

THE INCREASING BURDEN OF NCDs IN LMICs: LEVERAGING THE RESPONSE THROUGH LESSONS LEARNED FROM HIV

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IeDEA Global Consortium Annual Meeting
June 22-23, 2016



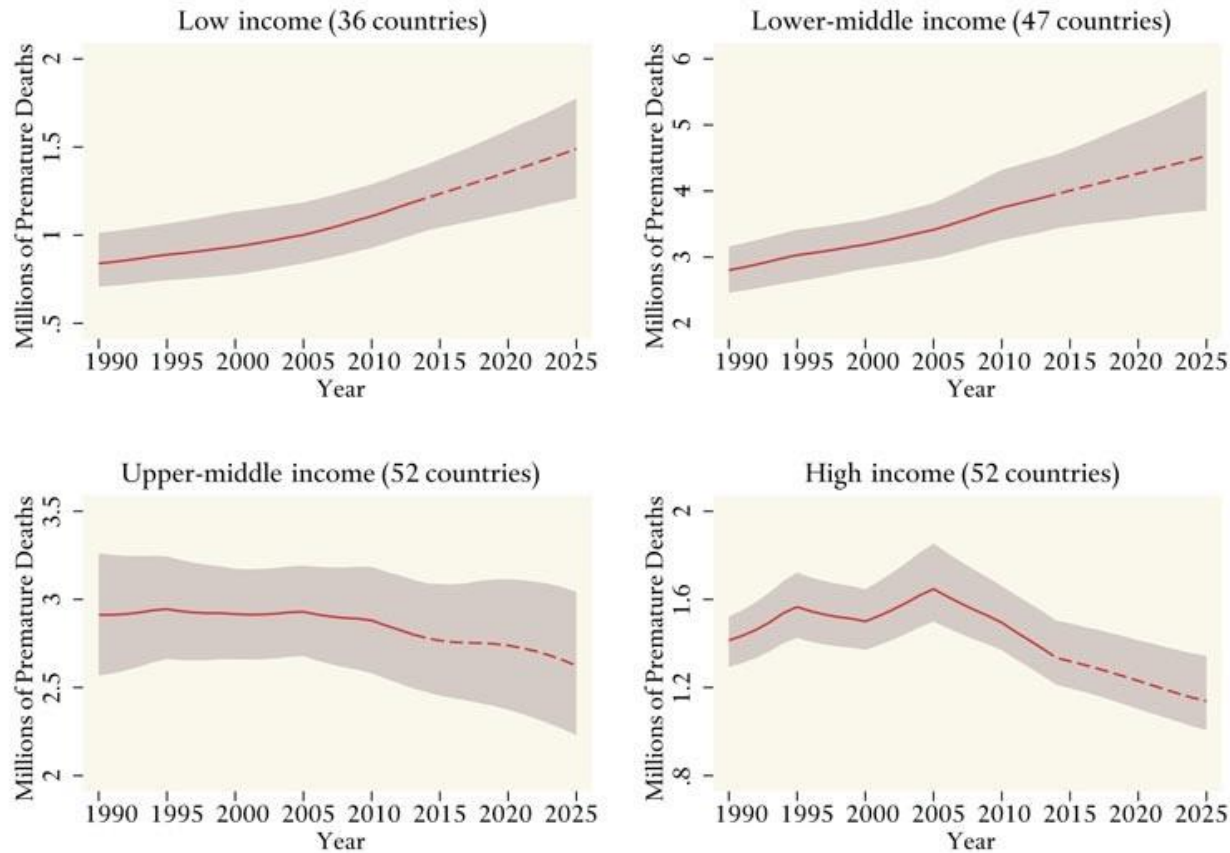
Fogarty International Center

Talk Outline

- The rising burden NCDs in LMICs
- Leveraging HIV Investments for NCDs
- The PEPFAR NCD Project – The Role of Research
- The Role of Data

The Context

Figure 1: Premature (Under Age Sixty) Deaths From NCDs

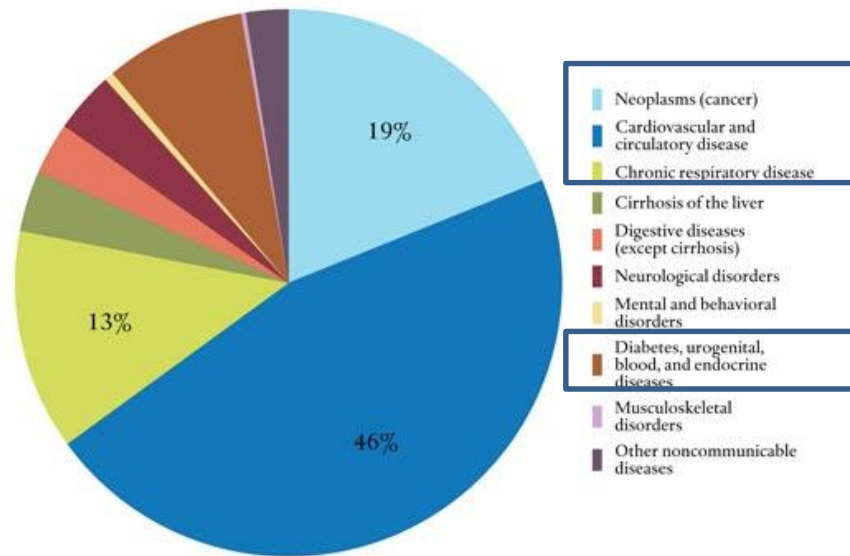


Underlying Data Source: Institute for Health Metrics and Evaluation, Global Burden of Disease Study 2013.

