

# Integration of NCD Care into HIV Programs in South Africa:

Putting our money (and staff) where our needs are

Mark Siedner MD MPH

Africa Health Research Institute

Massachusetts General Hospital / Harvard Medical School

# Talk Summary

- Is there an NCD problem?
- What is the evidence for fixing the problem?
- If the problems are fixable, why aren't they fixed?
- What can be done?

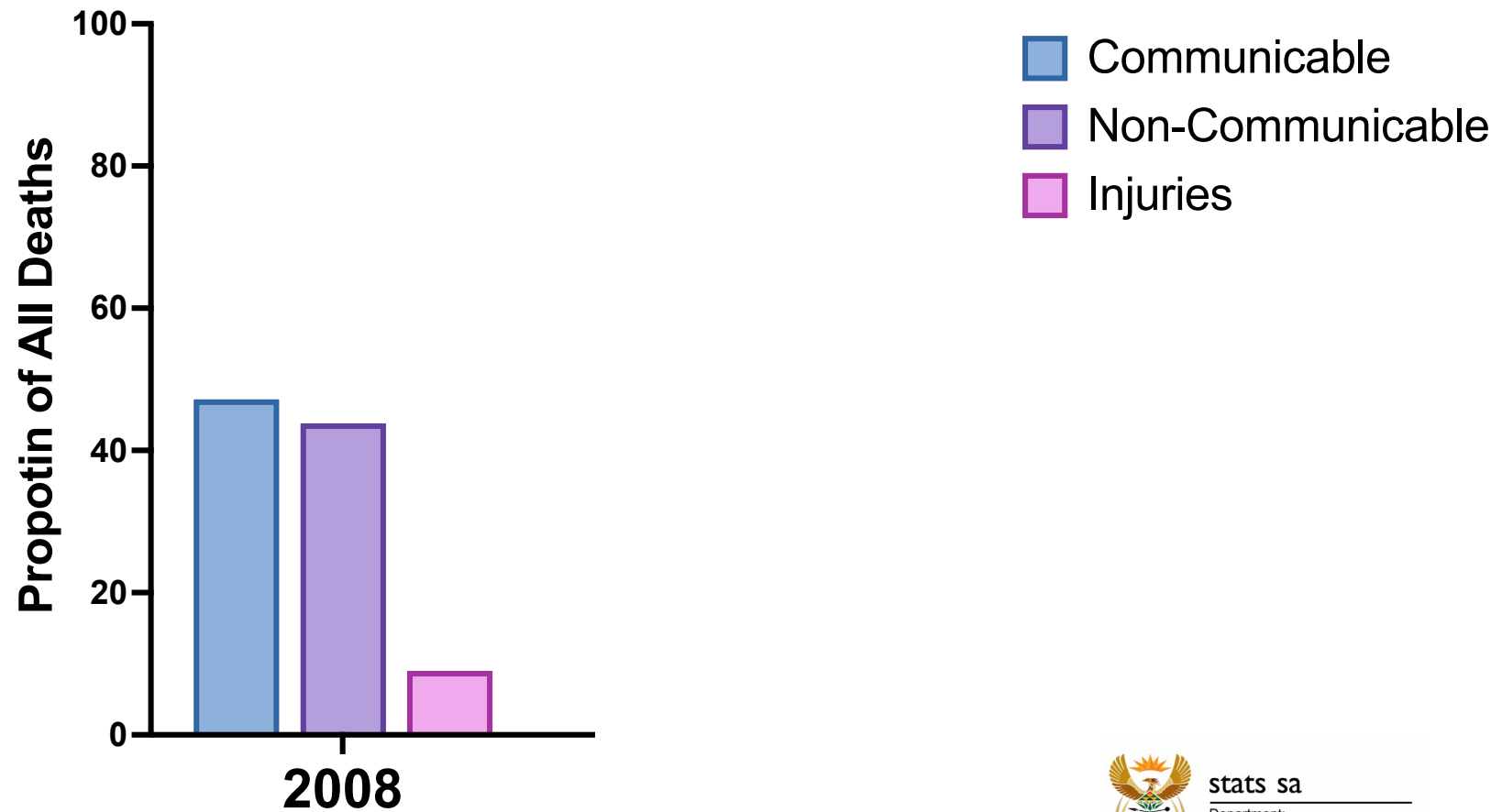
# What is the problem?

# Question 1.

True or false: HIV, tuberculosis and other communicable diseases remain the most common causes of death in South Africa?

- a. True
- b. False

## Leading Causes of Death in South Africa 2008 & 2018

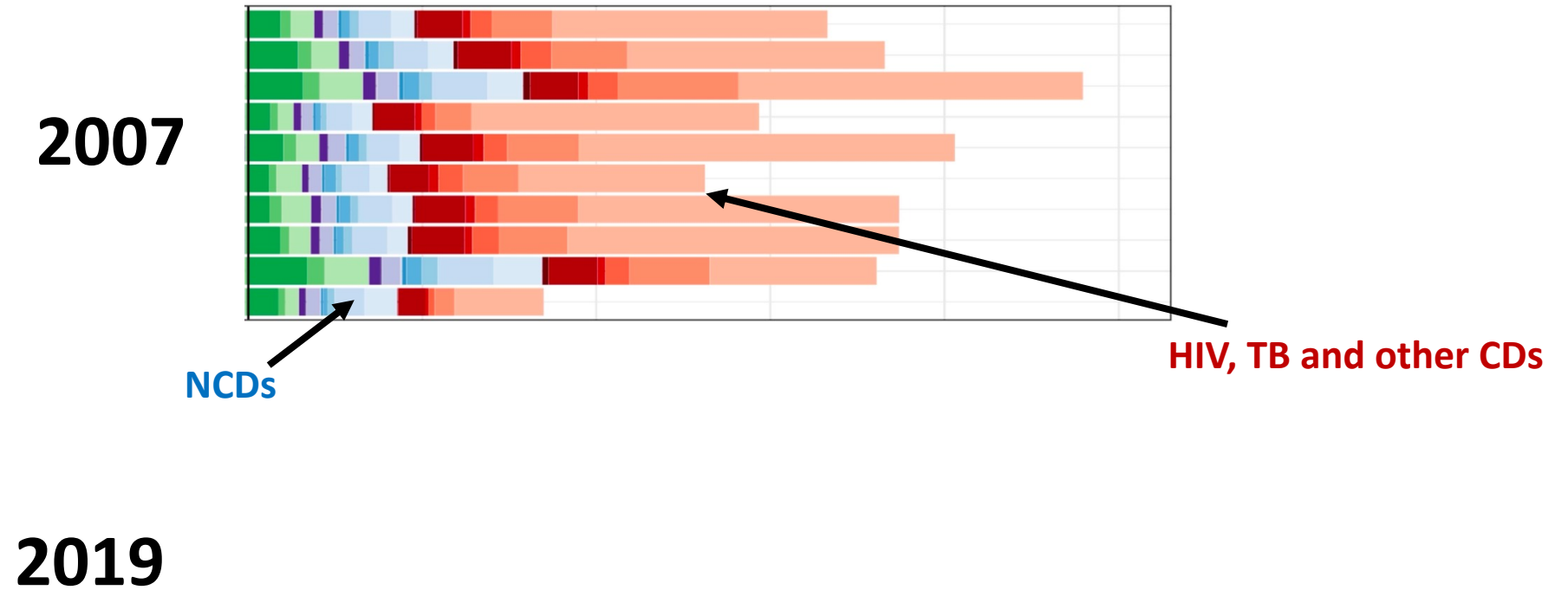


# Question 1.

True or false: HIV, tuberculosis and other communicable diseases remain the most common causes of death in South Africa?

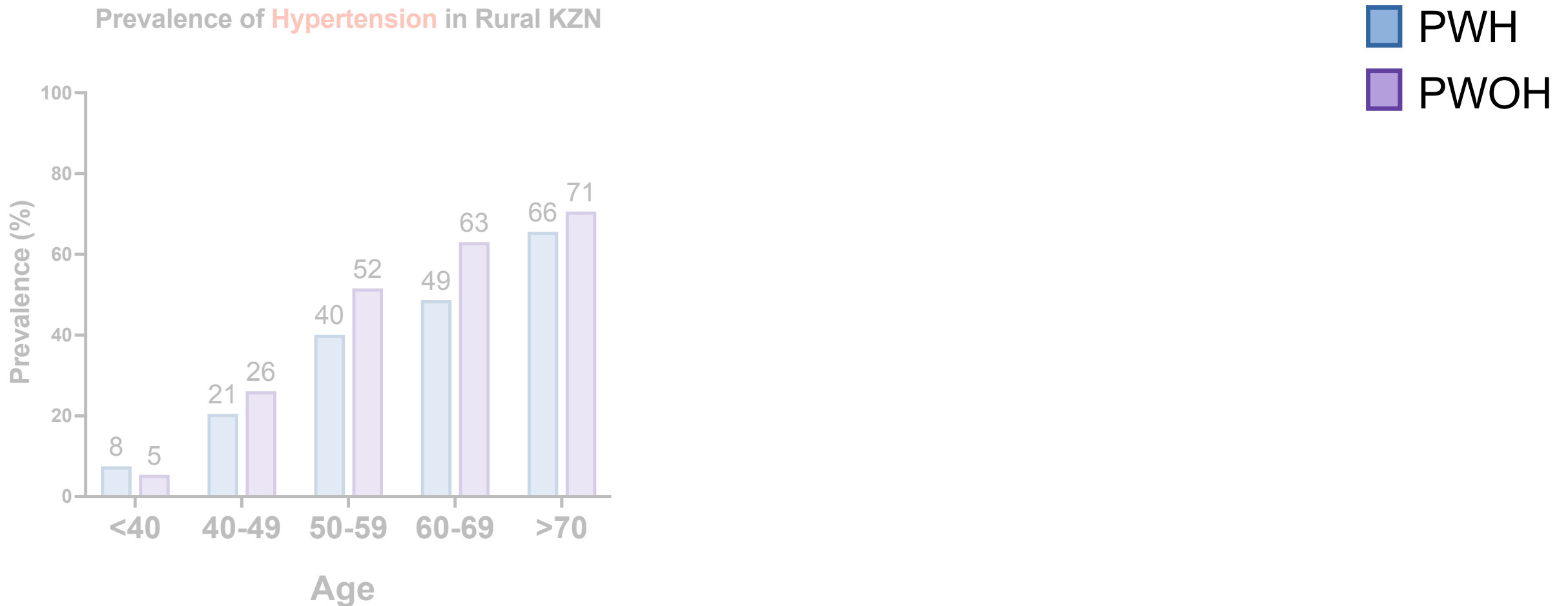
- a. True
- b. False**

# Years of Life Lost by Condition in South Africa



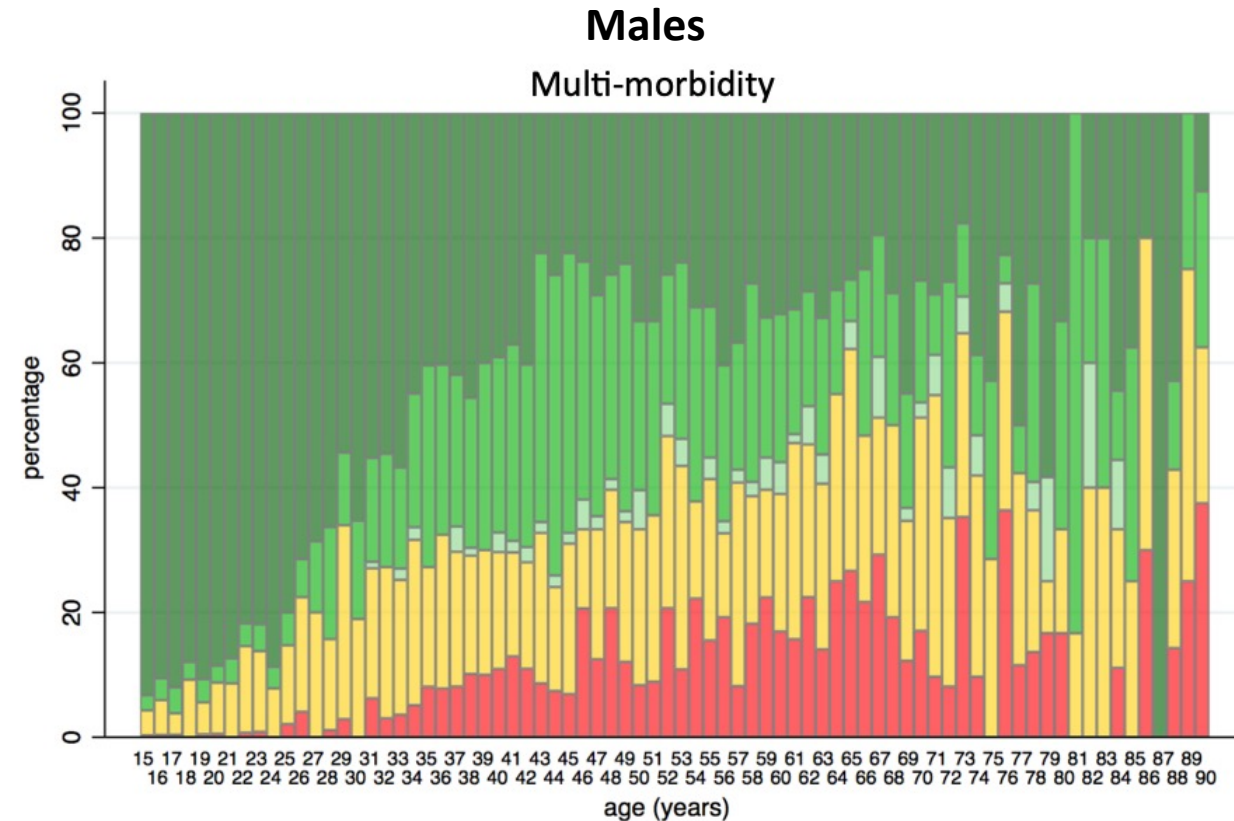
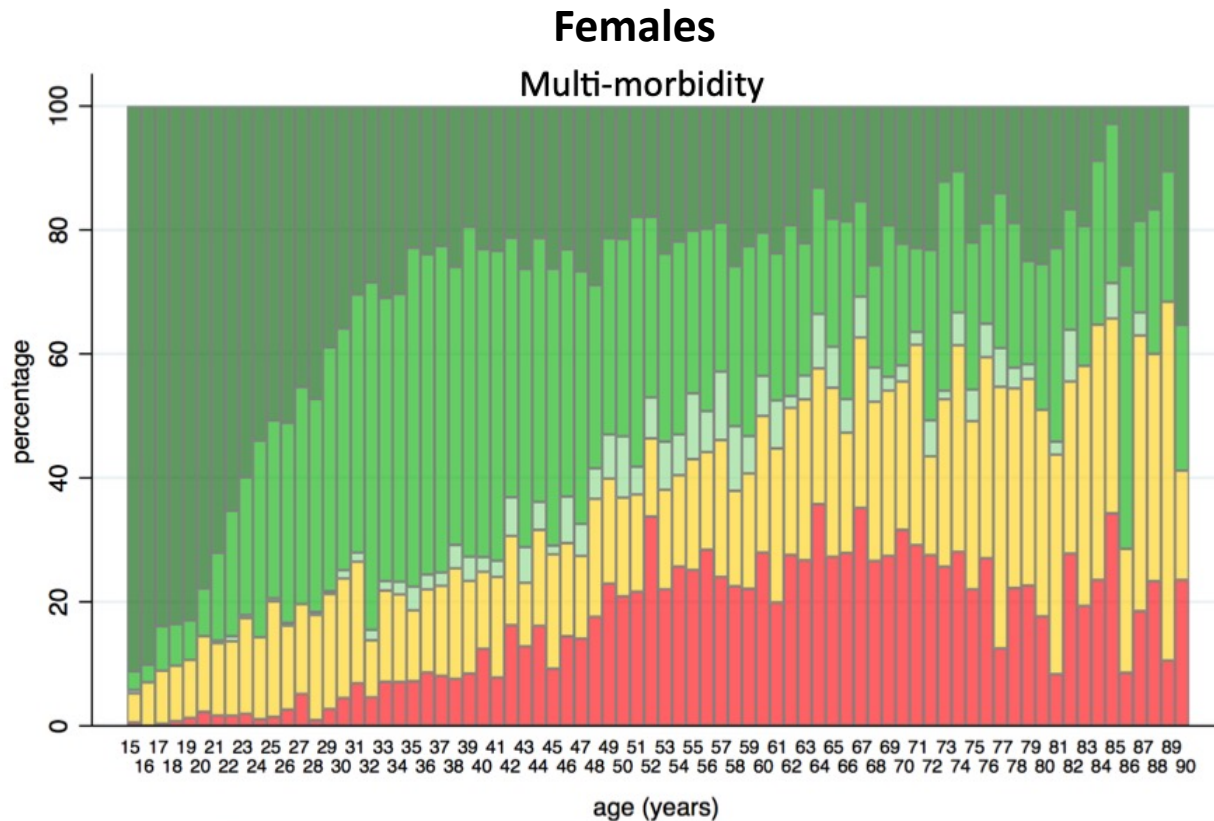
# Do people **with HIV** in SA *have* NCDs?

