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Dr. Kilmarx has no conflicts of interest to disclose*



**Fogarty International Center**

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***Perspectives in Global Health  
Research and Careers***

Duke Global Health Institute  
October 21, 2024 | Durham, NC

**Peter H. Kilmarx, MD, Deputy Director  
Fogarty International Center  
National Institutes of Health**

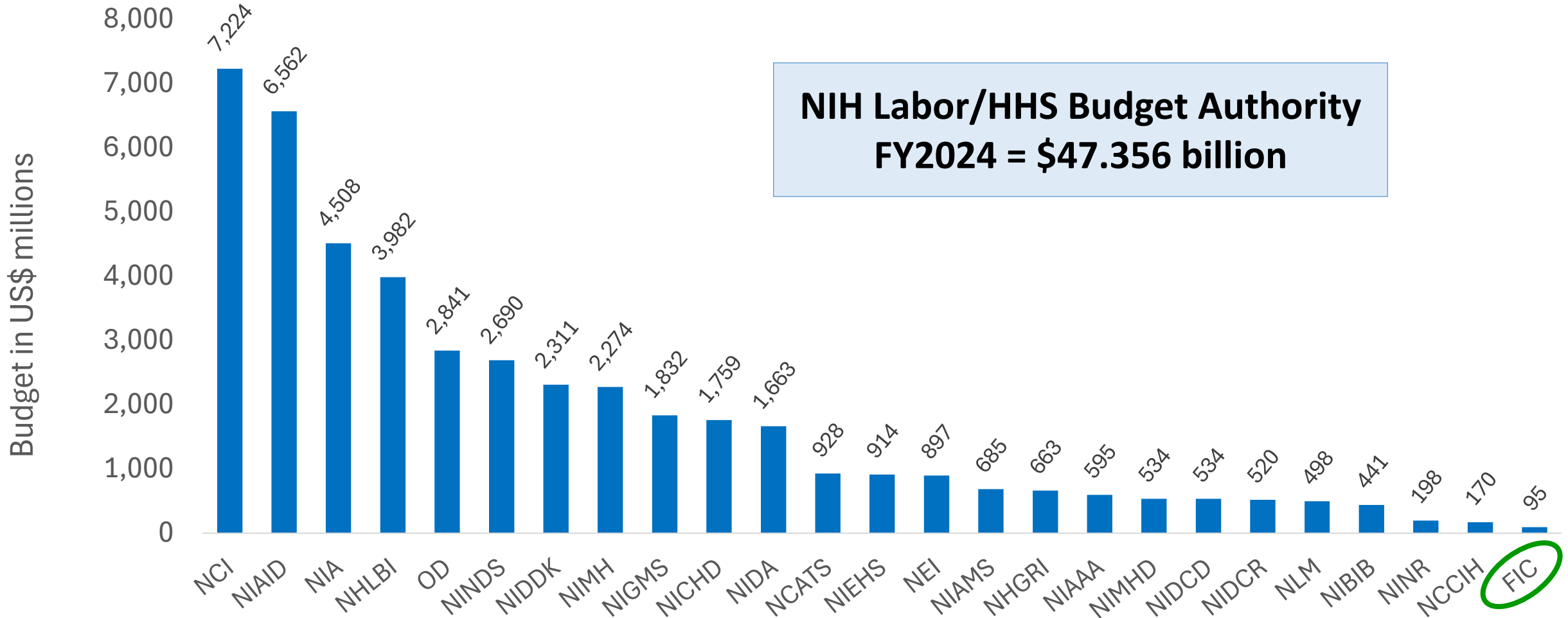
# NIH: Steward of Medical and Behavioral Research



“Science in pursuit of **fundamental knowledge** about the nature and behavior of living systems and the **application** of that knowledge to extend healthy life and reduce illness and disability.”



# NIH Budget by Institute and Center – FY 2024



# Why pursue global health research?

- Unique populations
  - Disease presentations
  - Genetics
- Unusual exposures, environment
  - Infections, diet, cultural context
- Unique interventions
  - Frugal/novel technologies, mobile health
- Insights & expertise of a diverse set of investigators
- Large, potentially treatment-naïve, patient populations
- Alternative health systems
- Increased early-career interest in global health

**New tools needed to reach global health goals!**



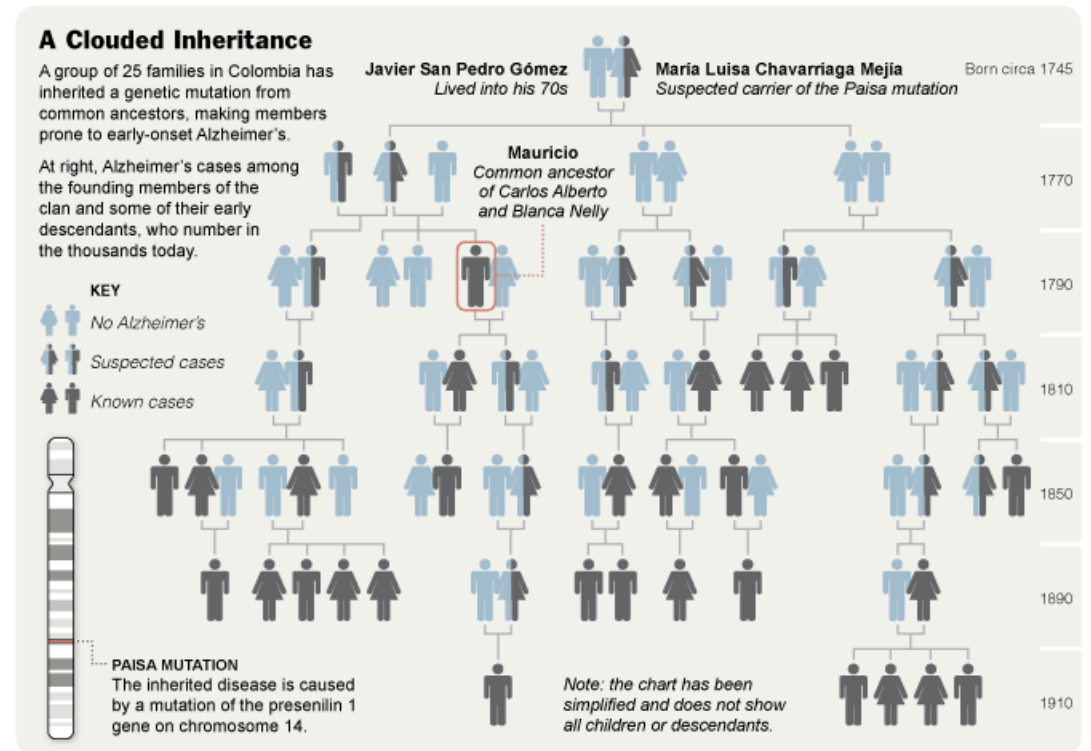
*Image by DALL-E*



# Fogarty trainees study Colombian family for clues to prevent Alzheimer's Disease



- Largest known family with an inherited, early-onset form of Alzheimer's Disease
- Biomarkers identified and multiple prevention trials ongoing with U.S.-based and other companies' drugs
- *"There's no doubt in my mind the clinical trial wouldn't have happened if it weren't for Fogarty getting in there and building capacity"* - Dr. Kenneth Kosik, Principal Investigator, UCSB



TODAY Carlos Alberto Villegas, his wife and their siblings descend from a common ancestor, circled above, who had the Paisa mutation.

Carlos Alberto, 53. Onset of memory problems at 41.	María Elisy, 61 (his sister) 48 at onset.	Darío, 55 (his brother) 47 at onset.	Oderis, 50 (his brother) 46 at onset.	Blanca Nelly, 41 (his wife) Currently no symptoms.	William, 48 (her brother) 45 at onset.	Gladys, 38 (her sister) Too afraid to have children.	Liliana, 29 (her sister) Terrified of any memory lapse.	Two sisters show early symptoms but deny it.

