The UMB CIHEB Community HIV Epidemic Control Model

Differentiated Prevention, Testing, and ART Delivery for the General Population and Pregnant & Breast-Feeding Women and their Children in Zambia

Center for International Health, Education, and Biosecurity
Institute of Human Virology, University of Maryland School of Medicine

The UMB Community HIV Epidemic Model

Differentiated Prevention, Testing, and ART Delivery for the General Population and Pregnant & Breast-Feeding Women and their Children in Zambia

Center for International Health, Education, and Biosecurity
Institute of Human Virology
UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE

www.ihv.ciheb.org

CONTACT DETAILS

Cassidy W. Claassen, MD, MPH
cclaassen@ihv.umaryland.edu

Linah K. Mwango, RN, HNP, BSc. Nrs.
lmwango@mgic.umaryland.edu

The UMB CHEC model was developed with support from the Ministry of Health of Zambia and with support from PEPFAR Cooperative Agreements NU2GGH001091-04-00 (SMACHT) and NU2G GH001913-02-00 (Z-CHECK), funded by the U.S. Centers for Disease Control and Prevention. This publication was supported by the International AIDS Society. The contents of this report are solely the responsibility of the authors and do not necessarily represent the official views of the Government of the Republic of Zambia, the U.S. Centers for Disease Control and Prevention, the Department of Health and Human Services, or the International AIDS Society.

This document was prepared by a team from University of Maryland: Dr Cassidy Claassen, Ms Linah Mwango, Dr Msangwa Sinjani, Dr Ignace Gashongore, Ms Ina Kafunda, Mr Victor Peleka, Ms Beauty Phiri, and Dr Robb Sheneberger. Special contributors were Ms Yuna Hammond (technical writing), Mr John Healey (photography), and Ms Anne Jennings (layout and design).

TABLE OF CONTENTS

LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARVs	Antiretrovirals
CD4	CD4 Lymphocyte Count
CDC	U.S. Centers for Disease Control and Prevention
CHEC	Community HIV Epidemic Control
CHWs	Community Health Workers
CIHEB	Center for International Health, Education, and Biosecurity
DSD	Differentiated Service Delivery
EHR	Electronic Health Record
EID	Early Infant Diagnosis
HCW	Health Care Workers
HEI	HIV-Exposed Infants
HIV	Human Immunodeficiency Virus
HTS	HIV Testing Services
MoH	Ministry of Health
PBFW	Pregnant and Breastfeeding Women
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission
PrEP	Pre-Exposure Prophylaxis
SMACHT	Stop Mother and Child HIV Transmission
SOC	Stable on Care
SOP	Standard Operating Procedure
UMB	University of Maryland, Baltimore
UNAIDS	United Nations Program on HIV/AIDS
USAID	United States Agency for International Development
VMMC	Voluntary Medical Male Circumcision

EXECUTIVE SUMMARY

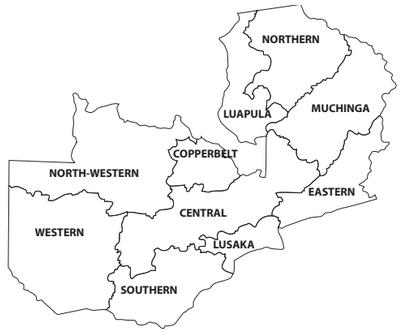
The Center for International Health, Education, and Biosecurity (CIHEB) of the Institute of Human Virology, at the University of Maryland, Baltimore (UMB) is implementing an innovative differentiated service delivery (DSD) model for human immunodeficiency virus (HIV)/ acquired immunodeficiency syndrome (AIDS) care in Zambia. The Community HIV Epidemic Control (CHEC) model is unique in that it addresses all three of the United Nations Program on HIV/AIDS (UNAIDS) 90-90-90 targets: 90% of people living with HIV know their status, 90% who know their status are on antiretroviral therapy (ART) and 90% of those on ART are virologically suppressed. The CHEC model utilizes a peer-to-peer approach to conduct health education, provide targeted HIV testing services (HTS) in the community, refer and link HIV-infected clients to treatment services, as well as HIV-uninfected clients to preventative health services, and to deliver antiretrovirals (ARVs) to eligible people living with HIV (PLHIV) in the community to ensure adherence and sustain viral suppression.

To date, the CHEC model has provided health services to over one million Zambians. UMB has rolled out CHEC to over 200 government-run clinics in Zambia with over 1,000 active community health workers (CHWs). The CHWs have conducted over one million HIV tests since 2015 in both the community and at the facility, linked over 90% to health services, and delivered ARVs to over 2,000 stable-on-care patients.

The model's success lies in its ability to enhance health system efficiency by providing client-centered care to improve the quality of HIV services to the community. The CHEC model utilizes a differentiated service approach to provide tailored HIV services serving the needs and desires expressed by the specific populations it serves. The model is highly adaptable to different target populations, including pregnant and breast-feeding women and their children, adolescents and youth, and key populations. It can also be adapted to serve various public health priorities, such as index testing and social network testing, prevention of mother to child transmission (PMTCT), and provision of HIV pre-exposure prophylaxis (PrEP). In addition, by task-shifting to CHWs, CHEC is decongesting overburdened health facilities and allowing health care workers (HCWs) more time to address the needs of the new and unstable clients on ART.

Based on this success, the Zambian Ministry of Health (MoH) has adopted the UMB CHEC model as one of the approved DSD models to be implemented in Zambia and CHEC is listed as a strategy in the 2018 Zambia Consolidated Guidelines for Treatment and Prevention of HIV.

The CHEC summary highlights the model's activities, tools, and outcomes as well as stories of clients whose lives have been changed by the differentiated HIV services CHEC offers them and their families.



BACKGROUND

Despite having one of the highest burdens of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) in Sub-Saharan Africa, Zambia has made progress towards reducing the devastating impact of the HIV epidemic. Concerted efforts by many stakeholders have resulted in a 27% decrease in new HIV infections and an 11% reduction of AIDS-related deaths in the last 8 years.