Prevalence of **Hypertension** in Rural KZN





# Do people **with HIV** in SA *have* NCDs?



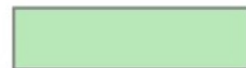
2+ uncontrolled diseases



1 uncontrolled disease



2+ controlled diseases



1 controlled disease

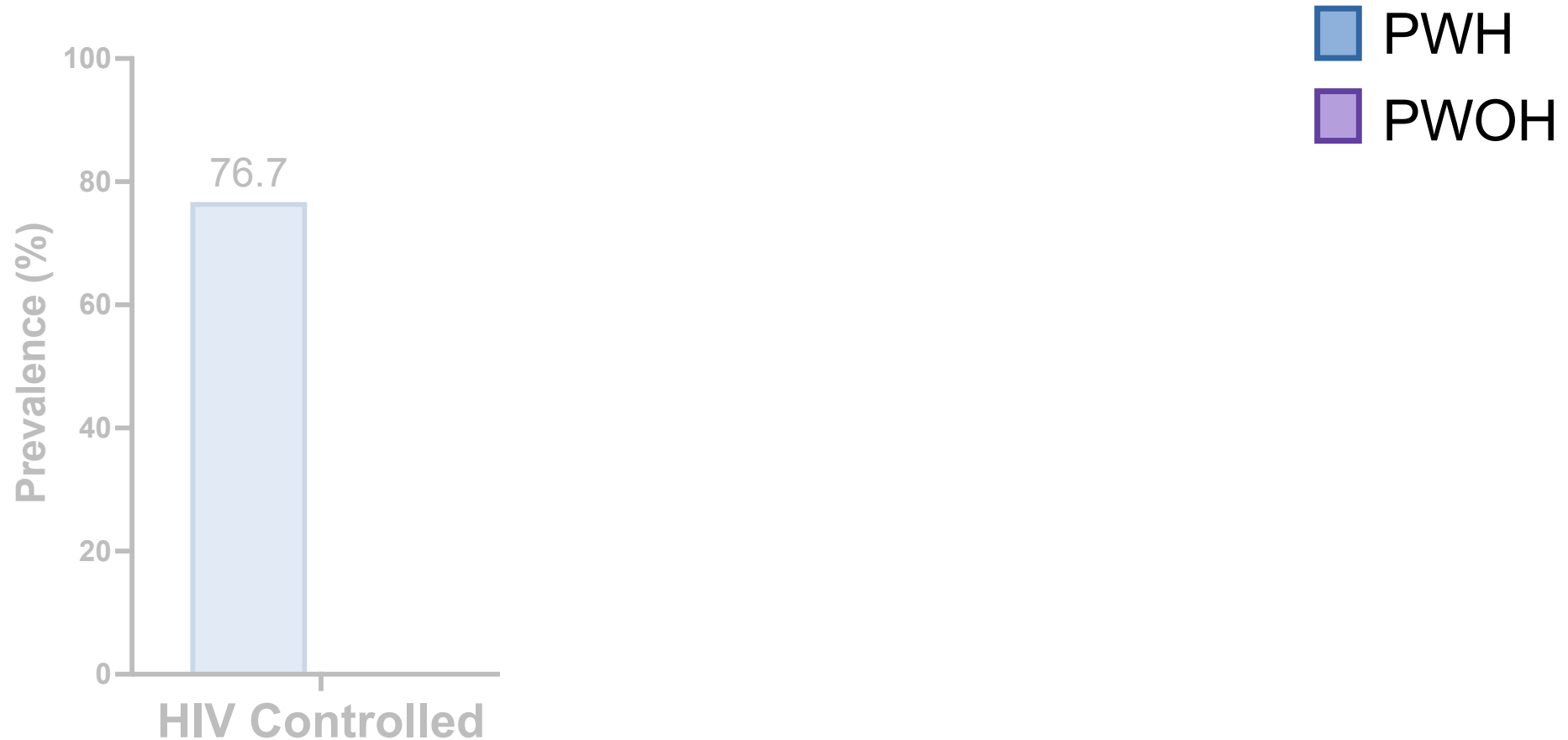


Healthy, no disease

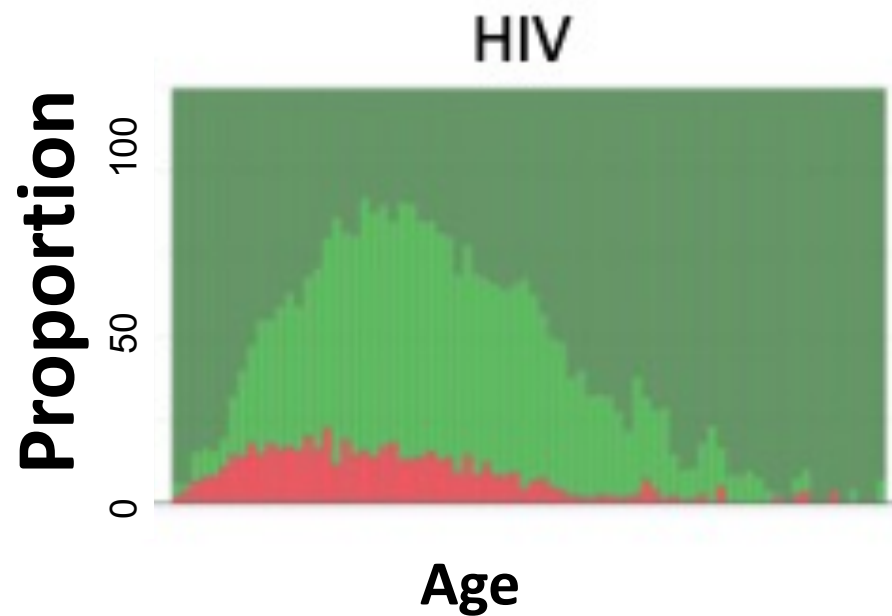


# Surely, their disease is well controlled...

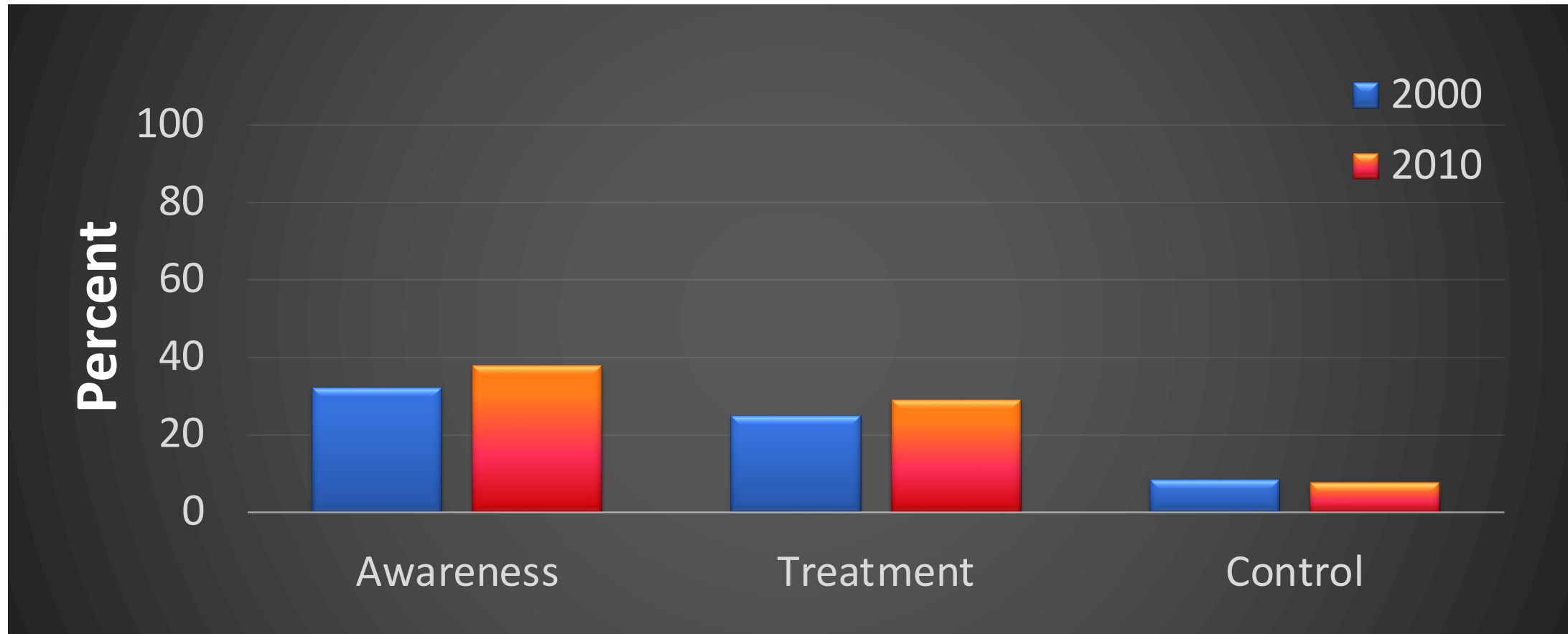
Prevalence of **Disease Control** in Rural KZN



# Surely, their disease is well controlled...



# But hypertension control is abysmal everywhere...



# Are people with HIV *dying of* NCDs **in SA?**

- We do not really know for sure
- There are few data on causes of death by HIV serostatus in the ART era
- But, we know that there is:
  - Increasing ART coverage
  - Declining HIV mortality and increasing life expectancy
  - Increasing NCD prevalence
  - Very poor NCD disease control
- It stands to reason that it is only a matter of time

# What is the problem?

- Aging population of people with HIV on ART
- Extremely high rates of NCDs (namely HTN, DM, and obesity)
- Very poor rates of NCD disease control

# What is the evidence for fixing the problem?

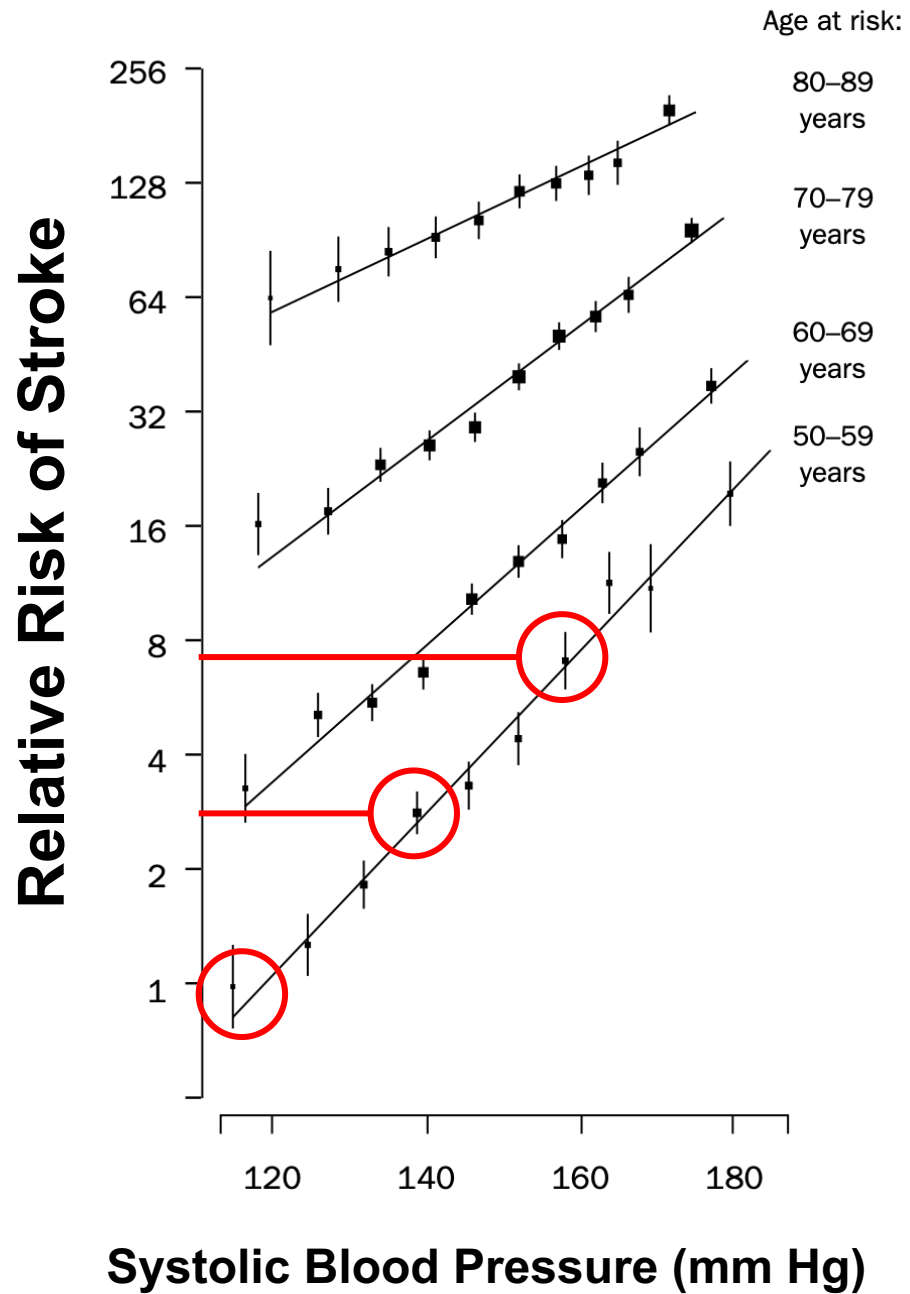
- Are higher blood pressures and hemoglobin A1c (or fasting glucose) associated with worse health outcomes?

