



Annual Report  
2023



# Contents

- Message from the CEO.....2**
- About CHAI .....4**
  - Where we work ..... 5
  - Our history..... 6
  - Our value proposition ..... 8
- Infectious Diseases .....10**
  - COVID-19.....11
  - Hepatitis..... 14
  - HIV/AIDS.....17
  - Malaria and Neglected Tropical Diseases .. 21
  - Oxygen Therapy ..... 23
  - Tuberculosis ..... 25
- Women and Children's Health ..... 28**
  - Diarrhea..... 29
  - Maternal and Newborn Health..... 31
  - Nutrition..... 34
  - Pneumonia..... 37
  - Sexual and Reproductive Health..... 40
  - Vaccines..... 42
- Non-communicable Diseases ..... 46**
  - Assistive Technology ..... 47
  - Cancer..... 48
  - Cervical Cancer ..... 50
  - Diabetes and Hypertension ..... 53
- Health Systems ..... 56**
  - Health Financing..... 57
  - Health Workforce ..... 60
- Climate & Health..... 62**
- Cross-Cutting Experts ..... 66**
  - Analytics and Implementation Research ... 67
  - Clinical Sciences..... 67
  - Diagnostics ..... 67
  - Digital Health ..... 68
  - Global Markets ..... 68
  - Product Development, Quality, Costing,  
and Regulatory Affairs..... 68
- Financials .....70**
- Acknowledgments .....72**
- Board of Directors .....73**
- Endnotes.....74**

## CHAI staff reflections

- Lan Mao ..... 13
- Manuel Espinoza Garcia .....20
- Habibou Ouedraogo .....36
- Ndunge Evelyn Pavao ..... 52



*Pictured on front cover: Campaign focused on screening, diagnosing, and treating pregnant women and vaccinating newborns in Rwanda. Credit: Olivier Mugwiza.*



## Message from the CEO

CHAI has always stood out to me for one reason: the ability to create real, measurable improvements for people by reducing illness and saving lives. We do this through the key roles we play. As **Market Shapers**, we drive down the price of drugs; as **Trusted Strategic Partners**, we support governments to design strong health policies; and as **Operational Partners**, we help turn those policies into action. When all three roles come together, we can tackle big, often neglected problems as **Ecosystem Catalysts** and dramatically improve health outcomes worldwide (learn more about these roles on page 8).

We don't do this work alone. Our impact starts and ends with the trusted relationships we have developed with governments over the decades. And it's that trust that allows us to turn strategies into real, on-the-ground results.

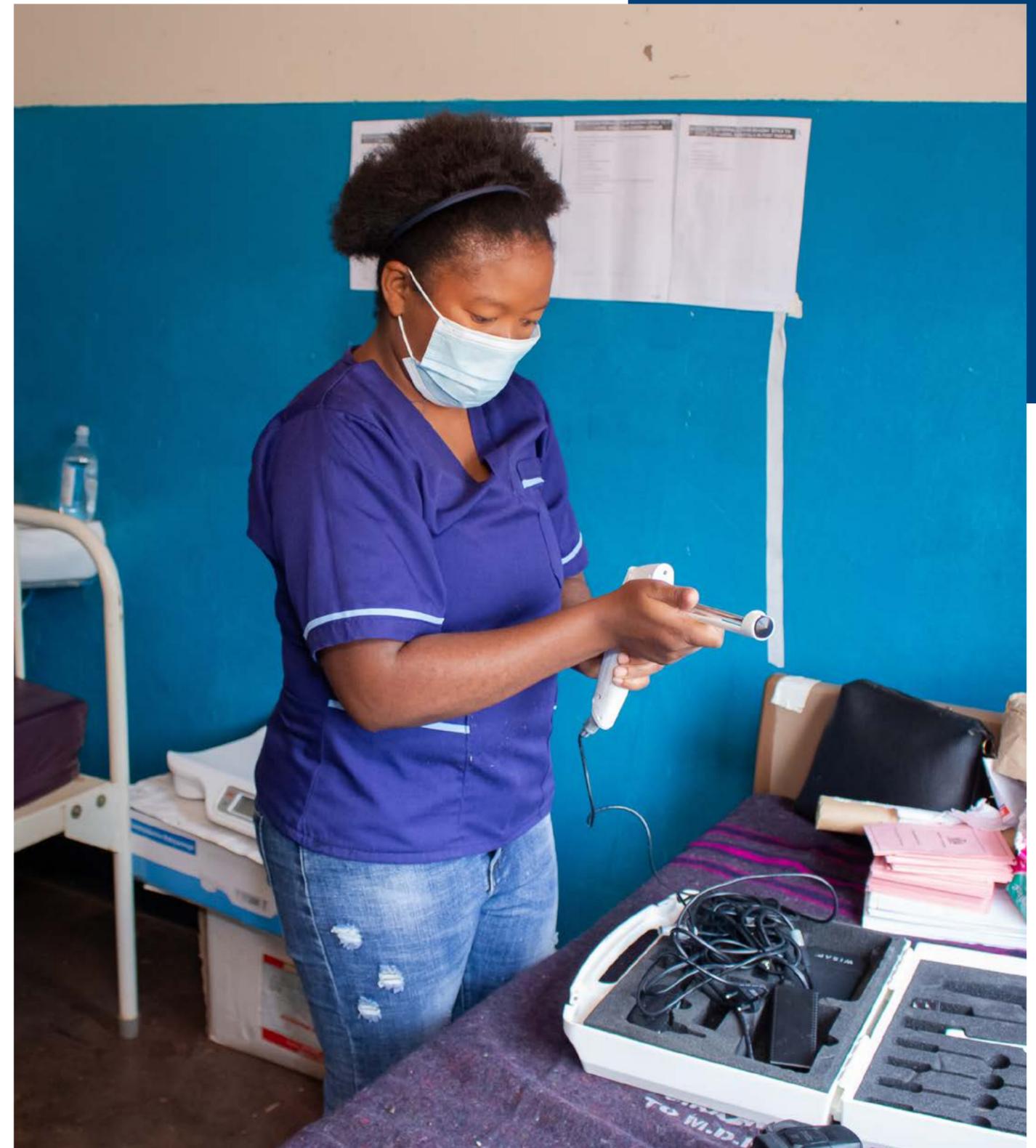
This year, we continued to bring innovative, data-driven solutions to some of the toughest health challenges. I'm incredibly proud and energized by the progress we've made. Together with governments, other NGOs, and our donors, we hit major impact milestones—like screening over a million women for cervical cancer (page 50); or Cambodia's first-ever month with zero reported cases of malaria (page 21); or establishing over 400 new oxygen plants across nine countries (page 23).

We also continued to investigate new areas where CHAI's unique capabilities could have an impact. In 2023, using the toolkit CHAI pioneered to create sustainable markets for pharmaceuticals, we began looking at market shaping for energy-efficient room air conditioners—essential to people's health in a rapidly heating world (page 62).

None of this would have been possible without the passion and commitment of our team. Thank you to our colleagues around the world who embody the roles that CHAI plays. We benefit from the breadth of skills—science, clinical, business, and more—that you bring to the organization every day.

As we look ahead, we remain committed to pushing the boundaries of what's possible in global health. We're determined to build a future where everyone, no matter where they live, has the ability to live a healthy and fulfilling life.

*Dr. Neil Buddy Shah*  
**CHAI CEO**



*Pictured: A health worker prepares a thermal ablation device, used for cervical cancer treatment, at Makola Health Center in Zambia. Credit: Dominic Mukumbila.*



# About CHAI

The Clinton Health Access Initiative (CHAI) is a global nonprofit organization that operates at the nexus of government, business, and health to drive more equitable access to healthcare.

**Our vision** A world in which everyone is able to live a healthy and fulfilling life.

**Our mission** To save lives and improve health outcomes in low- and middle-income countries by enabling the government and private sector to strengthen and sustain quality health systems.

**Our values** We are a mission-driven organization. We work in cooperation with and at the service of government partners. We have an entrepreneurial and action-oriented culture, which fosters diversity, equity, and inclusion. We operate with urgency, trust, transparency, frugality, and humility. We recognize our staff is our greatest asset.

*Pictured above: Healthcare workers participate in an Emergency Obstetric and Neonatal Care training program at Ndola Central Hospital in Zambia. Credit: Jason J. Mulikita.*

## Where we work

CHAI works with governments and partners to prevent and treat deadly infectious and non-communicable diseases, accelerate the rollout of lifesaving vaccines, reduce maternal, infant, and child mortality, make assistive technology available to those who need it, and strengthen health systems.

Our strategy is rooted in sustainability, which means governments lead the solutions and programs are designed to scale nationally with tactics that can be replicated in other countries. CHAI is deeply grounded in the countries we work, with 85 percent of employees based in program countries.

**39**

countries where CHAI had programmatic engagement, 36 where CHAI operated out of an office location

**125+**

countries have access to CHAI-negotiated deals on medications, diagnostics, vaccines, and other health tools

**85%**

of CHAI employees are based in program countries



- Countries with programs and a CHAI office
- Countries with programs only

# Our history

CHAI was founded in 2002 to help save the lives of millions of people living with HIV/AIDS in low- and middle-income countries.

## 2002-2003

- Introduced HIV drugs in low- and middle-income countries with CHAI's 60% price reduction. 60+ countries in Africa and the Caribbean access treatment for the first time as a result of the deal.

## 2009

- Delivered US\$1B savings for South African government with HIV and TB price cuts. Partnership dramatically scaled up clients accessing care and treatment as CHAI began expanding into new health areas beyond HIV.

## 2010

- Supported development of innovative subsidy mechanism to get ~300M anti-malarials to patients. Increased access to best-in-class artemisinin combination therapy in eight countries.

## 2011

- Averted childhood deaths and saved US\$950M with price deals for routine vaccines. Lowered price of rotavirus vaccine by 67% and pentavalent vaccine by 50%.

## 2012

- Created market for long-acting reversible contraceptive implants in low- and middle-income countries with 50% price cut.

## 2013

- Prevented 75,000+ deaths with expansion of life-saving childhood diarrhea treatment of zinc and oral rehydration salts (ORS) in five high-burden partner countries.

## 2014

- Supported Liberia's Ebola rapid response to contain the epidemic. Led case management and health worker training, serving as critical link between international emergency response and Liberian government.

## 2016

- Reduced maternal and newborn deaths by >35% in three Nigerian states with program focused on the 48 hours around delivery.
- Created market for hepatitis C treatment in seven countries with 71-95% cost reduction for originator treatments. Significantly expanded access in 2023 for WHO-prequalified products with >90% reduction for HCV treatment from two generic suppliers and reduced price for hepatitis B treatment to under US\$3 per month.

## 2017

- Increased access to cancer medications, including chemotherapies, in six high-burden countries in Africa. Expanded program in 2019 across Africa and Asia with 20+ additional medications.

- Introduced affordable single-pill DTG-based HIV regimen with landmark TLD deal, making best-in-class optimal medication available in low- and middle-income countries.
- Paved way for millions in savings with launch of MedAccess credit facility for healthcare access deals. Leverages US\$200M paid-in capital to negotiate agreements for medical innovations in low- and middle-income countries.

## 2019

- More than doubled number of doctors per population with close of Rwanda's flagship health workforce program. More broadly, CHAI has significantly expanded trained health workforces in 16 countries and provided strategic and operational support to governments to mobilize over US\$170M in resources to train and deploy health workers.

## 2020

- Achieved fastest-ever generic pediatric HIV drug approval and launch.

## 2020-2022

- Rapidly scaled COVID-19 pandemic response in partner countries with strategic and operational support. CHAI quickly secured and deployed donations of antigen test kits to 15+ high-burden countries, supported national oxygen strategies in 17 countries, and more.

## 2022

- Partnered with governments to screen over 1M women in 10 countries for cervical cancer. More than 80% of women receive appropriate treatment across the program, with half of partner countries exceeding 90% treatment coverage among women who screened positive for pre-cancerous lesions.
- Significantly expanded health insurance in Ethiopia. Scaled community-based health insurance coverage from 10M to 45M+ beneficiaries, including the most vulnerable who now receive fully subsidized coverage.

## 2023

- Over a decade of partnership, helped reduce malaria incidence by 98% across Cambodia, Lao PDR, and Vietnam, and set them on track to eliminate malaria in the next few years.
- Dramatically reduced cost of HIV treatment over 20 years. CHAI's pioneering work negotiating price reductions and generic licenses, together with critical efforts from partners like the United States President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis, and Malaria, reduced cost of HIV treatment from US\$10,000 per person per year in the early 2000s to under US\$45 in 2023.

None of these milestones would have been possible without the leadership of governments, communities with lived experience, support from our donors, and the partnership of global and local civil society organizations and multilaterals.

# Our value proposition

We solve problems across the entire value chain to accelerate our vision and mission through the four key roles we play.

As our areas of work have grown beyond HIV, our value proposition has continued to meet the changing needs of our government partners and the broader global health ecosystem.

Our unique value lies in our ability to catalyze transformational change, saving lives and improving health outcomes through the four key roles we play: **Market Shaper, Trusted Strategic Partner, Operational Partner, and Ecosystem Catalyst.**

These roles interact, overlap, and reinforce each other to accelerate positive change across health systems. Of these, our most powerful contribution is the way we operate as an Ecosystem Catalyst to develop bold, transformational programs and build momentum behind audacious goals.

Our value proposition is powered by our deep relationships across ministries of health, communities, the private sector, and the global health ecosystem. We also bring deep and broad technical expertise, supported by strong data analytics capabilities and experienced “boots on the ground” to marry theory with practical, real-world applications.



## Market Shaper

We create sustainable marketplaces for health commodities—accelerating market introduction, ensuring affordability, and enhancing supply security to increase equitable access.



## Trusted Strategic Partner

We support government-led strategic planning at national and sub-national levels to integrate and strengthen health systems.



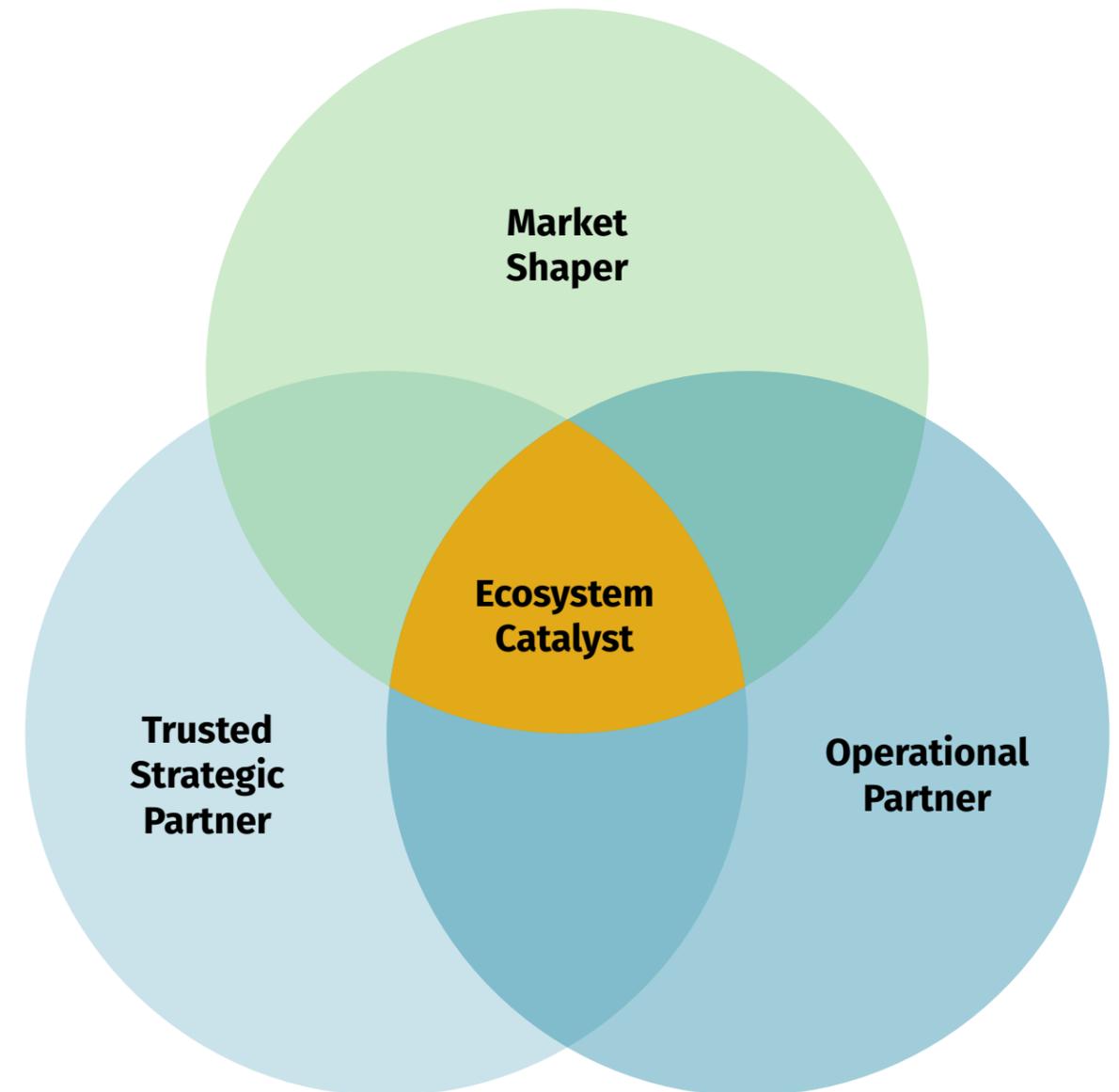
## Operational Partner

We support on-the-ground delivery and execution through technical, operational, and management support to ensure strategic plans are effectively implemented.



## Ecosystem Catalyst

We reimagine what is possible and design solutions that leverage the strengths of partners across sectors to bring about transformational impact.





# Infectious Diseases

For years, four infectious diseases drove the majority of illness and death worldwide—HIV, hepatitis, tuberculosis, and malaria. COVID-19 has now joined these as one of the deadliest globally. CHAI has built on the expertise of its team and the on-the-ground knowledge developed with our HIV work to ensure that as we partner with governments and the global health community to respond to COVID-19, we continue to address the risks posed by other infectious diseases.

*Pictured above: Screening AHD patients as part of a program to better understand the burden of histoplasmosis, at Lagos University Teaching Hospital in Nigeria. Credit: Latitude Space Africa.*

## COVID-19

CHAI is supporting ministries of health to introduce COVID-19 oral antivirals and establish test-and-treat models of care to initiate high-risk patients on treatment within five days of symptom onset.

### COVID-19 oral antivirals and test-and-treat programs take off across nine countries

The COVID-19 pandemic had a catastrophic impact on human lives, health systems, and global markets. It is estimated to have cost US\$12.5 trillion in direct economic losses, with nearly seven million<sup>1</sup> confirmed and 18 million estimated deaths.<sup>2</sup> The health impacts due to disruptions to basic care were also substantial. Roughly 23 million children missed out on routine immunizations. Antenatal visits decreased by 39 percent globally during the first year of the COVID-19 pandemic.<sup>3,4</sup> While COVID-19 case and testing rates have steadily declined since the Omicron wave began in November 2021, high-risk populations, including those over 50 years old, people living with HIV, and those living with tuberculosis, remain at high risk for hospitalization and death if infected.

Broad use of COVID-19 oral antivirals in high-income countries has demonstrated that treatment is a key partner to vaccines and diagnostics in limiting deaths among vulnerable people. In December 2021, the US Food and Drug Administration granted Emergency Use Authorization to nirmatrelvir boosted with ritonavir (Paxlovid). Developed by Pfizer, the WHO recommended it as the preferred regimen for outpatient treatment in April 2022. Treatment with oral antivirals such as nirmatrelvir/ritonavir can drastically reduce the potential for poor outcomes in high-risk populations. However, for it to be effective, it must be administered within five days of symptom onset before the disease becomes severe or critical. Despite the development of this life-saving treatment, access across low- and middle-income countries was extremely limited in 2022.

Beginning in late 2022, to address this access gap, CHAI supported ministries of health across nine countries (**Cambodia, Ghana, Kenya, Lao PDR, Malawi, Nigeria, Rwanda, Uganda, and Zambia**) to introduce nirmatrelvir/ritonavir. The COVID Treatment QuickStart Consortium, The Global Fund to Fight AIDS, Tuberculosis and Malaria, and Unitaid provided technical, in-kind, and funding support to the program.

CHAI's work kicked off at a time when COVID-19 rates were declining along with demand for testing. Furthermore, The Access to COVID-19 Tools Accelerator (ACT-A) closed in March 2023, and in May, the WHO declared an end to the COVID-19 Public Health

#### PARTNER COUNTRIES

Cambodia, Ghana, Kenya, Lao PDR, Malawi, Nigeria, Panama, Papua New Guinea, Rwanda, South Africa\*, Uganda, Vietnam, Zambia, Zimbabwe\*

*\*Discontinued before the end of the year*

#### KEY PARTNERS & DONORS

Quick Start Consortium (Duke University, COVID Collaborative, AmeriCares) funded through Pfizer, Open Society Foundations, Hilton Family Foundation; The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); Unitaid

#### CHAI ROLES

-  Market Shaper
-  Operational Partner



*Pictured: Normand Mbarushimana and other biomedical engineers received training on repair and maintenance of oxygen equipment at Kibuye Referral Hospital in Rwanda. Credit: Grayling.*

Emergency of International Concern. These factors, coupled with a growing COVID-19 fatigue and competing public health priorities, contributed to the low overall demand for COVID-19 treatment throughout 2023.

Despite these headwinds, highly motivated ministries of health in **Rwanda** and **Zambia** quickly established treatment sites and initiated high-risk patients on oral antivirals days after the treatment arrived in-country. Each ministry of health delivered the drugs nationally through decentralized models outside the care of specialists in tertiary hospitals. By the end of 2023, an additional

seven countries established test-and-treat capabilities, and the program initiated over 2,000 patients on treatment by year-end.

CHAI-supported governments are now preparing for a future with significantly reduced COVID-19 program funding and an uncertain epidemiological outlook. While the disease burden has been consistently low since the Omicron wave, the threat of new variants and a potential surge in cases remains. Maintaining COVID-19 surveillance and planning for surge response while caseloads are low will be critical to ensuring readiness should COVID-19 become a greater public health concern in the future.



## Lan Mao

Deputy Country Director, Cambodia

I was born just as the Pol Pot dictatorship was nearing its end, in January 1979, in the latter months of a turbulent time in Cambodian history. My precise birthdate remains unknown, and I entered the world under the most basic of shelters—a cattle cart.

Life has always been a delicate balance between ambition and service for me. For instance, when I was in university, I would drive more than six hours across two provinces every weekend for three years in the course of my university degree to volunteer with street youth in my home province. These early community-level experiences led me to choose a career in development upon finishing my degree.