[Council on Foreign Relations: Daniels and Donolon Chairs: The Emerging Global Health Crisis: Noncommunicable Diseases in Low-and Middle-Income Countries \(Fall 2014\)](#)

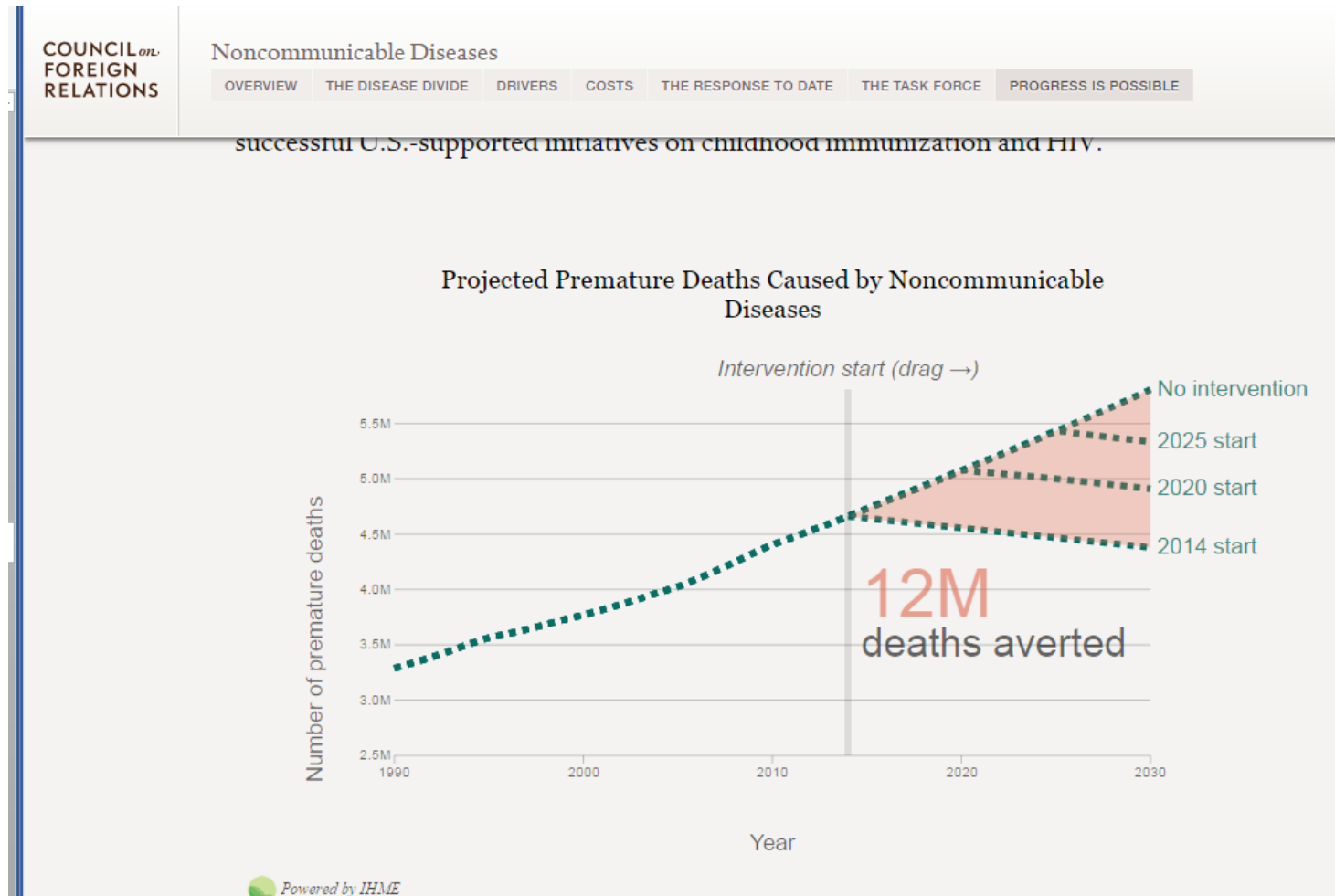
Four NCDs with the Greatest Burden

Figure 4: Cause of NCD Deaths in Low- and Middle-Income Countries



Data Source: Institute for Health Metrics and Evaluation, Global Burden of Disease Study 2013.

If We Do Nothing.....



NCD Economic Toll



At the global level, the World Economic Forum (WEF) projects that NCDs will inflict \$21.3 trillion in losses in developing countries over the next two decades—a cost nearly equal to the aggregate economic output of these countries in 2013. For these reasons, the WEF has ranked NCDs as a greater threat to global economic development than fiscal crises, infectious diseases, natural disasters, and crime and corruption.



