IeDEA Global Cohort Consortium

2017 Research Highlights

Website: iedea.org
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- Regional acknowledgements of site investigators, cohorts, study teams and administrators, data managers, and coordinating and data centers are available at: https://www.iedea.org/resources/

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IeDEA Asia-Pacific 2017 research highlights

HIV viral load suppression in adults and children receiving antiretroviral therapy – results from the IeDEA collaboration

- Primary objective: estimate proportion of adult & paediatric patients achieving undetectable VL
- Secondary objective: determine factors associated with VL suppression at 1 year after ART

	Total adults: 35561	Total children: 2601
Region	Number* (%)	Number* (%)
Asia-Pacific	2121 (6)	291 (11)
CCASAnet	3404 (10)	75 (3)
NA-ACCORD	14579 (41)	0 (0)
South Africa	15457 (43)	2235 (86)

Initiating ART between 2010-2014

Awachana Jiamsakul, et al. J Acquir Immune Defic Syndr. 2017 Nov 1;76(3):319-329

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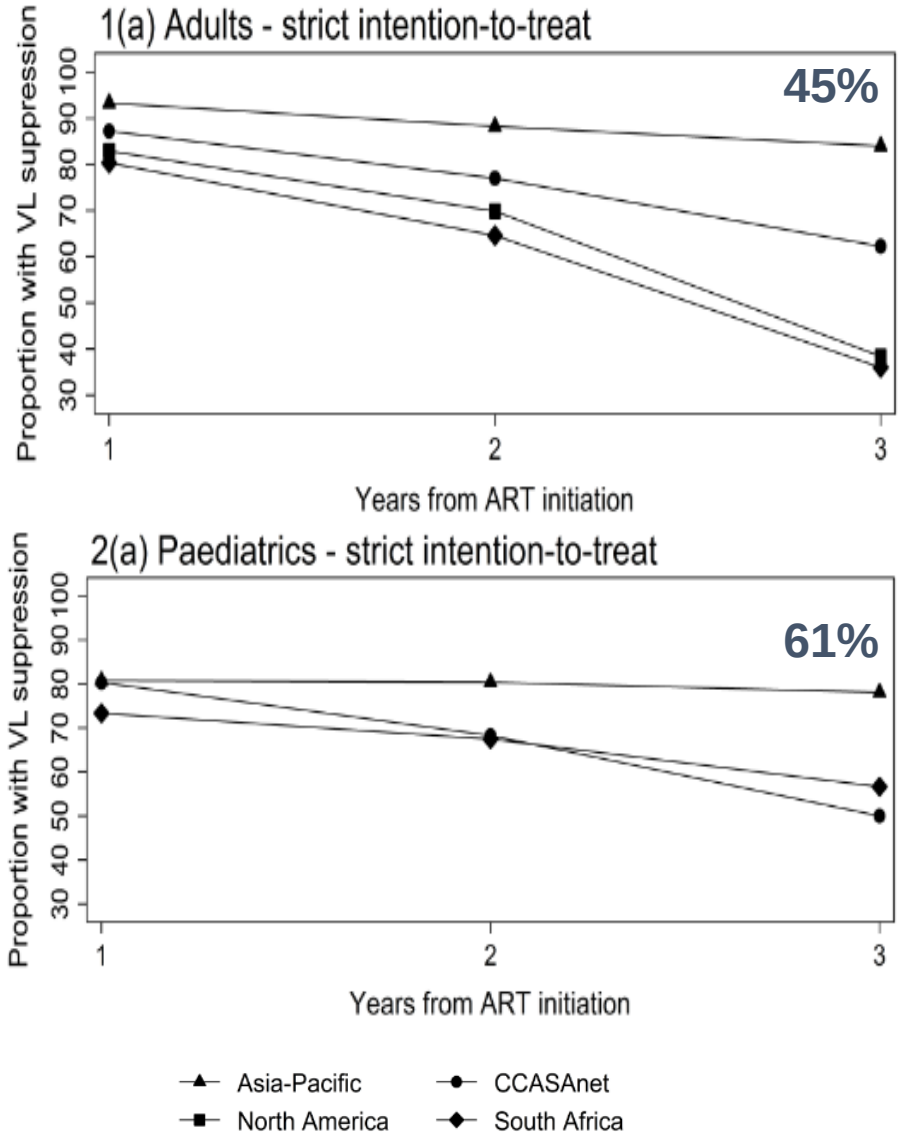
- Modified ITT: 90% adults & 80% children VS at 3yrs
- Adults: older age, pre-ART CD4 & exposure modes
- Children: age >1.5yrs, CD4 ≥15%
- Good treatment response if followed-up & retained
- Challenges: VL monitoring, retention & 90:90:90 for children



HIV viral load suppression in adults and children receiving antiretroviral therapy – results from the IeDEA collaboration. Awachana Jiamsakul, et al. J Acquir Immune Defic Syndr. 2017 Nov 1;76(3):319-329