Over the past two decades, I have had the privilege of working with prestigious international organizations such as Marie Stopes International, Development Alternatives Inc., FHI360, and CARE International. In May 2018, I embarked on a new chapter at CHAI Cambodia, where I took on the responsibility of launching the Sexual Reproductive Health program—an endeavor that was both urgent and essential. As a poignant coincidence, my son was born during the first week of my time at CHAI, adding a personal dimension to my career milestones.

My experience at CHAI differed significantly from my previous roles. The organization's distinct culture prioritizing outcomes over branding and marketing challenged me to adapt and grow in new ways. My focus shifted to collaborating with the Ministry of Health and government authorities, engaging in joint brainstorming, ideation, and design of technological solutions aimed at achieving feasible, scalable, and long-lasting breakthroughs.

In 2021, amidst the upheaval of the COVID-19 pandemic, I led CHAI's work to integrate non-communicable disease (NCD) initiatives into Cambodia's COVID-19 immunization programs. Collaborating closely with the Office of the Prime Minister and the Ministry of Health in Cambodia, we launched the project in the provinces of Takeo and Kampong Chhnang.

This laid the groundwork for other innovative care models, such as the Vision Catalyst Fund-supported integration of NCD and eye health in Kampot, and the TB Reach Fund-supported integration of tuberculosis and NCD care in Kampong Chhnang—groundbreaking initiatives that take a patient-centered approach to the delivery of health services, and ultimately strengthen population-level health outcomes.

Reflecting on my journey, trust has been the cornerstone of all my endeavors. Building trust with government partners is the crucial first step without which progress is unattainable. My work at CHAI underscores the value of collaboration, trust-building, and support—illustrating how teamwork can unleash collective talents and drive significant change. One example of this has been recently working with the Ministry of Health to update their policy on integrated community health workers.

My story is not only one of professional achievement and personal growth but must be understood in the context of Cambodia's healing and progress. I hope it can be a reminder that even the humblest beginnings can lead to extraordinary endeavors.

# Hepatitis

Viral hepatitis B and C affect more than 300 million people globally. Hepatitis can lead to liver damage or failure and is the leading cause of liver cancer in much of the world. More than 1.3 million people die from liver diseases every year.<sup>5</sup> Despite the availability of effective and inexpensive generic drugs that offer a cure for hepatitis C and vaccination against hepatitis B, only a fraction of those infected or vulnerable to infection have access to these interventions. CHAI is committed to eliminating hepatitis C and mother-to-child transmission of hepatitis B. We support governments in introducing and scaling viral hepatitis programs using a stepwise approach to build simple test-and-treat delivery models within existing health delivery infrastructure.

## PARTNER COUNTRIES

Cambodia, India, Indonesia, Myanmar, Nigeria, Rwanda, Vietnam

## KEY PARTNERS & DONORS

*Donors:* Bill and Melinda Gates Foundation (BMGF); The Hepatitis Fund; UK Foreign, Commonwealth, and Development Office (FCDO)

*Partners:* World Health Organization (WHO); World Hepatitis Alliance (WHA); The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); Pan American Health Organization (PAHO); Unitaid; The Kirby Institute, University of Bristol (UOB); FIND; Treatment Action Group (TAG); Coalition PLUS; TREAT Asia; Médecins du Monde (Mdm); Médecins Sans Frontières (MSF); Burnet Institute; Partners in Health (PIH); United Nations Development Program (UNDP); the Aga Khan University (AKU); International Network on Health and Hepatitis in Substance Users (INHSU); International Coalition to Eliminate HBV (ICE-HBV); PEPFAR; Harm Reduction International (HRI); Yayasan Koalisi Satu Hati; Indian Network of People who use Drugs (INPUD); Coalition for Global Hepatitis Elimination (CGHE); Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM); Gavi, The Vaccine Alliance; Elizabeth Glaser Pediatric AIDS Foundation (EGPAF); PATH; Africa Centres for Disease Control and Prevention (CDC); United States CDC;

## CHAI ROLES

-  Market Shaper
-  Operational Partner

## 90% reduction in cost of viral hepatitis treatment could help increase access to medication and save countries millions of dollars

In 2023, CHAI leveraged our market-shaping expertise to reduce the price of viral hepatitis treatment globally by over 90 percent, helping increase affordability and equitable access in low—and middle-income countries.

**Rwanda** has had access to this pricing since 2021. With CHAI's negotiation support, **Rwanda's** US\$60 per treatment course has been the benchmark for WHO pre-qualified direct-acting antivirals (DAAs), with countries like Egypt, **India**, and Pakistan scaling up their efforts based on affordable pricing for locally quality-assured DAAs. However, most low- and middle-income countries continue procuring DAAs at or above US\$100 and, in some cases, as high as US\$1,000. Millions of people could not afford the cure they needed because of this price disparity.

In May 2023, CHAI partnered with The Hepatitis Fund to announce an agreement with generic DAA manufacturers to dramatically lower the price of WHO-prequalified hepatitis B and C drugs in low- and middle-income countries. As a result, a 12-week, once-daily oral treatment of sofosbuvir and daclatasvir for hepatitis C is now available at or below US\$60. In addition, a month's treatment of hepatitis B using tenofovir disoproxil fumarate is offered at a ceiling price of US\$2.40. These new prices can generate significant savings, enabling public health programs to treat more patients within existing budgets, but will need investment by governments and donors in commodity procurement to be sustained. Without an increase in procurement, this pricing agreement is at risk of going away. Countries that could significantly benefit from these price reductions include **Cambodia**, with its newly launched national program in October 2023, **Indonesia**, aiming to micro-eliminate hepatitis C in key populations, starting with people in prisons, and **Nigeria**, where several states have initiated viral hepatitis



*Pictured: Campaign focused on screening, diagnosing, and treating pregnant women for hepatitis in Rwanda. Credit: Olivier Mugwiza.*

services, but face challenges with access to diagnostics and treatment.

## The WHO taps CHAI's market intelligence for its first-ever consolidated report on global viral hepatitis

As part of CHAI's efforts to improve market transparency and empower stakeholders and decision-makers in the hepatitis C community, we published the third issue of the Hepatitis C (HCV) Market Intelligence Report in December 2023. The report outlines historical supply and pricing trends and global benchmark prices. The report also offers strategies to access diagnostics and drugs at more affordable prices. For the first time, the report also provided preliminary insights into the market for WHO-recommended harm-reduction commodities: prevention products used in opioid agonist maintenance therapy (methadone and buprenorphine), overdose reversal (naloxone), and needles and syringe programs.

## Mobilizing donor resources for multiple countries to advance hepatitis elimination agendas

CHAI continues to play a critical role in catalyzing global hepatitis elimination efforts by mobilizing domestic and donor resources. For example, since 2020, CHAI in collaboration with partners, successfully advocated for the Global Fund to Fight AIDS, TB, and Malaria to expand its funding policy for viral hepatitis. Building on this success, in 2023, CHAI tailored technical assistance to 21 countries interested in developing hepatitis asks within the Global Fund's Grant Cycle 7, the grant allocation cycle from 2023-2025.

Of the 21 countries, 19 included hepatitis-related funding requests in their applications. CHAI's support helped several countries receive their grants, including **Nigeria**, **Uganda**, and **Vietnam**, allowing them to expand the scope of patient services they offer. In **Nigeria**, funding was earmarked for hepatitis B and C screening for pregnant women as part of **Nigeria's** triple elimination plans (to eliminate mother-to-child transmission of HIV, syphilis, and hepatitis

33M+

individuals screened for hepatitis B and C between 2016 and 2023. CHAI has supported governments in seven countries to screen over 19 million people for hepatitis C and over 14 million for hepatitis B.

90%

reduction in the global price of viral hepatitis treatment because of CHAI-led market-shaping work.<sup>28</sup>

B). Some of the grant funding also went to hepatitis C screening and treatment for people who inject drugs as part of the country's package of harm reduction services. **Vietnam** received hepatitis C treatment courses for 8,000 patients with HIV/hepatitis C co-infection. In addition, **Uganda** used the Global Fund funding to secure hepatitis B and C testing and treatment commodities for key populations and pregnant women.

### Catalyzing the triple elimination of hepatitis B, HIV, and syphilis in India and Rwanda

Of the 1.2 million new hepatitis B infections annually, most result from mothers passing the virus to their child at birth. Administering the hepatitis B birth-dose (HepB-BD) vaccine within 24 hours of birth is crucial to preventing this transmission.<sup>6</sup> In the WHO African Region, which accounts for 63 percent of new infections, only 18 percent of newborns receive the HepB-BD vaccine because of funding shortages.<sup>7</sup>

Globally, CHAI's advocacy first supported Gavi, The Vaccine Alliance, to include HepB-BD in their 2018 Vaccine Investment Strategy, though implementation was delayed by COVID-19. Now the strategy is moving forward, with Gavi opening funding for HepB-BD in 2024.

We also continue to work directly with countries to eliminate mother-to-child transmission. In **Rwanda**, approximately 10,000 out of every 350,000 newborns are at risk of contracting hepatitis B at birth every year.<sup>8</sup> Antenatal hepatitis B screening, combined with antiviral treatment for pregnant individuals and vaccination for infants, can significantly reduce transmission risks, but challenges persist in delivering these services at antenatal clinics.

With funding from the Canton of Geneva and The Hepatitis Fund, CHAI is partnering with the **Rwanda** government to screen 90 percent of pregnant women accessing antenatal care, initiate 90 percent of eligible patients on treatment, and vaccinate 90 percent of newborns born to mothers with hepatitis B within 24 hours. In 2023, our first step was to conduct a baseline assessment of over 60 public health facilities to evaluate existing services. The results informed training for over a thousand health workers across 513 health centers. Upon completing the assessment, the Ministry of Health, with CHAI support, established a digital data system to track the progress of commodities procured to treat 350,000 pregnant women for hepatitis B and provide 10,000 babies with the HepB-BD vaccine hepatitis. In 2024, CHAI will support program roll-out at facilities to reach a nationwide scale.

In **India**, a similar program focuses on integrating resources—such as human capital, supply chains, and data management systems—to reach triple elimination goals. In 2023, our CHAI affiliate office partnered with West Bengal and Punjab to launch triple elimination pilots. The insights from West Bengal led to the “Kolkata Declaration,” signifying the state's commitment to addressing these challenges. The CHAI affiliate office continues to work with both states, aiming to scale up the program nationally.

## HIV/AIDS

In 2023, an estimated 39.9 million people were living with HIV globally, with sub-Saharan Africa accounting for two-thirds of all cases. Over 600,000 people died from HIV-related causes, and more than 1.3 million were newly infected.<sup>9</sup> CHAI aims to drive sustained epidemic control by not just reducing deaths but also by improving the quality of life for people living with or at risk of HIV. We do this by catalyzing the rapid development and introduction of optimal, quality-assured HIV products and services. We partner with governments and communities to build resilient, sustainable, and equitable health systems driven by the principle that people—no matter who they are or where they live—are central to the HIV response.

### Providing more preventive choices to people at risk of HIV with an expanded PrEP toolkit

In 2021, the UN General Assembly declared a new set of targets to end AIDS by 2030, in what is called the 2021 Political Declaration on AIDS.<sup>10</sup> This declaration set several HIV prevention goals for 2025, including reducing new HIV infections to under 370,000 people and ensuring that 95 percent of people at risk of HIV infection have access to and use appropriate, prioritized, person-centered, and effective combination prevention options.

In the prevention space, we have a growing portfolio of products and interventions, including oral pre-exposure prophylaxis (PrEP), a pill that can be taken to prevent HIV. Yet globally, uptake has been slow. In 2023, only 2.3 million people started taking oral PrEP.<sup>11</sup>

HIV advocates have made it clear to their governments and global manufacturers that they want more choices. And thanks to clinical advancements, there are now in development real alternatives to the daily PrEP pill. Long-acting cabotegravir (CAB-LA) and other long-acting medications in the pipeline will offer discreet, sustained protection.

CHAI's work, globally and with countries, helped establish enabling supply and demand-side conditions for introducing these products. Over the last two years, we have engaged originator and generic product suppliers to accelerate generic development and market entry of new PrEP products. This includes products currently in development, such as lenacapavir, a six-monthly injectable now in phase three clinical trials, which has shown 100 percent efficacy<sup>12</sup> at preventing HIV infection among cisgender women and a 96 percent reduction in HIV infections compared to background HIV incidence among cisgender men, transgender men, transgender women, and gender non-binary individuals who have sex with partners assigned male at birth,<sup>13</sup> and the dual prevention pill, a single

#### PARTNER COUNTRIES

Benin, Cambodia, Democratic Republic of Congo, Ethiopia, India, Kenya, Lao PDR, Lesotho, Malawi, Mozambique, Myanmar, Nigeria, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe

#### KEY PARTNERS & DONORS

Bill & Melinda Gates Foundation, CIFF, EJAF, ELMA, MedAccess, UK Foreign, Commonwealth, and Development Office (FCDO), Unitaid

#### CHAI ROLES

-  Market Shaper
-  Trusted Strategic Partner
-  Operational Partner

## US\$1 self-test

Leveraging the 2022 market shaping intervention that introduced a US\$1 HIV self-test, CHAI worked with Uganda's Ministry of Health to conduct a successful field evaluation of the test, which led to its adoption within the national HIV program. In parallel, we prepared cost and impact models for the ministry to demonstrate how self-testing could expand services to reach more people.

daily pill to prevent pregnancy and HIV infection, being developed by Viatrix.

We have laid a strong foundation for product commercialization, but countries must also be ready to introduce these products when they become available.

### Zambia launches first-ever long-acting injectable HIV-prevention medication in any African country

With decades of experience introducing new products within countries, CHAI works with partner governments to build national multi-product PrEP portfolios.

CHAI worked with the Zambian government to develop the country's first CAB-LA implementation plan. We supported the update of PrEP guidelines to inform rollout of this new product. We also provided technical assistance to the Ministry of Health to prepare for the launch of CAB-LA in February 2024 (making it the first African country to introduce CAB-LA). As of October 2024, **Zambia** had delivered CAB-LA to over 2,000 people across 20 sites, generating essential early evidence for wider-scale long-acting injectable PrEP rollout.

With funding from The Children's Investment Fund Foundation (CIFF), CHAI partnered with the Global Fund, WHO, and key partners in countries eligible for a PrEP Matching Fund (**Kenya, Mozambique, Nigeria, Uganda, and Zambia**) to include more than one PrEP

modality in Global Fund implementation plans for 2024-2026.

In **Malawi**, CHAI is working as part of the Georgetown University-led Blantyre Prevention Strategy (BPS) to introduce CAB-LA and establish a path-to-scale through a Bill & Melinda Gates Foundation-funded implementation project.

### For the first time, children living with HIV now have access to an affordable, optimal treatment in one pill

There have been vast improvements in pediatric HIV treatment in recent years, including the rapid development and introduction of generic pediatric DTG (pDTG) tablets. The tablets are highly effective, affordable, dissolve in water, and taste like strawberries—increasing children's adherence to their treatment regimen and resulting in improved viral suppression.<sup>14</sup>

However, until recently, pDTG tablets and the other necessary WHO-recommended medications many children take daily as part of their treatment have not been available together in a single tablet. This has complicated supply chains and dispensation at pharmacies, and increased the risk that one pill may run out before the others.

CHAI, with funding from Unitaid, worked with innovator pharmaceutical company, ViiV Healthcare, and generic companies, Viatrix and Aurobindo, to develop generic products containing pDTG and the rest of the WHO-recommended treatments for children in one convenient pill. This product, ABC/3TC/DTG (60/30/5 mg) dispersible tablets (pALD), still dissolves in water and is also strawberry-flavored. Following United States Food and Drug Administration (US FDA) approval of ViiV's product, both generic companies received US FDA tentative approval for pALD in Q3 2023.<sup>15, 16</sup>

Compared to legacy products, pALD is expected to simplify procurement and supply chain processes, and streamline pharmacy dispensation and caregiver administration, minimizing the risk of children not receiving all

the required medicines to control their HIV. It is also expected to have a lower environmental impact by using fewer bottles and taking up less space during shipping.

In 2024, countries will begin to introduce pALD. For the first time ever, children living with HIV now have access to an affordable and optimal treatment, recommended by WHO, in one pill.

### Lesotho launches CD4 test that doesn't require an electronic device and yields same-day results with a 40-minute turnaround time

Advanced HIV disease (AHD) affects approximately 4.3 million adults globally, with a disproportionate 58 percent concentrated in sub-Saharan Africa.<sup>17</sup> AHD puts people living with HIV at a higher risk of developing and dying from opportunistic infections such as tuberculosis and cryptococcal meningitis. Therefore, it is critical to address AHD to lower AIDS-related morbidity and mortality.

Many people with AHD have no signs or symptoms of illness, and health workers can miss up to half of cases without laboratory testing.<sup>18</sup> Thus, CD4 testing, which measures the strength of a person's immune system, remains a critical gateway for timely diagnosis and management.

Unfortunately, access to CD4 testing can be limited and take days or even weeks to return results to clients, especially in rural areas. In **Lesotho**, for example, about 90 CD4 testing platforms are in hospitals and labs across the country. The platforms rely on long and fragmented sample transport networks to facilitate testing and return results to clients. Rarely does a client receive a same-day result. Even when they do, only 31 percent of **Lesotho's** health facilities have AHD services, which can make accessing testing, treatment and prevention for deadly opportunistic infections more difficult.

In 2020, Unitaid and CHAI announced an innovative access agreement<sup>19</sup> that enabled governments and partners in 138 countries to access the novel, instrument-free

VISITECT® CD4 Advanced Disease test at US\$3.98 per test. VISITECT® is the first point-of-care CD4 test that does not require an electronic device to produce a result. Moreover, it yields same-day results with a turnaround time of just 40 minutes. This enables same-day linkage to appropriate AHD screening, diagnosis, and treatment if needed. We knew this new CD4 test could solve some of the problems **Lesotho** was facing. So, CHAI worked with the Ministry of Health and other partners to evaluate the role and impact of introducing VISITECT®.

In Q2 2023, CHAI and the Ministry of Health convened AHD stakeholders to discuss a VISITECT® validation assessment. We completed the assessment that same quarter, ahead of potential PEPFAR procurement. We then supported the Ministry to quantify and place an order for the product, which it received in October 2023.

Since introducing the test, CHAI and the Ministry have worked to ensure continued access for patients. Activities included supportive supervision visits to monitor testing in facilities, identify any barriers to use, and implement corrective measures.

CHAI also facilitated comprehensive national and district-level training for over 1,400 health workers, equipping various cadres with requisite VISITECT® testing skills. Throughout the last half of 2023, we supported the Ministry's Supply Chain and Management Directorate (SCMD) to forecast test kit needs. This resulted in the inclusion of the VISITECT® test kit in the national budget.

Through the concerted efforts of CHAI, the Ministry of Health, and collaborating partners, VISITECT® has become a critical part of **Lesotho's** CD4 testing network, accounting for nearly 35 percent of all CD4 testing. Because it is device-free, it allows expanded access to CD4 testing and timely results in even remote clinics, decentralizing access to the lifesaving AHD package-of-care and identifying additional patients sooner.



## Manuel Espinoza Garcia

Case Management Senior Associate, Honduras

I began my career as a physician in a rural hospital in the Moskitia region of Honduras. My tools were stethoscopes, otoscopes, and laboratory tests. My mission was clear: reduce suffering, cure diseases, and save lives. However, working in a rural hospital in Puerto Lempira, I often felt overwhelmed by the preventable deaths that occurred. It was frustrating to see patients arrive too late, often because essential medications like antiparasitics or antibiotics weren't available when and where they were needed most.

I soon realized that my skills in emergency care and advanced life support were insufficient if we didn't address the root causes. This epiphany marked the beginning of my transition to public health, where I saw the potential to improve access to healthcare on a broader scale. Serendipitously, the opportunity to work with the Clinton Health Access Initiative (CHAI) arose, and I eagerly embraced it.

At CHAI, I was immediately struck by the organization's values and the diverse expertise of my team. Unlike my previous medical teams, this group included epidemiologists, entomologists, and finance experts. The idea of being part of a team dedicated to eliminating one of humanity's oldest and most devastating diseases, malaria, was captivating and dynamic.

One of the main challenges we faced was optimizing the use of limited resources. As a subnational associate, I found myself using new tools such as DHIS2, Excel, QGIS, and PowerPoint. My goal remained the same: reduce suffering, cure diseases, save lives, and now, prevent illness. Just as I learned to interpret an EKG, I had to learn to interpret data charts and community health indicators. Collecting and analyzing data became as critical as diagnosing a patient.

The difference was that, now, I could understand why essential supplies weren't reaching the right places, why early detection of cases was failing, and where to focus our support for maximum impact. Public health and clinical work are two ends of the same spectrum, both essential for a robust health system.

Leveraging data became key. Through developing robust information systems, we fostered a culture of data use,

crucial for evidence-based decision-making, especially with constant threats of new outbreaks. Our focus was on identifying gaps in access to case management services, not just for malaria but also for COVID-19 and other diseases. We aimed to ensure that no one was left unattended, even in the most remote areas.

Local champions, training, and capacity building had the most significant impact. It humbled me to realize that community health workers, despite limited education, often had a greater impact on public health than hospital-based doctors. This was evident during a malaria outbreak in a small, remote community with no more than 350 inhabitants, which took us five hours of paddling in a small canoe to reach. With no electricity or internet, we mapped the 400 cases, with the help of the community, using just pencil and paper. The community identified and drained a pond that was a mosquito breeding site where many cases were being repeatedly infected. Our team and the Ministry of Health then trained three community members and provided them with rapid diagnostic tests and malaria medications. Four weeks later, the outbreak had stopped, and the community hasn't had another since.

Our structured data analysis processes have become a routine part of local team activities. Regular monitoring of team performance and intervention outcomes, visualized through indicators, motivates teams to continue working with a clear vision and purpose.

CHAI's values—service, humility, frugality, and mission-driven cooperation—are not just abstract concepts but practical guides navigating health system complexities. By approaching our work with humility and resourcefulness, we build trust in local teams. Representing CHAI means bringing innovative ideas and working collaboratively to solve pressing problems.

What I cherish most is being part of a great regional and global team, contributing to more resilient health systems. Our collective efforts make a tangible difference in bringing health to remote areas.

This journey from clinician to public health advocate has been deeply rewarding, demonstrating that both ends of the healthcare spectrum are vital for a thriving health system.

# Malaria and Neglected Tropical Diseases

A growing toolbox is available to prevent and treat malaria and neglected tropical diseases (NTDs) effectively. However, high-quality information and systems are required to maximize the impact of these tools on disease burden. CHAI partners with governments across Africa, the Americas, and Asia to enhance disease surveillance, data-driven planning, and evidence-based management of malaria and NTD programs to control and eliminate these diseases.