People with HIV, Live Longer, Age Faster Get Non-communicable Diseases

"The medical issues in treating people with HIV have changed. We're no longer as worried about infections that come from being immunocompromised. Now we worry about diseases related to ageing, like cardiovascular disease, neurocognitive impairment and liver problems." Howard Fox, Study Co-Author*

***An Epigenetic Clock Measures Accelerated Aging in Treated HIV Infection**

Konstantinos Boulias, Judy Lieberman, Eric Lieberman Greer Molecular Cell, volume 62, Issue 2 p 153-155 21 April 2016

Case Study I

- 43 year-old woman diagnosed with HIV in 2001
- Presented with esophageal candidiasis; CD4 was 15
- Started on Zidovudine, Lamivudine and Efavirenz
- Clinical condition improved: significant weight gain & CD4 increased to 450 in 2005
- Yearly viral load monitoring from 2005 to 2008 was below 400 copies/ml(LOD)
- Patient never missed medical appointments

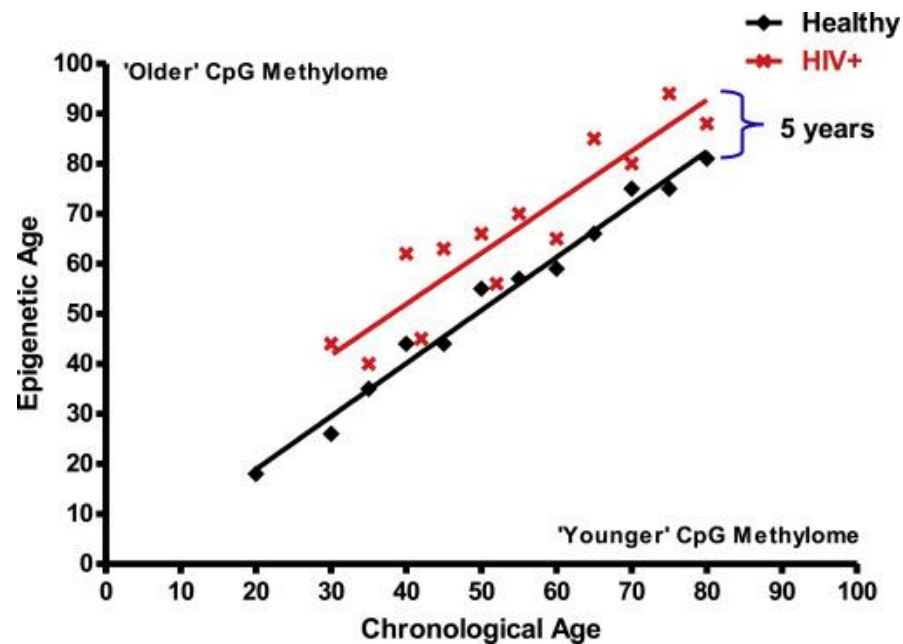
Kwasi Torpey, MD, MPH, PhD, FGCP, FHI 360

Case Study (Cont.)

- In April 2008, patient was rushed to the emergency room due to sudden collapse
- Patient was deeply comatose, BP 200/130mmHg
- Patient died within 2 hours of admission
- Post-mortem examination showed massive intracranial hemorrhage

How can events like this be prevented among HIV patients and the general population?

People with HIV Age Younger



Trends in Comorbidities

Trends in Comorbid Conditions Mentioned with HIV Disease on Death Certificates, United States, 2000-2010

Kpandja (KP) Djawe, Kate Buchacz, Charles Rose, and John T. Brooks

Epidemiology Branch, Division of HIV/AIDS Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia, USA

Table 2. Estimated Temporal Trends in Coefficient of Association in Deaths with HIV Cause and Select **Non-AIDS-related Condition or **AIDS-defining** Condition Causes**

Condition	Trend in coefficient of association	11-year % change	P-value
Heart disease	0.10	115.7	<0.01
Cerebrovascular disease	0.05	56.4	<0.01
Chronic liver disease	0.02	22.2	<0.01
Diabetes mellitus	0.07	79.8	<0.01
Kidney disease	-0.002	-2.2	0.55
Lung cancer	0.21	257.0	<0.01
Liver cancer	0.18	216.9	<0.01
Colon cancer	0.18	216.9	<0.01
Melanoma	0.15	178.0	<0.01
Anal cancer	0.15	178.0	<0.01
Oropharyngeal cancer	0.27	341.0	<0.01
<i>Pneumocystis pneumonia</i>	-0.04	-43.1	<0.01
Non-Hodgkin's lymphoma	-0.08	-84.6	<0.01
<i>Mycobacterium avium</i> complex	-0.10	-104.7	<0.01
Cryptococcosis	-0.04	-43.1	0.01
Cytomegalovirus	-0.08	-84.6	<0.01
Toxoplasmosis	-0.002	-2.2	0.91
Kaposi's sarcoma	0.001	1.1	0.97
Candidiasis	-0.06	64.1	<0.01
Histoplasmosis	-0.07	-74.4	0.02