However, Zambia's current progress towards the United Nations Program on HIV/AIDS (UNAIDS) 90-90-90 goals stands at 66-89-89 (see Figure 1). According to the 2016 ZAMPHIA, the annual incidence of HIV among adults aged 15 to 59 years in Zambia is 0.66%; 1.0% among females and 0.33% among males. Prevalence of HIV among adults aged 15 to 59 years in Zambia is 12.3%; 14.9% among females and 9.5% among males. Among pregnant women living with HIV, approximately 18% are not on antiretroviral therapy (ART), resulting in nearly 9,000 children infected by HIV from mother to child transmission in 2016.

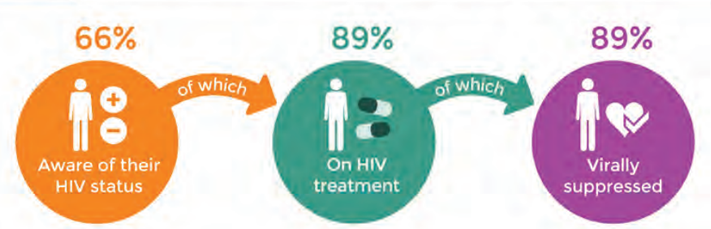


Figure 1 Zambia's progress on the 90-90-90 targets according to the 2017 UNAIDS Gap Report.

Zambia is continuously seeking novel approaches to efficiently diagnose HIV infections, increase access to ART, and improve retention. Interventions such as the Community HIV Epidemic Control model (CHEC) are necessary to identity the remaining 34% of the 1.2 million people living with HIV (PLHIV), link them to care and assist them in achieving viral suppression (see Figure 2). CHEC addresses this gap by identifying the healthy-appearing HIV-infected individuals in the community who are the primary drivers of new HIV infections. While facilities test all care-seeking individuals, these asymptomatic persons continue spreading HIV, quietly keeping Zambia trapped in the epidemic.

In addition, the Zambian health care system is challenged by a significant shortage of human resources and limited space for HIV testing services, ART dispensing and adherence counseling. CHEC addresses these issues by shifting health service tasks to Community Health Workers (CHWs) in the community. Furthermore, CHEC CHWs enroll clients into SmartCare, the national electronic health record (EHR) system, and provide them with a CareCard with their personal health information. This allows for seamless continuity of services from the community to the facility.

TABLE 1 The three DSD components of the CHEC model, their goals, populations, clinical characteristics and the services offered

HIV TESTING	PREVENTION OF MOTHER-TO-CHILD TRANSMISSION	STABLE-ON-CARE
GOAL To increase community uptake of HIV prevention strategies, diagnosis, and linkage to care and treatment	**GOAL** To reduce mother-to-child transmission by promoting early enrollment in prenatal care and ART, improving early infant diagnosis (EID) and treatment, and retaining HIV positive mothers and children on ART	**GOAL** To improve ART adherence, sustain viral suppression, and decongest health facilities
POPULATION Index case partners and those in their social network in both rural and urban areas	**POPULATION** All PBFWs where the model is implemented (rural and urban)	**POPULATION** Stable on Care (SOC) clients from urban and rural health facilities or posts
CLINICAL CHARACTERISTICS Status unknown or HIV-positive but not on care	**CLINICAL CHARACTERISTICS** All PBFWs (identified as a priority population in Zambia)	**CLINICAL CHARACTERISTICS** Clients must be clinically stable on ART for at least a year and must be virally suppressed (see Eligibility section)
SERVICES Home HIV testing, counseling, health education, health assessment, adherence support, personal health messaging, referral of HIV-infected clients for enrollment in care, referral of HIV-uninfected clients for preventative services such as voluntary medical male circumcision, cervical cancer screening, family planning, etc.	**SERVICES** General recruitment into antenatal care (ANC), reminder calls or visits about upcoming ANC visits, home visits to reinforce ANC health messages, home/ community HIV testing, linkage to ART, adherence support, identification of all HIV-exposed infants (HEI) and HIV-infected infants in the community, rapid initiation on ART for HIV-infected children and follow-up of HEIs through the breastfeeding period	**SERVICES** ARV home delivery, vital signs and basic health screening, adherence counseling and pill count
FREQUENCY CHWs conduct community visits four hours a day, three days a week	**FREQUENCY** CHWs provide HTS during their weekly community health education visits and call or visit mothers who have upcoming ANC appointments. CHWs visit all HIV-uninfected PBFW every 3 months and HIV-infected mothers according to the postnatal care (PNC) schedule	**FREQUENCY** Frequency: every 3 months (if drugs are available, more often if stock is low)

BASICS OF THE COMMUNITY HIV EPIDEMIC CONTROL (CHEC) MODEL

The CHEC model is unique in that it addresses all three of the UNAIDS 90-90-90 targets: 90% of people living with HIV know their status, 90% who know their status are on ART and 90% of those on ART are virologically suppressed. The CHEC model utilizes a peer-to-peer approach to conduct health education, provide targeted HIV testing services (HTS) in the community, refer and link HIV-infected clients to treatment services, as well as HIV-uninfected clients to preventative health services, and to deliver antiretrovirals (ARVs) to eligible PLHIV in the community to ensure adherence to sustain viral suppression.

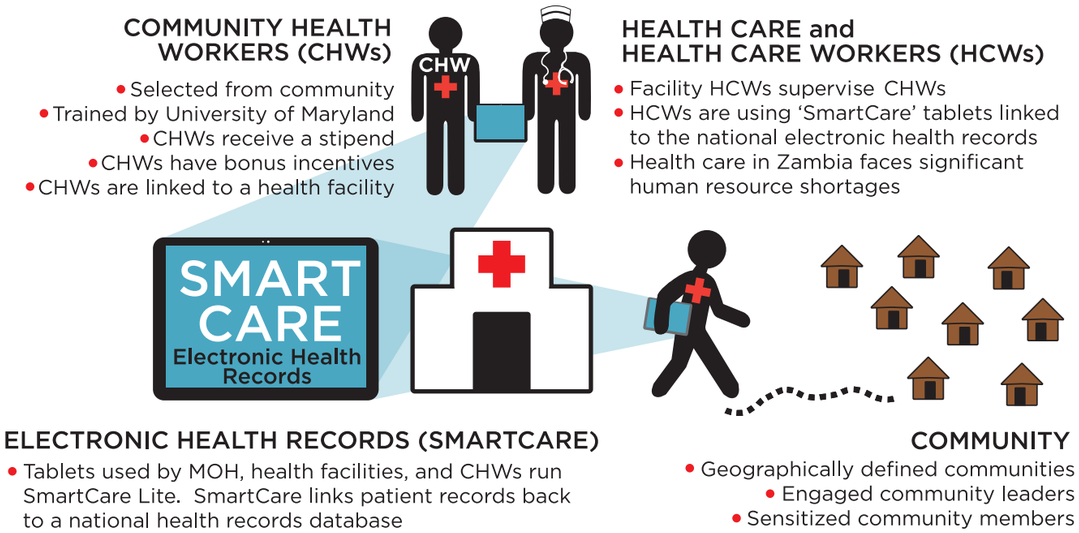
The CHEC approach strengthens existing HIV care systems in Zambia by increasing community participation and shifting tasks out of the health facility. This client-centered approach improves quality of HIV services by personalizing HIV services in the following ways:

