Canadian physician and I gave a presentation to the annual conference of the Ethiopian Medical Association in 1985 about the disease. Speaking about AIDS in an open forum was a serious challenge at that time. Ethiopia, like most of Africa, was in denial about the epidemic.

At first, the disease spread silently, predominately in urban centers among so-called high-risk groups (female sex workers and their clients including long-distance truck drivers and soldiers). Rates as high as 100 percent were documented in some corners of Addis Ababa, yet there was little response from the government and other partners to educate the public. Soon, research showed that the epidemic had started spreading to the general population.

I campaigned intensely to increase awareness about HIV/AIDS and provided training to health professionals and medical students in the hospitals where I worked. From 1990 to 2000, the HIV epidemic transformed into an AIDS epidemic, and tens of thousands of young Ethiopians perished. Hospitals and clinics were flooded by AIDS patients. Doctors were helpless since there was nothing to offer to patients except palliative care and the treatment of some opportunistic infections. The lifesaving antiretroviral drugs introduced in the developed world were not yet easily accessible in Ethiopia.

Eventually, I left the public sector to concentrate fully on HIV work. I opened Addis Ababa's first free antiretroviral treatment

center in 2004. The center, called ALERT, operated in one of the government hospitals in collaboration with the Federal Ministry of Health, Ethiopian Diasporas in North America, and the Christian Children's Fund of Canada (CCFC). Today, the center is treating more than 10,000 adults and more than 2,000 children.

While working at ALERT, I encountered CHAI staff for the first time. At the time, there were no pediatric formulations to treat children and we were trying to treat them by breaking adult tablets. CHAI wanted to explore the possibility of starting pediatric HIV care in Ethiopia. Together, with CHAI funding and CHAI mentors, we established a very good pediatric treatment center.

When CHAI was looking for a Country Director in Ethiopia, several of my colleagues encouraged me to take the position. At first I was hesitant since I was dedicated to my work at ALERT, but I soon decided that I could better support the treatment center and more health facilities working in HIV care if I took on a leadership position at CHAI.

When I began at CHAI a decade ago, our office had two rooms, less than 10 staff and very modest budget. Today, CHAI is managing eight programs in Ethiopia with 160 staff. CHAI Ethiopia has taken on a number of challenges. We have partnered to improve pediatric HIV/AIDS care, helped the Government of Ethiopia transform its health systems by strengthening its rural hospitals, improving maternal and neonatal care and access to vaccines and increasing access to lifesaving therapies for diseases such as pneumonia and diarrhea, the largest killers of children. CHAI has also started new work to address other critical diseases such as malaria, viral hepatitis and cancer.

CHAI's vision, mission, values, operational principles and strategic areas are well-aligned with our committed government partners to provide quality health services to their citizens. As a result, our effective program initiation and implementation has earned us a unique reputation in Ethiopia for bringing about innovative solutions to long-standing and difficult problems.

OUR HISTORY SELECT ACHIEVEMENTS

2002

CHAI founded. CHAI was founded in 2002 with a transformational goal: help to save the lives of millions of people living with HIV/AIDS in the developing world by dramatically scaling up antiretroviral treatment.

CHAI's First Programs—HIV/AIDS. In 2002 and 2003, CHAI initiated the first programs in Africa and the Caribbean that aimed to scale up HIV/AIDS care and treatment throughout entire countries. Working with governments in Mozambique, Rwanda, Tanzania, the Bahamas, Haiti, the Dominican Republic and the Eastern Caribbean States—all of which in total had less than 2,000 people on treatment at the time—CHAI helped to develop and implement national plans with the governments to test people for AIDS, procure drugs, accredit facilities, set up supply chains, train doctors, nurses and health workers and establish laboratories that led to over 800,000 people being treated in these countries alone within five years.

In 2003, CHAI negotiated to lower prices for first-line HIV drugs by over 60 percent and enabled over 60 countries to access these low prices. CHAI assisted the government of South Africa to develop a comprehensive plan to initiate the scale-up of treatment in the nation with the highest burden of AIDS, laying the foundation for the largest ART program in the world today.

2004

CD4 Test Price Reductions. In 2004, CHAI negotiated 50-90 percent reductions in the price of CD4 tests and other tests used for AIDS patients worldwide. Coupled with CHAI's technical support, these price reductions enabled the nationwide scale-up of CD4 testing in over 40 countries.

Pediatric HIV Work: Unitaid. Starting in 2004 and 2005, CHAI led a global effort to scale up treatment for children with AIDS in 34 countries, from around 75,000 on treatment to over 900,000 who are on treatment today. Working with Unitaid, which was formed under the leadership of the French Government and with CHAI's assistance, prices of first-line pediatric AIDS drugs were reduced from over US\$600 per child per year on average to around US\$60 per child per year. CHAI also worked to scale up the deployment of the special tests needed for children from 50,000 to over 1 million tests per year.

From 2004 to 2006, CHAI assisted the Governments of China and India to scale up HIV/AIDS care and treatment. These efforts helped to stem the growth of HIV/AIDS in these countries before the disease took on mammoth proportions.

2005

Second-Line Agreement: Unitaid. From 2005 to 2007, working with Unitaid, CHAI negotiated agreements to lower the price of second-line AIDS drugs by over 75 percent and accelerated the rollout of these drugs in over 30 countries to AIDS patients whose treatments were failing on first-line drugs.

Engagement in Southeast Asia. From 2005 to 2008, CHAI assisted governments in Southeast Asia to scale up care and treatment programs for AIDS, including in remote areas such as in Papua New Guinea and Papua Indonesia, which have the highest AIDS rates in Asia and are among the most remote places on earth.

2007

Expansion into Malaria. In 2007, CHAI expanded from its initial focus on HIV to apply its competencies towards improving the affordability and availability of effective drugs for malaria. CHAI's malaria program rapidly grew to help government partners to increase funding for malaria, improve access to quality diagnosis and treatment and support evidence-based decision-making to target resources and accelerate progress toward elimination.

2008

Mother-to-Child Transmission of HIV. From 2008 to 2011, CHAI helped to reduce mother-to-child-transmission of HIV by 40 percent in high-burden areas of six countries through a focus on increasing the demand for services at the community level and improving service delivery. CHAI worked with communities to increase uptake and retention in services and to reduce stock outs of essential supplies, improve mechanisms for the diagnosis of HIV, increase initiation of preventative medicines and increase the number of children tested for HIV.

2009

South Africa HIV Care & Treatment Scale-Up. Beginning in 2009, CHAI assisted the Government of South Africa (the nation with the highest HIV burden in the world) with the largest scale up of HIV care and treatment ever attempted, from 800,000 people in 2009 to over 3.2 million people today. CHAI helped negotiate agreements to lower HIV and TB drug prices that have saved the South African Government almost US\$1 billion; these savings are being used to treat more people within existing budgets. CHAI also provided critical support to increase the number of facilities providing treatment tenfold and scale up testing.

2011

Expansion into Vaccines. Since 2011, CHAI has been pioneering strategies in Ethiopia, Kenya, Malawi and Tanzania to roll out new vaccines, such as Pneumococcal and Rotavirus, more quickly and effectively.

Working with the Bill & Melinda Gates Foundation, CHAI negotiated a landmark deal to lower the price of the Rotavirus vaccine by 67 percent, saving the global community over US\$800 million, and negotiated a 50 percent reduction in the price of the Pentavalent vaccine, saving the global community an estimated US\$160 million over five years.

MATCH Study. In 2011, CHAI, supported by the Bill & Melinda Gates Foundation, conducted a study that illustrated the facility-level cost of treatment of HIV/AIDS was significantly lower than previously understood, at US\$200 per patient per year in low- and lower middle-income countries. Larger than any study of its kind, the Multi-Country Analysis of Treatment Costs for HIV/AIDS (MATCH) Study was conducted with the governments of Ethiopia, Malawi, Rwanda, South Africa and Zambia. CHAI has since used this evidence to inform the debate on the affordability and sustainability of universal access to treatment, and support analyses that have made an additional 443,000 patients eligible for treatment.

Human Resources for Health—Rwanda. Poor countries lack sufficient skilled doctors, nurses, community health workers and health managers to run effective health systems. Since 2011, CHAI has helped the Government of Rwanda to move towards establishing a world-class health system by implementing an unprecedented program to educate Rwandan doctors, nurses and health managers.

Malaria: Improving Access to Injectable Artesunate. Since 2011, CHAI has worked to lower the cost of and increase the availability of injectable artesunate, a malaria medicine that can dramatically decrease malaria mortality, particularly in children.

2012

Human Resources for Health — Zambia. Since 2012, CHAI has assisted the Zambian Government to educate a large group of Community Health Assistants (CHAs) who are deployed in remote districts throughout the country to bring quality first-line health care to people who currently have limited access.

Family Planning: Long-Acting Reversible Contraceptives. In 2012, CHAI negotiated an agreement to lower the price of long-acting reversible contraceptives from US\$18 to US\$8.50 per implant and is accelerating the rollout of these products. This effort will save the lives of thousands of women, prevent children from being stillborn and empower women to protect themselves from unwanted pregnancies.

2013

Engagement in Treatment of Child Diarrhea. In 2013, CHAI worked to scale up access to and usage of zinc/ORS as the recommended treatment for diarrhea, in India, Kenya, Nigeria and Uganda by building demand and increasing availability in both the public and private sectors. CHAI supported governments to lower the cost of zinc/ORS products. As a result of these efforts, wholesale prices have reduced by approximately 60 percent. CHAI has succeeded in accelerating the usage of these products by over tenfold in several African countries and in India.

2014

Viral Load Deal. In 2014, CHAI negotiated a global access price for viral load (VL) diagnostics of US\$9.40 per test, which will save over US\$150 million over the next five years and will dramatically improve the quality of health care that HIV patients receive.

Point-of-Care CD4 Price Reduction. In 2014, CHAI negotiated a 67 percent price reduction for service and maintenance of the first point-of-care (POC) CD4 product in the market (Pima), and has accelerated the market entry of a second supplier (BD FACS Presto), which will facilitate further price reductions for POC CD4 tests.

More Than 1 Million Early Infant Diagnostic Tests Performed. With support from CHAI, Unitaid, and other global partners, more than 1 million HIV diagnostic tests for infants were performed globally in 2014, up from only 80,000 tests in 2007.

Ebola Response in Liberia. In 2014, CHAI played a leadership role within case management, training and logistics facets of the Ebola response in Liberia and served as a critical link between the international emergency response and the Government of Liberia. CHAI was ultimately responsible for advising the government and implementing a massive scale-up of treatment centers, training of health workers (both national and international) and distribution of critical supplies to health workers in need.

2015

Reduction in Maternal and Infant Mortality. In 2015, CHAI introduced a new community-based approach in three states in Northern Nigeria that reduced maternal mortality by 37 percent and neonatal mortality by 43 percent over a 12 month period.

Three New Agreements to Expand Access to HIV Treatment. In 2015, CHAI, with the support of Unitaid, UNAIDS and the United Kingdom's Department for International Development (DFID), negotiated three new agreements that could increase access to more sustainable HIV drug regimens at reduced prices, including a tenofovir-based first-line regimen available for less than US\$100 per patient per year.

Price Reduction Agreement for Lifesaving Product for Mothers. In 2015, CHAI and partners announced an agreement to help to save mothers' lives by reducing the achievable cost-per-use of the non-pneumatic anti-shock garment (NASG) by over 75 percent. This innovative new product has been shown to safely and effectively reduce mortality due to post-partum hemorrhage, a leading cause of the nearly 290,000 maternal deaths reported annually around the world.

New Programs Introduced. In 2015, CHAI began working in three new program areas: viral hepatitis, pneumonia and cancer. CHAI began work to help governments develop effective treatment programs for viral hepatitis, the seventh highest cause of mortality in the world, with approximately 1.4 million deaths per year. Additionally, CHAI's Essential Medicines program expanded beyond just diarrhea to include treatment of pneumonia, which is the leading killer of children under five globally. CHAI also established a partnership with the American Cancer Society to support cancer treatment in Sub-Saharan Africa, where it is estimated that fewer than 10 percent of patients in need receive chemotherapy treatment.



WHERE WE WORK

★ BOSTON, MA, USA
GLOBAL OPERATIONS

Countries where CHAI currently operates program activities:

32

Countries participating in CHAI procurement consortium activities:

77

Countries with a CHAI country office:

30

MAP KEY:

- Procurement Consortium Countries
- Countries with offices and programs
- Program and Procurement Consortium Countries
- Countries with offices, programs, and procurement consortium members

2016 PROGRAM COUNTRIES

Countries where CHAI had programmatic engagement with the government in 2016.

Botswana	Mozambique
Cambodia	Myanmar
Cameroon	Namibia
Democratic Republic of the Congo	Nigeria
El Salvador	Panama
Ethiopia	Papua New Guinea
Guatemala	Rwanda
Haiti	Sierra Leone
Honduras	South Africa
India	Swaziland
Indonesia	Tanzania
Kenya	Uganda
Lao PDR	Ukraine
Lesotho	Vietnam
Liberia	Zambia
Malawi	Zimbabwe

2016 COUNTRY OFFICES

Countries where CHAI operated out of an office location in 2016.

Botswana	Nigeria
Cambodia	Panama
Cameroon	Papua New Guinea
Democratic Republic of the Congo	Rwanda
Ethiopia	Sierra Leone
Haiti	South Africa
India	Swaziland
Indonesia	Tanzania
Kenya	Uganda
Lao PDR	Ukraine
Lesotho	United States
Liberia	Vietnam
Malawi	Zambia
Mozambique	Zimbabwe
Myanmar	
Namibia	

2016 PROCUREMENT CONSORTIUM MEMBER COUNTRIES

Procurement Consortium Member Countries have access to CHAI-negotiated price reductions for key high-quality medicines and diagnostics

Anguilla	Chad	Guinea-Bissau	Morocco	South Africa
Antigua and Barbuda	Chile	Guyana	Mozambique	Sri Lanka
The Bahamas	China	Haiti	Myanmar	St. Kitts and Nevis
Barbados	Colombia	Honduras	Namibia	St. Vincent and the Grenadines
Belize	Commonwealth of Dominica	India	Nepal	Suriname
Benin	Democratic Republic of the Congo	Indonesia	Niger	Swaziland
Bhutan	Dominican Republic	Jamaica	Nigeria	Tanzania
Bolivia	Ecuador	Kazakhstan	Pakistan	Togo
Botswana	El Salvador	Kenya	Panama	Trinidad and Tobago
Brazil	Ethiopia	Kyrgyz Republic	Papua New Guinea	Uganda
British Virgin Islands	Gambia	Lao PDR	Paraguay	Ukraine
Burundi	Ghana	Liberia	Rwanda	Vietnam
Cambodia	Grenada	Malawi	St. Lucia	Zambia
Cameroon	Guatemala	Mali	Sao Tome and Principe	Zimbabwe
Cape Verde	Guinea	Mauritius	Senegal	
Central African Republic		Monserrat	Sierra Leone	

HIV/AIDS

GLOBAL INCREASE IN HIV TREATMENT

19.5 M

people living with HIV receiving ART by the end of 2016, a

153%

increase since 2010.