## Twelve countries prioritize over US\$1.2 billion in funding towards cost-effective malaria interventions to increase the impact of limited resources

Much of the progress made over the last 20 years to reduce the burden of malaria has relied on universal strategies that are increasingly unfeasible.<sup>20</sup> Today, there is an ever-expanding assortment of effective tools and strategies to fight malaria, but budgets to deliver them are not increasing apace, even as populations at risk of malaria are growing rapidly.<sup>21</sup> Navigating these challenges requires malaria programs to generate high-quality data and analytics to decide how best to spend their available resources for optimal impact.

In 2023, CHAI partnered with 12 countries (**Benin, Burkina Faso, Cambodia, Cameroon, the Democratic Republic of Congo, Honduras, Lao PDR, Mozambique, Myanmar, Namibia, Vietnam, and Zimbabwe**) to devise targeted, evidence-based intervention plans and incorporate them into Global Fund applications. We acted as a strategic partner to governments to bring quality analytics, including high-resolution risk maps, statistical analysis, and mathematical modeling, to assess the malaria situation in each country and identify how to spend resources most effectively. Using this information, we helped malaria programs develop national strategic plans and prioritize funding applications targeting a tailored set of tools and strategies to local contexts, accounting for mosquito resistance, population suitability, and transmission dynamics.

As a result, in 2023, the 12 countries supported by CHAI secured over US\$1.2 billion for cost-efficient malaria programming. Highlights of the work include **Mozambique**, where mathematical modeling was used to optimize plans for deploying next-generation prevention tools, with results suggesting that targeted deployment could achieve more than a 30 percent reduction in malaria compared to baseline scenarios. In **Burkina Faso**, we ran a cost-effectiveness analysis of different types of nets. We identified that even though one was more expensive—dual active ingredient bed nets—its greater predicted impact made it the better investment given the local context. As a result, **Burkina Faso** made a nationwide pivot to these nets. In **Angola**, the government faced a US\$7 million gap to reach the US\$20 million

### PARTNER COUNTRIES

Angola, Benin, Burkina Faso, Cambodia, Cameroon, Democratic Republic of Congo, Dominican Republic, Ethiopia, Guatemala, Haiti, Honduras, India, Kenya, Lao PDR, Mozambique, Myanmar, Namibia, Nigeria, Panama, Papua New Guinea, Senegal, South Africa, Uganda, Vietnam, Zimbabwe

### KEY PARTNERS & DONORS

Asia Pacific Leaders Malaria Alliance, Bill & Melinda Gates Foundation, Children's Investment Fund Foundation (CIFF), Duke University, GiveWell, the Global Fund, Inter-American Development Bank, PATH, UK Foreign, Commonwealth, and Development Office (FCDO), UN Foundation

### CHAI ROLES

- Trusted Strategic Partner
- Operational Partner
- Ecosystem Catalyst

US\$1.2B

in malaria funding from the Global Fund for 12 countries which CHAI supported to design evidence-based applications to improve impact.

budget required to cover three provinces with effective bed nets. CHAI collaborated with **Angola's** National Malaria Control Program to identify and prioritize protection for particularly high-risk populations by analyzing malaria risk, demographic factors, and insecticide resistance.

### Eastern Mekong sees a 98 percent drop in malaria incidence since CHAI began supporting the region over 10 years ago

For over a decade, countries in the Mekong region have been working to eliminate malaria. Eliminating the disease is a complicated undertaking that requires robust surveillance systems, context-appropriate interventions, comprehensive access to malaria diagnosis and treatment, and data-driven program management.

CHAI has been working alongside these countries for the last 10 years—partnering with **Cambodia, Lao PDR, Myanmar**, Thailand, and **Vietnam** to build strong systems that will achieve and maintain elimination long after we have left.

In 2023, we helped introduce new tools to **Cambodia, Lao PDR**, and **Vietnam** to continue progress towards malaria elimination. These included G6PD tests to confirm whether patients can safely receive the drug primaquine. This drug offers the promise of increasing cure rates and accelerating the elimination of *Plasmodium vivax* malaria but can cause severe side-effects that G6PD testing will avoid.

As elimination has succeeded and malaria's footprint has shrunk, malaria cases are increasingly focalized in smaller geographies. CHAI worked as a day-to-day partner to

provincial government teams to help tackle the ever-changing operational logistics and challenges of providing services to hard-to-reach areas and populations.

**Cambodia** marked the first-ever month with zero reported cases of *P. falciparum* malaria in December 2023. This landmark achievement illustrates how far the region has come in recent years. Across **Cambodia, Lao PDR**, and **Vietnam**, malaria incidence has dropped 97 percent over the decade since CHAI support began in 2013.

### Over 1.39 million children included in the NTD campaign in Kano State, Nigeria, thanks to better data

Programs to eliminate several high-burden NTDs—including lymphatic filariasis, onchocerciasis, schistosomiasis, soil-transmitted helminths, and trachoma—primarily rely on mass drug administration to cure infections and prevent transmission. Mass drug administration campaigns require quality data to plan, target, and evaluate success. However, many countries do not have sufficient data for informed decision-making on procuring and delivering the right drugs to the right populations.

In 2023, CHAI partnered with six countries, **Benin, Burkina Faso, Ethiopia, Kenya, Nigeria**, and **Senegal**, to improve the use of NTD data and better inform decision-making. In **Kenya**, for example, we helped establish daily data reviews of NTD drugs, which allowed for the timely redistribution of medications to facilities with stockouts and enabled 20,000 additional children to receive treatments.

In Kano State, **Nigeria**, data-driven microplanning of the schistosomiasis and soil-transmitted helminth campaign identified over 12,700 informal schools missed from prior campaigns. These “Tsangaya” schools are attended by children at high risk of these illnesses, who have been repeatedly missed by campaigns. Adding these schools to the campaign roster resulted in 1.39 million additional children being covered by this critical health service.

## Oxygen Therapy

Oxygen is a staple of modern medicine. However, while oxygen is widely available in high-income countries, lower-income countries often have inadequate infrastructure to produce or provide oxygen in health facilities. The COVID-19 pandemic exacerbated this issue by significantly increasing demand for oxygen. Building on our prior work for childhood pneumonia, CHAI was able to leverage lessons learned from the pandemic response. In 2023, we shifted to longer-term oxygen system strengthening efforts to reduce maternal, child, and overall mortality from hypoxemia-related causes. Since we began our work, there has been a notable surge in collaboration among governments, donors, international organizations, civil society groups, and the private sector to enhance oxygen accessibility efforts.

### 431 percent increase in pressure swing adsorption oxygen plants across nine countries

Our oxygen work is built around five pillars to improve patient access to quality oxygen services. These are: (1) effective planning and strategies to manage oxygen systems, (2) better clinical administration and technical management of oxygen, (3) affordable, efficient, and high-quality oxygen procurement and distribution systems, (4) stronger data information systems and monitoring for oxygen access, and (5) sustainable financing for oxygen access. These pillars are closely linked and reinforce one another.

The COVID-19 pandemic brought unprecedented attention, focus, and resources to the oxygen gaps that exist in many countries around the world. Before the pandemic, oxygen systems in low- and middle-income countries were considered too complex due to the required investments in infrastructure, equipment, and technical capacity. However, the pandemic prompted over US\$500 million worth of investment in oxygen production and supplies.<sup>22</sup> CHAI and our partners have supported 142 health facilities across 13 countries in receiving upgraded infrastructure and equipment—including power supply, piping networks, cylinder manifolds, filling ramps, functional pressure swing adsorption (PSA) plants, and bulk liquid oxygen tanks—to enhance oxygen delivery.

Over the past year, as the surge support for COVID-19 response has continued to subside, CHAI has been assisting ministries of health to capitalize on investments made at the height of COVID-19 to build more resilient health systems that can support and sustain oxygen services.

Leveraging previous investments from the Bill and Melinda Gates Foundation and ELMA Philanthropies, we have expanded oxygen programs in **Cambodia, Ethiopia, India, Kenya, Lao PDR, Liberia, Nigeria, Rwanda**, and **Uganda**. Across these countries, we have seen a remarkable 431 percent increase in PSA plants and vacuum

#### PARTNER COUNTRIES

Cambodia, Cameroon, Democratic Republic of Congo, Ecuador, Eswatini, Ethiopia, Ghana, Guatemala, India, Indonesia, Kenya, Lao PDR, Lesotho, Liberia, Malawi, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, Zimbabwe

#### KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation & ELMA Philanthropies, FHI360 & USAID, Unitaid

#### CHAI ROLES

 Operational Partner

142

health facilities in 13 countries have upgraded infrastructure and equipment and built oxygen-producing plants to support delivery of medical oxygen.

20

countries we have supported with biomedical engineer or technician training for the maintenance and repair of oxygen equipment and infrastructure.

insulated evaporator (VIE) systems used to store liquid oxygen. PSA plants increased from 122 to 579, while VIE systems grew from just 13 to 138. According to CHAI calculations, both production and storage capacities have also increased by 1,989 percent—from 4.6 million Nm3 O2 to 98.9 million Nm3 O2.

Under the project, over the last year, we have also supported health provider training—in **Rwanda**, 2,155 clinicians have been trained on hypoxemia screening and oxygen therapy so far. In **Ethiopia**, 43 clinicians from across the country have been trained up with the expectation they will cascade their knowledge to 330 other clinicians. The project runs through 2026, and we expect to see even more dramatic results over the second half of implementation.

### Ensuring the sustainability of oxygen projects

Unitaid-supported work that CHAI began during the first few years of the COVID-19 pandemic is now being handed over to ministry of health management in several countries, ensuring a sustainable oxygen supply beyond the end of the funded project. CHAI has worked to transfer ownership of VIE infrastructure to governments, so they may control liquid oxygen systems. As such, governments will be able to regulate pricing and terms of engagement with suppliers as needed.

Unitaid’s intervention into the oxygen market has also encouraged other donors, including USAID via partners such as FHI360 and Jhpiego, to sustain the virtuous cycle of increased demand, incentivizing diversified supply via further procurements. This has already broadened the impact of the work and is serving as catalysts for sustainably increasing access to oxygen across all the countries in which CHAI operates.

For example, to alleviate supply and demand pressures on PSA plants in low- and middle-income countries, CHAI is working to increase oxygen supply through the liquid oxygen market. In 2023, CHAI joined a consortium of partners to continue this work.

Meeting Targets and Maintaining Epidemic Control (EpiC) is funded by PEPFAR and USAID and led by FHI 360 with partners Right to Care, Palladium, and Population Services International. Under the name EpiC, CHAI and FHI 360 are implementing a combination of liquid oxygen market-shaping interventions and infrastructure improvements in **Democratic Republic of Congo, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Tanzania, and Zambia**. This work has involved building new infrastructure, such as at Piggs Peak Government Hospital in **Eswatini**, where CHAI oversaw the construction of a medical gas plant room and the installation of three medical air compressor systems. In **Democratic Republic of Congo**, CHAI helped put together a new Medical Oxygen Supply Chain Roadmap and liquid oxygen sustainability plan, and in **Mozambique**, we partnered with the Ministry of Health on an Oxygen Ecosystem Sustainability Plan.

## Tuberculosis

Tuberculosis (TB) is a serious infectious disease that spreads when people who are sick with TB expel bacteria into the air. On average, over 10 million people fall ill and 1.6 million people die of TB each year. Sixty-eight percent of cases and 82 percent of deaths occur in Southeast Asia and Africa.<sup>23</sup> In 2023, CHAI provided strategic support on TB to health ministries across eight countries. CHAI’s work focused on market shaping to improve access to drugs and diagnostics, case-finding innovations, introducing new diagnostic tools, accelerating access to shorter drug-resistant TB treatment regimens, and supporting the scale-up of preventive therapies.

### 93% of household contacts of TB patients complete shorter-term preventive treatment in India

In **India**, through the Global Fund-supported consortium Joint Effort for Elimination of TB (JEET), we launched a new project to reach healthy household contacts of drug-sensitive TB patients in over 72 districts across 11 provinces. CHAI affiliate, William J. Clinton Foundation (WJCF), worked closely with the National Tuberculosis Program to screen household contacts and put them on preventive treatment to avoid contracting TB.

The program tested two approaches. In both approaches, program teams would screen household contacts of TB patients and follow up through calls and home visits to ensure patients were taking their medications and not having adverse drug reactions. In six districts, a “test-and-treat” approach was taken. Household contacts were offered the Interferon Gamma Release Assay (IGRA) test—a blood test confirming TB infection—and chest X-rays to rule out TB. Patients were then started on the optimal preventive treatment, 3HP. In the other 66 districts, chest X-rays were offered to rule out TB before starting patients on another preventive treatment, 6H.

IGRA is superior to **India**’s previous standard of care, the Mantoux test, which provides less reliable results.<sup>24</sup> While the National Tuberculosis Program recommends using the IGRA, few states have adopted it. During the JEET program, WJCF engaged three centrally-located labs to provide end-to-end IGRA services. The project provided counseling for those hesitant to take the test and offered home sample collection and free tests to improve uptake by healthy household contacts.

Similarly, national guidelines on the implementation of preventive treatment for TB recommend using chest X-rays, wherever available, to screen household contacts over five years of age for TB. Under JEET, eligible household contacts were offered X-rays. The increase in X-ray test demand necessitated an expansion of testing capacity. To address this, the project enlisted private facilities to supplement the public facilities’ capabilities

#### PARTNER COUNTRIES

Cambodia, India, Kenya, Lao PDR, Nigeria, South Africa, Vietnam, Zimbabwe

#### KEY PARTNERS & DONORS

Open Philanthropy, TB Reach, The Global Fund, UK Foreign, Commonwealth, and Development Office (FCDO), Unitaid

#### CHAI ROLES

-  Trusted Strategic Partner
-  Operational Partner
-  Ecosystem Catalyst

70%

of notified pulmonary TB patients' household contacts visited at home, screened, and provided TB Preventive Treatment (TPT) across 11 provinces in India.

67,500+

individuals over 40 years old were reached in one province of Cambodia for TB screening through community-based models of integrated care.

across the districts. X-ray testing led to the diagnosis of 2,820 household contacts with TB. Notably, 65 percent of these cases were asymptomatic and, without X-ray, would have likely received incorrect treatment.

The program demonstrated the feasibility of large-scale private lab engagement. It also made a strong case for expanding testing capacity and accessibility. Finally, it highlighted the importance of mobilizing healthy contacts to get tested and providing them with counseling support.

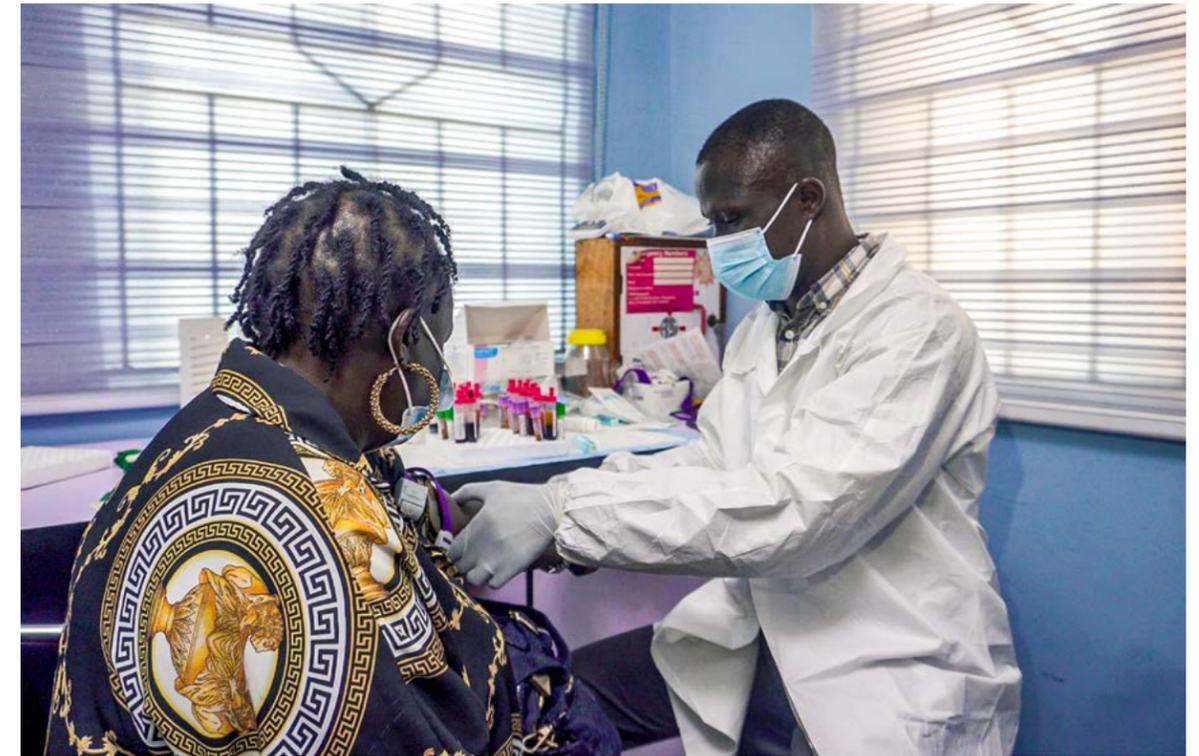
Of the healthy household contacts who began preventive treatment across the program, 77 percent completed their regimens. Those on the shorter 3HP regimen recorded a 93 percent completion rate, compared to 74 percent for those on the 6H treatment course.

This evidence helped the national program's decision to scale up a "test-and-treat" approach and 3HP implementation countrywide. Consequently, the program procured over five million tests and five million treatment courses at the beginning of 2024. It also underscored the need for careful and continued follow-up support during treatment for individuals on TB Preventive Treatment (TPT).

### Cambodia rolls out innovative, integrated NCD, COVID-19, and TB screening service to target high-risk adults over 40

The interconnectedness of health conditions is often overlooked, even though diseases such as TB and diabetes or cardiovascular diseases frequently coexist. People with non-communicable diseases (NCDs) are susceptible to TB, usually because their immune systems are compromised, which also increases their risk of severe complications from either condition. Conversely, individuals with TB are more vulnerable to developing NCDs. However, across health systems, there is a tendency to concentrate on just one part of the body or one disease. **Cambodia**, for example, is making impressive progress across several Sustainable Development Goals, such as reducing under-five mortality, which has dropped from 106 deaths per 1,000 live births in 2000 to almost 24 in 2022.<sup>25</sup> However, between 2009 and 2019, non-communicable diseases increased by almost half. This group of conditions now accounts for 60 percent of the country's total disease burden while receiving only 21 percent of total health expenditures.<sup>26</sup> At the same time, the **Cambodia** Ministry of Health reported only 21,627 TB cases and missed nearly 24,000 cases in 2021.<sup>27</sup>

In 2023, the Cambodian government, with strategic and operational support from CHAI and funding from TB Reach, launched a first-of-its-kind two-pronged program in Kampong Chhnang province aimed at supporting whole-of-person care. The project combined screening adults over 40 for both NCDs and TB, as well as providing COVID-19 vaccination booster shots. Under the first prong, when individuals come to a primary health facility seeking any type of care, they are also systematically screened for diabetes, hypertension, TB symptoms, risk factors, and COVID-19 vaccination status. Under the second prong, CHAI worked with the Provincial Health Department to reinvent active case finding for TB through an integrated approach at the community level. There, digital X-ray with CAD/AI capable of identifying lung health issues is combined with GeneXpert testing for TB, but also



*Pictured: Screening AHD patients as part of a program to better understand the burden of histoplasmosis, at Lagos University Teaching Hospital in Nigeria. Credit: Latitude Space Africa.*

diabetes and hypertension screening, health education spanning communicable and non-communicable diseases, and more recently, eye health testing. As TB prevalence in the country decreases, these integrated approaches in communities become essential to identify hard-to-reach patients, who are often elderly. As a result, 186,513 individuals were screened and referred for appropriate diagnosis and care.

Overall, the integrated program helped identify over 4,155 cases of diabetes and hypertension across all age groups with immediate linkages to treatment. Moreover, nearly 1,288 people were diagnosed with TB cases, with 558 cases microbiologically confirmed.

**Cambodia** is now preparing for a national scale-up of integrated TB and NCD screening services. CHAI continues to work with the National Ministry of Health and other partners, providing technical assistance on health worker training, monitoring and supervising service delivery, and updating non-communicable

disease SOPs to simplify diabetes and hypertension diagnosis.

These projects have the potential to be an ecosystem catalyst for sustainable whole-of-person care in **Cambodia**, providing a model to leverage funds from across disease areas to care for the whole person and ensure older adults are educated, screened, and have access to the treatments they need.



# Women and Children's Health

Far too few women and children worldwide have access to the essential, quality health services and nutrition they need. As a result, hundreds of thousands of women die every year from avoidable or treatable conditions. More than two million babies die within their first weeks of life. And millions more children and teens die from undernutrition, pneumonia, diarrhea, or vaccine-preventable diseases. CHAI works to reduce these deaths and give women and children the opportunity not only to survive but to thrive.

*Pictured above: A midwife in Siem Reap province, Cambodia, receives comprehensive coaching to strengthen their capacity to deliver family planning services safely and effectively. Credit: Chloe Villaret / CHAI.*

## Diarrhea

Diarrhea is the third leading cause of death in children under the age of five<sup>30</sup>—with half a million children dying in 2019 alone. More than 97 percent of these deaths are concentrated in low- and middle-income countries, particularly in sub-Saharan Africa (72 percent) and South Asia (19 percent).<sup>31</sup> The WHO recommends oral rehydration solution (ORS) and zinc supplements to treat diarrhea in children. Yet, as of 2021, ORS coverage globally was only 46 percent, and the combined use of ORS and zinc was a mere 16 percent. This is due to years of underinvestment in these interventions, despite their efficacy and affordability. CHAI aims to eliminate diarrheal deaths in children under five. Over the next five years, we plan to dramatically increase ORS/zinc coverage by coordinating with governments to develop strategies to drive up supply and foster demand at a large scale.

### At least 76,000 children's lives saved between 2012 and 2016 across four countries because of ORS/zinc treatment

Using ORS and zinc to treat diarrhea is one of the most economically viable and effective interventions in history—yet globally, this treatment continues to be disregarded, leading to hundreds of thousands of unnecessary deaths each year.

CHAI launched our program to support the governments of **Kenya, India, Nigeria, and Uganda** to scale up the use of ORS and zinc by comprehensively addressing supply and demand constraints. While the tactics in the four countries varied based on context, the key features of the program were consistent:

- Government leadership and coordination: CHAI facilitated government-led platforms to coordinate partner investments, prevent overlapping interventions, and optimize resources.
- Supply coordination: CHAI directly engaged with local suppliers to introduce 15 new, locally produced, and co-packaged ORS and zinc products—and cut the price for these products in half.
- Demand generation: CHAI devised and implemented marketing strategies to persuade health professionals, pharmacists, traditional healers, and caregivers to adopt ORS and zinc.