- Provides clients with confidential face-to-face HIV counseling
- Enrolls clients in SmartCare, the Zambia national EHR, thus providing continuity of health services from community to facility
- Offers tailored HIV services to specific subsets of clients (stable-on-care, pregnant and breastfeeding women (PBFW), etc.)
- Reduces the HIV client workload on the health facility and health care workers
- Strengthens adherence through follow-up visits and additional counseling

To date, the CHEC model has provided health services to over one million Zambians. As the implementing partner, the University of Maryland Baltimore (UMB) has rolled out CHEC to over 200 government-run clinics in Zambia with over 1,000 active CHWs. These CHWs have conducted over one million HIV tests since 2015 in both the community and at the facility, linked over 90% to health services, and have delivered ARVs to over 2,000 stable-on-care patients.

Table 1 (left) outlines the population, clinical characteristics, and services in each of the three components of the CHEC model. Figure 2 (following page) shows how the CHEC model's components and services address the 90-90-90 targets

COMMUNITY HIV EPIDEMIC CONTROL (CHEC) MODEL



COMMUNITY HIV EPIDEMIC CONTROL (CHEC) AND 90-90-90

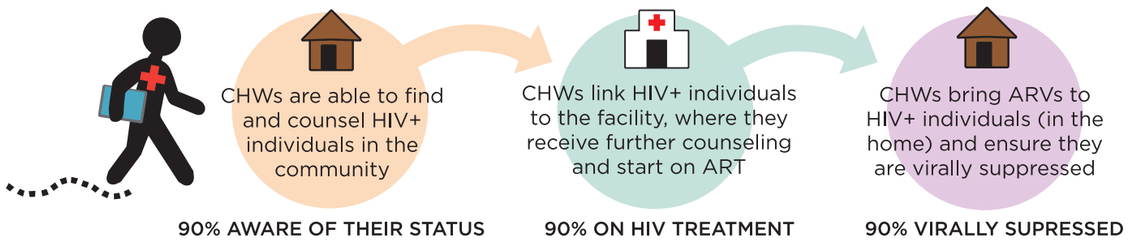


Figure 2 CHEC Model and 90-90-90 targets

EXAMPLE: Missing steps along the pathway

You are meeting with Mary Banda and her 2 month old boy, Gabriel. Mary had her first HIV test early in the pregnancy with Gabriel. She is married and has a 3-year-old girl who appears well.

So far, Mary:

- Accepted that she has HIV
- Started on ART, is taking it regularly, and has received her first shot of Depo
- Is feeding Gabriel breast milk exclusively
- Finished giving Gabriel nevirapine and started him on cotrimoxazole
- Has just been told that Gabriel's first HIV test is negative

However....

- Mary has been hiding her status from her husband
- Mary was told by her husband's family that she should give the baby pap

What steps have been missed?

What problems do you foresee?

How might you help Mary get back on the path?

Figure 3 Sample Training Materials Community Health Workers are presented with scenarios as part of their training

COMMUNITY HEALTH WORKER TRAINING

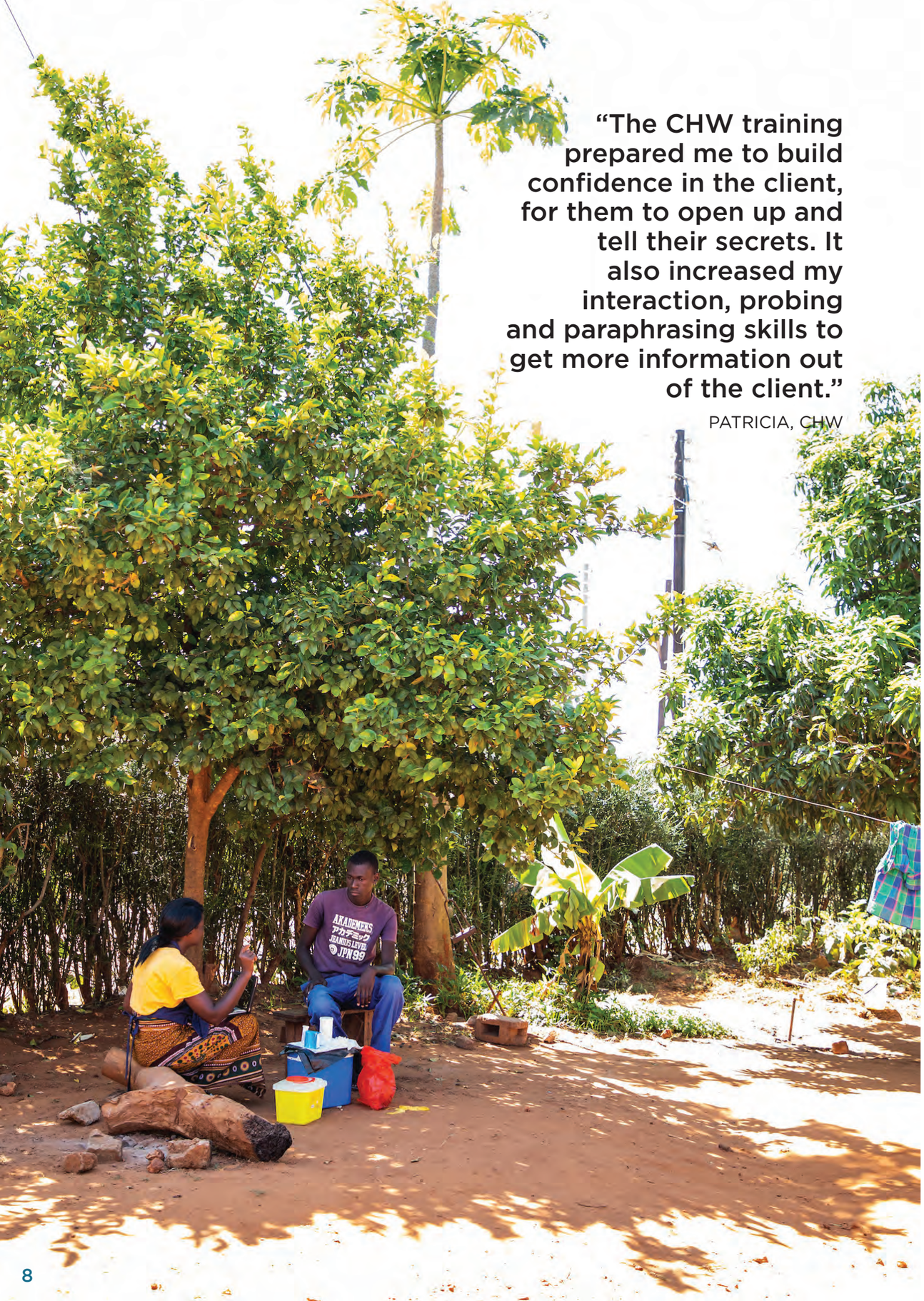
All CHWs undergo a rigorous training course in the CHEC model, which serves as the foundation for quality, tailored, and effective HIV service delivery in the community.