Source: University of Antioquia

THE NEW YORK TIMES

<https://www.fic.nih.gov/News/Publications/Pages/fogarty-trainees-study-colombian-family-prevent-alzheimers.aspx>

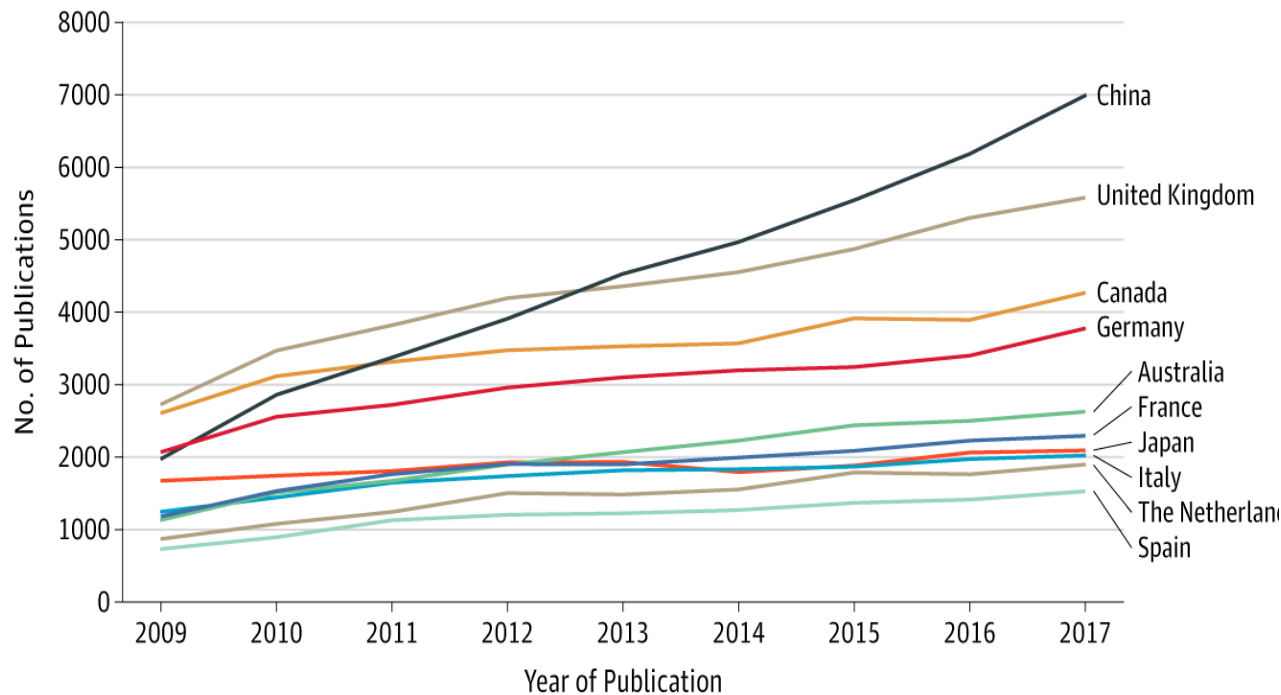
# Coauthor Country Affiliations in International Collaborative Research Funded by the US National Institutes of Health, 2009 to 2017

Joshua C. Grubbs, BA; Roger I. Glass, MD, PhD; Peter H. Kilmarx, MD

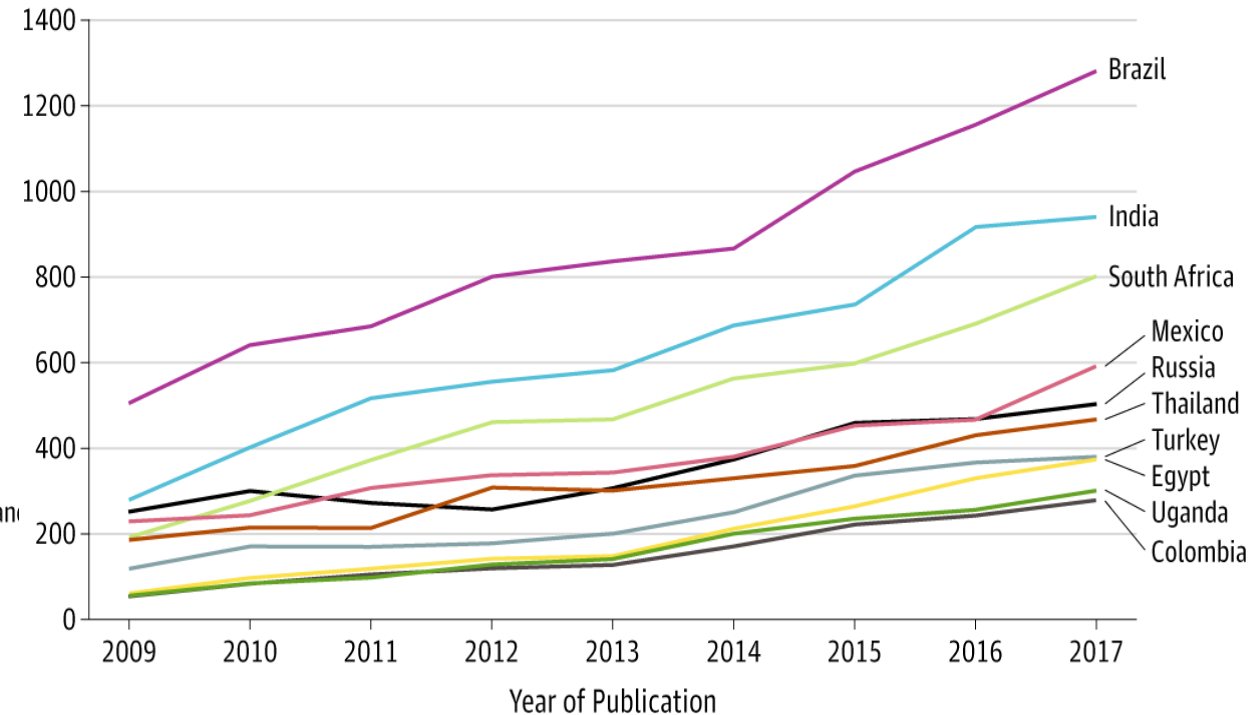


- 35% of all NIH-funded publications in 2017 had a non-U.S.-affiliated co-author
- Those with both U.S.- and non-U.S.-affiliated coauthors had greatest mean citation impact score

Non-US author affiliations



affiliations from low- to middle-income countries





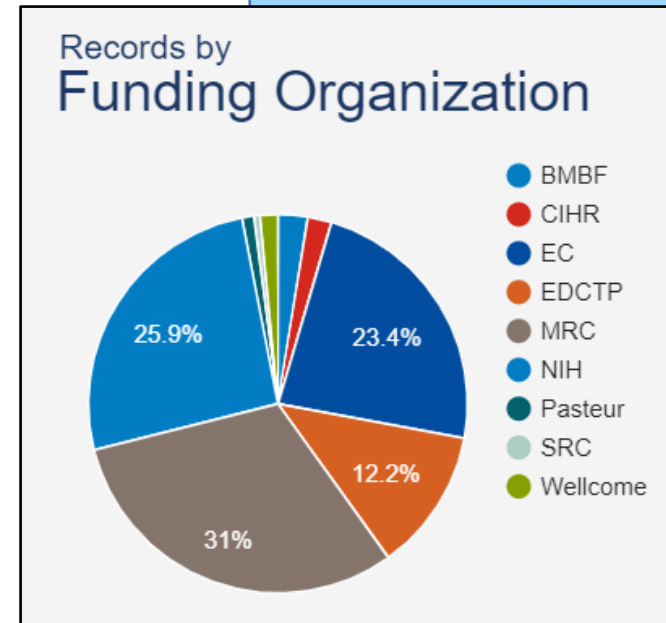
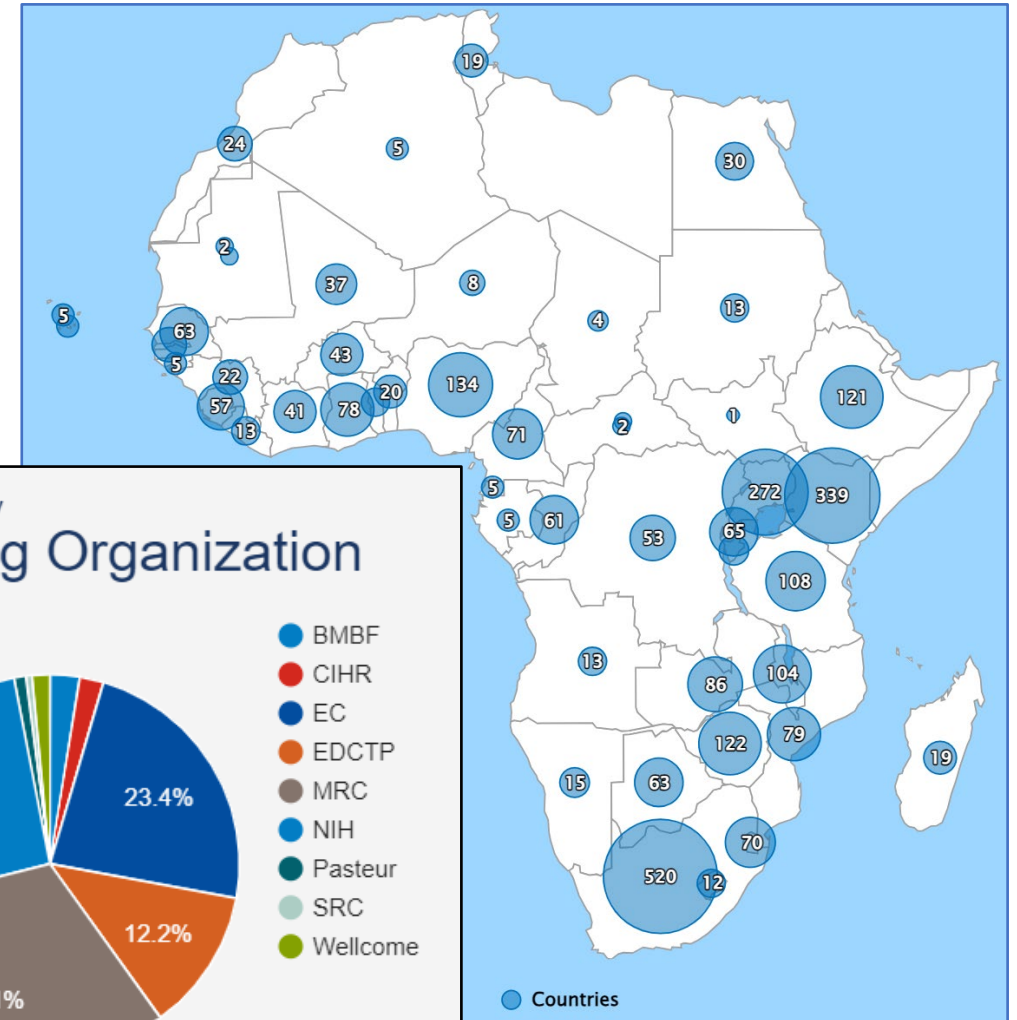
## An atlas of health research investments