## Question 2

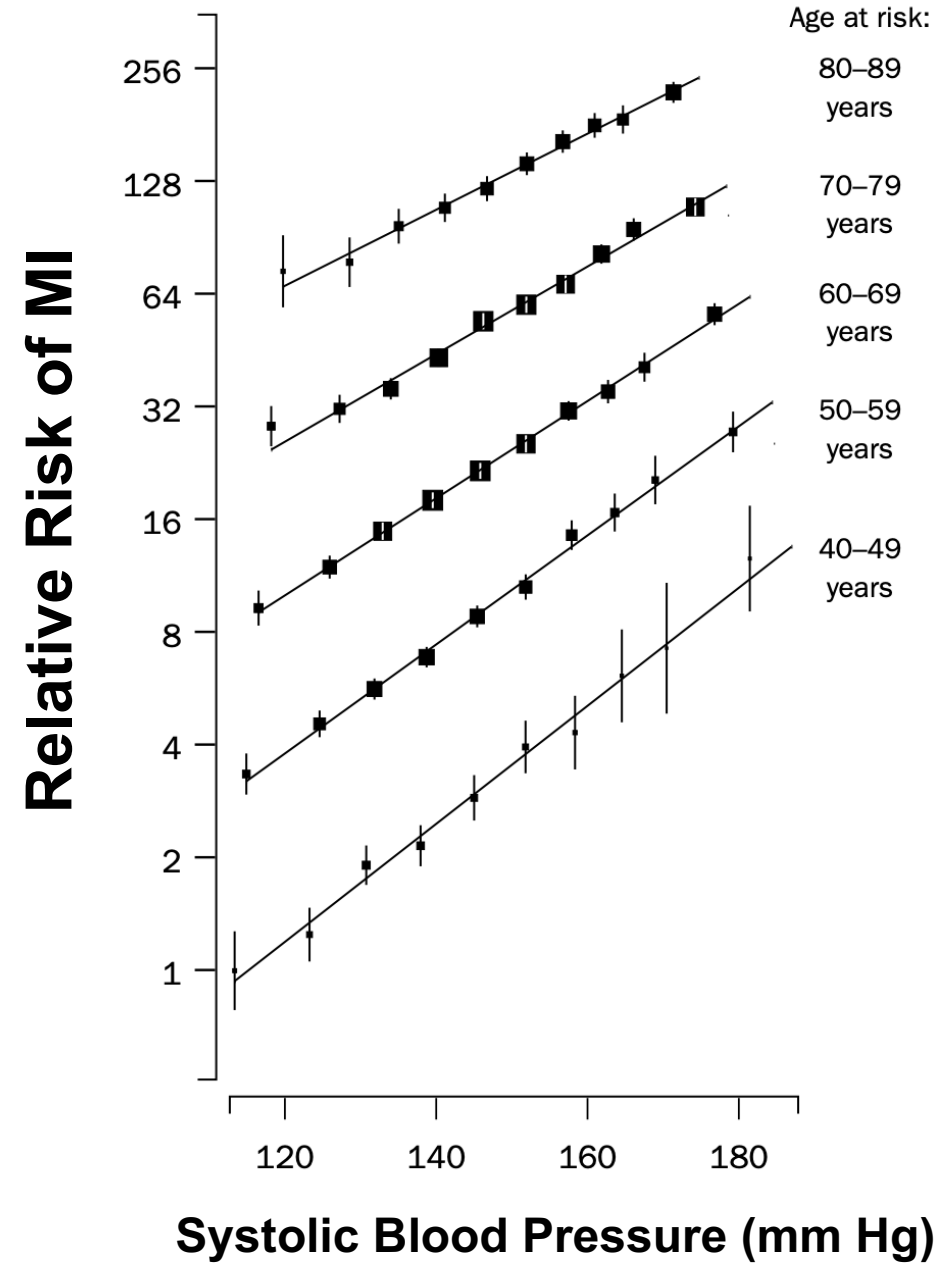
- Which of the following is true of blood pressure treatment:
  - a. Available blood pressure treatments do not work well to reduce blood pressure in people with HTN
  - b. Available blood pressure treatments work well to reduce blood pressure in people with HTN, but reducing blood pressure alone does not have much of an effect on health
  - c. Available blood pressure treatments work well to reduce blood pressure in people with HTN, and even modest reductions in blood pressure can significantly improve health



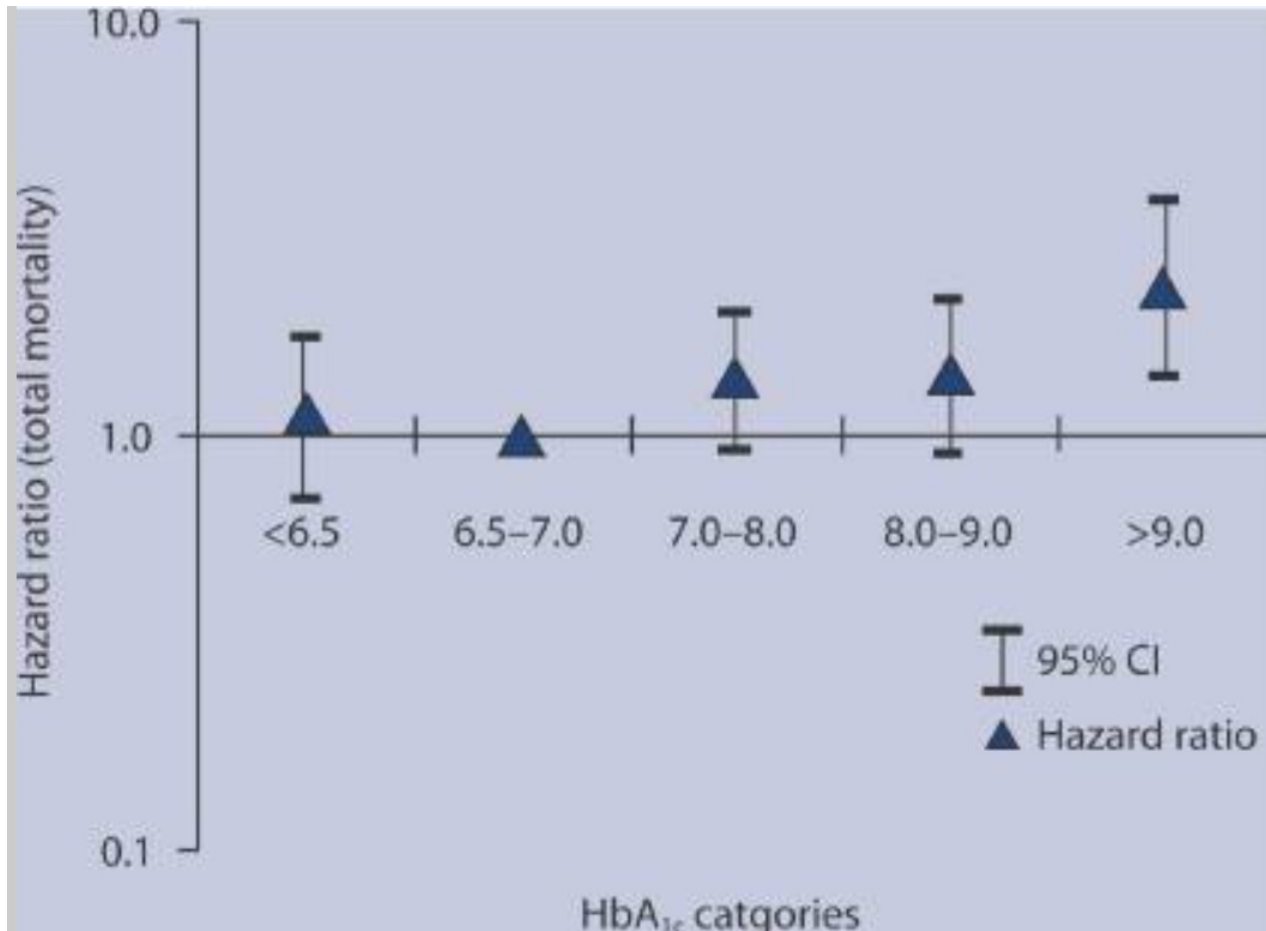
**A: Systolic blood pressure**



**A: Systolic blood pressure**



# Similar benefits for diabetes control

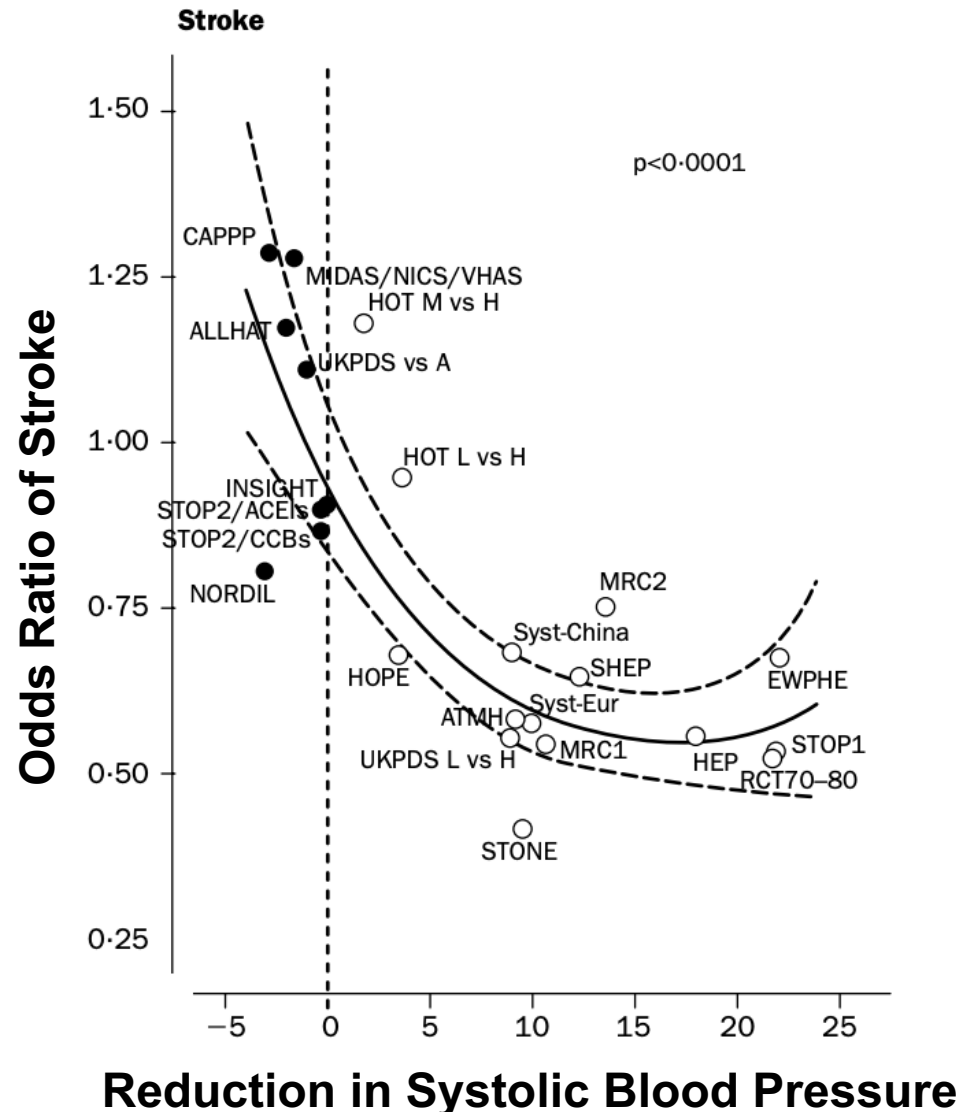


- **Each 1% HbA1c increase** associated with a **20% increase in** all-cause mortality

# What is the evidence for fixing the problem?

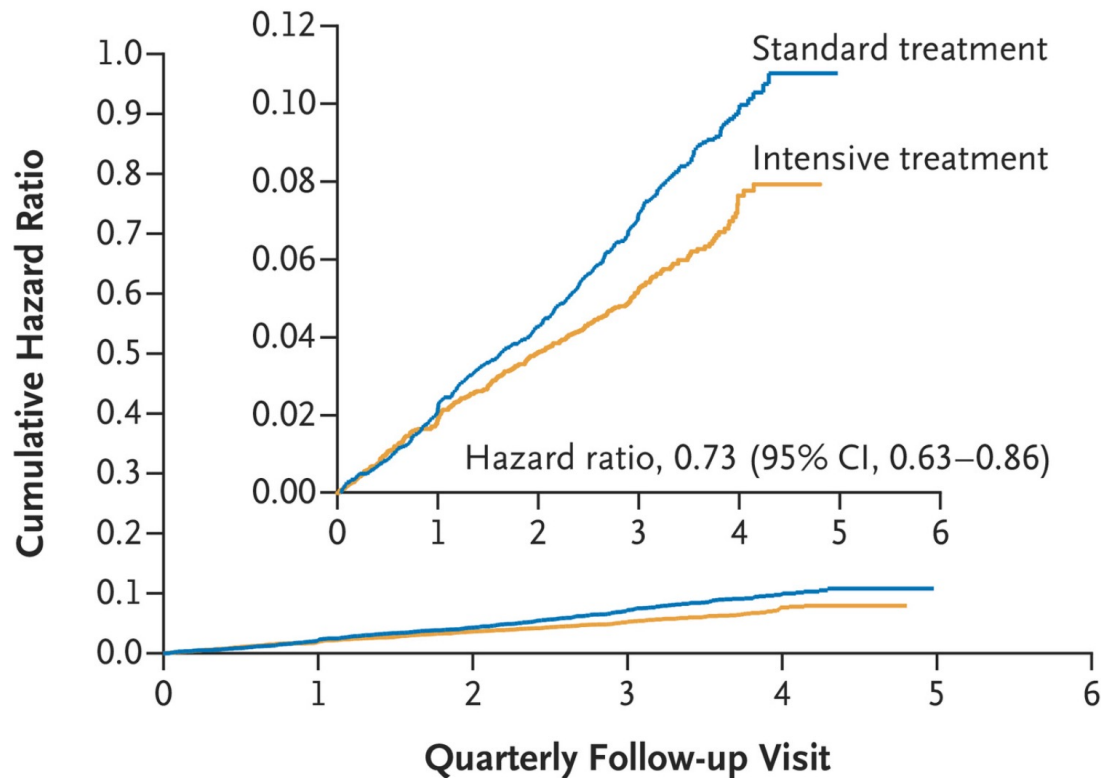
- Does therapy work to reduce those risks?

