

HIV and Non-Communicable Diseases: Strengthening Systems to Provide Integrated Chronic Care Services in Low-Resource Settings

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HIV and NCDs

- Making the HIV-NCD connection
 - convergence, co-morbidity and chronicity
- Integration of NCD services into HIV programs
 - feasibility, acceptability, challenges
- Strengthening health systems for chronic care
 - 21st century primary health care

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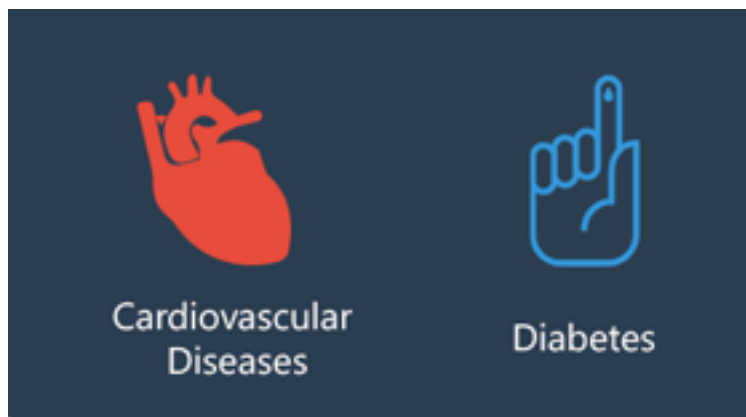
Defining “NCD”



- A diverse collection of health challenges
- Often, the focus is on four main NCDs:
 - Cardiovascular disease
 - Cancers
 - Chronic respiratory diseases
 - Diabetes

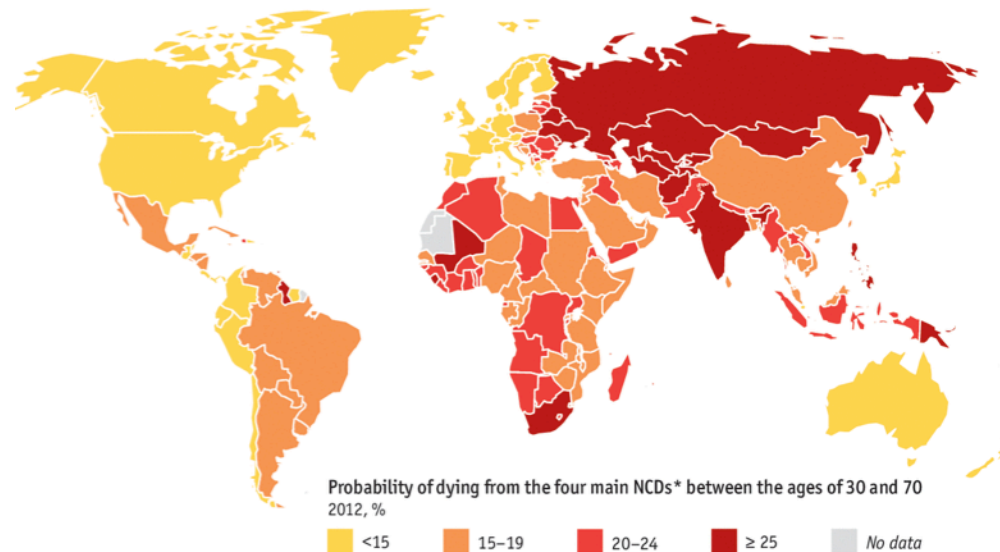
Convergence

Four Major Categories of NCDs



Co-Located Epidemics

Probability of dying prematurely from non-communicable diseases



Source: WHO

*Non-communicable diseases: cardiovascular diseases, cancer, chronic respiratory diseases and diabetes

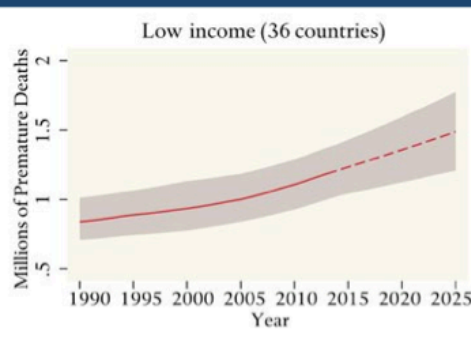
NCD Myth: Diseases of Affluence

- 80% of chronic disease deaths are in lower-income countries
- In all but the lowest-income countries, chronic diseases are more prevalent among the poor
- In all countries, the poor are more likely to die as a result of chronic diseases than the rich

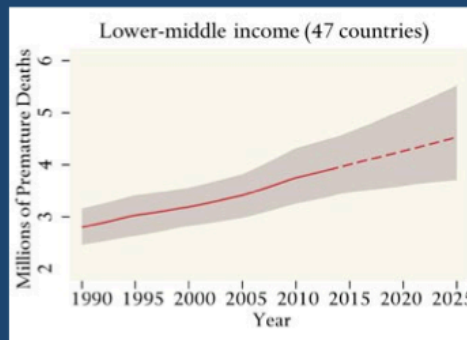
NCD Myth: Diseases of the Elderly

- 50% of global chronic disease burden is among those under 70 years of age
- 25% of all deaths attributed to NCDs occur before the age of 60, and 90% of these “premature” deaths occur in LMIC

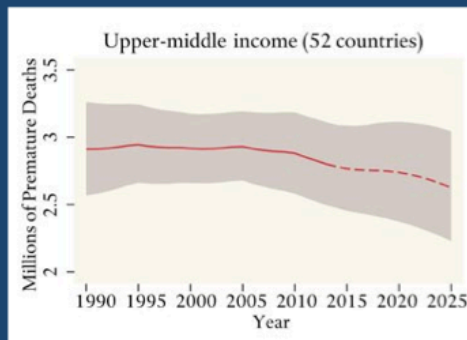
Low Income



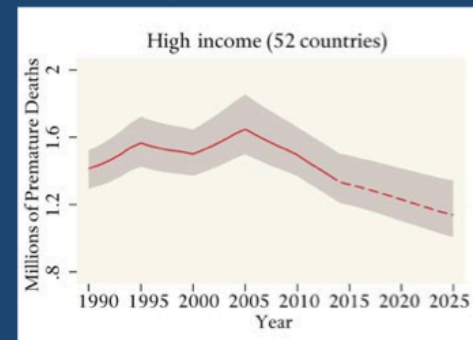
Lower-Middle



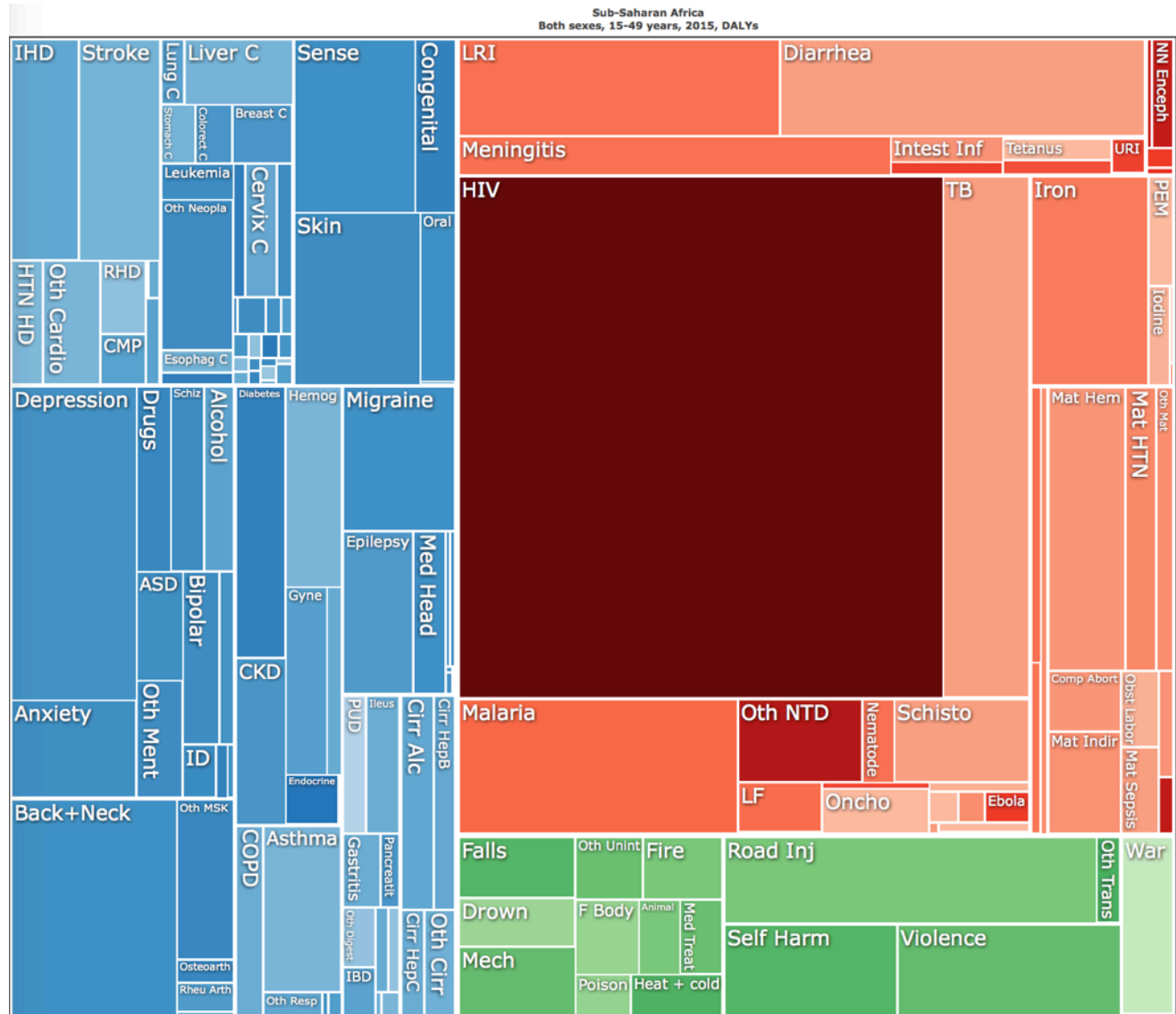
Upper-Middle



High Income



Burden of Disease (DALYs) in SSA



HIV and NCDs: Co-Located Epidemics

Global Burden of CVD (DALYs)

Figure 8 World map showing the global distribution of the burden of CVDs (DALYs), in males (age standardized, per 100 000) (1).

