Hypertension screening and management in two PEPFAR-funded Lighthouse Trust clinics in Malawi #1115

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BACKGROUND

- As HIV-infected persons live longer, common comorbidities shift from opportunistic infections to chronic conditions.
- The PEPFAR-supported clinic network in Malawi provides a unique opportunity to leverage the established clinic structure to incorporate screening and management of non-communicable diseases (NCDs) such as hypertension (HTN) and provide enhanced HIV care.

PROJECT OBJECTIVES

We initiated a pilot at two high-volume HIV clinics operated by the Lighthouse Trust in Lilongwe, Malawi as a demonstration project to inform modifications to our integrated hypertension and HIV model and to identify challenges that warrant consideration. The aims of the project are to:

1) integrate hypertension screening and treatment in HIV care clinics,
2) 2) optimize hypertension treatment outcomes using standardized hypertension treatment protocols and cohort monitoring and
3) 3) create a reproducible and scalable hypertension management model that is cost-effective and can be used to inform national scale up and other chronic disease care models.

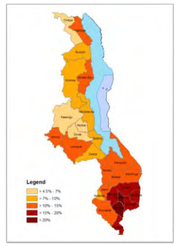
METHODS

- We integrated a HTN screening and management program using standardized HTN treatment protocols and cohort monitoring with HIV service delivery at 2 PEPFAR- supported clinics in Lilongwe, Malawi.
- A phased screening approach (e.g., first adults ≥60 years, then adults ≥50 years, then adults ≥40 years, etc.) was used to implement the program at the 1st site to limit burden on clinic flow.
- Persons with at least 3 elevated blood pressures (BP ≥140/90) on each of 2 separate visits were diagnosed with HTN.
- Patients with HTN who had stable HIV were treated using a stepwise approach based on the Malawi Standard Treatment Guidelines with adaptation for HIV patients (Figure) .
- We enhanced an electronic medical record system by developing a HTN module to monitor this subpopulation for outcomes of interest. Antiretroviral (ART) adherence was measured using pill counts.

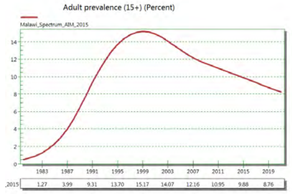
MALAWI AT-A-GLANCE

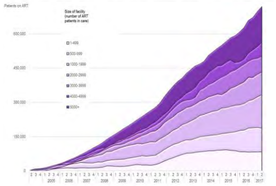
Population: 17.8 million; Life expectancy: 54 years

- HIV is the highest cause of mortality[1]
- Hypertension prevalence among adults estimated at 30%[2]





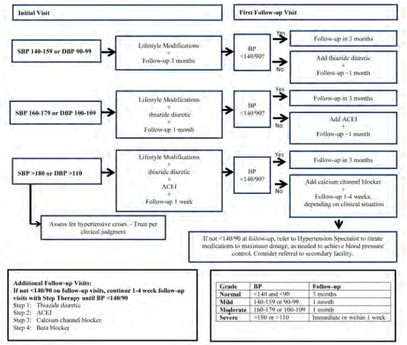




References:

1.Burden of Disease Estimated for 2011 and the potential effects of the Essential Health Package on Malawi's health burden, Bowie C., 2011, University of Malawi
2.WHO STEPS survey, 2009
3.Ministry of Health Integrated HIV Program Report April-June 2017

Figure. Suggested Algorithm for Treatment of Hypertension among HIV-infected Persons



BP=blood pressure; SBP=systolic blood pressure; DBP=diastolic blood pressure; ACEI= angiotensin converting enzyme inhibitor

RESULTS

- From 2/15 to 7/16, 29,359 adults >20 years old [median age 38 (interquartile range (IQR): 32-45) and 61% female] were screened for HTN at two clinics (Table 1).
- Of those screened, 3,448 (11%) were diagnosed with HTN, of whom 85% were given lifestyle modification advice or started on treatment.
- Severe disease (BP >180/110) requiring immediate treatment with ≥ 2 drugs was noted in 38%.
- Of all patients on antihypertensive treatment for 6 months, 26% had achieved controlled blood pressure.