- Launched by HIROs in 2013, hosted by NIH
- 1M+ grant records from 16 funding agencies, and growing
- Maps direct awards *and* collaborating research networks

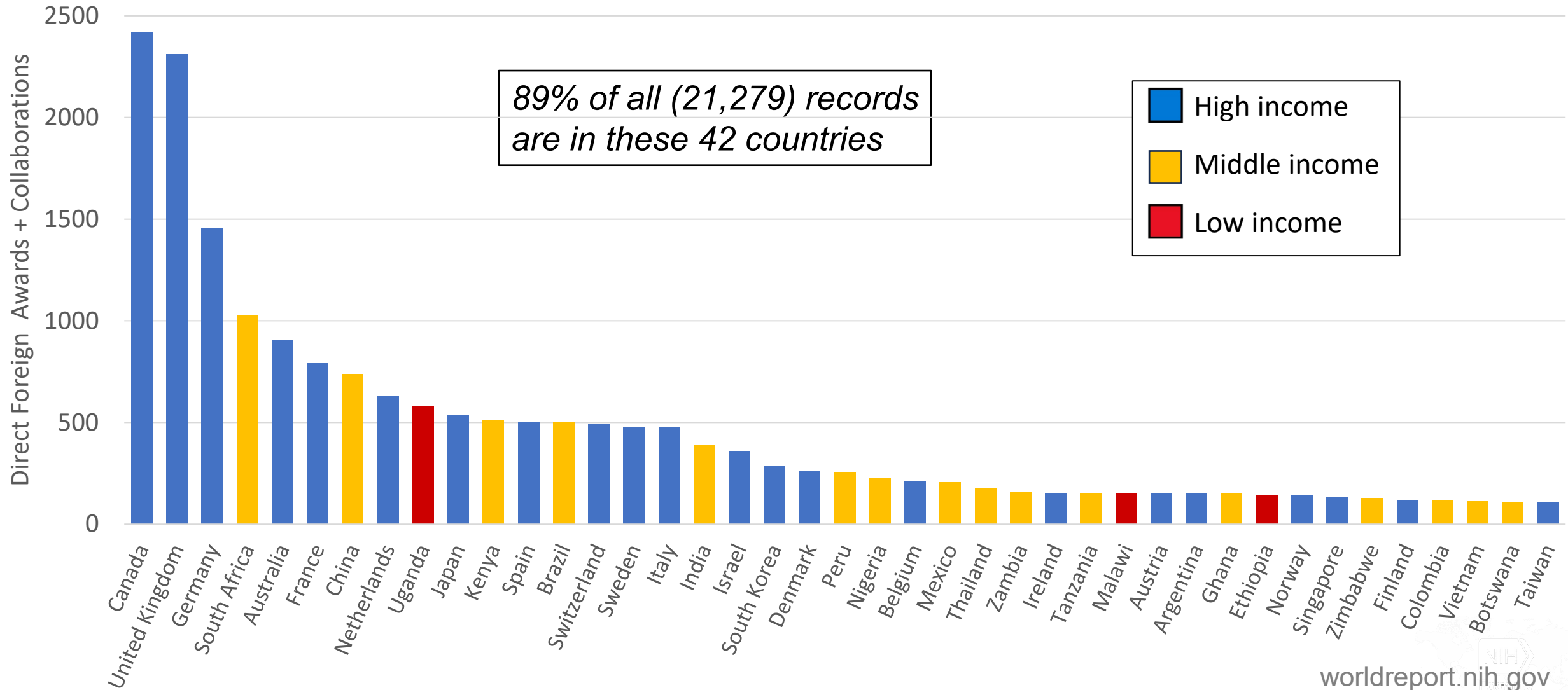
## Supports multiple use cases:

- Funders: identify opportunities for strategic cooperation
- Researchers: identify collaborators and targeted funding opportunities
- Development agencies, foreign ministries, civil society: contextualize research and research capacity

[worldreport.nih.gov](http://worldreport.nih.gov)

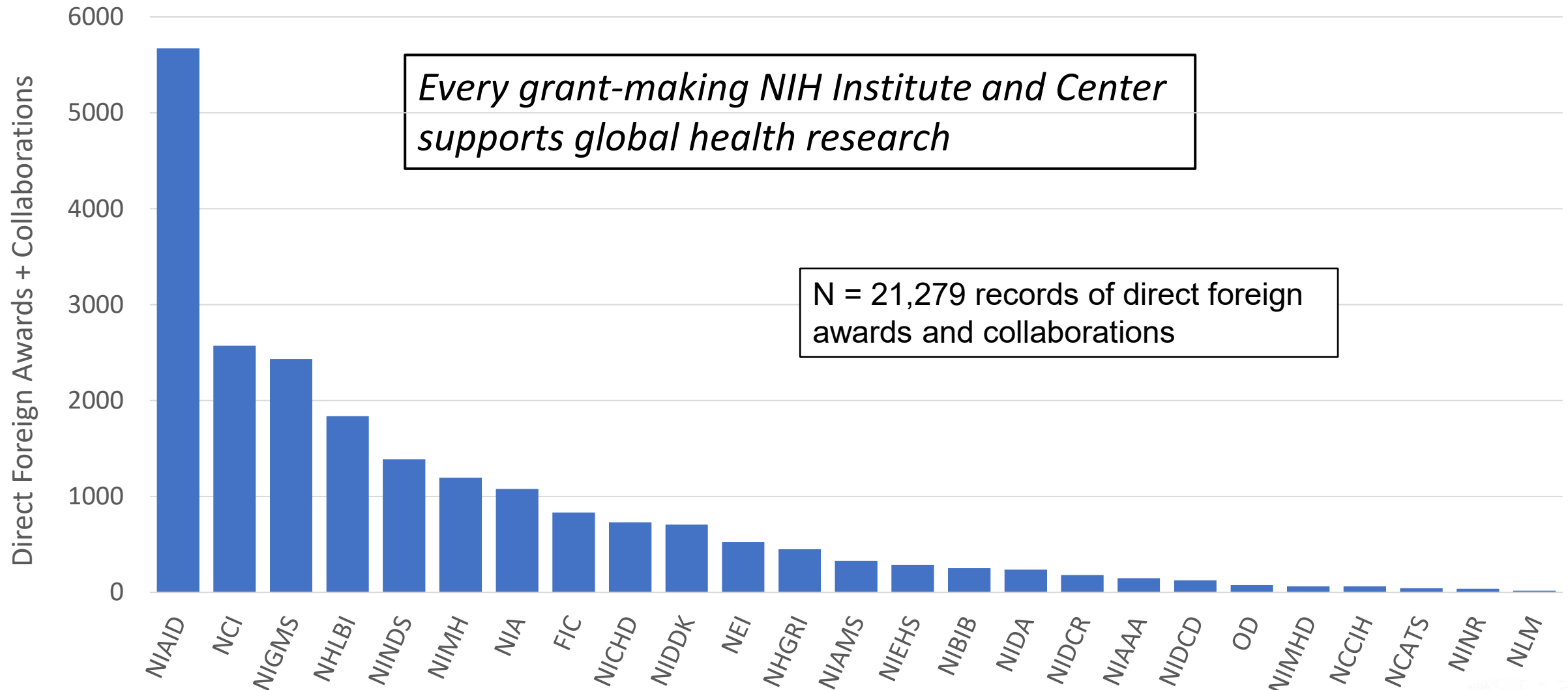


# Number of foreign NIH-funded direct awards + collaborations in World RePORT by country in countries with 100+ Records – FY2023





