DGHT
Division of Global HIV & TB

CDC COMBINATION PREVENTION EVALUATION PROJECTS:

INFORMING INNOVATIONS IN HIV TESTING, LINKAGE, AND TREATMENT DELIVERY TO HELP MEET 90-90-90 GOALS

OVERVIEW

Despite the significant scale up of HIV Testing Services (HTS), 47 percent of people living with HIV in resource limited countries remain unaware of their infection.[1] New global 2020 targets aimed at ending the HIV epidemic call for 90 percent of all people living with HIV to know their HIV status, 90 percent of all diagnosed persons to receive sustained antiretroviral therapy (ART); and 90 percent of those on ART to have a suppressed viral load (90-90-90).[2]

Achieving 90-90-90 requires countries to implement a strategic mix of effective facility- and community-based HTS, linkage, ART delivery, and ART retention interventions tailored to meet general and key population needs at local, regional, and national levels. Only one research study conducted in rural communities in Uganda and Kenya, however, has claimed to achieve 90-90-90. Very few highly effective HTS, linkage, and retention interventions have been identified for population subgroups in urban and rural communities.[3] [4] [5] To achieve 90-90-90, countries need additional HTS, linkage, and retention interventions that are effective for all population subgroups, including underserved groups such as adolescents and young adults, adult men, and key populations. Countries also need additional information about the strategic mix of these effective interventions in urban and rural communities.

CDC'S ROLE

To inform innovations in HIV testing, linkage, and ART delivery, and the mix of interventions needed to achieve 90-90-90, the U.S. Centers for Disease Control and Prevention (CDC) and our partners are conducting research, surveillance systems, and program evaluations of combination-prevention interventions in Botswana, Mozambique, Swaziland, and Tanzania.

- **Botswana:** In collaboration with the Botswana Ministry of Health and the Harvard School of Public Health, the Botswana Combination Prevention Project (BCPP) aims to achieve 90-90-90 coverage by 2018 in adults (16-64 years) in 30 peri-urban communities. This pair-matched community-randomized trial compares HIV incidence in 15 control communities with 15 intervention communities receiving expanded HTS, strengthened Voluntary Medical Male Circumcision, and expanded ART.

- **Mozambique:** In collaboration with the Mozambique Ministry of Health and several implementing partners, the Chókwè Health Demographic Surveillance System Combination Prevention Evaluation (CHDSS-CPE) aims to achieve 90-90-90 and track impact on HIV incidence in a population of approximately 50,000 residents (15-59) of Chókwè district, Gaza Province, Mozambique. CHDSS-CPE is a census-based health demographic surveillance system with annual home-based HTS, and follow-up counseling and referral to care for residents who test HIV-positive.

- **Swaziland:** Conducted in collaboration with the Swaziland Ministry of Health and Population Services International, CommLink, a demonstration project, is evaluating an integrated HTS, linkage-case-management, and HIV-care service delivery model for clients diagnosed in community settings. The primary aim of CommLink is to achieve >90percent enrollment in ART care within three months of diagnosis among program participants. CommLink is expected to be expanded in 2017 from two to five mobile-unit teams and evaluated against patient groups provided standard referral services.

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[1] UNAIDS. Global AIDS Update. Geneva: Joint United Nations Programme on HIV/AIDS, 2016. http://www.unaids.org/sites/default/files/media_asset/global-AIDS-update-2016_en.pdf

[2] UNAIDS. 90-90-90: An ambitious treatment target to help end the AIDS epidemic. Geneva: Joint United Nations Programme on HIV/AIDS, 2014. http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf.

[3] Petersen M, Balzer L, Kwarsiima D, et al. SEARCH test and treat study in Uganda and Kenya exceeds the UNAIDS 90-90-90 cascade target by achieving 81percent population-level viral suppression after 2 years. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract WEAC0106LB, July 2016.

[4] Govindasamy D, Meghij J, Negussi EK, et al. Interventions to improve or facilitate linkage to or retention in pre-ART (HIV) care and initiation of ART in low- and middle- income settings--a systematic review. Journal of the International AIDS Society. 2014;17:19032.

[5] Sharma M, Ying R, Tarr G, Barnabas R. Systematic review and meta-analysis of community and facility-based HIV testing to address linkage to care gaps in sub-Sarharan Africa. Nature. 2015;528:S77-S85.

- **Tanzania**: In collaboration with the Tanzania Ministry of Health and ICAP at Columbia University, the Bukoba Combination Prevention Evaluation (BCPE) aims to achieve 90-90-90 in an urban lake-side district of 61,000 residents (18-49 years) after a 2.5 year, community-wide combination-prevention intervention. BCPE is a single community, pre-/post-intervention, program evaluation.

ACCOMPLISHMENTS / RESULTS

CDC-supported combination prevention evaluations are ongoing. The implementation status and preliminary findings include:

- **Botswana:** BCPP began in 2013 and will be completed in 2018. Baseline findings reveal an overall HIV prevalence of 23.6 percent. Among community residents assessed as HIV-positive, 82 percent knew their status and 18 percent were newly identified. HIV-positive persons not on ART were referred to their local clinic, with 84 percent linked and 77 percent of those eligible initiated ART.