Depending on which CHEC component they support, the CHWs receive a combination of the following modules:

- Community mobilization and sensitization
- HIV testing services
- ART
- Adherence counseling
- How to take and monitor vital signs
- HIV and tuberculosis
- PMTCT procedures
- Ethical conduct
- Conducting a home visit
- Management of stable-on-care clients
- Client referral process for health services
- Sensitivity
- Training on adolescents, youth, and key populations

CHWs are also taught how to use tablets running SmartCare Lite, a mobile version of the Zambian EHR SmartCare. They enter patient data and issue clients a CareCard, which allows for continued health services in both the community and the facility.

Figure 3 (left) showcases the practical and didactic training materials used to equip the CHWs to provide HTS to the community. These materials include standard operating procedures (SOPs) for each component of the model as well as SOPs and training materials for teaching the CHWs how to utilize SmartCare on the tablets.



> **“The CHW training prepared me to build confidence in the client, for them to open up and tell their secrets. It also increased my interaction, probing and paraphrasing skills to get more information out of the client.”**
>
> PATRICIA, CHW

Table 2 (below) shows the three components of the CHEC model: HIV Testing Services (HTS), Prevention of Mother-to-Child Transmission (PMTCT), and Stable-on-Care (SOC).

Table 2 Components of the CHEC model: HTS, PMTCT, SOC

COMPONENTS OF THE CHEC MODEL

HIV TESTING SERVICES COMPONENT

WHO	WHAT	WHERE	WHEN / FREQUENCY
Trained Community Health Worker	Index case or social networking testing HIV counseling Referral (regardless of status) to health facility	Client’s home/in the community	When a new index client is identified through community testing

PMTCT COMPONENT

WHO	WHAT	WHERE	WHEN / (FREQUENCY)
Trained Community Health Worker	Identifying PBFWs HIV testing Counseling Health facility referral Follow-up home visits with mothers (ANC and PNC	Client’s home/in the community	ANC: before each scheduled ANC visit (call), after ANC visits (house visit) and as needed in between PNC: 9 times a year for EID and PNC visits

STABLE-ON-CARE COMPONENT

WHO	WHAT	WHERE	WHEN / (FREQUENCY)
Trained Community Health Worker	Health screening Adherence counseling ARV delivery Referral to facility if unwell	Client’s home/in the community	**Monthly** **Every 3 Months**
Nurses **Clinical Officers**	Clinical assessment Follow-up lab investigaion	Health facility/Clinic	**Every 6 Months** **Every 12 Months**

HIV TESTING SERVICES

The CHEC model initially employed a universal testing approach, offering HTS to everyone regardless of risk by going door-to-door to ensure every member of the community had been tested. Due to low positivity and low value-for-money discovered during the pilot phase, CHWs began index case and social network testing. Both index and social network testing rely on identifying partners, friends, children and other associations who might be HIV positive either due to biological contact or through presumed similar behaviors. One of the benefits of CHEC is that it can be easily adapted to real-time evaluations and tailored to meet data-driven needs.

(Left) A Community Health Worker conducts HIV testing in the community.

FAMILIES BENEFIT FROM THE CHEC MODEL: NELIA'S STORY

Two CHEC Community Health Workers found Nelia at home in October 2017. She was 46 years old with five children. "My husband was sick first....he didn't disclose. The two CHWs came to my home to test me. We have built up a relationship.... sometimes they even help me with my work...like washing. Today I've brought my mother. She was 'sick' but I shared the good news. She had bad self-stigma and didn't want to disclose. She said 'I have stomach problem.' [I told her] this HIV is real. Just be open. Don't keep it to yourself. Accept it's there, fix your diet, and learn how to take care of yourself."

As it turns out, the work CHEC is doing has actually brought together three generations of women with HIV in Nelia's family Nelia's second-born daughter also disclosed her HIV-positive status and now the three--grandmother, mother, and daughter--help each other get ART refills and take care of their health as a family.

Nelia describes the counseling she receives by the CHWs both at her home and at the facility as "much better than what I receive from the facility staff because it's the same people counseling me every time and there is much respect and confidentiality between us."

"It's the same people counseling me every time and there is much respect and confidentiality between us."

NELIA, CHEC HTS BENEFICIARY

TABLE 3 Comparison of Clinic Reporting in 2017 and 2018 (universal testing vs index case testing)

CLINIC'S HEALTH MANAGEMENT INFORMATION SYSTEM REPORTS	UNIVERSAL TESTING MARCH 2017	INDEX CASE TESTING MARCH 2018
TESTED FOR HIV	794	613
DIAGNOSED HIV - POSITIVE	22 (2.8%)	72 (11.7%)
STARTED ON ART	19	70

Table 3 (above) illustrates the substantial difference the shift from universal testing to index and social network testing had on positivity yield in just one year: from 2.77% in 2017 to 11.75% in 2018. Compared to universal testing, the percentage of HIV positive clients identified by the CHWs during community HIV testing and counseling increased by 9 percentage points in just one year by switching to index and social network testing.