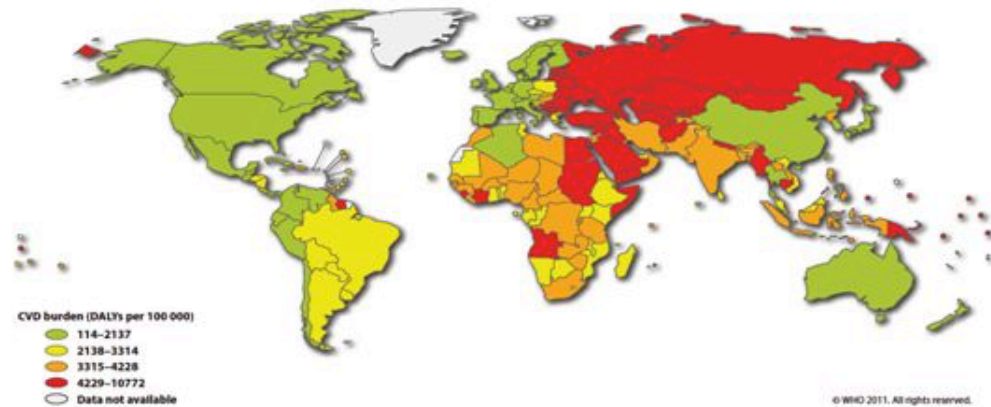
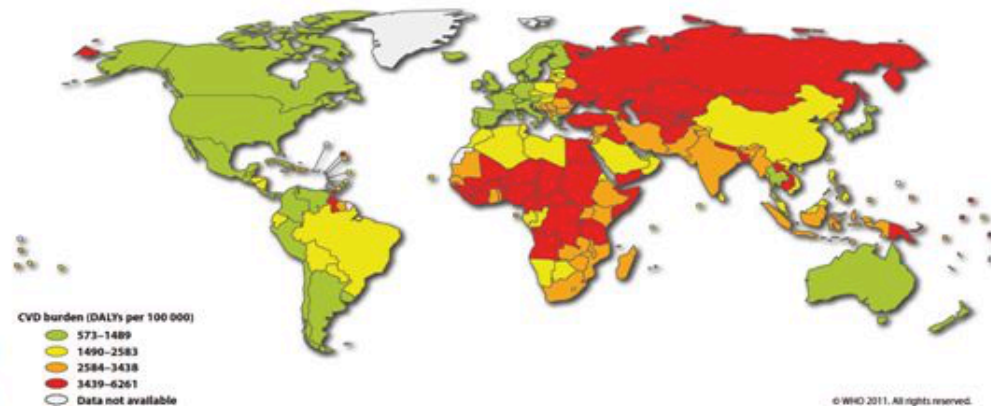
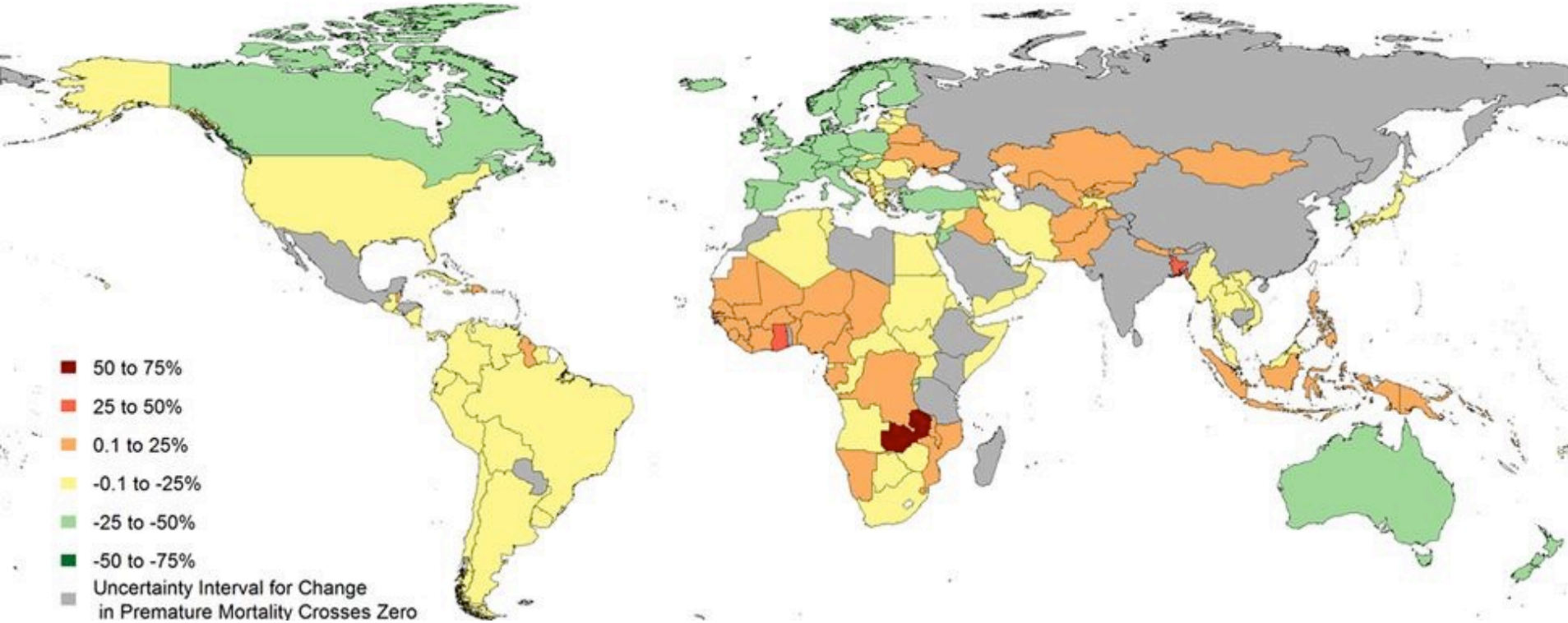


Figure 9 World map showing the global distribution of the burden of CVDs (DALYs) , in females (age standardized, per 100 000) (1).

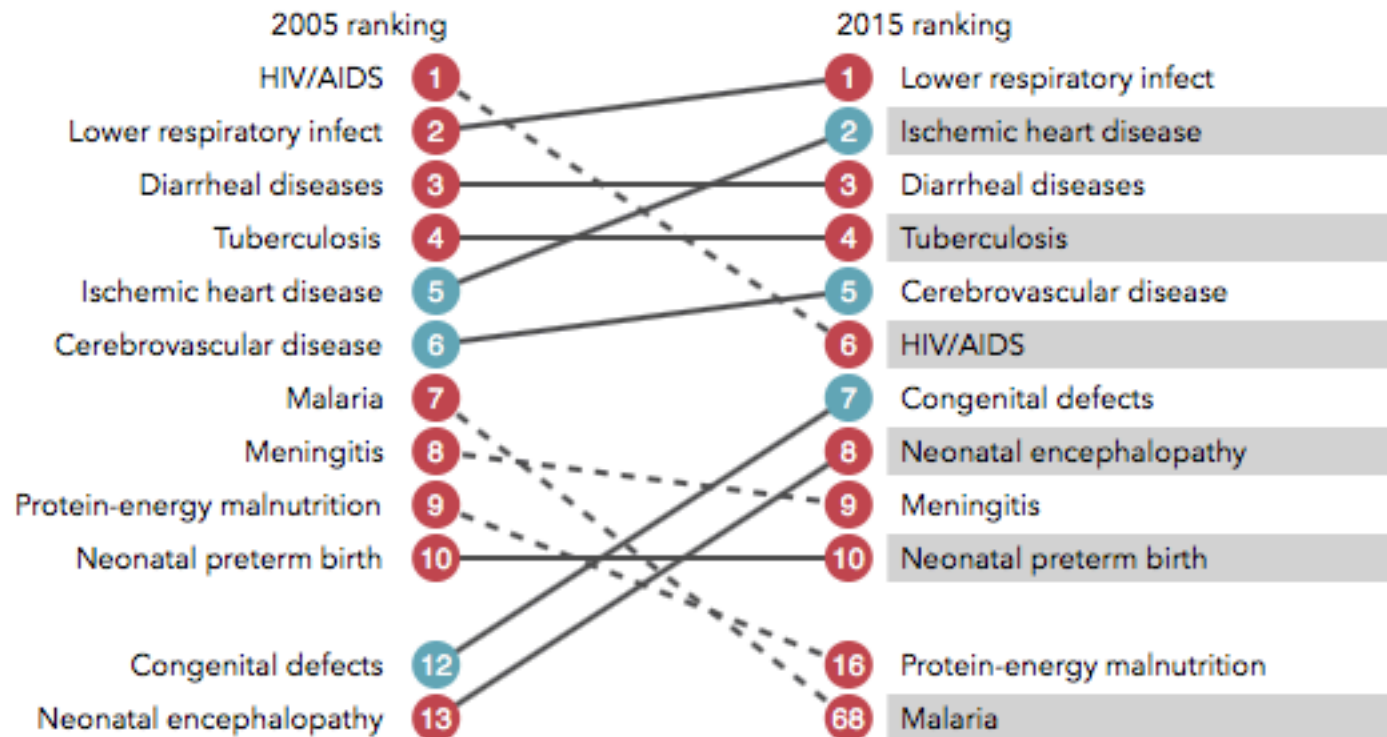


Percentage Change in Premature Cardiovascular Mortality from 2013-2025 if Risk Factors Continue Current Trend



Changing Cause of Death in Ethiopia

What causes the most deaths?

