AHRI AFRICA HEALTH RESEARCH INSTITUTE

UNIVERSITY OF KWAZULU-NATAL ™
INYUVESI YAKWAZULU-NATALI

Mass General Brigham

The IMPACT-BP Trial

A Community-Based Intervention for Sustainable Blood Pressure Control in KwaZulu-Natal, South Africa

AWACC

ANNUAL WORKSHOP ON ADVANCED CLINICAL CARE - AIDS

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

NIH National Heart, Lung, and Blood Institute

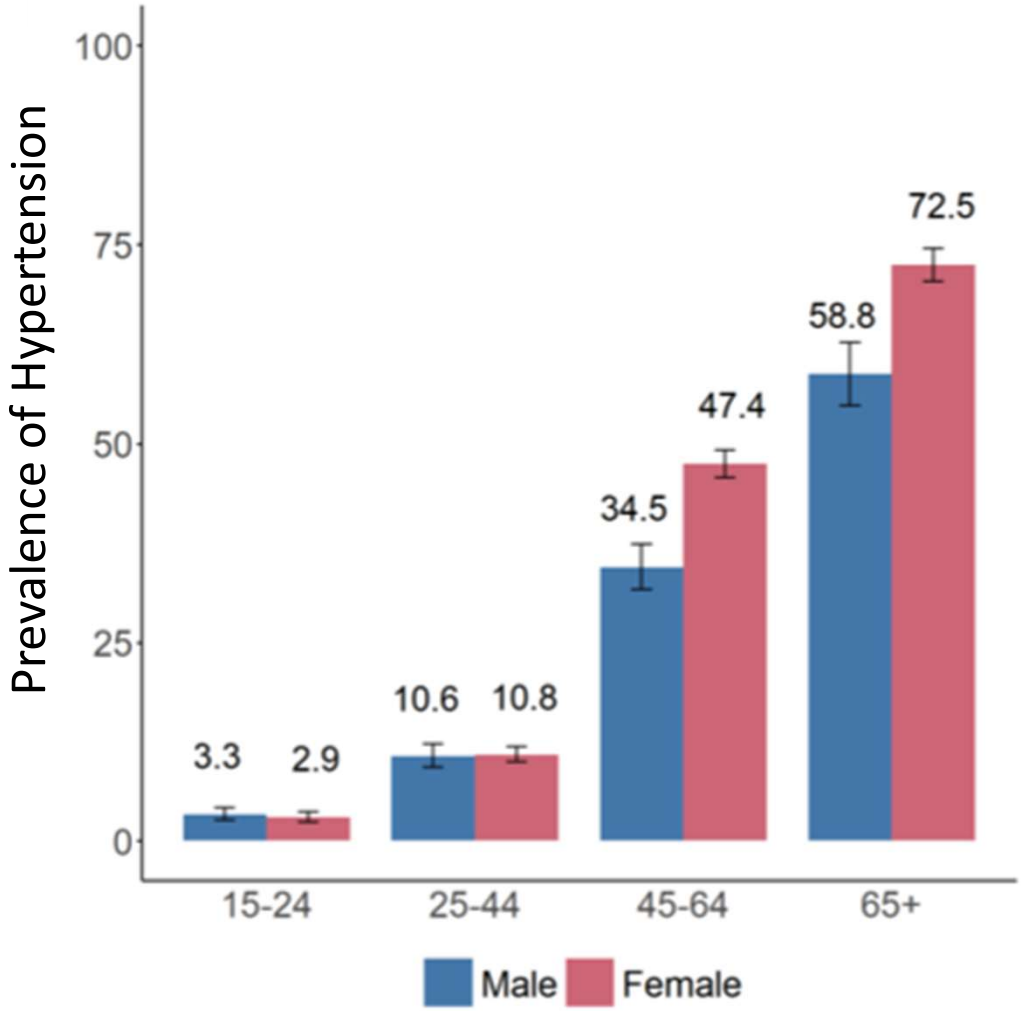
iMARKETING CONSULTANTS

Convergence of infectious and non-communicable disease epidemics in rural South Africa: a cross-sectional, population-based multimorbidity study

*Emily B Wong, Stephen Olivier, Resign Gunda, Olivier Koole, Ashmika Surujdeen, Dickman Gareta, Day Munatsi, Tshwaraganang H Modise, Jaco Dreyer, Siyabonga Nxumalo, Theresa K Smit, Greg Ording-Jespersen, Innocentia B Mpofana, Khadija Khan, Zizile E L Sikhosana, Sashen Moodley, Yen-Ju Shen, Thandeka Khoza, Ngcebo Mhlongo, Sanah Bucibo, Kennedy Nyamande, Kathy J Baisley, Diego Cuadros, Frank Tanser, Alison D Grant, Kobus Herbst, Janet Seeley, Willem A Hanekom, Thumbi Ndung'u, Mark J Siedner, Deenan Pillay, for the Vukuzazi Team**

Wong et al, Lancet Global Health, 2021

Population Prevalence of HTN in Northern KZN



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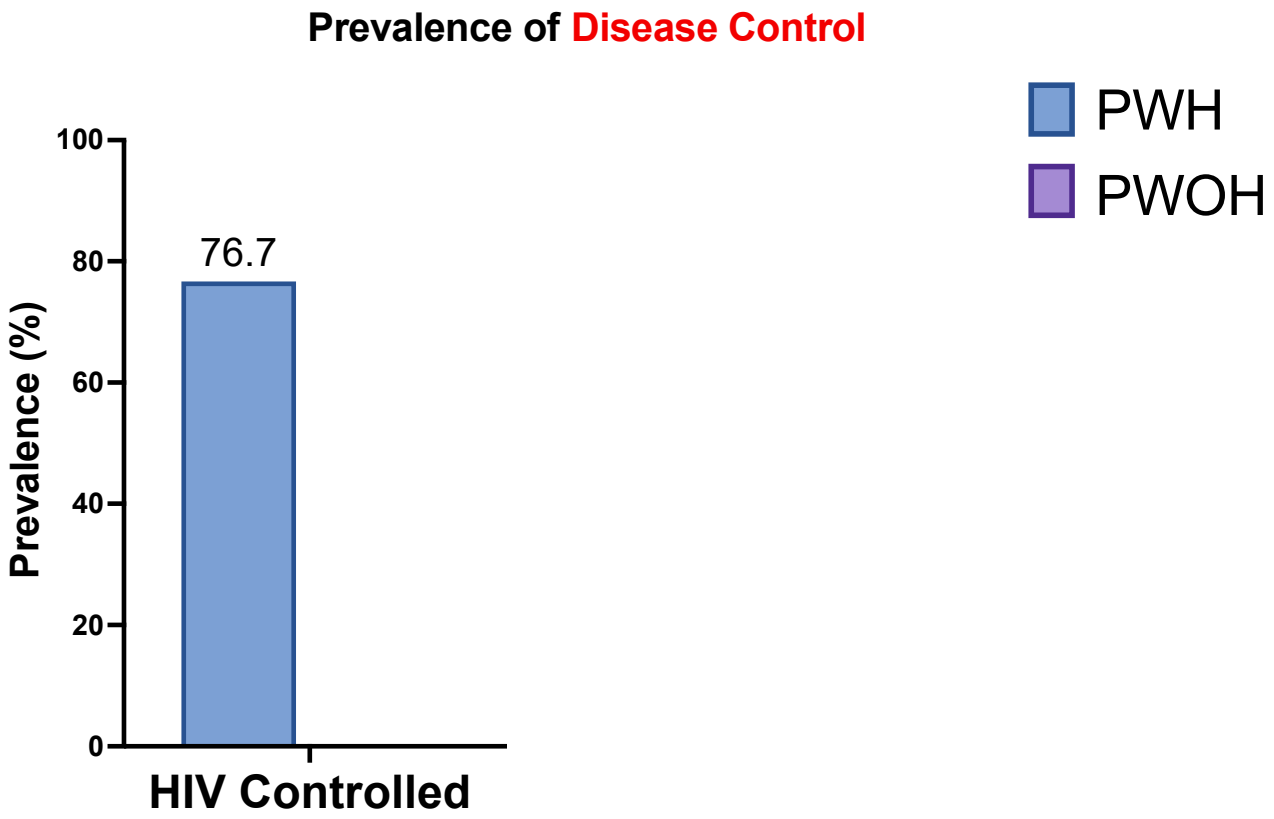
Wong et al, Lancet Global Health, 2021

Unlike HIV, HTN Control Remains Poor



Disease Control: HIV: VL<40; HTN: BP<140/90

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Vukuzazi Study, AHRI

Global Report on Hypertension (World Health Organization, 2024)

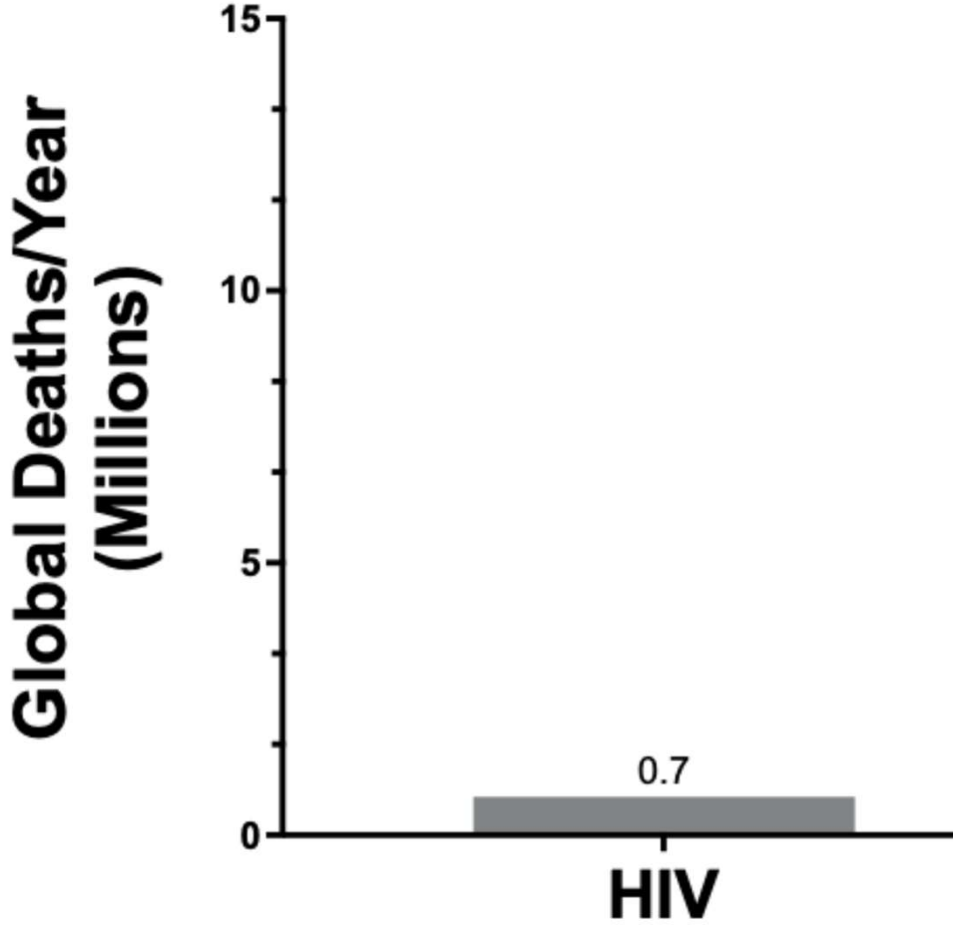
The 90/90/90 Cascade: starting from scratch

Table 2. Age-standardized prevalence of hypertension among adults aged 30–79 years, and among those with hypertension, diagnosis, treatment and effective treatment coverage in 2019, by WHO region

Region	Hypertension (%)
African	36 (38, 33)

Global Report on Hypertension (World Health Organization, 2024)

Hypertension matters



Global Report on Hypertension (World Health Organization, 2024)

Table 4.5: The ten leading underlying natural causes of death, 2019–2021*

Causes of death (ICD-10)	2021		
	Rank	Number	%

Stats SA, 2024

IMPACT-BP

- Overarching goals:
  - Determine causes for poor hypertension control in rural South Africa
  - Co-develop an intervention with partners and end-users to address those causes
  - Implement and evaluate a novel model of care to improve blood pressure and increase disease control rates in rural South Africa