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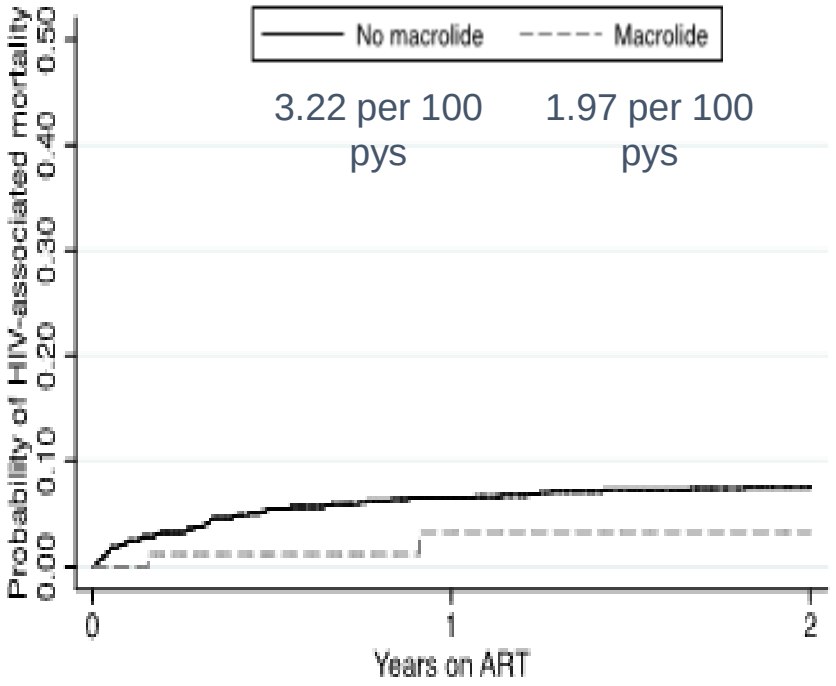
Effect of Macrolide Prophylactic Therapy on AIDS-Defining Conditions and HIV-Related Mortality

- MAC prophylaxis recommended for patients with CD4 <50 cells/mm^3
- Effect of macrolide prophylaxis on AIDS-defining conditions & HIV-associated mortality among patients starting ART in Asia
- 1345 eligible patients (≥18 yrs, CD4 <50 at ART start): 11% received prophylaxis



Mark Kristoffer Pasayan, et al. Oral abstract 64521, ID Week, October 4-8, 2017.

Risk factors associated with HIV-associated mortality in patients with baseline CD4 cell count of <50 cells/mm^3

	Univariate				Multivariate			
	HR	(95% CI)		p-value	HR	(95% CI)		p-value
Prior AIDS diagnosis	**2.06**	1.00	4.25	0.060	**4.23**	1.49	11.98	0.007
Per 10-cells/mm^3 increase in CD4 counts	**0.87**	0.78	0.98	0.016	**0.87**	0.79	0.96	0.006
Cotrimoxazole use	**0.54**	0.28	1.04	0.067	**0.37**	0.17	0.83	0.015
Macrolide use	**0.13**	0.03	0.61	0.010	**0.10**	0.01	0.80	0.031

- Sensitivity analysis (CD4 <100): consistent results
- Increase macrolide prophylaxis use & coverage
- Potential protective effect of prophylaxis against mortality in patients with CD4 <100 cells/mm^3

Effect of Macrolide Prophylactic Therapy on AIDS-Defining Conditions and HIV-Related Mortality.
Mark Kristoffer Pasayan, et al. Oral abstract 64521, ID Week, October 4-8, 2017.

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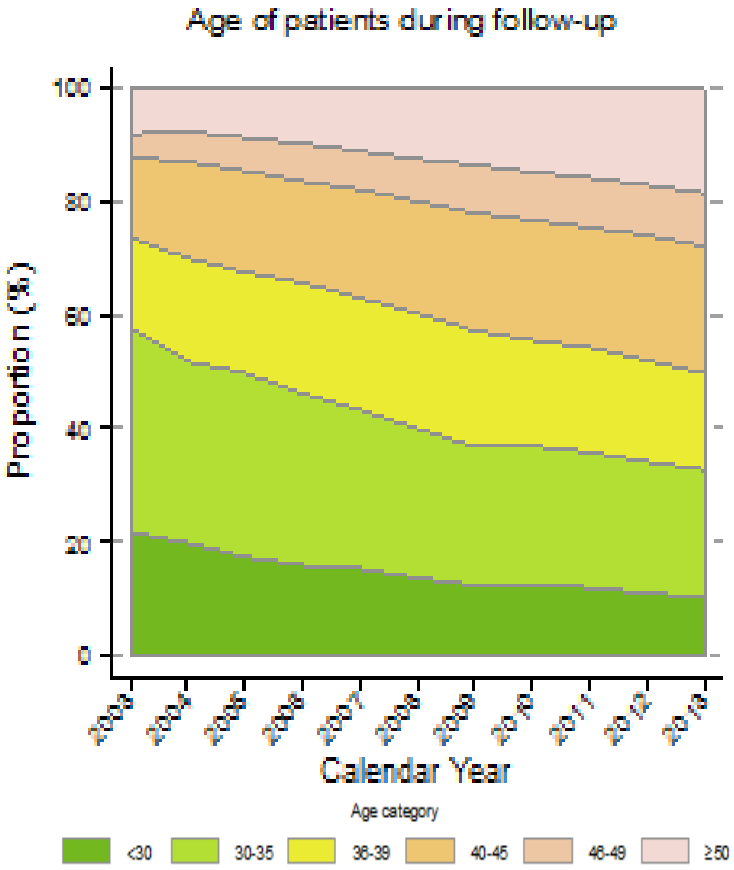
Growing challenges for HIV programs in Asia: clinic population trends, 2003-2013

- Evaluate time trends in demographic & clinical characteristics of HIV-positive patients aged ≥18 years initiating ART between 2003 and 2013
- TAHOD-LITE: all adult patients receiving care in 8 of 20 adult clinical sites
  - Cambodia, Hong Kong SAR, India, Indonesia, Singapore, South Korean, Vietnam



Nicole L De La Mata, et al. AIDS Care. 2017 Oct; 29(10): 1243-1254.