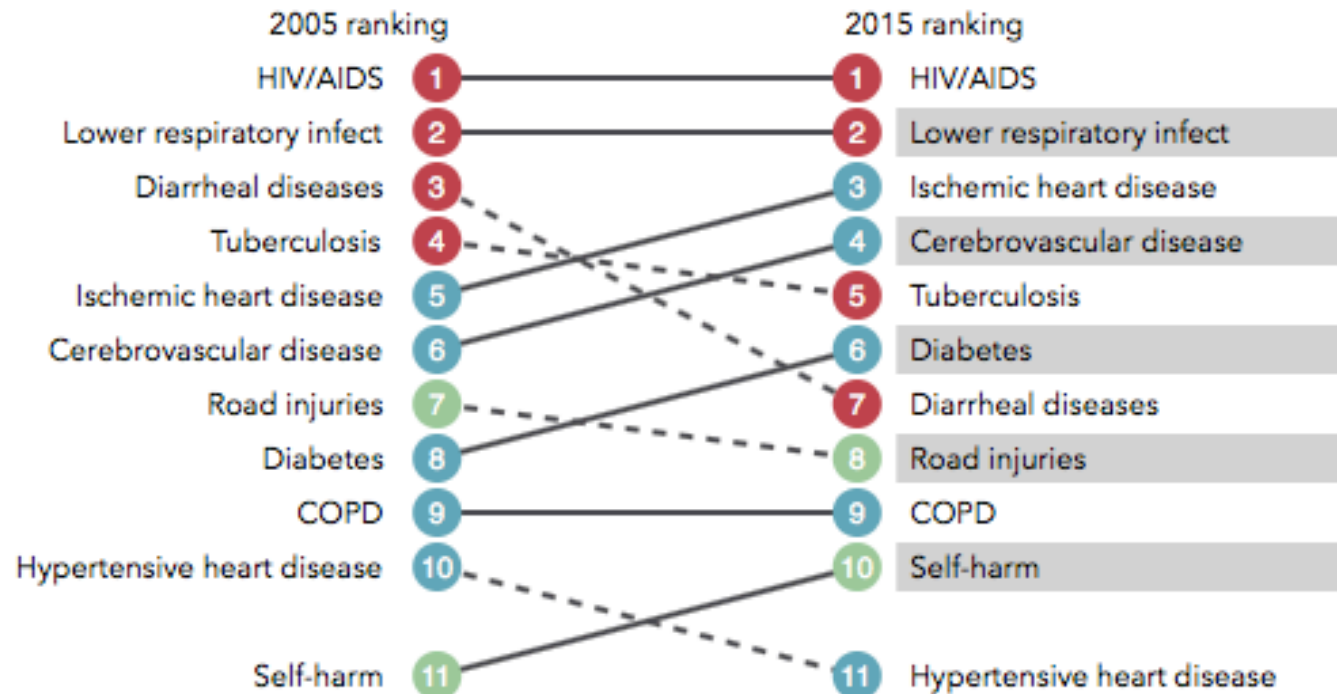


Top 10 causes of death by rate in 2015 and percent change, 2005-2015



Changing Cause of Death in Swaziland

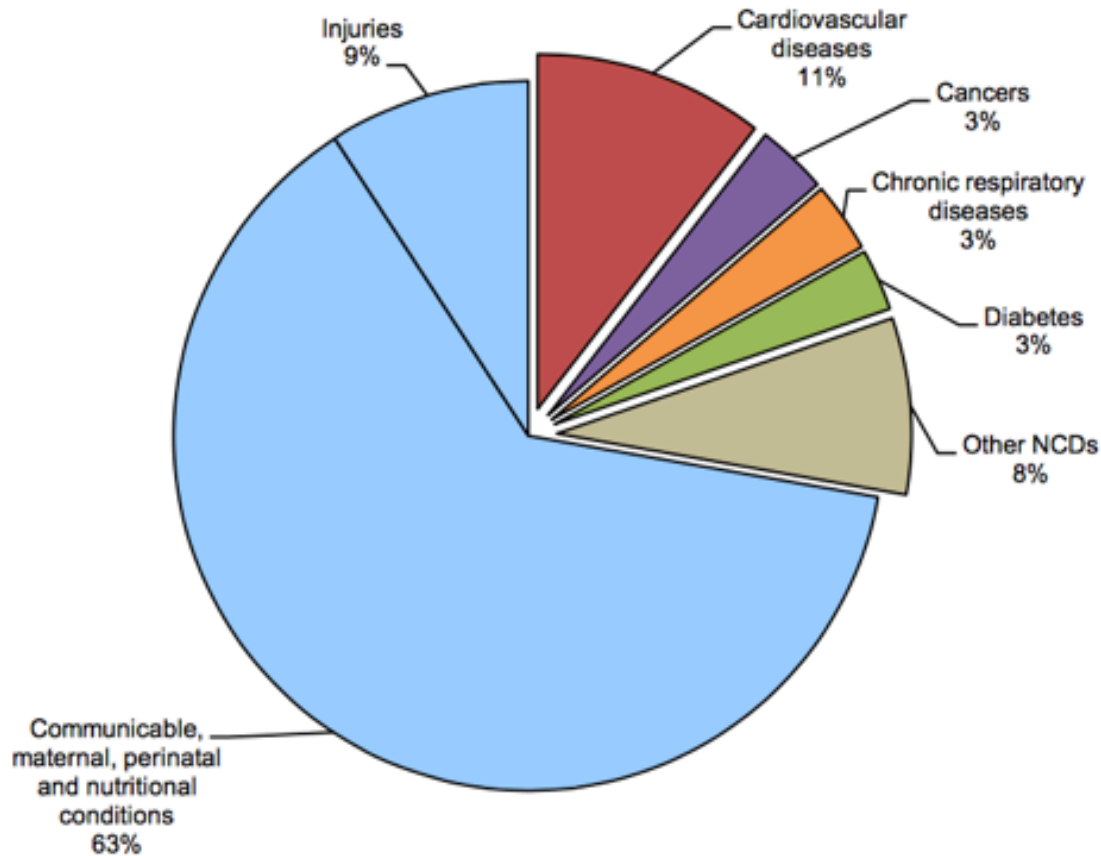
What causes the most deaths?



Top 10 causes of death by rate in 2015 and percent change, 2005-2015

Cause of Death in Swaziland

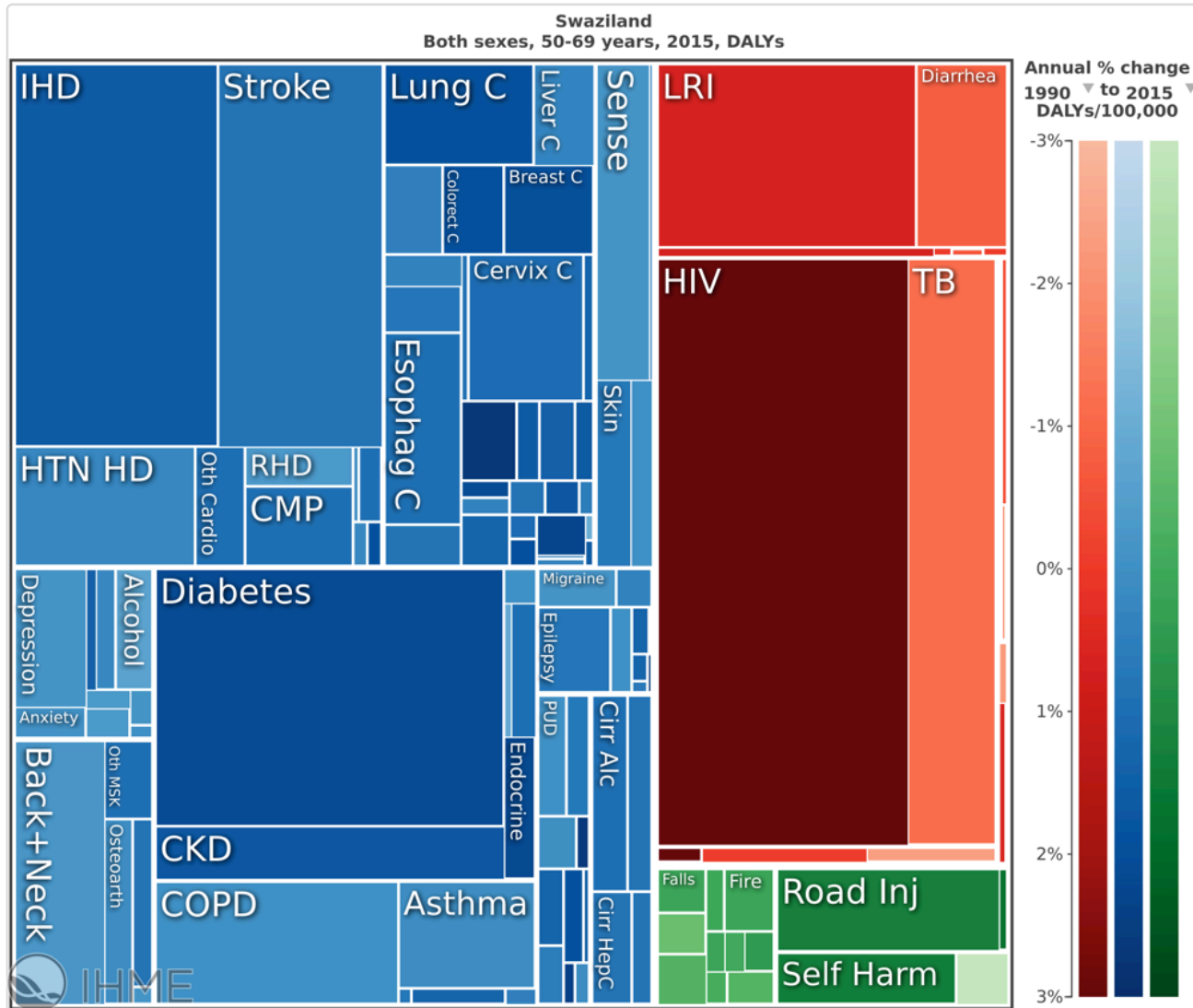
Proportional mortality (% of total deaths, all ages, both sexes)*



Total deaths: 14,000
NCDs are estimated to account for 28% of total deaths.