# Reductions in blood pressure and stroke risk



- **Each 5% reduction in BP** associated with a **25% reduced** odds of stroke

# Getting to 120mm Hg improves outcomes



- **27% reduced risk** of myocardial infarction, stroke, heart failure or death with more intensive blood pressure control (<120 vs <140)

## No. at Risk

Standard treatment	4683	4443	4247	2950	801	120
Intensive treatment	4678	4439	4275	3028	855	125

# ...And reduces mortality

Mean Achieved Systolic Blood Pressure, mm Hg	Hazard Ratio (95% CI)
Reduction to 120-124	
120-124 vs 125-129	0.74 (0.57-0.97)
120-124 vs 130-134	0.73 (0.58-0.93)
120-124 vs 135-139	0.79 (0.59-1.05)
120-124 vs 140-144	0.59 (0.45-0.77)
120-124 vs 145-149	0.71 (0.50-1.00)
120-124 vs 150-154	0.51 (0.36-0.71)
120-124 vs 155-159	0.49 (0.34-0.67)
120-124 vs $\geq 160$	0.47 (0.32-0.67)

**From 130:** 27% reduction in mortality

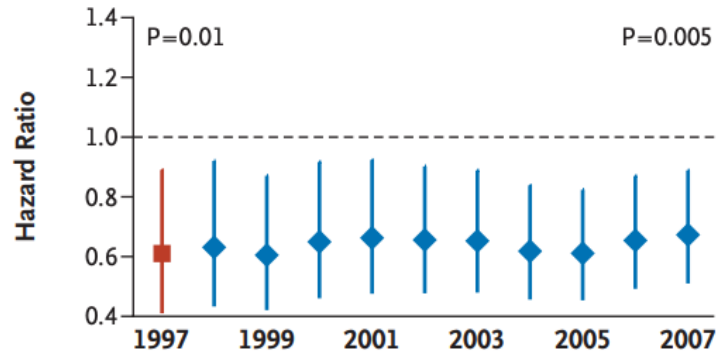
**From 140:** 41% reduction in mortality

**From 160:** 51% reduction in mortality

# Diabetes treatment also profoundly improves outcomes

Comparing dietary therapy with pharmacologic therapy (metformin)

D Myocardial Infarction

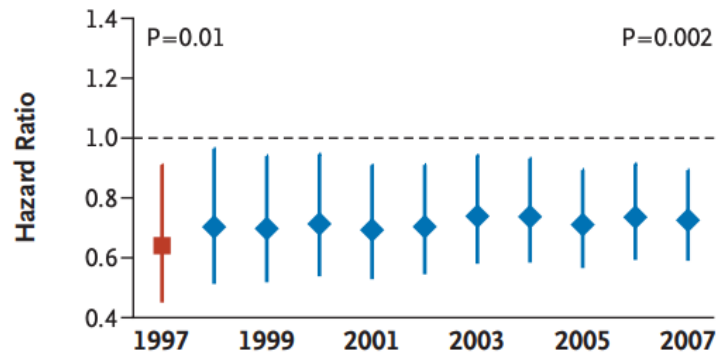


No. of Events

Conventional therapy	73	83	92	106	118	126
Metformin	39	45	55	64	68	81

~40% reduction in myocardial infarction

H Death from Any Cause



No. of Events

Conventional therapy	89	113	136	160	183	217
Metformin	50	70	86	110	123	152

~40% reduction in all-cause mortality

## Question 2

- Which of the following is true of blood pressure treatment:
  - a. Available blood pressure treatments do not work well to reduce blood pressure in people with HTN
  - b. Available blood pressure treatments work well to reduce blood pressure in people with HTN, but reducing blood pressure alone does not have much of an effect on health
  - c. **Available blood pressure treatments work well to reduce blood pressure in people with HTN, and even modest reductions in blood pressure can significantly improve health**



# What is the evidence for fixing the problem?

- Reducing blood pressure and hyperglycemia in people with hypertension and diabetes results in significant reductions in morbidity and mortality
- Available therapies in South Africa (e.g. amlodipine, hydrochlorothiazide, ACE inhibitors, metformin) are effective at improving those indicators

# **If the problems are fixable, why aren't they fixed?**

# A little bit of history

UNAIDS REPORT | 2011

## Chronic care of HIV and noncommunicable diseases

HOW TO LEVERAGE THE HIV EXPERIENCE

# A little bit of history

## SHARED BARRIERS AND CHALLENGES FOR HIV AND NONCOMMUNICABLE DISEASES

	HIV	Diabetes	Cardio-vascular diseases	Chronic lung disease	Cancer	Mental disorders
Demand-side barriers	+	+	+	+	+	+
Inequitable availability	+	+	+	+	+	+
Shortages of health workers	++	++	++	++	++	++
Lack of adherence support	++	++	+	+	+	+
Inadequate infrastructure and equipment	+	+	++	++	++	+
Inconstant supplies of drugs and diagnostics	+	+	+	+	+	+
Missing linkage and referral systems	+	+	+	+	+	+
Need for engaging clients and the community	+	+	+	+	+	+
Stigma and discrimination	++	+			+	++

# Two proposed models

## Model 1

Integrate NCD care into HIV Clinics

### **Pros:**

- Effective care programs already established
- Smaller, more manageable

### **Cons:**

- Leaves out general population
- Perpetuates “siloing” of healthcare system
- Unclear of funding source (HIV program?)

## Model 2

Create chronic care clinics that  
treat HIV & NCDs

### **Pros:**

- Leverages HIV model to general population
- Enhanced health equity

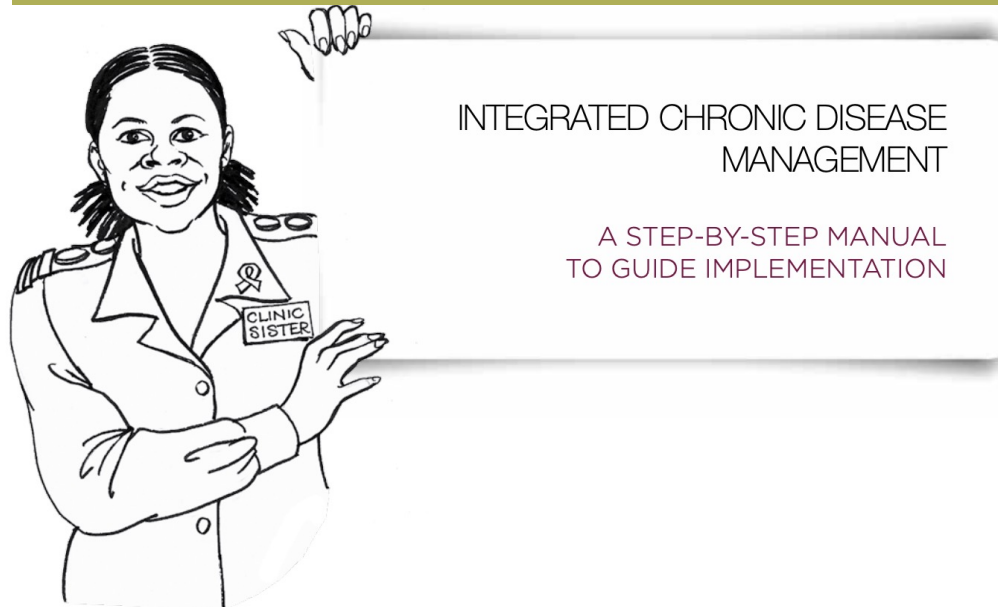
### **Cons:**

- Much more complex (and expensive) program
- Requires scalability of staff, resources, equipment, etc

# A little bit of history

2015

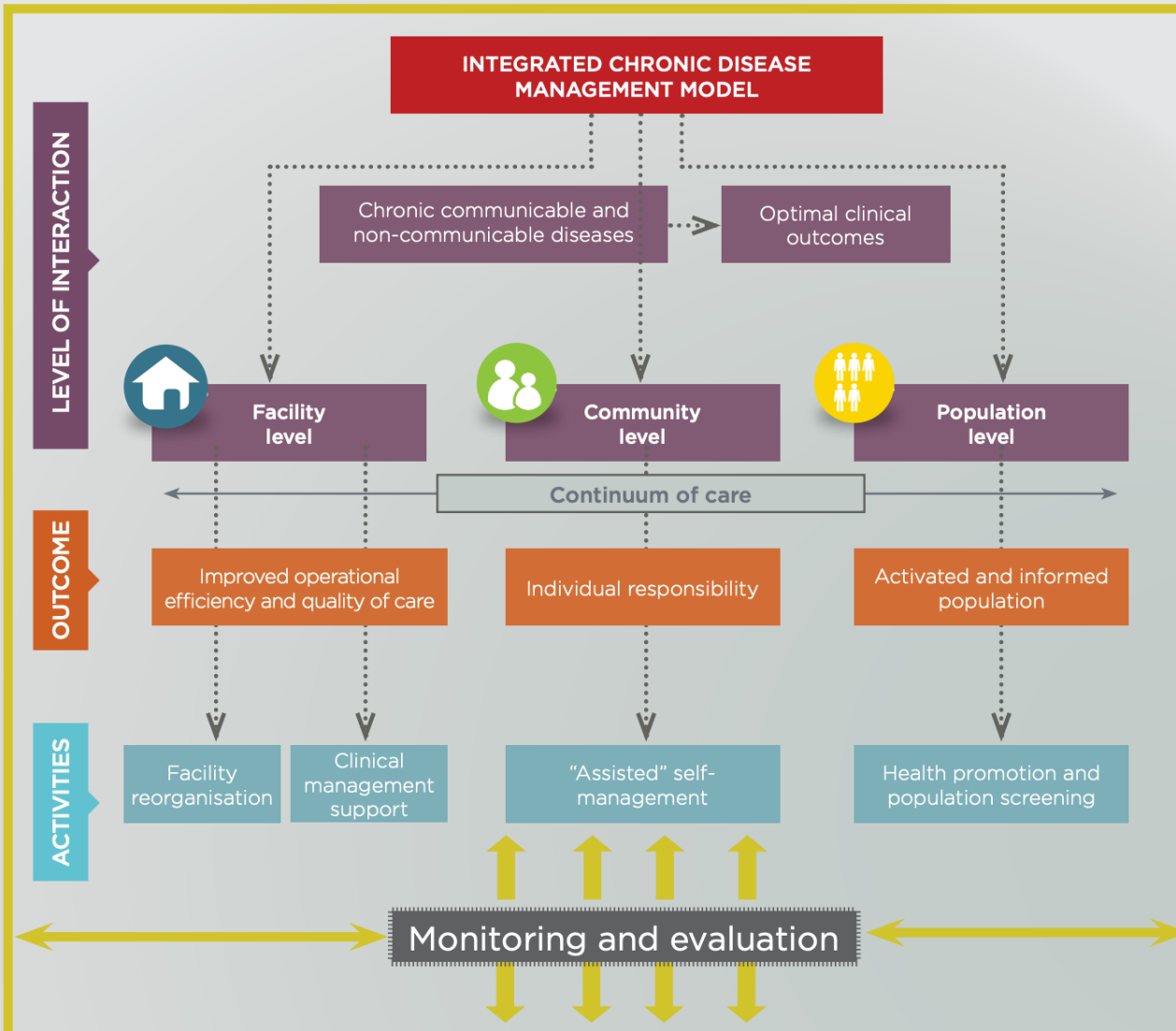
## INTEGRATED CHRONIC DISEASE MANAGEMENT Manual



## Conditions Covered

- HIV
- TB
- HTN
- DM
- Epilepsy
- Asthma/COPD
- Mental Health

National Department of Health, Republic of South Africa. Integrated Chronic Disease Management Manual, 2014. 2015. Available at: [http:// docplayer.net/3173205-Integrated-chronic-disease-management-manual.html](http://docplayer.net/3173205-Integrated-chronic-disease-management-manual.html).



### Provincial level

Adoption of the ICDM model	Development of district engagement plan	Establishment of ICDM task team and active participation	Leadership and oversight
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### District level

DISTRICT MANAGEMENT	DISTRICT PHARMACIST	DISTRICT CLINICAL SPECIALIST TEAM	REGIONAL TRAINING CENTRE	DISTRICT SUPPLY CHAIN
<ul style="list-style-type: none"> <li>Adopt ICDM as a strategy for the improvement of the quality of care at PHC level</li> <li>Ensure that the district annual performance plan and district health budgets are aligned to cater for ICDM</li> <li>Monitor the implementation of ICDM during district meeting</li> </ul>	<ul style="list-style-type: none"> <li>Review stock levels at each facility</li> <li>Updating of minimum stock levels</li> <li>Ensure good pharmacy practice at facilities</li> </ul>	<ul style="list-style-type: none"> <li>Mentoring of professional nurses and doctors</li> <li>Clinical audits</li> <li>Primary point of referral for complicated cases</li> </ul>	<ul style="list-style-type: none"> <li>Development of PC 101 training plan</li> <li>Capacitation of facility trainers on PC 101</li> <li>Supporting of facility trainers to conduct mop up training</li> </ul>	<ul style="list-style-type: none"> <li>Procurement of equipment as per the essential equipment list for each facility</li> <li>Procurement of pre-dispensing bags and labels for patients</li> </ul>

### Sub-district/local area manager/PHC supervisor

Supporting the operational	Escalating systemic	Progress monitoring
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# Problem solved?