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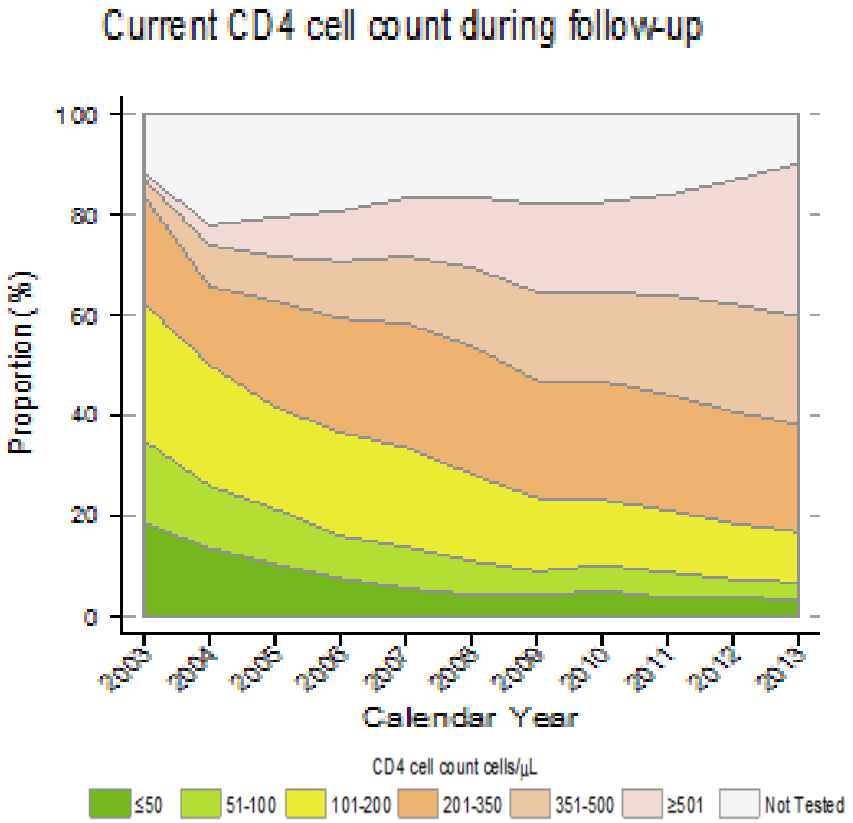
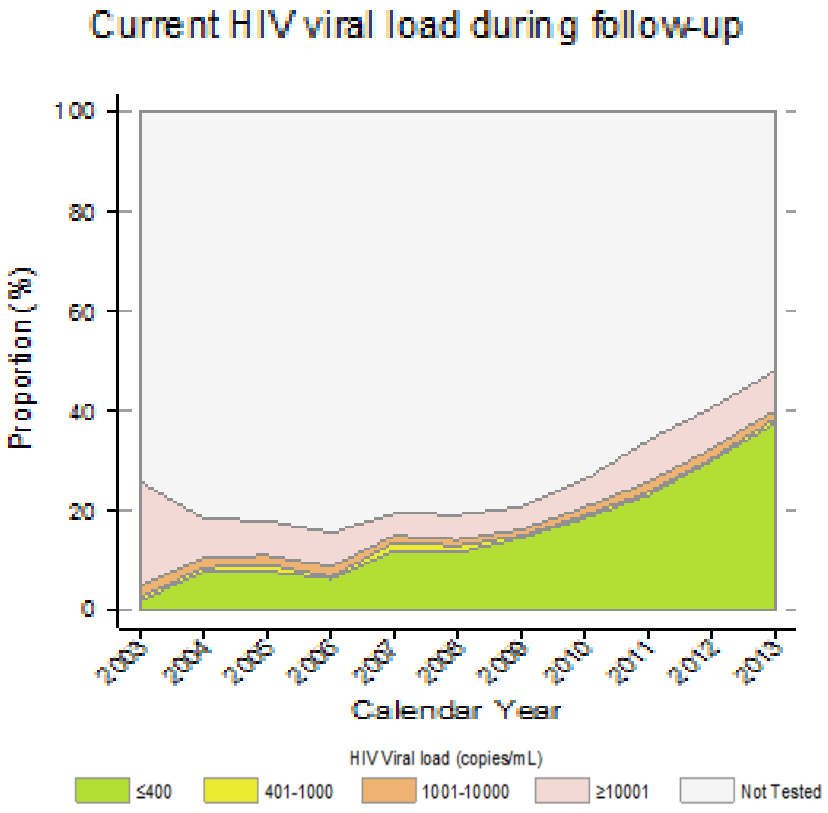