Objectives of IMPACT-BP Study

Aim 1

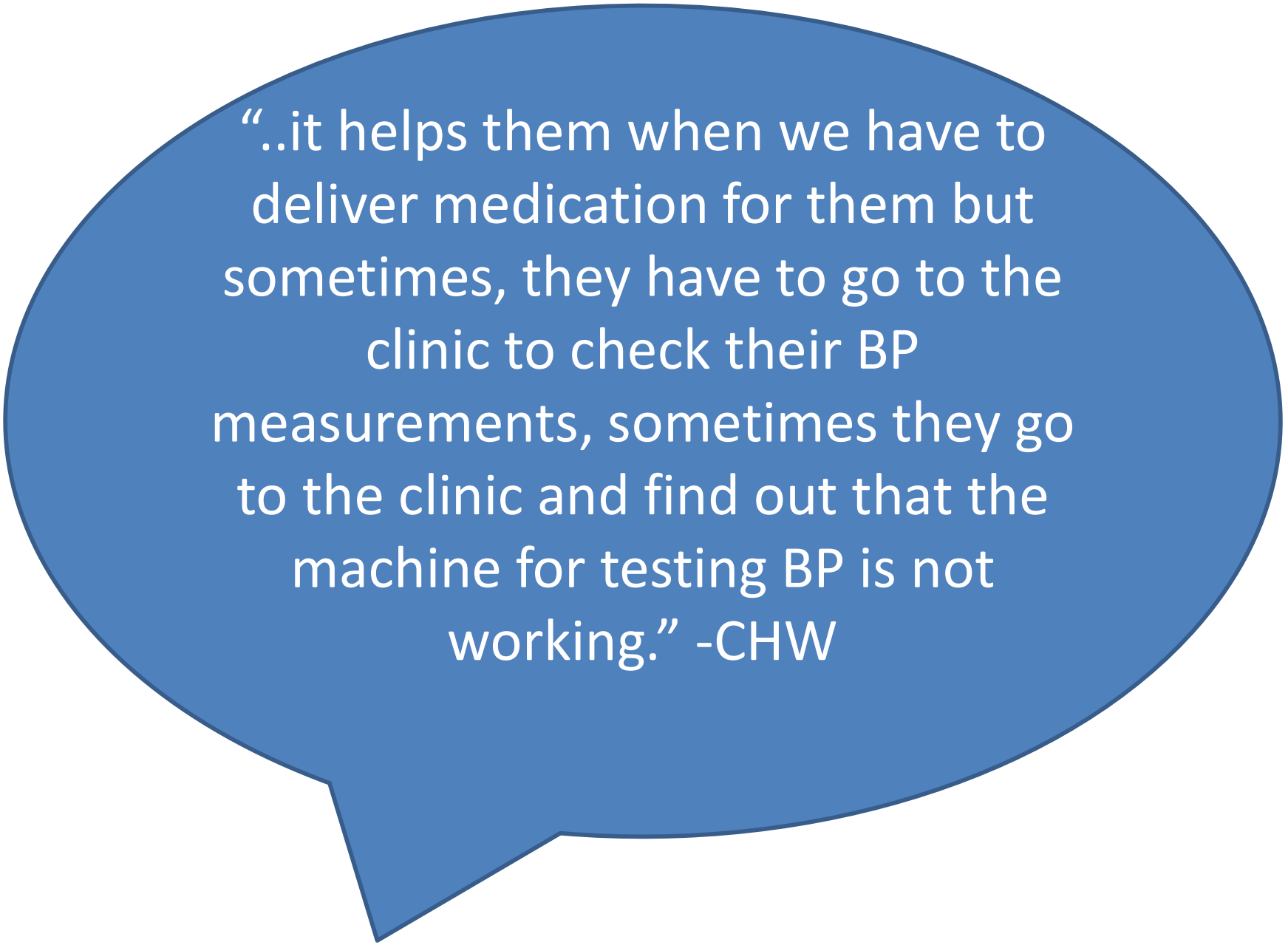
Design and determine the **acceptability and conduct a readiness assessment** for a community-based hypertension control program in rural KZN

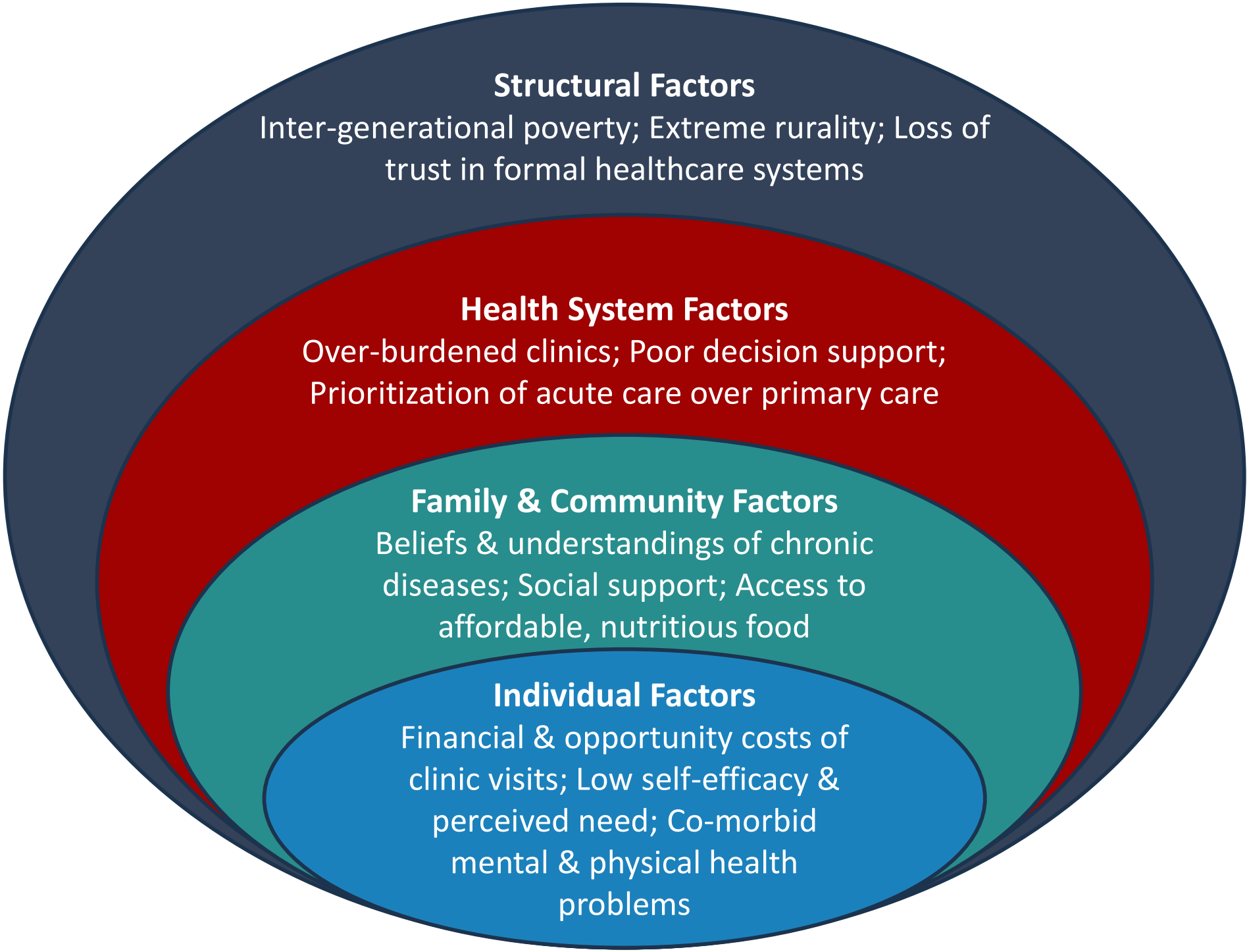
Learning from the Health System

Learning from the Patients and HCW

Activity	Types of participants
Focus Group Discussions (*32 participants*)	• HCWs • Outreach Team Leaders • HTN Patients
Key Informant Interview (*9 participants*)	• Clinic Supervisors/Managers • Subdistrict Officials • District Officials • Provincial Officials • Community Leaders

Learning from CHWs




Structural Factors
Inter-generational poverty; Extreme rurality; Loss of trust in formal healthcare systems
Health System Factors
Over-burdened clinics; Poor decision support; Prioritization of acute care over primary care
Family & Community Factors
Beliefs & understandings of chronic diseases; Social support; Access to affordable, nutritious food
Individual Factors
Financial & opportunity costs of clinic visits; Low self-efficacy & perceived need; Co-morbid mental & physical health problems

Learning from SA Guidelines

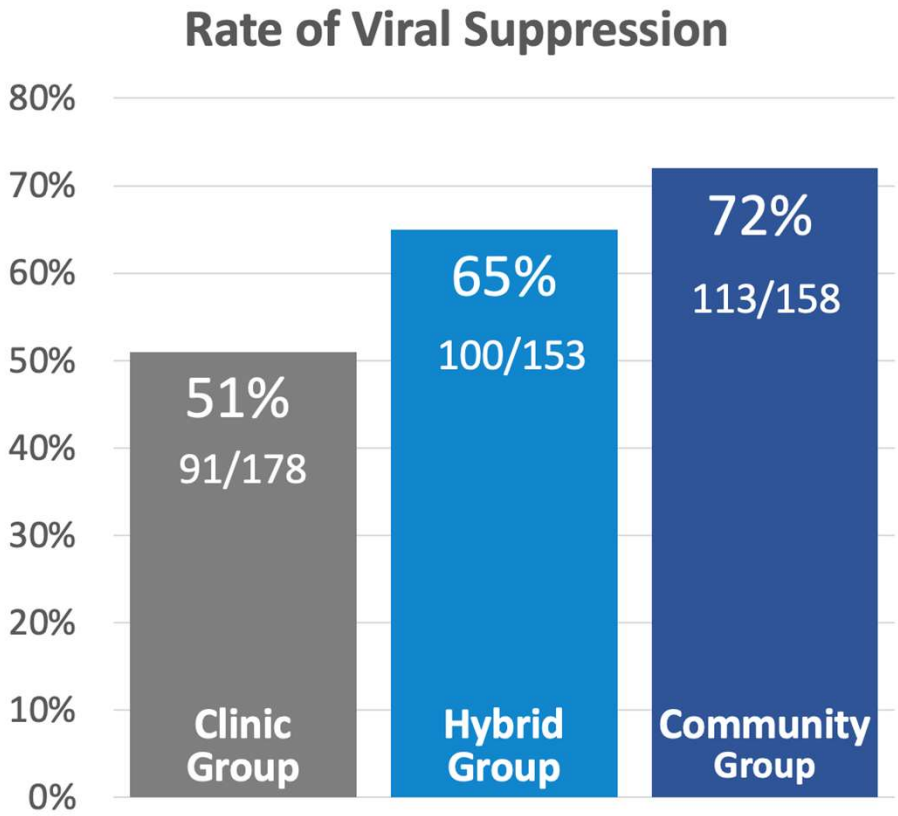
SA National DoH Strategic Framework 2019-2024:

- Reduce mortality and morbidity by accelerating implementation of a 90-90-90 strategy for NCDs
- Integration of CHWs in the public health system, strengthening clinics, and implementing a digital health strategy.

[1] National Development 2030, the Medium Term Strategic Framework 2019-2024.

[2] My Health, Your Health, Our Health: A Healthy KwaZulu-Natal. STRATEGIC PLAN 2020/21 – 2024/25. KwaZulu-Natal Department of Health, Pietermaritzburg, South Africa. (2020)

Learning from Successful HIV Programs

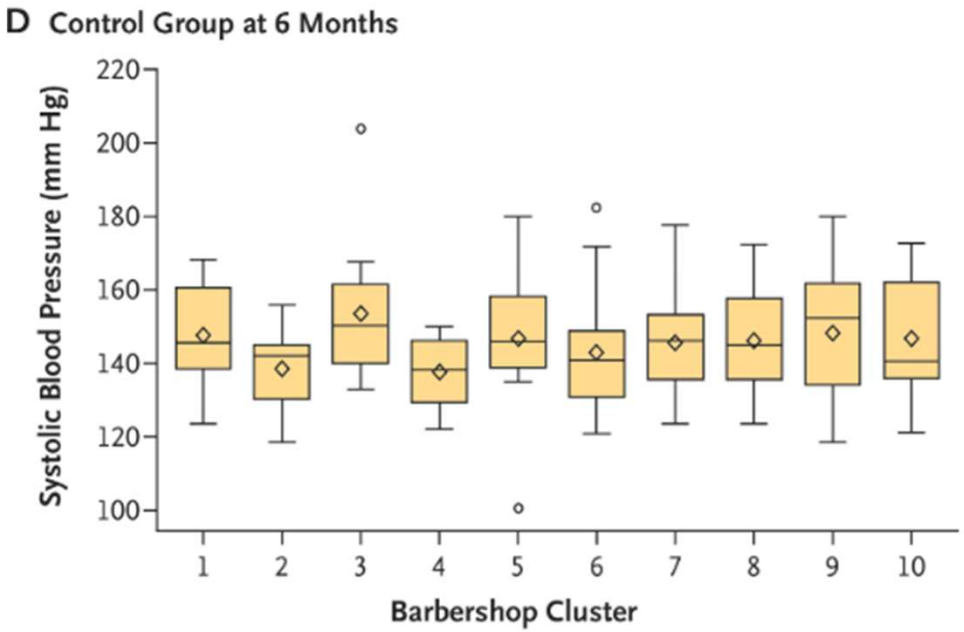


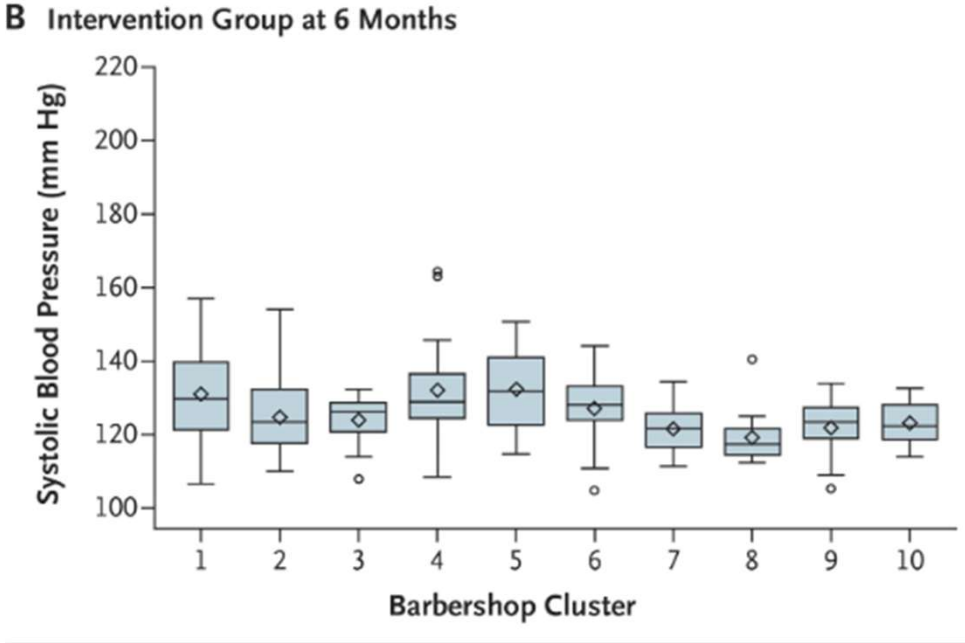
Decentralization of HIV Care

- Decongest clinics
- Reduce wait times
- Capacitate CCG/CHW workfore
- Engage patients in self-management
- Reduce transportation costs