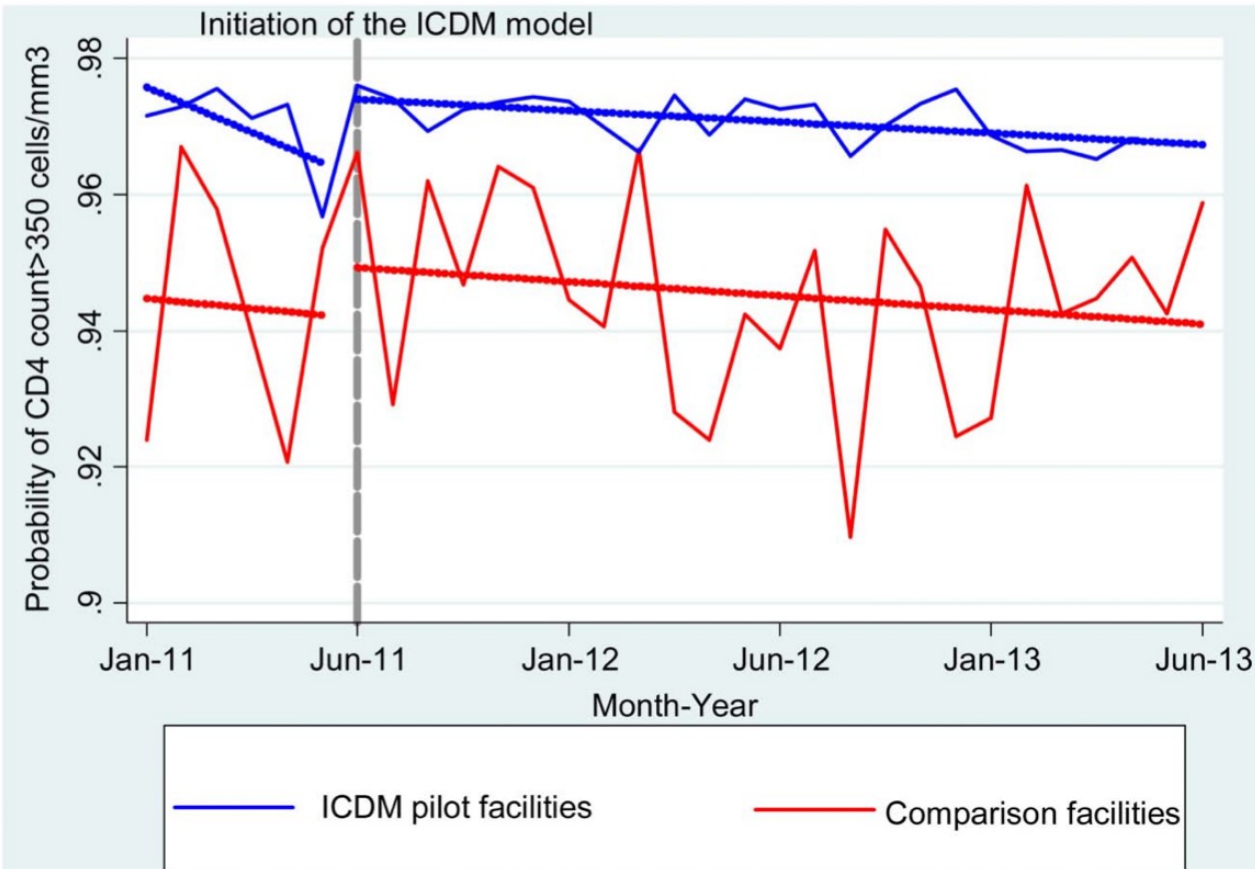
## Question 3

**In sub-Saharan Africa, integrated NCD/HIV programs have generally resulted in:**

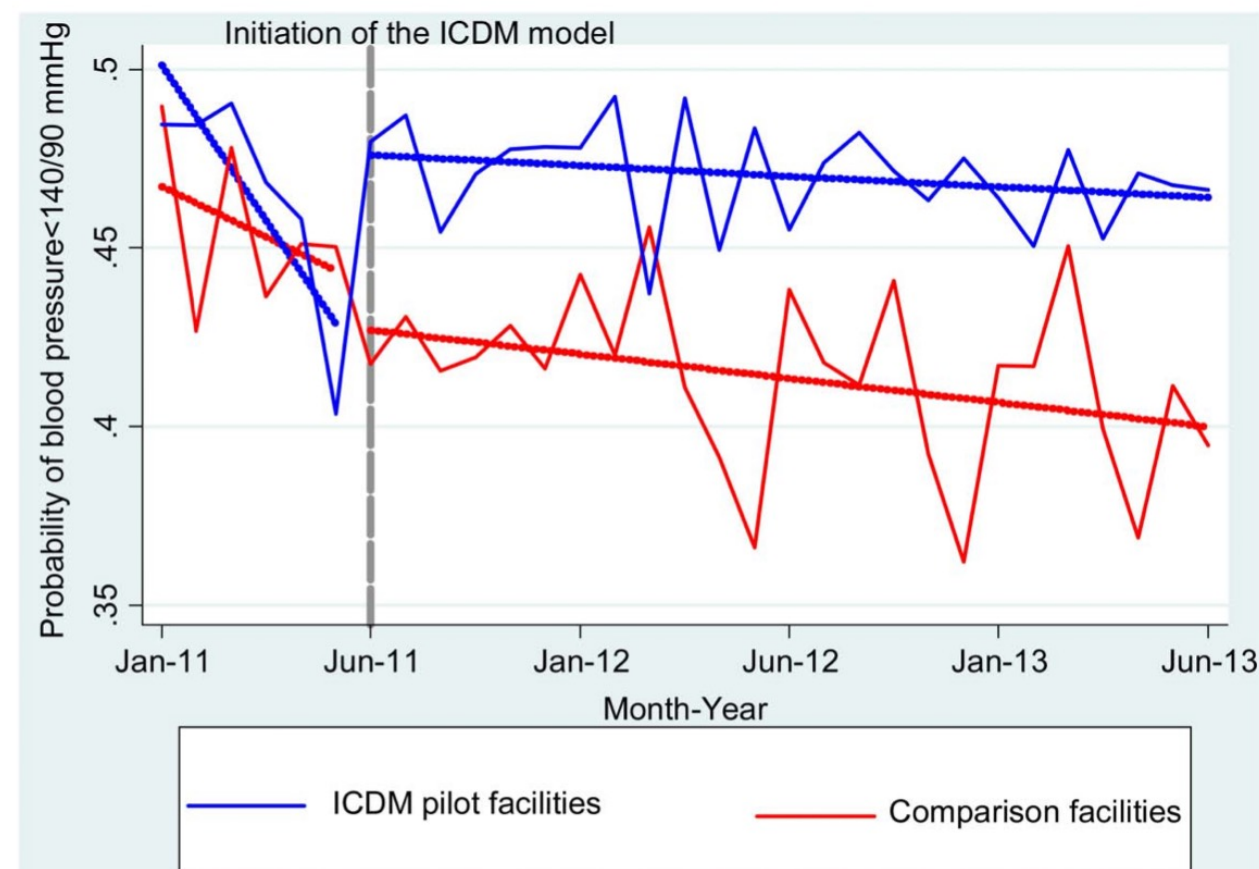
- a. Improvements in HIV and NCD care indicators
- b. Stable HIV care indicators and improved NCD care indicators
- c. Stable HIV care indicators and stable NCD care indicators (essentially no change)
- d. Worse HIV care indicators and worse NCD care indicators

# ICDM pilot in Mpumalanga, SA

## CD4 Count > 350

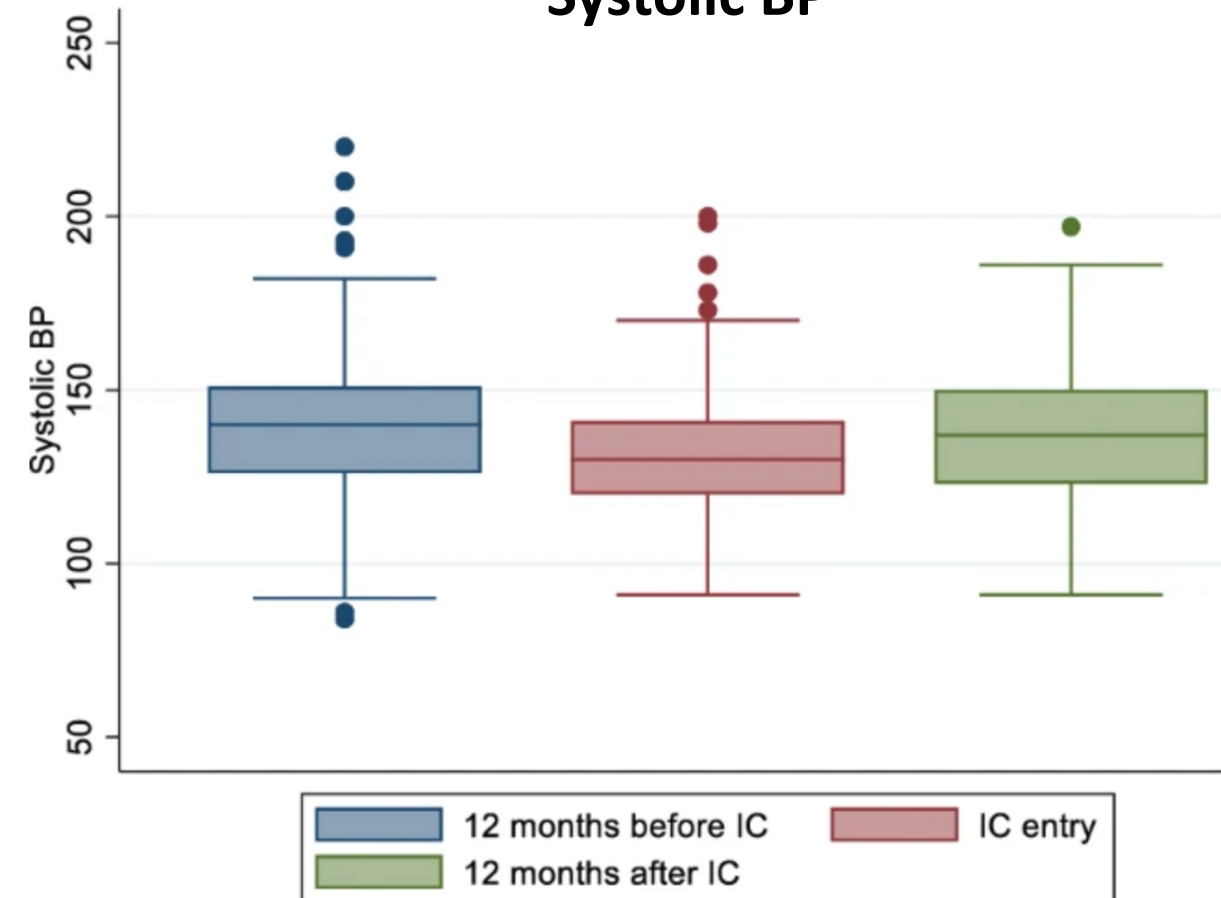


## BP < 140/90

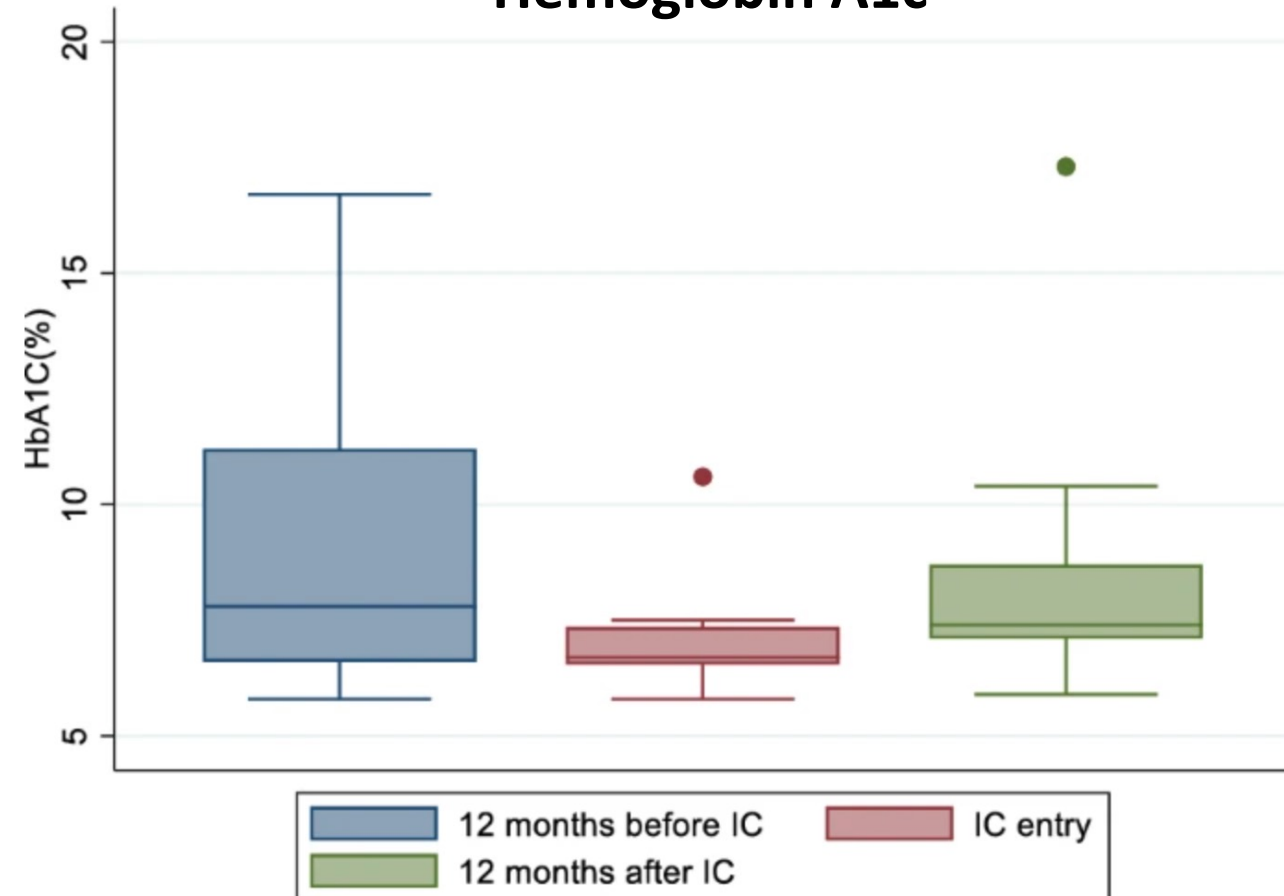


# Integrated care clubs in Cape Town, SA

Systolic BP



Hemoglobin A1c

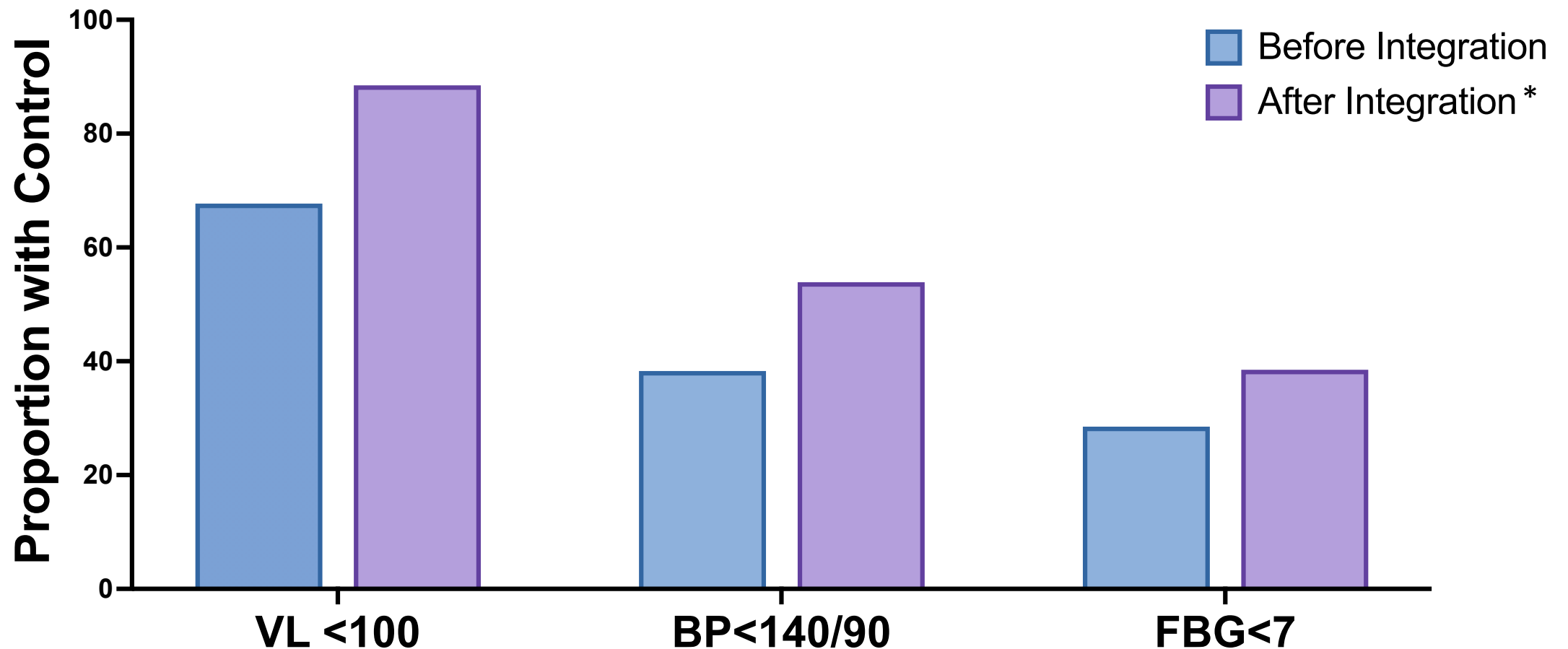


n=247

Gause et al, AIDS Res & Ther, 2021

# Integrated care model in Tanzania/Uganda

Disease Control Before vs After NCD/HIV Integration **Uganda/Tanzania**



\*Control after integration among those retained in care

Birungi et al, BMJ Open, 2021

## Question 3

**In sub-Saharan Africa, integrated NCD/HIV programs have generally resulted in:**

- a. Improvements in HIV and NCD care indicators
- b. Stable HIV care indicators and improved NCD care indicators
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# What seems to be the problem?