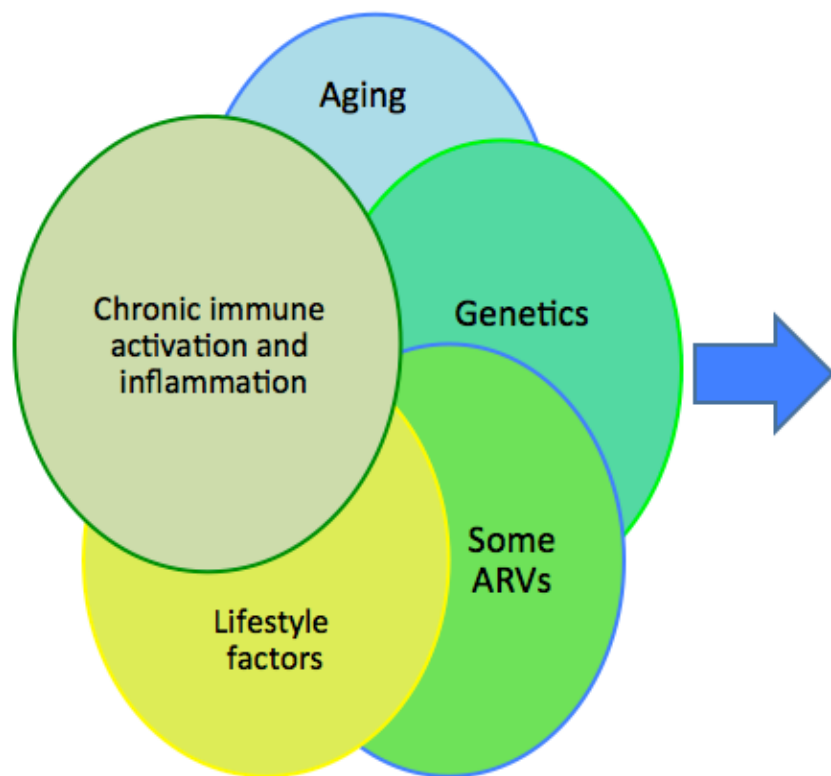
Convergence in Swaziland

DALYs amongst Adults (50-69 years)

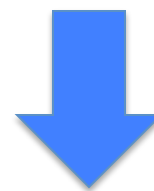


Comorbidity

PLHIV may be at higher risk for some NCDs



- Baseline NCD risk factors
- Metabolic complications of HIV
- Some ARVs cause dyslipidemia, glucose intolerance, other metabolic side effects



Non-AIDS morbidity and mortality

Prevalence of NCDs amongst PLHIV in LMIC

- Data are limited
 - Surveillance and community-based surveys lacking
- Systematic reviews
 - HTN prevalence: 8.7 – 45.9% in LMIC
 - Metabolic syndrome: 30% mean prevalence in SSA
 - DM prevalence: < 5% in most studies
- Facility-based studies
 - HTN rates at or above those of general population

NCD amongst PLWH

Illustrative studies (there are many more!):

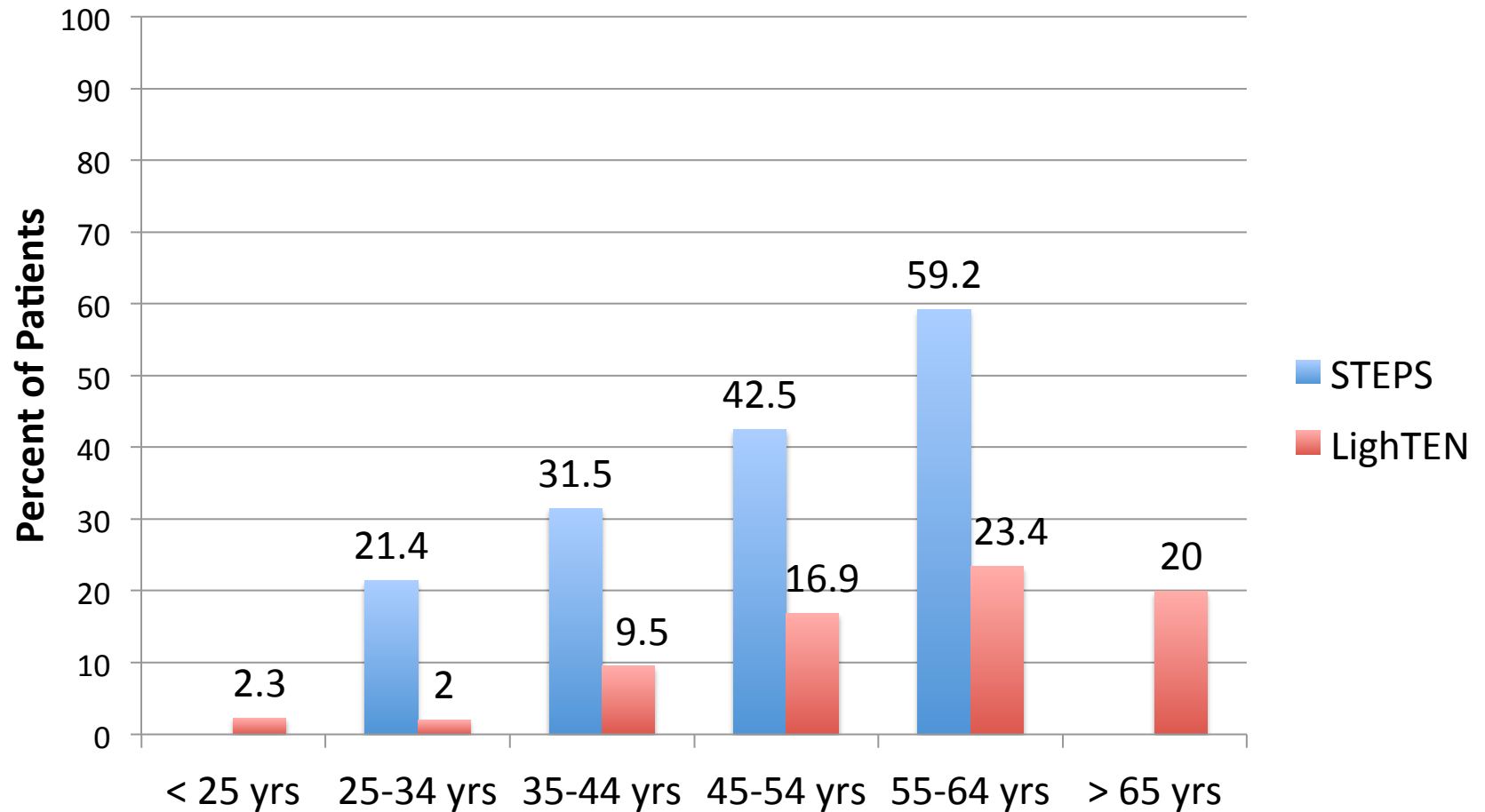
- Mwangemi *et al.* 2010 (VCT platform in Kenya): 38% of 4,307 newly-diagnosed PLWH had HTN
- Dave *et al.* 2011 (HIV clinic in South Africa): 26% of 406 ART-naïve patients had dysglycemia
- Gwarzo *et al.* 2012 (HIV clinic in Nigeria): 15% of 1,033 patients had HTN; 22% had elevated BMI
- Divala *et al.* 2016 (2 HIV clinics in Malawi): DM prevalence 4.1%, HTN prevalence 23.7%

CVDRF amongst PLHIV \geq 40 years on ART in Swaziland (N=1,826)

Characteristic	Total	Age (years)			Sex	
		40-49	50-59	60+	Male	Female
Total, n (%)	1,826 (100%)	1,121 (61%)	462 (25%)	238 (13%)	701 (38%)	1,125 (62%)
At least 1 CVD risk factor	39%	32%	47%	55%	45%	35%
Hypertension (BP > 140/90 mmHg)	25%	19%	31%	42%	21%	27%
Hypercholesterolemia (non-fasting TC > 6.2 mmol/L, POC)	8%	6%	11%	11%	6%	9%
Diabetes (HbA1c > 6.5%, POC)	5%	3%	8%	10%	4%	5%
Smoking in past year (self-report)	9%	9%	10%	8%	22%	2%

Rabkin et al. CROI 2017, abstract #637

HTN prevalence amongst PLHIV in Malawi



Chronicity

Defining “Chronic Disease”:

- **Long duration**
 - Requires self-management
- **Slow progression**
 - Early engagement in care is key
- **Often preventable**
 - Primary vs. secondary prevention
- **Risk factors may cluster in families/households**
 - Genetic, behavioral, and/or environmental

Illustrative Chronic Diseases & Conditions

Non-communicable conditions

Cardiovascular disease (e.g., ischemic heart disease, stroke)

Cardiovascular disease risk factors (e.g., hypertension, high cholesterol)

Diabetes

Chronic respiratory diseases (e.g., asthma, COPD)

Cancers

Infectious conditions

Hepatitis B

HIV/AIDS

Neuropsychiatric conditions

Epilepsy

Depression

Substance addiction

Characteristics/priorities of chronic disease from the perspective of the **health system**

Diagnosis and enrollment	Identification of risk factors, early diagnosis, opportunistic case-finding, point-of-service diagnostics , standardized diagnostic protocols
Retention and adherence	Appointment systems, defaulter tracking, patient counseling, expert patients, secure medication supply chains, pharmacy support
Multidisciplinary family-focused care	A multidisciplinary team of healthcare providers and community members delivers care in partnership with the patient
Longitudinal monitoring	Health information systems have standardized and easily retrievable data
Linkages and referrals	Links within the health facility (to lab, pharmacy, others), between facilities, and between facility & community
Self management	An informed, motivated patient is an effective manager of his/her own health
Community linkages and partnerships	Need functional partnerships between health facility-based providers and community-based groups that facilitate access to services across the care continuum