The results transformed the entire ecosystem, erasing decades of stagnation and leading to robust local markets. Across the four countries, ORS coverage increased from 35 to 48 percent during the program's tenure (2012-2016), while combined ORS/zinc coverage rose from 1 percent to 24 percent—translating to an estimated 76,000 lives saved. Importantly, this coverage has been sustained.<sup>32</sup>

#### 📍 PARTNER COUNTRIES

Nigeria

#### 🤝 KEY PARTNERS & DONORS

GiveWell

#### 🎯 CHAI ROLES

- Market Shaper
- Trusted Strategic Partner
- Operational Partner
- Ecosystem Catalyst

76,000

Lives saved by CHAI's ORS/zinc program between 2012 and 2016.

48%

ORS coverage increased from an average of 35% in 2012 across the four program countries to 48% by 2016, and combined ORS and zinc coverage from 1% to 24%.

We are conducting a rigorous evaluation of campaigns to distribute free ORS and zinc co-packs to all homes with children under five in Bauchi State. The study, a large-scale randomized controlled trial, aims to generate rigorous evidence on the most cost-effective methods to increase ORS/zinc coverage. The evidence will also galvanize funders and partners to end preventable diarrhea deaths. The study will take place over two years, and if successful, CHAI will support the Bauchi State Ministry of Health in implementing the campaign annually and introducing it to other states in **Nigeria**, as well as other high-burden countries.

After the program wrapped in **Nigeria**, coverage continued to increase, reaching 46 percent by 2021. Combined ORS and zinc coverage also increased from less than one percent in 2012 to 26 percent by 2021.

CHAI's collaborative approach working with multiple local suppliers led to ORS/zinc being picked up in states that CHAI's program had not supported. In fact, ORS and zinc products that CHAI helped Nigerian suppliers develop, register, launch, and market have even been found in other countries, such as the **Democratic Republic of Congo** and **Sierra Leone**.

In 2023, with support from GiveWell, CHAI began a new program in **Nigeria** that is expected to add to the toolbox of life-saving interventions for childhood diarrhea.

## Maternal and Newborn Health

Over the past decade, reductions in maternal and newborn deaths have largely stalled or even regressed in many countries that CHAI supports. For example, in Nigeria, the lifetime risk of maternal death worsened from one in 21 women in 2017 to one in 19 women in 2021.<sup>33</sup> Nearly half of all deaths among children under five occur in the first month of life.<sup>34</sup> Meanwhile, the number of babies stillborn at 28 weeks of pregnancy or later has risen by 11 percent in sub-Saharan Africa.<sup>35</sup> It is in this alarming context that CHAI operates. We design and implement innovative, integrated strategies that meet women where they are—whether at home, in a rural clinic, or an urban hospital—and support health workers to reliably provide the often simple, affordable, and effective tools they need to prevent these tragically avoidable deaths.

### In hard-hit region of Zambia, integrating health services dramatically reduces maternal and newborn deaths

In 2019, a pregnant woman or newborn died every 11 seconds worldwide due to birth complications.<sup>36</sup> By 2023, shockingly, this number had worsened to one death every 7 seconds.<sup>37</sup> Nearly all these tragedies occur in low- and middle-income countries, with chances of survival even lower in impoverished rural areas. Yet, a series of simple and effective interventions can address complications during pregnancy and childbirth, saving countless newborn lives.

In **Zambia**, CHAI partnered with the government to launch a program in Northern Province, where many women give birth at home, facing the highest risk of maternal death<sup>38</sup> and losing their babies to birth complications. Between 2020 and 2023, the program reduced maternal deaths by 41 percent, newborn deaths by 45 percent, and perinatal deaths by 43 percent.<sup>39</sup> Due to this success, the government and partners are using the approach, tools, and lessons to scale up the program nationally. Most recently, CHAI provided hands-on training in advanced newborn care to over 320 health workers. Crucial skills, such as neonatal resuscitation and infection prevention, contributed to a 69 percent drop in newborn deaths in the program's second year across Eastern and Southern Provinces, underscoring the importance of investing in well-trained health workers.

### Facilitating better access to caffeine citrate for premature babies struggling to breathe

Caffeine citrate is the WHO-recommended medication for treating short-term breathing problems in premature babies. These breathing problems, also called apnea of prematurity, are caused because preterm babies' breathing centers are not fully developed. Caffeine citrate's efficacy, tolerability, and safety make

#### PARTNER COUNTRIES

Cameroon, Ethiopia, Kenya, India, Lesotho, Mozambique, Nigeria, Rwanda, Senegal, South Africa, Uganda, Zambia, Zimbabwe

#### KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation, MedAccess, Swedish International Development Cooperation Agency, UK Foreign, Commonwealth, and Development Office (FCDO)

#### CHAI ROLES

-  Trusted Strategic Partner
-  Ecosystem Catalyst

160%

increase in the number of women tested and treated for syphilis during antenatal care across India.

70%

reduction in price for caffeine citrate—a vital drug for small and sick newborns common in higher-income nations but seldom accessible in the Global South.

it one of the most widely prescribed neonatal intensive care unit drugs in high-income settings. Yet, a landscaping analysis conducted by CHAI across five countries indicated that obtaining this life-saving commodity was extremely difficult in low- and middle-income settings.<sup>40</sup>

Based on the results of the analysis, in 2023, CHAI engaged with health ministries, regulatory bodies, and professional associations in **Ethiopia, Kenya, and Nigeria** to develop targeted, costed strategies to enhance the accessibility of caffeine citrate.

These strategies serve as roadmaps to address key challenges the countries face: evidence gaps, lack of policies and enabling environments, demand generation, and pricing structures. The roadmaps include detailed steps for engaging suppliers, obtaining regulatory approvals, increasing provider awareness, and planning for effective quantification and procurement.

This work culminated in a 70 percent price reduction for government buyers and landmark achievements of inaugural national tenders for caffeine citrate in **Ethiopia and Kenya**, setting a precedent for future access across Africa.

#### 44 low- and middle-income countries procure dual HIV/syphilis test under innovative pricing guarantee

An estimated 355,000 adverse birth outcomes, including more than 210,000 deaths annually from congenital syphilis globally, could be averted through timely access to simple and effective tests and treatment. The scale of the problem is clearer when compared to the progress made in HIV screening during pregnancy. In 20 high-burden countries, antenatal testing rates for HIV can reach as high as 95 percent, yet syphilis testing rates remain below 50 percent. A dual HIV/syphilis rapid diagnostic test (RDT) provides an efficient solution by screening for both diseases in a single clinic visit, though it is often more expensive than standalone HIV tests. Aligning syphilis screening with existing HIV screening levels during pregnancy could prevent 53,000 severe illnesses and save 74,000 lives each year.

To address this, CHAI and MedAccess partnered with SD Biosensor, a Korean manufacturer, in November 2021, to offer dual rapid tests for under US\$1 in over 100 low- and middle-income countries.<sup>41</sup> This pricing strategy was designed to integrate syphilis testing into existing antenatal HIV screening platforms, closing the price gap between dual and single HIV tests. The competitive market environment that CHAI helped create has led to further suppliers providing WHO-prequalified tests at reduced prices.

CHAI is actively supporting countries to scale up procurement and accelerate the rollout of dual tests, while ensuring timely access to treatment. As a result, 44 low- and middle-income countries have procured tests under the pricing guarantee. In **Nigeria**, more than 25,000 health facilities were offering dual tests by the end of 2023 as part of a national rollout, raising the country's syphilis testing rate from 24 to 31 percent. In **Zambia**, the Standard Q dual HIV/Syphilis kit was adopted in 2023, necessitating the training of health care workers at all testing points across the country. In **India**, CHAI affiliate, The William J. Clinton Foundation, played a critical role in securing national- and

state-level ownership of congenital syphilis elimination. This included facilitating the national rollout of dual RDTs and strengthening the syphilis program overall. By the end of 2023, these efforts had reduced the gap between syphilis and HIV screening rates from 33 percent to just 10 percent, with further narrowing expected over the next 12 months.

As dual RDTs increasingly become the standard for HIV testing during antenatal care, the gap between HIV and syphilis screening is narrowing across all low- and middle-income countries, not just in CHAI's partner countries. This shift represents a significant evolution in the testing landscape and lays the groundwork for the broader adoption of multiplex testing technologies.

#### Strengthening primary healthcare and community-level data in Nigeria to improve maternal and newborn health

**Nigeria** accounts for 23 percent of global maternal deaths annually, with 61 percent of births occurring in communities where complications often go untreated. The absence of comprehensive community-level data on maternal and newborn mortality limits targeted interventions.

To address this, CHAI partnered with the federal and state ministries of health and primary healthcare development agencies to improve data reporting across 10 states: Bauchi, Borno, Gombe, Kaduna, Kano, Nasarawa, Lagos, Niger, Sokoto, and Yobe. Implementing a Community-

10

states in Nigeria with whom CHAI is partnering to introduce new tools that collect comprehensive data on maternal and newborn health in communities where most complications often go untreated.

Based Health Management Information System (CBHMIS) ensured births, mortality outcomes, and Postpartum Family Planning utilization data was captured to support evidence-based decision-making. Leveraging key community stakeholders, the proportion of wards reporting maternal and neonatal mortality data rose from 38 percent in January 2023 to 66 percent by June 2024. While in states where CHAI helped introduce electronic community-level data reporting and dashboards, some wards were able to achieve reporting levels of 100 percent. CHAI also introduced and rolled out automated validation processes to improve data reporting accuracy, leading to an 83 percent decrease in the number of data errors recorded.

The availability of reliable data covering all levels of the health system is enabling **Nigeria's** Ministry of Health to make rapid, informed decisions to address emergent issues and support long-term strategic planning. CHAI and the Government of **Nigeria's** approach is quickly becoming a model for other countries.

# Nutrition

Malnutrition continues to be a significant public health problem in low- and middle-income countries, despite the availability of proven, cost-effective solutions that, if applied, would significantly decrease malnutrition-related illness and death. CHAI's approach to tackling malnutrition among the world's most vulnerable populations is focused on highest-impact interventions, such as access to multiple micronutrient supplements for pregnant women and nutritious supplementary foods for undernourished children.

## PARTNER COUNTRIES

Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Rwanda, Senegal, Uganda, Zambia

## KEY PARTNERS & DONORS

The Eleanor Crook Foundation, Embassy of Ireland, Government of Sweden, UK Foreign, Commonwealth, and Development Office (FCDO), World Bank/African Development Bank

## CHAI ROLES

-  Trusted Strategic Partner
-  Operational Partner
-  Ecosystem Catalyst

## Accelerating the introduction of multiple micronutrient supplements for pregnant women

There is strong evidence to suggest daily doses of multiple micronutrient supplements during pregnancy lead to better birth outcomes in most low-and middle-income countries.<sup>42,43</sup> With funding from the Foreign Commonwealth Development Office (FCDO) and the Eleanor Crook Foundation, CHAI is working across nine countries (**Ethiopia, Ghana, Kenya, Malawi, Nigeria, Rwanda, Senegal, Uganda, and Zambia**) to explore supply- and demand-side dynamics affecting the scale up of multiple micronutrient supplements, and to assess governments' interest and readiness to transition to multiple micronutrient supplements.

Together with partner countries, CHAI has conducted landscape assessments to gather key information needed to inform decisions about scaling up the use of multiple micronutrient supplements by pregnant women. Given that CHAI is not only a trusted strategic partner, but also an operational partner, in the countries where we work, we are well-positioned to support governments in the roll-out of multiple micronutrient supplements. For example, in **Ghana**, our landscape assessment has already accelerated the introduction of supplements for pregnant women into routine antenatal care services.

## Providing affordable, alternative nutrient sources for kids in Mozambique, Zambia

In **Mozambique**, due to the scarce availability of ready-to-use therapeutic food (a peanut-based paste used to treat children suffering from severe acute malnutrition at health facilities), CHAI introduced an innovative approach. With support from the Embassy of Ireland, we bought peanuts and installed easy-to-maintain peanut butter machines at 12 hospitals. This enabled the production of peanut butter, which is high in protein and contains healthy fats and other essential vitamins and minerals, for consumption by children suffering from moderate or severe acute malnutrition when ready-to-use therapeutic food was not readily available. Caregivers were also encouraged to bring roasted nuts to the health facility as groundnuts are locally grown

and easily available. Through this project, 1,337 children received nutritional supplementation with peanut butter, leading to weight gain and better growth measurements like height, weight, and mid-upper arm circumference. Only one percent of children who received the intervention were readmitted for further treatment.

In **Zambia**, with funding from the government of Sweden, CHAI is supporting the Ministry of Health to equip health systems, including community health systems in Eastern and Southern Provinces, to deliver quality, people-centered, rights-based, and equity-focused services for women and children.

To address the high prevalence of malnutrition in these provinces, we are focused on strengthening health provider capacity to deliver services, ensuring anthropometry equipment is available to those providers, increasing access to therapeutic foods for children, distributing job aids to community health workers and volunteers to assess growth and identify severe acute malnutrition, and exploring alternative foods to manage malnutrition such as combined multi-vitamins or porridges mixed with sources of protein (dried fish or other meat), milk, and sugar.

As a result, the proportion of facilities with at least one health worker trained in growth monitoring and promotion increased from seven percent to 50 percent between 2021 and 2023. The number of children screened for malnutrition nearly doubled. And the cure rate among children with severe acute malnutrition rose from 41 percent to 84 percent.

**50%**

of facilities in Zambia have at least one health worker trained to monitor indicators of malnutrition, which has doubled cure rates of severe acute malnutrition.

**1,337**

children with moderate and severe malnutrition received a simple peanut butter supplement while in hospital in Mozambique, leading to a full recovery for 99% of the children.



## Habibou Ouedraogo

Associate, Community Health, Burkina Faso

My interest in public health and more particularly health inequalities started in high school when I volunteered with an association of doctors in Burkina Faso, my home country, who would travel in hard-to-reach areas to provide free medical check-ups and treatment for diseases such as malaria. This experience sparked a desire to pursue a career where I could meaningfully be challenged with hard to solve questions and contribute to the improvement of health care systems.

I studied public policy at Sciences Po Paris (France), and health economics at the University of Birmingham (United Kingdom), and worked briefly in health literacy, cancer and immunization policies. I joined CHAI in 2021 as a health financing analyst in the Burkina Faso team, after a friend from Eswatini who had previously worked at CHAI told me about the new office opening there.

There I worked with the ministry of health in their efforts to accelerate progress towards universal health coverage (UHC). Strengthening financial management systems was identified as a key area of focus, particularly for primary health facilities and district health management offices, where lack of real-time data made it difficult to allocate resources efficiently. My role was to support the design, development and implementation of a tech solution to capture real time data on the financial performance of health facilities, and the use and allocation of resources. Since health facility financial data had never been captured electronically before, our approach involved conducting a diagnostic study and engaging with stakeholders from central, regional, and district levels from the onset which allowed us to better understand bottlenecks, clarify expectations and propose fit-to-context solutions.

In 2022, we launched a pilot program in 12 health facilities in four regions of the country to improve financial management systems through the adoption of digital tools, capacity building, and reform

proposals. Originally planned to run for six months, the project lasted more than two years and was a lesson for our young team. We quickly realized the true time implications of such projects, especially when launching a digital platform.

After multiple trials and errors, we have now been able to roll out the financial tool to more than 100 facilities as part of the government's new program known as the Minimum Digital Ecosystem (MDE). This flagship initiative aims to digitize various data collection and management tools in all primary health facilities to improve real-time data availability and completeness. Data on the financial performance of health facilities, drug stock management, quality of health service delivery, and the like will strongly support data-driven decision-making for more efficient resource allocation and monitoring of financial flows, including for the free medical care program, thereby improving its sustainability. We are also working towards a nationwide scale up of the tool, starting in late 2024 with an additional 123 facilities to be trained, with the hope to cover the rest of the 2,000 facilities in 2025-2026.

CHAI's ambition has always been to be transformative in supporting national health providers. What I have enjoyed most in this role is the opportunity to think critically about the best approaches to problems, and the flexibility to propose solutions and engage with stakeholders, particularly those on the field.

We are also not starting from scratch—we are building on what already exists based on the priorities of our government partners. This, coupled with the presence of smart and talented colleagues who are always curious, is a big win for a young professional like me just starting her career. As I am transitioning to a new role as an Associate in community health, I am particularly excited to continue working in this sector and contribute to health systems strengthening.

## Pneumonia

Pneumonia kills more children than any other infectious disease, claiming the lives of over 700,000 children under five every year, or around 2,000 every day.<sup>44</sup> Over 90 percent of these deaths happen in low- and middle-income countries, where mortality rates are up to 150 times higher than in wealthier nations.<sup>45</sup> CHAI partners with countries to deliver timely and accurate diagnosis and treatment and overcome barriers to accessing those tools, such as ensuring antibiotics are easily available at all levels of care. Our work over the last decade has also revealed a critical but overlooked intervention in the fight against pneumonia: oxygen.

### Accessing the right tools to diagnose and treat childhood pneumonia in resource-limited settings

Diagnosing pneumonia in children can be challenging as its symptoms—cough, fever, and difficulty breathing—are common to many childhood illnesses. Antibiotics are needed to treat childhood pneumonia. However, children's lungs can fill with fluid quickly, and they will often die from a lack of oxygen before the antibiotics take effect. Oxygen therapy can buy the body the time it needs to allow the medicine to work.

Luckily, tools exist to ensure children are diagnosed and treated for pneumonia. However, advanced tools such as chest x-rays and lab tests, commonly used in high-income countries, are often not available at the community clinics where children first seek care in resource-limited settings.

Instead, the WHO recommends using clinical symptoms (e.g., fast breathing, respiratory rates, or chest in-drawing) to diagnose pneumonia. Unfortunately, in CHAI's review of over 16,600 clinical charts of patients diagnosed with pneumonia across five countries, only 14 percent had a respiratory rate measured. Clinicians often rely on personal instincts to determine whether a patient has pneumonia and requires antibiotics.

Even when following WHO guidelines, one study estimates that clinicians still misdiagnose two of every 10 children with pneumonia.<sup>46</sup> Pulse oximeters can improve accuracy but are not widely available, especially at primary care clinics in low- and middle-income countries. Additionally, clinical signs cannot distinguish between viral and bacterial pneumonia. With viral pneumonia leading to most hospitalizations, this can lead to excessive and ineffective antibiotic treatment, contributing to rising rates of antimicrobial resistance. New guidance and protocols are desperately needed.

For bacterial infection, the WHO recommends oral amoxicillin dispersible tablets (Amox DT) as the first-line antibiotic. Amox DT can be distributed in the community and administered at home.

#### PARTNER COUNTRIES

Ethiopia, India, Kenya, Nigeria, Uganda

#### KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation, ELMA Foundation, IKEA

#### CHAI ROLES

- Market Shaper
- Trusted Strategic Partner
- Operational Partner

**310%**

increase in the number of severe pneumonia patients receiving oxygen after Kenya's dramatic 40% increase in access to oxygen at health facilities across the country.

**410**

health workers across 33 health facilities in 16 districts in Uganda were trained in hypoxemia management, leading to an 80% increase in the administration of oxygen to children with hypoxemia.

Beginning in 2015, CHAI worked with local suppliers to introduce Amox DT and ensure it was added to national essential medicines lists in five countries: **Ethiopia, India, Kenya, Nigeria, and Uganda**. This had an enormous impact on local markets. In **Ethiopia**, for example, 99 percent of all public health facilities in the country now stock Amox DT—compared to none before CHAI's intervention.

### Over US\$135 million raised to support oxygen systems strengthening across 13 countries

Supportive oxygen therapy is crucial for children with severe pneumonia—as well as many other diseases and conditions. Studies have shown that better access to oxygen can cut mortality rates in half for children hospitalized with pneumonia and cut overall child mortality by a quarter.<sup>47</sup>

The COVID-19 pandemic brought the importance of oxygen into deadly focus. Before the pandemic, oxygen systems in low- and middle-income countries were considered too complex due to the required investments in infrastructure, equipment, and technical capacity. However, the pandemic prompted over US\$500 million worth of investments in

oxygen production and supplies,<sup>48</sup> with CHAI receiving US\$135 million to support oxygen systems strengthening, including procurement. CHAI and our partners have supported 142 health facilities across 13 countries (including five pneumonia-specific programs) in receiving upgraded infrastructure and equipment—including power supply, piping networks, cylinder manifolds, filling ramps, pressure swing absorption plants, and bulk liquid oxygen tanks—to enhance oxygen delivery.

As the surge support required during the first several years of pandemics lessens, governments have begun shifting their oxygen infrastructure to more broadly support public health programs, including for pneumonia.

CHAI is ready to support these transitions. We have seen firsthand the difference that better hypoxemia diagnosis and treatment can have across entire health systems. Our work establishing oxygen systems and training health workers on those systems helped increase the number of children with pneumonia receiving oxygen by 64 percent, up from 19 percent, across **Ethiopia, India, Kenya, Nigeria, and Uganda**.

### Enhanced case management could save up to 300,000 pneumonia deaths annually

Improved case management presents another significant opportunity to reduce pneumonia deaths. CHAI operates across 35 countries that contribute 440,000 pneumonia deaths annually. Enhanced case management with antibiotics and oxygen could prevent many of those deaths, saving approximately 300,000 lives each year (estimated by scaling up all pneumonia interventions from current coverage levels to 90 percent using the Lives Saved Tool).<sup>49</sup> CHAI's experience points to interventions in four key areas to improve case management and reduce pneumonia deaths:

- Increase community access to diagnostic tools: Using multi-modal devices with automated respiratory rate measurement and pulse oximetry at community levels will facilitate early detection

of pneumonia cases. This initiative includes supporting the development of guidelines, clinician training, and strengthening data systems to increase device utilization, track coverage, and ensure accountability.

- Accelerate development of diagnostic tools: Identifying and introducing promising diagnostic tools, including auscultation devices, AI-assisted X-rays, and ultrasounds, will improve pneumonia diagnosis accuracy in real-world settings. This involves coordinating with innovators and governments to ensure these technologies cost-effectively meet the needs of low- and middle-income countries' health systems.
- Ensure access to effective antibiotics: CHAI proposes to expand the availability

of high-quality and affordable antibiotics for pneumonia while promoting appropriate antibiotic stewardship. This will involve collaborating with ministries of health to address supply chain issues, eliminate stock outs, and establish monitoring systems, as well as encouraging additional suppliers, including local manufacturers, to enter the market.

- Ensure access to oxygen therapy: Collaborating with governments to reallocate COVID-related oxygen equipment to pediatric services and other neglected areas, while supporting oxygen use across all levels of care for pediatric patients, thus addressing both supply and demand issues.



Pictured: Pulse oximeters in Bonga, Ethiopia, are a key tool in diagnosing pneumonia. Credit: Scott Miller / CHAI.

# Sexual and Reproductive Health

Globally, approximately 218 million<sup>50</sup> women who want to avoid pregnancy are not using contraception, leading to unintended pregnancies that can have health consequences, including unsafe abortion, preterm birth, and postpartum depression. CHAI works to provide all women and girls with access to safe, high-quality reproductive health care. In doing so, we aim to build healthy markets for reproductive health commodities, increase reproductive health commodity security, and develop and deploy people-centered models of care delivery.