- **Mozambique:** CHDSS-CPE began in 2014 and will be completed in 2018 after five annual rounds of health-demographic surveillance, and integrated community-based HTS and linkage services. Preliminary baseline findings from CHDSS-CPE suggest high HIV prevalence of undiagnosed HIV infection among men and women, low ART coverage particularly among younger HIV-positive persons, and exceptionally high HIV incidence. [6] [7] [8] To address these findings, in 2016, the Mozambique Ministry of Health approved ART for all HIV-positive persons in Chókwè district, and CDC supported an additional peer-delivered facility-based linkage intervention.

- **Swaziland:** Implementation of CommLink began in June 2015 in the Hhohho region of Swaziland with two mobile teams. Designed to improve exceptionally low enrollment in HIV care among community-diagnosed clients, CommLink provides point-of-diagnosis clinical care, and follow-up linkage case management, escort, and treatment navigation services for clients diagnosed in community settings.[9] [10] Preliminary findings from CommLink suggest that, overall and among all age and gender subgroups, approximately 90 percent of clients consent to participate and enroll in HIV care within 3 months of diagnosis.[10]

- **Tanzania**: The intervention phase of BCPE began in 2014 and will be completed in 2017. BCPE is evaluating provider-initiated, home-based, and venue-based HTS; peer-delivered linkage case management including HIV-care escort and treatment navigation services; and Treat All mop-up and defaulter-tracing. BCPE findings indicate high prevalence of undiagnosed HIV infection, and very low ART coverage at baseline. Findings also show substantial uptake of HTS, linkage-to-care, and defaulter-tracing services.[11] [12] [13] [14] [15]Findings suggest that BCPE might achieve 90-90-90 in Bukoba in 2017.[15]

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[6] Casavant I, MacKellar D, Thompson R, et al. Home-Based HIV testing and new HIV diagnoses in Chókwè District, Mozambique. Presented at the 2016 Conference on Retroviruses and Opportunistic Infections Boston, Massachusetts. Abstract 975, February 2016.
[7] Auld A, Casavant I, Thompson R, et al. Low Antiretroviral Therapy coverage among adults, especially young men, living with HIV in a Southern Mozambican District with high HIV incidence. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract WEPEC173, July 2016.
[8] Nelson R, Thompson R, Casavant I, et al. Ongoing High HIV Incidence among women and men in Chókwè, Southern Mozambique: A call for rapid scale-up of Combination HIV Prevention. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract TUAC0204, July 2016.
[9] MacKellar D, Williams D, Storer N, et al. Enrollment in HIV care two years after HIV diagnosis in the Kingdom of Swaziland: an evaluation of a national program of new linkage procedures. PLoS One. 2016; DOI:10.1371/journal.pone.0150086.
[10] Williams D, Bhembe B, MacKellar D, et al. Improving early enrollment in HIV care among persons diagnosed in community settings in the Kingdom of Swaziland: Preliminary findings from CommLink, an integrated HTC, mobile-HIV-care, and linkage case management demonstration project. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract THPEE508, July 2016.
[11] Maruyama H, Ernest O, Porter S, et al. Measuring the burden of undiagnosed HIV infection from a population-based survey in Bukoba, Tanzania: merits of a home-based testing approach. Presented at the 2015 International Conference on AIDS and STIs in Africa. Harare, Zimbabwe. November 2015.
[12] Porter S, MacKellar D, Weber R, et al. ART coverage and viral load in Tanzania: Bukoba combination prevention baseline study. Presented at the 2016 Conference on Retroviruses and Opportunistic Infections, Boston, Massachusetts. Abstract 1025, February 2016.
[13] Ernest O, Maruyama H, Weber R, ET AL. Reaching 90percent tested: An innovative provider-initiated HIV testing model with modest increase in staffing brings HIV testing and counseling (HTC) to scale in 11 clinical settings in Bukoba, Tanzania. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract WEPEC150, July 2016.
[14] Gikaro J, MacKellar D, Ernest O, et al. Achieving 90percent linkage to HIV care and treatment: first year outcomes of the combination prevention linkage case management program in Bukoba, Tanzania. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract TUPEB044, July 2016.
[15] MacKellar D, Maruyama H, Weber R, et al. First-year intervention outcomes of the Bukoba Tanzania combination prevention evaluation: promising HIV testing & linkage-to-care methods to achieve 90-90-90. Presented at the 2016 International AIDS conference, Durban, South Africa. Abstract WEAE0205, July 2016.

FUTURE EFFORTS

In addition to these studies, CDC will continue to disseminate methods and findings of the combination prevention evaluations at local and international conferences, and help programs consider, adopt, and tailor evidence-based interventions to meet country needs. As these combination-prevention evaluations are completed in 2017 and 2018, CDC will collaborate with other programs supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) to disseminate lessons learned and successful models for improving HIV case finding, and enrollment and retention in ART care. In addition to in-person technical assistance visits and webinars, CDC will share fact sheets, summaries of standard operating procedures, job aids, and monitoring and evaluation tools of effective combination-prevention interventions.

BENEFITS OF OUR WORK

Findings from the combination prevention evaluations can help countries adopt, tailor, and implement a mix of innovative HTS, linkage, and retention interventions to help achieve 90-90-90, and reduce HIV incidence and HIV-related morbidity and mortality. Effective intervention models identified in these evaluations might also be applicable in some communities in the United States where many HIV-positive persons are undiagnosed, delay enrollment in or default from HIV care.