Common Health System Barriers

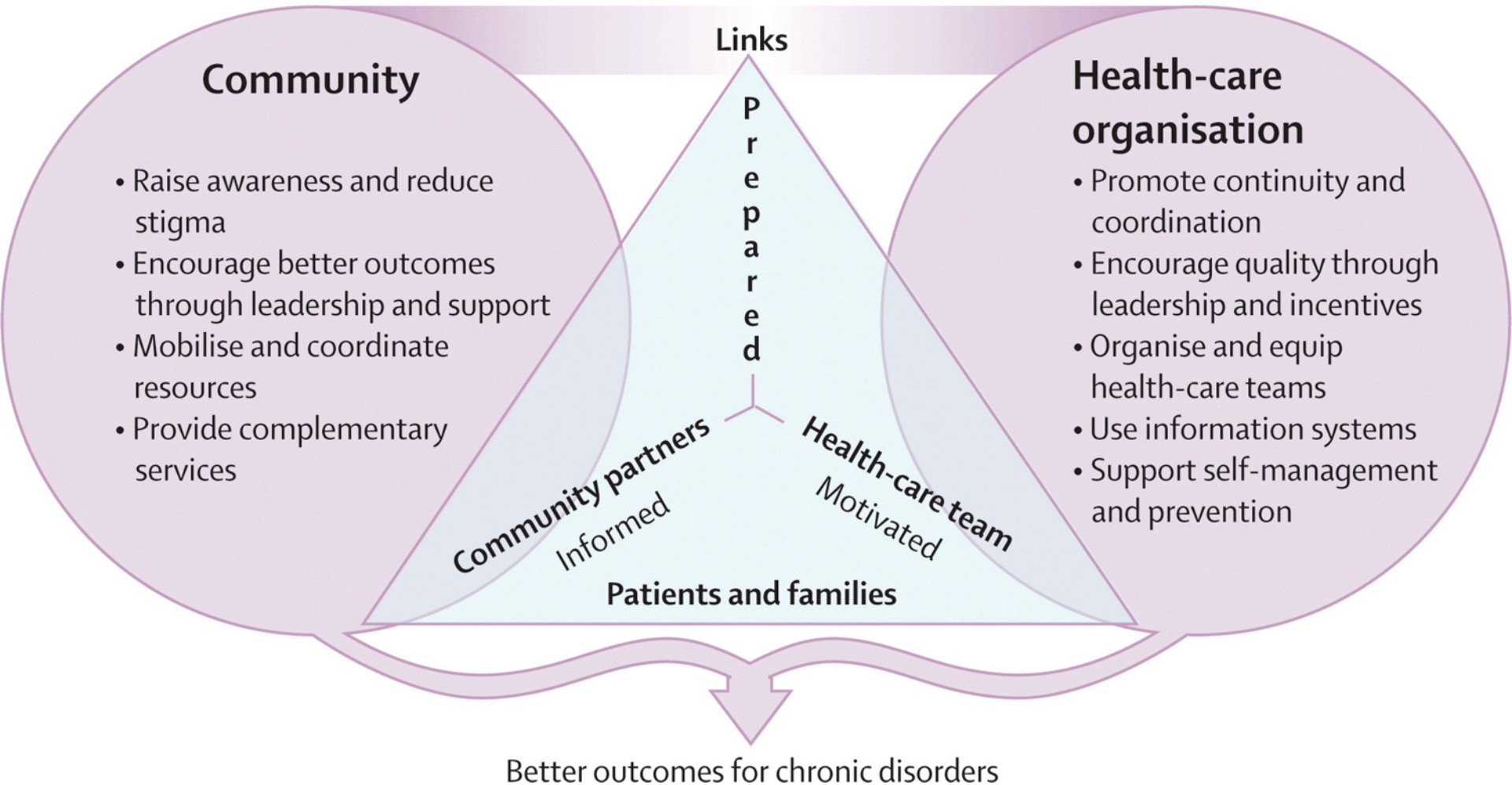
	HIV/AIDS	Diabetes	CVD	Chronic Lung Disease	Cancers	Mental Health
Demand-side barriers	+	+	+	+	+	+
Inequitable availability	+	+	+	+	+	+
Health worker shortages	++	++	++	++	++	++
Lack of adherence support	++	++	+	+	+	+
Inadequate infrastructure and equipment	+	+	++	++	++	+
Inconstant supplies of drugs and diagnostics	+	+	+	+	+	+
Missing linkage and referral systems	+	+	+	+	+	+
Need for client and community engagement	+	+	+	+	+	+
Stigma and discrimination	++	+			+	++

Positive policy environment

- Strengthen partnerships
- Support legislative frameworks

- Integrate policies
- Provide leadership and advocacy

- Promote consistent financing
- Develop and allocate human resources



Community

- Raise awareness and reduce stigma
- Encourage better outcomes through leadership and support
- Mobilise and coordinate resources
- Provide complementary services

Links

P
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Community partners
Informed

Health-care team
Motivated

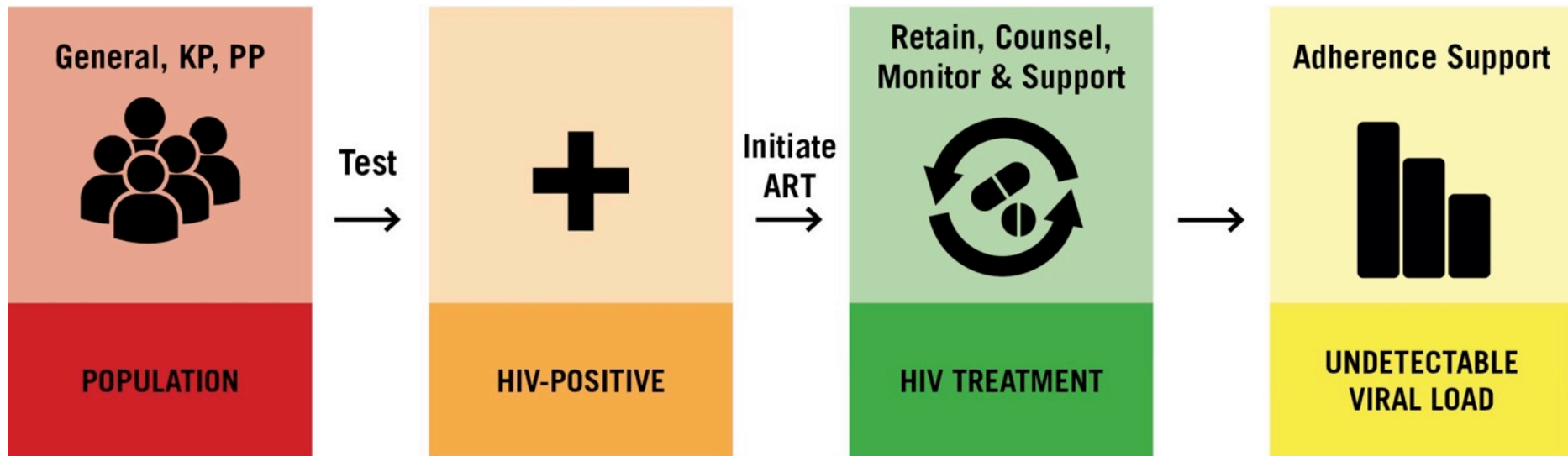
Patients and families

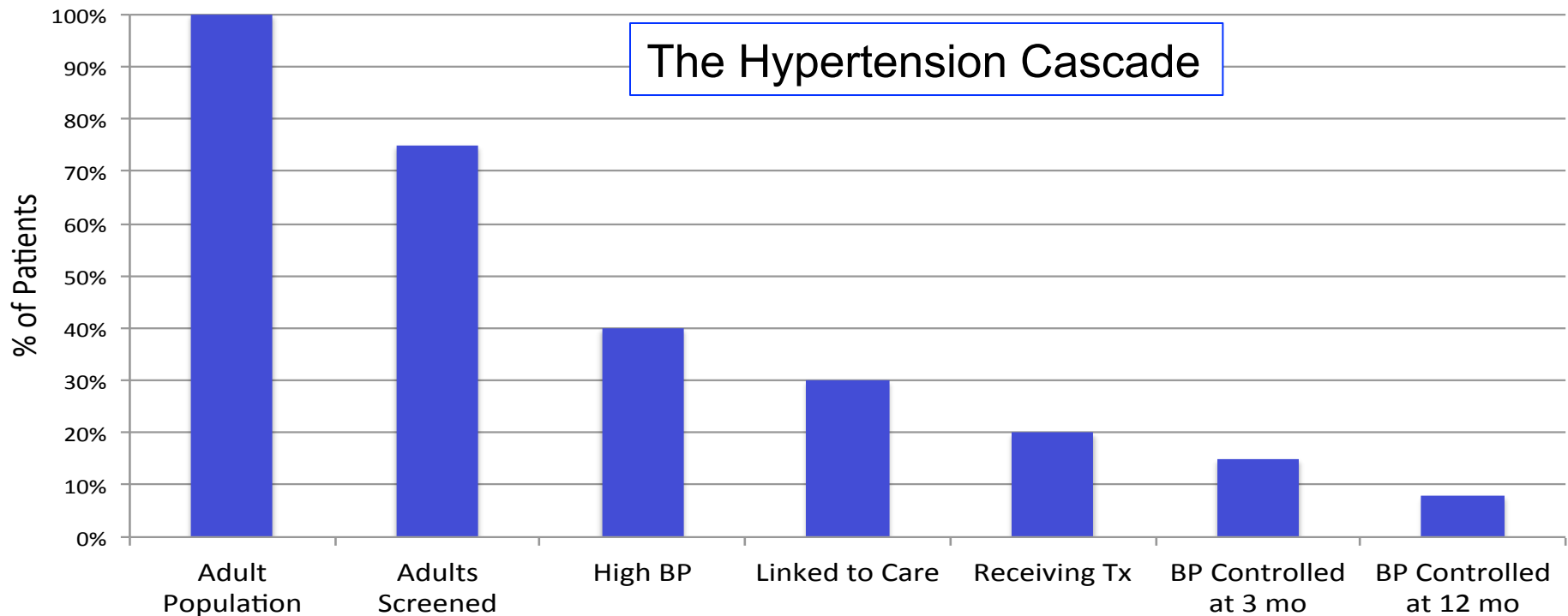
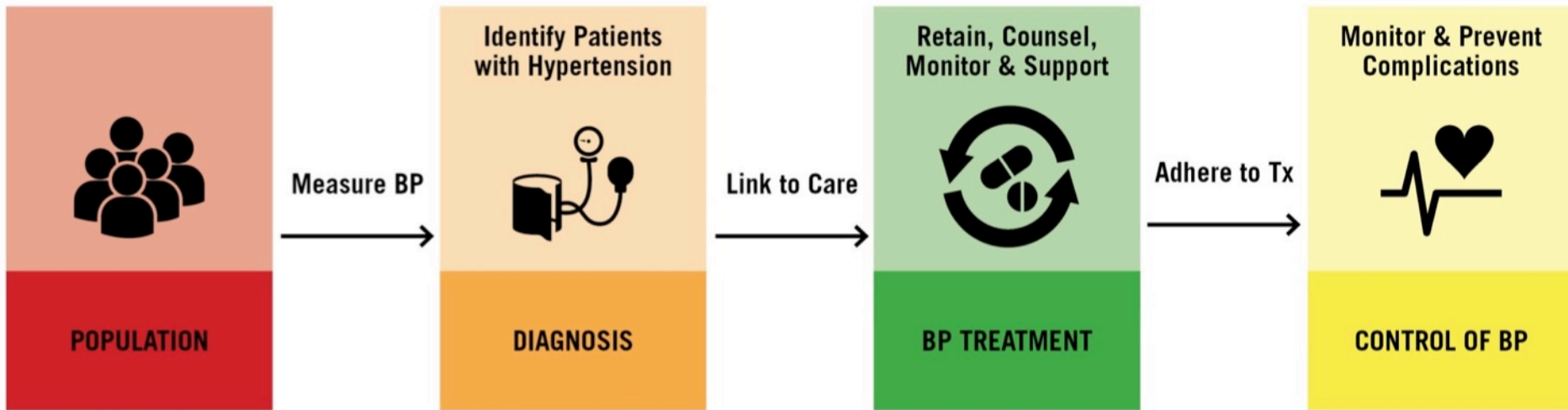
Health-care organisation