## PARTNER COUNTRIES

Cambodia, Democratic Republic of Congo, Ghana, India, Kenya, Liberia, Malawi, Nigeria, Rwanda, Senegal, Sierra Leone, Tanzania, Uganda, Zambia

## KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation; The Children's Investment Fund Foundation; PATH; Reproductive Health Supplies Coalition, The UK's Reproductive Health Supplies Programme

## CHAI ROLES

-  Market Shaper
-  Trusted Strategic Partner
-  Operational Partner

## 55 percent increase in hormonal intrauterine device (IUD) uptake

The IUD is a highly effective, long-acting, reversible contraceptive method that provides substantial benefits to women. It has been available for over 30 years in high-income markets. However, until recently, it was not widely available in low- and middle-income countries primarily due to the high cost.

In 2021, CHAI collaborated with manufacturers, donors, and global procurers to significantly reduce the price. Together with these stakeholders and FHI360, we launched the Hormonal IUD Access Group to align support around a global strategy to enable access to the product. We then began working with governments who were interested in introducing hormonal IUDs to their contraceptive method portfolios, starting with **Nigeria, Rwanda, and Zambia** in 2022. In 2023, we built on these efforts and began to roll out in **Kenya, Malawi, and Uganda**. We worked as a strategic and operational partner to governments in these countries to design, monitor, and implement national scale-up plans.

In 2023, over 90,000 women chose hormonal IUDs across these countries, a 55 percent increase from 2022. **Rwanda** completed their scale-up of hormonal IUD in 2023, reaching all 45 hospitals and 515 health centers targeted for training across the country's 30 districts.

CHAI has over a decade of experience supporting governments to introduce and scale new and underused products like the hormonal IUD. We have learned many lessons around how to make new product introduction more effective and efficient. Perhaps the most important lesson has been around government leadership. In 2021, we began working with governments in **Kenya, Nigeria, and Zambia** to establish platforms that enable routine, government-led product adoption and introduction as well as to steward the market for all reproductive health products within a country. The new approach put governments in the lead and broke partners out of product-specific silos.

The Reproductive, Maternal, Neonatal, Child and Adolescent Health Product and Technologies Innovation Steering (RaPTIS) Committee in **Kenya** is one example of this new approach. In 2023, this government-led group facilitated the rapid rollout of hormonal IUDs to 32 percent of facilities in just two months. In addition, RaPTIS has promoted efficiencies across products by requiring multiple products—the hormonal IUD and a contraceptive injectable product—be included in one three-day training, replacing two separate five-day training sessions. This combined and shortened training represents US\$278 in savings per health worker trained. The RaPTIS platform has enabled strategic discussions about other critical reproductive health products, including tranexamic acid, heat-stable carbetocin, and the non-pneumatic anti-shock garment (NASG) as part of the wider product mix available for postpartum hemorrhage. Similar efforts are underway in **Nigeria**, at both national and state levels, and in **Zambia**, where we are seeking not only to increase access to critical reproductive health products but transform the way governments actively manage their reproductive health markets.

## US\$7.3 million deployed across 16 countries to support the scale-up of new and lesser-used reproductive health products

Globally, CHAI works to transform the way reproductive health product introductions are financed. Historically, funding for product scale-up has been fragmented across donors and partners, leading to uncoordinated and poorly sequenced activities that may or may not align with government plans.

We enable coordinated funding of government plans through the Catalytic Opportunity Fund, a funding model aimed at making pooled donor funding more responsive to government priorities. Between 2019 and 2023, over US\$23 million has been invested in the Catalytic Opportunity Fund by the Bill & Melinda Gates Foundation, The Children's Investment Fund Foundation (CIFF), and the UK's Reproductive Health Supplies Programme in support of

55%

Increase in hormonal IUD uptake across Kenya, Malawi, Nigeria, Rwanda, Uganda, and Zambia between 2022 and 2023.

US\$7.3M

Deployed across 16 countries to support the scale-up of new and lesser used reproductive health products through a rapid responsive funding mechanism that provides a new way to support government-led product introduction efforts.

the scale-up of three new and lesser-used reproductive health products, including hormonal IUD.

Over US\$7 million in funding from the Bill & Melinda Gates Foundation and the UK was deployed across 16 countries through this mechanism in 2023, supporting governments to make progress against their plans, while enabling coordination of resources and plans across implementing partners. In 2023, CHAI also worked with Reproductive Health Supplies Coalition to launch a Catalytic Opportunity Fund for new and lesser-used postpartum hemorrhage products.

# Vaccines

Immunization is one of the most impactful and cost-effective public health interventions available. Since 2010, CHAI has worked with governments, partners, communities, and global stakeholders in over 15 countries with 50 million births per year to sustainably improve effective immunization coverage of vaccines and the underlying health systems.

## PARTNER COUNTRIES

Benin, Cambodia, Cameroon, Democratic Republic of Congo, Eswatini, Ethiopia, Ghana, Honduras, India, Indonesia, Kenya, Lao PDR, Lesotho, Malawi, Myanmar, Nigeria, Papua New Guinea, Sierra Leone, Tanzania, Uganda, Vietnam, Zimbabwe

## KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation; ELMA Philanthropies; Gavi, the Global Vaccines Alliance; GiveWell; The Rockefeller Foundation; UNICEF; USAID

## CHAI ROLES

-  Trusted Strategic Partner
-  Operational Partner
-  Ecosystem Catalyst

## Strengthening commercially viable regional manufacturing efforts in Africa

The COVID-19 pandemic revealed deep structural inequalities in global health markets, including huge disparities in the distribution of vaccines, particularly in Africa where less than one percent of all vaccines administered are manufactured on the continent. This led to concerted calls from African heads of state, coordinated by the Africa Union, to localize vaccine manufacturing on the continent, strengthen African health security, and boost pandemic preparedness.

CHAI has played a central role in the ongoing global efforts to support the scale-up of African vaccine manufacturers. CHAI's focus has been to identify vaccine manufacturing plans that support the pandemic preparedness goals of the African Union, while also maintaining commercial viability for manufacturers and supply security in vaccine markets. Key successes to date include

- Developing three highly lauded publications on the landscape of over 30 African vaccine manufacturing projects and the required strategy to support them, which have informed financial tools worth several billions of US dollars, and vaccine procurement projects led by the African Union and other regional bodies.
- Providing go-to-market support to high-potential African vaccine manufacturing projects that directly informed the commercialization strategy of some of the most eagerly anticipated vaccine localization initiatives on the continent.
- Engaging extensively on the Gavi-led African Vaccine Manufacturing Accelerator (AVMA) to design the financial mechanism worth US\$1 Billion.

## Accelerating uptake of new or under-used life-saving vaccines for children, including HPV, rotavirus, and malaria vaccines

Between 2022 and 2023, CHAI partnered with the governments of **Cambodia, Indonesia, and Nigeria** to introduce the human

papilloma virus (HPV) vaccine. HPV is the leading cause of cervical cancer, which still kills about 350,000 women every year,<sup>51</sup> most of them in low- and middle-income countries.

Since introducing the HPV vaccine, 10.7 million adolescent girls have been vaccinated across the three countries, preventing up to 51,000 cases of cervical cancer annually. Through this work, CHAI has contributed significantly towards the attainment of Gavi's global goal of immunizing 86 million adolescent girls with the HPV vaccine by 2025<sup>52</sup>, as well as the WHO's 90:70:90 cervical cancer elimination<sup>53</sup> goals.

In **Nigeria** and **Indonesia**, CHAI also worked with governments to introduce the rotavirus vaccine into national routine immunization programs, using a phased approach between 2022 and 2023. Rotavirus protects against diarrhea, which is the third leading cause of death<sup>54</sup> for children under five. In **Nigeria**, the work was largely completed in 2022, but CHAI worked with the government to address bottlenecks to coverage and routinization into primary health care systems, achieving 61 percent coverage across all states by December 2023. In **Indonesia**, the vaccine rolled out to 11 provinces in August 2022 with mixed results. Following a review and robust improvement plan, coverage was up to 70 percent by August 2023. Today, the rotavirus vaccine has been rolled out to the entire country, potentially reaching approximately 4.4 million children (90 percent coverage). It is estimated that the vaccine could avert over 8,000 under-five deaths annually in **Indonesia**.

CHAI worked with several countries to access Gavi support to introduce the first-ever malaria vaccine over the past year. Malaria kills almost half a million children under the age of five—a child every minute<sup>55</sup>—every year. With Gavi's donation of 4.6 million vaccine doses and US\$614,000, high-burden countries including **Democratic Republic of Congo, Nigeria, Sierra Leone, and Uganda** introduced the vaccine into their national immunization programs. This work with early-adopter countries will provide valuable lessons to inform the use of the malaria vaccine in other countries.

# 10.7M

adolescent girls have been vaccinated against HPV in Cambodia, Indonesia, and Nigeria, preventing up to 51,000 cases of cervical cancer annually.

## Enabling countries to make evidence-based vaccine portfolio choices and optimize schedules

In 2023, CHAI supported countries with evidence-based decision-making on vaccine portfolio choices and schedule optimization to save immunization programs' money and improve their outcomes.

For example, in **Lao PDR**, together with the government, we reviewed available evidence, which resulted in the use of a more cost-effective pneumococcal conjugate vaccine (PCV) that saved the government US\$500,000 per year—over 50 percent of the annual PCV procurement budget.

CHAI also supported country decisions to switch the HPV schedule from two doses to a single dose in 10 out of 19 Gavi-eligible countries,<sup>56</sup> in line with the latest global recommendations. This resulted in significant cost savings and program simplifications for national Essential Programs on Immunization (EPI) while easing constraints on global supply.

CHAI coordinates closely with global partners to catalyze change across the immunization ecosystem and drive strategies that can then benefit our country partners. In 2023, we worked with Gavi and technical partners to inform global policies and define guidance resources on vaccine switches for country use. In **Indonesia**, this translated to CHAI leaning on those resources to recommend and support the government's switch to a domestic brand of rotavirus vaccine, which could better protect against stock outs.

## Strengthening health systems to sustain coverage and protect future generations from vaccine-preventable diseases

In **Nigeria**, we deployed and promoted the effective use of an improved electronic logistics management information system (eLMIS) based on the open-source OpenLMIS platform. This enhanced eLMIS has been implemented across all vaccine cold stores in the country and is regularly used by nearly all trained cold chain officers. As a result, visibility of supply stock levels has improved. For example, this has prevented vaccine expirations by facilitating the early detection of soon-to-expire vaccines and their redistribution to locations with higher use rates.

In **Myanmar**, we are implementing an electronic Logistics Management Information System (eLMIS) using mSupply software to manage vaccines and public health commodity inventories. In 2023, we deployed vaccine eLIMS at state and regional cold rooms with integrated visualization capability to enhance data visibility and support efficient supply planning.

In 2023, last-mile distribution interventions were expanded to improve vaccine availability. In **Kenya**, initiatives for direct vaccine delivery from county stores to health facilities were launched in five new counties, benefiting 340,000 children, and increasing stock availability from 88 percent to 95 percent in sub-county stores. Building on this success, CHAI extended last-mile distribution support to **Uganda** and **Cameroon**. In **Uganda**, a revamped supply chain across nine districts reduced the average distance between facilities and vaccine stores from 40 kilometers to 8 kilometers, with plans for nationwide implementation within three years. In **Cameroon**, a situational analysis identified distribution bottlenecks, leading to last-mile pilots in four districts for 35,000 children. To facilitate broader adoption, CHAI shared insights and learnings with global partners, including on the Technet platform and the Gavi-led Immunization Supply Chain Steering Committee (iSC2).



*Pictured: Health workers review immunization records at Bonga Hospital's vaccine clinic in Ethiopia. Credit: Scott Miller / CHAI.*



# Non-communicable Diseases

Non-communicable diseases (NCDs) such as heart disease, cancer, chronic respiratory disease, and diabetes are now the leading cause of death globally. Most NCD deaths occur in low- and middle-income countries and are expected to rise significantly over the next decade—even while NCD deaths in high-income countries have been declining for years. CHAI works with governments and partners to increase access to essential medicines and basic health tools across the health system to ensure those in need receive testing and treatment.

*Pictured above: Patients participate in a randomized clinical trial of insulin for people with type 1 diabetes in Dhaka, Bangladesh. Credit: Margaret Prust / CHAI.*

## Assistive Technology

Assistive Technology helps people live healthy, independent, and dignified lives. Yet, one billion children and adults globally lack access to life-changing products and services such as wheelchairs, hearing aids, and eyeglasses. In many countries, assistive technology is directly donated by charities. As a result, service delivery is highly fragmented, often running in parallel to public systems and relying on donor funding that may not be sustainable. CHAI works with governments, organizations of persons with disabilities, NGOs, and the private sector to 1) integrate assistive technology provision into public healthcare; 2) set up and strengthen systems for early identification and intervention for children with disabilities; 3) support the roll-out of disability management information systems; and 4) scale up access to eyeglasses. Our work helps to build sustainable markets for high-quality assistive products.

### CHAI partners with 15 countries across Africa and Southeast Asia to integrate assistive technology into public health systems

CHAI is working with governments in 15 countries to integrate assistive technology into public health systems. We collaborate with countries to develop national strategies and priority lists for assistive products and increase access to these products and services for those who need them. We have partnered with ATscale and the governments of **Cambodia** and **Kenya** to launch a three-year program to increase access to assistive technology in each country. In **Cambodia**, we are working with the government to strengthen the quality of and access to services at physical rehabilitation and vision centers within communities with the aim of reaching 300,000 people by 2025. In **Kenya**, we are collaborating with the program that aims to reach 275,000 people with various assistive technologies, including physical, visual, hearing, language, and speech aids. We are also working with ATscale and the governments of the **Democratic Republic of Congo, Lesotho, Mozambique, Zambia, and Zimbabwe** to create more enabling environments for scaling assistive technology.

### Launching new partnerships to drive change at a global scale

At the Clinton Global Initiative (CGI) annual meeting in 2023, we joined partners, including the Missing Billion Initiative, to announce a plan<sup>57</sup> to accelerate disability inclusion in health systems. Over the next two years, we will partner with global, national, and community stakeholders to design inclusive systems that serve as case studies for scale in at least six countries. Acting as ecosystem catalysts, and together with EYelliance, we also announced plans to build government-led school eye health programs in countries in Africa and Southeast Asia. The work kicked off<sup>58</sup> in **Uganda**, where we supported planning a national school eye health program.

#### 📍 PARTNER COUNTRIES

Cambodia, Democratic Republic of Congo, Ethiopia, Indonesia, Kenya, Lesotho, Liberia, Malawi, Nigeria, Rwanda, Sierra Leone, South Africa, Uganda, Zambia, Zimbabwe

#### 🤝 KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation; ATscale, the Global Partnership for Assistive Technology; EYelliance; Global Disability Innovation Hub; LEGO Foundation; Lever for Change; Livelihood Impact Fund; Vision Catalyst Fund

#### 🎯 CHAI ROLES

● Ecosystem Catalyst

# Cancer

By 2030, about three-quarters of all cancer deaths will occur in low- and middle-income countries (LMICs).<sup>59</sup> However, many of these countries lack the full suite of commodities, medications, and trained health providers needed to deliver cancer and palliative care services. CHAI is partnering with governments to strengthen cancer care systems in LMICs and fill these critical systematic gaps. We believe by working in close collaboration with governments and anchoring a suite of transformational interventions, we can dramatically improve the survival rates of cancer patients in LMICs.

## PARTNER COUNTRIES

Cameroon, China, Ethiopia, Ghana, Indonesia, Kenya, Nigeria, Tanzania, Uganda, Zambia

## KEY PARTNERS & DONORS

American Cancer Society, Norwegian Cancer Society, Parker Institute for Cancer Immunotherapy / Parker Foundation, PATH, UBS Optimus Foundation, University of Notre Dame

## CHAI ROLES

-  Trusted Strategic Partner
-  Operational Partner

## Government of Kenya identifies and funds need for an additional US\$1 million towards cancer treatment thanks to an effective data management system

A systematic review estimates that the average household in low- and middle-income countries spends about US\$3,000 out-of-pocket to manage a single cancer patient<sup>60</sup>—an amount that could be almost three times their annual earnings.<sup>61</sup> The cost of cancer care is therefore borne not only by patients but also by their families and wider communities, creating generational poverty and exacerbating already existing socio-economic disparities.

With support from the American Cancer Society and UBS Optimus Foundation, CHAI has partnered with governments in **Ethiopia, Kenya, Nigeria, and Zambia** to increase public funds for cancer management and relieve families of financial burdens. We are doing this by improving data visibility so that ministries of health can make informed decisions about where resources are most needed.

For example, in **Kenya**, we partnered with the Ministry of Health to develop a digital platform, the Screening, and Oncology Dashboard, which aggregates data about the types of cancer services and medications available at lower levels of care, such as regional cancer centers, where most patients begin treatment. This data was instrumental in understanding the national need for cancer medicines and drove the successful allocation of an additional US\$1 million annually of domestic financing. With the new funding, cancer treatment centers have expanded over the last three years from just two hospitals to fourteen nationwide. Almost 70,000 cancer patients have received treatment who would otherwise not have. Additionally, the number of patients who receive chemotherapy increased from just 700 in 2020 to over 22,000 in 2023.

We are also increasing access to pediatric cancer medicines. In **Zambia**, CHAI partnered with the Ministry of Health in implementing the Global Platform for access to Childhood Cancer Medicines (GPACCM) for procuring pediatric cancer medicines. This support is laying the foundation for the country's

preparedness to receive GPACCM commodities, which will improve health outcomes for children receiving pediatric cancer treatment.

## Empowering health workers in Indonesia and Ghana to detect childhood cancers early

Unlike adult cancers, childhood cancers are not treatable through preventive measures such as vaccination and screening. To ensure children have a chance at a cure and long, healthy lives, primary health workers must recognize cancer signs and symptoms early and link children to care. However, across low- and middle-income countries, over 60 percent of children are diagnosed late, leading to palliative rather than curative treatment.<sup>62</sup> CHAI, in collaboration with the UBS Optimus Foundation, is helping train primary health workers to identify the early signs of pediatric cancer.

In **Ghana**, we worked with the public health service and other experts to build and launch a national e-learning course to detect early warning signs of childhood cancers. Hosted on the accredited Medical and Surgical Skills Institute platform,<sup>63</sup> the training enables health workers to earn official credits endorsed by professional regulatory bodies of the Ministry of Health. In the program's first three months, nearly 1,000 health workers accessed the training. We anticipate that all healthcare workers nationally will take the training, thus increasing the number of children assessed and diagnosed.

In **Indonesia**, we worked with a local group of hemato-oncologists (doctors who specialize in blood diseases, bleeding disorders, and cancers) to revise the early childhood cancer detection guidelines. The updated guidelines now include information on eight commonly occurring cancers. Together with the Ministry of Health, we trained over 80 staff and piloted the guidelines at 44 high-volume facilities in the central region. We used the insights gathered from the pilot to refine the document, including introducing a checklist to simplify guideline interpretation for lower-level health workers. More than 1,000 children have been evaluated, with 119 referred for further tests. The health

# US\$1M+

domestic financing allocated to cancer care in Kenya after deploying a decision-making oncology dashboard, leading to a 30x increase in the number of patients receiving chemotherapy in 3 years.

ministry plans to scale up the guidelines up to an additional 80 primary health facilities next year.

## Decentralizing and scaling breast cancer services in Ethiopia leads to 4x increase in treatment

Breast cancer is the leading cause of cancer mortality among women in **Ethiopia**<sup>64</sup> with over 70 percent diagnosed at advanced stages of the disease.<sup>65</sup>

We are working with the Ministry of Health to diagnose the cancer earlier and provide comprehensive treatment in line with the WHO's Global Breast Cancer Initiative<sup>66</sup> goals. The program focuses on decentralizing cancer services by task-shifting and strengthening capabilities, including (1) training primary health workers on clinical breast exams, a cost-effective screening method recommended by the WHO in resource-constrained settings; (2) training doctors at hospitals to collect tissue samples using Fine Needle Aspiration (FNA); and (3) training doctors, nurses, pharmacists, and surgeons on breast cancer care and medication management at referral hospitals.

As a result of the program, by the end of 2023, almost 34,500 women had received clinical breast exams, resulting in 1,688 being referred for further tests and at least 73 confirmed cases of cancer. The number of women receiving treatment has increased more than fourfold over the last four years, reaching 2,591 in 2023.

# Cervical Cancer

More than 348,000 women continue to die of cervical cancer each year<sup>67</sup> despite the availability of proven preventive interventions. At least 94 percent of these women reside in low- and middle-income countries (LMICs).<sup>68</sup> Over the last four years, CHAI has worked as a market shaper to rapidly expand access in LMICs to high-quality tools for screening and treating cervical pre-cancer, including human papillomavirus (HPV) tests and thermal ablation (TA) devices. We have also been a trusted strategic and operational partner to country governments to reach more women by integrating service delivery into routine health services.

We have demonstrated the impact of optimal screening and treatment tools on decreasing cervical cancer incidence and mortality. We are now leveraging these tools to establish delivery models, such as self-collection in communities, to accelerate progress towards elimination.

## PARTNER COUNTRIES

Kenya, Lesotho, Malawi, Myanmar, Nigeria, Rwanda, Zambia, Zimbabwe

## KEY PARTNERS & DONORS

Partners: Expertise France, WHO; Donors: FIND, Global Health Labs, Judith Neilson Foundation, Unitaid

## CHAI ROLES

-  Market Shaper
-  Trusted Strategic Partner
-  Operational Partner

## Cervical cancer screening and treatment approved for inclusion in Rwanda's largest health insurance program

Financing for cervical cancer screening and treatment programs in most CHAI's program countries, including **Rwanda**, is constrained. Ministries of health typically rely on donor funding to finance the introduction of new technologies and scale-up of services. To screen a woman in line with a WHO-recommended HPV DNA test, followed by pre-cancer treatment if found positive and eligible, can cost anywhere between US\$11 to US\$22 per woman<sup>69</sup>—just considering the cost of commodities and procurement.

**Rwanda's** Community Based Health Insurance (CBHI) costs US\$3 per person annually<sup>70</sup>. CBHI is the largest health insurance scheme in the country, with an estimated coverage of 85.6 percent of the target population.<sup>71</sup> CHAI supported the **Rwanda** Biomedical Centre in securing sustainable financing for the National Cervical Cancer Program now covered under the CBHI. CHAI was instrumental in bringing together relevant stakeholders and advocating for the inclusion of cervical cancer services in the CBHI benefits budget with the **Rwanda** Social Security Board. We spearheaded efforts to quantify the need and partnered in developing the cervical cancer elimination plan—all of which was catalytic in securing the approval of cervical cancer services under CBHI.