HIV TESTING SERVICES ROLES AND RESPONSIBILITIES

Health Care Worker (HCW) Responsibilities for HTS

- Enroll and initiate all HIV-infected patients on antiretroviral treatment
- Identify SOC clients and link them to CHWs for continuity of care in the community
- Supervise all CHWs attached to the facility
- Conduct quality control and result validation on all tests done in the community
- Offer preventative services to the clients referred from the community such as VMMC, cervical cancer screening, etc.

Community Health Worker (CHW) Responsibilities for HTS

- Conduct community sensitization and health education: provide correct and understandable information about HIV, treatment, and transmission in individual, couple, family, or group sessions.
- Update HIV counseling messages to the community, from preventing death to promoting life and longevity (paradigm shift). *Counseling should be in local language.
- Administer an HIV risk assessment tool to determine who requires an HIV test
- Perform rapid HIV testing based on screening score
- Provide clear information on why, where, and how to access ART * all PLHIV are initiated on ARVs by the clinicians regardless of the clinical stage and CD4 lymphocyte count (CD4 count)
- Work closely with health facility staff to ensure that all HIV-infected patients are initiated on treatment
- Use and record data on tablets running SmartCare Lite, a mobile version of the national electronic health record system

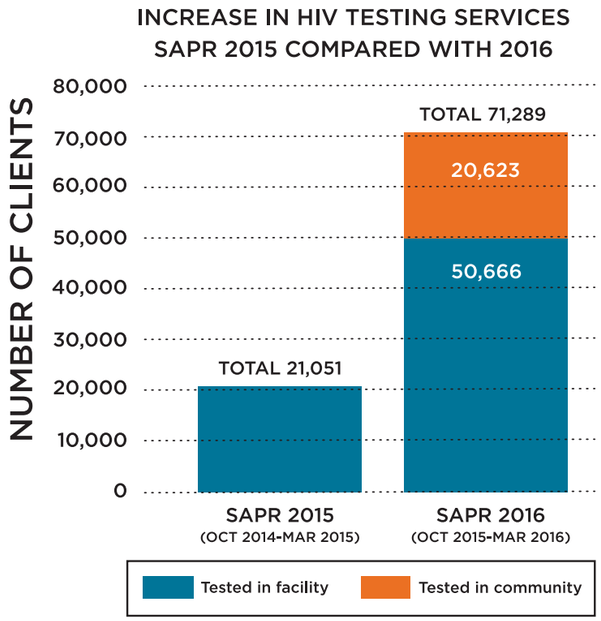


Figure 4 HTS in the facility and in the community

HIV TESTING SERVICE REFERRALS

Clients testing HIV-negative are counseled on prevention and referred for preventative services: VMMC for men and cervical cancer screening and family planning for women. Additionally, all HIV-negative clients are scheduled for repeat periodic HIV testing.

Clients testing HIV-positive are referred and personally escorted by the CHW to the health facility for confirmatory testing and ART initiation.

HTS RESULTS

The CHEC model has facilitated an increase in the demand for and uptake of HTS in its facilities, in some communities as much as 339% (Figure 4, above). HIV testing increased in these communities from 21,051 in 2015 to 71,289 clients in 2016. Of these clients, 28.9% were tested in the community by the CHWs (up from 0% in 2015).

Similarly, the percentage of children and adolescents linked to care rose dramatically from 27.8% in 2015 (pre-CHEC model) to 80.6% in 2016 (post-CHEC model implementation).




PREVENTION OF MOTHER-TO-CHILD TRASMISSION (PMTCT)

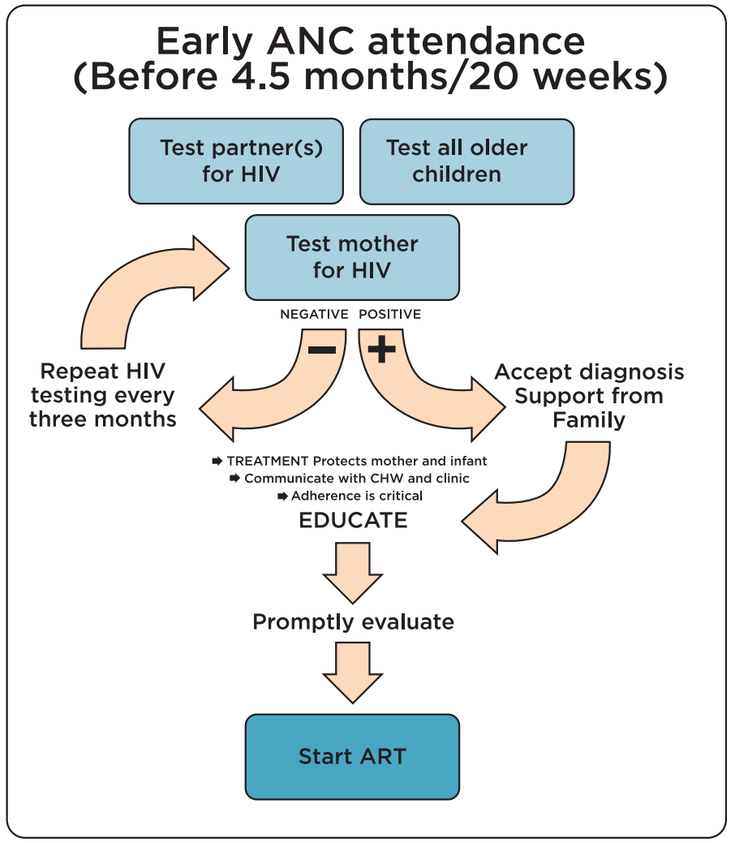


Figure 4 Maternal-Infant HIV Care Pathway

Figure 4 (left) shows the maternal-infant HIV care pathway. The CHW works to prevent mother to child transmission by facilitating a safe delivery, a healthy mother, and a healthy child free of HIV using this maternal-infant HIV care pathway. The counseling clients receive from their assigned CHWs is both personalized and professional.

.

CHEC PMTCT RECRUITMENT

Regardless of HIV status, the CHW recruits and enrolls all PBFW in their catchment area into ANC and/or PMTCT services. They provide their clients with ANC and PNC support home visit schedules based on their client's status.