- Ask the audience

## Question 4:

**Which is the most significant reason why integrated care models have not resulted in substantial improvements in NCD and HIV care?**

- a. Insufficient training of HCWs to manage multiple conditions
- b. Lack of patient knowledge/support for NCD care management
- c. Twice the patients, similar health care staff
- d. Lack of reliable NCD care equipment (e.g. BP cuffs, FBS/A1c testing)
- e. Drug supply and stock issues
- f. All of the above
- g. Other

## Question 4:

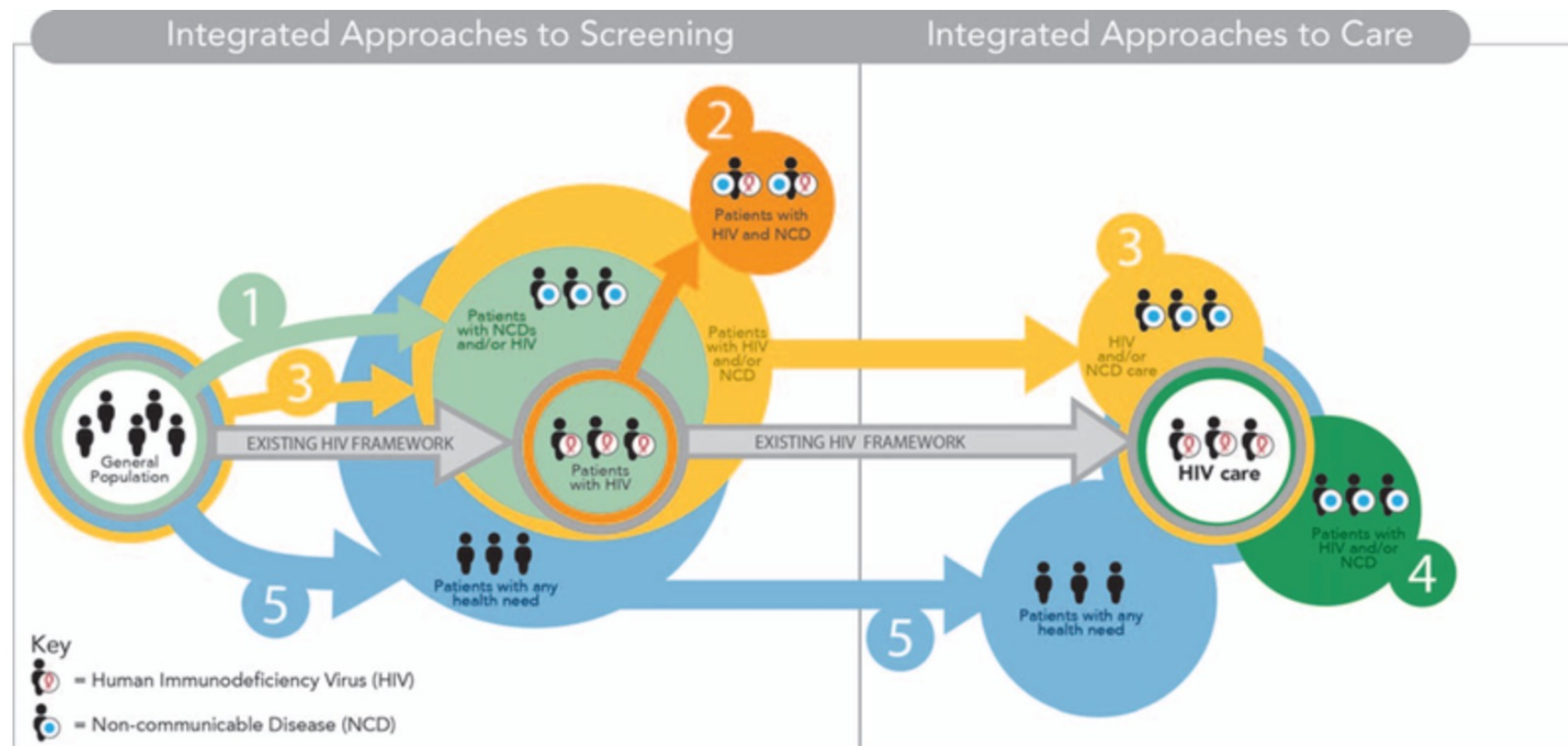
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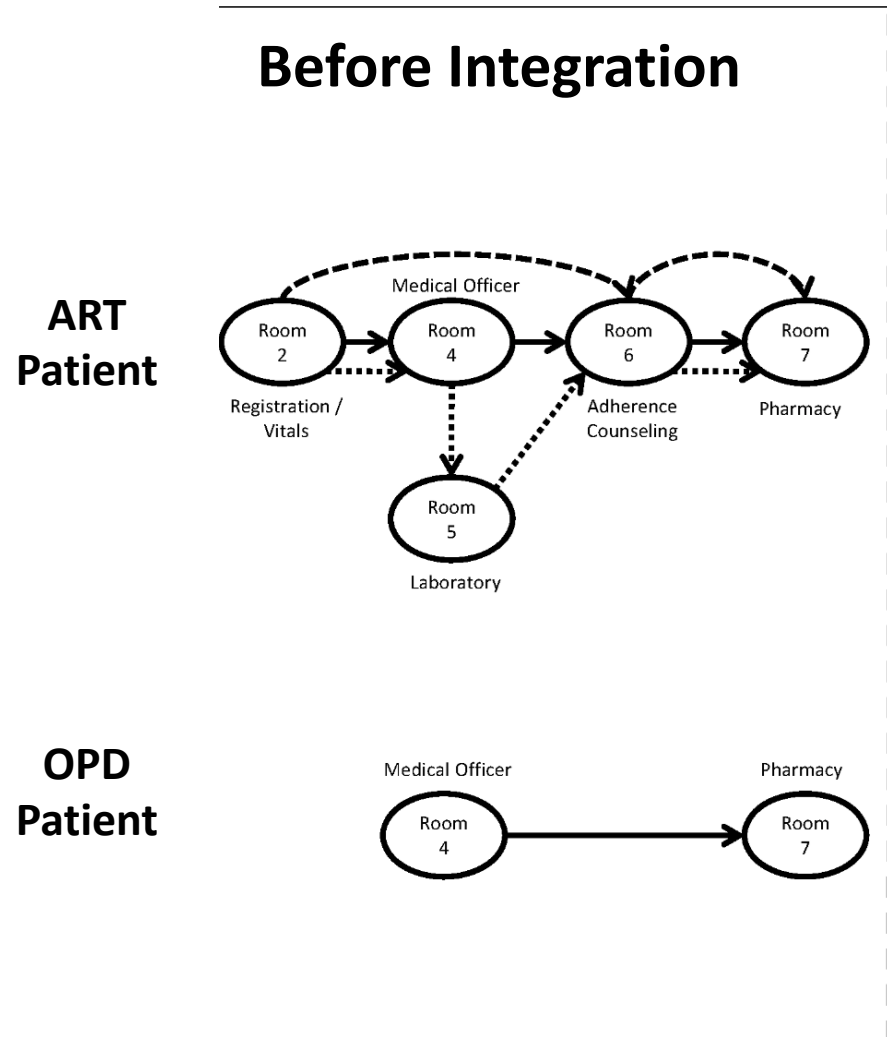


# This is a complex problem

Fig. 1.



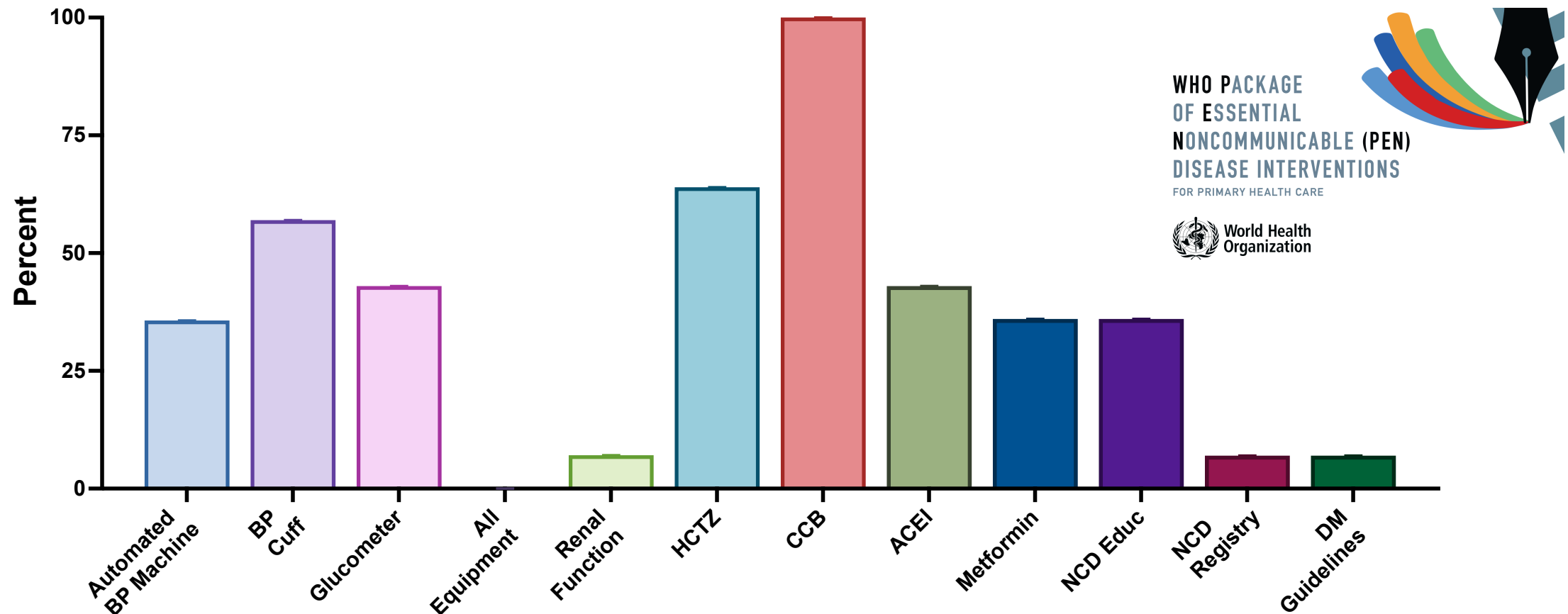
# Twice the patients, same staff...



**Estimated 30-40%  
increase in waiting  
times**

# You can't treat what you can't diagnosis

Availability of NCD Care Infrastructure in Primary Care Clinics in Uganda



# The full package for success

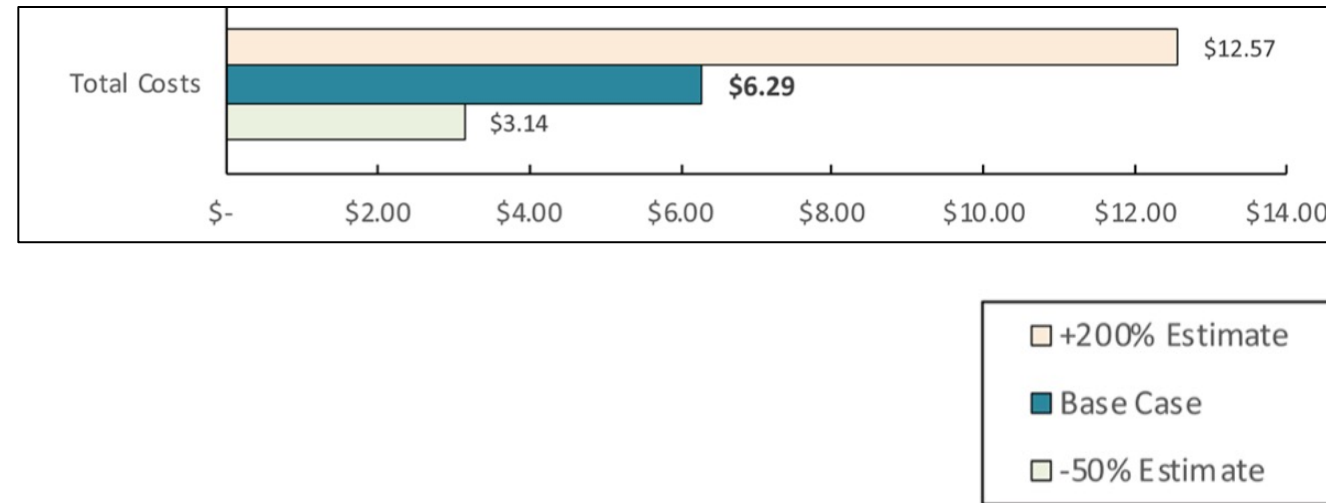
- Political commitment
- Service redesign (with promotion of clear guidelines)
- Strengthening capacity and expansion of the healthcare workforce
- Delivery of patient friendly education and care
- Data and monitoring and evaluation platform
- Resource gap analysis
- Support from multi-lateral organizations