Thanks in part to CHAI support, the government approved including cervical cancer screening services—both HPV tests and visual inspection with acetic acid (VIA)—in CBHI. This milestone has unlocked a route to sustainable financing that is not reliant on external funding and paved the way for the subsequent inclusion of diagnostics and treatment for all cancers under CBHI.

## Creating a market for and driving global demand for thermal ablation devices to treat pre-cancer

With Unitaid funding, CHAI was the major buyer of TA devices globally between 2019 and 2021. We procured over 5,000 devices and deployed them across over 20 countries under a volume guarantee deal. TA devices are portable, battery-operated, hand-held devices used to treat pre-cancer that can be used to expand treatment services in LMICs. These devices are a big improvement over previously used cryotherapy, which was bulky and difficult to operate, expensive, and relied on the availability of natural gas. CHAI's procurement via the volume guarantee constituted roughly 80 percent of the total market sales in those years, with few purchases coming in from other buyers. CHAI adopted a comprehensive approach to increase the stability and growth of the TA devices market, which would, in turn, perpetuate a positive cyclical effect on keeping prices down and ensuring wider accessibility.

Within partner countries where we had already laid the groundwork for regulatory approvals, CHAI accelerated the deployment of procured devices between 2021 and 2022. CHAI widely disseminated learnings and our experience of using TA devices in health facilities and working with ministry-of-health-led technical working groups, and other implementing partners. We also advocated for including TA devices within national cervical cancer screening and treatment guidelines, thus ensuring sustainability. At the global level, CHAI continued to widely socialize the access pricing offered by the two manufacturers of TA devices, engaged with the manufacturers on product improvement via performance feedback, and worked with Unicef-SD to include TA devices in their catalog. This provided the choice of direct-to-supplier and Unicef-SD to potential buyers for device procurement. Despite the conclusion of the volume guarantee period in 2022, CHAI negotiated with the manufacturers to continue offering affordable pricing on the TA devices, citing increasing market stability and growth.

# 1.3M

women screened for cervical cancer in 10 countries, with 82% of those women linked to care to treat precancerous lesions.

# ~529,000

people benefitted from using new optimal products (HPV tests: 406,200, thermal ablation devices: 92,000, LEEP: 31,000) in 10 countries through CHAI's work as a market shaper and operational partner to the government.

As a result of these efforts, the TA devices market saw increased stability and growth with the diversification of the buyer base. In 2022 alone, TA device sales were more than 80 percent of the previous three years' combined sales. Roughly 90 percent of these sales came from buyers other than CHAI or Unitaid. Both manufacturers have continued offering affordable pricing beyond the volume guarantee period<sup>72</sup> and investing in product improvements.



## Ndunge Evelyn Pavao

Associate Director, Global Talent Acquisition, Canada

I first joined CHAI in 2011 in Uganda, as an eager-to-learn volunteer on the Access to Medicines team supporting the Uganda Ministry of Health to evaluate the PIMA™ Point of Care CD4 Analyser Pilot project. My first impression was that I had to learn fast, and that my role was an important part of our data analysis. I immediately felt like I had the trust and responsibility of my team, and was energized by the experience.

A few short years later I was back at CHAI—this time as a Talent Acquisition Consultant, tasked with leading the scale-up of staffing in Uganda amidst exponential program growth. It was an exciting time. We worked hard, learned lessons along the way, and 10 years later, I’m still here. CHAI’s approach to sustainable solutions to public health problems continues to be the reason I remain committed to our mission and continue wanting to lead our investments in equally mission-driven talent across the globe.

At CHAI, our belief that "Our staff are our greatest asset" resonates deeply, and I have seen it exemplified numerous times. For example, when a staff member from the Uganda office spent weeks in the India office as part of an internal talent exchange and knowledge-sharing effort to transfer lessons learned from private sector programs. I have also attended team retreats where we share our successes, address challenges, and reaffirm our strength as "one CHAI." Additionally, I have seen CHAI staff position themselves closely to implementing partners, sometimes sitting right outside their doors with laptops in hand, demonstrating their commitment to urgency, flexibility, and achieving impactful results.

We understand that the sustainability of CHAI’s impact on the ground is influenced by our ability to retain top talent. We also recognize that we operate in a donor-funded landscape, which occasionally presents funding cliffs for some of our valued team members. As an operational partner, one challenge my team sought to address was creating opportunities to retain top talent through

advocating for internal candidates, by providing increased visibility and equitable access to the range of opportunities across CHAI. We did this through the creation of a monthly Internal Jobs Bulletin newsletter, with an initial open rate of 99 percent. A huge success! We also noted that positions filled by internal or alumni hires increased by 73 percent between 2022 and 2023.

Over the years, CHAI has embraced innovation across multiple facets of the organization, such as knowledge management and implementing efficiency-generating technologies that speak to our commitment to support our partners in their delivery of life-saving interventions. In the coming years, we hope to leverage enabling infrastructure—systems, facilities, technologies—to build on efforts to retain existing staff. We continue to view the development and retention of our staff as a strength in our ability to leverage our value propositions.

# Diabetes and Hypertension

Each year, 15 million people between the ages of 30 and 69 die from non-communicable diseases (NCDs), most of them in low- and middle-income countries.<sup>73</sup> Cardiovascular disease, often caused by hypertension, or high blood pressure, accounts for the most NCD deaths globally. Diabetes leads to another 1.5 million deaths each year. In 2023, the third year of CHAI’s NCD program, we continued to expand by supporting governments to strengthen and implement their NCD prevention and control strategies.

## Decentralizing diabetes care leads to thousands more people screened and diagnosed in Eswatini and Ethiopia

In **Eswatini**, diabetes is the fifth leading cause of death. **Ethiopia** faces a similarly high burden, with up to 2.4 million people living with diabetes, and almost 70 percent of them undiagnosed.<sup>74</sup> To ensure people living with diabetes have a greater chance at being diagnosed and receiving ongoing care, both ministries of health decided to decentralize NCD services and integrate them at the primary healthcare level—bringing care closer to home. But the ministries needed support to meet these priorities.

In **Eswatini**, there was no proactive screening for diabetes and its related complications at the primary healthcare or community levels.<sup>75</sup> CHAI partnered with the Ministry of Health to develop a national diabetes prevention policy, practical desk guides, and training manuals for health workers. As a result, **Eswatini** has successfully decentralized services for diabetes and hypertension to 80 percent of the primary healthcare facilities in the country. In partnership with CHAI, the ministry also trained community health workers on basic NCD screening and referral and launched the “Dia-Beat-It #BeatDiabetes Campaign” to sensitize and encourage the public to get screened for diabetes. The community health workers conducted community screenings and referred at-risk clients to public facilities. By the end of 2023, over 6,300 people had been screened through the community campaigns.

In **Ethiopia**, a CHAI-led landscaping assessment showed that only 17 percent of diabetes patients across over 100 facilities surveyed were being seen at primary care clinics. In 2023, together with the Ministry of Health, we launched a pilot to test the decentralization of diabetes services. The first phase of this pilot was completed within one year at one hospital and three primary care facilities. We helped update facility-based treatment protocols, provided training and mentorship to health workers on diabetes care and commodity supply chain management, and provided job aids such as patient education flip charts and treatment algorithms. The number of diabetes patients on treatment at the primary healthcare level increased by 56 percent

### PARTNER COUNTRIES

Cambodia, Cameroon, Eswatini, Ethiopia, Ghana, India, Kenya, Nigeria, Zimbabwe

### KEY PARTNERS & DONORS

Breakthrough T1D, NCDI Poverty Network, Resolve to Save Lives, The Leona M. and Harry B. Helmsley Charitable Trust, University of Pittsburgh, Vision Catalyst Fund, World Diabetes Foundation

### CHAI ROLES

-  Trusted Strategic Partner
-  Operational Partner

3,570

cases of diabetes and hypertension were identified and immediately linked to care, thanks to an integrated tuberculosis and NCD screening program in Cambodia that reached a total of 67,523 people.

530+

health workers in Eswatini and Ethiopia trained using updated NCD materials, leading to an increase in the number of people diagnosed and initiated on treatment.

in the first phase of the pilot. Additionally, the forecasted insulin volumes more than doubled, with over threefold procured due to the training provided. Phase two of this pilot builds on the learnings gained at additional facilities. As secretary of the national NCD Medicines and Medical Technologies Technical Working Group, CHAI is working to support the development of a comprehensive roadmap for scaling up the decentralization of diabetes services to the primary healthcare level nationally using the results of this pilot

### Reducing stockouts of essential hypertension commodities in Nigeria's Ogun state

In **Nigeria**, the limited availability of high-quality NCD commodities, such as antihypertensives, at primary health facilities negatively impacts people's health outcomes. Stockouts are often at the root of the problem.

The Ministry of Health and Social Welfare and partners established the Nigerian Hypertension Control Initiative in 2020 to strengthen supply chain mechanisms and ensure access to high-quality antihypertensive treatments at the primary healthcare level in Ogun and Kano states. Currently operational in 52 primary

healthcare centers across 20 local government areas, the initiative integrates essential medications into a Drug Revolving Fund model to ensure equitable and continuous availability of vital hypertension drugs to patients. As part of this initiative, in Ogun State, where stockouts were high, CHAI established a consumption-based quantification model to support improved forecasting accuracy and enhanced contracting processes with suppliers, ensuring consistent hypertension medication availability at existing facilities.

As a result of CHAI's efforts to strengthen the government's capacity to forecast accurately and procure commodities at levels that meet demand, the incidence of stockouts in the state has decreased by 15 percent. This work will inform the scale-up of its use in all facilities in Ogun State.



*Pictured: Diabetes care training session at Bonga Hospital in Ethiopia. Credit: Scott Miller / CHAI.*



# Health Systems

Despite significant increases in access to healthcare over the past few decades, half of the world still lacks basic health services. But many governments are committed to achieving universal health coverage. CHAI is working with governments to invest in primary healthcare as a crucial first step toward universal coverage.

*Pictured above: Community members attend a demonstration on cervical cancer and HPV testing methods in Naguru, Uganda. Credit: Melinda Stanley.*

# Health Financing

Each year, half a billion people in low- and middle-income countries are pushed into poverty, or deeper into poverty, due to healthcare expenses. Millions of others do not seek or receive care they need due to resource shortages.<sup>76</sup> CHAI and the governments we partner with work to address financial barriers to ensure essential services are available and affordable to all, close to where people live—whether at private or public clinics, pharmacies, or in communities. In this context, CHAI works with governments to (1) set priorities and mobilize and re-align external and domestic funds toward these priorities, (2) expand financial protection for the most vulnerable, and (3) ensure funds allocated or used efficiently and sustainably. Through this work, and in collaboration with CHAI’s programs across women, newborn, and child health and health systems, we aim to significantly and sustainably reduce the estimated 77 percent of preventable maternal, newborn, and child deaths and stillbirths in the countries we operate through primary health care.<sup>77</sup>

## Resources mobilized in Eswatini and Uganda following evidence-based planning and coordination of funding sources

In 2023, CHAI conducted targeted engagements to mobilize resources for high-priority interventions. In **Eswatini**, for example, we partnered with the government to mobilize resources to roll out the human papillomavirus (HPV) vaccine. CHAI helped cost and develop an investment case, raising US\$2.8 million from the Ministry of Finance for HPV vaccine introduction and US\$1.6 million from Gavi, The Vaccine Alliance, for technical assistance in the rollout of the vaccine. We then collaborated on introducing the vaccine, leading to at least 44,000 girls aged 9 to 14 (60 percent of the eligible population) being vaccinated. CHAI is now working with the Ministry of Health to advocate for additional funds from the Ministry of Finance to ensure the transition to routine HPV vaccination across the country.

In **Uganda**, CHAI partnered with the Ministry of Health to use evidence-based planning and analysis of available funds from different sources to inform grant applications to Gavi and the Global Fund to Fight AIDS, TB, Malaria. As a result, the organizations allocated US\$50 million and US\$526 million respectively for prioritized and cost-effective interventions across HIV, TB, malaria, and immunization.

As development assistance for health continues to decline alongside persistent fragmentation and limited visibility of funding flows, CHAI is increasingly focusing on aligning donors with government plans and priorities. Leveraging our years of experience in the field, we are working with governments to enhance joint planning and allocation of external and internal resources against an evidence-based and prioritized package of essential services. In 2023, we shared our expertise and experience together with the **Malawi** Ministry of Health in a

### 📍 PARTNER COUNTRIES

Benin, Burkina Faso, Democratic Republic of Congo, Eswatini, Ethiopia, India, Kenya, Malawi, Mali, Nigeria, Rwanda, South Africa, Tanzania, Uganda, Zimbabwe

### 🤝 KEY PARTNERS & DONORS

Bill and Melinda Gates Foundation, Global Affairs Canada, Global Financing Facility (GFF), LAD, Sida’s Regional Team for SRHR in Africa, The World Bank Group

### 🎯 CHAI ROLES

- Market Shaper
- Trusted Strategic Partner
- Operational Partner

4

countries (Burkina Faso, Ethiopia, Rwanda, Nigeria) expanded coverage of insurance and free care programs without asking patients to pay more than they can afford.

150%

increase in coverage of vulnerable populations in Kano State, Nigeria by state schemes.

US\$526M

received from the Global Fund and US\$50 million from Gavi for prioritized interventions in HIV, malaria, TB, and immunization in Uganda.

paper for *Health Policy and Planning* titled “Donor Coordination to Support Universal Health Coverage in **Malawi**,”<sup>78</sup> which was part of a special issue, “Rethinking External Assistance for Health.” We extended the reach of our impact by working with Global Financing Facility (GFF) and the WHO to launch the joint CHAI-GFF-WHO resource guide<sup>79</sup> on harmonizing approaches to tracking financial resources for health.

### Increasing financial protection for over 65 million most-vulnerable populations in Ethiopia, Nigeria, and Rwanda

User fees remain a significant barrier to people accessing the essential primary health services they need. While many governments have put policies in place for free care reforms and tax- or contribution-based insurance systems, there remains a critical need to support the implementation of these policies. CHAI provides targeted technical assistance as an

operational partner, informing how these systems are scaled to reach those in most need. In **Ethiopia, Nigeria, Rwanda, and Zambia** insurance schemes cover healthcare expenses for populations without formal employment and subsidize the poorest populations. CHAI is helping ensure these schemes are as effective and sustainable as possible. For example, in **Ethiopia**, we improved the design and then scaled a community-based health insurance scheme covering nearly 53 million people (80 percent of the eligible population). In **Zambia**, we are collaborating with the National Health Insurance Management Authority to boost healthcare financing policy development and reforms. The goal of these reforms is to extend coverage, currently at 35 percent, to underserved populations, including informal sector workers, rural communities, and vulnerable groups.

In **Rwanda**, we have been working with the government to restructure its benefits package to ensure it covers people who need care the most. In 2023, the Rwandan government formally expanded the Community-Based Health Insurance (CBHI) benefits package, which covers 12 million people (91 percent of the population), including the poorest citizens. The CBHI package now includes free cervical and breast cancer diagnosis, care, and treatment. We are also working to build the agency's institutional capacity to manage the scheme and operationalize the agency's data strategy by setting up systems, processes, and capacities to strengthen data management and use for decision-making.

In **Nigeria**, we supported state and federal subsidy schemes to expand coverage of vulnerable populations. These are defined as pregnant women, children under five, disabled and elderly people (over 85 years), and poor populations. In Kano State, the coverage has increased from 95,600 to 147,000 people, and in Kaduna State, it has increased from 50,600 to 58,700 people. Across countries, CHAI's work included generating evidence to inform program design (e.g., the pooling of risk and finances, targeting of vulnerable groups and assessment of informal sector willingness to pay), demand generation strategies, domestic

resource mobilization to support coverage expansion, the setup of digital insurance management systems, and the introduction of gender mainstreaming guidelines.

Ultimately, this support is aimed at achieving Universal Health Coverage (UHC), reducing out-of-pocket expenses, and improving health outcomes across countries.

### Improving budget execution and ensuring funds reach frontline providers

Even when funds are available, they may be underspent or not reach frontline providers. Many countries are reforming payment systems to increase the predictability of funding and ensure providers can deliver services without interruption to the people who need them most.<sup>80</sup> **Ethiopia** and **Rwanda** are two of a handful of countries implementing such reforms via capitation. In 2023, **Ethiopia** began to roll out capitation services, following a two-year pilot that CHAI supported. The pilot evaluated the impact of paying health facilities in advance for each patient enrolled in their catchment area. In the first year of scale-up, the capitation reform was scaled from six to 47 districts across seven regions. The initial results indicate that capitation has already improved the availability of essential medicines and drug prescriptions while controlling costs. In **Rwanda**, we provided technical assistance to design a similar reform. We also supported knowledge sharing between these countries and others, such as **Burkina Faso, Malawi, and Nigeria**, which are embarking on similar reforms in the region.

Alongside payment reforms, there is often a need to strengthen the management of funds at facility level. In **Zambia**, CHAI has been supporting the Ministry of Health to strengthen the public financial management system. We have helped the ministry enhance and integrate the business management solution, Microsoft Navision, into the system. This has saved the government over US\$250,000 due to better operational efficiency and improved financial management.

In **Nigeria**, CHAI supported the delivery of a minimum standard package of services across 94 prioritized facilities in Kano and Kaduna states. CHAI led the development of a costed up plan for a Minimum Service Package and fiscal space analysis for sexual and reproductive health and rights that informed the package of services. Due in part of these efforts, Kano State doubled the budget for the Minimum Service Package scale-up —increasing from approximately US\$717,000 in 2023 to nearly US\$1.7 million in 2024. This funding boost will enable free access to critical services such as facility deliveries and antenatal care for vulnerable groups.

CHAI also worked with the government to strengthen state-run monitoring teams to improve facility readiness to deliver this minimum package and efficiently use funds. An internal evaluation completed in 2023 showed this approach has dramatically increased the availability and use of primary healthcare services thanks to improvements in health workers' capacity, equipment, and commodity availability. For example, in Kano State, facilities meeting minimal tracer commodity requirements increased from 36 to 93 percent, while in Kaduna, the average number of skilled healthcare workers in facilities almost doubled from 11 to 21. In 2023 alone, there was an increase in the uptake of sexual and reproductive health services, including a 20 percent increase in average facility attendance, a 10 percent increase in antenatal attendance, and a 5 percent improvement in facility delivery.

# Health Workforce

Health systems depend on the labor of the health workforce. The quality and coverage of care that patients receive rely on skilled health workers' availability. Yet, the WHO estimates a global shortage of 10 million health workers by 2030.<sup>81</sup> Low- and middle-income countries are most affected, accounting for 75 percent of the global shortage. CHAI's health workforce program supports governments to optimize their health workforces within available resources. When this is the case, governments can make progress toward universal health coverage by maximizing the extent to which available, high-performing, and motivated health workers can provide quality services when and where needed.

## 📍 PARTNER COUNTRIES

Cameroon, Ethiopia, Ghana, Kenya, Lesotho\*, Liberia, Malawi, Nigeria, Rwanda, Sierra Leone, Tanzania\*, Uganda\*, Zambia, Zimbabwe

\*Global Fund Grant Cycle 7 ("GC7") support only

## 🤝 KEY PARTNERS & DONORS

ELMA, FCDO, GAC, Global Fund, Large Anonymous Donor

## 🎯 CHAI ROLES

- 🟡 Trusted Strategic Partner
- 🟢 Operational Partner
- 🟠 Ecosystem Catalyst

## Millions of dollars mobilized for health workforce development in 11 countries

Globally, funding for health systems, including health workforce and community health, is low compared to disease-specific initiatives for HIV, tuberculosis, and malaria.<sup>82</sup> Even more challenging, the return on investments has historically been small because the funds have not been strategically programmed or effectively spent.

However, over the last few years, the Global Fund to Fight AIDS, TB, and Malaria has significantly increased its funding and strategic attention to strengthening health systems. In 2023, CHAI partnered with governments to prepare for this injection of money and ensure every dollar spent has as much impact as possible.

From December 2022 to August 2023, CHAI partnered with 11 countries (**Ethiopia, Ghana, Kenya, Lesotho, Liberia, Malawi, Nigeria, Rwanda, Tanzania, Uganda, and Zambia**) to successfully develop their Global Fund grant Cycle 7 funding requests. As a result, the governments received a total of US\$103 million to program toward strategic health workforce and community health worker activities. Based on internal analysis, in many cases, the total dollar amount a country received was much higher than in previous grant cycles.

CHAI then partnered with government human resources for health and community health departments across eight countries to provide operational support. For example, we completed quantitative analyses to maximize the resources available for health workers, including community health workers. We then assisted the departments in prioritizing which activities those additional resources should go toward to drive the greatest impact.



*Pictured: New Community Health Assistants graduate from their program at Mwachisompola Community Health Assistant Training School in Chibombo, Zambia. Credit: Jason J Mulikita.*

By operationalizing and optimizing tens of millions of dollars across the region, this next round of Global Fund funding can contribute to closing the health worker gap by making better use of resources to employ and retain health workers. Beyond increasing the number of health workers sustainably employed, the Global Fund funding will ensure health workers are appropriately trained and adequately supported to deliver quality care to patients.



# Climate & Health

When we talk about climate change, the dialogue is often centered around the increase in degrees of temperature or the amount of carbon emitted. These numbers are not connected to their impact on human lives. The World Bank estimates that 21 million people could die by 2050 from risks triggered by climate change—risks such as malnutrition, malaria, dengue, diarrhea, and heat stress.<sup>83</sup> Despite this, funding for climate and health is limited, and challenges remain in identifying key risks and solutions. We believe health needs to be at the center of discussions around climate change. In the first year of our Climate and Health program, we focused on centering health in global and national climate discussions, partnering with countries to identify and address their most urgent climate and health risks, building a climate lens into work across CHAI's existing programs, and developing high-impact climate and health interventions.

*Pictured above: A young mother walks with her child in the paddy fields where she works in Uttar Pradesh, India. Credit: Sujata Khanna / WJCF.*

## Building government capacity to address the health impacts of climate change in Africa and Southeast Asia

Low- and middle-income countries that contributed the least to carbon dioxide (CO<sub>2</sub>) emissions are already bearing the brunt of its effects.<sup>84</sup> To address these challenges, countries must adapt. And donors are ready to invest in these adaptation plans. Now, countries must identify their climate and health priorities and begin mapping solutions before they can access funding. CHAI is well-positioned to help, due to our longstanding relationships and deep understanding of the health issues facing many of these countries.

In 2023, we began working with governments to identify the specific climate and health risks they face and find solutions. For example, in **Cambodia** and **Uganda**, CHAI has helped reprogram excess Rockefeller Foundation funding for COVID-19 vaccines toward climate and health initiatives. In **Cambodia** specifically, we worked with community health workers and SNV to develop a strategy to reduce indoor air pollution from so-called dirty cooking through the health system (cooking that uses fuels like charcoal, wood, and kerosene). In **Uganda**, we supported the launch of the National Health Adaptation Plan.