Community Health Worker Responsibilities to HIV Positive Mothers for PMTCT

- Determine mother's ART status. Help her accept her status, discuss stigma and encourage disclosing status to spouse (if applicable)
- Find out who else might be infected
- Explain how treatment works and the basics of ARVs and ARVs during pregnancy
- Encourage mother to attend all ANC visits. Call moms in the days before and make a home visit after all ANC appointments
- Schedule CHW ANC clinic and home visits using the ANC CHW Visit Schedule for Seropositive Mother
- Discuss danger signs in pregnancy
- Assess the mother's emotional state and provide psychological support as needed
- Assess adherence, identify barriers and provide solutions during adherence counseling
- Document progress along the maternal-infant HIV care pathway at each visit
- Plan for delivery at a health facility or hospital
- Plan for care after delivery: feeding the baby, family planning, etc.
- Make schedule for postnatal care and CHW home visits after delivery (focus on ART adherence, infant testing, immunizations nutrition and growth monitoring)

"I advise people to come to the clinic to reconfirm their status. There is no other thing but to start the drugs."

ALINA, ANC AND PMTCT BENEFICIARY

COMMUNITIES BENEFIT FROM CHEC: FLORENCE'S STORY

Florence began volunteering at the health facilty in 2012 and has been a CHW for four years. She calls pregnant and breastfeeding women in her catchment area like Alina one to two days before every ANC appointment. She also organizes meetings in the community to promote early ANC and testing for HIV and sexually transmitted infections as well as health screening and other services.

Florence recalls counseling a pregnant woman who refused ART because it meant she would be on treatment for life. "I followed her every week. She was not happy to see me. [I asked her] 'Would it be good if your child goes school and is taking tablets but the other children aren't taking tablets?' Florence successfully persuaded the woman to begin ART.

"Right now we have not had a single child born positive from an HIV positive mother. Not one mother has died at home [in childbirth]. They all come to the clinic." she proudly said.

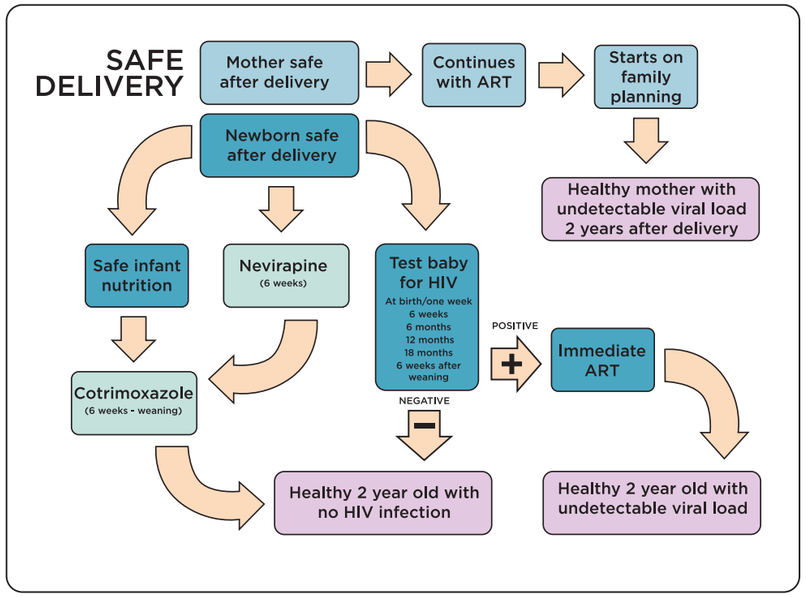


Figure 5 Safe Delivery Pathway adhered to by CHWs during postnatal care

Figure 5 (left) lays out the safe delivery pathway used by the CHWs during postnatal care.

Health Care Worker Roles and Responsibilities for PMTCT

HCWs in the ANC department are responsible for receiving all ANC or PNC referrals the CHWs make. HCWs provide the standard ANC and/or HIV services and immediately initiate all eligible clients on ART. The pharmacist dispenses drugs to the mother and the clinic tracks and counsels mothers on adherence to treatment and ANC and/or PNC visits.

PMTCT Results

PMTCT services provided by the CHWs improved outcomes at all levels of the PMTCT cascade of care by 3-5 fold just one year after implementing the CHEC model in 2015 in the SMACHTplus program (Figure 6, below). Under SMACHT 'plus,' the CHEC model increased the number of community members tested from 689 to 3,469 in the first year of implementation. The HIV positivity yield increased by 503% and the number of HIV positive pregnant women on ART increased over 300%.

COMPARING PRE-CHEC AND POST-CHEC IMPLEMENTATION PMTCT DATA IN SOUTHERN PROVINCE, ZAMBIA FROM (OCTOBER 2014 - MARCH 2015) TO (OCTOBER 2015 - MARCH 2016)