Barnabas et al, *Lancet Glob Health*, 2021

…and from innovative HTN care programs elsewhere





Victor et al, *NEJM*, 2018

A community-based care model

- **Goals of program**
  - Enhance patient efficacy and self-empowerment
  - Reduce transportation costs
  - Decongest clinics
  - Decrease wait times
  - Task shift away from over-burdened nurses
  - Actively support nurses to respond to respond to high blood pressure

A community-based care model

- **Three main program elements**
  1. Patients to measure/monitor their own blood pressure at home

  2. CHWs to visit patients to collect data, address challenges, and deliver medicines

  3. Nurses to manage care remotely with mobile health tools and decision support

Objectives of IMPACT-BP Study

✓ Aim 1

Design and determine the **acceptability and conduct a readiness assessment** for a community-based hypertension control program in rural KZN

Aim 2

Conduct a randomized trial to determine the effectiveness of a community-based hypertension control program in rural KZN

Aim 2: IMPACT-BP Trial Design

Location: Primary healthcare clinics in uMkhanyakude District in KZN

Design: Open-label, three-arm randomized controlled trial

Eligibility: age > 18, HTN (>140/90 mmHg, two readings >=6 months apart)

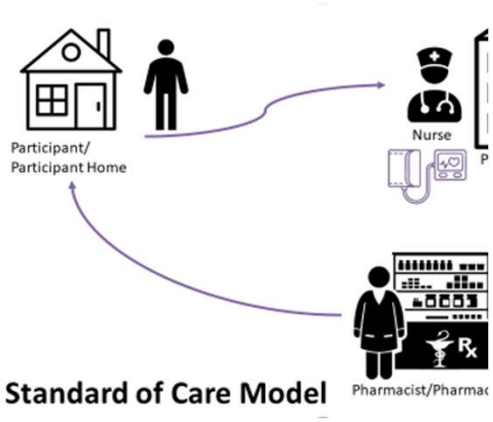
Exclusion criteria: (people who need physician support)

- -pregnancy
- -severe symptomatic HTN >180/110, advanced renal disease, >3 BP meds
- -planning to move within 24 months

Randomization to one of three arms:

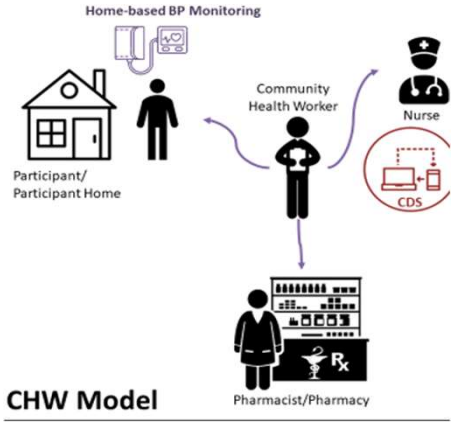
Standard of care

- Routine clinic-based hypertension care
- All monitoring, decision making, and prescriptions occur at clinic



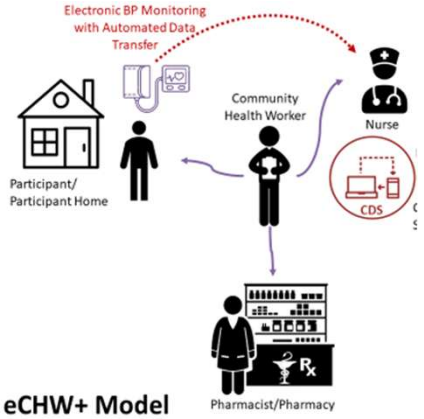
CHW

- Self-monitoring of BP
- Home visits by CHW
- Remote management of BP by nurses using app
- CHW delivery of medicines



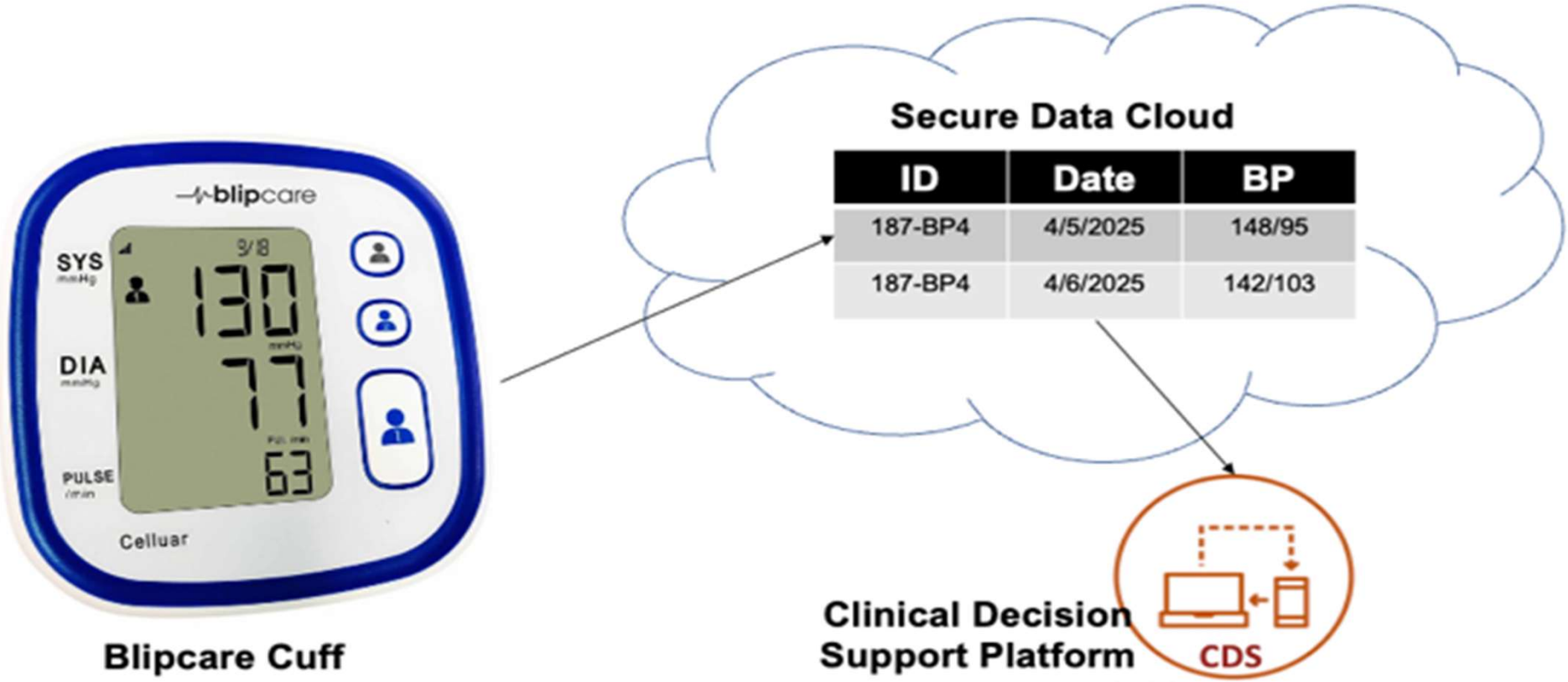
eCHW+

- **BP readings automatically sent to nurses via device**
- Self-monitoring of BP
- Remote management of BP by nurses using app
- CHW delivery of medicines



Standard Cuffs: Omron M3 Model (~1500R/$75 each)

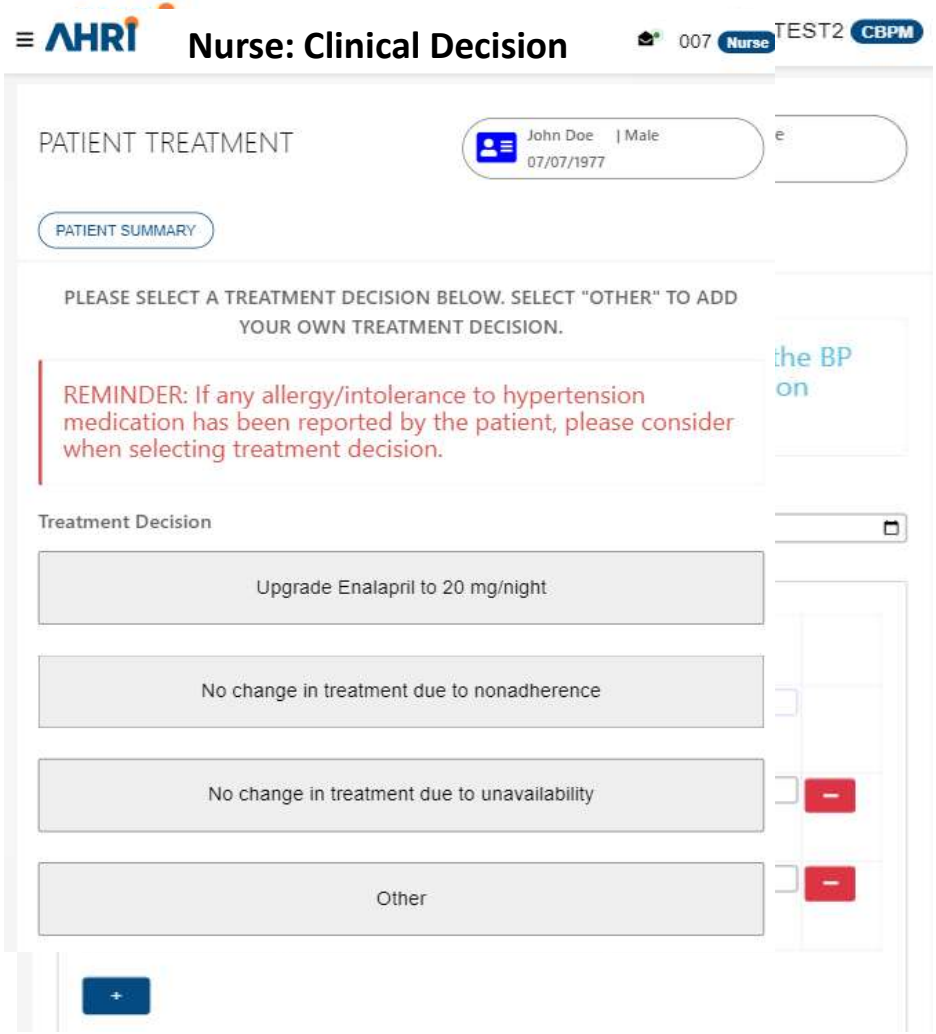
Smart Cuffs: Care Matrix Blipcare Model (~2000R/$100 each fee includes data service)



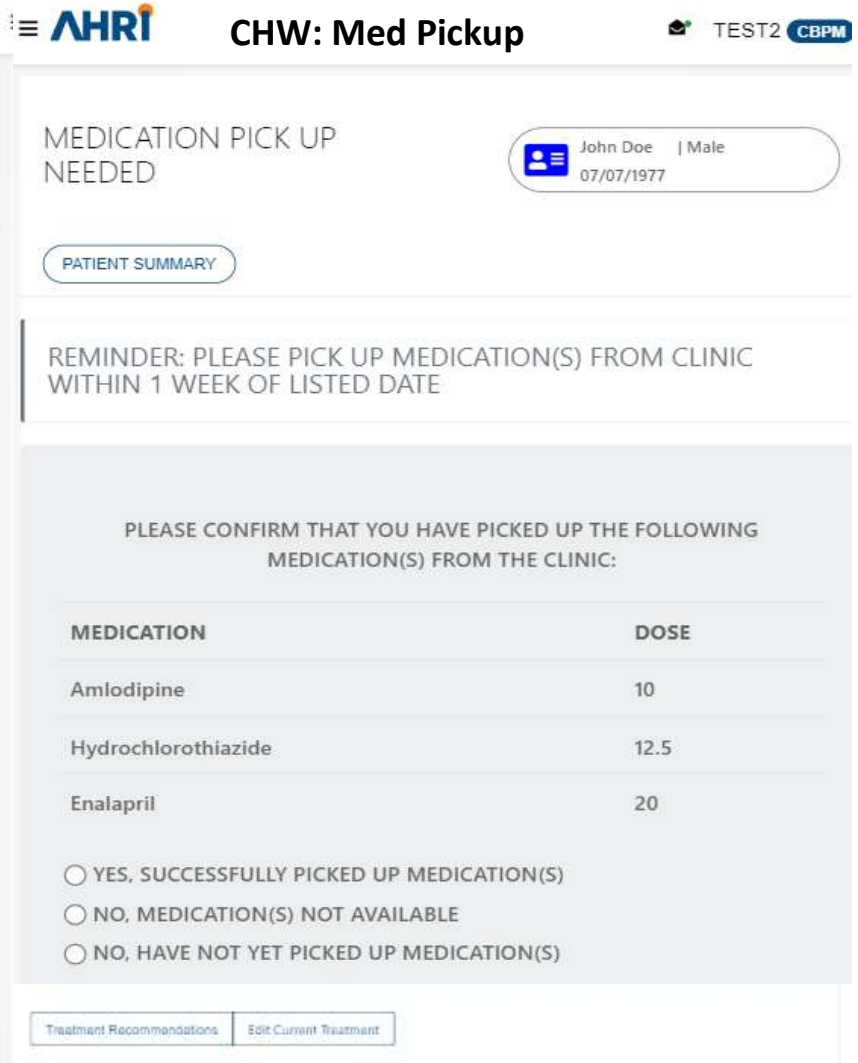
CHWs: Heart and Soul of the Program

Intervention App

A. **Nurse: Clinical Decision**



B. **CHW: Med Pickup**



Intervention App

Standard Treatment Guidelines and Essential Medicines List for South Africa

Primary Healthcare Level
2018 Edition

health
Department:
Health
REPUBLIC OF SOUTH AFRICA

2030 NDP

STEP 2: Add hydrochlorothiazide.