# Number of foreign NIH-funded direct awards + collaborations in World RePORT by NIH ICO – FY2023



# The Fogarty Mission



- To support & advance the NIH mission thru global partnerships
- To address global health challenges through innovative & collaborative programs for research & training

## ***“Science for Global Health”***



*Rhode Island Congressman John E. Fogarty*

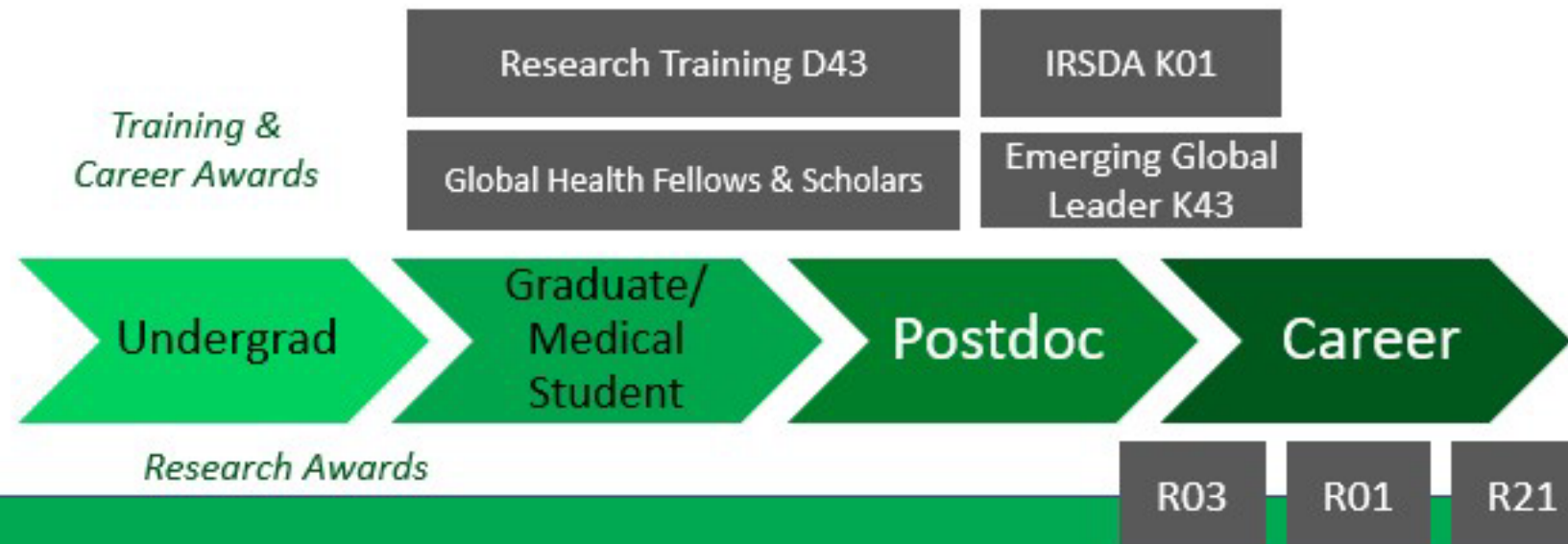
“... a man who, for more than a quarter of a century, worked tirelessly for a healthy America, in a healthier world.”

Congressman Melvin Laird (R-WI) 1967

# Building a robust global health research workforce

Developing leaders in the field requires:

- Well-trained individuals
- Protected time to conduct research in LMICs
- Strong mentorship from US investigators with experience working in LMIC settings AND from LMIC investigators



# Building sustainable global health research capacity at home and abroad

- 7,000+ scientists worldwide have received significant research training
- Support for 500+ research and training projects, involving collaborations with 100+ academic institutions
- Multidisciplinary programs focus on:
  - Infectious diseases, One Health
  - Chronic conditions
  - Informatics, mHealth, bioethics
  - Implementation science
  - Brain disorders, mental health
  - Tobacco cessation
  - Climate change, environmental health





# Select \*Individual Training\* Opportunities from Fogarty International Center, NIH

- [Global Health Fellows and Scholars](#) (LAUNCH) – students and postdoctoral fellows from U.S. or LMICs apply to university consortia (7) for LMIC placement for 12 months
- [International Research Scientist Development Award](#) – up to 5 years mentored support for postdoctoral *U.S. research scientists* (K01)
- [Emerging Global Leader Award](#) – up to 5 years mentored support and protected research time for postdoctoral *LMIC research scientists* (K43)



Fogarty Director  
Kathleen M. Neuzil, MD, MPH

## Investigator Spotlight – Gerald Bloomfield, MD, MPH

- **Fogarty Fellow:** 2009-2010
  - **U.S. institution:** Duke University, Brown University
  - **Foreign institution:** Moi Teaching Hospital, Eldoret, Kenya
  - **Research topic:** Cross-section between HIV and heart disease
- **Fogarty IRSDA (K01):** 2011-15
  - **U.S. institution:** Duke University
  - **Foreign institution:** Moi Teaching Hospital, Eldoret, Kenya
  - **Research topic:** Risk factors for atherosclerosis among patients with heart failure in Kenya
- **Current affiliation:** Associate professor, Duke Univ School of Medicine; associate research professor, Duke Global Health Institute



# Investigator Spotlight – Dr. Sikhulile Moyo

- **Fogarty Fellow: 2017-2018**
  - **Local organization:** Stellenbosch University
  - **U.S. organization:** Harvard T.H. Chan School of Public Health
  - **Research focus:** Evolutionary trends and dynamics of HIV-1C in Botswana
- **Emerging Global Leader (K43): 2022-27**
  - **Research focus:** Viral diversity an innovative biomarker for refining estimates of HIV incidence
- ***First to sequence and report Omicron variant of SARS-CoV-2***



# Building global health research capacity to address research imperatives following the COVID-19 pandemic

Peter H. Kilmarx , Roger I. Glass

Published: August 31, 2021

**PLOS MEDICINE**

- “COVID-19 has provided a strong example of the importance of *health research capacity* as an *essential element of pandemic preparedness*. **Building research capacity** must become a higher priority to achieve our shared global health goals while increasing *resilience* to address future health threats.”
- “COVID-19 is recalibrating perspectives of levels of expertise among higher- and lower-income countries. **A new sense of humility and equity will be critical to understand all of the lessons to be learned and improve global health following COVID-19.**“

PLOS Special Collection: *How will COVID-19 transform global health post-pandemic?* Reid M, Abdool-Karim Q, Geng E, Goosby E (2021) PLOS Medicine 18(3): e1003564.

<https://dx.plos.org/10.1371/journal.pmed.1003753>





# Challenges and Opportunities in Global Health Research

(Kilmarx PH, Glass RI. *PLoS Med* 2021)



- Unprecedented global research response to **COVID-19**: home rapid self-tests, improved survival, and vaccines; with an unfinished agenda (e.g., long COVID)\*
- Priority areas for future research:
  - Largest ↑ DALYs, 1990-2019, in **NCDs** (heart disease, diabetes, stroke, kidney disease, cancer). Overlapping risk factors (hypertension, fasting plasma glucose, body mass index, tobacco use, air pollution).\*\*
  - [One Health](#) – interconnections between humans, animals, plants, and the environment, transdisciplinary approach: zoonotic and vector-borne diseases, antimicrobial resistance, food safety, environmental contamination
  - [Planetary Health](#) – health impacts: climate change, declining biodiversity, increasing pollution, shortages of fresh water, land, and ocean resources
  - [Implementation Research](#) – promoting uptake of evidence-based interventions and policies into routine health care and public health settings

\**NIH-Wide Strategic Plan for COVID-19 Research* \*\**Global Burden of Disease Lancet 2020*

# NIH-Wide Working Group on Promoting Equity in Global Health Research

- 8 NIH ICs: FIC, NIAID, NIMH, NINDS, NICHD, NCI, NIEHS, NHLBI
- 186 responses to *Request for Information*, both HIC and LMIC
- *Key Themes:*
  - Inequity in research partnerships
  - Funding limitation and structures
  - Scientific and administrative capacity
  - Research priority setting
  - Data access and ownership
  - Representation in peer review
- RFI responses and proposed strategies being reviewed by the *NIH Working Group* to inform next steps and action items

## Request for Information on Promoting Equity in Global Health Research



Issued by:  
Fogarty International Center (FIC)  
National Heart, Lung, and Blood Institute (NHLBI)  
National Institute of Allergy and Infectious Diseases (NIAID)  
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)  
National Institute of Environmental Health Sciences (NIEHS)  
National Institute of Mental Health (NIMH)  
National Institute of Neurological Disorders and Stroke (NINDS)  
National Cancer Institute (NCI)

Comment Period: May 20, 2022 – August 01, 2022

This report was drafted by staff at the Fogarty International Center, U.S. National Institutes of Health.