We are also working with countries to find reliable, climate-friendly solutions to electricity shortages. In sub-Saharan Africa, only 40 percent of health facilities have reliable access to electricity.<sup>85</sup> To ensure essential operations continue during blackouts, many facilities rely on expensive, polluting gas-powered generators—or they must simply go without power, often putting services on hold.

Solar technology can help ensure constant and cost-effective access to electricity to deliver uninterrupted health services while also reducing carbon emissions. However, donors have historically taken a siloed, short-term approach to this technology. They focused more on the procurement and deployment of solar panels while neglecting ongoing operations, maintenance, or building the capacity of the public sector.

In 2023, we partnered with the government of **Malawi** to develop a national solar for health plan around which donor financing will be coordinated. Linked to this plan, **Malawi** will develop an innovative financing mechanism that provides operational and maintenance support to newly installed solar-powered sites, ensuring they have reliable access to electricity for the next 10 to 15 years. We are working with ministries of health in **Ethiopia**, **Nigeria**, and **South Africa** to develop similar long-term solutions.

### PARTNER COUNTRIES

Cambodia, India, Kenya, Malawi, South Africa, Uganda

### KEY PARTNERS & DONORS

*Partners:* Clinton Global Initiative, Health Finance Coalition, India Cooling Coalition, Malaria No More, Rockefeller Foundation, SNV, TATA Power-DDL

*Donors:* Cadence, Global Fund, Unicef

### CHAI ROLES

-  Market Shaper
-  Trusted Strategic Partner
-  Ecosystem Catalyst

## Applying CHAI's health system shaping approach to address climate change

We are also working to better understand climate change's effects on health in other areas that intersect with CHAI's expertise. In some cases, the connection is quite clear. Vector-borne diseases, for example, could reach nearly five billion more people by 2070, with rising temperatures and changing weather patterns increasing the spread of dengue and other illnesses.<sup>86</sup> Wolbachia—a naturally occurring bacteria found in half of all insects, but not dengue-carrying mosquitoes—can be introduced to mosquitoes to decrease their ability to carry and transmit the virus that causes dengue and other diseases.<sup>87</sup> We plan to work with ministries of health to deploy Wolbachia in the fight against dengue in hard-hit regions. This includes Central America and Southeast Asia, where CHAI has already helped build strong malaria elimination programs.

Green procurement is another area we are operating in. We are working with suppliers and procurers to prioritize reducing carbon emissions in procurement decisions. In 2023, we partnered with Cornell University to conduct a full life cycle assessment to understand the greenhouse gas emissions for HIV medication Tenofovir Disoproxil Fumarate, or TDF. The first-of-its kind study showed that pharmaceutical companies could cut—by over half—their carbon footprint if they made some key changes.

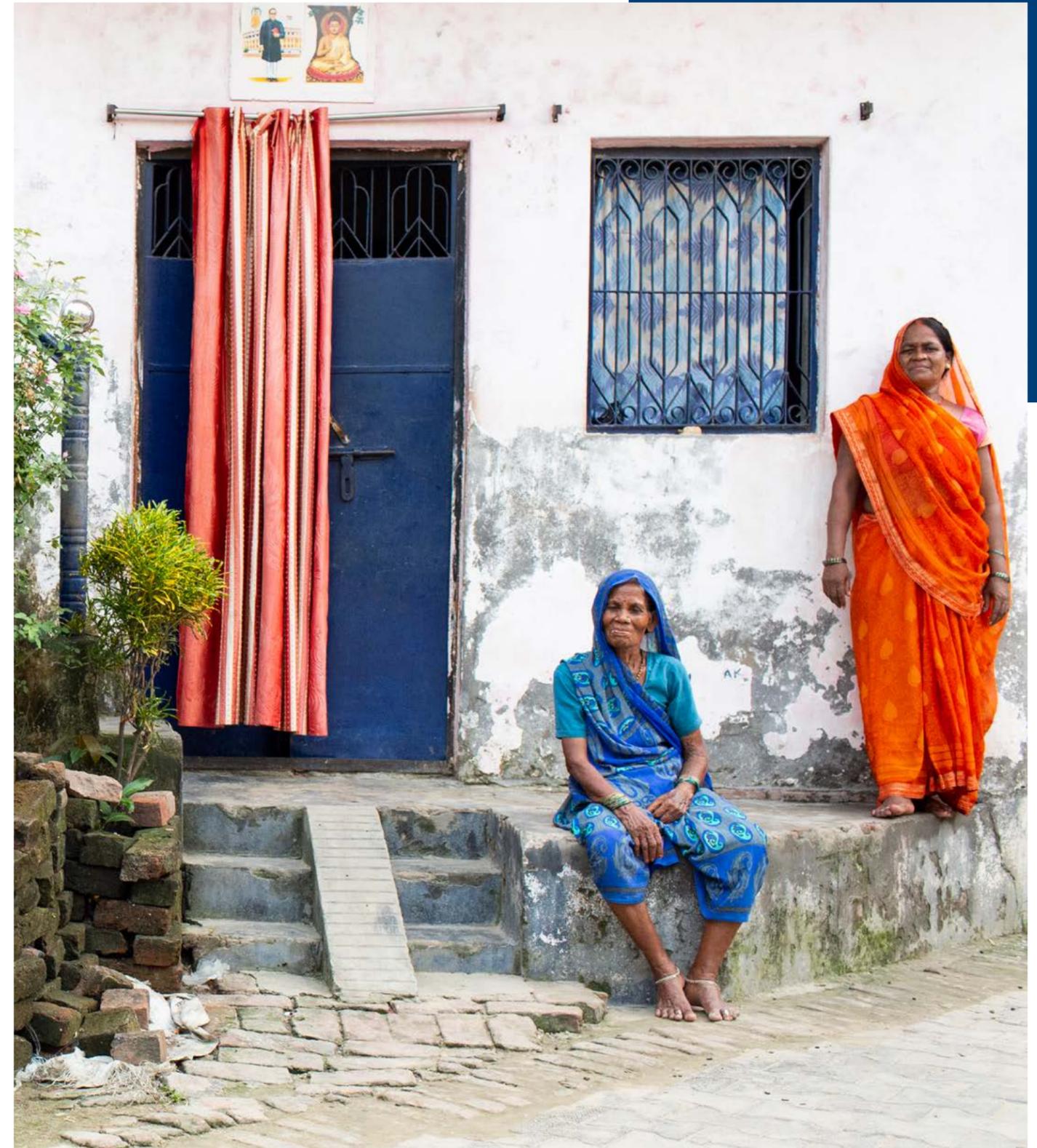
The study found that most generic drugs, including TDF, are produced in **India**, which relies on coal for energy. By switching to renewable energy sources, companies could cut their environmental impact by up to 45 percent. Optimizing supply chain networks to reduce distances between production facilities could reduce emissions by another nine percent.

Using the toolkit CHAI pioneered to create healthy, sustainable markets for pharmaceuticals and other health products, we are now also looking at market shaping for climate. Air conditioning is increasingly one way individuals are dealing with rising temperatures—the world is expected to buy

three billion additional air conditioning units by 2050.<sup>88</sup>

With over a billion people facing heat-related threats to their lives today and health-related deaths projected to rise by 370 percent by midcentury,<sup>89</sup> people's ability to cool their homes is essential to their health. Unfortunately, the electricity consumed by cooling appliances globally causes more pollution than international aviation and shipping combined.<sup>90</sup>

Our clean cooling initiative works to transform the market for energy-efficient room air conditioners—starting in **India**. Together with a broad set of partners, we are developing a suite of interventions to reach 60 percent market penetration of high-efficiency air conditioners in key emerging economies by 2035, averting billions of tons of CO2 globally and changing the trajectory of heat-related health threats. In 2024, we are taking the first step, with a pilot funded by Cadence Giving Foundation, in Delhi, **India**, that provides an upfront rebate for buyers purchasing higher-efficiency air conditioners.



*Pictured: A family home in Maharajganj, Uttar Pradesh, India. Credit: Sujata Khanna / WJCF.*



# Cross-Cutting Experts

Our global team of science, business, and technical experts support the entire organization to fundamentally change the global health landscape. CHAI's Diagnostics, Digital Health, Global Health Sciences, and Global Markets groups work with over 50 CHAI program and country teams, as well as governments and companies around the world, to develop new and innovative products that will transform care, secure lower prices for key commodities such as medication and diagnostics, improve laboratories and related services, and connect decision-makers with the quality evidence they need to inform health policy. The impact of these groups can be seen across nearly every program milestone in this report.

*Pictured above: The CHAI Analytics and Implementation Research team visits with the CHAI Kenya team for internal discussions and planning. Credit: CHAI.*

## Analytics and Implementation Research

CHAI generates evidence on the introduction and scale-up of new health products, innovations, and interventions in partner countries. We then use that evidence to inform national and global policies and turn those policies into action. We do this by right-sizing our research and developing the right tools—such as policy influence plans, dashboards, cost models, operational plans and more—to catalyze action based on the results. Our approach is driven by government decision-makers and their most urgent questions, needs, and opportunities. We draw on CHAI's experience addressing health system challenges and stay firmly focused on the impact we want to achieve.

## Clinical Sciences

CHAI develops strategies and provides access to products that improve the delivery of health services. We do this through interpreting and sharing trends in global health, training health workers on treatment guidelines and standards of care, and helping develop global and national public health policies. CHAI senior clinicians have direct professional experience managing patients; using medicines and diagnostics; and training fellow physicians, including those on technical advisory groups, on the use of these products. This can be a valuable resource when emerging conditions lack evidence or normative guidance, as was the case for COVID-19 and Mpox.

## Diagnostics

Access to testing is a critical part of care and prevention for nearly every disease. Accurate diagnosis requires the right mix of affordable, quality technologies, and effective health systems. However, testing remains a critical gap for many diseases—half the world does not have access to essential tests. The COVID-19 pandemic brought this into sharp focus. Providing testing rapidly became an enormous priority for countries to track and manage the spread of the disease. CHAI supports countries to improve existing testing services and to introduce and scale up new technologies so patients can be diagnosed accurately and begin treatment sooner. We work closely with governments to upgrade testing services and cost-effective supply chains, support training, and other areas. In recent years we have helped countries deliver health services for diagnosing and monitoring cervical cancer, cholera, COVID-19, diabetes, hepatitis, HIV, maternal and newborn health conditions, sickle cell disease, sexually transmitted illnesses, and tuberculosis.

## Digital Health

CHAI works hand-in-hand with governments to design, develop, scale, and institutionalize digital technologies to accelerate progress toward their public health goals. We support ministries of health to adopt technologies that serve health workers, health systems managers, and those that simplify the use of and access to data. We provide strategic and operational support to governments, working closely with end-users, global and local software technology organizations, donors, and others to influence digital health initiatives, ensure strong and thoughtful planning and coordination, and drive sustainability.

## Global Markets

CHAI was founded to make treatment more equitable for millions of people living with HIV in low- and middle-income countries. Sustainable access to effective and quality-assured medicines and diagnostics remains a core pillar of our approach. CHAI helps governments maximize the impact of limited funding by identifying innovative products, or enabling access to existing products, that improve patient outcomes while reducing costs. We assist pharmaceutical, vaccine, and diagnostics companies with strategies to expand patient access in low- and middle-income countries via various types of market interventions, from enabling effective product licensing and incentivizing accelerated new product development, to leveraging financial tools such as volume guarantees and buy downs, and devising new product introduction strategies. As a result, since CHAI was founded in 2002, we have completed over 140 agreements to bring the most effective drugs and diagnostics to tens of millions of people. These agreements ensure people in over 125 low- and middle-income countries can access the best products while realizing billions of dollars in savings.

## Product Development, Quality, Costing, and Regulatory Affairs

CHAI accelerates affordable access to quality-assured medical products for people living in low- and middle-income countries. Working with innovator and generic suppliers and other global stakeholders across disease areas, we support product development and market introduction, while maintaining a relentless commitment to quality, safety, effectiveness, and affordability, and stringent regulatory standards.



*Pictured: Workers installing oxygen system piping at Escuintla Regional Hospital in Guatemala. Credit: CHAI.*

# Financials

Clinton Health Access Initiative, Inc. and subsidiaries. Years ended December 31, 2022 through 2023.

## Consolidated statement of activities

Revenues and support	2023	2022
Contributions	US\$576,277	US\$629,699
Grants		-
In-kind contributions	454,167	1,734,187
Other	968,469	447,473
Net assets released from restrictions	224,215,030	224,021,452
<b>Total revenues, gains, and other support</b>	<b>226,213,943</b>	<b>226,832,811</b>
<b>Expenses</b>		
Program services	209,512,856	210,435,557
Management and general	15,915,979	16,662,696
Fundraising	628,618	565,283
<b>Total expenses</b>	<b>226,057,453</b>	<b>227,663,536</b>

## Consolidated statements of financial position

Assets	2023	2022
Cash and cash equivalents including donor restricted amounts	US\$133,235,609	US\$118,141,913
Advances and deposits	4,256,444	3,316,876
Grants receivable	19,691,121	14,268,881
Prepaid expenses	2,100,893	3,003,062
Operating lease right-of-use asset	1,102,280	1,359,225
Property and equipment	350,142	284,832
<b>Total assets</b>	<b>160,736,489</b>	<b>140,374,789</b>
<b>Liabilities and net assets</b>		
Accounts payable	6,154,009	6,230,023
Accrued expenses	10,007,214	8,299,189
Operating lease liability	1,021,468	1,275,666
Deferred revenue	132,526,959	112,593,086
<b>Total liabilities</b>	<b>149,709,650</b>	<b>128,397,964</b>
<b>Net assets</b>		
Without donor restrictions	9,868,754	9,712,264
With donor restrictions	1,158,085	2,264,561
<b>Total net assets</b>	<b>11,026,839</b>	<b>11,976,825</b>
<b>Total liabilities and net assets</b>	<b>160,736,489</b>	<b>140,374,789</b>

# Acknowledgments

## CHAI's work is possible thanks to a committed network of donors and partners:

Abt Associates Pty Ltd	Global Access Health	Resolve to Save Lives (RTSL)
African Population and Health Research Center	Global Affairs Canada	Riders for Health
African Society for Laboratory Medicine (ASLM)	Global Disability Innovation Hub (GDI Hub)	Robert Selander (The Selander Foundation)
AIDS Vaccine Advocacy Coalition (AVAC)	Grand Challenges Canada	SEMA Reproductive Health
Alan Schwartz (Schwartz Family Foundation)	Health Systems Trust, South Africa	Sightsavers
American Cancer Society, Inc.	Honduras Ministry of Health	Silicon Valley Community Foundation (GiveWell)
Aqua for All	Imperial College	Solina Centre for International Development and Research
Aquity Innovations	Individual & Unsolicited Donations	Stop TB Partnership's TB REACH
Asia Pacific Leaders Malaria Alliance	Inter-American Development Bank	Swedish International Development Cooperation Agency
Bill & Melinda Gates Foundation	Interactive Research and Development Vietnam	Technical Advice Connect LTD/GTE
Bill, Hillary & Chelsea Clinton Foundation	Jacaranda Health	The Aurum Institute NPC
Boston University	John Snow Institute	The Brigham and Women's Hospital (BWH)
Breakthrough T1D	Joint United Nations Programme on HIV/AIDS (UNAIDS)	The ELMA Foundation
Cadence Giving Foundation	Judith Neilson Foundation	The Global Fund to Fight AIDS, Tuberculosis and Malaria
Cadence Giving Foundation	Karen Baptist Convention	The Hepatitis Fund
Cambodia Ministry of Health	LEGO Foundation	The Leona M. and Harry B. Helmsley Charitable Trust
Charles Engelhard Foundation	Livelihood Impact Fund	The Rockefeller Foundation
Children's Investment Fund Foundation	MacArthur Foundation	The Susan Thompson Buffett Foundation
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH	Malaria Consortium	Tony Blair Institute for Global Change
Development Activities Int'l Ltd	MASS Design Group	Touch Foundation
Duke University	MedAccess	UBS Optimus Foundation
Ellen's Children Funds	Medical Products Supply Center, Laos PDR	UK Foreign, Commonwealth and Development Office
Elton John AIDS Foundation	MIT Solve	UNITAID
Embassy of Ireland	MIT Solve	United Nations Children's Fund
European Commission	National Center for HIV/AIDS, Dermatology and STD	United Nations Office for Project Services
Evidence Action	National Committee for Sub-National Democratic Development Secretariat (NCDDS)	University of Manitoba
FHI360	National Emergency Response Council on HIV-AIDS, Eswatini	University of Pittsburgh
Flanders International Cooperation Agency	Norwegian Cancer Society (NCS)	University of Washington
Foundation for Innovative New Diagnostics	Open Philanthropy	University of Witwatersrand
GARDP Foundation	Paediatric Aids Treatment for Africa	Vision Catalyst Fund
GAVI Alliance	PATH Drug Solutions	Vital Strategies, Inc
Gemeinnützige GmbH für effektives Spenden	Population Services International	World Bank
Genesis Analytics	Premise Data Corporation	World Diabetes Foundation
Global Access Health	Public Health Enhancement Fund, South Africa	World Health Organization
	Raymond G. Chambers (MCJ Amelior Foundation)	World Vision

# Board of Directors

**President William J. Clinton**, Board Member, Chair Emeritus & Co-Founder  
**Alan D. Schwartz**, Chair of the Board & Chair of the Executive Committee  
**Raymond G. Chambers**, Vice Chair of the Board  
**Bruce Lindsey**, Board Member  
**Robert W. Selander**, Board Member & Chair of the Finance Committee  
**Chelsea Clinton**, Vice Chair of the Board & Co-Chair of HR Committee  
**Aliko Dangote**, Board Member  
**Ann Veneman**, Board Member  
**Dr. Mark Dybul**, Board Member  
**Professor Dame Sally Davies**, Board Member  
**Joy Phumaphi**, Board Member & Co-Chair of HR Committee  
**Luis Alberto Moreno**, Board Member  
**Ophelia Dahl**, Board Member  
**Richard Zall**, Board Secretary and Legal Counsel  
**Timothy A.A. Stiles**, Chair of the Finance Committee's Audit Subcommittee

View CHAI Leadership Teams on our website: [www.clintonhealthaccess.org/about-us/#leadership](http://www.clintonhealthaccess.org/about-us/#leadership)