# What about the money?

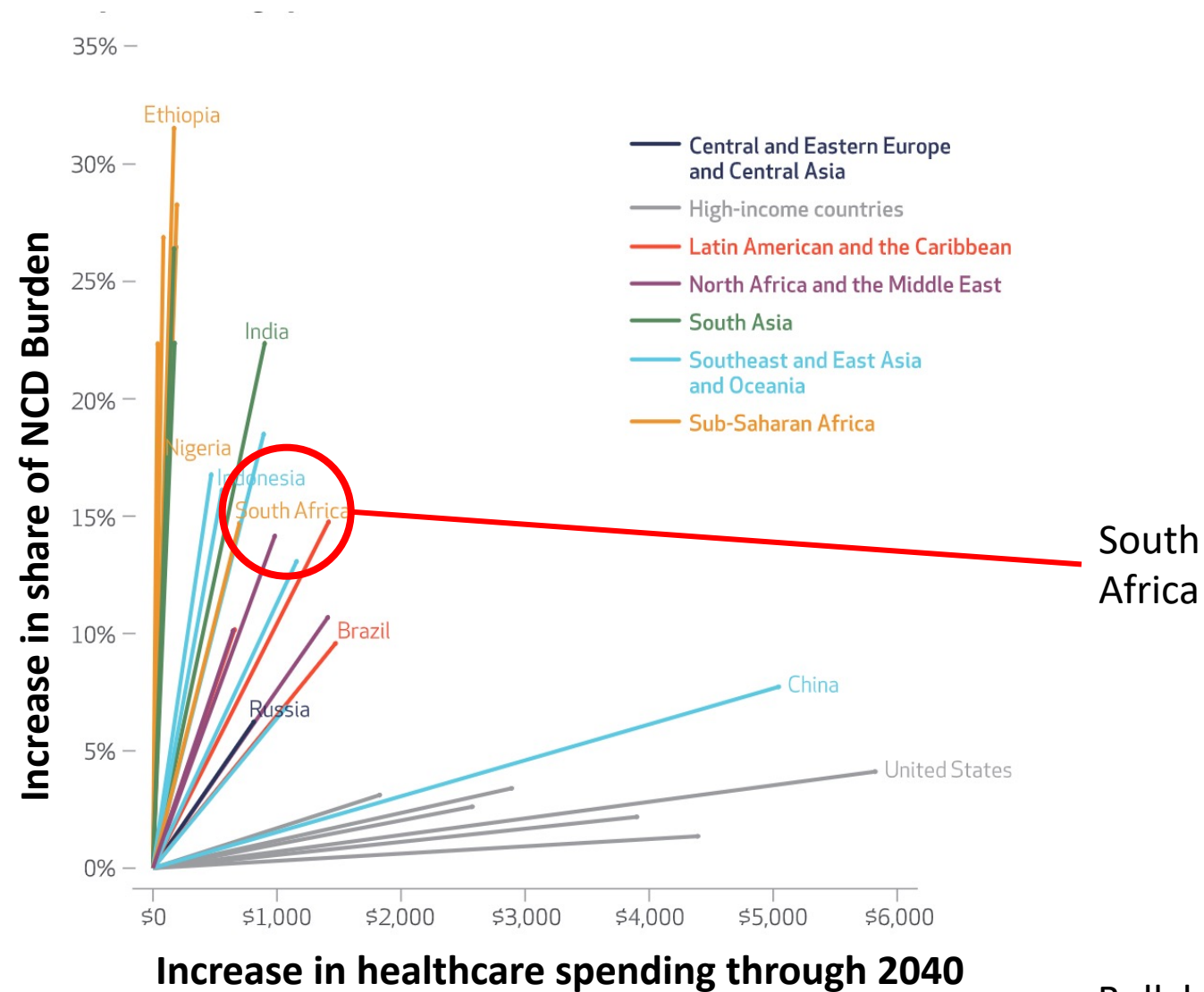
- Many of these issues are *not* financial, but..
- Ultimately, we will have to put our money where our needs are...

# How much might it **cost** to integrate NCD care?

- HTN costing study in Uganda
- Additional **total** costs per year
  - PWH: between \$3-12/year
  - Primarily medicines
- Additional **incremental** costs
  - Approximately 2-4% of current costs for HIV care

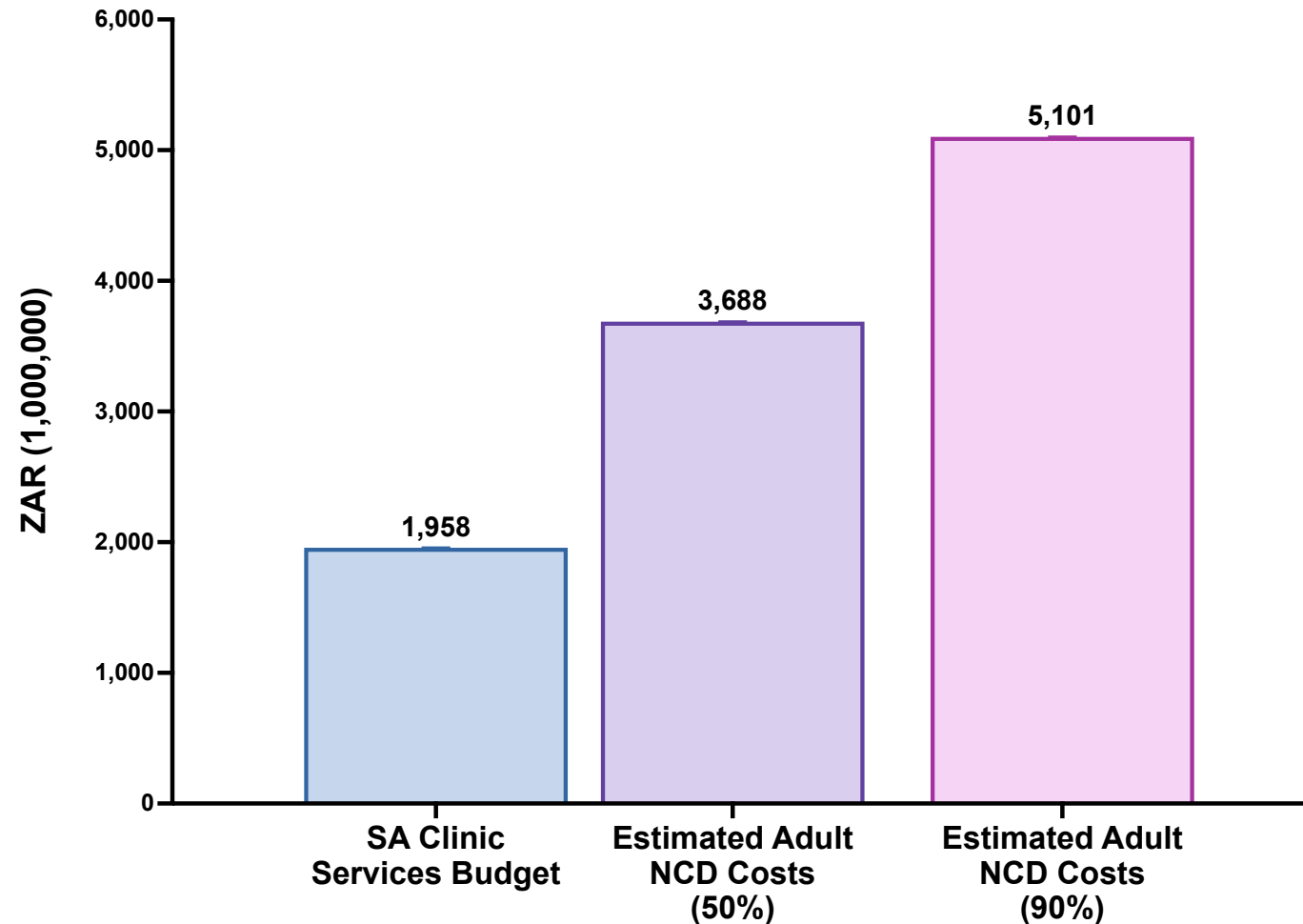


# Minimal projected change in LMIC health spending



# But cheap does not mean free...

Budget and Estimated Costs of NCD Care in South Africa  
2020



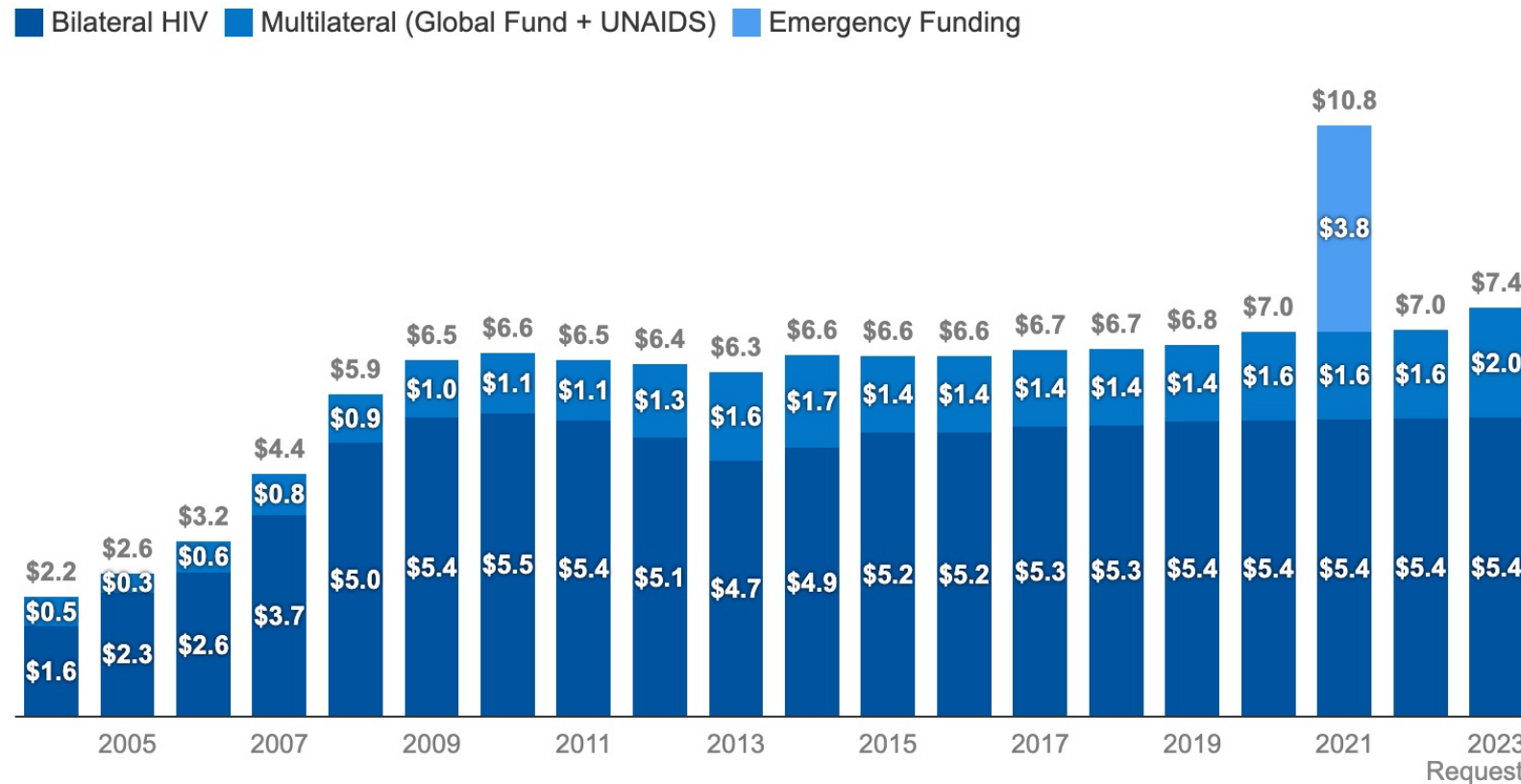


# Donor Outlays into HIV Care

Figure 1

U.S. Funding for the President's Emergency Plan for AIDS Relief (PEPFAR), FY 2004 - FY 2023 Request

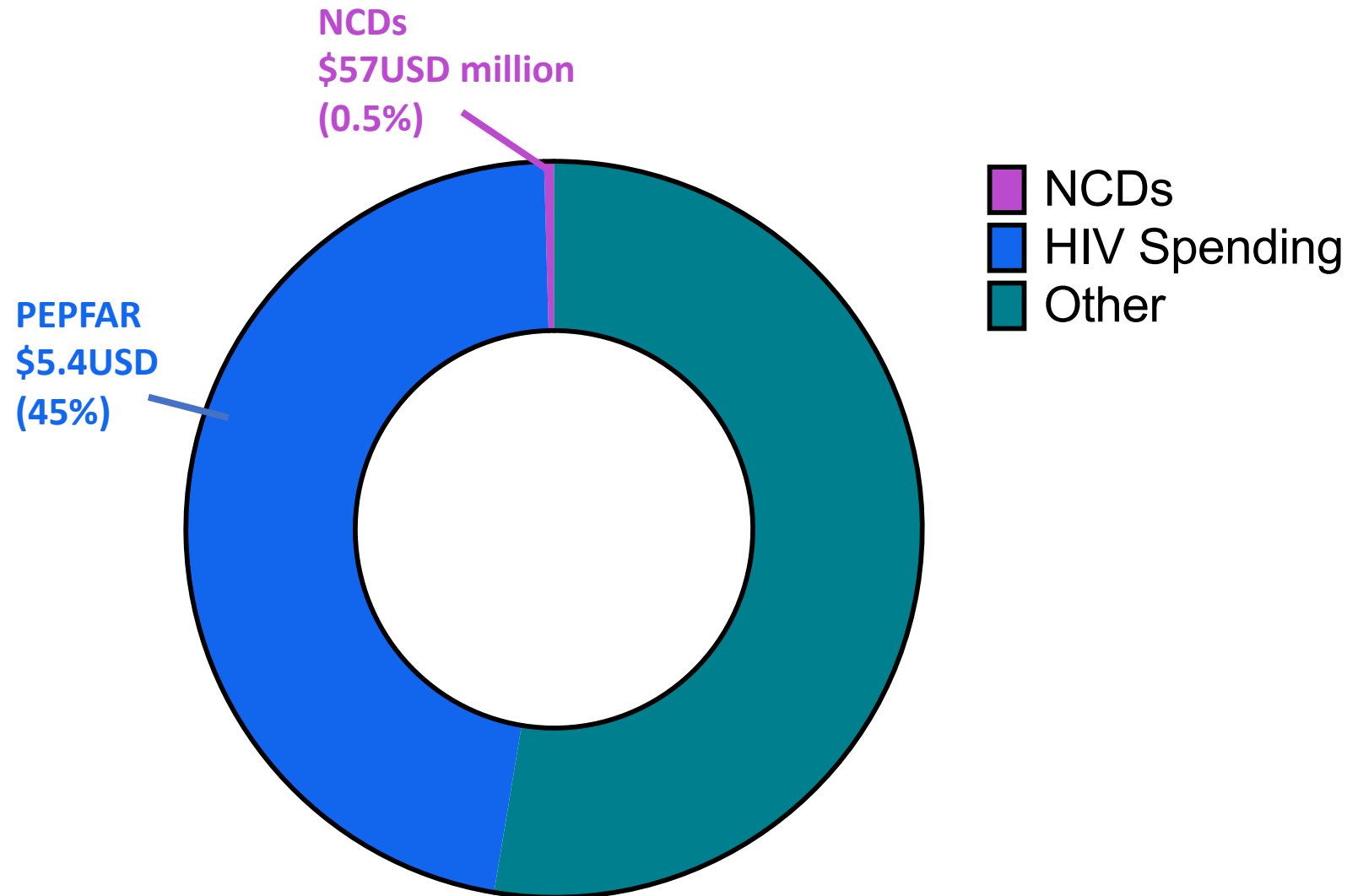
(In Billions)



**\$110 billion** in total  
spending on HIV care

(~2 trillion ZAR)

# US government donations into global healthcare (2019)



# NCDs absent from most global health strategic priorities

Country	Proportion of Spending	Global Health NCD Strategy
United States	0.5%	Absent
United Kingdom	1.7%	Absent
Germany	1.4%	Identified as a global problem causing avoidable mortality and undermining opportunities for development, economic growth, social and political stability, and poverty reduction
France	1.5%	Recognized as a leading cause of mortality in the world and depleting health systems
Canada	1.6%	Absent

# What can be done?

- Leave on a high note!