- Promote continuity and coordination
- Encourage quality through leadership and incentives
- Organise and equip health-care teams
- Use information systems
- Support self-management and prevention

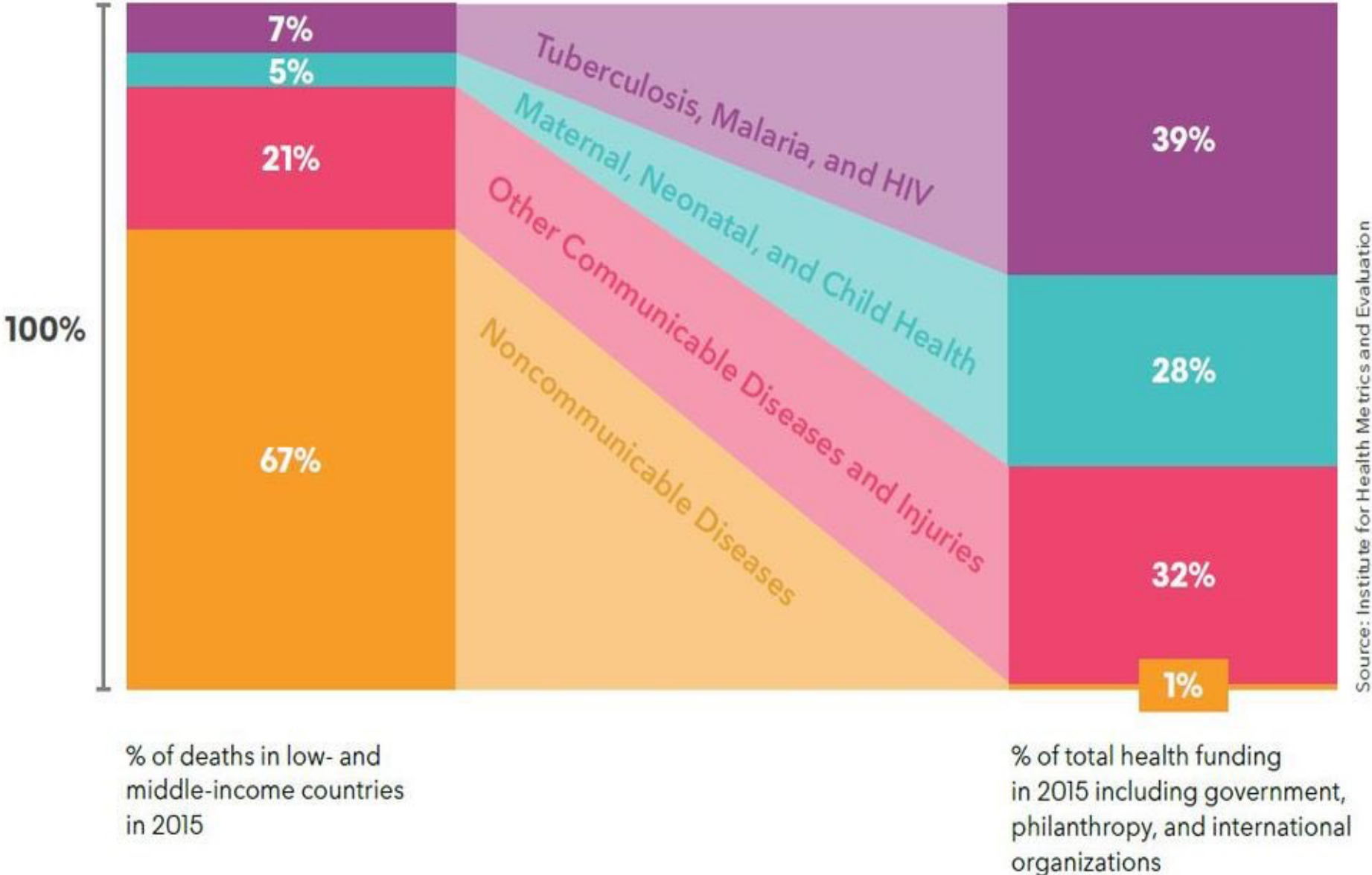
Better outcomes for chronic disorders

HIV Care Continuum





Noncommunicable diseases account for **67%** of deaths in low- and middle-income countries but only **1%** of health funding addresses them



HIV and NCDs

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Integration of NCD services into HIV programs

“As with many passionately debated subjects, data on risks and benefits of integration are scarcer than might be expected.”

– Schuchat & De Cock 2012

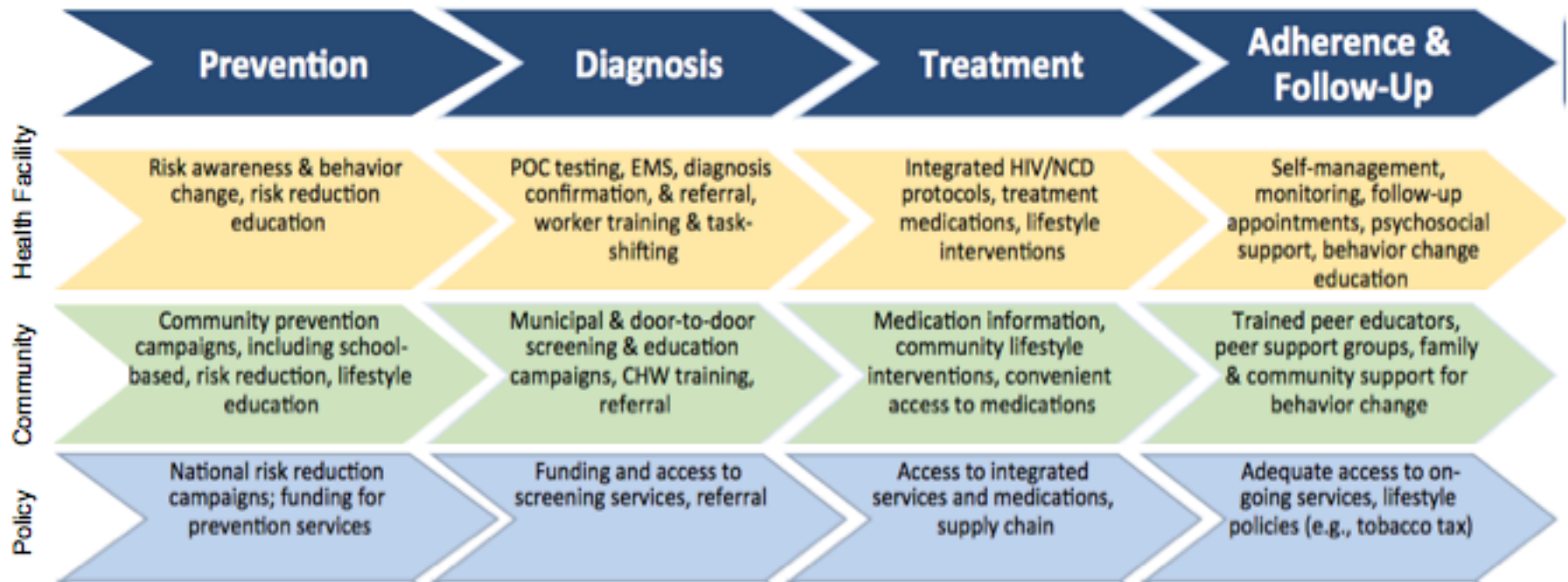
What are the tradeoffs? What is the impact on:

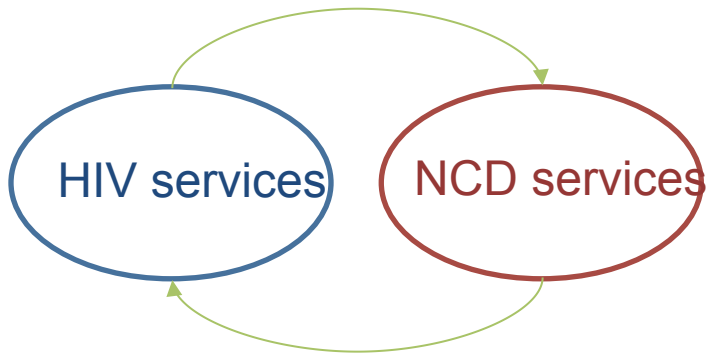
- Coverage?
- Quality?
- Equity?
- Efficiency?

Integration of NCD services into HIV programs

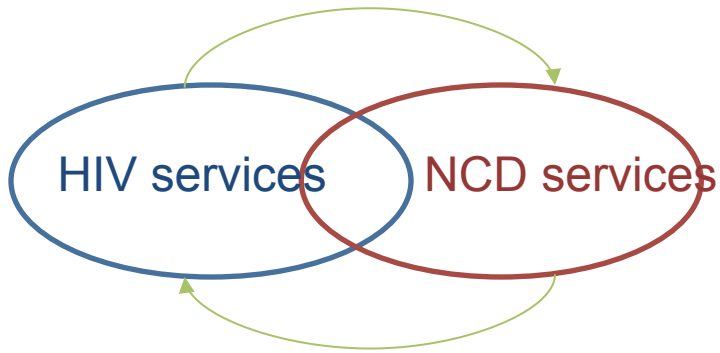
- Feasibility
 - HCW cadre
 - Time
 - Cost
- Acceptability
 - To patients
 - To clinicians
- Impact
 - On coverage and quality of HIV services
 - On health outcomes
 - On patient satisfaction

What is the optimal model for integrated HIV-NCD services?