Entry to Step 2	Treatment	Target
» Diastolic BP 90–99 mmHg and systolic BP 140–159 mmHg without any existing disease. **AND** » No major risk factors. **AND** » Failure of lifestyle modification alone to reduce BP after 3 months. **OR** Mild hypertension with major risk factors or existing disease. **OR** Moderate hypertension at diagnosis.	» Lifestyle modification **AND** • Hydrochlorothiazide, oral, 12.5 mg daily. LoE: [xxx]	» BP control within 1 month to < 140/90 mmHg.

STEP3: Add a second antihypertensive medicine.

Entry to Step 3	Treatment	Target
» Failure to achieve targets in Step 2 after 1 month despite adherence to therapy. **OR** Severe hypertension (See table).	» Lifestyle modification **AND** • Hydrochlorothiazide, oral, 12.5 mg daily. **ADD** ▪ Long-acting calcium channel blocker, e.g.: ▪ Amlodipine, oral, 5 mg daily.	» BP control within 1 month to <140/90 mmHg.

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Intervention App

line_no	heart_attack	join_1	diabetes_history	join_2	avg_sys_min	avg_sys_max	join_3	avg_dias_min	avg_dias_max	join_4	dose_4	rec_1	rec_2	rec_3
G1	no	and	no	and	140	159	and	90	99	and	null	Add Hydrochlorothiazide 12.5 mg/d	Add Amlodipine 5 mg/night	Add Enalapril 10 mg/night
G2	no	and	no	and	160	INF	and/or	100	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d + Amlodipine 5 mg/night	Add Hydrochlorothiazide 12.5 mg/d + Enalapril 10 mg/night	Add Hydrochlorothiazide 12.5 mg/d
G3	no	and	no	and	0	139	and	0	89	and	null	Congratulations for reaching blood pressure goals, continue on current treatment for hypertension.		
G4	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Amlodipine 5 mg/night	Add Enalapril 10 mg/night	No change in treatment due to nonadhere
G5	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Amlodipine 5 mg/night	Add Enalapril 10 mg/night	No change in treatment due to nonadhere
G6	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Rotate Amlodipine to Hydrochlorothiazide 12.5 mg/d	Upgrade Amlodipine to 5 mg/night
G7	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Rotate Amlodipine to Hydrochlorothiazide 12.5 mg/d	Upgrade Amlodipine to 10 mg/night
G8	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Rotate Amlodipine to Hydrochlorothiazide 12.5 mg/d	Add Enalapril 10 mg/night
G9	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Upgrade Enalapril to 10 mg/night	Rotate Enalapril to Hydrochlorothiazide 12
G10	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Rotate Enalapril to Hydrochlorothiazide 12.5 mg/d	Upgrade Enalapril to 20 mg/night
G11	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Rotate Enalapril to Hydrochlorothiazide 12.5 mg/d	Upgrade Enalapril to 20 mg/night
G12	no	and	no	and	140	INF	and/or	90	INF	and	null	Add Hydrochlorothiazide 12.5 mg/d	Rotate Enalapril to Hydrochlorothiazide 12.5 mg/d	Add Amlodipine 5 mg/night
G32	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 5 mg/night	Upgrade Enalapril to 10 mg/night	No change in treatment due to nonadhere
G33	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 5 mg/night	Upgrade Enalapril to 20 mg/night	No change in treatment due to nonadhere
G34	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 5 mg/night	Upgrade Enalapril to 20 mg/night	No change in treatment due to nonadhere
G35	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 5 mg/night	No change in treatment due to nonadherence	No change in treatment due to unavailabil
G36	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Enalapril to 10 mg/night	Upgrade Amlodipine to 10 mg/night	No change in treatment due to nonadhere
G37	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 10 mg/night	Upgrade Enalapril to 20 mg/night	No change in treatment due to nonadhere
G38	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 10 mg/night	Upgrade Enalapril to 20 mg/night	No change in treatment due to nonadhere
G39	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Amlodipine to 10 mg/night	No change in treatment due to nonadherence	No change in treatment due to unavailabil
G40	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Enalapril to 10 mg/night	No change in treatment due to nonadherence	No change in treatment due to unavailabil
G41	no	and	no	and	140	INF	and/or	90	INF	and	null	Upgrade Enalapril to 20 mg/night	No change in treatment due to nonadherence	No change in treatment due to unavailabil

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Table 1. Summary of Study Visit Procedures

	Enrollment Visit	6-Month Visit	12-month Visit
Screening and eligibility form	✓		
Consent form	✓		
Point of care creatinine	✓		
Sociodemographic questionnaire	✓		
Tracking form	✓		
Hypertension KAP	✓	✓	✓
Medication adherence	✓	✓	✓
Hypertension treatment history	✓	✓	✓
Resource use form	✓	✓	✓
Health related quality of life	✓	✓	✓
Blood pressure measurements	✓	✓	✓
Chart review for medication and laboratory history	✓	✓	✓

Study Outcomes

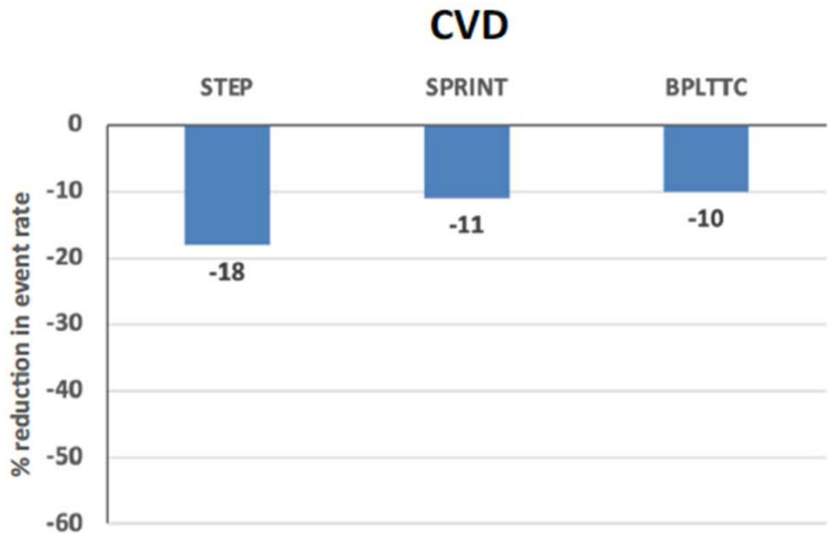
- **Outcome measurements:**
  - 6 months/12 months
  - Home visits by study staff, not involved in CHW program, blinded to study arm

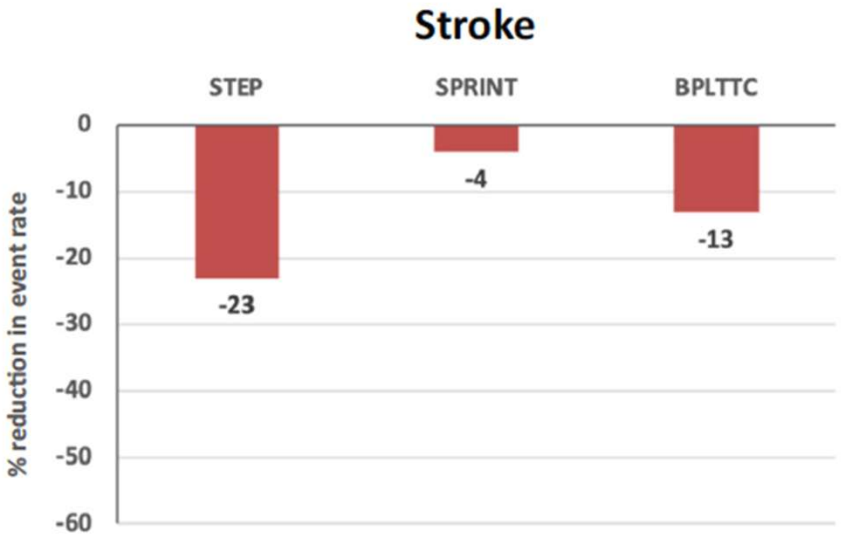
- **Primary Outcome:**
  - Change in systolic blood pressure from enrollment to 6 months

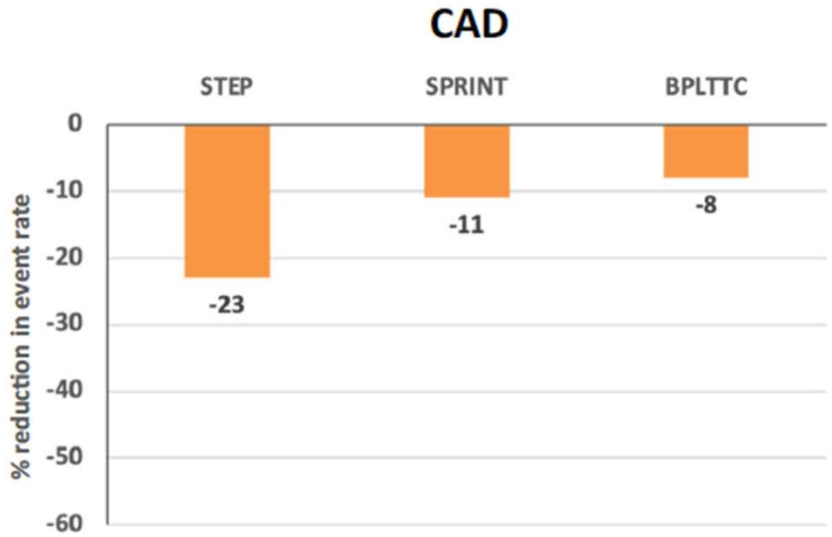
- **Secondary Outcomes:**
  - Systolic blood pressure change at 12 months
  - Proportion of participants with blood pressure control (<140/<90) at 6 and 12 months