DECREASED TREATMENT COSTS FOR FIRST LINE REGIMENS

CHAI cut costs from
\$600
per patient per year,

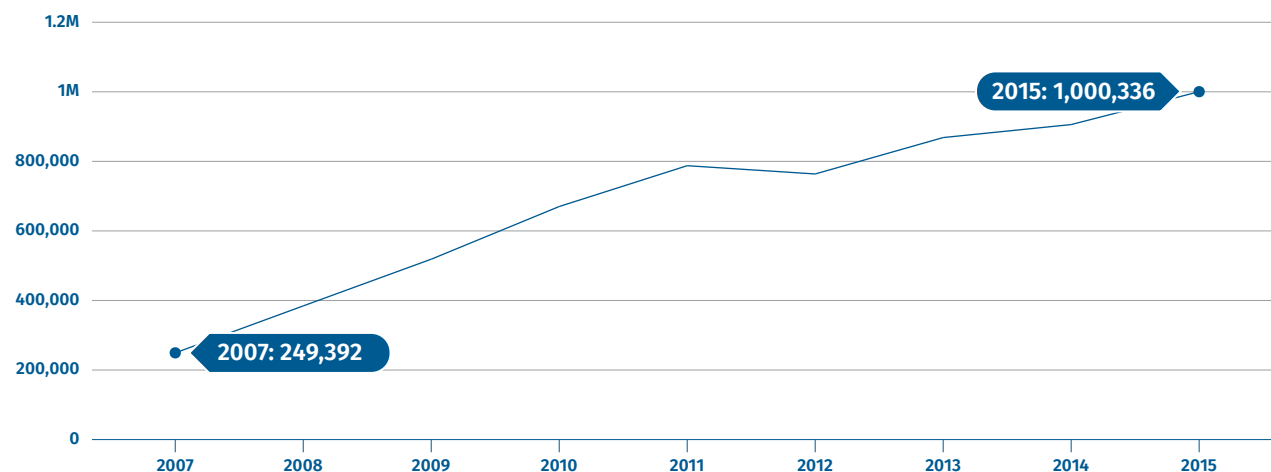
to less than
\$75
per patient per year.

SCALE UP OF PEDIATRIC AIDS TREATMENT

In 2005,
10,000
HIV-infected children were on treatment in the developing world outside of Brazil and Thailand.

In 2016,
920,000
children were on treatment globally.

GLOBAL EID TESTING VOLUMES IN LOW- AND MIDDLE-INCOME COUNTRIES



Complete data for 2016 unavailable.

Since 2002, CHAI has worked to improve access to diagnosis, prevention and treatment for those impacted by HIV/AIDS in the developing world. Alongside our partners, CHAI has helped save the lives of over 11.8 million people and significantly lowered the prices of high-quality treatments.

Despite the remarkable progress to stem the HIV/AIDS crisis to date with declines in incidence rates across high-endemic areas, a rapidly growing population of youth and adolescents has led the absolute number of new infections to stagnate since 2010 at around 2.1 million per year globally. The response is at a turning point: accelerate and break the cycle of infection while the overall costs are manageable, or let the epidemic continue to grow and face far greater future costs in both funding and human lives.

Bringing the HIV pandemic under control and saving tens of millions of lives is within reach and it is critical to maintain strong efforts and investments, taking a smarter, more targeted approach.

CHAI is working alongside our government partners to address these challenges and accelerate the response to control the epidemic. In 2016, CHAI continued this work with partners to expand HIV testing, increase access to quality care, and scale up proven interventions to prevent disease transmission. CHAI helped several countries adopt new guidelines from the World Health Organization (WHO) to initiate treatment for all people diagnosed with HIV regardless of disease progression, and helped improve access to newer and better treatment and prevention options.

TEST AND TREAT

In September 2015, the WHO released new recommendations removing all limitations on eligibility for antiretroviral therapy (ART) and recommending the initiation of ART for all people living with HIV, regardless of disease progression. Evidence has shown that the earlier patients begin treatment, the better their health outcomes and the less likely they are to transmit HIV to others. In 2016, CHAI worked with partners in multiple countries to help governments adopt this new policy, known as “Test and Treat” or “Test and Start”.

In **Lesotho**, CHAI supported the government to better understand the impact of the adoption of Test and Treat, including the potential costs to the country



RIDERS FOR HEALTH WORKER IN LESOTHO



MAXART EARLY ACCESS TO ART FOR ALL PROGRAM
IN SWAZILAND

and the number of people who would be affected. CHAI's evaluation helped Lesotho become the first country in Sub-Saharan Africa to launch Test and Treat nationally in April 2016. **Tanzania** launched implementation of their Test and Treat strategy in October 2016. CHAI provided the Ministry of Health with analysis on the number of antiretroviral (ARV) medications and diagnostic commodities needed to fully implement the policy, and actively supported advocacy and resource mobilization.

In **Swaziland**, early results from the groundbreaking MaxART Early Access to ART for All (EAAA) study helped drive the government to adopt the WHO HIV treatment guidelines. In **India**, CHAI successfully worked with National AIDS Control Organization (NACO) to plan adoption of a Test and Treat strategy that is due to be launched across the country in 2017. CHAI supported **Zambia** with various ARV costing scenarios to help better understand the impact of adopting Test and Treat. This process helped inform the revision of the 2016 HIV treatment guidelines which have since been launched and are being implemented.

ACCESSING BETTER TREATMENTS

Newer treatments with fewer side effects enable patients to continue treatment, in turn saving lives and limiting the spread of disease. As the number of patients receiving treatment continues to rise, the patient population is more diverse and a one-size-fits-all service delivery model is not equipped to address the patient and health system needs. Differentiated models of care can reduce the burden of HIV treatment on both the patient and the health system. CHAI's work with partners has helped increase access to newer and better HIV treatment and prevention options.

In 2016, CHAI helped facilitate accelerated introduction of improved ARV medications in 11 countries with support from Unitaid and the United Kingdom's Department for International Development (DFID). In a significant step, the U.S. Food and Drug Administration (FDA) approved the CHAI-supported generic dolutegravir (DTG), a superior first-line alternative to the current standard of care. Taken with other HIV treatments, DTG is less toxic and more effective than previous options, with faster viral suppression and fewer side effects. The new medication is expected to play a critical role in progress towards the UNAIDS 90-90-90 goals by improving medication adherence. The approval, combined with support from CHAI and the Unitaid Optimal ARV grant, has already led to early DTG orders from **Kenya, Nigeria and Uganda**. CHAI projects a 20-30 percent reduction in costs for first-line treatments as a result of the introduction of fixed-dose combinations that include tenofovir (TAF) and DTG.

To help increase the uptake of optimal ARVs in countries like **Ethiopia**, CHAI led provider trainings and the development of evidence-based forecasts based on Test and Start recommendations and recent ART regimen data. CHAI also augmented ARV procurement through price negotiations. This

work helped to increase the uptake of optimal ARVs from 32 to 64 percent. In **Malawi**, CHAI supported the Ministry of Health to better understand how different models of care operate and identify opportunities to further improve these models moving forward. Malawi is a leader in developing pragmatic and innovative approaches to optimizing HIV service delivery, implementing several innovative methods to streamline services and provide different types of patients with visits tailored to their needs. Working with the Ministry of Health with support from the Bill & Melinda Gates Foundation, CHAI conducted an evaluation of three different service delivery models: fast-track refills, community ART groups, and longer prescription refills. This work revealed that while these three models are successfully providing a better patient experience to many HIV treatment patients and thus ideally improving retention and viral suppression, there are specific areas that can be improved upon such as the accuracy of patient differentiation among the health workers. Findings of this project will be carried forward by the Ministry of Health to improve program design and implementation.

In addition to increasing access to better treatment, CHAI's HIV diagnostic work is helping lead to better long-term care for people living with HIV. Viral Load (VL) monitoring allows health workers to more accurately identify patients at risk of treatment failure. Once identified, patients with elevated VL can receive treatment adherence counseling or be switched to a more effective second-line treatment regimen if necessary due to drug resistance. CHAI's work globally to help scale up conventional VL testing has resulted in an estimated US\$24.1 million in savings, with approximately 3.4 million tests procured to date at or below the Global Access Price. Globally, the scale up of VL testing has resulted in over 9 million tests conducted in 2016, providing a better quality of care for these patients in resource-limited settings.

In **Malawi**, CHAI provided technical assistance to the Ministry of Health to develop and launch the VL Scale up Plan and assisted with forecasting, reviewing of supplier invoices and distribution of VL commodities. This work resulted in the completion of nearly 44,000 tests above the 2016 target of 231,000 tests, helping to improve treatment outcomes for thousands of patients. In **Swaziland**, CHAI identified over 12,000 unfilled lab results with estimated cost of over US\$60,000, and developed facility-specific interventions in collaboration with the Swaziland National AIDS Program (SNAP) and PEPFAR clinical partners to address this inefficiency.

PEDIATRIC HIV DIAGNOSIS AND TREATMENT

In 2005, CHAI catalyzed the scale up of pediatric AIDS treatment. When CHAI's pediatric initiative was first launched, around 75,000 HIV-infected children (11 percent of those in need) were on treatment in developing countries, only 10,000 of whom were outside Brazil and Thailand. With support from Unitaid, the Children's Investment Fund Foundation (CIFF), ELMA Philanthropies and the Elton John AIDS Foundation (EJAF), CHAI cut the cost of WHO-



In October 1999, my cousin died of HIV/AIDS-related TB complications... At this time in Kenya, very few people knew what HIV was or how to deal with it. Soon after the funeral, I resolved to find out as much as I could about this mysterious disease.”

— **Gerald Macharia**
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RIDERS FOR HEALTH PROGRAM IN LESOTHO

recommended first-line regimens from US\$600 per patient per year to less than US\$100 and helped to bring improved pediatric formulations to the market, made early infant diagnosis affordable and accessible in dozens of countries and enabled thousands of health workers to deliver pediatric treatment through clinical training and mentoring programs. By 2016, there were 920,000 children on treatment globally. In 2016, CHAI continued to work with partner governments and donors such as Unitaid and ELMA Philanthropies to improve access to testing, prevention and treatment for infants and older children.

Despite the reduction in rates of mother-to-child transmission of HIV, there are still over 400 infants born with HIV every day. Without treatment, up to 30 percent of infected children will die by their first birthday, and half by their second. Early infant diagnosis (EID) is a gateway to care and treatment for HIV-exposed infants up to 18 months, who cannot be diagnosed using more widely available HIV rapid tests. Global EID testing volumes have increased to over 1.1 million tests in 2016, up from fewer than 100,000 tests per year when CHAI's EID program began in 2007. However, coverage remains low and gaps still exist within EID programs causing long test result turnaround times and high rates of loss to follow-up before infected infants can begin treatment. CHAI is working to address these issues through the introduction of point-of-care (POC) EID devices, simpler and easier-to-use technologies that take diagnostic testing out of the laboratory and bring it closer to where patients receive care. POC testing has a significant impact on patient outcomes by enabling faster treatment initiation for infected infants via same-day test results.

A CHAI-supported impact study in **Mozambique** showed that use of POC EID testing increased ART initiation and retention in care, and allowed earlier ART initiation compared to conventional centralized EID testing. The dramatic improvements in result turnaround time led to 90 percent of infants tested on POC devices initiating ART within 60 days of sample collection, compared to just 13 percent of those tested on centralized platforms. With support from Unitaid to accelerate access to innovative diagnostics over eight years, CHAI continues to improve the effectiveness of EID programs through the scale-up of POC technologies. CHAI will support the scale-up of POC EID testing in 10 countries (Cameroon, DRC, Ethiopia, Kenya, Malawi, Mozambique, Senegal, Tanzania, Uganda and Zimbabwe) through 2020.

With funding from ELMA Philanthropies, CHAI also supported the development and implementation of improved national policies with guidance to better identify infected children and link them to care. This work focused on identifying otherwise under-prioritized older children who may have slipped through the elimination of HIV transmission from mother-to-child cascade. In **Uganda**, a five-day intensive training program to facilitate routine testing at priority entry points such as outpatient, pediatric inpatient, tuberculosis (TB) and Nutrition wards has now been rolled out in high-volume facilities in 85 out of 112 districts in the country. In **Malawi**, the development of operational

guidance for improving and documenting index case-testing (testing children of HIV-positive adults) increased testing by 5.5 times in the five priority districts between October and December in 2016, with disease positivity rates ranging from 8-19 percent. These results indicate that index testing can be an effective strategy to accelerate pediatric identification and should be scaled nationally and in other countries. In **Zambia**, CHAI complemented existing testing policy through the development of operational guidance for children that has been nationally adopted by the Ministry of Health, resulting in routinized testing in newly activated entry points, such as Nutrition and TB wards in priority facilities.

Targeted testing in **Zimbabwe** using a five-question screening questionnaire resulted in testing and finding approximately 70 percent more children in priority sites. This screening algorithm has now been adopted in the National Operational and Service Delivery Manual and HIV testing services (HTS) Guidelines, and will be scaled nationally. In **Lesotho**, CHAI worked with a consortium of partners to provide community-based testing to nearly 43,000 children, many of who likely would never have made it to a facility.

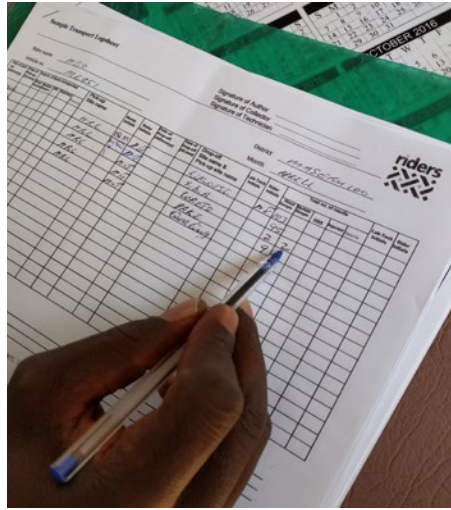
In an effort to better deliver pediatric treatment, CHAI also conducted pediatric mentorship visits in 20 selected high-volume care and treatment health facilities across **Tanzania** to support the dissemination of WHO recommendations to provide ART to all HIV-positive children under 15, regardless of their disease progression or adherence to treatment. Mentors trained and supported health workers to improve the identification of HIV-infected children and initiate treatment with high-quality ARV medication. As a result of these efforts, EID coverage improved by 17 percent, rates of resuming treatment children lost to follow up improved by 36 percent and 575 children were initiated on ART between November 2015 and June 2016.

In **India**, CHAI's data-driven and evidence-based approach helped NACO to improve efficiency of the EID program by optimizing a testing algorithm that minimized loss to follow-up. CHAI is also supporting the Ministry of Health in **Cameroon** to improve EID service delivery as well as the introduction of new pediatric ARV formulations.

TOOLS FOR PREVENTION

In addition to ensuring better and more effective treatments for patients, CHAI is also working to curb the spread of the disease through increased access to critical prevention tools including voluntary medical male circumcision (VMMC) and oral pre-exposure prophylaxis (PrEP). Through prophylactic use of ARV medications, oral PrEP has been shown to reduce the risk of HIV transmission and the WHO has recommended its use globally among those at substantial risk of HIV.

In 2016, CHAI worked with the government of **South Africa** to introduce oral PrEP as part of a combination prevention package, making it the first country



RIDERS FOR HEALTH LOGSHEET IN LESOTHO

in Sub-Saharan Africa to begin provision of this new tool. Following a decision by the South African National Department of Health (NDoH) to proceed with policy development for oral PrEP use, CHAI's work drove completion of national oral PrEP policy and guidelines, the development of a monitoring and evaluation framework and related tools and reporting templates and the establishment of a secure commodity supply chain (including four registered generic oral PrEP products). South Africa's oral PrEP implementation seeks to empower those most at risk for HIV with an additional safe, effective and discrete HIV prevention option. The WHO continues to look to South Africa's program as an example as it develops PrEP implementation guidance, particularly around monitoring and evaluation. Other countries continue to evaluate the use of oral PrEP and some are moving forward with introduction, including Kenya, Zimbabwe and Lesotho.

CHAI also supported the governments of **South Africa, Zambia and Zimbabwe** to scale up VMMC, shown to be one of the most cost-effective HIV prevention strategies. In 2016, these three countries conducted over 900,000 VMMCs, averting tens of thousands of new HIV infections across southern Africa. To ensure sustainability of VMMC programming within countries' long-term HIV response, CHAI worked with the Ministries of Health to improve national target-setting processes and monitoring and evaluation systems, while also supporting South Africa to start transitioning donor-driven service delivery to the government.



Gerald Macharia

Vice President, Regional Director,
East and Southern Africa

Country Director,
Kenya

Immediately upon graduating college, I entered the corporate world. I began work in marketing and management and soon became CEO of Faulu Microfinance Bank, a regional financial services institution that I built from a small non-governmental organization (NGO) program to one of the best in the region. Little did I know that one event would soon change the course of my life.

In October 1999, my cousin died of HIV/AIDS-related TB complications. I was away on a family holiday and only learned of his death on my way home. At this time in Kenya, very few people knew what HIV was or how to deal with it.