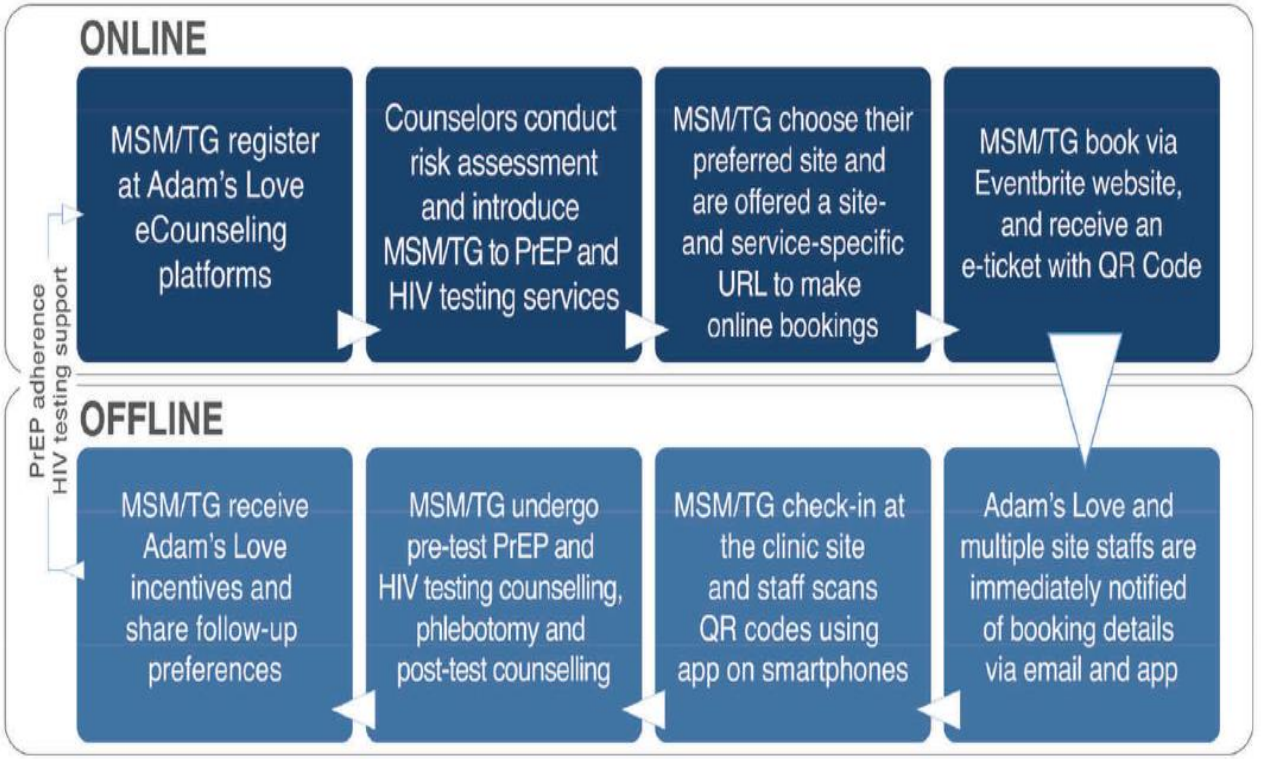
- 52% had no HIV viral load assessment in 2013
- Care needs of aging populations & expand VL monitoring

Growing challenges for HIV programmes in Asia: clinic population trends, 2003-2013.
Nicole L De La Mata, et al. AIDS Care. 2017 Oct; 29(10): 1243-1254.

A novel Online-to-Offline (O2O) model for pre-exposure prophylaxis and HIV testing scale up

- Evaluate effect of O2O model on PrEP & HIV testing uptake among Thai MSM & TG
- Identify factors associated with PrEP uptake

The Adam's Love Online-to-Offline (O2O) model for PrEP and HIV testing scale up.



Tarandeep Anand, et al. J Int AIDS Soc. 2017 Mar 13;20(1):21326.

O2O model is highly effective in linking online at-risk MSM & TG to PrEP and HIV testing services…

- Jan-Apr 2016: 272,568 people reached online via PrEP O2O promotions
  - 425 MSM & TG received eCounseling & e-tickets
  - 325(77%) checked in at clinics & received HIV testing
  - 9 (3%) HIV +ve, 316 HIV –ve (of which 53% started PrEP)
- PrEP uptake associated with higher education, seeking sex partners online, being aware of sexual partners' HIV status & ever previously used PEP
- High potential for scale-up/replication in high key population internet penetration settings

A novel Online-to-Offline (O2O) model for pre-exposure prophylaxis and HIV testing scale up
Tarandeep Anand, et al. J Int AIDS Soc. 2017 Mar 13;20(1):21326.