# How do you solve a multi-component problem?

## Multi-component HIV/HTN Integration Intervention

Table 1a. iHEART-SA key intervention components: **Measuring blood pressure intervention**

Level	Barrier	Intervention Component
Patients	Wait times are long	Rework <b>clinic workflow</b> so that wait times used for obtaining BP, VLs, etc.
	Low understanding of HTN and treatment	Patient health education in waiting areas through <b>presentations / education materials</b> on HTN/HIV and importance of managing both conditions
Healthcare worker	Lack time and human resources	Task shifting identify and support <b>a care coordinator</b> (allied health worker that is trained and wields respect from staff; paid for by the study for 12 months) to oversee BP measurement and recording
	Lack information management for quality improvement	<b>Information management system</b> to track check-in at clinic, BP measured/not, BP treated/not, VL measured/not, time seen in clinic, home recordings <b>Patient flow chart</b> to ensure relevant data is recorded for each patient
General	White coat hypertension	<b>Home BP monitor loan programme</b> – purchase 10-20 per clinic / donated devices; integrate with App In appropriate circumstances, teach patients receiving them how to use and go over terms of use/return

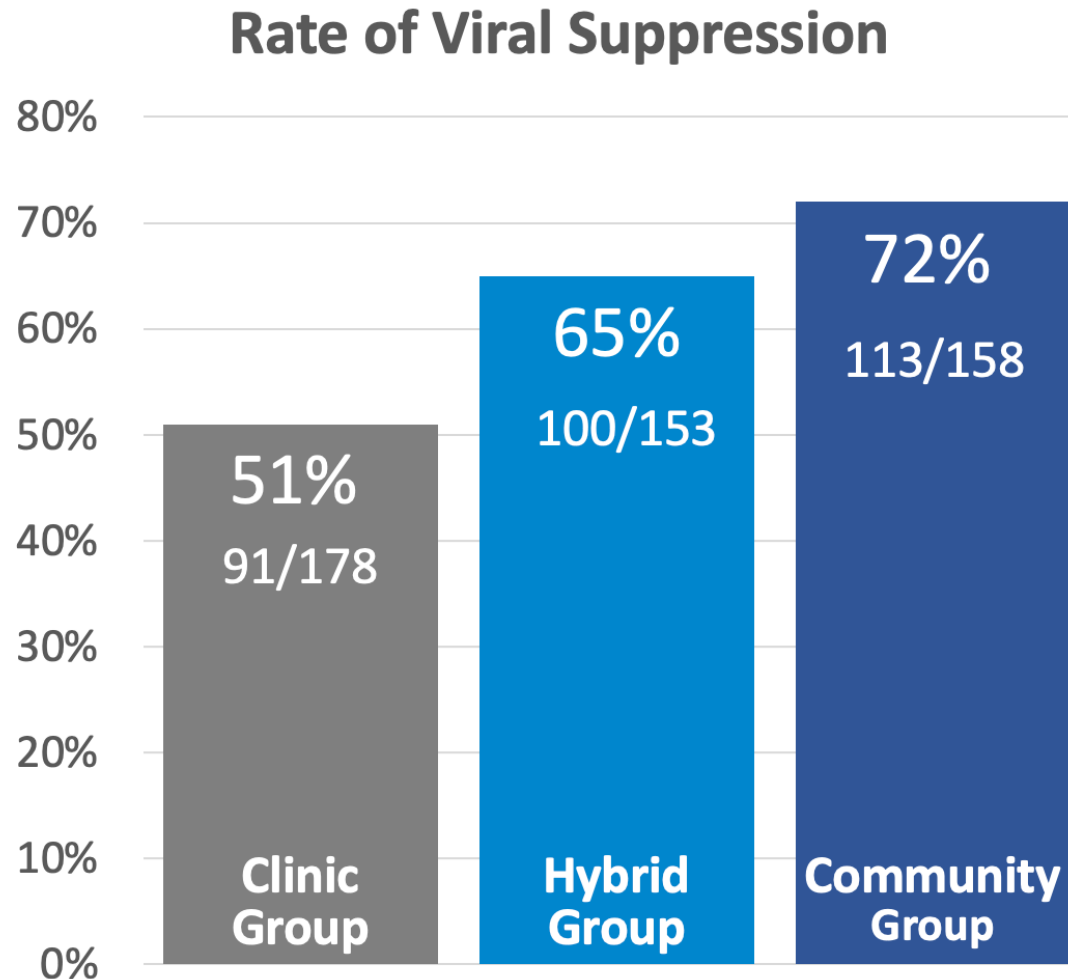
Table 1b. iHEART-SA key intervention components: **Managing hypertension intervention**

Level	Barrier	Implementation Strategy
Patients	Low understanding of HTN and treatment	Patient health education in waiting areas through <b>presentations / education materials</b> on HTN/HIV and importance of managing both conditions
Healthcare worker	Lack information management for quality improvement	<b>Information management system</b> with home and clinic readings + built-in prompts for next visits, tests <b>Patient flow chart</b> to ensure relevant data is recorded for each patient
	Lack of guideline knowledge and in-service mentoring	<b>Training</b> – general guideline trainings and how to use the information management system  <b>Monthly</b> and feedback patient information central and has achieved
	Competing priorities	Inform case re



# Learning decades of successful HIV care

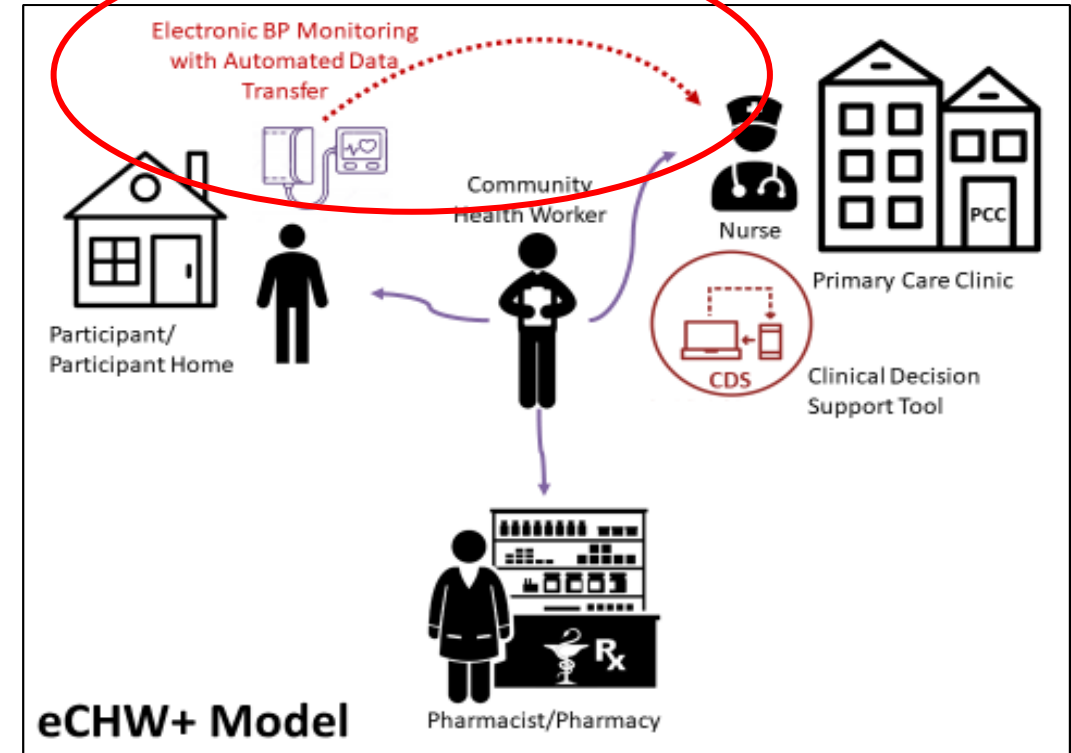
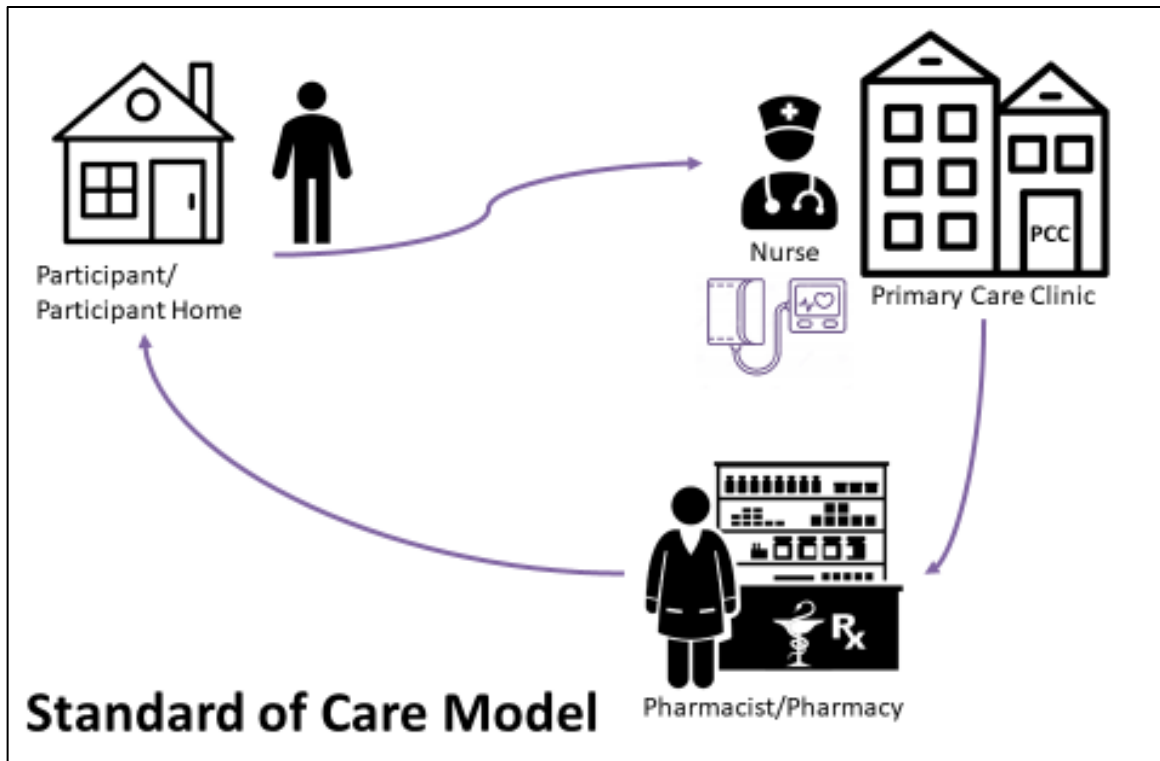
DO ART



## Decentralization of HIV Care

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

# To Improve HIV Care: **IMPACT-BP Study**



# To Improve HIV Care: IMPACT-BP Study

IMPACT BP APP

CBPM

BP HISTORY

PATIENT SUMMARY

ADD BP VALUES

ALL RECORDINGS:

Show

entries

Search:

Date	SBP
01/09/2022	120
02/09/2022	121
03/09/2022	122
04/09/2022	123
05/09/2022	124
06/09/2022	125
07/09/2022	126
08/09/2022	127
09/09/2022	128
10/09/2022	129
11/09/2022	130
12/09/2022	131
13/09/2022	132
14/09/2022	133

Showing 1 to 14 of 64 entries

Bongane Mdluli | Male

PATIENT SUMMARY

PLEASE SELECT A TREATMENT DECISION BELOW. SELECT "OTHER" TO ADD YOUR OWN TREATMENT DECISION.

REMINDER: If any allergy/intolerance to hypertension medication has been reported by the patient, please consider when selecting treatment decision.

MEDICATION	MG PER PILL	PILLS PER DAY	TOTAL DOSE
Hydrochlorothiazide	25	0.5	12.5
Amlodipine	10	0.5	5
Enalapril	2.5	4	10

PLEASE SELECT A TREATMENT DECISION BELOW. SELECT "OTHER" TO ADD YOUR OWN TREATMENT DECISION.

REMINDER: If any allergy/intolerance to hypertension medication has been reported by the patient, please consider when selecting treatment decision.

Treatment Decision

Add Enalapril 10 mg b.d.

No change in treatment due to nonadherence

No change in treatment due to unavailability

Other

AHRI

AFF  
HEA  
RES  
INS



# Political commitment & Donor Funding (?)



## FOCUS AREA 3: INTEGRATION

Work with governments to integrate vertical HIV/AIDS programming more efficiently and effectively into the local health service delivery infrastructure by sharpening PEPFAR's technical assistance and measuring capabilities and outcomes of the local public health system to manage a greater share of the HIV response. Where possible, PEPFAR will integrate HIV programming into strengthened public health systems to manage tuberculosis, high burden non-communicable diseases, sexual reproductive health, rights and services, as well as other local health priorities that impact PLHIV - to protect HIV/AIDS gains and strengthen health and economic outcomes. In addition, it will be critical to design and sustain service delivery models, including differentiated service delivery approaches, that effectively meet the needs of HIV prevention and PLHIV for adult men and women, children and key populations.

PEPFAR will embrace a patient and people-centered approach to health service delivery by partnering with governments to develop the appropriate policy environment to enable private service providers to play a critical role to complement and fill gaps in HIV/AIDS service delivery including addressing issues of hypertension and mental health, public health systems, and innovation, while ensuring access and affordability for HIV clients and beneficiaries.

SEPTEMBER 2022

Slide courtesy of Vincent Marconi

# Talk Summary

- **Is there an NCD problem?**
  - Yes, NCDs now leading cause of death in SA
  - PWH have high rates of NCDs and most are uncontrolled
- **What is the evidence for fixing the problem?**
  - In clinical trials, HTN and DM treatments have strong beneficial effects
  - Treatments reduce poor outcomes and death
- **If the problems are fixable, why aren't they fixed?**
  - NCD integration is a complex problem with multiple barriers across patient, clinic, health system, and government levels
- **What can be done?**
  - Evaluations on going of multi-component interventions
  - Additional funding both at national and global level likely required

# **Thank you for your attention!**

- **Questions?**

**[msiedner@mgh.harvard.edu](mailto:msiedner@mgh.harvard.edu)**