Soon after the funeral, I resolved to find out as much as I could about this mysterious disease that was ravaging the Kenyan population. Without knowing what impact it would have, I created a credit facility for women afflicted by HIV in one of Nairobi's slums. This successful effort brought me into direct contact with the face of HIV through these women, and I realized that all 800 of them were a minuscule representation of the tens of thousands out there who needed urgent support to cope with this epidemic.

In 2005, a friend informed me that the newly-formed CHAI was looking to set up operations in Kenya. I immediately expressed interest in becoming CHAI's first Country Director and was hired and tasked with setting up the Kenya office. Despite the many challenges we faced that first year, the three of us working at CHAI Kenya at the time managed to get 1,500 children on HIV treatment by the end of 2005. By the end of the next year, there were a total of 3,000 on treatment.

The focus on treatment in those early years helped me to realize that we desperately needed to rethink the process of diagnostics and treatment monitoring. Fifty percent of HIV-positive children would die before their second birthday if not caught and treated early. However, in 2006, Early infant diagnosis (EID) of HIV (the gold standard for infant testing) was restricted to just a few labs.

To address this problem, my team in Kenya developed a testing algorithm and wrote national EID guidelines and then

approached molecular diagnostics companies to reduce diagnostic equipment prices. The first instrument placement and complete end-to-end cost-per-test model was implemented in Kenya and became a global model.

Kenya had a number of other firsts that also became models for the rest of the world. Kenya was the first country to design an effective EID sample transport system and it was the first to develop a now globally-accepted electronic EID result transmission system. These were proud and deeply satisfying moments for me, especially when the number of children on treatment steadily rose and mortality decreased. At the end of 2016, 80,000 children were on treatment in Kenya.

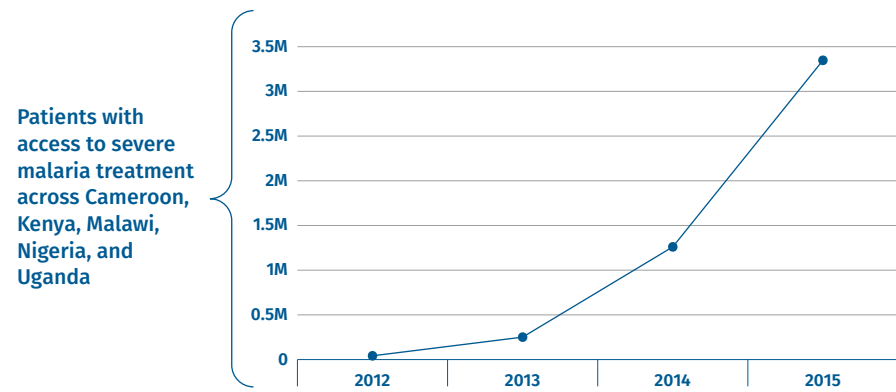
Building on our success around HIV/AIDS, we began to tackle other diseases, including malaria. Our work has helped reduce prices for critical medication like high-quality artemisinin-based combination therapy (ACT) and introduce more efficacious treatment for severe malaria.

We have also worked to reduce deaths from diarrhea (the second largest killer of children worldwide), including the development of a low priced co-packaged zinc and oral rehydration salt (ORS) product that came into market inside six months. Zinc/ORS is a critical tool to help reduce the severity of diarrhea in children. Even so, the two were not packaged together, making access and treatment more difficult. Finding the right manufacturer, building a business case for the co-pack and bringing it into the public and private sector markets was one of the most exciting adventures of the many that I have had at CHAI. In 2016 alone, nearly 3 million co-packs will have moved in both markets.

Even with all of these successes, there are times I wonder if I have bitten off more than I can chew. The multitude of public health issues in the world will most likely keep increasing. Yet the fulfillment of knowing I saved many lives by doing what I do and trying to do it well is a legacy I owe myself.

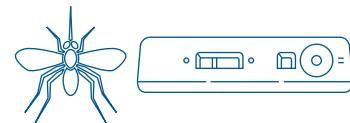
MALARIA

UPTAKE OF SUPERIOR TREATMENT FOR SEVERE MALARIA



2016 data not available.

RAPID DIAGNOSTIC TESTS IN EAST AFRICA



Facilitated sales of
5 Million +
low cost, high-quality malaria rapid diagnostic tests since 2013



CHILD RECEIVES MALARIA MEDICATION IN SWAZILAND

Malaria is a largely preventable and treatable disease, yet each year it kills over 400,000 people globally—mostly children under five years of age. Another 200 million people become ill, and more than 3.2 billion people remain at risk of contracting malaria worldwide. CHAI believes that malaria elimination is possible in the near-term in many regions of the world and is working with partners around the globe to achieve this goal by scaling up proven interventions and improving the effectiveness of anti-malaria programs. Throughout 2016, CHAI continued its work in Asia, Africa and the Americas to combat the disease and help countries reach their elimination goals.

ASIA

In the Greater Mekong Subregion, including the CHAI partner countries of **Cambodia, Laos, Myanmar and Vietnam**, multi-drug resistant malaria threatens the substantial gains made in reducing the disease in the region, and potentially around the globe. In response to this threat, in May 2015, these countries committed to an accelerated target for regional malaria elimination. To help follow through on this commitment, CHAI engaged national malaria

programs to develop new, detailed, evidence-based strategies to guide their preparation for elimination and ensure effective implementation.

Over the past year, with financial support from the Bill & Melinda Gates Foundation, CHAI evaluated key drivers of malaria transmission, gaps in surveillance and disease tracking, and operational management structures that require strengthening to achieve elimination. CHAI facilitated rigorous operational planning exercises to help national malaria programs determine actions necessary to achieve elimination goals and supported detailed costing of these national plans to identify funding gaps and support future resource mobilization. These plans will be used in 2017 to inform national funding requests for the US\$243 million regional Global Fund application, which will catalyze elimination efforts in the region.

In **India**, CHAI supported the National Vector Borne Disease Control Program with malaria elimination scenario planning to help create a technically, operationally and financially viable pathway to eliminate malaria by 2030. CHAI identified critical gaps in diagnostic and treatment practices in both the public and private sectors in order to craft targeted strategies for elimination. With support from CHAI, the state of Gujarat launched its first ever State Action Plan for Malaria Elimination (2017-2022) to achieve a target of zero indigenous cases by 2022.

AMERICAS

With support from the Bill & Melinda Gates Foundation, CHAI is providing technical assistance to national malaria programs across Central America and Hispaniola to help them build programs that can successfully and sustainably eliminate malaria by 2020.

Although the number of malaria cases in **Panama** has fallen by 36 percent since 2007, the remaining cases are found in remote areas of the country, often lacking access to quality health services. In 2016, CHAI worked in partnership with the Government of Panama and the indigenous Guna Yala communities along the Atlantic coast to launch a new system of community health workers. This new model enables members of the community to receive rapid malaria diagnosis in high-risk transmission areas with



In the future, eliminating malaria and hepatitis C, and minimizing the TB burden in the Mekong region are within reach. Ambitious goals like these are what drive me to continue to carry out this lifesaving work.

— Dang Ngo
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COMMUNITY HEALTH WORKER TRAINING IN MESO AMERICA

immediate treatment when cases are positive. Collecting quality data on all cases will also allow the country to further target interventions where they are needed the most. With the improved involvement of communities, this new model has the potential to help Panama secure its goal of malaria elimination in the next few years.

In **Guatemala**, CHAI began working with the sugar cane association to better understand the main drivers of malaria transmission in the department of Escuintla, the area with the highest malaria risk in the country. This work will better inform what interventions will have maximum impact to eliminate the disease. In **Haiti**, CHAI worked with the National Malaria Control Program and the Division of Epidemiology, Laboratory and Research to develop a plan and platform to transition to a national case-based malaria reporting system using an electronic interface. This surveillance system will report detailed data on individual malaria cases rather than aggregate numbers, allowing much more detailed understanding of malaria in the country.

AFRICA

Accelerating progress towards elimination

In 2016, with support from the Bill & Melinda Gates Foundation, CHAI worked closely with malaria programs in southern Africa to help them to reach elimination targets. CHAI supported governments to implement high-impact interventions in priority areas of ongoing transmission by improving the collection, management and analysis of data and encouraging evidence-based programmatic decision-making. CHAI supported several countries to adopt geographic information system technologies, electronic data collection tools and dashboard visualizations to improve the planning, implementation and evaluation of indoor residual spraying campaigns. These campaigns help protect communities from malaria by killing or repelling the mosquitoes that transmit it.

In **South Africa**, CHAI supported design and implementation of an initiative to send field teams out into communities reporting malaria cases to investigate the drivers of transmission and identify solutions for eliminating them. CHAI also supported development of a national notification form for integrated disease surveillance and the scale up of MalariaConnect—a tool for real-time notification of malaria cases via mobile phone—to all public clinics and community health centers in malaria endemic areas. Quick notification of malaria cases facilitates improved disease tracking and more rapid, targeted response.

In **Swaziland**, CHAI helped the National Malaria Control Program implement an operational study to determine whether a targeted mass drug administration approach in response to a malaria case is an effective way of preventing subsequent cases. The results will inform the subsequent approach taken in the national elimination strategy and help realize Swaziland’s ambitious goal of being the first Sub-Saharan country to

eliminate malaria. CHAI also worked in collaboration with the Ministry of Health and University of Oslo in **Zimbabwe** to train 326 health workers from the 20 elimination districts on a new system for reporting individual malaria cases, providing detailed surveillance data to enable more targeted, efficient programs. The system aims to streamline the malaria case data collection and reporting process, increase timeliness and accuracy of reporting and link intervention and entomological data.

In **Namibia** and **Swaziland**, CHAI supported government programs to expand their intervention toolboxes through pioneering work on permanent housing improvements aimed at preventing mosquitos entering household structures. These improvements have been shown to more sustainably reduce transmission than mosquito spraying or nets and have other positive health benefits. Results from a small-scale feasibility assessment in Namibia show that there is high uptake of the housing improvements in selected communities and suggest that with careful planning, local ownership, and regular supervision and cross-ministerial engagement, housing improvements have the potential to become a cost-effective vector control intervention for elimination.

Reducing illnesses and deaths

In East, West and Central Africa, with support from the United Kingdom’s Department for International Development (DFID) and Unitaid, CHAI worked to increase access to the most effective drug for severe malaria, injectable artesunate. By June 2016, over 18 million vials of injectable artesunate had been delivered across **Cameroon, Kenya, Malawi, Nigeria** and **Uganda**, with the potential to save an additional 70,000 lives over the course of the project.

CHAI also continued to work with manufacturers and importers of high-quality, low-cost rapid diagnostic tests to reduce inappropriate usage of malaria medications and improve disease intelligence, launching or expanding programs to scale up the availability and use of malaria rapid diagnostic tests in the public and private health sectors of **Kenya, Nigeria, Tanzania** and **Uganda**. By training public and private providers on the appropriate use of diagnostic tests and reporting practices, CHAI facilitated sales of 2 million tests in the private health sector in 2016, while preventing an estimated 2.2 million effective malaria drugs from use on patients without malaria.



HEALTH WORKER PERFORMS RAPID DIAGNOSTIC TEST ON POTENTIAL MALARIA PATIENT IN TANZANIA



Dang Ngo

Senior Regional Director,
Greater Mekong

Country Director,
Vietnam

I grew up privileged. Access to clean water, food, health care and education was never an issue during my childhood in California. While we were never wealthy from an American perspective, we always had enough to meet our basic needs. This privilege is something most of the world's population lacks, and I am mindful that small changes to my own family's circumstances could easily have shifted our fortune for the worse. It was luck that enabled my family to leave Vietnam for America in 1975 just before the war ended, ensuring that we did not have to suffer through the country's rebuilding period, and it drives me to give back.

After a five-year career in technology, creating information systems for universities, I decided to leave to follow my dream of becoming a photographer and traveling the world. I photographed whatever interested me, selling my photos to fund my travel and volunteer activities. The people I met during this period were inspirational, and it was their stories and hard work that moved me to find a way to help those in need.

While facilitating small-scale health projects for communities in Southeast Asia, I was interested in having a greater impact and therefore returned to school and got a Masters of Public Health degree in 2008 from the Johns Hopkins Bloomberg School of Public Health. Shortly afterwards, I joined CHAI as a Program Coordinator in my native Vietnam and got to fulfill another dream of understanding my heritage, not just as a distinct war event from an American perspective as most U.S. history books portray, but as a living, evolving, dynamic country in a fast-growing part of the world.

I am proud of our work and close partnership with the Ministry of Health in strengthening Vietnam's health system capacity and in helping the government reach national health targets. When CHAI began work here in 2006, only nine percent of children were receiving lifesaving antiretroviral therapy for HIV/AIDS. By 2015, that number had increased to 86 percent nationally. AIDS used to be a death sentence for children and now, in provinces where

CHAI provided technical support, 97 percent of children were surviving after 12 months on antiretroviral therapy.

CHAI helped establish an Early Infant Diagnosis testing program to detect HIV in infants. Today this program tests 1,800 infants annually for HIV and has started 79 percent of them successfully on antiretroviral therapy. To reduce tuberculosis (TB), we introduced isoniazid preventative therapy which, combined with anti-retroviral therapy, reduced TB incidences by 97 percent among nearly 2,000 children living with HIV. A CHAI-initiated SMS-delivered referral-support software was shown to reduce loss to follow-up of HIV-diagnosed patients registering for treatment by 50 percent, addressing one of the biggest challenges in HIV programming.

While these are the government's achievements, I am proud that CHAI's staff played a significant role along with other partners in assisting the government. And there is still much more to do.

CHAI empowers staff to use our creative freedom to solve large challenges with minimal bureaucracy, whether it's upstream market-shaping work or building government-led, strong and sustainable health systems in countries. CHAI's values and structure facilitate our impact.

In the future, eliminating malaria and hepatitis C, and minimizing the TB burden in the Mekong region are within reach. Ambitious goals like these are what drive me to continue to carry out this lifesaving work.

ESSENTIAL MEDICINES FOR DIARRHEA AND PNEUMONIA

Diarrhea and pneumonia are the two largest killers of children worldwide, yet both are preventable and easily treated with the right medications and equipment.

In 2012, CHAI launched work in **India, Kenya, Nigeria and Uganda** to increase access to the World Health Organization (WHO) recommended treatment for diarrhea—the combination of oral rehydration salts (ORS, to replace fluids and essential salts lost to dehydration) and zinc (to reduce diarrhea duration and severity and protect from future episodes). Together, ORS and zinc can prevent over 90 percent of diarrhea-related deaths at a cost of less than US\$0.50 per child. Even so, many children never receive these lifesaving treatments due to lack of awareness and access. CHAI's program focuses on improving treatment rates to reach as many children as possible.

In CHAI's four focal countries, average zinc coverage grew from 1 to 31 percent and average ORS coverage increased from 35 to 48 percent. When compared with other high-burden countries, the annual coverage increases in areas where CHAI worked were three times greater for ORS and six times greater for zinc.

This success is inspiring efforts to replicate and further expand these results. It has also motivated CHAI to deliver a similar approach to help to improve treatment rates for children with pneumonia—the largest killer of children worldwide.

DIARRHEA

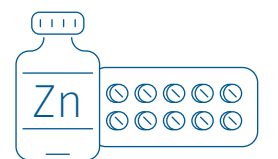
From 2012 to 2016 in **India**, with support from the IKEA Foundation and the Bill & Melinda Gates Foundation, CHAI partnered with the Governments of Uttar Pradesh, Madhya Pradesh and Gujarat to support the scale-up of zinc and ORS. These states contributed to over 40 percent of deaths from diarrhea. CHAI used an approach that focused on ensuring consistent supply

TREATMENT COVERAGE

Compared with high burden countries where CHAI was not working, annual coverage increases in CHAI geographies were



3X greater for ORS, and



6X greater for zinc.