# Endnotes

- Mathieu, E., Ritchie, H., Rodés-Guirao, L., Appel, C., Giattino, C., Hasell, J., Macdonald, B., Dattani, S., Beltekian, D., Ortiz-Ospina, E., & Roser, M. (2020, March 5). Coronavirus pandemic (COVID-19). Our World in Data. <https://ourworldindata.org/covid-deaths>
- IHME | COVID-19 Projections. (n.d.). Institute for Health Metrics and Evaluation. <https://covid19.healthdata.org/global?view=cumulative-deaths&tab=trend>
- UNICEF. (2021, July 15). COVID-19 pandemic leads to major backsliding on childhood vaccinations, new WHO, UNICEF data shows [Press release]. Retrieved October 18, 2024, from <https://www.unicef.org/press-releases/covid-19-pandemic-leads-major-backsliding-childhood-vaccinations-new-who-unicef-data>
- Chmielewska, B., Barratt, I., Townsend, R., Kalafat, E., Van Der Meulen, J., Gurol-Urganci, I., O'Brien, P., Morris, E., Draycott, T., Thangaratinam, S., Doare, K. L., Ladhani, S., Von Dadelszen, P., Magee, L., & Khalil, A. (2021). Effects of the COVID-19 pandemic on maternal and perinatal outcomes: a systematic review and meta-analysis. *The Lancet Global Health*, 9(6), e759–e772. [https://doi.org/10.1016/s2214-109x\(21\)00079-6](https://doi.org/10.1016/s2214-109x(21)00079-6)
- Global HIV, Hepatitis and STIs Programmes (HHS), Health Product Policy and Standards (HPS). (2024). *Global Hepatitis Report 2024: Action for access in low- and middle-income countries*. In *who.int*. World Health Organization. Retrieved October 18, 2024, from <https://www.who.int/publications/i/item/9789240091672>
- World Health Organization. (2024). *Global Hepatitis Report 2024: Action for access in low- and middle-income countries*. WHO. Retrieved October 18, 2024, from <https://www.who.int/publications/i/item/9789240091672>
- World Health Organization. (2024). *Global Hepatitis Report 2024: Action for access in low- and middle-income countries*. WHO. Retrieved October 18, 2024, from <https://www.who.int/publications/i/item/9789240091672>
- ICAP at Columbia University. PHIA Rwanda. Accessed October 18, 2024. <https://phia.icap.columbia.edu/countries/rwanda/>
- UNAIDS. \*AIDSinfo\*. Accessed October 18, 2024. <https://aidsinfo.unaids.org/>
- UNAIDS. "Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030," n.d. [https://www.unaids.org/en/resources/documents/2021/2021\\_political-declaration-on-hiv-and-aids](https://www.unaids.org/en/resources/documents/2021/2021_political-declaration-on-hiv-and-aids)
- PrEP Watch. \*The Global PrEP Tracker\*. August 2024. Accessed October 18, 2024. <https://www.prepwatch.org/resources/global-prep-tracker/>
- Bekker, L., Das, M., Karim, Q. A., Ahmed, K., Bating, J., Brumskine, W., Gill, K., Harkoo, I., Jaggernath, M., Kigozi, G., Kiwanuka, N., Kotze, P., Lebina, L., Louw, C. E., Malahleha, M., Manentsa, M., Mansoor, L. E., Moodley, D., Naicker, V., . . . Kiweewa, F. M. (2024). Twice-Yearly Lenacapavir or daily F/TAF for HIV prevention in cisgender women. *New England Journal of Medicine*. <https://doi.org/10.1056/nejmoa2407001>
- Gilead Sciences. 2024. "Gilead's Twice-Yearly Lenacapavir for HIV Prevention Reduced HIV Infections by 96% and Demonstrated Superiority to Daily Truvada® in Second Pivotal Phase 3 Trial." News release, October. <https://www.gilead.com/news/news-details/2024/gileads-twiceyearly-lenacapavir-for-hiv-prevention-reduced-hiv-infections-by-96-and-demonstrated-superiority-to-daily-truvada>
- Campbell, Jennifer, D. Rathakrishnan, B. Ngwatu, J. Bropy, C. Amole, and the TORPEDO Study Group. 2023. "Outcomes from the Transitioning Children to Optimal Regimens of Paediatric Dolutegravir (TORPEDO) Study at 6 Months in Benin, Nigeria, and Uganda." *IAS Conference on HIV Science*. <https://programme.ias2023.org/Abstract/Abstract/?abstractid=4689>
- Business Standard. 2023. "Aurobindo Pharma to Launch HIV Drug for Children in 123 Countries." *Business Standard*, August 16. [https://www.business-standard.com/health/aurobindo-pharma-to-launch-hiv-drug-for-children-in-123-countries-123081600723\\_1.html](https://www.business-standard.com/health/aurobindo-pharma-to-launch-hiv-drug-for-children-in-123-countries-123081600723_1.html)
- Viatrix. 2023. "Viatrix Announces U.S. FDA Tentative Approval of a Paediatric Formulation of Abacavir (ABC)/Dolutegravir (DTG)/Lamivudine (3TC), a Once-Daily Treatment for Children Living with HIV." News release, September 5. <https://newsroom.viatrix.com/2023-09-05-Viatrix-Announces-U-S-FDA-Tentative-Approval-of-a-Paediatric-Formulation-of-Abacavir-ABC-Dolutegravir-DTG-Lamivudine-3TC-a-Once-daily-Treatment-for-Children-Living-with-HIV>
- Bhana, Arvin, Charlotte Hanlon, Sarah Skeen, and Mark Tomlinson. 2022. "Integrating Mental Health into HIV Prevention and Care: A Call for Action." *AIDS and Behavior* 26 (9): 2681–2689. <https://pubmed.ncbi.nlm.nih.gov/36049486/>
- Hakim, J., Musiime, V., Szubert, A. J., Mallewa, J., Siika, A., Agutu, C., Walker, S., Pett, S. L., Bwakura-Dangarembizi, M., Lugemwa, A., Kaunda, S., Karoney, M., Musoro, G., Kabahenda, S., Nathoo, K., Maitland, K., Griffiths, A., Thomason, M. J., Kityo, C., . . . Gibb, D. M. (2017). Enhanced Prophylaxis plus Antiretroviral Therapy for Advanced HIV Infection in Africa. *New England Journal of Medicine*, 377(3), 233–245. <https://doi.org/10.1056/nejmoa1615822>
- Clinton Health Access Initiative. 2023. "UNITAID and CHAI Announce Agreement with Omega Diagnostics to Increase Access to New Portable CD4 Testing Device for People Living with HIV in Over 130 Low and Middle-Income Countries." News release, October 18. <https://www.clintonhealthaccess.org/news/unitaid-and-chai-announce-agreement-with-omega-diagnostics-to-increase-access-to-new-portable-cd4-testing-device-for-people-living-with-hiv-in-over-130-low-and-middle-income-countries/>
- Cohen, J. M., Okumu, F., & Moonen, B. (2022). The fight against malaria: Diminishing gains and growing challenges. *Science Translational Medicine*, 14(651). <https://doi.org/10.1126/scitranslmed.abn3256>
- Cohen et al., The fight against malaria: Diminishing gains and growing challenges.
- World Health Organization. ACT-A Accelerator. <https://www.act-a.org/therapeutics>. (Accessed March 27, 2023)
- Global Tuberculosis Programme, WHO. (2023). *Global Tuberculosis Report 2023*. In *who.int*. World Health Organization. Retrieved October 18, 2024, from <https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2023>
- Ayers, T., Hill, A. N., Raykin, J., Mohanty, S., Belknap, R. W., Brostrom, R., Khurana, R., Lauzardo, M., Miller, T. L., Narita, M., Pettit, A. C., Pyan, A., Salcedo, K. L., Polony, A., Flood, J., Pascopella, L., Ahmed, A., Aiona, K., Lovato, J., . . . Turner, D. (2024). Comparison of tuberculin skin testing and interferon-γ release assays in predicting tuberculosis disease. *JAMA Network Open*, 7(4), e244769. <https://doi.org/10.1001/jamanetworkopen.2024.4769>
- UN Inter-agency Group for Child Mortality Estimation. (n.d.). Under-Five mortality rate [Dataset]. In *Cambodia*. <https://childmortality.org/all-cause-mortality/data>
- UNDP Cambodia. (2020). Prevention and control of noncommunicable diseases in Cambodia. In *undp.org*. Retrieved October 18, 2024, from <https://www.undp.org/cambodia/publications/prevention-and-control-noncommunicable-diseases-cambodia>
- World Health Organization. 2022. "Global Tuberculosis Report 2022." *www.who.int*. 2022. <https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2022>
- Programmes, "Global Hepatitis Report 2024: Action for Access in Low- and Middle-Income Countries."
- Zimmerman B.V. (n.d.). The Data Explorer. The Global Fund Data Explorer. <https://data.theglobalfund.org/>
- World Health Organization: WHO. "Diarrhoeal Disease," March 7, 2024. <https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease>
- UNICEF data - child statistics. Accessed September 25, 2024. [https://data.unicef.org/wp-content/uploads/2019/10/XLS\\_Birth\\_registration\\_database\\_June-2023.xlsx](https://data.unicef.org/wp-content/uploads/2019/10/XLS_Birth_registration_database_June-2023.xlsx)
- Schroder, Kate, Audrey Battu, Leslie Wentworth, Jason Houdek, Chizoba Fashanu, Owens Wiwa, Rosemary Kihoto, et al. "Increasing Coverage of Pediatric Diarrhea Treatment in High-Burden Countries." *Journal of global health*, June 2019. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6513503/>
- Sexual and Reproductive Health and Research (SRH), "Trends in Maternal Mortality 2000 to 2020: Estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division," February 23, 2023, <https://www.who.int/publications/i/item/9789240068759>
- UNICEF. "Levels and trends in child mortality: United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME), Report 2023." *Data.Unicef.Org*. UNICEF. Accessed October 17, 2024. <https://data.unicef.org/resources/levels-and-trends-in-child-mortality-2024/>
- Maternal, Newborn, Child & Adolescent Health & Ageing (MCA). (2022b, October 18). Protect the promise: 2022 progress report on the every woman every child global strategy for women's, children's and adolescents' health (2016-2030). <https://www.who.int/publications/i/item/9789240060104>
- UNICEF. (2019, September 19). Surviving birth: Every 11 seconds, a pregnant woman or newborn dies somewhere around the world [Press release]. Retrieved October 17, 2024, from <https://www.unicef.org/press-releases/surviving-birth-every-11-seconds-pregnant-woman-or-newborn-dies-somewhere-around>
- United Nations. (2023). One pregnant woman or newborn dies every 7 seconds: new UN report. In *news.un.org*. Retrieved October 17, 2024, from <https://news.un.org/en/story/2023/05/1136457>
- Zambia Statistics Agency, Ministry of Health (MOH) Zambia, and ICF. Zambia Demographic and Health Survey 2018. Lusaka, Zambia, and Rockville, Maryland, USA: Zambia Statistics Agency, Ministry of Health, and ICF; 2019.
- Kamanga, A., Ngosa, L., Aladesanmi, O., Zulu, M., McCarthy, E., Choba, K., Nyirenda, J., Chizuni, C., Mwiche, A., Storey, A., Shakwelele, H., & Prust, M. L. (2022). Reducing maternal and neonatal mortality through integrated and sustainability-focused programming in Zambia. *PLOS Global Public Health*, 2(12), e0001162. <https://doi.org/10.1371/journal.pgph.0001162>
- Ekhuagere, O. A., Bolaji, O., Nabwera, H. M., Storey, A., Embleton, N., Allen, S., Demeke, Z., Fasawe, O., Wariari, B., Seth, M., Khan, L., Magge, H. H., & Aladesanmi, O. (2024). A landscape evaluation of caffeine citrate availability and use in newborn care across five low- and middle-income countries. *PLOS Global Public Health*, 4(7), e0002486. <https://doi.org/10.1371/journal.pgph.0002486>
- CHAI, MedAccess, & SD Biosensor. (2021, November 15). MedAccess, CHAI, and SD Biosensor announce partnership to make dual rapid test for syphilis and HIV available for under US\$1 in over 100 low- and middle-income countries [Press release]. Retrieved October 17, 2024, from <https://www.clintonhealthaccess.org/news/dual-syphilis-hiv-rdt-for-under-us1/>
- Keats, E. C., Haider, B. A., Tam, E., & Bhutta, Z. A. (2019). Multiple-micronutrient supplementation for women during pregnancy. *Cochrane Library*. <https://doi.org/10.1002/14651858.cd004905.pub6>
- Smith, E. R., Shankar, A. H., Wu, L. S., Aboud, S., Adu-Afarwuah, S., Ali, H., Agustina, R., Arifeen, S., Ashorn, P., Bhutta, Z. A., Christian, P., Devakumar, D., Dewey, K. G., Friis, H., Gomo, E., Gupta, P., Kästel, P., Kolsteren, P., Lanou, H., . . . Sudfeld, C. R. (2017). Modifiers of the effect of maternal multiple micronutrient supplementation on stillbirth, birth outcomes, and infant mortality: a meta-analysis of individual patient data from 17 randomised trials in low-income and middle-income countries. *The Lancet Global Health*, 5(11), e1090–e1100. [https://doi.org/10.1016/s2214-109x\(17\)30371-6](https://doi.org/10.1016/s2214-109x(17)30371-6)
- UNICEF. (2023, November). Pneumonia in Children. *data.unicef.org*. Retrieved October 17, 2024, from <https://data.unicef.org/topic/child-health/pneumonia/>

- 45 Global Burden of Disease Study 2019 (GBD 2019) Data Resources | GHDX. (n.d.). <https://ghdx.healthdata.org/gbd-2019>
- 46 Rees, C. A., Basnet, S., Gentile, A., Gessner, B. D., Kartasmita, C. B., Lucero, M., Martinez, L., O'Grady, K. F., Ruvinsky, R. O., Turner, C., Campbell, H., Nair, H., Falconer, J., Williams, L. J., Horne, M., Strand, T., Nisar, Y. B., Qazi, S. A., & Neuman, M., I. (2020, August 13). An analysis of clinical predictive values for radiographic pneumonia in children. <https://eresearch.qmu.ac.uk/handle/20.500.12289/10662>
- 47 Lam, F., Stegmuller, A., Chou, V. B., & Graham, H. R. (2021). Oxygen systems strengthening as an intervention to prevent childhood deaths due to pneumonia in low-resource settings: systematic review, meta-analysis and cost-effectiveness. *BMJ Global Health*, 6(12), e007468. <https://doi.org/10.1136/bmjgh-2021-007468>
- 48 World Health Organization. (n.d.). The Access to COVID-19 Tools (ACT) Accelerator. who.int. Retrieved October 18, 2024, from <https://www.who.int/initiatives/act-accelerator>
- 49 Institute for International Programs at Johns Hopkins Bloomberg School of Public Health. (n.d.). The Lives Saved Tool. [livessavedtool.org](https://www.livessavedtool.org/). Retrieved October 18, 2024, from <https://www.livessavedtool.org/>
- 50 Sully, E. A., Biddlecom, A., Darroch, J. E., Riley, T., Ashford, L. S., Lince-Deroche, N., Firestein, L., & Murro, R. (2020). Adding it up: Investing in Sexual and Reproductive Health 2019. <https://doi.org/10.1363/2020.31593>
- 51 World Health Organization. (2024, March 5). Cervical Cancer. who.int. Retrieved October 18, 2024, from <https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>
- 52 Gavi, The Vaccine Alliance. (n.d.). Human papillomavirus vaccine support. [gavi.org](https://www.gavi.org/types-support/vaccine-support/human-papillomavirus). Retrieved October 18, 2024, from <https://www.gavi.org/types-support/vaccine-support/human-papillomavirus>
- 53 World Health Organization. (n.d.-a). Cervical Cancer Elimination Initiative. who.int. Retrieved October 18, 2024, from <https://www.who.int/initiatives/cervical-cancer-elimination-initiative>
- 54 World Health Organization. (2024, March 7). Diarrhoeal disease. who.int. Retrieved October 18, 2024, from <https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease>
- 55 Malaria No More. (n.d.). New figures show a dramatic rise in malaria deaths. [malariafreesolutions.org.uk](https://malariafreesolutions.org.uk/new-figures-show-dramatic-rise-malaria-deaths#:~:text=Children%20under%205%20are%20especially,dying%20every%20minute%20from%20malaria). Retrieved October 18, 2024, from <https://malariafreesolutions.org.uk/new-figures-show-dramatic-rise-malaria-deaths#:~:text=Children%20under%205%20are%20especially,dying%20every%20minute%20from%20malaria>
- 56 Cambodia, Cameroon, Eswatini, Ethiopia, Laos, Malawi, Myanmar, Nigeria, Sierra Leone, Tanzania
- 57 Clinton Health Access Initiative and the Missing Billion Initiative. 2024. "The Missing Billion Initiative Announces Global Commitment to Action on Disability Inclusion." News release, October. <https://www.clintonhealthaccess.org/news/the-missing-billion-initiative-announces-global-commitment-to-action-on-disability-inclusion/>
- 58 Eyelliance and Clinton Health Access Initiative. 2023. "Eyelliance and CHAI Model of Collaboration in Uganda." Blog post, September. <https://www.eyelliance.org/post/eyelliance-and-chai-model-of-collaboration-in-uganda>
- 59 International Agency for Research on Cancer. 2024. "Data Visualization Tools for Exploring the Global Cancer Burden in 2022." Accessed October 18. <https://gco.iarc.fr/today/en>
- 60 Kazibwe, Joseph, Phuong Bich, and Kristi Sidney Annerstedt. 2021. "The Household Financial Burden of Non-Communicable Diseases in Low- and Middle-Income Countries: A Systematic Review." *International Journal for Equity in Health* 20 (1): 122. <https://pubmed.ncbi.nlm.nih.gov/34154609/>
- 61 World Bank. 2024. "World Bank Country and Lending Groups." Accessed October 18. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>
- 62 World Health Organization. 2021. *CureAll Framework: WHO Global Initiative for Childhood Cancer*. Geneva: World Health Organization. <https://www.who.int/publications/i/item/9789240025271>
- 63 University of Minnesota, Center for Global Health and Social Responsibility. 2024. "Medical and Surgical Skills Institute Partnership." Accessed October 22, 2024. <https://globalhealthcenter.umn.edu/medical-and-surgical-skills-institute-partnership>
- 64 Dandena, Firaol Guyassa, Berhanetsehay Teklemariam Teklewold, Tadele Dana Darebo, and Yisihak Debodina Suga. "Epidemiology and Clinical Characteristics of Breast Cancer in Ethiopia: A Systematic Review." *BMC Cancer* 24, no. 1 (September 4, 2024). <https://doi.org/10.1186/s12885-024-12822-5>
- 65 Clinton Health Access Initiative. 2024. "Over 21,000 Women Screened for Breast Cancer in Ethiopia Thanks to Decentralized Services." Accessed October 22, 2024. <https://www.clintonhealthaccess.org/case-study/over-21000-women-screened-for-breast-cancer-in-ethiopia-thanks-to-decentralized-services/>
- 66 Union for International Cancer Control (UICC). 2024. "Global Breast Cancer Initiative." Accessed October 22, 2024. <https://www.uicc.org/what-we-do/driving-global-impact/targeted-commitments/global-breast-cancer-initiative>
- 67 World Health Organization. "Cervical Cancer." IARC Cancer Today Fact Sheet 23. Accessed October 10, 2023. <https://gco.iarc.who.int/media/globocan/factsheets/cancers/23-cervix-uteri-fact-sheet.pdf>
- 68 World Health Organization. (2020). Global strategy to accelerate the elimination of cervical cancer as a public health problem. In who.int. Retrieved October 18, 2024, from <https://www.who.int/publications/i/item/9789240014107>
- 69 Estimates based on screening using HPV tests and treatment using thermal ablation devices (average cost of tests across four key test suppliers and thermal ablation device cost across two key suppliers)
- 70 Johnson, S. (2022a, August 18). How Rwanda could become one of the first countries to wipe out cervical cancer. *The Guardian*. <https://www.theguardian.com/global-development/2022/aug/18/how-rwanda-could-become-one-of-the-first-countries-to-wipe-out-cervical-cancer>
- 71 Strategic Purchasing Africa Resource Center. (2021, September 21). Towards Sustainability Of The Community-Based Health Insurance In Rwanda: Successes, Challenges, And Opportunities. [sparc.africa](https://sparc.africa). Retrieved October 18, 2024, from <https://sparc.africa/2021/09/towards-sustainability-of-the-community-based-health-insurance-in-rwanda-successes-challenges-and-opportunities/>
- 72 Clinton Health Access Initiative & Unitaid. (2022). White Paper: Deploying Thermal Ablation Devices to Expand Access to Treatment for Cervical Precancer. In [clintonhealthaccess.org](https://www.clintonhealthaccess.org/policy/white-paper-deploying-thermal-ablation-devices-to-expand-access-to-treatment-for-cervical-precancer/). Retrieved October 18, 2024, from <https://www.clintonhealthaccess.org/policy/white-paper-deploying-thermal-ablation-devices-to-expand-access-to-treatment-for-cervical-precancer/>
- 73 The Global Health Observatory - World Health Organization. (year). Noncommunicable diseases: Mortality. Retrieved from <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-mortality>
- 74 World Health Organization. (2014, January 1). Eswatini: STEPwise Approach to NCD Risk Factor Surveillance (STEPS). who.int. Retrieved October 18, 2024, from <https://www.who.int/teams/noncommunicable-diseases/surveillance/data/eswatini>
- 75 Cordis, C. (2019, March 12). Scaling up the WHO-PEN package for diabetes and hypertension in Swaziland: a nation-wide cluster-randomised evaluation of three strategies in Swaziland (WHO-PEN@Scale). *CORDIS | European Commission*. <https://cordis.europa.eu/project/id/825823/reporting>
- 76 Data, A. & D. F. I. (2022, June 27). Tracking Universal Health Coverage: 2021 Global monitoring report. <https://www.who.int/publications/i/item/9789240040618>
- 77 Black, E. et al. (2016). Reproductive, Maternal, Newborn, and Child Health: Key Messages from Disease Control Priorities 3rd edition. *The Lancet*, 388(10061), 10.1016/s0140-6736(16)00738-8. [https://www.researchgate.net/publication/301251014\\_Reproductive\\_maternal\\_newborn\\_and\\_child\\_health\\_key\\_messages\\_from\\_Disease\\_Control\\_Priorities\\_3rd\\_Edition](https://www.researchgate.net/publication/301251014_Reproductive_maternal_newborn_and_child_health_key_messages_from_Disease_Control_Priorities_3rd_Edition)
- 78 Sharma, Lalit, Stephanie Heung, Pakwanja Twea, Ian Yoon, Jean Nyondo, Dalitso Laviwa, Kenasi Kasinje, et al. "Donor Coordination to Support Universal Health Coverage in Malawi." *Health Policy and Planning* 39, no. Supplement\_1 (January 1, 2024): i118-24. <https://doi.org/10.1093/heapol/czad102>
- 79 Clinton Health Access Initiative & Global Financing Facility. (2023, September 26). Harmonizing Health Resource Tracking: A Resource Guide for Country Implementation | Global Financing Facility. [globalfinancingfacility.org](https://www.globalfinancingfacility.org/resource/harmonizing-health-resource-tracking-resource-guide-country-implementation). Retrieved October 17, 2024, from <https://www.globalfinancingfacility.org/resource/harmonizing-health-resource-tracking-resource-guide-country-implementation>
- 80 Hanson, K. et al (2022). Introducing The Lancet Global Health Commission on financing primary health care: putting people at the centre. *The Lancet Global Health*, 10(1). [https://doi.org/10.1016/s2214-109x\(21\)00510-6](https://doi.org/10.1016/s2214-109x(21)00510-6)
- 81 World Health Organization: WHO. (2019, August 7). Health workforce. [https://www.who.int/health-topics/health-workforce#tab=tab\\_1](https://www.who.int/health-topics/health-workforce#tab=tab_1)
- 82 Financing Global Health 2023: The Future of Health Financing in the Post-Pandemic Era. (n.d.). Institute for Health Metrics and Evaluation. <https://www.healthdata.org/research-analysis/library/financing-global-health-2023-future-health-financing-post-pandemic-era>
- 83 World Bank. (2024, April 11). World Bank Climate and Health Program: Putting health at the center of climate investment and action. Policy Commons. <https://policycommons.net/artifacts/12039618/world-bank-climate-and-health-program/12933746/>
- 84 Baker, A., & Mitchell, I. (2020). Projecting Global Emissions for Lower-Income Countries. In <https://www.cgdev.org/>. Center for Global Development. Retrieved October 18, 2024, from <https://www.cgdev.org/publication/projecting-global-emissions-lower-income-countries>
- 85 International Renewable Energy Agency. (2023, January 1). Energizing health: accelerating electricity access in health-care facilities. [irena.org](https://www.irena.org/Publications/2023/Jan/Energizing-health-accelerating-electricity-access-in-health-care-facilities). Retrieved October 18, 2024, from <https://www.irena.org/Publications/2023/Jan/Energizing-health-accelerating-electricity-access-in-health-care-facilities>
- 86 Felipe J Colón-González, Maquins Odhiambo Sewe, Adrian M Tompkins, et al. "Projecting the Risk of Mosquito-Borne Diseases in a Warmer and More Populated World: A Multi-Model, Multi-Scenario Intercomparison Modelling Study." *The Lancet Planetary Health* 5, no. 7 (2021): e475-e487.
- 87 Fox, T., Sguassero, Y., Chaplin, M., Rose, W., Doum, D., Arevalo-Rodriguez, I., & Villanueva, G. (2023). Wolbachia-carrying Aedes mosquitoes for preventing dengue infection. *Cochrane Library*, 2023(3). <https://doi.org/10.1002/14651858.cd015636>
- 88 International Energy Agency. (2018). The Future of Cooling: Opportunities for energy-efficient air conditioning. In <https://www.iea.org/>. Retrieved October 18, 2024, from <https://www.iea.org/reports/the-future-of-cooling>
- 89 Romanello, M., Di Napoli, C., Green, C., Kennard, H., Lampard, P., Scamman, D., Walawender, M., Ali, Z., Ameli, N., Ayeb-Karlsson, S., Beggs, P. J., Belesova, K., Ford, L. B., Bowen, K., Cai, W., Callaghan, M., Campbell-Lendrum, D., Chambers, J., Cross, T. J., . . . Costello, A. (n.d.). The 2023 report of the Lancet Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms. *The Lancet*, 402(10419), 2346-2394. [https://doi.org/10.1016/s0140-6736\(23\)01859-7](https://doi.org/10.1016/s0140-6736(23)01859-7)
- 90 The Economist Intelligence Unit. (2019). The Cooling Imperative: Forecasting the size and source of future cooling demand. In [eiu.com](https://www.eiu.com). The Economist Group. Retrieved October 18, 2024, from <https://www.eiu.com/n/the-cooling-imperative/>





Clinton Health Access Initiative, Inc. (CHAI)  
383 Dorchester Avenue, Suite 300  
Boston, MA 02127 USA

+1 617 774 0110

[info@clintonhealthaccess.org](mailto:info@clintonhealthaccess.org)

For all press inquiries, please contact:

[press@clintonhealthaccess.org](mailto:press@clintonhealthaccess.org)

[www.clintonhealthaccess.org](http://www.clintonhealthaccess.org)