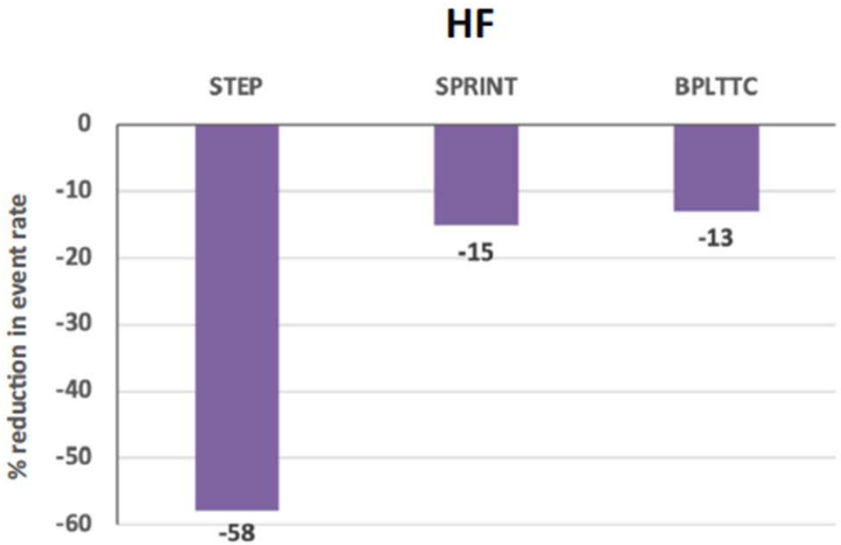
Powered for 5mm Hg change

- Clinical benefit of 5mm Hg reduction in systolic blood pressure

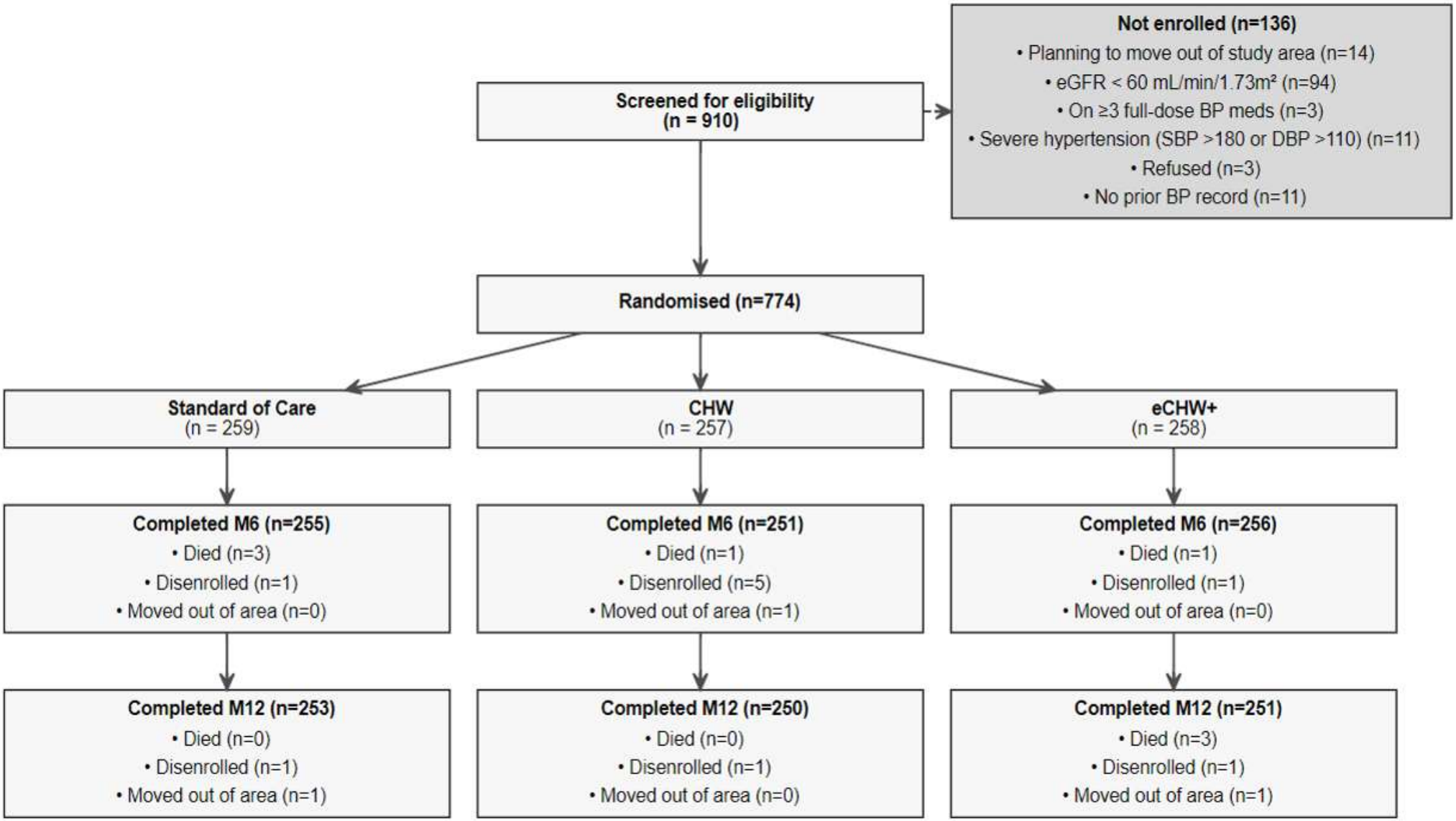






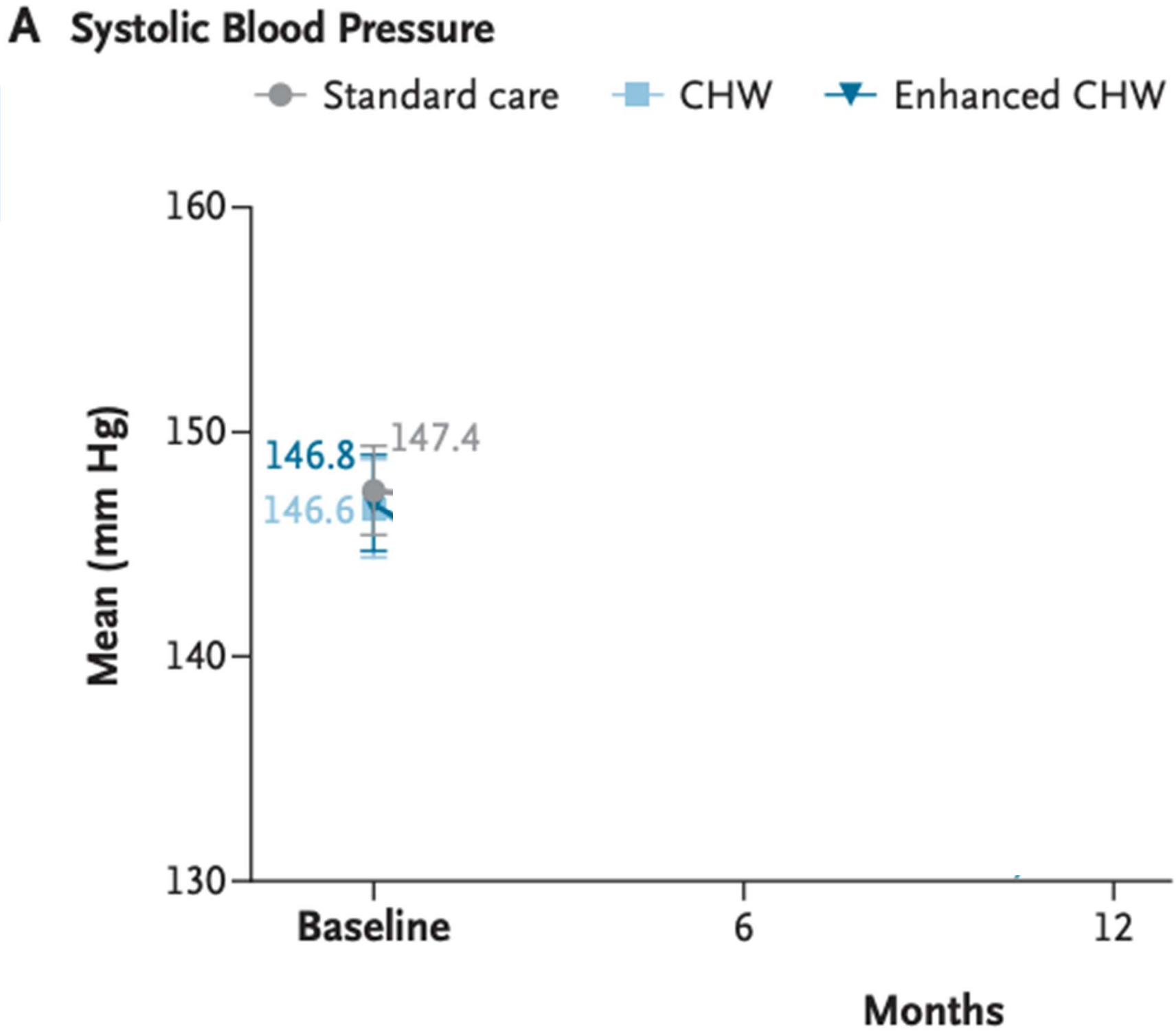


Kario et al, Hypert Res, 2024

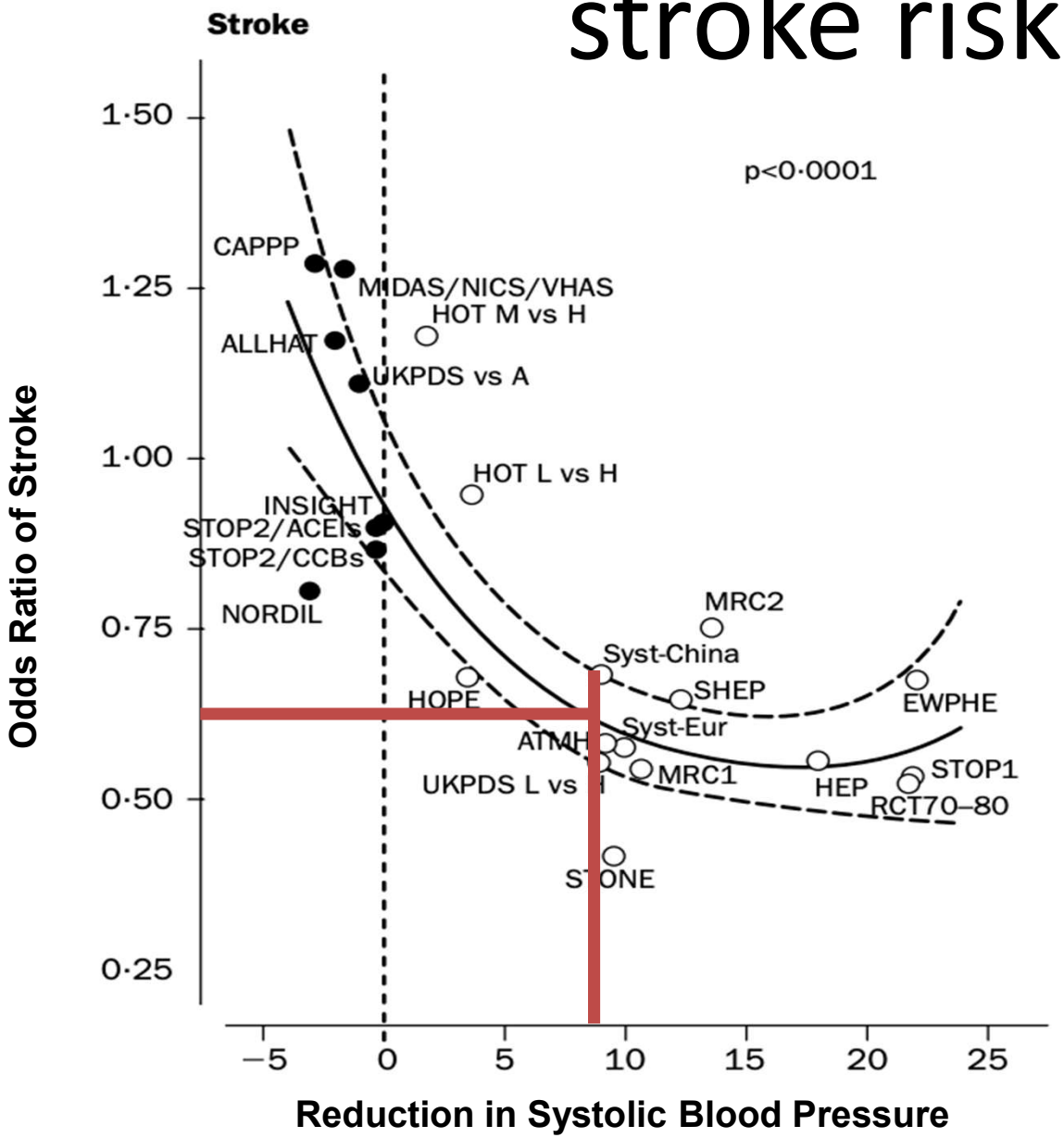

Screened for eligibility
(n = 910)
Not enrolled (n=136)
• Planning to move out of study area (n=14)
• eGFR < 60 mL/min/1.73m² (n=94)
• On ≥3 full-dose BP meds (n=3)
• Severe hypertension (SBP >180 or DBP >110) (n=11)
• Refused (n=3)
• No prior BP record (n=11)
Randomised (n=774)
Standard of Care
(n = 259)
CHW
(n = 257)
eCHW+
(n = 258)
Completed M6 (n=255)
• Died (n=3)
• Disenrolled (n=1)
• Moved out of area (n=0)
Completed M6 (n=251)
• Died (n=1)
• Disenrolled (n=5)
• Moved out of area (n=1)
Completed M6 (n=256)
• Died (n=1)
• Disenrolled (n=1)
• Moved out of area (n=0)
Completed M12 (n=253)
• Died (n=0)
• Disenrolled (n=1)
• Moved out of area (n=1)
Completed M12 (n=250)
• Died (n=0)
• Disenrolled (n=1)
• Moved out of area (n=0)
Completed M12 (n=251)
• Died (n=3)
• Disenrolled (n=1)
• Moved out of area (n=1)

Clinical characteristics at randomization

	SOC	CHW	eCHW+	Total
	(n=259)	(n=257)	(n=258)	(n=774)
Age (years), mean (SD)	62 (12)	63 (12)	62 (11)	62 (12)
Female, n (%)	194 (74.9%)	202 (78.6%)	192 (74.4%)	588 (76.0%)
SBP at baseline (mmHg), mean (SD)	147.4 (16.4)	146.6 (18.0)	146.8 (17.2)	147.0 (17.2)
SBP≥160 mmHg at enrolment, n (%)	50 (19.3%)	53 (20.6%)	53 (20.5%)	156 (20.2%)


A Systolic Blood Pressure
Standard care
CHW
Enhanced CHW
160
150
140
130
Mean (mm Hg)
146.8
147.4
146.6
Baseline
6
12
Months