June 22, 2023

# Bibliometric analysis of sub-Saharan African and US authorship in publications about sub-Saharan Africa funded by the Fogarty International Center, 2008–2020

Ezinne A Akudinobi  Peter H Kilmarx

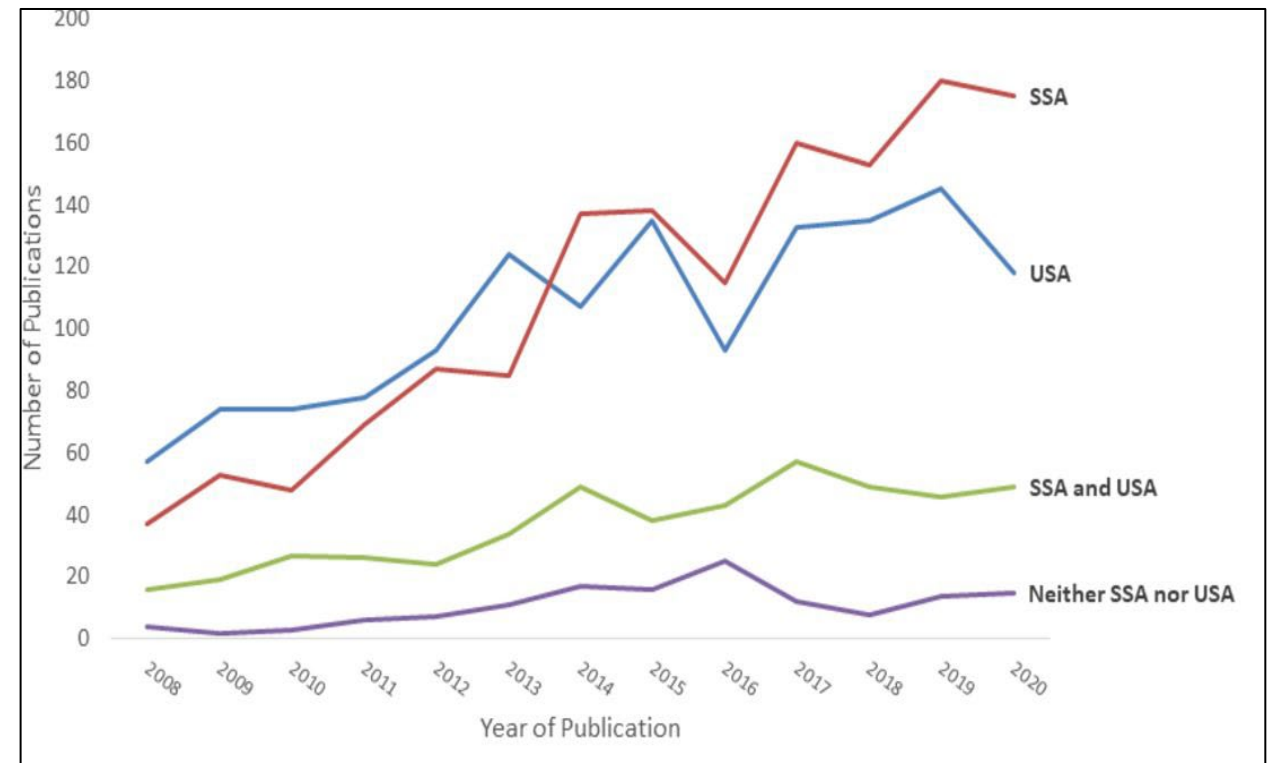


August 23, 2022.

**BMJ Global Health**

## Number of publications about SSA funded by FIC, 2008–2020, by first author affiliation

- SSA-affiliated **first** authors **increased** from 53 (47%) in 2008 to 224 (63%) in 2020
- SSA-affiliated **last** authors **increased** from 32 (28%) to 166 (47%)
- Median **RCR value** of publications with SSA-affiliated authors **lower** than for US-affiliated authors
- Possible increasing **equity** in research activities funded by FIC, but additional investigation and actions needed



# Select Fogarty funding supplements for training of members of under-represented groups in LMICs – FY 23

- Quechua-speaking **indigenous minorities** of South America (psychiatric and neurodegenerative diseases)
- Rural and Syrian **refugee communities** in Jordan (climate change and health)
- **Rural communities** in Kenya (HIV, food security and poverty alleviation)
- **Women from backgrounds of extreme poverty** (HIV in women in Kenya)
- **Pastoral (Turkana) communities** in Kenya (HIV prevention)
- **Religious minorities** in India (Mentorship to junior faculty from under-represented groups)
- **LGBTQ+** trainees from HDIs in South Africa (barriers to HIV services and gender-affirming care for transgender people)
- **Rural and indigenous populations** in Central America (SDoH and CVD)
- **Ethnic minorities** in the Peruvian Amazon (Environmental Health)
- **Female junior faculty** in MENA (Trauma and injury)
- **Muslim women faculty** in Thailand (MDR-TB)

<https://www.fic.nih.gov/News/Pages/fogarty-bolsters-research-equity-with-supplemental-awards.aspx>

25 applications from 15 countries





# A career in global health . . .



# Peace Corps, Fisheries, Zaire (DR Congo) – 1983-86







Johns Hopkins Hospital, Osler Medical Housestaff, Janeway Firm – 1990-93

# CDC Division of STD Prevention – 1994-96

## Intercity Spread of Gonococci with Decreased Susceptibility to Fluoroquinolones: A Unique Focus in the United States

Peter H. Kilmarx, Joan S. Knapp, Minsheng Xia,  
Michael E. St. Louis, Sandra W. Neal, Dennis Sayers,  
Laura J. Doyle, Marilyn C. Roberts,  
and William L. Whittington

J Infect Dis 1998;177:677-82.

*Epidemic Intelligence Service, Epidemiology Program Office, Division of STD Prevention, National Center for HIV, STD, and TB Prevention, and Division of AIDS, STD, and TB Laboratory Research, National Center for Infectious Disease, Centers for Disease Control and Prevention, Atlanta, Georgia; Department of Pathobiology and Center for AIDS and STD, University of Washington, Seattle, Washington; STD/HIV Prevention, Ohio Department of Health, Columbus, and Department of Microbiology, Cleveland Clinic Foundation, Cleveland, Ohio*

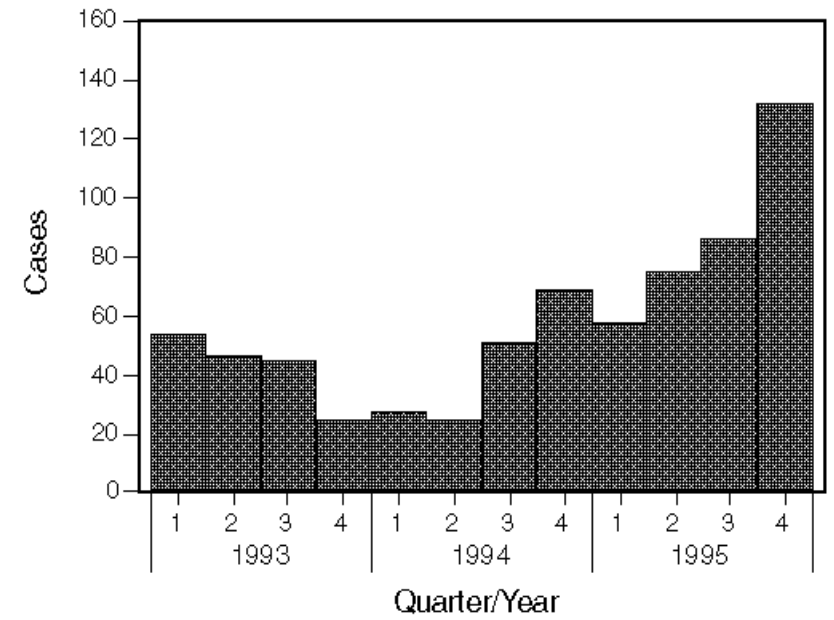
## Sociodemographic Factors and the Variation in Syphilis Rates among US Counties, 1984 through 1993: An Ecological Analysis

Am J Public Health 1997;87:1937-43.

