Cost-Effectiveness Analysis of Free Anti-Hypertensive Medicines on Blood Pressure Among HIV Positive Patients at IDI

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INTRODUCTION

- With increased access to antiretroviral therapy (ART), people living with HIV (PLWH) are living longer and are more vulnerable to NCD such as hypertension due to drug adverse events and other lifestyle risk factors such as smoking (1).
- The prevalence of hypertension among HIV patients is believed to range from 15.1%-26.3%(2).
- The Ugandan health system like most systems in resource-limited settings has been largely unprepared for the increasing burden of dual long-term care for both hypertension and HIV/AIDS.

- In August 2017, the Infectious Diseases Institute(IDI) introduced free antihypertensive drugs to all patients diagnosed with hypertension and accessing ART at its centre of excellence HIV/AIDS clinic.
- Thus, the aim of this study was to evaluate the cost effectiveness of free access to antihypertensive treatment for HIV-infected adults on ART to inform decision making on national scale-up of intervention in other HIV clinics in

AIMS

- To determine the impact increased access to free antihypertensive on median blood pressure.
- To identify the factors associated with hypertension control among HIV patients receiving free-antihypertensives at IDI.
- To determine the cost per mm Hg reduction in blood pressure

METHOD:

Design: Data from Retrospective cohort study among HIV-infected hypertensive patients.

Study Setting & Population(N=754)

Patients with at least ≥ 3 visits before August 2017 and<after September 2017 (hypertesion diagnosis)

Exclusion criteria : Patients with serious complications and comorbidities, BMI> 40 kg/m2 and those who switched ART regiment to DTG.

Variables: Age, Sex, Marital status, BMI, CD4 at ART start

Cost Data:

- Data on the dosage per patient was extracted from I.C.E.A and matched with unit cost per prescribed medicine.
- Cost of labour was based on annual salary data for IDI doctors and nurses devoted to the intervention.
- Fixed costs such as depreciation of building were not included because the costs would still be incurred with or without the intervention.

Effectiveness Data:

- Data on patient blood pressure measurement pre and post intervention was extracted from I.C.E.A
- Intervention Effectiveness = Post intervention BP – Pre intervention

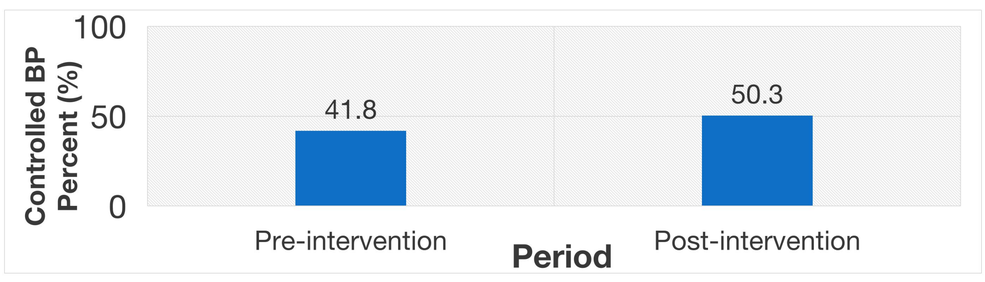
RESULTS: A GEE Logistic interaction model showing factors associated with controlled blood pressure PRE compared to Post

	PRE		POST		Change	
Characteristics	Adjusted Odds ratio (C.I)	P-value	Adjusted Odds ratio (C.I)	P-value	Adjusted Odds ratio (95% CI)	P-value
Age group						
<50	1.04 (0.77 - 1.42)	0.777	0.99 (0.73 - 1.34)	0.950	0.95 (0.68 - 1.33)	0.755
>=50	1.00		1.00		1.00	
Gender						
Female	1.48 (1.06 - 2.07)	0.021	1.40 (1.01 - 1.94)	0.044	0.94 (0.65 - 1.37)	0.760
Male	1.00		1.00		1.00	
Marital status						
Married	1.00		1.00		1.00	
Single	1.31 (0.96 - 1.79)	0.094	1.15 (0.85 - 1.56)	0.374	0.88 (0.62 - 1.24)	0.469
BMI						
<18.5	1.00		1.00		1.00	
18.5-24.9	0.90 (0.47 - 1.75)	0.766	0.41 (0.21 - 0.82)	0.011	0.46 (0.21 - 0.99)	0.049
>=25	0.52 (0.26 - 1.00)	0.051	0.33 (0.16 - 0.65)	0.002	0.63 (0.29 - 1.39)	0.253

Total cost of intervention	$18,956.00
Number of patients served	754
Cost per patient	$ 25.14
Median change in SBP(mm Hg)	2
ICER/ Cost per mm Hg change in SBP	$ 12.57
Controlled BP	
Number of patients with controlled BP	64
cost per controlled BP	$25.14
ICER/ cost per additional controlled BP achieved	$ 0.393

RESULTS:

SES indicators	Before intervention [N = 754 (%)]	After intervention [N = 754 (%)]	P-value
Median blood pressure (systolic, mmHg); median (IQR)	134 (129 - 148)	132 (124 - 144)	0.069[1]
Median blood pressure (diastolic, mmHg) ; median (IQR)	82 (80 - 90)	82 (78 - 90)	0.108[1]
Blood pressure categorized (mmHg)			
Controlled	315 (41.8)	379 (50.3)	<0.001[2]
Uncontrolled	439 (58.2)	375 (49.7)	



Discussion:

- Providing free anti hypertensive medicine was associated with reduction in SBP with cost effectiveness ratio of $12.51 per SBP reduced and $ 0.392 per additional patient with controlled BP.
- The programme did not require a large burden of extra inputs beyond medicines and labour costs. This presents the best opportunity for cost saving through economics of scale and scope. Donor funding for NCDs remains low, estimated at 1.3% of total development assistance for health in 2015(3)
- The 10mmHg reduction is BP is considered to be clinically significant. However, previous studies have shown than, any slight reduction in BP is likely to result in substantial reduction in CVD related morbidity and mortality(4)

Conclusion:

- Providing free antihypertensive medicine to HIV positive patients was cost effective in reducing BP thus reducing the overall risk of CVD events.
- The study provides preliminary evidence needed by decision makers to inform policy and resource allocation

References:

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