Leveraging the Huge Investment in HIV/AIDS

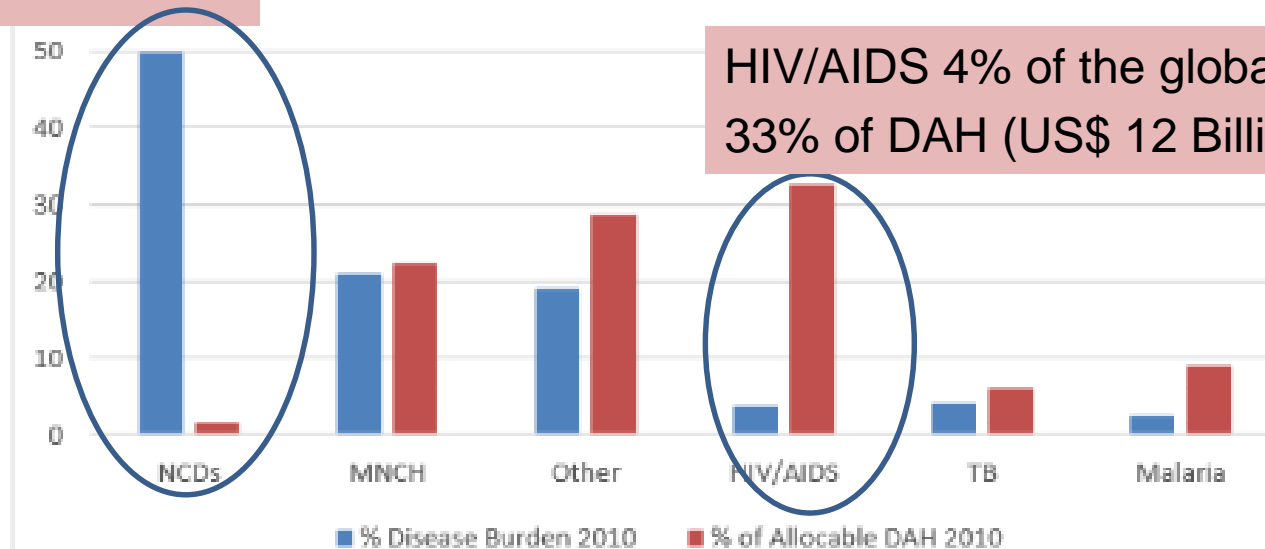
Figure 3: DAH and disease burden by health condition, 2010*

NCDs 50% of the global disease burden
1% of DAH (US \$377 Million)

DAH and Disease Burden by Health Area

Source: IHME DAH Database,

Note: excludes health systems and non-allocable DAH



HIV/AIDS 4% of the global burden
33% of DAH (US\$ 12 Billion)

Lessons Learned from HIV NCD

Barriers (HIV and NCD)	Solutions (HIV and NCD)
1. Too few medical health specialists	Task Shifting, Medical Training Strengthened
2. Little access to health care in rural areas	Decentralization -- Care to rural primary care centers
3. Many people to treat, few resources	Public Health Approach (decentralization, simplification)
4. Too few drugs, too expensive, hard to obtain, stock out, hard to take	Decentralization, Strengthened Supply Chain, Research to find new combination medication
5. Patients don't remain in care	mHealth, support groups
6. New Funding Paradigms	Global Fund, PEPFAR
7. People unaware of HIV/AIDS and its effects	CHW Education, Public Education, Medical Education
8. National Policies need to be added	The 'three ones' approach: one national coordinating body, one national guideline, one national M&E system, one essential package of care for facilities at each level of the health system
9. Need for data and results to report to funders, policy makers	Work with WHO and others to determine metrics and monitoring systems

Research to Guide Practice

Enhancing HIV/AIDS platforms to address NCDs in low-resource settings (PEPFAR- NCD PROJECT)

To bring together researchers, implementers and policy-makers to articulate practical goals, approaches, and related research agendas to support LMICs as they strive to sustain and enhance the gains in HIV/AIDS prevention, care, and treatment and address the rising burden of chronic NCDs.

<http://www.fic.nih.gov/About/Staff/Policy-Planning-Evaluation/Pages/pepfar-ncd-project.aspx>



Partners

NIH

- FIC, NCI, NHLBI, NIAID, NICHD, NIDDK, NIMH, NIMHD, NINDS, OAR, NINR (11)

Other USG Agencies

- CDC, OGAC, USAID

International Organizations

- UNAIDS, Global Fund, WHO

Implementers/NGOs

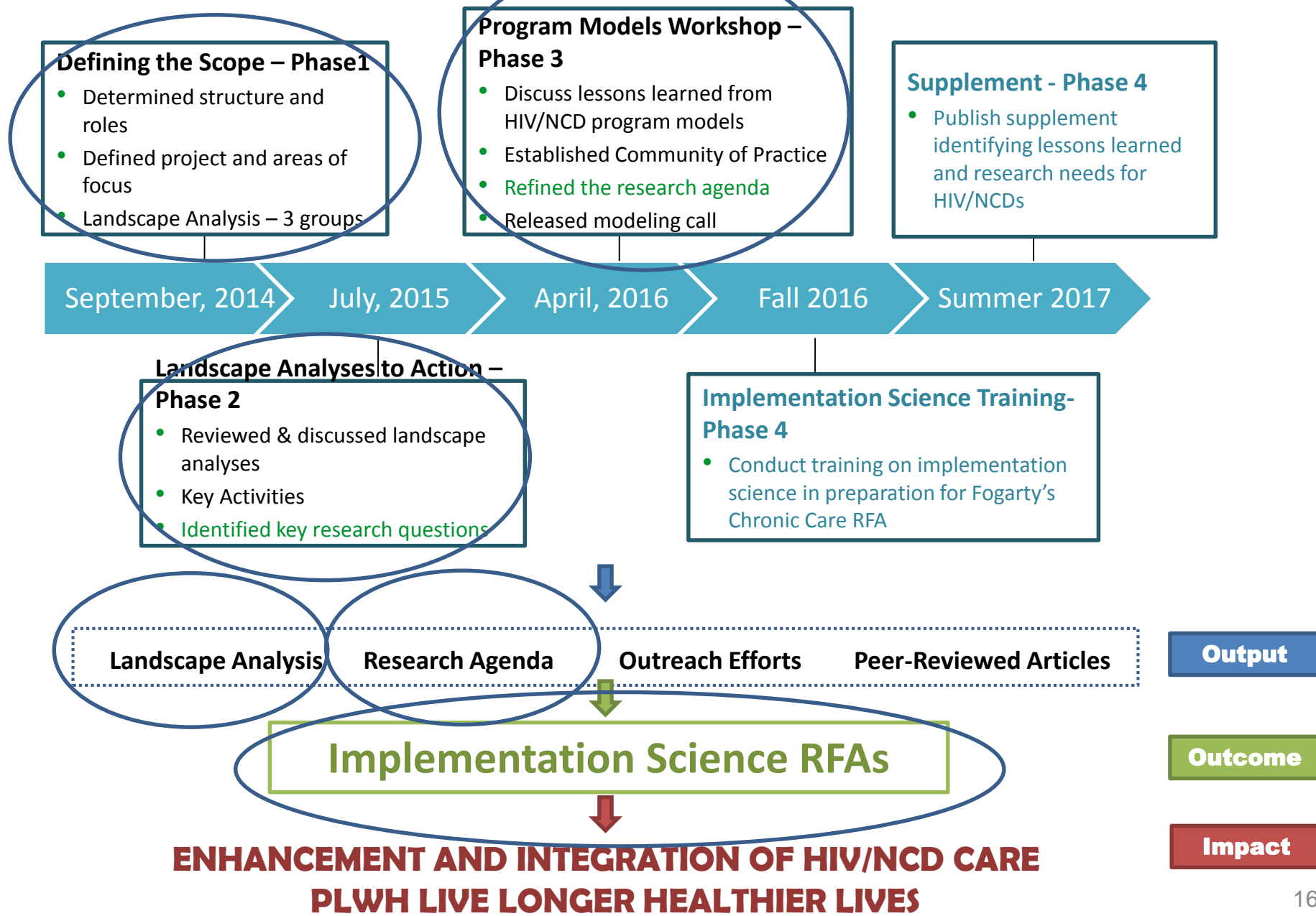
- AMPATH, FHI-360, leDEA, Jhpiego, Malawi, MOH, MSH, PATH, PIH