Peter H. Kilmarx, MD, Akbar A. Zaidi, MS, James C. Thomas, PhD, MPH,  
Allyn K. Nakashima, MD, Michael E. St. Louis, MD, Melinda L. Flock, MSPH,  
and Thomas A. Peterman, MD, MSc



FIGURE 1. Number of cases of primary and secondary syphilis, by quarter and year of report — Baltimore City, Maryland, 1993–1995



PH Kilmarx, W Brathwaite, M Cicchinelli, et al. Outbreak of Primary and Secondary Syphilis--Baltimore City, Maryland, 1995. MMWR 1996;45:166-9.

## Living With HIV: Experiences and Perspectives of HIV-Infected Sexually Transmitted Disease Clinic Patients After Posttest Counseling

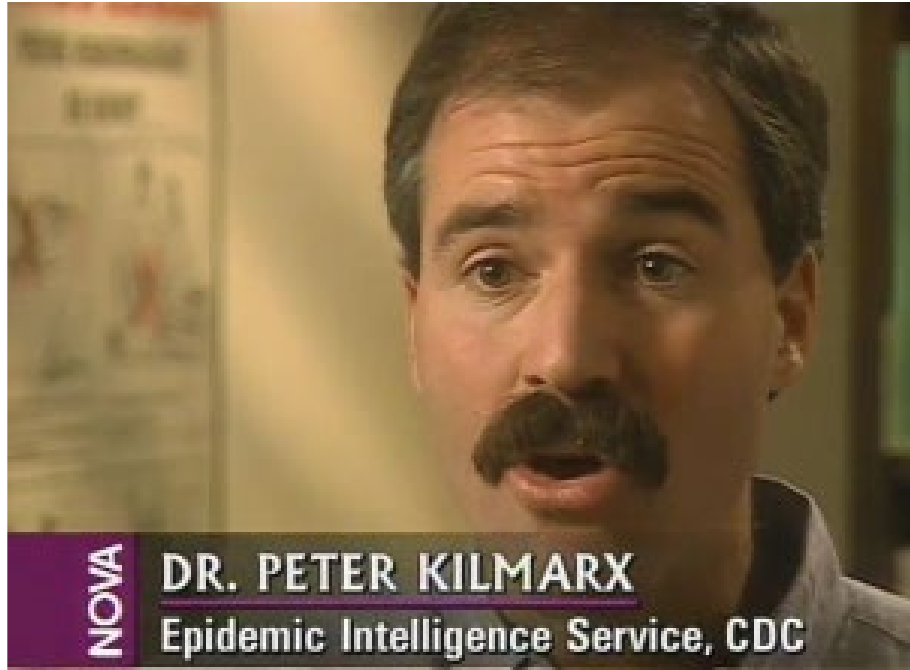
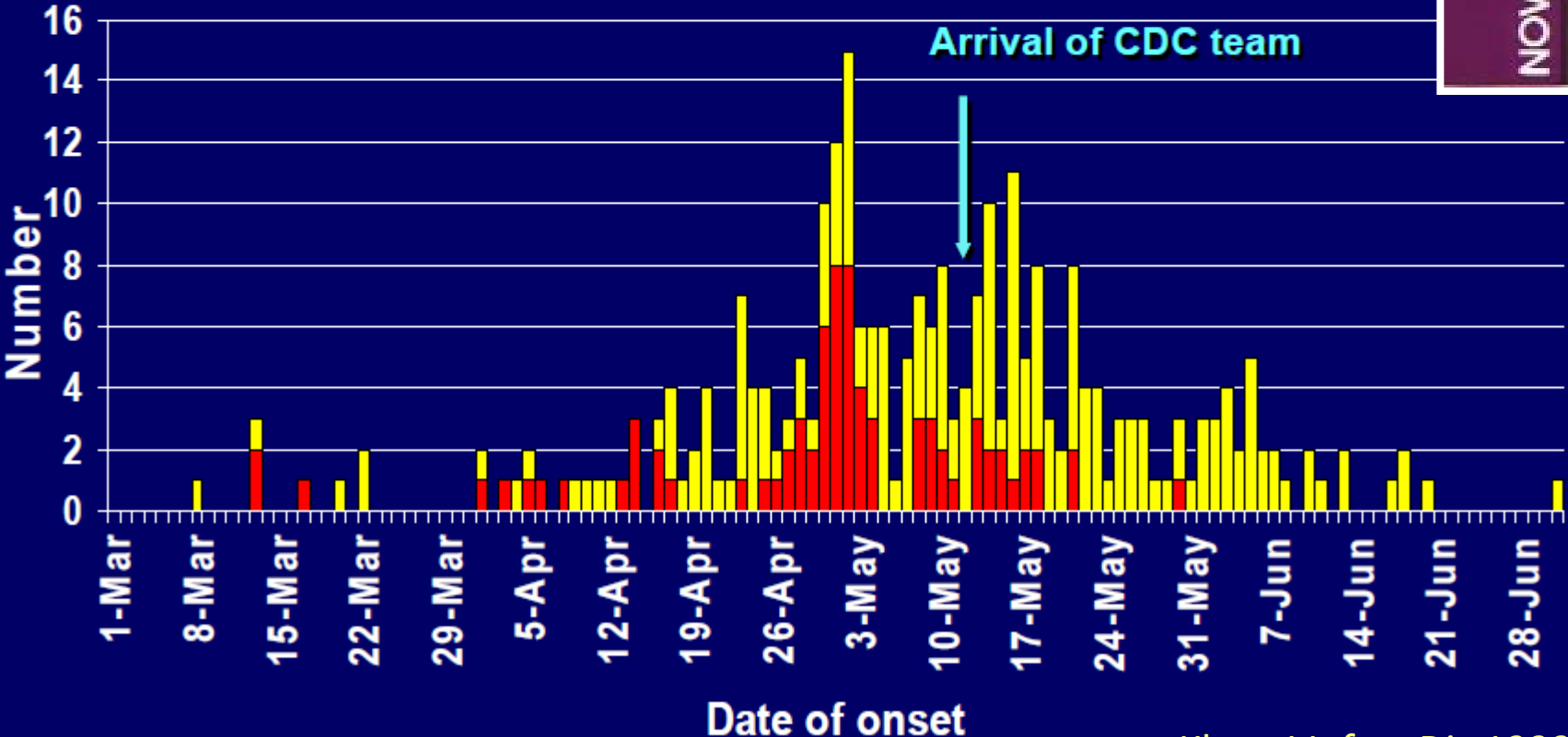
KILMARX, PETER H. MD<sup>\*†</sup>; HAMERS, FRANÇOISE F. MD, MPH<sup>\*†</sup>; PETERMAN, THOMAS A. MD, MSc<sup>\*</sup>  
Sexually Transmitted Diseases: January 1998 - Volume 25 - Issue 1 - p 28–37  
Original Article



# Ebola – Kikwit, DRC – 1995

315 cases, 81% mortality

- Non-Health Care Workers
- Health Care Workers





## HIV Prevention Research – Northern Thailand, 1995-2002



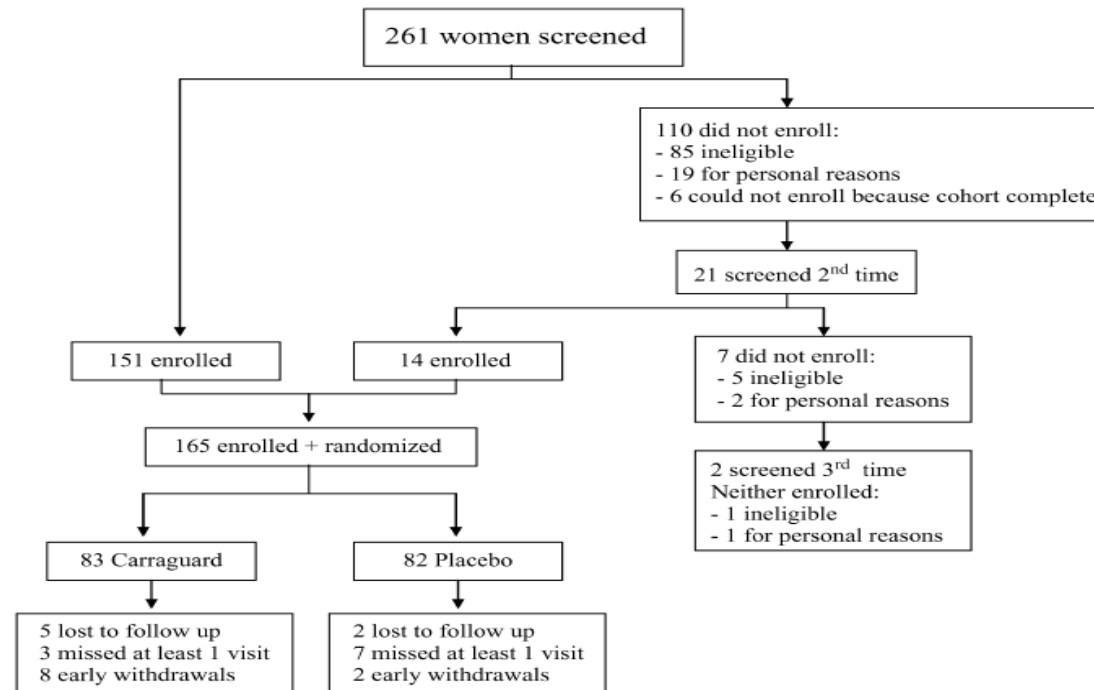
# Multiple clinical trials of topical microbicides