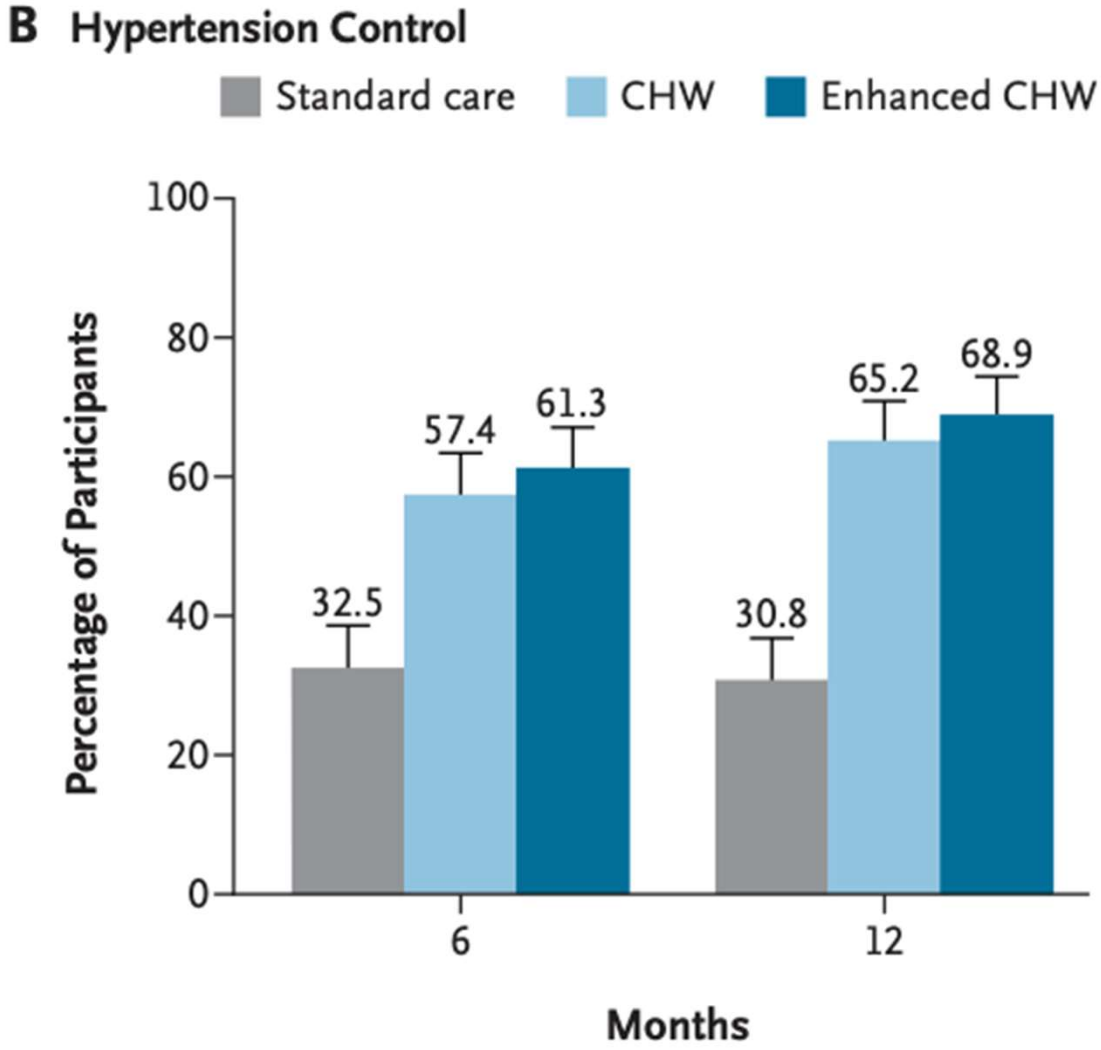
Reductions in blood pressure and stroke risk

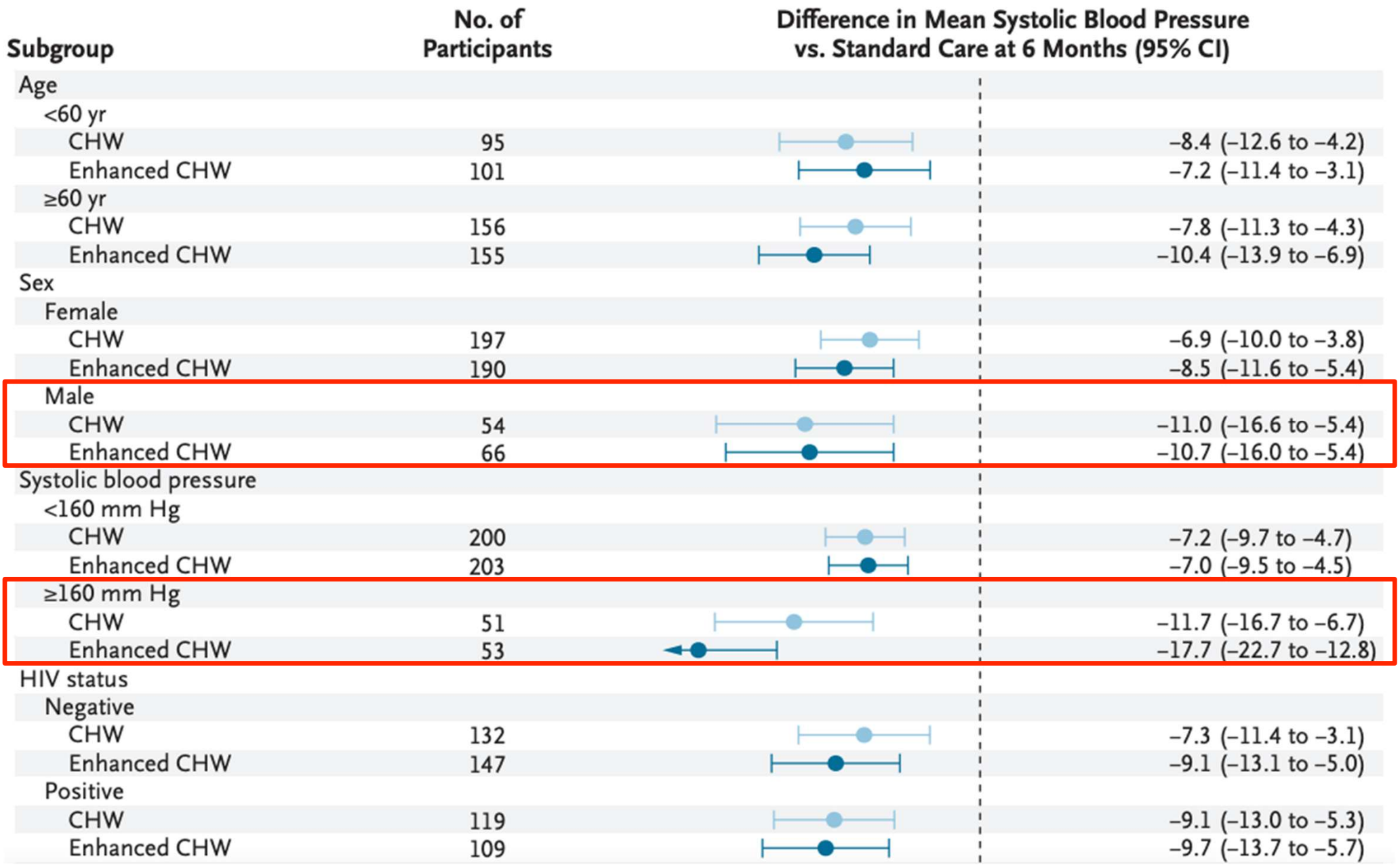


The 8-10% reduction in BP seen would be predicted to correspond to an approximate 40% reduced odds of stroke

Staessen et al, Lancet, 2001

Blood pressure control rates




Subgroup
No. of Participants
Difference in Mean Systolic Blood Pressure vs. Standard Care at 6 Months (95% CI)
Age
<60 yr
CHW 95 −8.4 (−12.6 to −4.2)
Enhanced CHW 101 −7.2 (−11.4 to −3.1)
≥60 yr
CHW 156 −7.8 (−11.3 to −4.3)
Enhanced CHW 155 −10.4 (−13.9 to −6.9)
Sex
Female
CHW 197 −6.9 (−10.0 to −3.8)
Enhanced CHW 190 −8.5 (−11.6 to −5.4)
Male
CHW 54 −11.0 (−16.6 to −5.4)
Enhanced CHW 66 −10.7 (−16.0 to −5.4)
Systolic blood pressure
<160 mm Hg
CHW 200 −7.2 (−9.7 to −4.7)
Enhanced CHW 203 −7.0 (−9.5 to −4.5)
≥160 mm Hg
CHW 51 −11.7 (−16.7 to −6.7)
Enhanced CHW 53 −17.7 (−22.7 to −12.8)
HIV status
Negative
CHW 132 −7.3 (−11.4 to −3.1)
Enhanced CHW 147 −9.1 (−13.1 to −5.0)
Positive
CHW 119 −9.1 (−13.0 to −5.3)
Enhanced CHW 109 −9.7 (−13.7 to −5.7)

Safety: Severe adverse events

Outcome	CHW (N=257)	Enhanced CHW (N=258)	Standard Care (N=259)
Adverse events during observation period — no. (%)			
Total adverse events	7 (2.7)	10 (3.9)	4 (1.6)
Severe adverse events	7 (2.7)	10 (3.9)	4 (1.6)
Adverse events related to trial procedures	0	0	0
Deaths	1 (0.4)	4 (1.6)	3 (1.2)

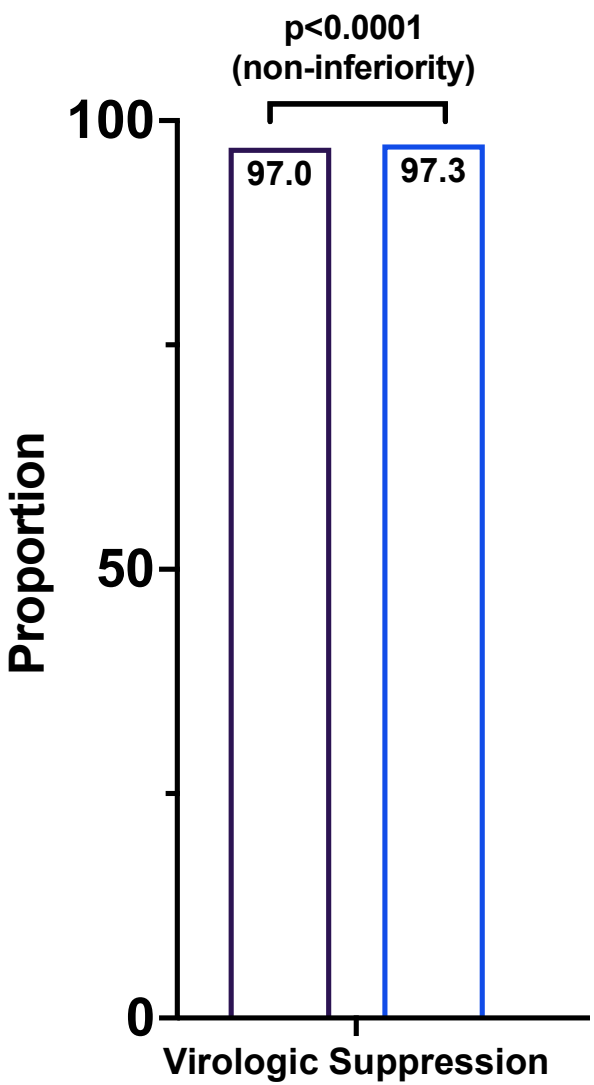
Results in Context

Other health system HTN trials in LMICs

- Meta-analysis of 9 RCTS of remote or telehealth
  - < 1mm Hg reduction in systolic blood pressure (not significant)
- COBRA BPS trial
  - 5 mmHg reduction in systolic blood pressure
  - Required physician management in the clinic
- SimCard Trial in rural India and China
  - 2.7 mm Hg reduction in systolic blood pressure (secondary outcome)

Dones et al, Physiother Res Int, 2025
Blood et al, JAMA Card, 2023
Jafar et al, NEJM, 2020
Mills et al, Ann Intern Med 2018
Tian et al, Circulation 2015