Additional Experts

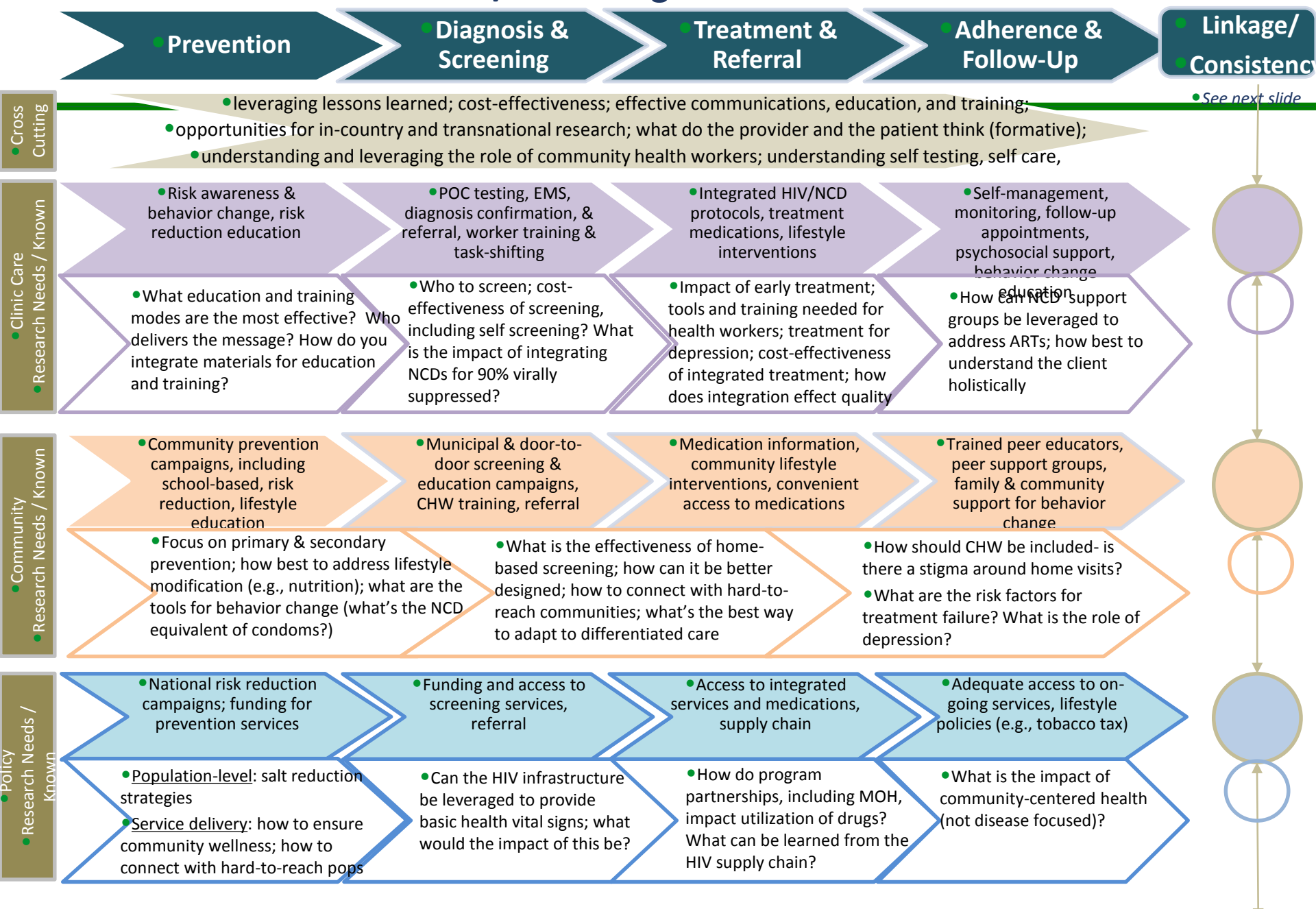
- CUNY, University of Chicago, University of Washington, UCSF