DISCUSSION WITH LOCAL COMMUNITY ABOUT THE IMPACT OF HOME COOKING PRACTICES ON PNEUMONIA IN MADYA PRADESH, INDIA

and dispensing practices for zinc and ORS and reinforced messaging among caregivers and providers. These interventions reached over 125,000 villages and an estimated 24.6 million children under five years of age. In particular, the program created an innovative, self-sustaining last-mile distribution channel that brought products and promotion efforts to rural villages. By connecting local entrepreneurs to high-quality zinc and ORS suppliers, the program streamlined the supply chain to rural markets.

By 2016, CHAI’s targeted promotion efforts reached approximately 145,000 rural health providers and drugstores and over 100,000 community health workers. The mass media campaigns reached over 230 million people. As a result of these efforts, treatment coverage has increased significantly since the program began—from 22 percent to 48 percent for ORS and from under 1 percent to 31 percent for zinc, on average, across the three states. These gains were seen equally, if not more so, among rural and poorer populations. In addition, private providers who received information were more likely to dispense ORS and zinc compared to those who did not. Those exposed to the mass media campaign in these states also had higher ORS and zinc coverage rates.

In **Nigeria**, with support from the Norwegian and Canadian Governments, CHAI’s efforts to improve access to zinc and ORS helped to increase combined zinc and ORS coverage from 3 to 31 percent across the eight focal states. In the same period, the disparity in ORS coverage between the wealthiest and poorest households decreased by approximately 70 percent; ORS coverage was even higher in rural versus urban households by endline. More than 15 new zinc and low-osmolarity ORS products—including co-packs—were introduced to the local Nigeria market, resulting in a 70 percent drop in wholesale price. Private providers who received peer detailing were nearly twice as likely to recommend ORS and zinc compared to those who were not.

CHAI’s work alongside the Ministry of Health in **Uganda**, with funding from ELMA Philanthropies and Absolute Return for Kids (ARK), increased combined coverage of zinc and ORS to almost 30 percent, the second highest national combined coverage among the 10 countries with the highest burden of childhood diarrhea globally. The approach of strengthening existing public and private sector supply chains, combined with effective government policy and regulatory frameworks, have increased the availability of essential medicines and commodities in Uganda, and is a major driver of sustainability of these interventions.

With support from the IKEA Foundation, CHAI also worked in **Kenya** to scale up national usage rates of zinc and ORS in partnership with the national and county governments from 2012 to 2016. In public health facilities, the program facilitated the introduction of co-packaged zinc and ORS—which helped to increase the dispensing rate for combined treatment from 35 to 66 percent. In the private sector, the price decreased by over 55 percent and availability of zinc and ORS increased from 30 to 78 percent.

PNEUMONIA

Pneumonia is a severe respiratory infection in which a child’s lungs fill with fluid, making it difficult for them to breathe. Pneumonia kills more children than HIV, tuberculosis (TB) and malaria combined. Estimates show that a child dies from pneumonia every 35 seconds. While accurate and timely diagnosis and treatment can prevent most of these deaths, access to effective diagnosis and treatment is often unavailable in low-resource settings.

Through support from the Bill & Melinda Gates Foundation, the IKEA Foundation and ELMA Philanthropies, CHAI has recently expanded to incorporate pneumonia diagnosis and treatment (Amoxicillin Dispersible Tablet (DT), pulse oximetry and oxygen treatment) in **India, Kenya, Nigeria and Uganda**, as well as to **Ethiopia**, complimenting diarrhea treatment efforts. The program aims to significantly increase the percentage of children with pneumonia receiving correct diagnosis and treatment.

Through these new investments, CHAI worked with the Government of **Ethiopia** in 2016 to improve the policy environment for key medications and medical equipment for the diagnosis and treatment of pneumonia, including oxygen, pulse oximeters and Amoxicillin DT. As a result, the Ministry of Health, with support from CHAI and other partners, launched Ethiopia’s first National Roadmap for Oxygen and Pulse Oximetry. This effort will accelerate access to pulse oximeters and oxygen services for treatment, including at primary health facilities. This is one of the first strategies of its kind globally and will help to prevent thousands of deaths.

In **Nigeria**, CHAI collaborated with the Pharmacists Council of Nigeria (PCN) to include Amoxicillin DT to its list of approved medicines, allowing provision of pneumonia treatment at the community level among registered proprietary patent medicine vendors (PPMVs). CHAI also worked with the Nigerian Government to further strengthen the Essential Equipment List (EEL) by including recommended specifications for oxygen commodities. For oxygen and pulse oximeters, CHAI also supported the tendering, evaluation and selection of optimal equipment in three states (Kano, Kaduna and Niger) to support first-ever procurement in each state.

In **Uganda**, CHAI worked closely with the Pharmacy Division and Ministry of Health partners to finalize the draft of the Uganda Clinical Guidelines (UCG) and subsequent updating of the Essential Medicines and Health Supplies List (EMHSL). Amoxicillin is now the recommended first-line treatment for pneumonia, Amoxicillin DT 250mg is included in the essential medicines list and three new Amoxicillin DT 250 mg products have been registered.

CHAI successfully supported efforts by PATH and other stakeholders to encourage the WHO to identify oxygen as a medicine essential for the management of hypoxemia in its Model List of Essential Medicines (EML) and list of Essential Medicines for Children (EMLc).



These values of consistently looking for innovative solutions to deliver transformational change, of not being afraid of failure and of working with urgency, are at the very core of CHAI’s culture.”

— Harkesh Dabas
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Harkesh Dabas

Senior Country Director,
India

Six years ago, I faced a major crossroads in my life. After serving almost two decades in uniform, the last five of which I oversaw strategic operations for the Indian Navy, I was presented with the option of either taking on a lucrative career with one of the major defense contractors, or more meaningful (although less financially rewarding) work with CHAI. I chose CHAI out of an abiding memory of my father who collected blood samples as a door-to-door malaria health worker. It was the right decision.

Over the last four years, CHAI India has grown from an office of less than 10 people to a close-knit team of almost 100 bright, passionate and dedicated individuals. Their selflessness, sacrifices and commitment to serve is a constant inspiration and a beacon of hope.

Months ago, I had a lively discussion with a well-respected leader of a large Indian conglomerate. We lamented the big challenges we as a country faced: a large and growing population, debilitating poverty, rapid urbanization, poor infrastructure and endemic corruption. Yet, as I reflected on the discussion, I could not have been more optimistic. Despite all its challenges, India is on the move. A drive towards greater accountability and transparency in governance and deep political will are bringing tremendous change. I see this transformation reflected in CHAI's partnership with governments, both at the central and state levels. We are working together to tackle the scourge of some of the most intractable public health problems.

Among other achievements, CHAI's partnership with governments has resulted in the fastest ever scale up of lifesaving zinc and oral rehydration salt (ORS) treatment for children with diarrhea. This effort was undertaken across the three states that account for around 40 percent of all deaths from diarrhea in the country (Uttar Pradesh, Madhya Pradesh and Gujarat) and reached an estimated 24.6 million children in over 125,000 villages. Over three years, coverage of ORS and zinc has increased significantly, saving the lives of tens of thousands of children. I cannot think of many organizations other than CHAI where I could have a larger impact on lives and get to serve so many people.

While India's economy gallops ahead, it remains home to more than a quarter of world's tuberculosis (TB) patients and 40 percent of children are malnourished. One-fifth of all childhood deaths under five globally occur in India. Addressing these challenges requires us to see the problems differently and take big ambitious steps. At the same time, resource constraints mandate frugal innovations across products, processes and service delivery.

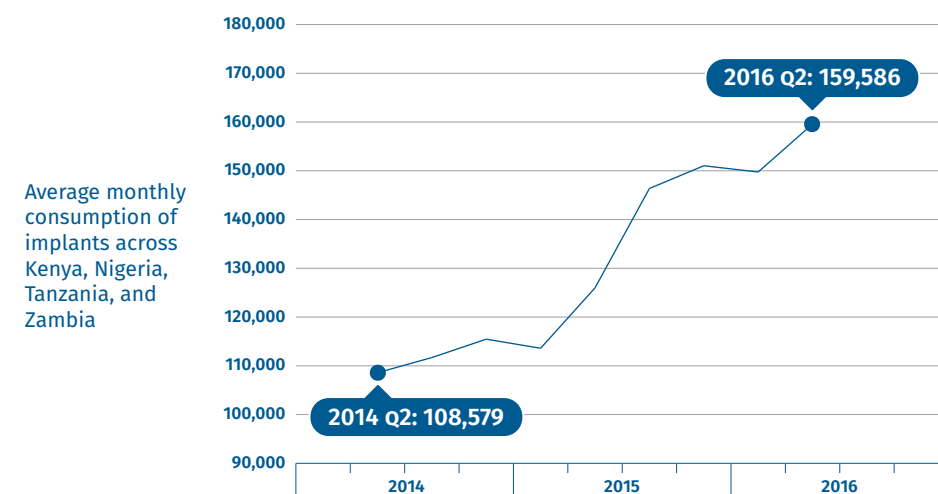
CHAI, under the guidance of the government of Madhya Pradesh, is currently executing a state-wide effort to address the burden of malnutrition among children and anemia in adolescent girls and women. The program will reach 4.5 million children, 6.75 million adolescent girls and over two million pregnant and lactating women over the next three years and expects to reduce the burden of malnutrition amongst children and anemia amongst adolescent girls and pregnant women by at least 10 percent.

The scale and scope of the program reflects India's ambition in taking on a big and seemingly intractable challenge. Its design incorporates extensive innovations in service delivery, and its wide-ranging use of technology reflects a strong focus on operational excellence. These values of consistently looking for innovative solutions to deliver transformational change, of not being afraid of failure and of working with urgency, are at the very core of CHAI's culture. They are the reason that I and over fifteen hundred of my colleagues are committed to CHAI. There is no other organization where I would rather be.

I spent over two decades in the Armed Forces where 'service-before-self' was not only a motto, but a way of life. I never imagined that I would find another calling quite like the uniformed services. Over the past four years, CHAI India has grown beyond tackling HIV to supporting the Indian government to address other health issues such as TB, malaria, hepatitis, nutrition, immunization, diarrhea and pneumonia, and I am excited about the future challenges we may take on. For me, CHAI has not been work, but a true calling.

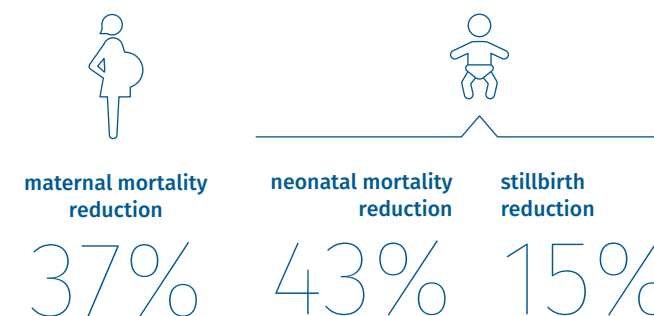
MATERNAL AND NEWBORN HEALTH AND FAMILY PLANNING

INCREASE IN AVERAGE CONSUMPTION OF IMPLANTS IN FOCUS COUNTRIES



DECREASED MORTALITY RATES

Implementation of an integrated health system approach over a 12-month period in Nigerian states of Kaduna, Kano and Katsina led to:



MOTHER AND CHILD IN UTTAR PRADESH, INDIA



WOMAN RECEIVES LONG-ACTING REVERSIBLE CONTRACEPTIVE IN BOMI COUNTY, LIBERIA

Every year, over 300,000 mothers die from complications of pregnancy and childbirth. Globally, close to 1 million newborns die on their first day of life, almost 2 million babies do not survive their first week, and another 2.5 million are stillborn. Well-timed and targeted interventions can dramatically reduce mortality for mothers and their children.

CHAI is working to ensure that mothers and their babies have access to lifesaving treatment and that all families have the tools to safely plan their families to improve health outcomes and strengthen their economic well-being.

MATERNAL AND NEWBORN HEALTH

In 2012, CHAI developed an integrated approach to dramatically and sustainably reduce maternal and neonatal mortality. Piloted in Ethiopia and scaled up in Northern Nigeria, this approach addresses critical gaps in health systems and links each level—from the community to primary health facilities to the hospital—to avert preventable deaths that occur in the 24 to 48-hour window around childbirth.

By mentoring birth attendants at all levels of the health system and connecting women to the health system via community interventions and transport, high-risk pregnancies can be identified early and tracked closely to develop birth plans to ensure that women are receiving quality care at delivery, no matter where labor begins. The approach focuses on training workers to identify potential complications early to provide necessary interventions before they become life-threatening, applying simple interventions to immediately stabilize complications and enable survival, ensuring the timely referral of more complicated cases to appropriate health facilities for proper treatment, and providing critical postnatal care. Recognizing that a large number of births occur at home, CHAI’s approach includes targeting the quality of services available to home births, while working toward the goal of every woman delivering her baby in a well-equipped facility by an experienced skilled birth attendant. Taking these basic and necessary steps can significantly reduce maternal and newborn mortality.

Nigeria contributes to 19 percent of the global burden of maternal deaths. About 250,000 newborns die in Nigeria within the first month after birth. This mortality is particularly concentrated in the northern region of the country. To help to reduce these often-preventable deaths, CHAI partnered closely with the Nigerian federal and state governments in the three states of Kaduna, Kano and Katsina, operating across 30 local governments with a population of around 10 million.

In 2016, two independent external evaluations demonstrated that, in the target area of 10 million people, there were rapid, consistent and continuing declines in maternal and neonatal mortality, as well as in the proportion of stillbirths. Starting from a baseline established at six months into implementation, the evaluations confirmed that the CHAI approach contributed to a sustained 37

percent reduction in maternal mortality, a 43 percent reduction in neonatal mortality and a 15 percent reduction in stillbirths within 12 months.

CHAI is now working with partner governments to roll out this approach in other countries, most noticeably in **Ethiopia** where an integrated program will commence in 2017. This builds on an initial platform of work concluding in 2016 to improve the ability of midwives to provide lifesaving services across more than 400 health facilities. As a result of CHAI’s midwife mentoring intervention, the proportion of facility deliveries across focus facilities increased by 56 percent from a 39 percent baseline of overall expected deliveries to 61 percent. Understanding that an increase in facility deliveries does not necessarily result in saved lives, CHAI is now working with the Government of Ethiopia to implement an integrated approach to maternal and neonatal health in these geographies to drive significant and sustained levels of lifesaving impact.

CHAI’s approach has not only been shown to lead to substantial reductions in the number of mothers and babies dying across some of the lowest performing geographies in the world, but it also serves as a model for ministries of health and partners looking to achieve high-impact, cost-effective and sustained mortality reductions. CHAI is currently working with a number of governments to share these lessons and help to plan future interventions.

FAMILY PLANNING

Despite the effectiveness of family planning in helping to save lives and strengthen the economic success of families, approximately 222 million women of reproductive age lacked access to contraception in 2012. That year, CHAI began work to increase access to voluntary contraceptive methods (particularly contraceptive implants) by reducing barriers such as low product availability, high prices, lack of trained providers and cultural and societal factors.

Over the past two years, with support from the Bill & Melinda Gates Foundation, CHAI helped more than 3.5 million women to begin using contraceptive implants in **Nigeria, Tanzania, Kenya and Zambia**—enabling these women to use a highly effective, long-acting contraceptive of their choice to avoid unintended pregnancies. Across the four countries, average monthly consumption of implants increased by 47 percent, in part due to CHAI’s work to strengthen the supply chain, train health workers and empower program managers to use data for performance management and decision-making. CHAI also worked through the Coordinated Supply Planning (CSP) group to help the United Nations Population Fund (UNFPA) and U.S. Agency for International Development (USAID) address funding gaps for contraceptives in the **Democratic Republic of the Congo, Kenya and Nigeria.**

In **Tanzania**, CHAI helped to increase monthly contraceptive implant usage by 79 percent. Working alongside the Ministry of Health, the University of Dar es Salaam and the Health Management Information System (HMIS) unit,



CHAI is a place where you can come to answer a calling to serve and to feel you are being effective. It is a place where I can get up every day now and know that in service to our mission my ‘work’ truly is having impact.”