Cluster RCT of HIV/NCD Integration



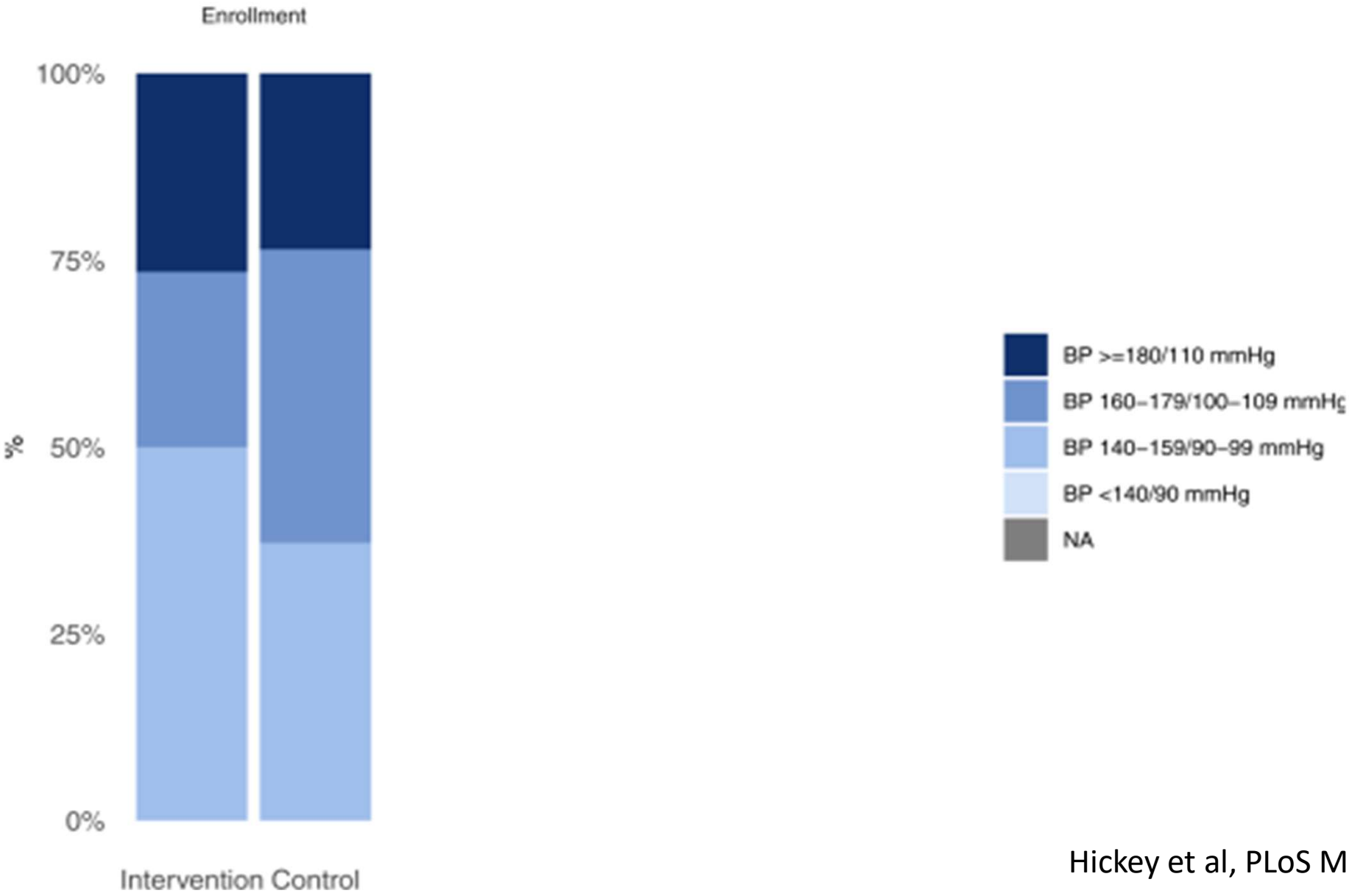
Study Outcomes

- Standard of Care
- Care Integration

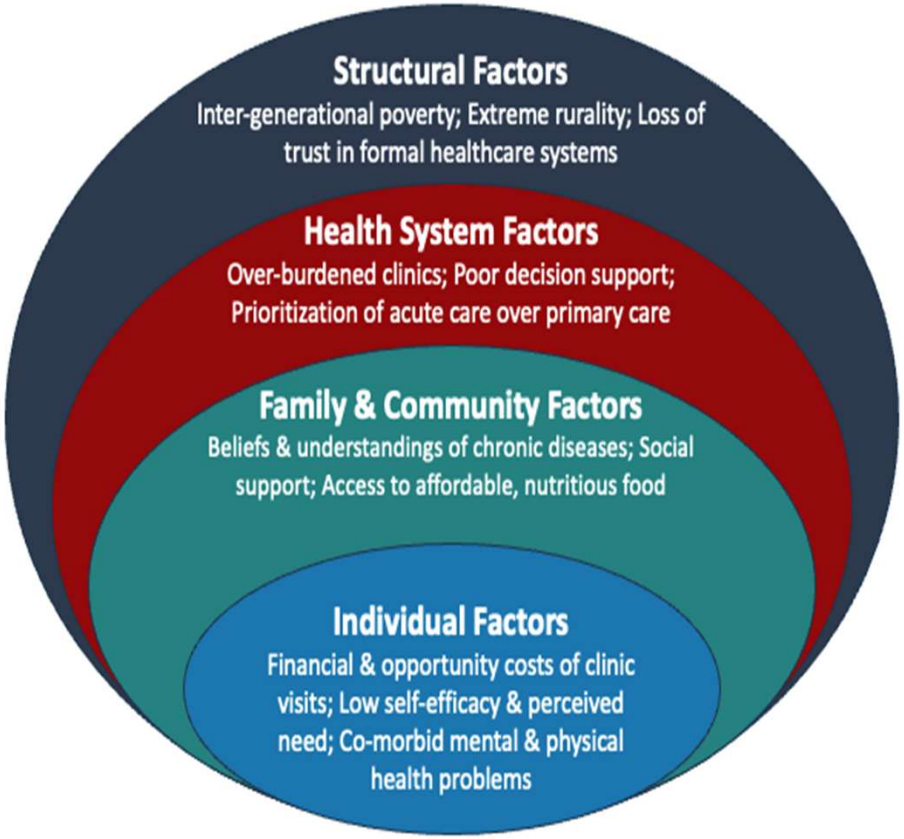
- **Integrating care did not diminish HIV control.**
- **But had modest effects on NCD disease control**

Kivuyo et al, Lancet, 2023

PLOS Medicine



Hickey et al, PLoS Med, 2025



Multidimensional intervention to address multiple barriers to care:

1. Empower individuals to measure their own blood pressure (self-empowerment)
2. Eliminate transportation costs/time for patients
3. Decongest clinics, decrease wait times and patient loads
4. Provide nurses with automated clinical decision support to minimize activation energy for medication titration

This was *not* easy

(it was real life, aka ”implementation science”)

Challenge #1

- **Community health worker labor dispute**
  - 3 months before study launch
  - DoH informs us that we are not permitted to work with current cadre of staff
- **Solution**
  - Partner with DoH to rapidly hire 30 “community blood pressure monitors”
    - Residents of same catchment areas to permit service to community
    - Same HR guidelines (high school diploma, able to walk miles/day)
  - Develop and implement training curriculum (to both sets of workers)

Challenge #2

- **Nationwide power outages**
  - Persistent through much of study period
  - Impacted power at clinics and cell phone towers
- **Solution**
  - Redesign architecture of mobile health platform
    - Allow offline access for CBPMs
  - Provide all clinic nurses with multiple SIM cards to “tower hop” and access BP control interface

Challenge #3

- **Destructive weather Oct 23**
  - Destroyed one of the recruitment clinics
  - Unpassable roads

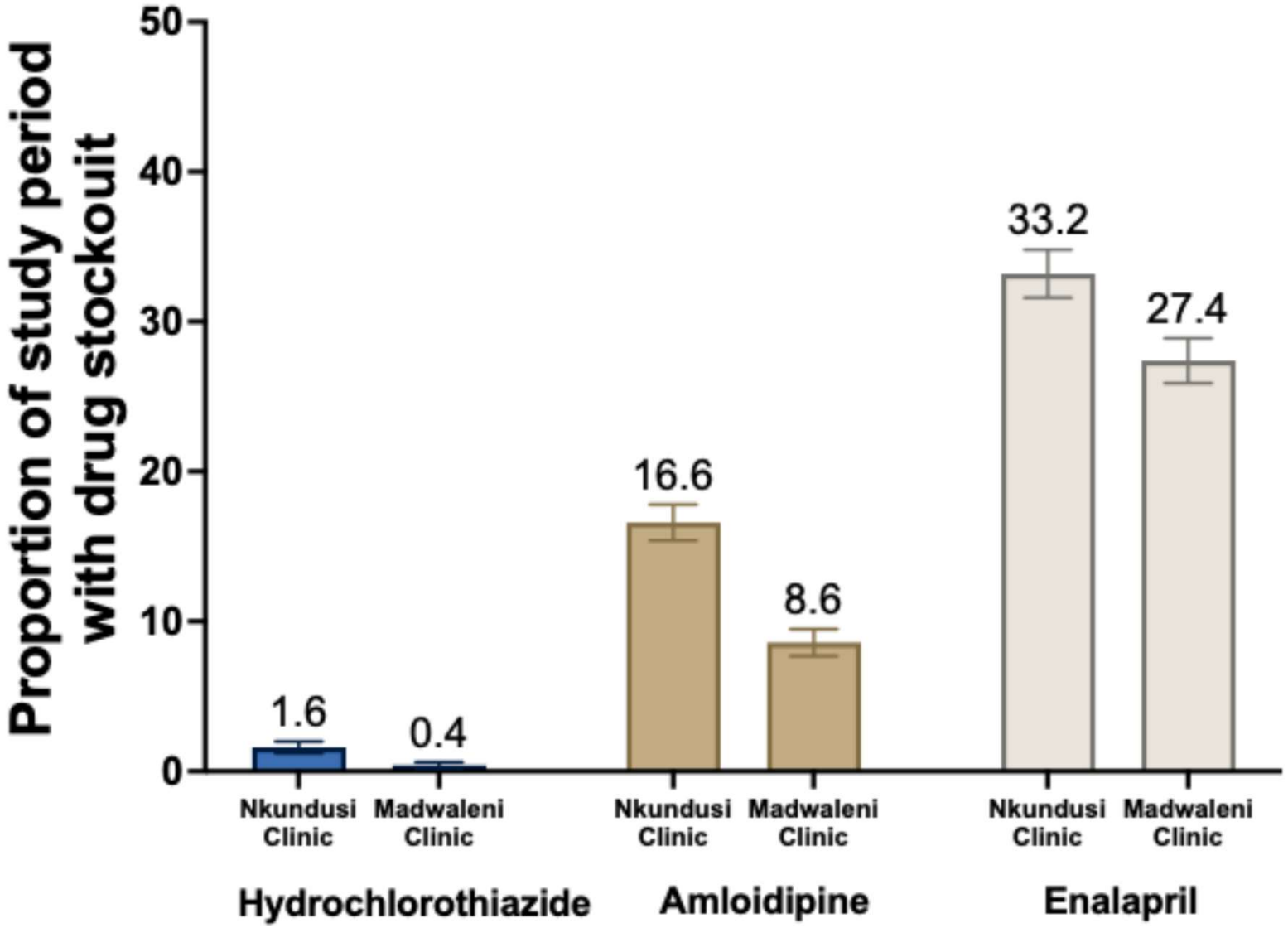
- **Solution**
  - Paused recruitment activities
  - Partnered with DoH on clinic repairs
  - Provided staff and CBPMs with “storm gear”

Challenge #4

- **Armed carjacking spree**
  - Three research vehicles at AHRI were victims
- **Solution**
  - Paused all study activities
  - AHRI hired a security company and instituted updated policy:
    - Limit field work to sedans (when roads passable)
    - All field vehicles work in pairs
    - 24-hour patrols
    - Staff panic buttons
  - Trainings for all staff on safety best practices

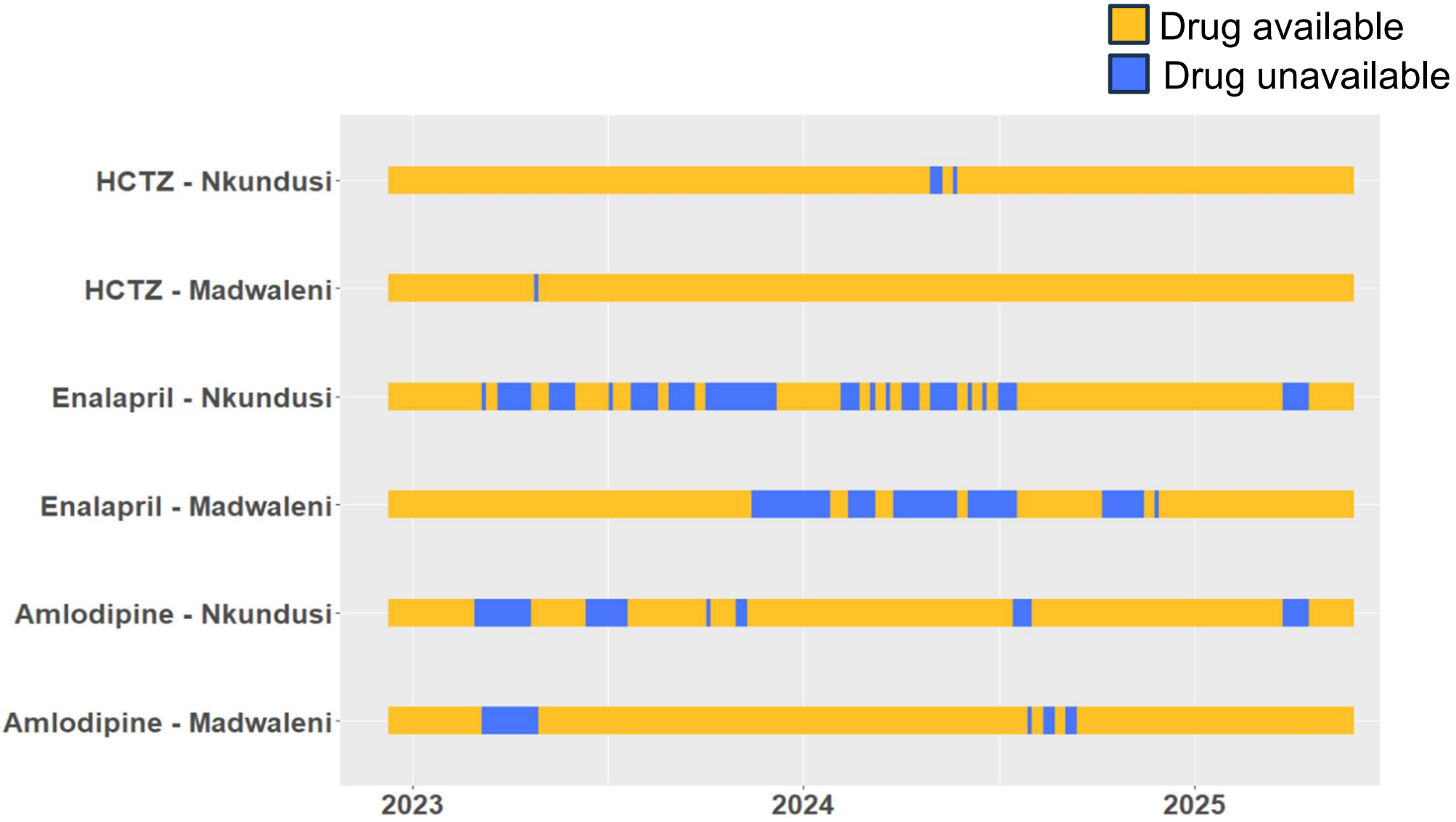
Challenge #5

- **Stockouts of all 3 medicines**



Challenge #5

- **Clinic stockouts of all 3 medicines**



Conclusions

- In a rural area of South Africa, we observed 8-10mm Hg reductions in systolic blood pressure and 30% improvements in blood pressure control with a community-based chronic disease care model

What’s Next?