Research to Guide Practice: Enhancing HIV/AIDS Platforms to Address Chronic, Non-Communicable Diseases in Low Resource Settings



● HIV/NCD Integration Model



NIH RFAs Covering HIV/NCD Integration

- FIC: [Global Non-communicable Diseases and Injury Across the Lifespan: Exploratory Research \(R21\) \(PAR-16-052\)](#) Due Feb. 22, 2017
- NIMH: [Research Partnerships for Scaling Up Mental Health Interventions in Low- and Middle-Income Countries \(U19\) \(PAR-16-174\)](#) Due June 15 2016
- NCI: [Planning for Regional Centers of Research Excellence in Non-communicable Diseases in Low and Middle Income Countries \(P20\)](#) August 3, 2016

Case Study II: Screening and Treatment of Hypertension in PLWH in Malawi

Problem

High burden of undiagnosed and untreated hypertension in people living with HIV in Malawi (estimated that 46% of people living with HIV had elevated blood pressure).

Policy Option 1: Integration of hypertension screening and treatment into existing HIV clinic structures

Policy Option 2: Hypertension screening within HIV Clinics and Subsequent Referral

Policy Option 3: Development of a Comprehensive Chronic Care Clinic Model

Policy Option 4: The Addition of Hypertension Screening and Referral into Community-Based HIV Activities

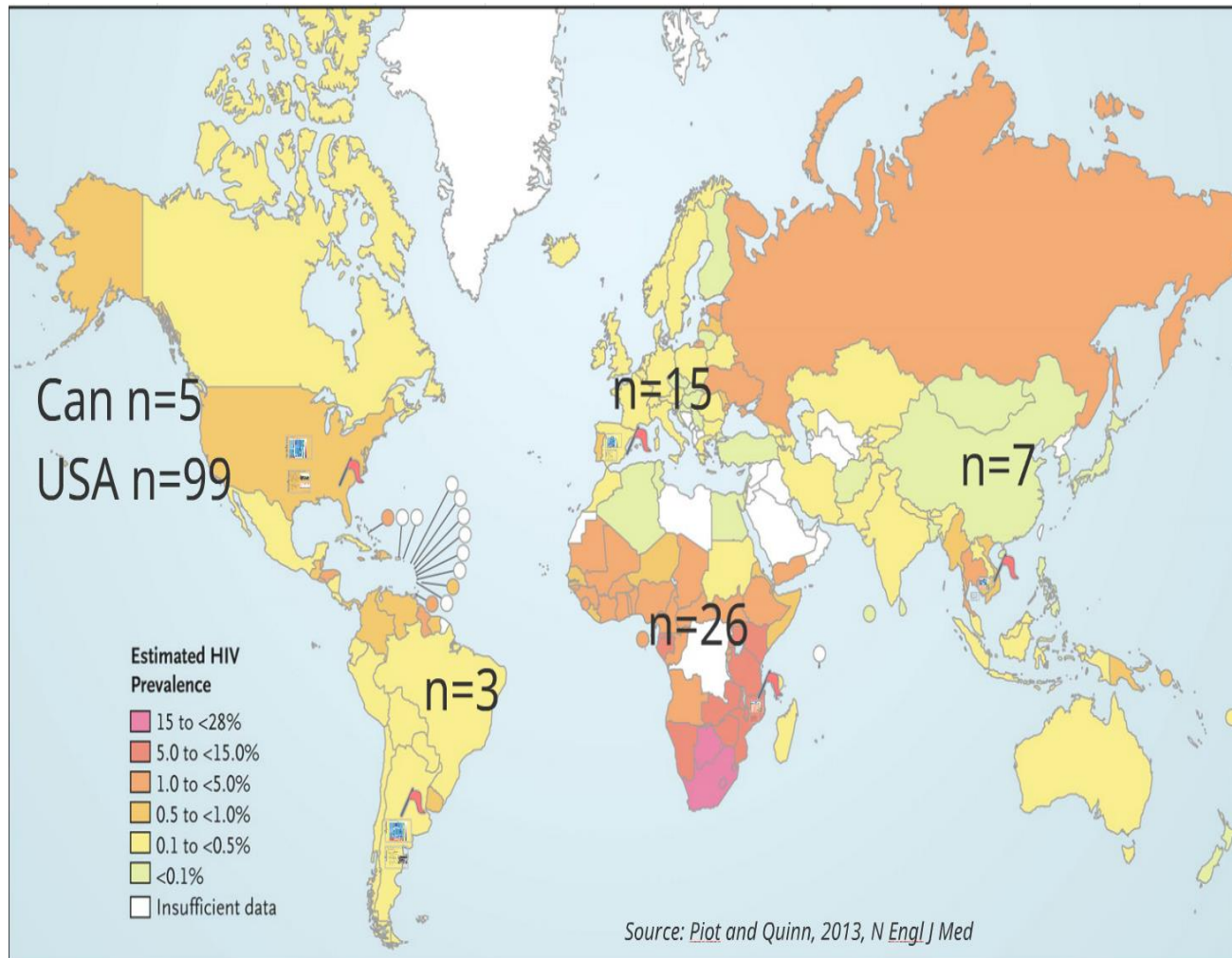
Lack of Data to Inform Decision Making

The evidence for all four options is limited and the costs and cost-effectiveness of the four options are uncertain. Given the limitations of the currently available evidence, rigorous evaluation and monitoring of resource use and activities is warranted.