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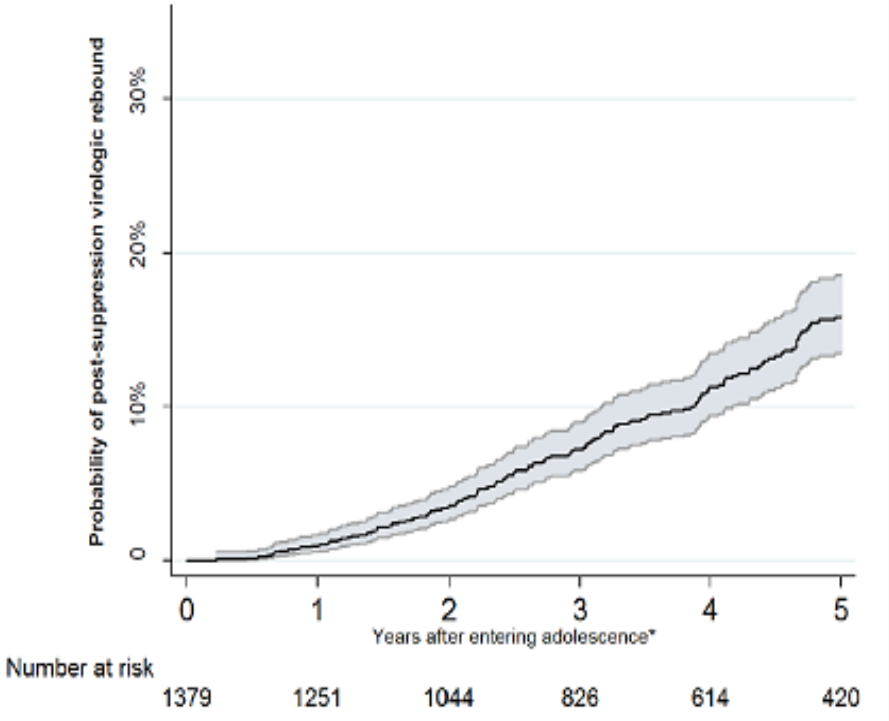
Incidence of Postsuppression Virologic Rebound in Perinatally HIV-Infected Asian Adolescents on Stable Combination Antiretroviral Therapy

Kaplan-Meier estimate of the cumulative probability of post-suppression virologic rebound



- Incidence & predictors of post-suppression VR in adolescents on stable cART
- 1,379 PHIV, 10-19 yrs old, on cART & period of VS before/during adolescence
- 13% (180) post-suppression VR = incidence rate 3.4 per 100 PYFU

Tavitiya Sudjaritruk, et al. J Adolesc Health. 2017 Jul;61(1):91-98.

Predictors of post-suppression virologic rebound during adolescence among perinatally HIV-infected adolescents on stable ART

Clinical parameters	Virologic rebound, n (%)	Person-years follow-up	Rate per 100 person-years (95% CI)	Univariable analysis		Multivariable analysis	
				HR (95% CI)	*P*	Adjusted HR (95% CI)	*P*
Primary caregiver							
• Biological parents	31 (7.1)	1314	2.36 (1.66 - 3.35)	Ref		Ref	
• Grandparents	56 (17.9)	1230	4.55 (3.50 - 5.92)	1.79 (1.12 - 2.84)	0.01	2.05 (1.27 - 3.30)	0.003
• Relative/non-relative/foster	56 (15.6)	1507	3.72 (2.86 - 4.83)	1.46 (0.88 - 2.41)	0.14	1.53 (0.92 - 2.55)	0.10
Weight-for-age z-score							
• >-1.5	51 (11.0)	1741	2.93 (2.23 - 3.86)	Ref		Ref	
• -1.5 to -2.5	49 (11.7)	1683	2.91 (2.20 - 3.85)	1.02 (0.68 - 1.53)	0.92	1.06 (0.71 - 1.60)	0.76
• <-2.5	70 (17.0)	1673	4.18 (3.31 - 5.29)	1.60 (1.10 - 2.33)	0.01	1.49 (1.01 - 2.18)	0.04
Baseline cART regimen*							
• First-line NNRTI-based	119 (11.1)	4444	2.68 (2.24 - 3.21)	Ref		Ref	
• Second-line PI-based	57 (19.5)	858	6.64 (5.12 - 8.61)	2.66 (1.88 - 3.75)	<0.001	2.66 (1.86 - 3.79)	<0.001
Year of the first cART regimen initiation							
• <2005	86 (14.9)	2835	3.03 (2.46 - 3.75)	Ref		Ref	
• 2005 to 2008	80 (12.0)	2214	3.61 (2.90 - 4.50)	1.75 (1.22 - 2.50)	0.002	1.89 (1.31 - 2.72)	0.001
• >2008	14 (10.4)	312	4.49 (2.66 - 7.58)	2.96 (1.59 - 5.48)	0.001	4.15 (2.15 - 7.99)	<0.001
Experienced pre-adolescent virologic failure							
• No	174 (12.8)	5286	3.29 (2.84 - 3.82)	Ref		Ref	
• Yes	6 (25.0)	74	8.06 (3.62 - 17.95)	2.72 (1.16 - 6.38)	0.02	2.68 (1.11 - 6.48)	0.03

More intensive VL monitoring for those at higher risk of VR & enhanced adherence management

Incidence of Postsuppression Virologic Rebound in Perinatally HIV-Infected Asian Adolescents on Stable Combination Antiretroviral Therapy. Tavitiya Sudjaritruk, et al. J Adolesc Health. 2017 Jul;61(1):91-98.