*J Acquir Immune Defic Syndr* • Volume 43, Number 3, November 1, 2006

## Safety and Acceptability of the Candidate Microbicide Carraguard in Thai Women

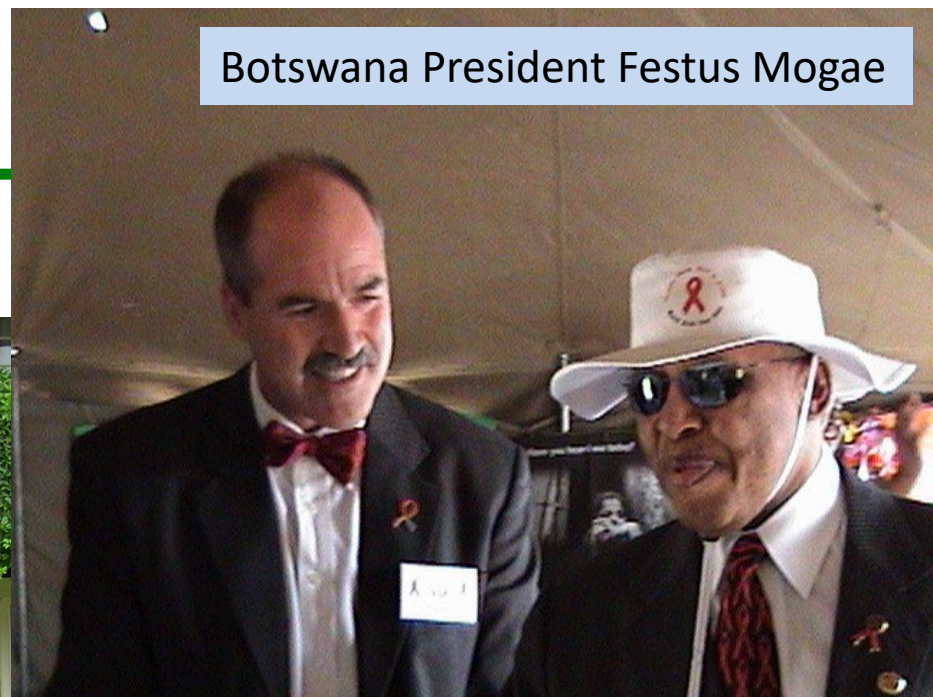
### Findings From a Phase II Clinical Trial

Peter H. Kilmarx, MD,\*† Janneke H. H. M. van de Wijgert, PhD,§ Supaporn Chaikummao, BHP,\*  
Heidi E. Jones, MPH,‡ Khanchit Limpakarnjanarat, MD, MPH,\* Barbara A. Friedland, MA,‡  
John M. Karon, PhD,|| Chomnad Manopaiboon, MA,\* Nucharee Srivirojana, MA,¶  
Somboonsak Yanpaisarn, MD,# Somsak Supawitkul, MD,\*\* Nancy L. Young, MS,\*  
Philip A. Mock, MApp Stats,\* Kelly Blanchard, MS,‡ and Timothy D. Mastro, MD\*†





# Botswana CDC Country Director – 2002-05



Botswana President Festus Mogae



Minister of Health Sheila Tlou

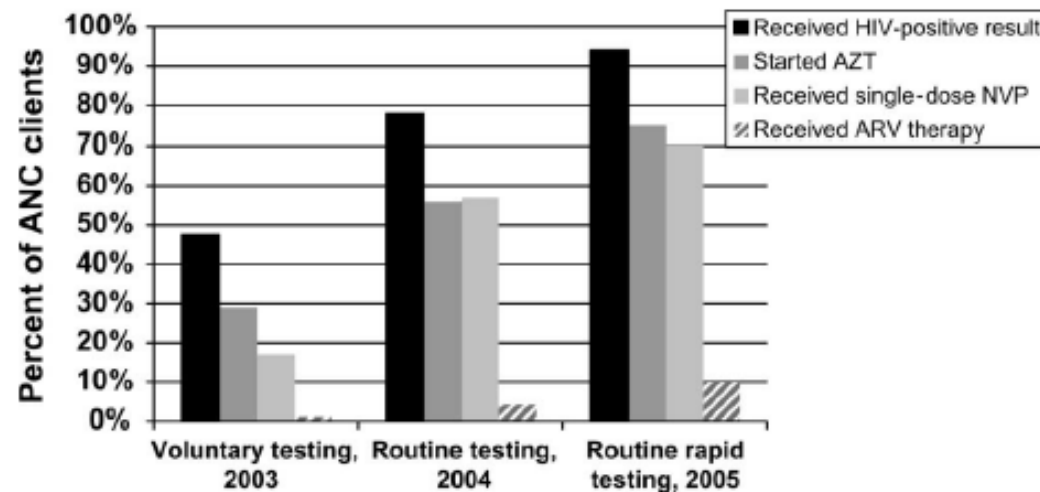


# Botswana – initiation of PEPFAR

*J Acquir Immune Defic Syndr* • Volume 45, Number 1, May 1, 2007

## Successful Introduction of Routine Opt-Out HIV Testing in Antenatal Care in Botswana

*Tracy L. Creek, MD,\* Raphael Ntuny, MBCHB, MPH,† Khumo Seipone, MD, MPH,‡  
Monica Smith, MPH,† Mpho Mogodi, MBCHB, MPH,‡ Molly Smit, MBBS, DPH,†  
Keitumetse Legwaila,† Iris Molokwane, MSW,† Goitebetswe Tebele,† Loeto Mazhani, MD,‡  
Nathan Shaffer, MD,\* and Peter H. Kilmarx, MD, MPH\*†*



# Ebola Outbreak, DR Congo – 2007



CDC lab – MSF clinical coordination discussion



**Chief Shamba Gilbert, traditional chief of Bakwa Tombe, Mweka zone, Kasai Occidental, the Democratic Republic of the Congo.**

## **Stories from the Field** Text Message from the Congo

Peter H. Kilmarx\*

*Fogarty International Center, National Institutes of Health, Bethesda, Maryland*

*Am. J. Trop. Med. Hyg.*, 104(4), 2021, pp. 1169–1171

doi:10.4269/ajtmh.21-0118

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# Epidemiology Branch, Division of HIV/AIDS Prevention, CDC – 2006-10



## Male Circumcision



This fact sheet summarizes information in four areas of male circumcision: 1) male circumcision and risk for HIV acquisition; 2) male circumcision and other health conditions; 3) risks associated with male circumcision; and 4) HIV infection and male circumcision in the United States.

### What Is Male Circumcision?

Male circumcision is the surgical removal of some or all of the foreskin (or prepuce) from the penis [1].

### Male Circumcision and Risk for HIV Acquisition by Heterosexual Men

Several types of research have documented that male circumcision significantly reduces the risk of men contracting HIV through penile-vaginal sex.