Hypertension diagnosis disaggregated by age and sex

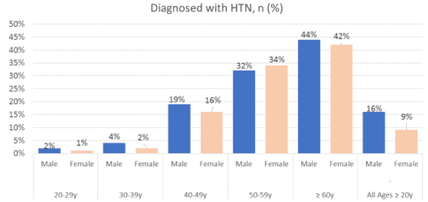


Table 1. Post implementation program evaluation data for two Lighthouse Trust pilot sites in Lilongwe, Malawi, February 2015 to June 2016.

Characteristic	Total
Screening parameters	
Number of persons screened*†	29,359
Median age (IQR)	38 (32-45)
Male gender (%)	11,794 (39)
Diagnosis parameters	
Number newly diagnosed with hypertension (%)‡	3,448 (11)
Mild (SBP 140-159 or DBP 90-99)	1,619 (47)
Moderate (SBP 160-179 or DBP 100-109)	514 (15)
Severe (SBP ≥ 180 or DBP ≥ 110)	1,315 (38)
Treatment parameters	
Number of hypertensive patients started on treatment or given lifestyle advice (%)	2,915 (85)
Number of all hypertensive patients on pharmacologic treatment for hypertension (%)‖	1,681 (49)
Control parameters	
Of those on treatment for 3 months, number with normal blood pressure at last visit (%)	240 (22)
Of those on treatment for 6 months, number with normal blood pressure at last visit (%)	229 (26)
Adherence parameters	
Number of hypertensive patients on treatment with at least 95% antiretroviral adherence	1,165 (80)
Number of patient without hypertension with at least 95% antiretroviral adherence	20,073 (79)

*Phased approach was used at the Martin Preuss Clinic; therefore, the program was considered fully operational in June 2015 and the evaluation period extends to 12 months from this date to June 2016.
†All patients were screened with an automated sphygmomanometer.
‡Definition new diagnosis of hypertension based on Malawi Standard Treatment Guidelines (4th edition): SBP≥140 mm hg or DBP≥ 90mm hg measured on two consecutive visits or severe HTN (SBP≥180 mm hg or DBP≥ 110mm hg) on a single visit; SBP = systolic blood pressure; DBP= diastolic blood pressure
‖Provision for treatment: all persons with moderate or severe hypertension were eligible for treatment. Of those with mild hypertension, those with mild hypertension, lifestyle modifications unless they have one CVD risk factor (current smoker, DM, history of CVD, history of CVD in first-degree relative).

RESULTS

- Of persons on pharmacologic treatment for 6 months, blood pressure control was 38% for mild cases, 30% for moderate cases, and 21% for severe cases (Table 2).
- Of the 3,448 persons diagnosed with HTN, 1,812 (53%) were male, of whom 826 (46%) were 40-49 years of age.
- Prevalence of HTN among males was 16%, almost twice as high as females (9%).
- ART adherence for hypertensive patients receiving HTN medications was comparable with patients not on HTN medications (80% vs. 79%, respectively).
- The annual cost of treatment of the entire cohort with HTN was approximately 14,000 USD or $4/patient.

Table2. Change in blood pressure by category after hypertension treatment initiation in two PEPFAR-funded clinics in Malawi

Blood pressure category	Total at diagnosis	On pharmacologic treatment	On pharmacologic treatment for 6 months	Of those on treatment for 6 months, normal BP at last visit
Lighthouse and MPC, n (%)				
Mild	1619	351 (22)	152 (43)	57 (38)
Moderate	514	326 (63)	172 (53)	51 (30)
Severe	1315	1004 (76)	566 (56)	121 (21)
Total	3448	1681 (49)	890 (53)	229 (26)

MPC = Martin Preuss Center

CONCLUSIONS

- HTN screening and management can be successfully integrated into PEPFAR-funded HIV service delivery sites at low cost and with moderate blood pressure control rates.
- These findings support integration of NCD and HIV services to enhance HIV care as well as to target middle-aged men, a hard-to-reach population for PEPFAR.
- Hypertension and HIV integrated care will need continued investments in supply-chain management as for the publically-funded clinics in Malawi, stock-outs of antihypertensive medications commonly occur; Innovative approaches to paying for medications should be sought.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.