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CCASAnet
2017 Research Highlights

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International epidemiology Databases to Evaluate AIDS

CCASAnet

Mortality in children with Human Immunodeficiency Virus initiating treatment: A six-cohort study in Latin America

Luque MT, Jenkins CA, Shepherd BE, Padgett D, Rouzier V, Succi RC, Machado DM, McGowan CC, Vermund SH, Pinto JA. *J Pediatr* 2017;182:245-252.

- Retrospective cohort study: 1997-2013
- **1174 ART–naïve, perinatally-infected children** who started cART at <18 years of age at six CCASAnet sites in Latin America
- Study **outcomes** were all-cause mortality, loss to follow-up, and major changes in cART.
- Median follow-up was 5.6 years (IQR 2.3-9.3).
- Median age for cART initiation was 4.7 years (IQR 1.7-8.8) and median age at HIV diagnosis was 3.3 years (IQR 1.0-7.0).
- Median CD4 count was 472 cells/mm^3 (IQR 201-902); median CD4% was 16% (IQR 10-23)

IeDEA International epidemiology Databases to Evaluate AIDS

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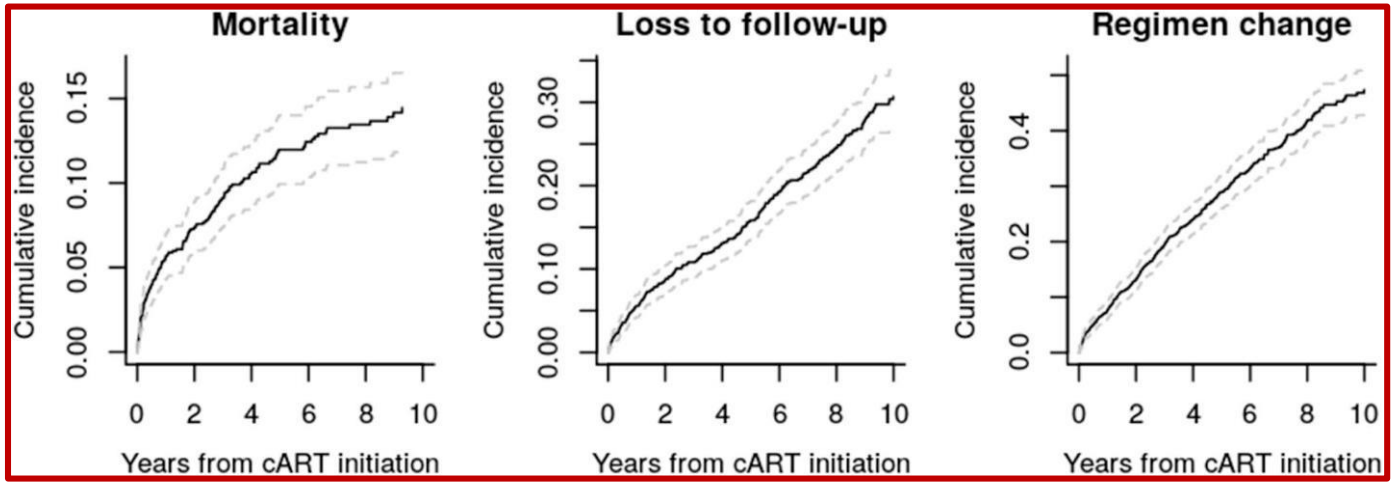
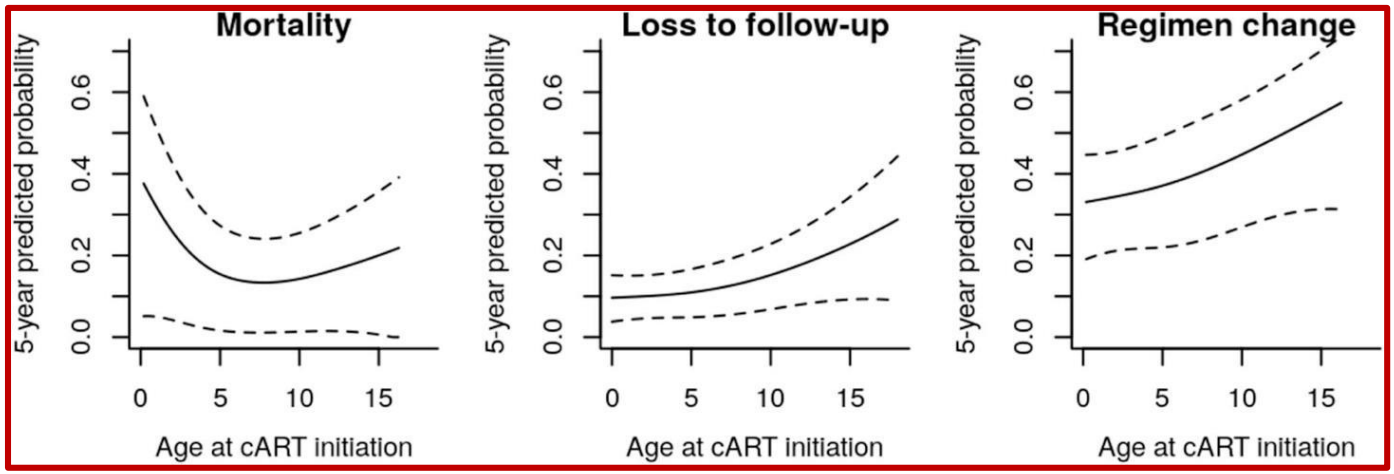


Estimated cumulative incidence for mortality, LTFU, and regimen change after cART initiation



Predicted probability of mortality, LTFU, and regimen change 5 years after cART initiation based on age at cART initiation

Younger children had the greatest risk of mortality, whereas older children had the greatest risk of being lost to follow-up or changing regimens.