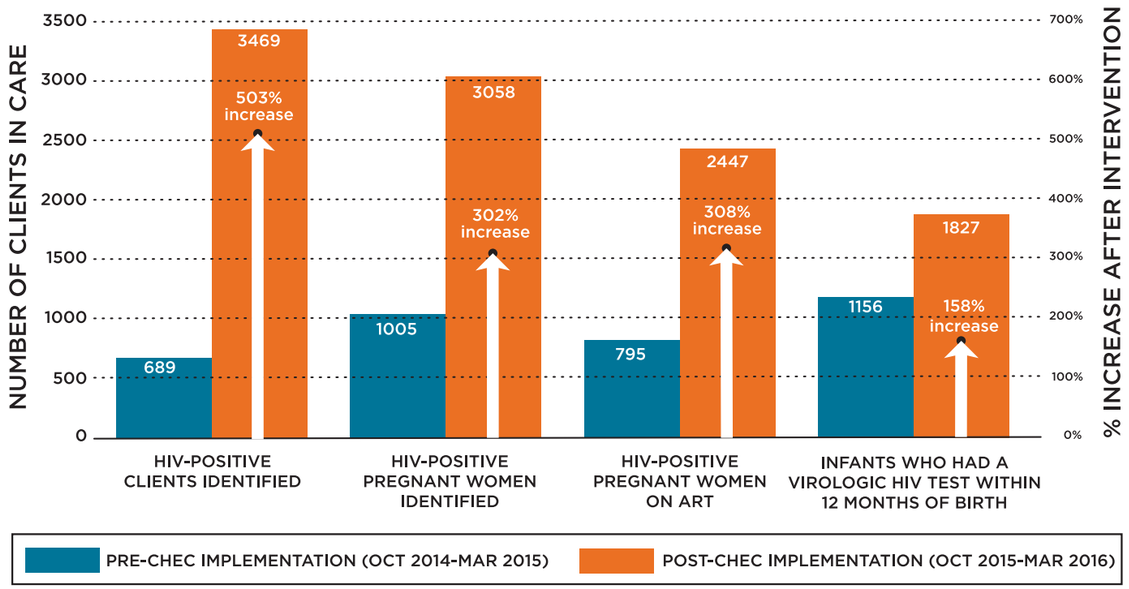


Figure 6 Pre-CHEC and post-CHEC implementation data in Southern Province, Zambia

DIFFERENTIATED ART DISTRIBUTION FOR STABLE-ON-CARE

The third component of the CHEC model is the Stable-on-Care component.

Stable on Care Eligibility Criteria (Recruitment)

All SOC clients must meet all of the following requirements:

- 15+ years of age
- Be on ART for more than one year
- Have an undetectable viral load (where available)
- Have a stable CD4 count >200 cells/ml
- Be asymptomatic
- Have no active HIV-related illness and no known co-morbidity
- Show evidence of good adherence
- Provider approval/patient consent

Health Care Worker Responsibilities for SOC

Health Care Workers in the ART department are responsible for identifying and referring clients who meet the above eligibility criteria to the SOC program using the Stable on Care Register at the health facility. Healthy facility clinicians write prescriptions for SOC clients, which CHWs take to the pharmacy. The pharmacist dispenses drugs to the CHW in the specified amount for each client and records what drugs were received by the CHW into SmartCare. Health facility staff also ensure necessary supplies are available for use at both the facility and community level.

Community Health Worker Responsibilities for SOC

- Pick up medication refills from ART facility and deliver to the clients
- Ensure the right patient receives the right medication
- Check temperature, blood pressure, and screen for opportunistic infections like tuberculosis
- Conduct adherence counseling
- Listen to patient's concerns and provide feasible solutions
- Refer all clients with complaints to the facility *
- Record interactions in SmartCare Lite
- Report all significant findings to the facility in-charge

** Referral to health facility:* under no circumstances are CHWs to attempt to treat or counsel patients with clinical concerns. CHWs are trained to refer all clients who are symptomatic or have abnormal vital signs to the facility to see a clinician.

"I came to the clinic on my own because I wanted to know my status. I found out I was reactive but I wasn't aware I was pregnant....my first child was ok [HIV negative] so I have to adhere. My community health worker has been very helpful. In the first days, it wasn't easy to make every appointment. She called and reminded me to collect my drugs. She was always counseling me and giving me advice: *"You're not the first one. Others have taken the drugs and been fine."*

Stable on Care Results

In February 2017, UMB conducted a small sub-study collecting viral load data for all patients in SOC at four different sites (Figure 7, below). The study found that of the 1091 SOC clients at the time, 96.8% were virally suppressed with near 100% retention in care. Later in 2017, UMB assessed viral loads at eight sites implementing the CHEC SOC model and found that most of the clinics had viral suppression rates of 92-100%, as compared to the national average of 89.% (Figure 8).