— Kelly McCrystal
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CHAI helped initiate and finalize the development, training and deployment of a Family Planning Dashboard. This dashboard, used at the national and subnational levels, is increasing visibility into program performance and is empowering decision makers to take evidence-based action to improve contraceptive supply and service delivery. The dashboard has helped identify regions with fewer providers trained on family planning methods and has led to a better allocation of resources.

In **Kenya**, CHAI helped to increase average monthly consumption of implants by 178 percent and reduce stock outs across four target counties by increasing data visibility and promoting corrective action through the National Family Planning Dashboard. CHAI supported program managers within the county governments to routinely use the dashboard to identify problems and target resources for improving contraceptive availability and uptake. Program managers were particularly effective at using the dashboard to identify stock imbalances of contraceptives across facilities and supporting redistribution to avoid wastage and stock outs.

In **Nigeria**, the number of women choosing and receiving contraceptive implants each month increased by 59 percent over the course of the grant. CHAI worked in two states, Rivers and Zamfara, to more than triple average monthly implant consumption by addressing supply chain bottlenecks, hosting Contraceptive Days to increase demand, task-shifting implant provision to Community Health Extension Workers and increasing the number of health facilities staffed with a health worker trained to insert implants. CHAI also supported training for state officials and partners in 15 of 36 states in Nigeria on the National Family Planning Dashboard. This dashboard, similar to Tanzania, helps state and federal officials track and address stock outs, identify gaps in human resources and better allocate resources.

In the **Democratic Republic of Congo (DRC)**, where CHAI began its first year of work in 2016, CHAI focused on supporting the government's National Supply Chain and Reproductive Health Programs. With funding from UNFPA in DRC, CHAI supported these government programs to improve the availability of contraceptives by deepening the understanding of national contraceptive needs and supporting rational distribution. CHAI worked to build the capacity of government counterparts in contraceptive forecasting.

CHAI began to support the Ministry of Health's National Supply Chain Program to coordinate the development of a logistics management information system for pharmaceutical products and the National Reproductive Health Program in its use of electronic health-systems data (DHIS2) to improve their strategic program decision making and planning. In 2017, CHAI will support the development of a national contraceptive security committee and build the capacity of this committee to conduct stronger forecasts and manage the national supply of contraceptives.



Kelly McCrystal

Executive Vice President of Strategy
and New Initiatives

I spent 17 years in the private sector, designing and implementing custom software solutions for private companies. While I enjoyed what I did for a living, it lacked meaning. I reached a point where I felt I was at a “now-or-never” moment in my life and decided to leave the private sector to search for a purpose-driven career.

For me, the motivation to work in global health is fundamentally one of equity. With 99 percent of all maternal deaths occurring in developing countries and a child in Africa much more likely to die of cancer than a child suffering from a similar cancer in the United States, it becomes a lottery of birthplace whether a mother survives pregnancy and delivery or a child lives to see his or her fifth birthday. That's simply not right. Poverty shouldn't be a death sentence. We have a moral obligation to give every mother and child an opportunity to live a fulfilling life and to not be struck down by a preventable illness or death.

I found CHAI appealing due to its approach of bringing management system thinking to solve global health issues. The tools and interventions necessary to solve most public health issues and to prevent unnecessary death and suffering in developing countries are known. They are available to those of us who are privileged enough to live and have access to them in wealthier countries. What is required is a combination of lower prices for the drugs and tools to make them affordable, and the management systems and approaches necessary to deliver the tools and interventions at scale in our partner countries. This is at the heart of CHAI's approach to lowering overall systems costs and to scaling interventions that are known to save lives. CHAI was therefore a place I felt I could leverage my systems background to help bridge at least some part of the inequity that exists. Also, having spent my career in startups and small companies, I felt that I could potentially flourish in CHAI's decentralized and entrepreneurial culture that empowers individuals as decision makers.

I have been privileged in the past few years to oversee our work in maternal and newborn health and, in that role, be a part of

our program in Northern Nigeria where in a span of 18 months we helped to lower death rates of mothers and newborns by over 40 percent across a population area of over 10 million people. Our team in Nigeria, in collaboration with the federal and state governments and local communities and leaders have worked tirelessly to improve the lives of these families and to make the systems that led to these improvements sustainable so that more women and babies can survive childbirth and keep families intact. We're now working to expand this approach to Ethiopia, Zimbabwe and hopefully to other countries where the maternal and neonatal death rates are still unacceptably high.

There is still so much work to be done. Young girls should have the right to choose when to get married and if and when to have a child; and mothers deserve the opportunity to delay their next pregnancy and safely space the frequency of births. Millions of babies are not surviving their first month of life and, of those that do, too many will by their second birthday be cognitively impaired from chronic malnutrition and destined not to reach what could have been their full potential. Women should be afforded the same opportunities as I am to avoid getting cervical cancer through screening and early treatment. These are all challenges that we are now addressing at CHAI.

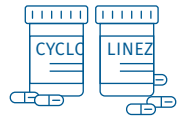
So, I stay at CHAI for the mission and the people with whom I serve and for our ability “get things done” in the service of our partner governments to address some of these inequities that still exist. CHAI is a place where you can come to answer a calling to serve and to feel you are being effective. It is a place where I can get up every day now and know that in service to our mission my “work” truly is having impact.

TUBERCULOSIS

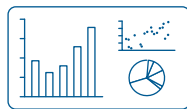
2016 ACTIVITIES IN ADDRESSING TB



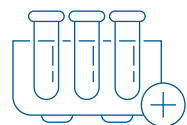
Supported governments in implementing revised WHO guidelines



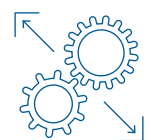
Improved access to DR-TB related essential medicines



Provided analytic support in the adoption and uptake of new drugs and diagnostics



Increased screening, and access to quality tests at affordable prices



Strengthened health systems in the adoption of new drugs and diagnostics and products



Scaled-up and improved diagnostic connectivity

Tuberculosis (TB) is now the leading cause of death for those infected with HIV, causing one-third of all AIDS-related deaths. In 2015, the World Health Organization (WHO) estimated that 10.4 million people developed TB and 1.8 million died from the infection. In some low-HIV prevalent countries such as India, TB continues to be a leading cause of mortality, particularly for women of child-bearing age.

In 2015, an estimated 4.3 million people who developed TB were never linked to care. Those who do seek care face delays in diagnosis and initiation of treatment. Poor-quality treatment management and inappropriate use of anti-TB drugs, especially in the private sector, lead to unnecessary mortality, and potentially the development of drug resistant TB (DR-TB).

CHAI is working with generous support from the Bill & Melinda Gates Foundation, the United Kingdom's Department for International Development (DFID), ELMA Philanthropies and the Surgo Foundation, to help partner countries to improve patient outcomes by better diagnosing and treating TB patients to limit the spread of the disease and prevent the development of drug resistance.

ADDRESSING DRUG RESISTANT TUBERCULOSIS

The increasing burden of DR-TB is a growing concern in the world, with approximately 580,000 cases in 2015. The lack of capacity in most countries to meet the more complex and costly diagnosis and treatment required has resulted in many deaths and further transmission of DR-TB infections.

In April 2016, the WHO revised guidelines for the treatment of DR-TB, recommending a shorter and more effective regimen in response to the growing epidemic. CHAI supported partner countries in analyzing the risks and benefits of switching to the new regimen and in planning for its transition and rollout. CHAI also worked to disseminate new WHO guidelines and encouraged the use of a new test (the molecular second line probe assay—SL-LPA) to detect resistance to second-line anti-TB drugs. In **South Africa**, CHAI helped the government forecast the amount of medication that would be needed for the switch, and has worked to improve access to clofazimine, an essential drug for this regimen. Implementation of the new

regimen in South Africa has started, and aims to reach up to 70 percent of all DR-TB patients when complete. This switch is estimated to save the South African Government over 300 million Rand annually once fully implemented.

In **Ethiopia** and **Vietnam**, CHAI played a catalytic role in the introduction of bedaquiline (BDQ), a new DR-TB drug. In accordance with WHO requirements, CHAI supported the national TB program to establish a pharmacovigilance system for new TB drugs and helped support active detection and reporting of adverse effects associated with the new drugs. CHAI also provided support in quantification and forecasting of the new shorter regimen which has been rolled out in Vietnam since early 2016 and Ethiopia will start implementation at the end of 2017. In **India**, which has the highest incidence of TB in the world, CHAI provided pharmacovigilance analytic support to the BDQ pilot in order to understand the safety and appropriateness of the drug in India.

In **Ethiopia**, CHAI worked in collaboration with the Ministry of Health and the Ethiopian Public Health Institute (EPHI) to map out a national integrated TB and HIV sample transportation network. The network, once implemented, will drive efficiency of costs, frequency and turnaround time for samples and results delivery, and lead to more TB and DR-TB cases being reliably diagnosed.

IDENTIFYING AND TREATING PATIENTS

CHAI continued its work in 2016 to identify, track and treat TB patients to improve patient outcomes and reduce the spread of the disease through outreach, trainings for health workers, improved testing as well as digital tracking tools.

In **Lesotho**, CHAI, along with the national TB program, Jhpiego and Mineworkers Development Agency, launched a community-based campaign to reach current and former mineworkers and their families with HIV and TB testing services. The campaign was conducted in five districts and reached approximately 7,000 people, 85 percent of whom were ex-miners. The screening resulted in an increase in known HIV status among event attendees from 32 to 83 percent. All of the newly diagnosed TB cases and 76 percent of newly diagnosed HIV cases were successfully linked to care within two months.



Along with working with the government to save lives, what is most satisfying to me is the ability to transfer our skills and values to government staff who toil everyday with limited resources to improve the health system.”

— Dr. Owens Wiwa
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In **Uganda, Malawi and Zimbabwe**, CHAI provided technical assistance to national TB programs for pediatric TB. Among other activities, CHAI has conducted service delivery assessments, supported the inclusion of best pediatric TB policies in national guidelines, designed training packages, evaluated TB screening systems for children at increased risk for TB and provided technical support on the introduction of new pediatric TB formulations. Through this work, CHAI has supported wide-scale adoption of optimal approaches and products to improve pediatric TB diagnosis and treatment outcomes.

In **Malawi**, CHAI developed and implemented interactive training curricula and accompanying job aids for health workers on TB Contact Investigation (CI) and pediatric TB diagnosis, alongside the national TB program. Trainings and supervision visits on TB CI were conducted in 40 facilities in five priority districts. As a result of these activities, two-quarters into the intervention period, the household contact screening rate increased from 20 percent to 37 percent and the Isoniazid Preventive Therapy (IPT) initiation rate for eligible children increased from 19 percent to 38 percent. Based on these initial successes, the TB CI and Pediatric TB curricula were adopted as national training models.

In **India**, CHAI has supported the Revised National TB Control Programme (RNTCP) to scale up national planning of diagnostics and new drugs and regimens. CHAI conducted an operational assessment on pre-diagnosis attrition and scalability of lab processes in five representative states on areas of sample collection, transport and results delivery to help to ensure that diagnosed patients receive prompt care and are successfully retained on treatment. In the private sector, which caters to a significant majority of healthcare needs in India but is not included in specially negotiated pricing lists, CHAI continued efforts to scale up the access to quality tests at affordable prices through the Initiative for Promoting Affordable and Quality TB Tests (IPAQT) platform. IPAQT now has a network of over 5,500 laboratory centers that provide access to affordable quality TB diagnostics in more than 80 percent of Indian districts. IPAQT has been recognized as an innovative and successful example of public-private partnership by the RNTCP and the WHO. Additionally, CHAI is partnering with the Chennai city government in its ambitious TB Free Chennai Initiative and has helped to create a multi-stakeholder partnership, developing the Chennai Strategic Plan for TB Elimination, and crafting detailed implementation plans. This initiative is the flagship of the ZeroTB cities initiative aiming to achieve zero TB mortality in high-burden cities.

To help to reorganize TB testing and treatment in **Kenya**, CHAI worked with the Ministry of Health's national TB program to help to organize 130 GeneXpert testing instruments into one single platform, linking them online and managing them centrally at the TB program office. This web-based platform is able to collate all testing, send test results back to all testing facilities

via mobile phone, track all TB patients and their treatments, aggregate data on testing and treatment by facility, sub-county, county and at the national level, enable facilities to order refills online and keep track of the state of testing instruments to enable service and repairs where necessary. In fiscal year 2017-2018, this initiative will be expanded to create additional capacity to run Early Infant Diagnosis of HIV (EID) tests and also HIV Viral Load (VL). In **Myanmar**, CHAI helped scale up diagnostic connectivity to over 90 percent of all installed and operational GeneXpert machines over the years 2015-17. Scale up of diagnostic connectivity has enabled the national TB program to have better visibility and management of machine performance, error rates, disease positivity and resistance rates.

CHAI also helped expand usage of the Access to Care Information System (ACIS) software it developed in **Vietnam** to reduce the number of patients lost to follow-up for HIV and TB. In 2015, the system reduced the number by half. ACIS usage has now been expanded to over 400 facilities in 53 provinces with over 9,000 patients referred since 2014 and a successful referral completion rate of 77 percent. By connecting ACIS with the national TB program's patient management software, both treatment facilities and suspected DR-TB patients are now immediately notified when the patients' GeneXpert test results are available at the laboratory, an improvement from the one to two weeks it took to notify patients previously. CHAI plans to improve TB case detection by expanding ACIS's capacity to support household contact tracing and referrals through the urban Zero TB Vietnam initiative. It also plans to expand ACIS to pediatric hospitals to increase referrals and detection of pediatric TB cases.



CHILDREN IN UTTAR PRADESH, INDIA



Dr. Owens Wiwa

Executive Vice President, Global Resources for Health, Regional Director, West and Central Africa

Country Director, Nigeria

A little over ten years ago, I started work at CHAI after four different interviews that began with a meeting in a hotel lounge in Nigeria and ended at the gate of a New York Airport. The interview was supposed to take place in a proper office, but was moved to the airport when my interviewer urgently had to fly to Boston before heading to India that evening to negotiate down the price of antiretroviral drugs!

I left Nigeria ten years earlier, in 1996, on exile to Canada. In Nigeria I worked as a rural physician in the public sector and later set up my private hospital. I also volunteered with the Daughters of Charity sect in Ogoni to treat tuberculous and leprosy patients and took care of internally displaced persons. It was there that I joined an environmental and human rights advocacy group as an activist. Due to this work, I was declared wanted by the Military junta, eventually leading to my exile.

At the time of my CHAI interview, I had been working at the University of Toronto for eight years and succeeded in directing my research grants toward projects based in the Niger Delta examining the impact of unresolved historical injustice and violence by state and non-state actors on community mental health status and HIV/AIDS. I was returning to Nigeria fairly often, and the opportunity with CHAI allowed me to move back to Nigeria on a more permanent basis.

Working for CHAI is as humbling, exhilarating and fulfilling as my volunteer work in Nigeria. My colleagues work with a passion similar to what I saw with the nuns of the Daughters of Charity taking care of internally displaced people. CHAI is responsive to the situation in Nigeria and has an uncanny ability to work with other stakeholders in a collaborative way. At CHAI, we do whatever it takes to reach our goals.

I embraced CHAI's mission and values, learned how to work with and through government, the community leaders that we serve and patient groups to identify the gaps in the health care system. I helped develop innovative programs and

treatment options for communities burdened with diseases to save lives.

Working closely with the Nigerian government and patients, we have helped save the lives of mothers and children through our Maternal and Neonatal Health program. We have worked with the private sector and government to reduce prices and increase coverage of lifesaving diarrhea treatments in Nigeria, preventing the deaths of hundreds thousands of Nigerian children. We have introduced and expanded the use of artemisinin-based combination therapies (ACTs) including injectable artesunate to treat severe malaria. Our work has helped Nigeria to introduce new vaccines into the country and our signature work with the HIV/AIDS community has allowed us to work with the government to introduce new drug formulations with negotiated prices, new and better diagnostic reagents and equipment and more accurate forecasting and quantification tools. We now have programs focusing on cancer, nutrition and hepatitis C, as well as cross-cutting programs on supply chain, technology and improving the health workforce. When new gaps or priorities are identified by the government or local communities, we respond to them.