### Biologic Plausibility

Compared with the dry external skin surface of the glans penis and penile shaft, the inner mucosa of the foreskin has less keratinization (deposition of fibrous protein) and a higher density of target cells for HIV infection [2]. Some laboratory studies have shown the foreskin is more susceptible to HIV infection than other penile tissue [3],

## Recommendations for HIV Prevention with Adults and Adolescents with HIV in the United States, 2014

December 11, 2014

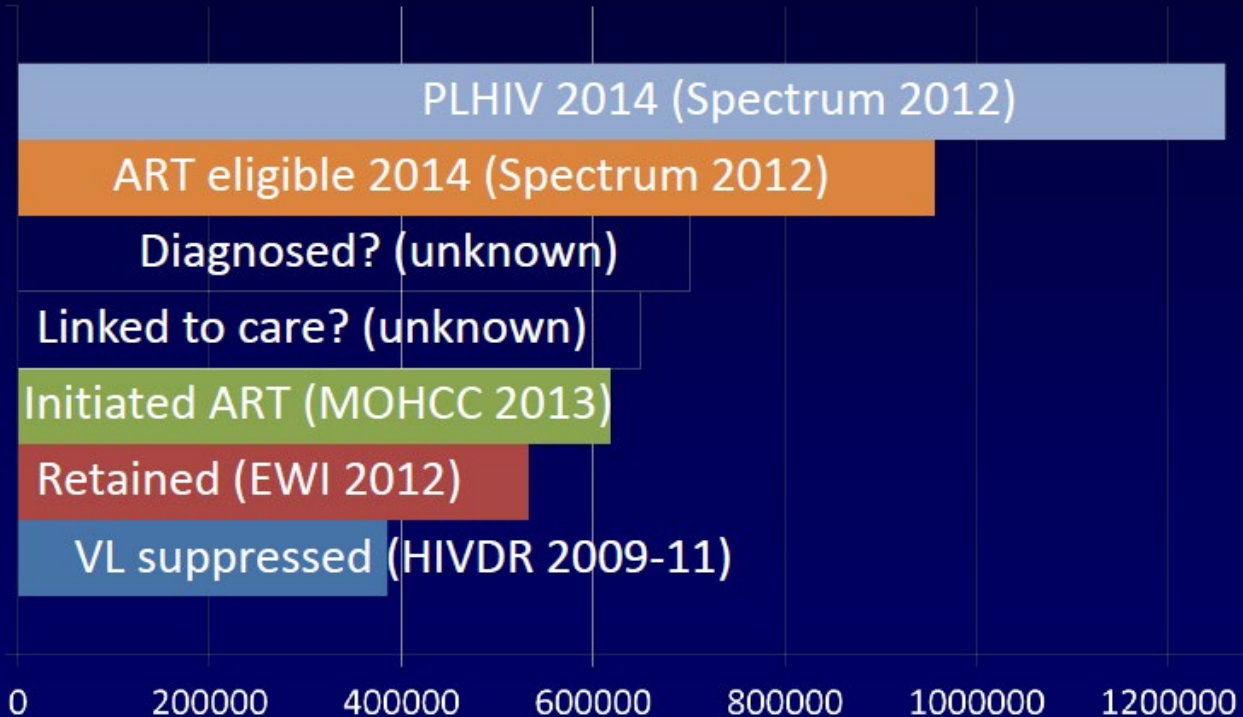
Kathleen Irwin, Peter Kilmarx, et al.



# CDC Zimbabwe – 2011-15

## Estimated Cascade of Care, Age $\geq 15$ Years, Zimbabwe – 2014

Kilmarx PH, Mutasa-Apollo T. *Curr Opin HIV AIDS*. 2013



Overall, VL suppression (VL<1,000) ~30% of all PLHIV (crude estimate)





# CDC Sierra Leone Ebola Response - 2014

Centers for Disease Control and Prevention  
**MMWR**

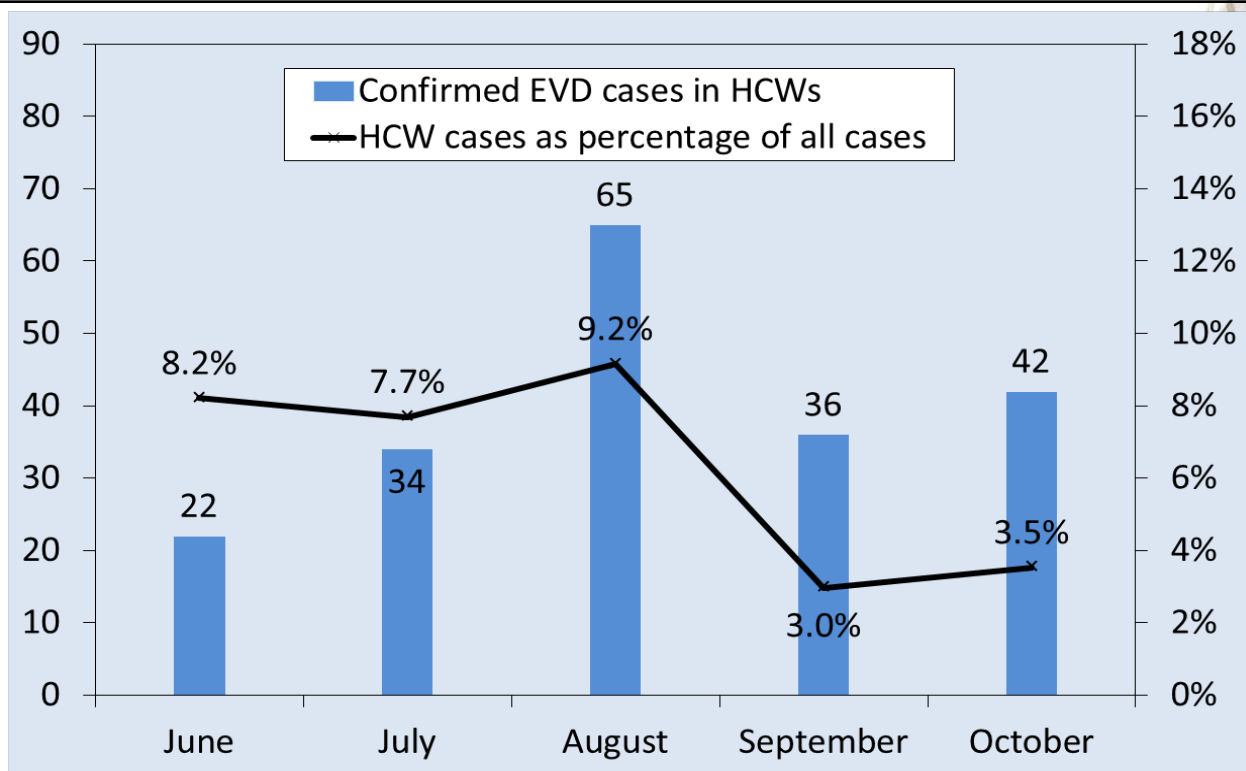
Morbidity and Mortality Weekly Report

Early Release / Vol. 63

December 9, 2014

## Ebola Virus Disease in Health Care Workers — Sierra Leone, 2014

Peter H. Kilmarx, MD<sup>1,2,3</sup>; Kevin R. Clarke, MD<sup>1,2</sup>; Patricia M. Dietz, DrPH<sup>1,4</sup>; Mary J. Hamel, MD<sup>5</sup>; Farah Husain, DMD<sup>1,6</sup>; Jevon D. McFadden, MD<sup>1,7</sup>; Benjamin J. Park, MD<sup>1,8</sup>; David E. Sugerman, MD<sup>1,6</sup>; Joseph S. Bresee, MD<sup>1,9</sup>; Jonathan Mermin, MD<sup>1,4</sup>; James McAuley, MD<sup>1,2,10</sup>; Amara Jambai, MD<sup>11</sup>



*“... the estimated confirmed Ebola incidence rate was approximately 100-fold higher in HCWs than in non-HCW adults in Sierra Leone.”*

## Building a Career (in Global Health)

- One step at a time
- Importance of mentors
  - Do your research
- Seize opportunities
- Make/show impact
- Keep in touch



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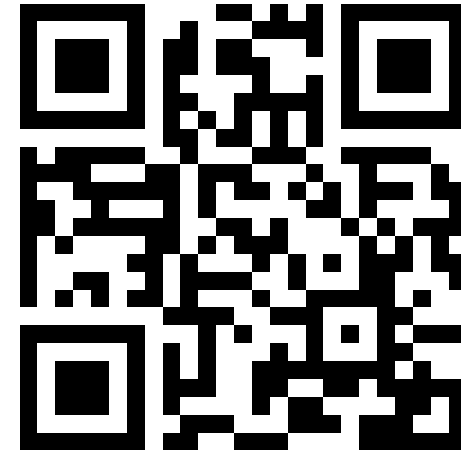


# Summary

- Strong support from NIH for diverse international research partnerships
- Strong support from Fogarty for research training and capacity building
- Build your own career in global health, one step at a time

*This matter of expanding research is one, perhaps the one, truly global effort in which all nations can and will join as real partners – Congressman John E. Fogarty*

Download this presentation:



<https://go.nih.gov/bZ1zgTs>