Objectives of IMPACT-BP Study

✓ Aim 1

Design and determine the **acceptability and conduct a readiness assessment** for a community-based hypertension control program in rural KZN

✓ Aim 2

Conduct a randomized trial to determine the effectiveness of a community-based hypertension control program in rural KZN

Aim 3

Estimate the **fidelity, sustainability, acceptability, and cost-effectiveness** of community-based hypertension control program in rural KZN

Acceptability and Improvements

Type of interviews	Type of participant	Number of interviews
Focus Group Discussion	CHWs, study participants, HCWs	9
Key Informant Interviews	DOH province, district, clinic staff, study participants, study nurses	14

Patient Interviews

"The way my CHW treats me is like she is my daughter, as you were calling me yesterday, I was with her, she came to deliver medication, and she is very open, we talk a lot" **–Intervention Arm Participant**

CHW Interviews

"…we end up becoming social workers …you end up helping a person with a lot of things. One of my participants would even call me she is having problems with her kids and say she had a problem now I have to listen and advise her…" **–CHW**

HCW Interviews

"Because of AHRI and IMPACT-BP, my clinic used to be full all the time, but now it is better because they are helping me with my patients. None of my patients have had complications; they are well-managed, so I would love the study to continue. I have even seen on my graph statistics that I analyse every month, and I do not have CVA patients" **–Clinic Manager**

Fidelity

Fidelity measure	Target	Study Data	Policy relevance
Home BP monitoring frequency/month (mean/month)	30	30.5 (SD 26.9)	Verifies participant engagement and feasibility

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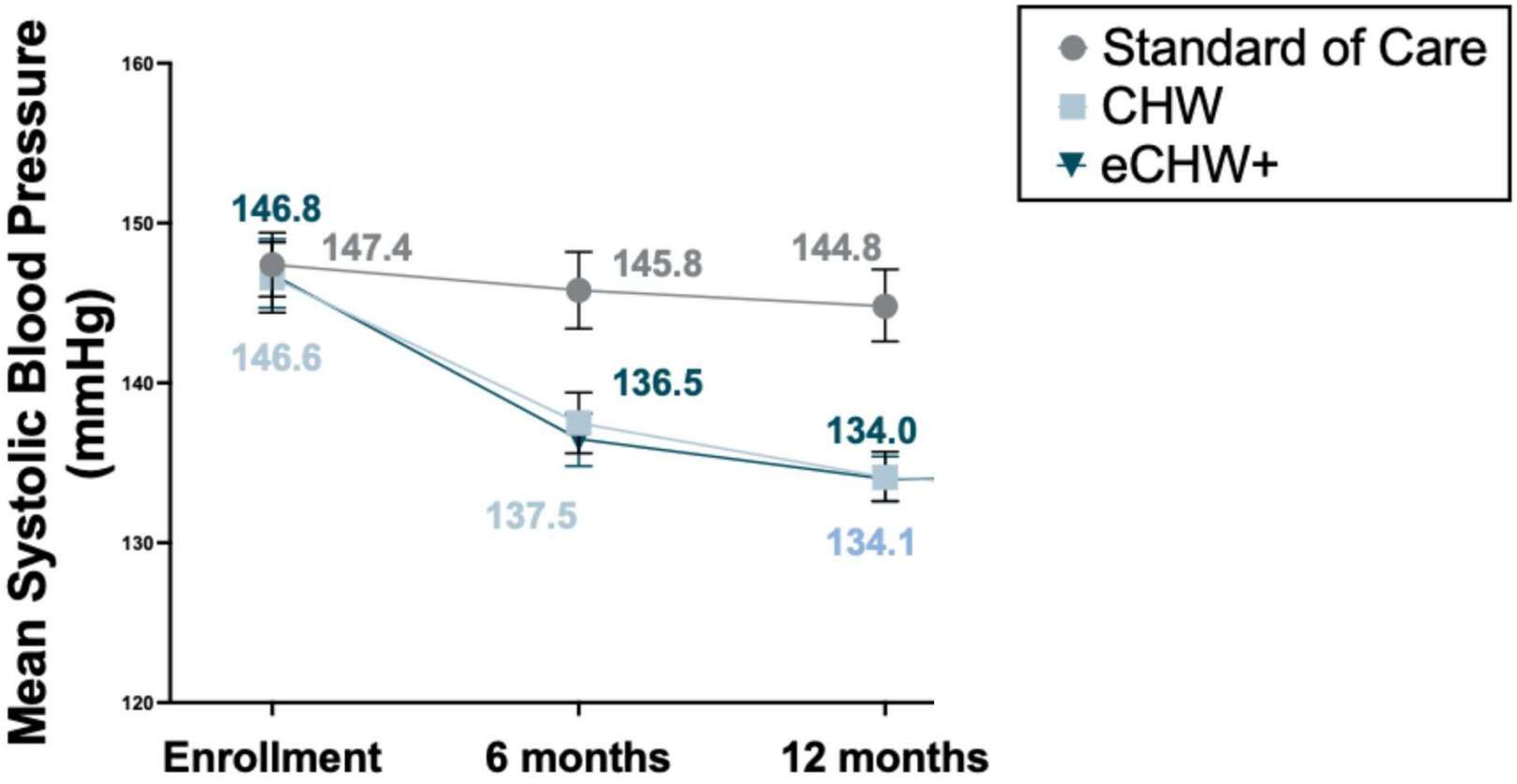
Medication delivery Time (mean days)	≤7 days	2.2 days (SD 2.9)	Efficient care coordination
Response to critical BP (>180/110)	≤2 days	2 days (SD 1.8)	Effective emergency response

Sustainability



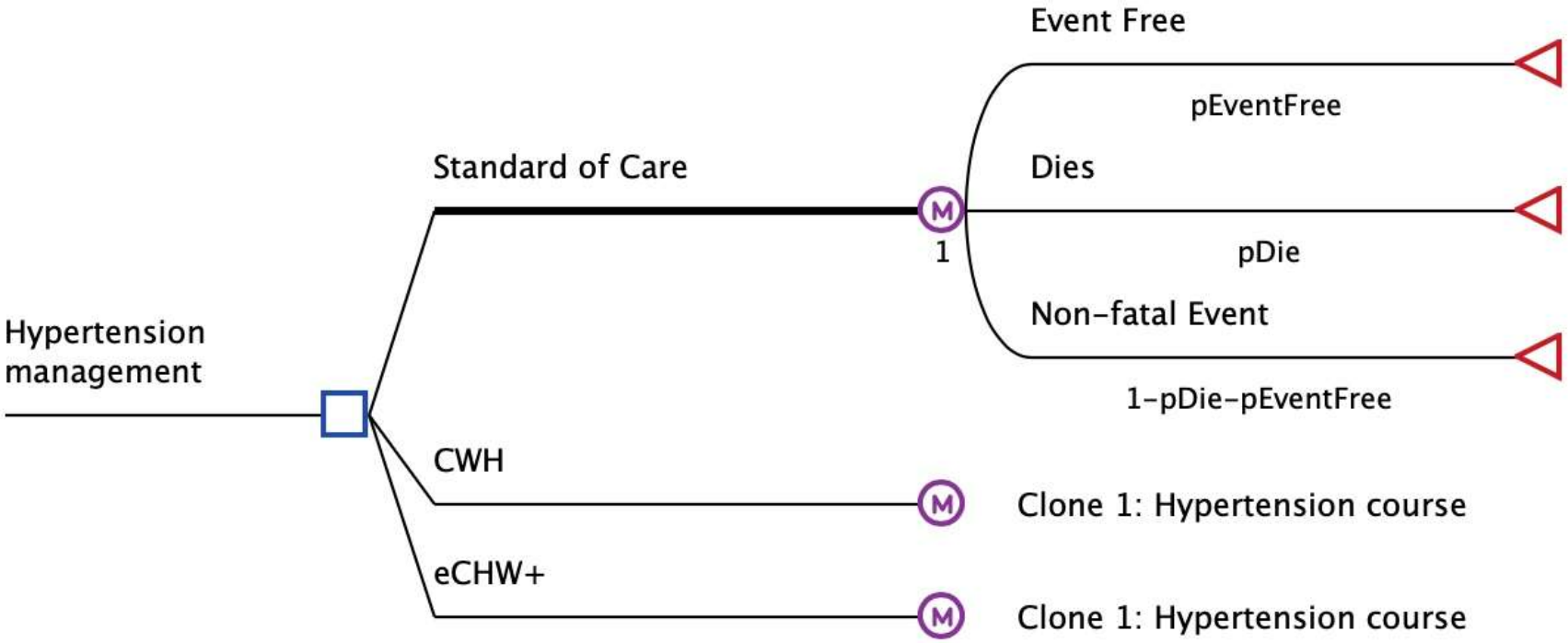
Cost and Cost Effectiveness

1. Estimating program cost and tradeoffs

Costs	Standard of Care	Intervention
Clinic staff time	$$$ (health system)	$
CHW time		$ (health system)
BP cuffs		$ (health system)
Transportation costs	$$$ (patient)	$ (patient)

Cost and Cost Effectiveness

2. Estimating lifetime cost-effectiveness



An example:

-if each 5 blood pressure cuffs costs around ($400) and prevents one stroke ($2,500 and 4 DALY lost)

Viljoen et al, Stroke, 2013

Future Directions

- **Expansion to multimorbidity care**
  - HIV and DM
- **Expansion of model to urban settings**
  - Fully automated BP monitoring system
  - Pharmacy pick-up/drop-off
- **Transportability (Rosebud, South Dakota)**

Thembile Khambule
IMPACT-BP CBPM

Acknowledments

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CBPMs

Fikile
Nompumelelo
Maboni
Phethile
Nothando
Sthembile
Fikile
Siphesihle
Thobile
Mphile
Nokukhanya
Silindile
Zanele

Manukuza
Mdhletshe
Mkhasibe
Zwane
Hlabisa
Makhunga
Manzini
Mathenjwa
Mlambo
Mthembu
Ngobese
Thethwayo
Tono

Nelisiwe
Thembile
Thuli
Lindiwe
Simangele
Zandile
Nokukhanya
Ayanda
Busi
Siphesihle
Jabu
Charity
Lindiwe

Ndwandwe
Khambule
Myeni
Tembe
Bukhosini
Ndlovu
Sibisi
Gumede
Mbuyazi
Mlambo
Ngwane
Hlatshwayo
Mkwanazi

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Kathy Baisley

Full text of published manuscript & appendices

RESEARCH SUMMARY

Home-Based Care for Hypertension in Rural South Africa

October 1, 2025 | DOI: 10.1056/NEJMdo008231

The NEW ENGLAND JOURNAL of MEDICINE

Home-Based Care for Hypertension in Rural South Africa

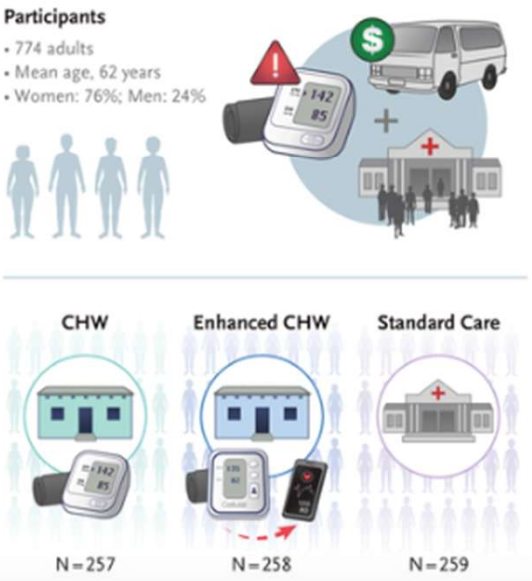
A Research Summary based on Siedner MJ et al. | 10.1056/NEJMoa2509958 | Published on September 1, 2025

WHY WAS THE TRIAL DONE?

Elevated blood pressure results in approximately 10 million deaths per year. Numerous low-cost, effective therapies are available, but poorly controlled hypertension is common — particularly in populations with structural barriers to health care, such as overcrowded clinics and transportation costs. Whether home-based blood-pressure management can improve outcomes in places with such barriers is unknown.

HOW WAS THE TRIAL CONDUCTED?

Adults in rural South Africa with uncontrolled hypertension were assigned to receive home-based care, enhanced home-based care, or standard, clinic-based care. Home-based care comprised patient monitoring of blood pressure, home visits from a community health worker (CHW) for data collection and medication delivery, and remote nurse-led decision making supported by a mobile application (CHW group). Enhanced home-based care was similar but used blood-pressure machines that transmitted readings directly to the nurses' mobile app (enhanced CHW group). The primary outcome was the systolic blood pressure at 6 months. Safety was also assessed.



Questions?

Thank you for your time and attention!

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