Along with working with the government to save lives, what is most satisfying to me is the ability to transfer our skills and values to government staff who toil everyday with limited resources to improve the health system. CHAI has made it possible for me to observe the transformation of the health system in Africa through building the health workforce a little at a time, with little resources.

When I joined CHAI to lead our Nigeria office we had just a few people working in Nigeria and now we are a staff of well over 100 dedicated people. We hope to continue our efforts on behalf of the Nigerian people for many years to come.

HEPATITIS

CHAI launched a new program in 2015 focused on reducing the global burden of hepatitis C (HCV) with the support of the United Kingdom's Department for International Development (DFID). Working in seven focal countries with high rates of hepatitis, CHAI has supported efforts alongside governments to improve access to screening and treatment.

Currently, over 70 million people worldwide are estimated to be chronically infected with HCV, the seventh highest cause of mortality globally. Approximately 90 percent of these infections are concentrated in low- and middle-income countries. HCV is transmitted via blood-to-blood contact associated with poorly sterilized medical equipment, transfusions, needle stick injuries, mother-to-child transmission and intravenous drug use. Yet, screening and treatment programs were nearly non-existent until the launch of new directly acting antivirals (DAAs) in 2014. These treatments have made a cure possible with safe, effective and tolerable treatment courses.

Due to CHAI's work in 2016, guidelines in all seven focal countries now recommend a shortened set of diagnostic tests and treatment with DAAs. These changes, combined with lowered ceiling prices negotiated by CHAI, decreased the cost of treatment from an average of US\$2,618 per patient to between US\$133 and US\$789 per patient treated, depending on the country—a 71 to 95 percent cost reduction. The program has also benefited from a donation of 10,000 patient courses of Daklinza from Bristol-Meyers-Squibb with the support of AmeriCares, which has been instrumental in providing access to an optimal treatment combination while generic products are still in development. This work helped 30,000 people to access treatment over the course of the year, laying the groundwork for the rapid scale-up of screening and treatment in 2017.

In **India**, CHAI provided strategic and operational support to the State of Punjab's ambitious program to rapidly scale up care and treatment for HCV. Within months of its launch, the program has become one of the largest in the region with over 29,000 patients on treatment. CHAI's support has helped develop an electronic medical records system that ensures patients are followed through the cascade of care, complete treatment and achieve high cure rates. Furthermore, CHAI is now expanding its work to inform active

TREATMENT COST

71% to 95%

Reduction in cost of treatment



Due to:

- new guidelines for diagnostics, and treatment
- lower negotiated ceiling prices



At CHAI, I have learned new skills in a very meaningful way. Skills such as negotiating for quality low- pricing of supplies, matched with creating the high-volume of demand and adopting a strategic approach to transformational impact.”

— Dr. Khin San Tint
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screening strategies which will increase the number of vulnerable populations accessing care. CHAI is also supporting the government to evaluate the use of new screening and diagnostic technologies that would allow patients to access services closer to their homes.

In **Ethiopia**, CHAI worked with the government to create national policy and guidelines on viral hepatitis prevention and control and helped support the development and distribution of monitoring and evaluation tools. Health workers from selected high-volume and teaching hospitals, including private hospitals, received training on viral hepatitis diagnosis and treatment. Some hospitals have started diagnosis and treatment for hepatitis B and C viruses based on the training received and have started to provide onsite training within their respective facilities.

In **Indonesia**, CHAI worked with partners to develop a web-based data collection platform to help to gather data from 34 provinces and scale up the hepatitis program. The platform will include HIV data which will be a major breakthrough for increasing treatment and diagnosis.

Following the successful launch of treatment in 2016, CHAI is now supporting Ministries of Health in their scale-up plans to move toward their ambitious 2030 targets of eliminating new transmissions. Rapid scale-up will require aggressive government commitment and leadership to drive a strong, coordinated, efficient program, along with continued support for reducing prices of critical drugs and diagnostics.



Dr. Khin San Tint

Country Director,
Myanmar

I joined CHAI in 2013 as an independent consultant hired to navigate the opening of the new office in Myanmar. My niece worked for CHAI for six years, creating an HIV lab in Vietnam and supporting CHAI countries in the Southeast Asia region. She introduced CHAI to me when CHAI was looking for someone from Myanmar who spoke Burmese and also had exposure to international work to expedite the process of legally establishing CHAI in the country. I enjoy process-orientated work with large goals, and I decided to quit my job in Johannesburg and join CHAI full-time.

I was born in and grew up in Burma (now Myanmar). Raised as a Buddhist, I was taught the value that being privileged is to serve the common good. I left Burma in 1993 to join my husband who was working as a medical officer in the homeland of Setswana, now part of South Africa. We left with the intention of raising our three kids with a better education. In South Africa, our children were nurtured and became part of the global service community. My husband and I served South Africa for more than 20 years.

While there, I worked with women through the Women’s Health Project (WHP), led by a diverse group of women committed to gender equality and human rights. At the same time, my husband cared for children, including refugees from neighboring countries, at the public hospital in Johannesburg. Being part of the democratic transition of South Africa and the consciousness of equity in life made it easier to be brave to do the right things. When I had an opportunity to return home to Myanmar and work with the government, my dream came true. It took all of my strength and humility to take the risk of going back and leaving my family.

Working for CHAI in Myanmar makes me feel that I am part of rebuilding the nation. I am driven by the knowledge that CHAI’s mission of saving lives is not only about the clinical aspect, but more about having equitable access to diagnosis and care. Even while governments spend increasingly more on health budgets each year, there often is no or slow progress on health outcomes.

CHAI’s view is that most wasted health spending is due to inefficient management of health systems. That is why our work in Myanmar focuses on sustainable health systems strengthening.

At CHAI, I have learned new skills in a very meaningful way. Skills such as negotiating for quality low- pricing of supplies, matched with creating the high-volume of demand and adopting a strategic approach to transformational impact. With minimum funding we can do a lot by making the health system machinery move efficiently, perform better and have greater impact.

Since we opened our office during the transition period of Myanmar, our government counterparts expressed their urgent need to improve the data systems and reporting. We took on the challenge and completed the job within one to two years when others told the government that it would require four to five years.

Now, we are in our fourth year and can show the outcomes of our work. We have gained trust from the national program managers in the government. We helped to increase uptake of Early infant diagnosis (EID) for HIV from 10 percent in 2013 to more than 60 percent in 2016. We have increased pediatric antiretroviral therapy (ART) uptake from 44 percent in 2015 to 80 percent by end of June 2017. The Quick Start program for treating the first 2000 infected with hepatitis C virus (HCV) by the public sector is already achieving success. We are supporting the government to develop the Hepatitis National Strategic Plan for 2017-2020 and national simplified treatment guidelines for HCV. The next step is to diagnose and treat HCV at the township primary healthcare level with the goal of eventually eliminating HCV in Myanmar. We are also now working with the government in the challenging task to try to eliminate malaria in the country over the next five to 10 years. I am happy that I can work in a meaningful way to help my government to improve the health of our people and contribute to rebuilding our country.

CANCER



PATIENT RECEIVING TREATMENT AT THE UGANDA CANCER INSTITUTE IN KAMPALA, UGANDA

CHAI launched its cancer program in partnership with the American Cancer Society (ACS) in late 2015. Together, CHAI and ACS are focused on interventions that will lower prices and increase access to lifesaving cancer treatment in Sub-Saharan Africa.

Deaths from cancer remain high in Sub-Saharan Africa due to an array of challenges, including weak screening and early detection programs, limited human resources, and lack of access to quality, affordable diagnosis and treatment. In 2012, there were 626,000 new cases of cancer and 447,000 cancer deaths throughout the region. Affordable and effective tools exist to screen, diagnose and treat certain cancers and many common cancers, such as cervical and breast, are preventable or highly responsive to treatment. Even so, the required medicines and diagnostics, many of which have been used in wealthy countries for decades, remain largely out of reach in Sub-Saharan Africa.

In 2016, CHAI developed relationships with government partners and drug manufacturers to build comprehensive country and market strategies. CHAI supported **Ethiopia** to conduct a rigorous national drug quantification to optimize their procurement decisions and reduce stock outs of essential cancer medicines. CHAI also supported Ethiopia to develop a comprehensive, budgeted cervical screen-and-treat strategy for Addis Ababa and sections of Oromia. CHAI worked with the Ethiopian Government on an ambitious plan to expand breast cancer treatment services from one hospital to an additional 12. Rollout of the plan is beginning in 2017 and will significantly expand access to cancer services.

In **Nigeria**, CHAI worked with Stanford University to conduct a detailed capacity and needs assessment at two major cancer hospitals in order to inform the development of a plan to strengthen cancer care. CHAI mapped the chemotherapy importer and distributor landscape with the goal of helping hospitals to optimize their product sourcing and access quality, affordable medicines. CHAI began supporting the Ministry of Health to develop a new national Cancer Control Plan, which is expected to be completed in September 2017. CHAI also worked with the government to develop a comprehensive, budgeted cervical screen-and-treat strategy for Lagos and Kaduna.

In 2016, ACS and CHAI also partnered with IBM Health Corps to develop ChemoQuant, an innovative online chemotherapy forecasting tool to help countries quantify their cancer treatment needs and plan for costs and procurement. ChemoQuant will help provide a platform for Ministries of Health to forecast their chemotherapy needs. Uganda will pilot the tool in 2017 and additional countries are expected to follow suit by year's end.

CHAI also conducted detailed analysis and engaged with chemotherapy manufacturers, with the aim of developing access partnerships that expand access to quality, affordable cancer treatment for tens of thousands of patients. In 2017, CHAI and ACS announced a groundbreaking agreement with Pfizer, Inc. and Cipla, Inc. to expand access to 16 essential cancer treatment medications (mostly chemotherapies) in **Ethiopia, Nigeria, Kenya, Uganda, Rwanda and Tanzania**. These partnerships, and complementary work to optimize forecasting and supply chain, are expected to enable countries to save more than 50 percent on procurement while shifting to high quality medicines. CHAI and ACS are also working together to address other barriers to treatment such as workforce shortages and limited access to treatment facilities.



PATIENT RECEIVING TREATMENT AT THE UGANDA CANCER INSTITUTE IN KAMPALA, UGANDA

VACCINES

REDUCTION OF PROCUREMENT COSTS

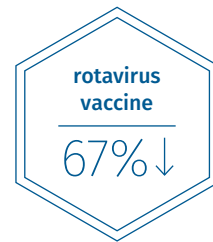
Pricing negotiations brokered by CHAI have saved the global community over

US\$800 M+

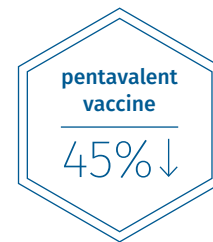
in procurement costs over the past 5 years by reducing vaccine prices between

45% to 67%

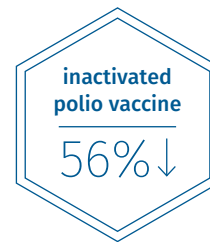
VACCINE COST REDUCTIONS



67% price reduction secured resulting in an estimated \$650M in savings over five years.



45% price reduction secured resulting in an estimated \$150M in savings over four years.



56% price reduction secured resulting in an estimated \$150M in savings over four years.



CHILD IN MADYA PRADESH, INDIA

Immunization is one of the most successful and cost-effective methods of preventing disease and saving lives. Even so, millions die each year from vaccine-preventable diseases due to lack of access. Children in low-income countries face the highest risk of contracting and dying from such diseases. CHAI is working globally to ensure that vaccines are available, effective and affordable, with a special focus in nine low-income countries that represent 47 million births every year, one-third of all births globally.

LOWERING COSTS

CHAI is continuing its work to negotiate lower prices for lifesaving vaccines in order to increase access and delivery. Over the past five years, pricing negotiations brokered by CHAI have saved the global community over US\$800 million in procurement costs by reducing vaccine prices by 45 percent to 67 percent. Beyond pricing negotiations, this work has stimulated intense competition and adjusted market expectations on the lowest possible pricing for these vaccines. For example, by 2017 the average price for the pentavalent

vaccine dropped to approximately US\$0.80 per dose. This is a dramatic reduction from the weighted average price of US\$2.17 in 2011, before CHAI negotiated its original price deal. CHAI continues to make progress towards other key pricing agreements by working closely with multinational vaccine companies and developing country vaccine manufacturers on business planning, market entry and pricing strategy based on thorough Cost of Goods Sold (CoGS) analyses.

INTRODUCING NEW VACCINES

With generous support from the Bill & Melinda Gates Foundation, CHAI has been working to accelerate the introduction of new vaccines by helping national governments decide what vaccines to introduce and when. CHAI is assisting these governments to increase speed and efficiency to reach target coverage for particular vaccines and strengthen their national immunization systems in the process.

In **Nigeria**, where pneumonia is a leading killer of children under five, CHAI supported the government to complete the national introduction of pneumococcal conjugate vaccine (PCV), which is expected to avert 35,000 additional deaths of children under five per year. In **Kenya, Ethiopia, Nigeria and Cameroon**, four of the countries most at risk for polio epidemics worldwide, CHAI supported governments with the introduction of the Inactivated Poliovirus Vaccine (IPV). CHAI also played a critical role in helping these Ministries of Health to switch from using the trivalent Oral Poliovirus (tOPV) vaccine to the bivalent Oral Poliovirus Vaccine (bOPV), to dramatically reduce vaccine-derived polio disease. These milestones are critical to steps towards global polio eradication.

In 2016, CHAI also supported the governments of **Nigeria, Lesotho and Uganda** in preparing a plan for the introduction of the Rotavirus vaccine, which will avert around 17,000 infant deaths per year. With the support of CHAI and its partners, the Nigeria and Lesotho governments secured approval from Gavi, the Vaccine Alliance, to fund these introductions. CHAI also initiated support to the Governments of **Ethiopia, Kenya, Uganda, Cameroon, Tanzania and Lesotho** to accelerate the uptake of the Human Papilloma Virus (HPV) vaccine, which protects women against the risk of cervical cancer—the



I am proud that CHAI has played a critical role in dramatically reducing the prices of these drugs and making them widely available, and also in changing the management, supply chain, and financial systems that are needed to provide drugs, diagnostics, and vaccines for vulnerable families around the world.”

— Joshua Chu
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MOTHER AND CHILD PARTICIPATE IN THE CHILD HEALTH PROGRAM IN UGANDA

leading cause of female cancer deaths in East and Southern Africa. CHAI is helping governments identify delivery models that will reach the target population of young girls in an effective and sustainable manner.

Improving the Vaccine Cold Chain and Supply Chain to Reach Every Child

Most vaccines must be stored and transported at refrigerated temperatures of two to eight degrees Celsius to maintain their potency. This supply chain is known as the “cold chain”, and is the backbone of immunization programs spanning the world. A recent study found that 37.1 percent of vaccines in storage in low- and middle- income countries (LMICs) are exposed to freezing temperatures, which can cause them to lose their effectiveness. It is estimated that up to approximately US\$1 billion worth of vaccines could suffer irreversible loss of potency from excessive exposure to freezing temperatures.

With generous support from the Bill & Melinda Gates Foundation and the ELMA Vaccines and Immunization Foundation, CHAI is helping countries build systems that ensure vaccines are available and potent at the point-of-care. To achieve this, CHAI is working with key stakeholders involved in global cold chain markets and policy development, manufacturers of cold chain equipment and partner governments to introduce sustainable solutions for the storage, distribution and management of vaccines.

Over the past three years, CHAI has worked with partners to significantly improve access to cold chain equipment to protect against currently common risks to vaccines such as freezing, loss of power or other problems that could impact potency and effectiveness. Since 2014, CHAI has been working closely with the World Health Organization (WHO) to implement next-generation standards for “optimal” vaccine refrigerators, transport boxes and temperature monitoring equipment. Optimal products are defined as “Grade A” technology that eliminate all freezing temperatures from the vaccine storage area without any intervention on the part of the user, generally a health worker. In comparison, non-optimal technology requires health workers to perform additional steps before using the cold chain equipment. These steps, such as storing vaccines in a fridge in a specific manner and away from the walls of the fridge, are time-consuming and prone to error, resulting in potential exposure to freezing.