VIRAL LOAD (VL) MONITORING FOR STABLE-ON-CARE (SOC) CLIENTS AT 4 CHEC SITES

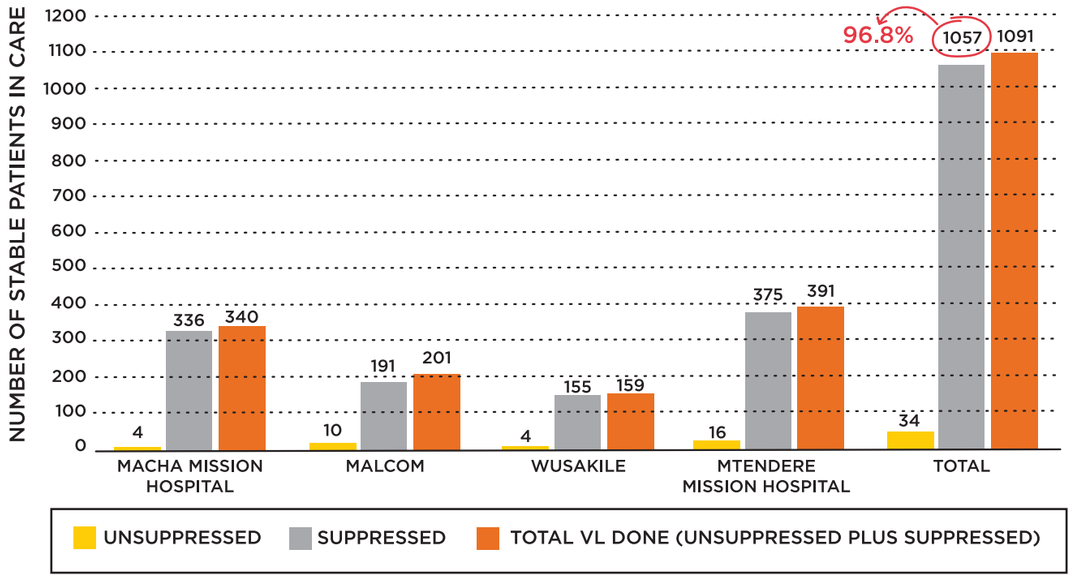


Figure 7 Viral load monitoring for SOC patients at four clinics

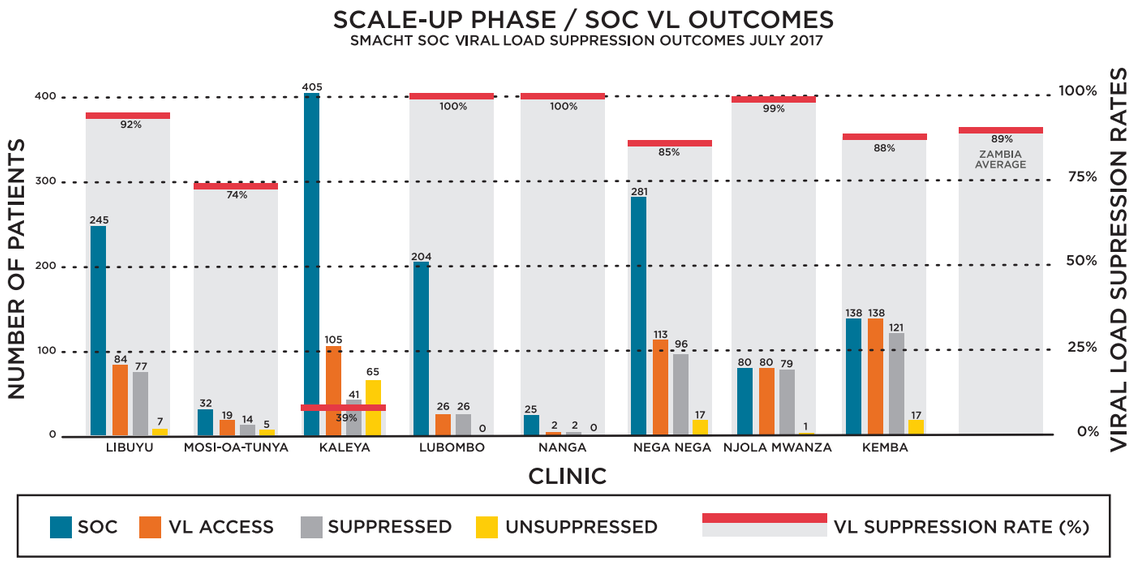


Figure 8 Results for eight clinics in the scale-up phase in 2017

INDIVIDUALS BENEFIT FROM CHEC: LLOYD'S STORY

Juliet, a Community Health Worker at an urban government clinic in Southern Zambia, is visiting her client Lloyd at his house for a SOC visit. Lloyd and his wife are both HIV-positive and receive medications from Juliet from their home.

"There used to be long queues at the clinic when I went to pick up the medications," Lloyd said. "I appreciate [the program]. It's really good. I want the proram to continue. It gives me a chance to concentrate on other things. "Juliet comes to encourage me. Now, I'm strong. I wasn't like this before."

Lloyd, and many other clients like him, is one of Juliet's greatest accomplishments: "A long time ago, we were seeing so many bedridden clients. Today clients are no longer bedridden. Most are now mobile," she declared.

FEASIBILITY AND SCALABILITY

In 2016, the United States Agency for International Development (USAID) conducted a cost-effectiveness study (Estimated Costs and Impact of Test & Treat in Zambia) that compared the CHEC model with two other community-based differentiated care models in use in Zambia.

The CHEC model has higher start-up costs compared to the other two models, attributable to training the CHWs and the cost of tablets for each CHW. The USAID report demonstrates that over time, however, the CHEC model is the cheapest of all three models at $203 per client per year. The cost is just $5 per client per year in subsequent years.

According to the same study, if scaled up, the CHEC model could cover over 131,500 of the 1,090,15 people who will be on ART by 2020. Thus, CHEC can provide HIV services to an estimated 12% of the national need, whereas the other two DSD models combined provide coverage to less than 7% of the national need.

CHEC MODEL NEXT STEPS

The University of Maryland Baltimore is currently rolling out new applications of the CHEC model for even more effective, high-yield results in Zambia. This includes recruiting and training community health workers from high-risk key and priority populations such as adolescents and youth, female sex workers, and men who have sex with men. This approach is expected to improve viral suppression for the healthy but infected individuals that are driving the HIV epidemic in Zambia and make progress on achieving 90-90-90 in Zambia. The CHWs selected from these communities are targeting hot spots to provide partner and social network testing as well as the full range of counseling and support outlined above.

Other Novel Opportunities for Deployment of CHEC

- CHEC for Key Populations: incorporating community distribution of PrEP to key populations using lessons learned from Stable on Care component.
- Community ART initiation: bringing ART initiation into the community for clients who live far from a clinic or can't get to the clinic due to restrictive operational hours. Clients will be initiated in the community and attached to a CHW, who will ensure they are virally suppressed despite living an unrealistic distance from a health facility.
- Expand Community Health Services: Broaden the CHW's scope of work to other health services such as malaria, hypertension, and mass-drug administration campaigns.

Government and Other Partnerships

CHEC CHWs work closely with government clinic staff in every component of the model, creating a sense of ownership from the facility and a strong, trusting, and reliable support network for the community. The MoH recently adopted the CHEC model as an official strategy to enhance adherence to and quality of treatment in the 2018 Zambia Consolidated Guidelines for Treatment and Prevention of HIV. UMB is also working with MoH and other partners who are also rolling out differentiated service delivery models to develop an operations manual for differentiated service delivery in Zambia.

CLOSING

In 2009, Granich et al. published an article in the Lancet titled “Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model”. The model demonstrated that in a South African context epidemic control might be possible with a universal test and treat approach. It did not address the challenges associated with implementing test and treat in a more resource-constrained country like Zambia where severe shortages of trained health providers, facility infrastructure, and government health care funding exist.

The Community HIV Epidemic Control strategy was created to address the significant gaps that existed in the HIV care continuum between testing, linkage, retention, and viral suppression. UMB recognized that in Zambia the health care system could not be expanded fast enough to accommodate the demand for services following a test and treat approach. Initially, CHEC was designed for universal HIV testing and treatment, but the functionality of the strategy allows for high flexibility to adapt to the dynamic changes in strategic approaches. CHEC has been implemented on a broad community-based facility-linked strategy in over 200 facilities in the Southern Province and Lusaka. UMB has adapted CHEC in Zambia to provide HIV services not only to the general population but also in a targeted approach for pregnant women and their infants in a PMTCT program, as well as utilized peer CHWs to deliver services to adolescents, youth, and key populations including sex workers and men who have sex with men. CHEC has also transitioned from a universal test and treat strategy to targeted index testing, same-day initiation strategies, PrEP support, retention in care, and community ART for stable-on-care clients.

CHEC has proven to be cost-effective and continues to evolve to close identified gaps by expanding the reach of the facility into the community. Most importantly, CHEC was designed with the end in mind. It leaves a coordinated community health work force linked to the facility that can transition to non-communicable diseases and respond to new outbreaks as HIV epidemic control becomes a reality.

UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

INSTITUTE OF
HUMAN VIROLOGY

www.ihv.ciheb.org