Policy 1: Integration of hypertension screening and treatment into existing HIV clinic structures	<ul style="list-style-type: none">- No systematic reviews that discuss patient outcomes.- Studies from Uganda, Tanzania, and Kenya found high hypertension among PLWH (only confirmed the problem).- One study in Ethiopia found improved documentation when HIV operation protocols applied to NCD care.
Policy 2: Hypertension screening within HIV Clinics and Subsequent Referral	<ul style="list-style-type: none">- Limited documentation of programs integrating screening.- A pilot project in Malawi has integrated hypertension screening, but linkage to care is poor.
Policy 3: Development of a Comprehensive Chronic Care Clinic (CCC) Model	<ul style="list-style-type: none">- Some CCC models piloted in Malawi BUT only one site includes HIV- Only one “lessons learned” paper that describes a health system where HIV care has been integrated in CCC model (Cambodia).
Policy 4: The Addition of Hypertension Screening and Referral into Community-Based HIV Activities	<ul style="list-style-type: none">- Two studies (one in Kenya and one in Uganda and Cape Town) showed community-based screenings for multiple NCDs including hypertension and HIV were feasible and highly accepted- Chamie et al. showed that linkages to care after an elevated blood pressure diagnoses were sub-optimal in studies conducted in Uganda, Kenya and South Africa.

Need more implementation research and piloting of these models of care to produce evidence of the possible advantages and disadvantages.

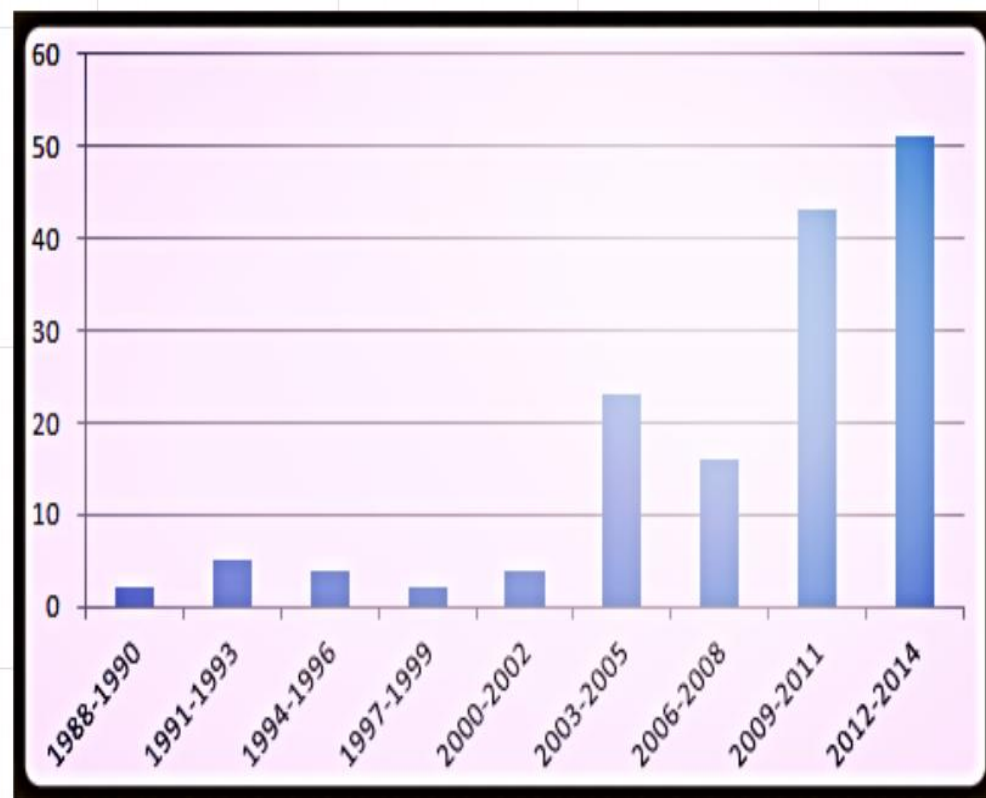
Number of Studies Integrating HIV and NCDs per region (155)