In addition, in 2015, CHAI partnered with Gavi in conceptualizing and setting up the Cold Chain Equipment Optimization Platform (CCEOP). This new, five-year, US\$250 million financing mechanism helps countries to afford scaling up optimal equipment by effectively subsidizing procurement costs. In 2017, CHAI will work with Gavi to assist in the acceleration of the CCEOP so that cold chain equipment (CCE) is procured and deployed in-country quicker and more efficiently. Through these efforts, 150,000 optimal cold chain equipment will be scaled up in-country over the next five years and together with improved management and maintenance systems, significant reductions in vaccine damage are expected.

CHAI’s efforts on WHO equipment standards and the Gavi CCEOP have translated into real product changes through design and pricing support to CCE manufacturers, focusing on the upgrade of all equipment to meet “optimal” standards for vaccine protection. As a result of these efforts, the market for vaccine refrigerators has been transformed. In 2013, only around 22 percent of the products offered were optimal, and only two out of seven suppliers offered these products. As of July 2017, this number has drastically increased to approximately 82 percent with offerings from eight suppliers, with the target that all Gavi countries will only purchase optimal products by 2020. CHAI’s support to suppliers has resulted in 10 of the optimal products since 2015 being introduced into the market at significantly reduced, affordable prices; this includes seven products that are the lowest-cost units in their respective market segments and are up to 42 percent less expensive than competing products. CHAI is now applying this approach to vaccine transport devices, where the introduction of freeze-free technology could significantly reduce potency-loss risks to vaccines in transport.

In addition to improving optimization of the cold chain at the global level, CHAI is helping countries to directly access new equipment and increase service delivery. CHAI supported five Gavi countries (Uganda, Cameroon, Tanzania, Ethiopia and Kenya) in their successful applications to the CCEOP, allowing them to access approximately US\$60 million of funding to procure around 24,000 units of cold chain equipment through 2022. This funding will enable countries to address significant gaps in their cold chains and significantly increase the safety of vaccines. For example, in **Uganda**, CHAI supported an evidence-based plan that helped the government to secure approval for an approximately US\$10.75 million CCEOP funding plan. This approval will allow Uganda to improve the cold chain system in the country by addressing capacity gaps in 12 percent of district vaccine stores and 35 percent of health facilities in order to meet all planned new vaccine introductions by 2020. The CCEOP plan will also extend cold chain equipment coverage to facilities that lacked cold chain equipment by seven percent, increasing access to cold chain storage.

In **Ethiopia**, CHAI supported the government to improve its management system and capacity for cold chain equipment. CHAI helped to develop an on-the-job training model that was used to train 257 technicians during the installation of over 900 optimal solar cold chain equipment. CHAI also supported the government to build a strong pipeline of qualified technicians by introducing a cold chain maintenance curriculum into the certifying programs of two major technical institutions. CHAI helped train and provide follow-on support to a new cohort of 10 senior cold chain technicians that are able to maintain Ethiopia’s cold rooms.

In **Cameroon**, CHAI helped the government to rapidly implement a new cold room temperature management system, meant to avert events such as the one that damaged nearly 500,000 doses of IPV in 2015. Deployed at the central



WOMAN AND CHILD IN MADYA PRADESH, INDIA

store and all 10 regional depots, this system helped eliminate the incidence of high-risk freeze events at these sites by July 2016, and has reduced the incidence of heat alarms by more than 70 percent. Moving forward, CHAI is working with the government to introduce a best-in-class remote monitoring platform, drawing on experience from previous CHAI-supported deployments in Nigeria, Tanzania and elsewhere.

In **India**, CHAI worked with the national Ministry of Health and Family Welfare (MoHFW) to craft and operationalize the National Cold Chain and Vaccine Logistics Action Plan (NCCVLAP)—a major strategic revision to the management of the immunization supply chain in India. CHAI is also developing the comprehensive guidelines that will help states execute this new strategic model. In focal states like Madhya Pradesh, CHAI is helping the government to identify changes that could be made to the cold chain system to help secure greater availability and potency for vaccines, while also minimizing costs. For example, a recent optimization exercise covering 41 percent of districts in Madhya Pradesh helped the government equip 77 percent of new cold chain points through the efficient reallocation of existing cold chain equipment, rather than new procurement.



Joshua Chu

Vice President, Global Vaccines and Southeast Asia

I graduated from the Wharton School of Business and embarked upon a career in finance and management. I worked for several organizations including Singapore Airlines, where I managed their portfolio of airline investments and fuel hedging strategy. The work was financially rewarding but I struggled to find personal meaning. Climbing the career ladder was no longer satisfying, and, in 2007, I decided to take a sabbatical and explore other career options.

I spent a few months in Lusaka, Zambia working pro-bono for a healthcare organization to help develop its performance management system. While there, I lived and volunteered at an orphanage for HIV-positive children. I was not prepared for what I saw. The home was a shelter for orphans that were horribly abused because of their HIV status. Many were rescued by the police and sent to the home. All of them had at least one parent pass away due to HIV/AIDS and many were wrongly blamed for bringing misfortune and contributing to the deaths of their parents. I was horrified by the treatment that the children endured.

I won a lottery when I was born in Malaysia, a country with a relatively strong health infrastructure, and to parents that gave me the right start in life. These children did not. I made a vow to dedicate my energy to serving those who were oppressed, voiceless and orphaned. After I left Zambia, I started looking for an organization that would allow me to serve these children.

My search led me to CHAI. I was attracted to CHAI because it used business and management approaches to make a difference for the poor. At CHAI, I believed that I could apply my experience and skills to change how markets worked so that they could better serve those in need.

My first role at CHAI was as the Deputy Country Director of Nigeria. Starting my time at CHAI in Nigeria was baptism by fire. At the time, Nigeria had three percent of the world's population, but had a 10 percent share of global child and maternal mortality. Working in Nigeria was an incredible challenge, but it was an

extremely rewarding experience. When I first arrived, we had a small office of eight staff and programs in HIV and malaria. Today, the office has over 100 staff and eight offices, and has expanded its scope to include programs in vaccines, family planning, maternal and neonatal health, hepatitis C, cancer and essential medicines for children. Moreover, CHAI is supporting the Government of Nigeria to make a dramatic difference in the health outcomes of the country, with ambitious plans to avert one million deaths by 2020.

In 2012, I transitioned to a global role overseeing CHAI's work to increase access to affordable and reliable supplies of vaccines through strategic price negotiations, and to provide support to vaccines manufacturers. In 2014, I took on an additional Regional Director role developing new programs in the Southeast Asia and Pacific region. In 2017, I also began overseeing our global vaccine delivery work to accelerate the entry of new vaccines and to transform the cold chain and immunization planning systems.

As I look back at my eight years at CHAI, I am grateful for the opportunity to serve children and families and fulfill the vow that I made in Zambia. As I recall my time in the orphanage, one of our daily routines was to give the children their daily antiretroviral drugs. I am proud that CHAI has played a critical role in dramatically reducing the prices of these drugs and making them widely available, and also in changing the management, supply chain and financial systems that are needed to provide drugs, diagnostics and vaccines for vulnerable families around the world.

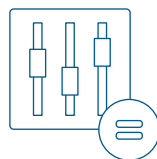
I believe that CHAI can continue to be at the cutting edge of pushing the boundaries of what is possible and make this world a better place for children who are voiceless, orphaned and oppressed. These children believe that they have a future, and I believe that too.

HEALTH SYSTEMS STRENGTHENING

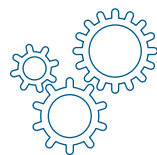
IMPROVING HEALTH FINANCING



Quantify and prioritize funding needs for the health system



Implement financing reforms such as insurance to more equitably raise and pool resources



Improve efficiency of resource management and coordination



Use evidence based decision making

Strong health systems are the key to eliminating disease, treating those who are sick and reducing mortality. Many governments have committed to the goal of universal health coverage—ensuring individuals have access to quality essential care when needed without suffering financial hardship. However, to make the goal of universal health coverage a reality, these governments will need to take steps to upgrade the health workforce and other service delivery systems, and secure and manage sustainable, domestic funding to support high-quality health services for their people.

While low-income countries in Africa and Southeast Asia experience over half of the global disease burden and are home to 40 percent of the world's population, they account for only three percent of health spending. These resource shortages, combined with weaknesses in delivery systems, including a severe deficit of skilled health workers, prevent the population from accessing even basic quality services. CHAI is working with its partner governments to strengthen and fundamentally reform their health financing systems and to improve and expand their health workforces to increase access, improve quality of care and ensure the sustainability of health services.

SUSTAINABLE HEALTH FINANCING

Many low-income countries depend on foreign aid to fund their health systems, which can be volatile and unsustainable. Fluctuations in donor contributions and domestic resources, as well as inefficiencies in spending, create resource shortages and contribute to a health system that is ill-equipped to meet the needs of the population. Health providers are then forced to ration services among patients or charge formal or informal user fees for care. This can act as a deterrent for patients, particularly the poor, to seek care. Globally, millions of people are driven below the poverty line in order to access critical services; many others never receive any treatment at all.

In 2016, with support from the Swedish International Development Cooperation Agency (SIDA) and Irish Aid, CHAI continued its work with

partner governments to assess and strengthen health financing systems to understand needs, address gaps and better manage available resources. CHAI worked to improve government coordination of donor and domestic resources, including annual tracking of funding flows and financial and programmatic performance. At the request of our government partners, CHAI increased focus on comprehensive reforms of domestic financing systems, including the implementation of health insurance reforms, to ensure that resources are raised and distributed equitably and then managed efficiently toward the goal of sustainably financing universal health coverage.

National Health Insurance Reforms

In **Ethiopia and South Africa**, CHAI increased its work assisting the governments to roll out health insurance. Implemented well, these reforms can support countries to transition away from a dependence on donor funding and sustainably increase access to and utilization of health services for those in greatest need.

In **Ethiopia**, CHAI supported the Ethiopian Health Insurance Agency (EHIA) to move toward its goal of national health insurance. Community-based health insurance in Ethiopia was designed as a district level pilot. While currently underway in a number of districts, it will be difficult and expensive to bring it to national scale in its current form. CHAI supported the EHIA to begin to develop a strategy for key changes that will increase the feasibility of bringing this reform to scale, and ensure it is sustained and integrated into a national insurance scheme. These changes will be piloted beginning in 2018. In parallel, CHAI continued to support the EHIA to prepare to manage national health insurance for a population of over 100 million people. This included generating evidence on the cost of services to inform negotiations and contracting with private providers, training EHIA staff and supporting improvements in core processes of insurance from enrollment through claims management. CHAI also supported the development of a strategy that will inform the development and use of critical information systems and new



HEALTH WORKER AT THE EMERGENCY OBSTETRIC AND NEONATAL CARE TRAINING AT NDOLA CENTRAL HOSPITAL IN NDOLA, ZAMBIA



EMERGENCY OBSTETRIC AND NEONATAL CARE TRAINING AT NDOLA CENTRAL HOSPITAL IN NDOLA, ZAMBIA

technologies to carry out core operations for insurance and for managers to have real-time visibility and continuously improve performance.

In **South Africa**, CHAI focused on the upcoming National Health Insurance (NHI) policy reform, which aims to address underlying healthcare inequities in a system, including providing strategic and technical support to the leadership of the National Department of Health (NDOH) in designing this reform. CHAI supported the development of a costing model to understand the financial implications of insurance under different implementation scenarios as well as analyses to identify opportunities for efficiency savings within the existing health system. This analysis has been used to support discussions between the NDOH and National Treasury and to identify scenarios for implementation of insurance in the short- and long-term, including decisions around the role of the private sector in NHI. CHAI also developed the ‘NHI Service Benefits Framework’, which defines and determines costs of an essential package of services. This tool and subsequent analyses will inform upcoming decisions on what will be delivered under NHI, including levels of care, providers and service reimbursement.

Promoting Health Systems Efficiency

In **Rwanda, Malawi, Swaziland, Zimbabwe, Zambia and Cameroon**, CHAI is supporting governments to strengthen existing domestic- and donor-funded systems to deliver an essential package of services. This includes work to support governments to optimally manage an increased proportion of resources from donor and domestic channels over time as an interim step toward independence. CHAI worked in **Swaziland and Malawi** to support the development and prioritization of an essential healthcare package to inform how scarce resources are allocated. In Swaziland, CHAI piloted a facility readiness and service availability assessment at two hospitals and 10 clinics, helping the government to identify gaps and allocate resources to fund basic equipment and commodity needs for services such as diagnosing and treating non-communicable diseases.

In **Malawi, Lesotho, Zimbabwe, Cameroon and Ethiopia**, CHAI continued to support the governments in annual resource mapping exercises—a national tracking of government and donor resources to inform planning and resource allocation decisions. In Malawi, CHAI also played an integral role in the development and prioritization of Malawi’s Health Sector Strategic Plan II (2017-2022). By conducting a financial gap analysis with resource mapping and costing data, CHAI has helped the government to ensure the new plan is both affordable and prioritized. This plan and gap analysis can in turn be used to inform health sector resource mobilization and allocation and to coordinate the significant number of donor and external partner efforts so that limited resources are spent efficiently and effectively to deliver basic health services.

In collaboration with the World Bank, CHAI supported the Ministry of Health and Child Care in **Zimbabwe** to develop the first National Health Financing Policy, providing a framework for health financing interventions and reforms.

CHAI also supported the Ministry of Health’s Department of Policy and Planning to leverage the results of resource mapping to demonstrate the unsustainable reliance of the health sector on external funding (over 55 percent) and to inform recommendations to mobilize domestic resources and improve efficiencies in planning, allocation and spending of resources.

In **Zambia**, CHAI supported the Ministry of Health to implement an improved budget consolidation tool and provided guidance on the customization of a new national accounting tool that will generate data to allow regular monitoring of expenditure against activity-based budgets. This work aims to improve the allocation and management of government and donor resources for health.

STRENGTHENING THE HEALTH WORKFORCE

A skilled health workforce is critical to any well-functioning health system, yet many low- and middle-income countries face chronic health workforce shortages and lack the systems necessary to recruit, train, deploy and retain health workers where they are most needed. The WHO projects that there will be a shortage of an estimated 15 million health workers worldwide by 2030. This limited production of new health workers is drastic in Africa, given the continent’s rapid population growth, estimated to double between 2008 and 2036. In 2016, CHAI worked with government partners to address health workforce shortages by implementing programs that provide high-quality training to priority health workers, strengthen Human Resources for Health (HRH) Departments within Ministries of Health and providing the analytical and management tools to develop and implement effective, evidence-based policies and strategies at the national level that increase access to and improve the quality of health services.

Evidence-Based Policy and Strategic Planning for Health Workforce

In **Liberia and Sierra Leone**—two countries hit hardest by the 2015 Ebola virus disease outbreak—CHAI helped launch new health workforce strategies to strengthen health workforce production, align donors and partners to national interests and ultimately strengthen essential government-led management and coordination systems at the national level. In Sierra Leone, CHAI conducted a nationwide health worker census and payroll audit, which provided the analytical foundation for a comprehensive and government-led five-year HRH strategy and plan that will increase the quantity, quality and skill-diversity of health workers throughout the country’s health facilities, with a specific focus on increasing rural retention of health workers and decentralizing human resources management to the district level.

In **Liberia**, CHAI worked in close partnership with the Ministry of Health to launch the National Health Workforce Program (HWP), a seven-year inter-ministerial initiative designed to build a robust health workforce training pipeline and essential health infrastructure. In addition to improving the quality of education for nurses, midwives, physicians and physician specialists,



I am proud to lead CHAI Liberia to help build a resilient post-war, post-Ebola health system that will provide quality affordable health care for our people.”

— **Dr. Moses Massaquoi**
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HEALTH WORKERS AT THE EMERGENCY OBSTETRIC AND NEONATAL CARE TRAINING AT NDOLA CENTRAL HOSPITAL IN NDOLA, ZAMBIA

the HWP will introduce an entirely new cadre of health managers that will strengthen management and administration of public health facilities and lead quality improvement and assurance projects. This will include the national scale-up of a community health worker model to replace the existing fragmented model of county-specific community health volunteers and reform Ministry of Health structures to ensure that the government can appropriately plan for and manage the country's public-sector health workforce.