Scenario 1: Parallel Services



Scenario 2: Coordinated Services



Scenario 3: Integrated Services

Malawi Policy Brief



An Evidence-Based Policy Brief

Improving the Screening and Treatment of Hypertension in People Living with HIV

Policy options highlighted:

1. Integrate HTN screening and management into HIV clinics
2. HTN screening within HIV clinics with referral for management
3. Development of a comprehensive chronic care clinic (CCC) model



Piloting NCD models in Zimbabwe

- MSF and MOHCC are piloting nurse-led care for HIV, TB, HTN, DM and asthma at 11 health facilities in Chipenge Districts
- Multiple models under development
 - Integration of NCD services into OPD for all
 - Integration of NCD services into HIV clinic for PLHIV and into OPD for HIV-negative patients
- Data are pending, but uptake of NCD services appears to be robust

Multi-disease community health campaigns



- SEARCH study offered screening and linkages for HTN, DM, HIV, TB, malaria, urgent care and men's health in the context of CHCs in Uganda
- Uptake of both NCD and HIV testing was high
- Non-HIV services reduced stigma and attracted individuals previously reluctant to access HIV testing

HEART Study in Swaziland

Phase 1: Screening

- Screening for HTN, DM, high cholesterol and tobacco smoking integrated into a large urban HIV clinic for patients ≥ 40 years on ART
- Data will include:
 - Prevalence
 - Time-motion studies
 - Patient exit interviews
 - Provider KII
 - Costing

Phase 2: Management

- Patients with HTN and/or ten-year CVD risk $> 10\%$ randomized to management in HIV clinic or referral to OPD
- Data will include:
 - Linkage to NCD care
 - Retention in NCD and HIV care
 - Time motion studies
 - 6-month outcomes
 - Patient and provider KII
 - Costing

Screening time-motion data: Swaziland

Time-motion data collection form

Record the start time for this session: ___ : ___

TIME-MOTION ACTIVITIES

Record the start and end times (hh:mm) for each task performed. Use optional second time slots if activity is interrupted. Leave activity blank if not completed.

Task	Start 1	End 1	Start 2	End 2
1. BP measurement <i>(including sensitization)</i>	__:__	__:__	__:__	__:__
2. Interview <i>(including smoking question)</i>	__:__	__:__		
3. Point-of-care test – Fingerstick for TC/HbA1c	__:__	__:__		
4. Point-of-care test – Waiting/ processing	__:__	__:__		
5. Post-test counseling <i>(including disclosure and</i> <i>provision of written materials)</i>	__:__	__:__		
6. Documenting results <i>(completing CVD Risk</i> <i>Stratification Form)</i>	__:__	__:__		
7. Regular HIV consultation <i>(including follow-up for care,</i> <i>labs, medication refill)</i>	__:__	__:__		

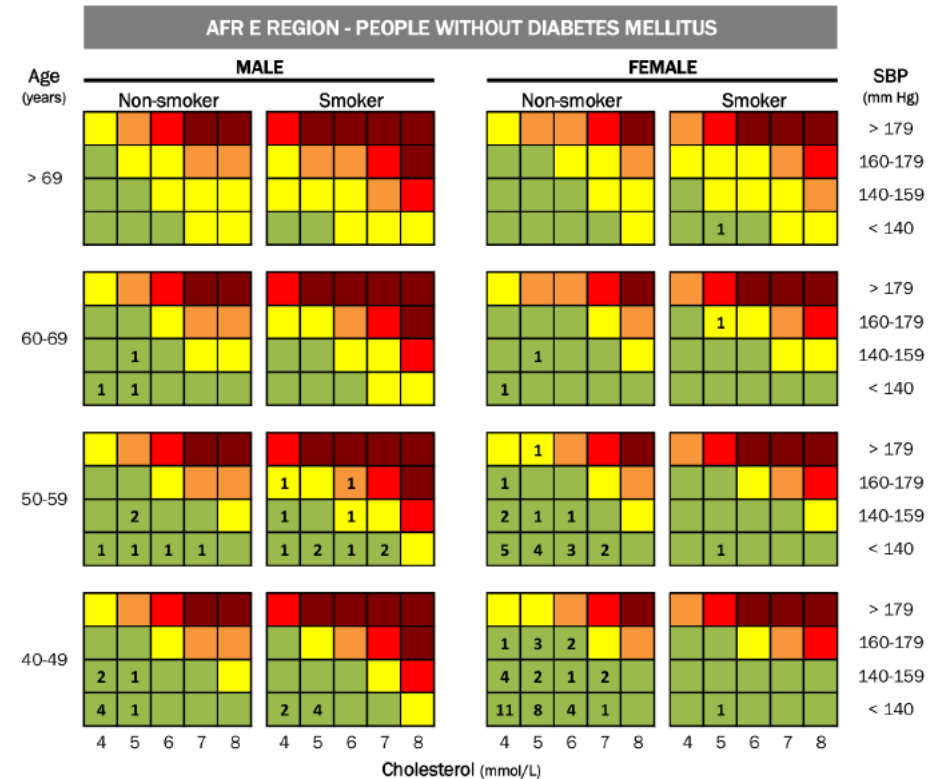
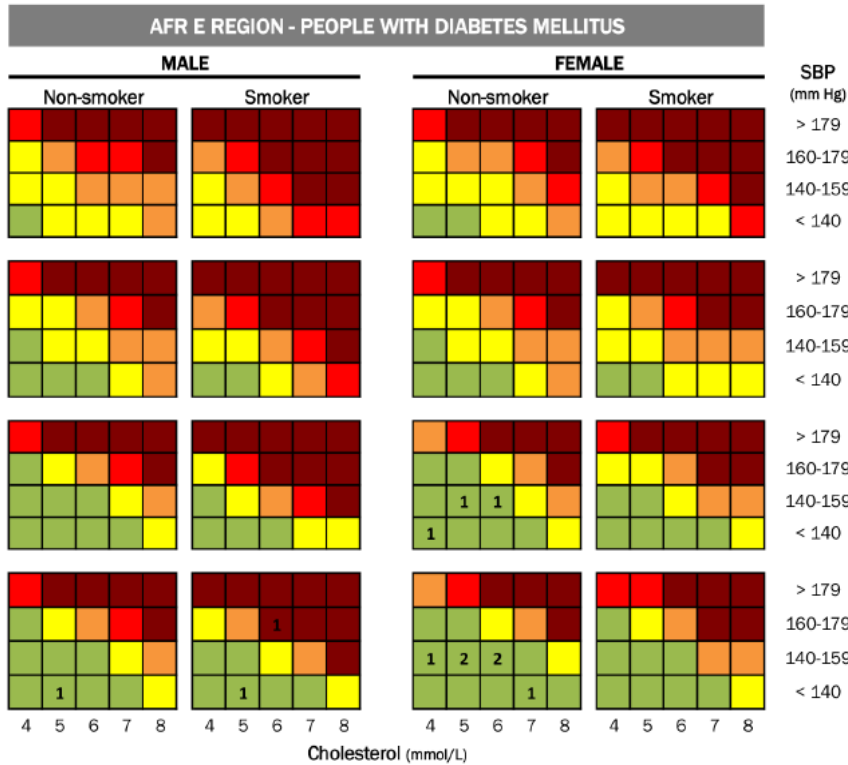
Record the end time for this session: ___ : ___

Time spent on HIV and CVDRF screening services

Service provided	No. minutes spent, median (range)		Wilcoxon rank-sum <i>p</i>
	Not screened (n=50)	Screened (n=118)	
Total visit length	4 (2-11)	15 (9-30)	<0.01
HIV services	4 (2-10)	4 (2-11)	0.55
	Screened positive (n=35)	Screened negative (n=77)	
Total visit length	16 (10-25)	15 (9-30)	0.12
HIV services	4 (2-8)	4 (2-11)	0.90
CVDRF screening services	14 (10-22)	13 (5-22)	0.12
BP measurement	2 (0-3)	2 (0-3)	0.78
Interview	1 (0-3)	0 (0-1)	0.26
POC testing	10 (7-18)	10 (4-20)	0.75
Post-test counseling	1 (0-2)	1 (0-2)	0.10
Documenting results	1 (0-7)	1 (0-3)	0.04