HIV/NCD Integration Literature

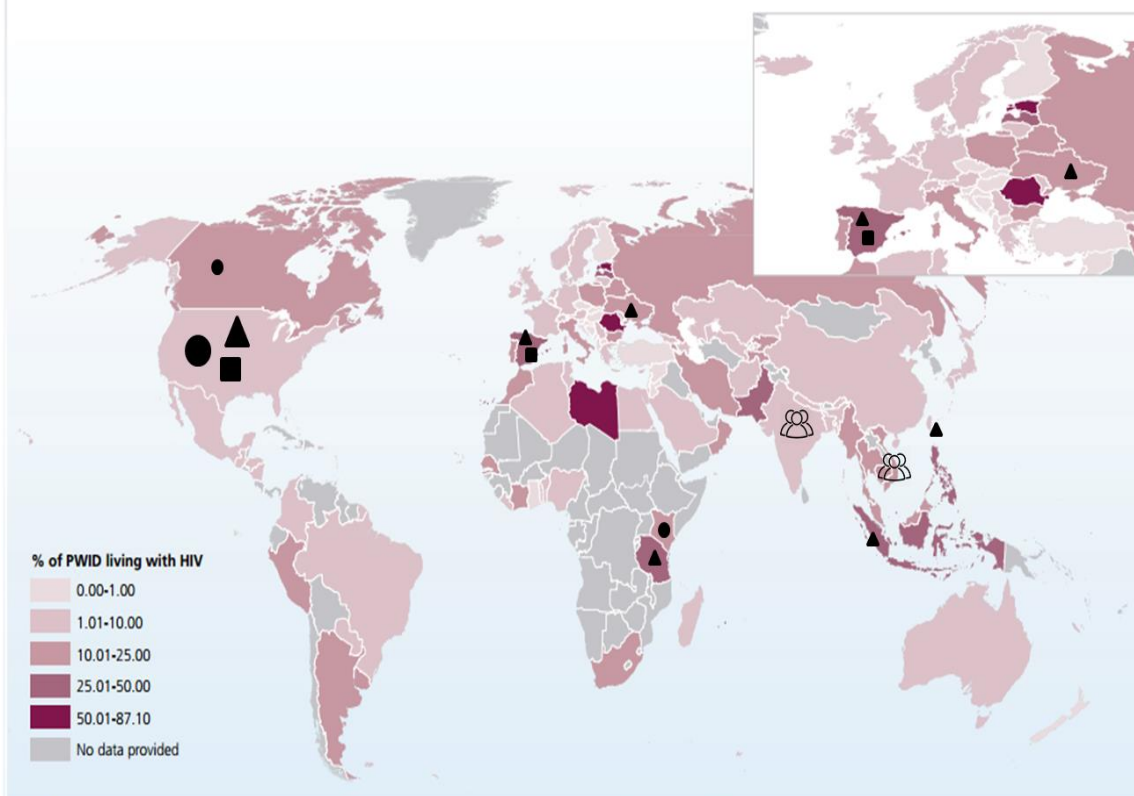
- **Descriptive n=50**
- **Observational n=83**
- **RCT n=15**
- **Qualitative n=7**
- **Total n=155**

Number of Studies/ per year



HIV and Substance Abuse Integration (literature)

Prevalence of HIV among people who inject drugs, 2013 or latest year available



Note: The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Sudan and South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Type	Country	No.
● HIV Facility	USA	19
	Canada	2
	Kenya	1
	Viet Nam	1
▲ Drug Treatment Facility	USA	15
	Spain	1
	Taiwan	1
	Indonesia	1
	Tanzania	1
	Ukraine	1
■ Other Facilities	USA	6
	Spain	1
⦿ Patient Perspectives	India	1
	Vietnam	1

PEPFAR-NCD Call for Modeling Proposals

In response to a need for more data on NCD burden in PLWH in LMICs, the PEPFAR-NCD Project has issued a Call for Modeling Proposals.

The goal is to develop models to estimate the burden of four NCDs (**CVD, type 2 diabetes, depression, and cervical cancer**) in PLWH at the national scale in at least two of the following select countries: **Ethiopia, Kenya, Malawi, Rwanda, South Africa, Swaziland, and Uganda.**

One or two awards of up to \$150,000 USD will be made for a 1 year project.

Application deadline – August 1, 2016

<http://www.crdfglobal.org/grants-and-grantees/current-funding-opportunities/2016/06/16/pepfar-ncd>

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PEPFAR-NCD Call for Modeling Proposals

Deadline: Aug 01, 2016 23:59 Eastern Standard Time (EST)
Apply: <https://eps.crdfglobal.org/PEPFAR-NCD>

CRDF Global is accepting proposals for PEPFAR-NCD modeling projects. Funding for this award initiative is provided by CRDF Global [utilizing funds provided by the U.S. National Institutes of Health (NIH), Fogarty International Center].

FIC is leading a PEPFAR funded project, PEPFAR-NCD Project, in collaboration with US Centers for Disease Control (CDC), U.S. Agency for International Development (USAID) and low and middle-income country (LMIC) partners. The goal of this effort is to develop a research agenda to support the integration of care for people living with HIV (PLWH) who get Non-Communicable Diseases (NCDs) into existing HIV platforms. The initiative focuses on PLWH in Sub-Saharan Africa (SSA) many of whom are being treated successfully for HIV only to die prematurely from preventable and treatable NCDs. This project focuses on four NCDs -- cervical cancer, cardiovascular disease (CVD), depression and type 2 diabetes.

This request for proposals (RFP) is in response to a need for more data on NCD burden (risk factors and outcomes) in PLWH in LMICs. This finding was made through a landscape analysis conducted by the PEPFAR-NCD project. Policymakers and implementers alike need data on the burden of NCDs in PLWH to make evidence-informed decisions about which diseases to prioritize in an integrated HIV/NCD chronic care health platform and to determine the outcome of various NCD care scenarios for PLWH. Furthermore, they need data to monitor the progress of future interventions and research projects.

The primary goals and objectives of the proposed project are to:

- Develop models to estimate the burden of four NCDs (CVD, type 2 diabetes, depression, and cervical cancer) in PLWH at the national scale in at least two of the following select countries: Ethiopia, Kenya, Malawi, Rwanda, South Africa, Swaziland, and Uganda.
- Provide data to enable policymakers and implementers to make evidence-informed decisions about the integration of HIV/NCD chronic care platforms and assess the progress of future interventions and research.
- Use the model or adapt it for economic analyses that will assess deaths averted, quality-adjusted life years saved, and disability-adjusted life years saved by integration of NCD and HIV care in LMICs.

One or two awards of up to \$150,000 USD will be made for a 1 year project.

NOTE: Electronic Proposal Submission (EPS) website will be active July 15*