In **Malawi** and **Zambia**, two countries facing large numbers of vacancies at rural health centers, CHAI leveraged its analytical expertise to assess the efficacy of monetary and non-monetary incentive packages to retain rural health workers. In resource-constrained health systems, it is critical to understand the impact of non-monetary incentives such as supportive supervision, facility quality, housing and opportunities for career advancement on the retention of health workers in rural areas. Results are expected to inform government policy in 2017 that will aim to increase the availability of essential health services to rural communities.

Scaling Up Health Workforce Production to Increase Access to Health

Skilled Community Health Assistants (CHAs) have been shown to significantly improve the quality of health care. A 2012 study by Innovations for Poverty Action, the London School of Economics, Harvard University and the Ministry of Health in Zambia, found that career-motivated and financially incentivized CHAs in Zambia had a dramatic impact on health service delivery indicators. Specifically, the career-motivated CHAs had:

- 31 percent more institutional deliveries
- 24 percent more child outpatient visits at health posts
- 22 percent more child growth monitoring visits at health posts
- 20 percent increase in polio vaccination among children under one
- 5 percent increase in breastfeeding
- 25 percent decrease in the prevalence of underweight children

In 2016, with funding from the United Kingdom's Department for International Development (DFID), CHAI continued to support the Ministry of Health to train and deploy CHAs in Zambia. By the end of the year, nearly 2,000 CHAs have been trained and over 1,400 have been deployed to 789 health facilities across the country that serve more than 3.9 million people. In 2016, CHAI trained more than 400 CHA supervisors to strengthen the coordination of newly graduated CHAs and ultimately improve the provision of services at the community level. With support from DFID, CHAI is also helping to improve Emergency Obstetric and Neonatal Care (EmONC) education in Zambia through the provision of equipment and training materials to nursing and midwifery schools to ensure graduates have the skills and competencies to improve health outcomes for mothers and newborns.

CHAI is further supporting Zambia's commitment to increase the number and quality of its health workforce with support from the Swedish International

Development Cooperation Agency (SIDA). In 2016, nearly 2,000 "mid-level" skilled birth attendants (SBAs) were either in training or had graduated under the program. These SBAs will provide essential preventative and curative maternal and newborn care. In 2016, CHAI also completed renovations and expansions of student housing, classrooms and skills laboratories at two nursing schools which will boost enrollment capacity. SIDA's support has also enabled CHAI to address dramatic gaps in the provision and availability of services in three of Zambia's most rural and high-need provinces: Luapula, Muchinga and Northern. CHAI trained 137 health workers from these provinces in EmONC and 70 health workers in EmONC mentorship. CHAI established a nursing and midwifery mentoring program in 112 facilities to ensure these competencies are retained. In partnership with the Government of Zambia, CHAI also set up an emergency referral and ambulance system so that high-frequency radios and transportation are available and utilized for those cases where women need to be transferred to be treated.

In **Malawi**, CHAI continues to support the government to strengthen health workforce production and retention as a means to provide critical family planning and maternal and child health care. In 2016, supported by the Norwegian Ministry of Foreign Affairs, CHAI oversaw the completion of construction of 11 structures at prioritized training institutions (including student dormitories, classrooms, lecture theaters and skills laboratories) which are expected to increase training quality and capacity for nurses and midwives. CHAI also supported training at these nine nursing and midwifery training institutions, including scholarships for 701 Nurse Midwife Technicians (NMTs) and Registered Nurses (RNs) at diploma level and 431 Community Midwife Assistants (CMAs). NMTs provide critical nursing and midwifery services at health facilities, while CMAs are recruited from and ultimately deployed to work in the most underserved and hard-to-reach communities, acting as a link between health facilities and rural communities. These health workers are anticipated to reduce existing gaps in the workforce and reduce maternal and neonatal morbidity and mortality as they graduate and are deployed across the country. CHAI is supporting the Ministry of Health Reproductive Health Department's Community-Based Distribution Agents (CBDAs) program which provides family planning services at the community level—an essential service in Malawi where approximately 80 percent of the population is rural and fertility rates are among the highest in the world. In 2016, CHAI continued to monitor activities of 220 CBDAs trained previously in three districts, and trained 272 additional CBDAs, 55 primary and 19 secondary supervisors in five new districts. By the end of the program, CHAI will have trained 600 CBDAs and 137 primary and secondary CBDA supervisors, as well as 200 Health Surveillance Assistants in provision of injectable contraceptives at the community-level.

CHAI is also training community health workers in **Tanzania**, where the first cohort of more than 5,000 community health workers (CHWs) graduated in the



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fall of 2016. These CHWs are expected to deliver services to 2,500 villages and five million people. In contrast to the current community-based workforce which is largely comprised of volunteers with little, if any, training, the new cadre of CHWs receive standardized training, supervision and equipment, increasing the quality of service delivery that will contribute to improved health outcomes throughout local communities.

In **Ethiopia**, CHAI completed its work with the Ethiopia Hospital Management Initiative, a 10-year program that sought to develop and implement national standards for hospital management and reform and introduce a brand-new cadre of health managers to improve the quality and management of services in Ethiopia's public health sector. For the duration of the program, CHAI provided technical assistance to the national and district governments to design, implement and monitor new standards at more than 115 public hospitals in Ethiopia. CHAI also worked with the government and partners to design and launch an innovative Masters in Health Administration (MHA) that has graduated new and mid-career administrators each of whom are posted at public hospitals to strengthen management capacity. In 2016, CHAI formally transitioned the MHA program to public universities and successfully transitioned all implementation and monitoring activities of public hospitals to the Ethiopian Federal Ministry of Health.



Dr. Moses Massaquoi

Country Director,
Liberia

I left my home in Liberia at the height of the civil war. We left on the last boat out with around 7,000 other Liberians. By the third day, it began to sink and we were rescued by authorities from the Côte D'Ivoire. While in exile, I began working with Médecins Sans Frontières (MSF) and I encountered CHAI for the first time in 2003, barely a year after its formation. At the time, I was the Medical Coordinator for MSF Belgium for an HIV/AIDS program at the Nairobi District Hospital, Mbagathi, Kenya.

My MSF Belgium HIV/AIDS program was the only program at the time in Kenya that had pediatric care and treatment programs. There was no pediatric formulation and we had no choice but to split adult tablets for children. We were ecstatic when the CHAI team visited and informed us that they had pediatric antiretroviral therapy (ART) and were looking for programs interested in using the medications. At the time, we had approximately 100 children on treatment, the highest number of children in all of Kenya. MSF gladly accepted the pediatric antiretroviral medications (ARVs), which led to improved survival rates for our children. After five years, I completed my assignment in Kenya and moved to Malawi to continue my work in HIV as the MSF Belgium Medical Coordinator. It was at this time that I again encountered CHAI.

When I learned that CHAI was looking for a new Country Director in my home country of Liberia, I jumped at the chance. In July 2009, I returned home. At the time, CHAI was primarily focused on work in HIV, providing technical assistance to support to Liberia's Ministry of Health and the National AIDS Control Program (NACP). We soon realized however, that we could have much greater impact and save more lives if we positioned ourselves to help rebuild the post-war health system.

CHAI has worked in the service of the government since then and has been actively involved in helping to rebuild the Liberian health system. CHAI was also among the few humanitarian organizations to support the Liberian Government in combatting the unprecedented Ebola outbreak in 2014. We led the case

management response on behalf of the government and helped to organize the logistics and training of health workers. On short notice, we also helped secure protective suits for health workers so that they could safely treat patients without contracting the disease themselves.

More recently, CHAI is assisting the government to plan, coordinate and implement a program to expand and improve the quality of the health workforce from community health workers through specialist physicians. I am proud to lead CHAI Liberia to help build a resilient post-war, post-Ebola health system that will provide quality affordable health care for our people.

NUTRITION



BOY PREPARING FOOD IN MADYA PRADESH, INDIA

Nutrition is critical to the health and development of children. Yet in most parts of Sub-Saharan Africa and South Asia, more than 40 percent of children are chronically malnourished. Chronic malnutrition is considered an underlying cause of nearly half of all childhood deaths around the world and can result in stunted brain and physical development. Ensuring that children, as well as pregnant and breastfeeding women, have access to high-quality, nutritious food helps reduce susceptibility to disease and provides the building blocks for longer, healthier lives.

In 2016, CHAI worked with government partners and the private sector to increase access to nutritious foods that are specifically designed for children six months to two years of age—a critical time in growth and development. CHAI's nutrition programming in Africa is supported by the United Kingdom's Department for International Development (DFID), ELMA Philanthropies, the Netherlands Development Finance Company and the New Zealand Ministry of Foreign Affairs and Trade (MFAT). With the support of the IKEA Foundation, CHAI also worked to improve childhood nutrition and reduce the burden of anemia for adolescent girls and women in India.

INCREASING ACCESS TO FORTIFIED FOODS

In 2016, in partnership with the Government of **Rwanda**, CHAI made significant progress on the roll-out of a national nutrition program aimed at reducing the rate of chronic malnutrition in children. CHAI facilitated the launch of a new company, Africa Improved Foods, which constructed a state-of-the-art production facility in Rwanda to produce fortified blended food. Africa Improved Foods is a joint venture among Royal DSM, the International Finance Corporation, the Netherlands Development Finance Company, the Commonwealth Development Corporation and the Rwandan Government.

Initial product runs began in the fourth quarter of 2016. By the end of the year, Africa Improved Foods had produced batches of fortified blended food for the Government of Rwanda and Supercereal Plus for the World Food Programme. The Government of Rwanda is purchasing products at-cost from the factory for fully subsidized distribution to the poorest households in the country. The program is expected to reach about 93,000 children and 20,000

women in poor households with highly nutritious fortified blended foods in 2017. When the World Food Programme sales are included, the factory will serve almost one million malnourished children in Africa.

In cooperation with the relevant government partners, and with both technical and financial support from New Zealand AID, CHAI provided extension support for partner cooperatives in 2016 in both Rwanda and **Ethiopia**. These efforts are intended to improve farmers' yields and crop quality, and reduce their cost of production, in turn allowing the local ventures to purchase high-quality inputs for fortified blended food production from local farmers.

IMPROVING CHILDHOOD NUTRITION AND REDUCING ANEMIA IN GIRLS AND WOMEN

In early 2016, with support from the IKEA Foundation, CHAI began work to improve nutritional outcomes in Madhya Pradesh, **India**. This populous state has the third highest burden of malnutrition in the country. The program is focused on three key areas: reducing the burden of anemia for adolescent girls and pregnant women, improving quality and access to complementary foods and enhancing the capacity of frontline workers to manage the Integrated Child Development Services (ICDS) program. The ICDS program provides complementary and supplementary foods across Madhya Pradesh and promotes appropriate health and nutrition practices such as exclusive breastfeeding, regular growth monitoring and identification of severe acute malnutrition.

To tackle the burden of malnutrition and anemia, CHAI plans to support the Indian Government to drive a comprehensive set of reforms. These reforms will help improve local capacity to produce affordable, nutritious complementary and supplementary food products that are appropriately fortified with the necessary macro- and micro-nutrients and utilize a simple, yet effective, supply chain management system that will help to improve access and availability of these nutritious foods in the hardest to reach populations. In addition, CHAI and the government will work to improve the coverage and service delivery of iron and folic acid supplementation



FAMILY COOKING IN MADYA PRADESH, INDIA

interventions targeted at adolescent girls and pregnant women, strengthen community-level systems for routine monitoring of nutrition indicators, establish a continuum of care and treatment for children with moderate and severe acute malnutrition and streamline planning and implementation processes to improve access to safe water and sanitation.

In a little over a year, CHAI has made significant progress with the Government of Madhya Pradesh to address the problem of anemia by crafting and operationalizing a robust and well-financed iron supplementation strategy. CHAI has also facilitated the introduction of iron-fortified salt to be distributed by a public funded program to over 10 million people, with a target of reducing anemia by 10 percentage points by 2019. Since the program began, it has reached 819,000 children, 873,079 adolescents and 342,300 pregnant and lactating women to identify cases of anemia, promote exclusive breastfeeding and treatment, growth monitoring and referral in cases of severe malnutrition.

CHAI is also working with the Madhya Pradesh Government to introduce interventions that have potential for transformational impact including the introduction of a Community-Based Management of Acute Malnutrition (CMAM) program and the revision of ICDS complementary food recipes. By working closely with the government to implement this comprehensive strategy, CHAI hopes to reduce the burden of underweight and stunting in children under three by 10 percentage points by 2019.



FINANCIALS

Clinton Health Access Initiative, Inc. and Subsidiaries

End-year **2013**, **2014**, **2015** and **2016**

Amounts in Thousands of Dollars (\$000's)

CONSOLIDATED STATEMENT OF ACTIVITIES

	2016	2015	2014	2013
Total revenue	\$ 139,733	\$ 152,586	\$ 141,534	\$ 109,387
EXPENSES				
East Africa	26,708	24,328	24,197	16,306
Caribbean	-	387	347	1,281
Southeast Asia	6,522	11,988	14,407	13,220
Southern African Development Community	28,544	31,868	29,239	23,883
West Africa	23,191	30,251	20,004	11,869
India	8,701	6,150	7,672	5,286
Direct Country Team Expenses	93,666	104,972	95,866	71,845
Direct Global Team Expenses	33,011	31,853	30,790	25,235
In-Country Indirect Cost	2,056	1,900	1,553	1,418
Executive & Program Management	2,226	2,530	1,892	1,654
General and Administrative	9,390	9,861	7,891	6,606
Overhead	13,672	14,291	11,336	9,678
Finance System	465	633	760	448
Total expenses	140,814	151,749	138,752	107,206
Increase in net assets	\$(1,082)	\$ 838	\$ 2,783	\$ 2,180

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

	2016	2015	2014	2013
ASSETS				
Cash and cash equivalents	\$ 2,232	\$ 9,913	\$ 10,403	\$ 10,524
Assets limited as to use	72,903	77,693	60,369	61,567
Accounts receivable	411	1,437	1,732	975
Contributions receivable	2,830	3,038	3,393	4,944
Grants receivable	6,092	1,926	7,641	4,387
Prepaid expenses	6,049	1,006	1,527	638
Property and equipment, net of accumulated depreciation	247	225	184	211
Total assets	90,764	95,238	85,249	83,246
LIABILITIES AND NET ASSETS				
Accounts payable	1,971	3,550	2,395	3,171
Accrued expenses	2,540	2,547	4,211	2,226
Deferred revenue	23,442	29,207	36,029	38,118
Obligations associated with assets held for commodities purchases	220	375	3,128	3,513
Total liabilities	28,173	35,679	45,763	47,028
Total net assets	62,591	59,559	39,487	36,219
Total liabilities and net assets	\$ 90,764	\$ 95,238	\$ 85,250	\$ 83,247



ACKNOWLEDGEMENTS

CHAI'S 2016 WORK IS POSSIBLE THANKS TO A COMMITTED NETWORK OF DONORS AND PARTNERS.

- | | | | |
|--|--|--|---|
| Absolute Return for Kids | Flanders International Cooperation Agency | New Zealand Ministry of Foreign Affairs and Trade | The Australian Government |
| Advance Access & Delivery (AA&D) | Gavi, The Vaccine Alliance | Norwegian Ministry of Foreign Affairs | The ELMA Foundation |
| Africa Improved Foods | Georgetown University | Oak Foundation | The Global Fund to Fight AIDS, Tuberculosis and Malaria |
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* CHAI's Board of Directors expanded to 15 members in March 2017. In June 2017, Dr. Tachi Yamada became Chairman of the Board, replacing President Clinton who became Chairman Emeritus.

** Joined Board March 2017



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Keith Arkins: page 8

Claudia Beretta: page 13, 18, 24, 68, inside front cover

Melinda Stanley: pages 3, 10, 27, 30, 33, 41, 48, 50, 52, 62, 64, 70, inside back cover

Tom White: pages 46, 47 (courtesy of American Cancer Society)



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