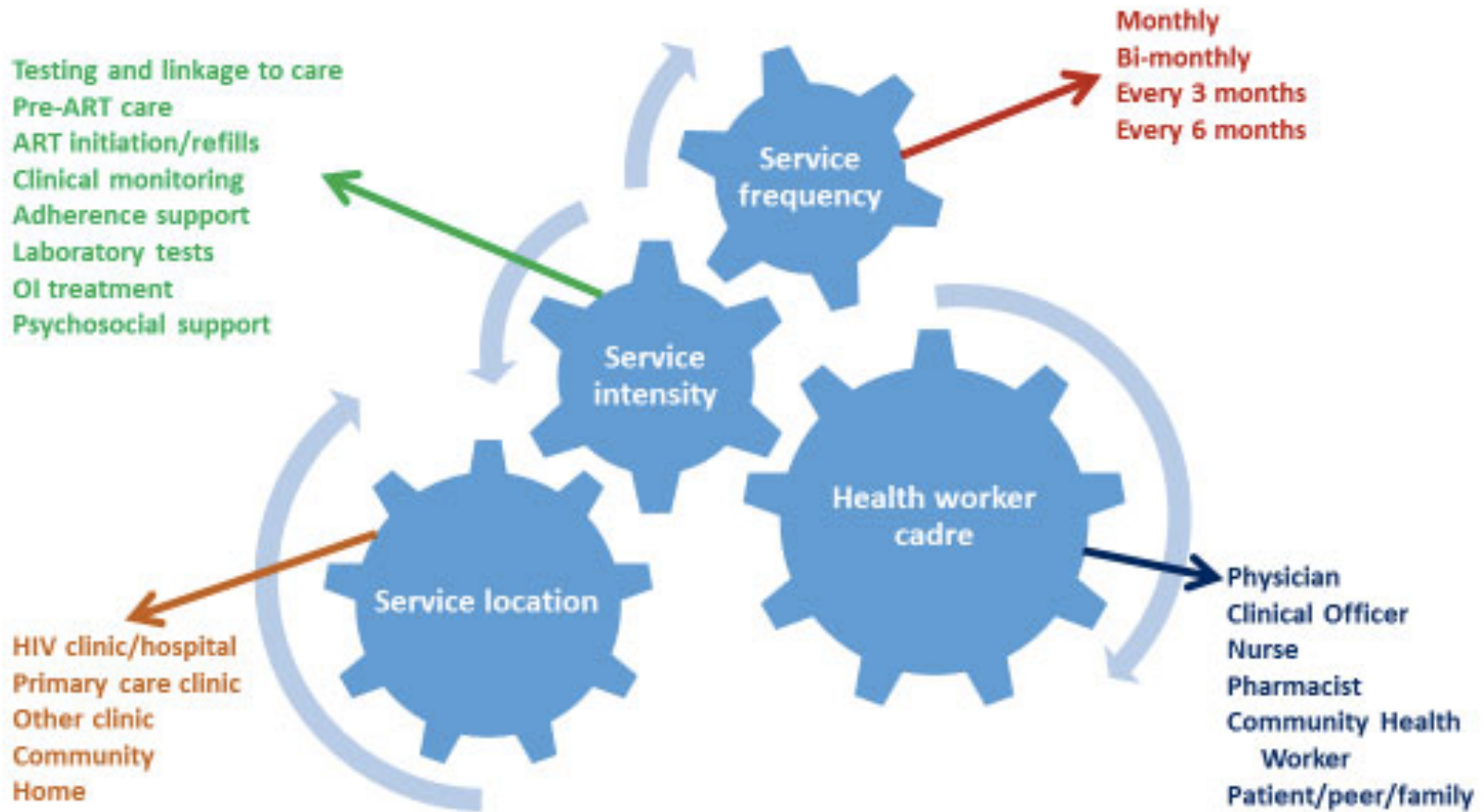
Risk Stratification: South Africa

Risk Level ■ < 10% ■ 10-19% ■ 20-30% ■ 30-39% ■ ≥ 40%




- 37.7% of participants had high BP, 10.4% had high total cholesterol, 15.4% reported current tobacco smoking, 4.1% had diabetes.
- 3.6% had a ten-year CVD risk of > 10%

Differentiated Chronic Care



NIH PEPFAR NCD Project



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Research to guide practice: Enhancing HIV/AIDS platforms to address NCDs in low-resource settings

Research to guide practice: Enhancing HIV/AIDS platforms to address NCDs in low-resource settings (the PEPFAR-NCD Project) aims to bring together researchers, implementers and government representatives to articulate practical goals, approaches and a related research agenda for treatment for noncommunicable diseases and middle-income countries (LMICs).

The NIH, with leadership from the Center for Global Health Studies (CGHS) at Fogarty, is conducting collaboration with the President's Emergency Plan for AIDS Relief (PEPFAR) and the partners list focuses on people living with HIV (PLHIV) being treated successfully for HIV but experiencing comorbid diseases.

Context

The rapidly rising burden of NCDs in LMICs creates a new epidemic that the global health community must address by establishing the evidence base and leveraging existing PEPFAR investment systems. The existing human capital, and data systems developed to support HIV, are being leveraged to address NCDs.

For millions of patients, HIV has been transformed into a highly treatable, chronic condition thanks to the development and distribution of increasingly sophisticated combination therapies. These advances have come with another unanticipated outcome, though. Researchers and health workers now worry they may lose patients they have saved from AIDS-related illnesses to non-communicable diseases (NCDs), including cardiovascular disease, cervical cancer, and diabetes. The project also includes policy makers, health and government officials, and researchers from 11 other NIH centres and institutes.

“As the prevalence of NCDs among HIV patients seems to be increasing, it seems natural to attempt to combine services for both diseases...”

It started in 2014, following “reports

increasing, it seems natural to attempt to combine services for both diseases, researchers said. This integration becomes easier as HIV transitions into a chronic disease for many patients, requiring less frequent visits to clinics and freeing health workers to expand their services.

“We need to find a way of bringing both of them together”, said Harriet Akello, the senior clinical officer at Zomba Central Hospital HIV

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NIH project focuses on

Print

NIH project focuses on integration of HIV and NCD care

The US National Institutes of Health and partner agencies are exploring ways to combine health services for HIV and non-communicable diseases in resource-poor settings. Andrew Green reports.



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Leveraging HIV programs to enhance NCD services for all

Why reinvent the wheel? Leveraging the lessons of HIV scale-up to confront non-communicable diseases

Miriam Rabkin^{a,b*} and Wafaa M. El-Sadr^{a,b}

Scale-up of HIV care and treatment: can it transform healthcare services in resource-limited settings?

Wafaa M. El-Sadr and Elaine J. Abrams

The rapid expansion of HIV care and treatment has undoubtedly ameliorated conditions in the world and enable persons living with HIV. Concerns have been raised, however, about the impact of health services. This paper argues that in resource-limited countries, if desired, achieving broad health benefits, more effective and responsive health services mechanisms need to be established. Key questions to be answered.

AIDS 2011

Keywords: antiretroviral

SUPPLEMENT ARTICLE

The Impact of HIV Scale-Up on Health Systems: A Priority Research Agenda

Miriam Rabkin, MD, MPH,*† Wafaa M. El-Sadr, MD, MPH, MPA,*†† and Kevin M. De Cock, MD, MBChB,§ for the Bellagio HIV/Health Systems Working Group†

HIV, aging and continuity care: strengthening health systems to support services for noncommunicable diseases in low-income countries

Miriam Rabkin^a, Margaret E. Kruk^b and Wafaa M. El-Sadr^a

INTRODUCTION

Recent years have witnessed a 6-fold increase in spending on global HIV programs, a 10-fold rise in the number of people receiving antiretroviral treatment in developing countries, and declines in HIV incidence and mortality in some countries.¹ Although the urgent need to respond to the HIV epidemic has attracted widespread support, this unprecedented expansion of

programs and the maintenance of these programs. The importance of such research and the need to support implementation science while simultaneously supporting program expansion has been emphasized by the Declaration¹⁴ of the International AIDS Society, the Statement of the Positive Synergies Collaborative¹⁵ and others.¹⁶

It is unlikely that the impact of large and sustained initiatives such as the effort to scale-up HIV services summarized as simply positive or negative. HIV programs are heterogeneous, and their effects are deeply context-specific. Others have noted, health systems need both vertical and horizontal integration to deliver care.¹⁷ Similarly, well-functioning health systems, which are consistent with multiple needs.

ends to both maximize the expansion of HIV Vaccine Initiation and Malnutrition Plan for AIDS dedicated staff and many HIV

1, November

article is pro

SUPPLEMENT ARTICLE

Scaling Up Chronic Care Systems: Leveraging HIV Programs to Support Noncommunicable Disease Services

Miriam Rabkin, MD, MPH* and Sania Nishtar, SI, FRCP, PhD†

Integrated Chronic Care for HIV and NCDs

Offering integrated care for HIV/AIDS, diabetes and hypertension within chronic disease clinics in Cambodia

B Janssens,^a W Van Damme,^b B Raleigh,^a J Gupta,^a S Khem,^a K Soy Ty,^a MC Vun,^c N Ford^d & R Zachariah^e

Problem In Cambodia, care for people with HIV/AIDS (prevalence 1.9%) is expanding, but care for people with type II diabetes (prevalence 5–10%), arterial hypertension and other treatable chronic diseases remains very limited.

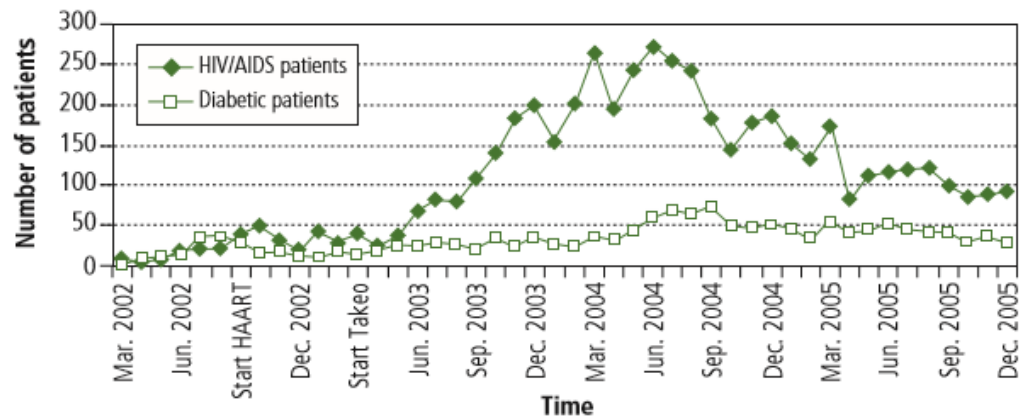
Approach We describe the experience and outcomes of offering integrated care for HIV/AIDS, diabetes and hypertension within the setting of chronic disease clinics.

Local setting Chronic disease clinics were set up in the provincial referral hospitals of Siem Reap and Takeo, 2 provincial capitals in Cambodia.

Relevant changes At 24 months of care, 87.7% of all HIV/AIDS patients were alive and in active follow-up. For diabetes patients, this proportion was 71%. Of the HIV/AIDS patients, 9.3% had died and 3% were lost to follow-up, while for diabetes this included 3 (0.1%) deaths and 28.9% lost to follow-up. Of all diabetes patients still in follow-up at 24 months.

Lessons learned Over the first three years, the chronic disease clinics for HIV/AIDS with non-communicable chronic diseases in Cambodia resulting in good outcomes. Services were well accepted by patients. This experience shows how care for HIV/AIDS patients can act as

Fig. 1. Inflow of new patients in chronic disease clinics, Cambodia



HIV and NCD care in Kibera, Kenya

NCD and HIV care integrated into primary care clinics in the informal settlement of Kibera, Kenya

- HTN and DM services provided for both HIV negative and HIV positive pts
- Analysis of routinely collected data for 2,206 pts with DM and/or HTN:
 - 9.5% were PLHIV; median age was younger for this group (43 vs. 49 years)
 - Outcomes similar for both groups



Edwards et al 2015
Ayah et al 2013

Integrated medication adherence clubs for stable adults with HIV and/or NCDs

RESEARCH ARTICLE

"They just come, pick and go." The Acceptability of Integrated Medication Adherence Clubs for HIV and Non Communicable Disease (NCD) Patients in Kibera, Kenya

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21st Century Primary Health Care

- As we differentiate and decentralize HIV care, we run the risk of re-creating “vertical” programs at the community level
- Instead, can we re-imagine and redesign primary health care services to include continuity care for chronic diseases?
- What would it take?

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Questions? Comments?