A pragmatic approach for reproducible research with sensitive data

Shepherd BE, Blevins Peratikos M, Rebeiro PF, Duda SN, McGowan CC. *Am J Epidemiol* 2017; 186: 387-392.

- Research is reproducible if given the original datasets, an independent scientist can obtain exactly the same quantitative results obtained by the original researchers.

- Reproducible research is important to protect against fraud, ensure accuracy of results, demonstrate exactly what analyses were performed, disseminate methods, and to advance biomedical research.

- For many reasons, we are not able to publicly post our analysis datasets, so IeDEA studies are not fully reproducible. This is a common problem in biomedical research.

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Quasi-Reproducible Research is a solution.

For quasi-reproducible research, investigators should **post on a publicly available website without restriction**:

1. Analysis code used in the published study
2. Simulated data
3. Results created by applying the analysis code used in the published study to the simulated data

CCASAnet uses the following website to post these materials:

http://biostat.mc.vanderbilt.edu/ArchivedAnalyses

- Analysis code for all CCASAnet publications
- A simulated CCASAnet dataset following IeDEA protocols
- A report running the original code (used in the published manuscript) on simulated data

Outcomes of HIV-positive patients with cryptococcal meningitis in the Americas

B. Crabtree Ramirez, Y. Caro Vega, B.E. Shepherd, C. Le, M. Turner, C. Frola, B. Grinsztejn, C. Cortes, D. Padgett, T.R. Sterling, C.C. McGowan, A. Person. *Int J Infect Dis* 2017 Oct;63:57-63.

BACKGROUND:

- Cryptococcal meningitis (CM) is associated with high morality
- Timing of ART in CM can be a challenge
- Burden of CM in Latin America has not been well described

METHODS:

HIV-positive adults in care with CM, between 1985-2014 at participating sites in CCASAnet and Vanderbilt Comprehensive Care Clinic

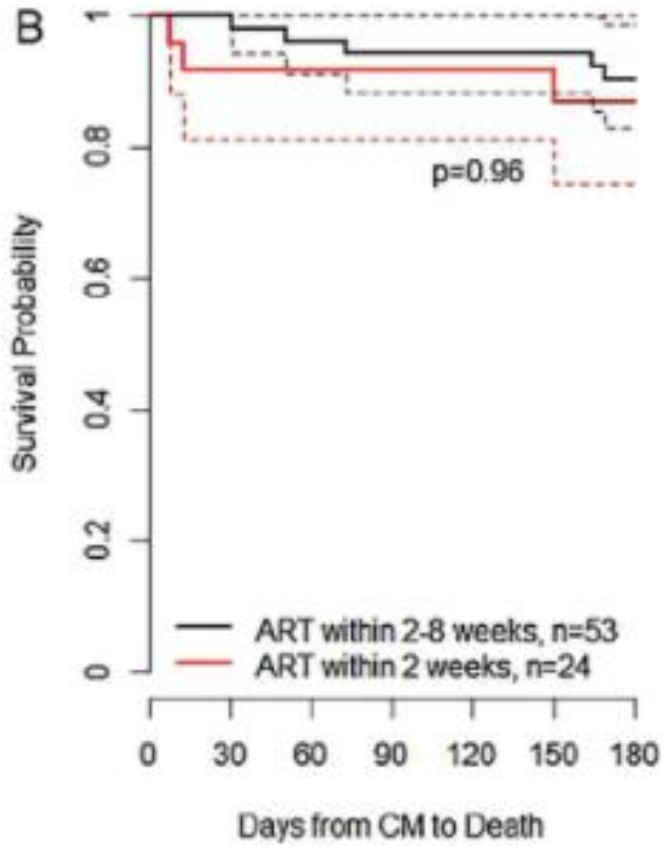
Risk of death when initiating ART <2 weeks after CM diagnosis vs initiating between 2-8 weeks was assessed using dynamic marginal structural models adjusting for site, age, sex, year of CM, CD4 count, and route of HIV transmission

IeDEA International epidemiology Databases to Evaluate AIDS

CCASAnet

RESULTS

- 340 patients were included from Argentina, Brazil, Chile, Honduras, Mexico, and Vanderbilt
- 142 (42%) died.
- Patients diagnosed with CM after ART had a higher risk of death (p=0.03).
- Probability of survival was not statistically different between patients who started ART within 2 weeks of CM (7/24, 29%) vs. those initiating between 2-8 weeks (14/53, 26%) (p=0.96), potentially due to lack of power.

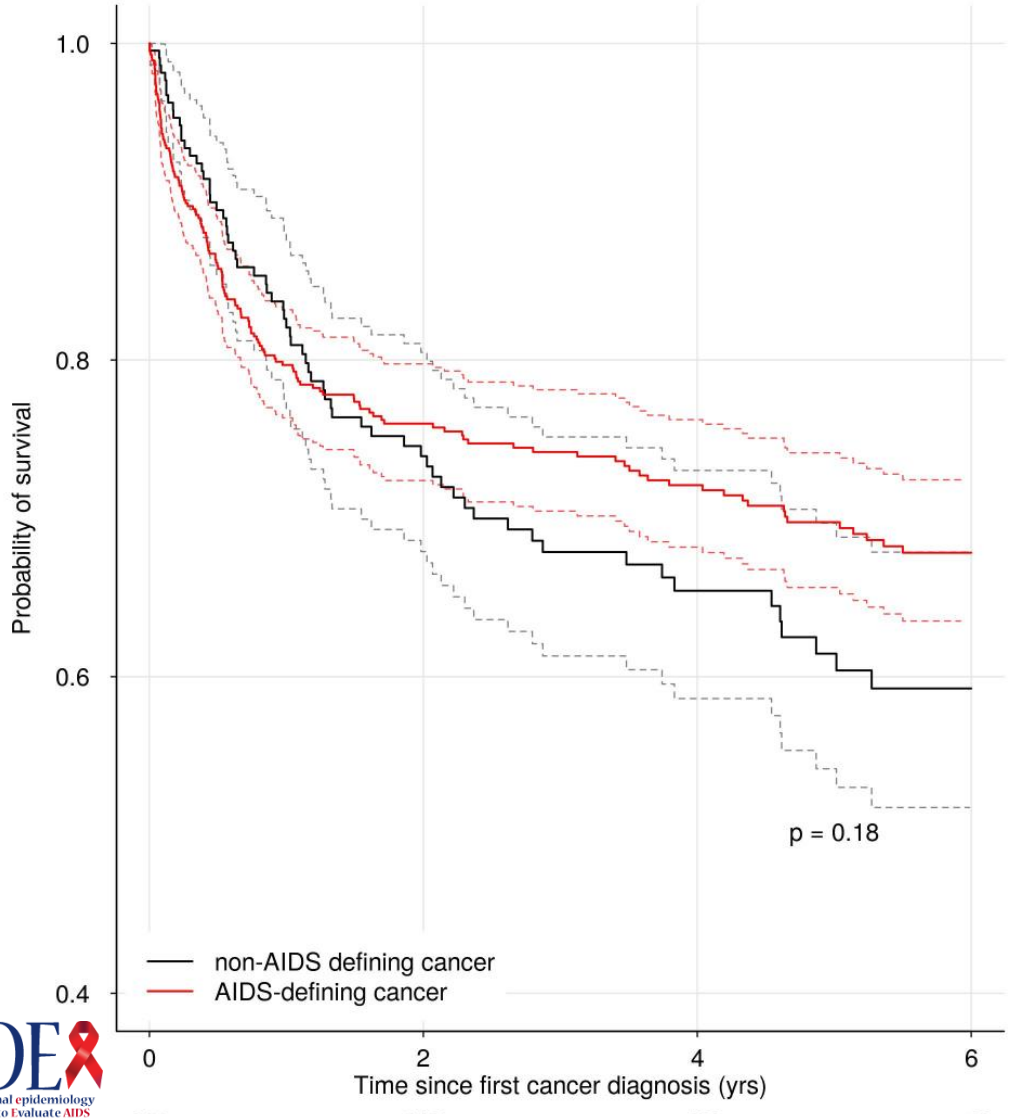


INTERESTING OBSERVATIONS

- 42% overall mortality even in cART era
- 56% of the patients in the study period developed CM *after* ART start, often 2-3 years

Survival after cancer diagnosis in a cohort of HIV-positive individuals in Latin America

Fink V, Jenkins CA, Castilho J, Person AK, Shepherd BE, Grinsztejn B, Netto J, Crabtree B, Cortés CP, Padgett D, Jayathilake J, McGowan CC, Cahn P. Under review at *Infect Agents & Cancer*.



- 564 ADCs and 219 NADCs between 2000-2015
- Similar survival after one year but lower survival among NADCs at 5 years (60 vs. 69%)

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Patients with NADC (vs. ADC) were more likely to be:

- female (28 vs. 14%)
- older at cancer diagnosis (45 vs. 37 years)
- diagnosed with cancer after ART initiation (79 vs. 50%)
- have higher CD4 cell counts (median 376 vs. 86 cells/μL) and suppressed HIV RNA (70 vs. 31% with suppressed HIV RNA) at cancer diagnosis
- **Conclusions:** Increasing age, increasing time from HIV diagnosis, and detectable HIV RNA were statistically associated with increased risk of mortality following cancer diagnosis.
- Sex, timing of diagnosis relative to ART initiation, and CD4 cell count were not meaningfully associated with mortality.

Virologic failure and mortality in older ART initiators in a multisite Latin American and Caribbean cohort

Carriquiry G, Giganti MJ, Castilho JL, Jayathilake K, Cahn P, Grinsztejn B, Cortes C, Pape JW, Padgett D, Sierra-Madero J, McGowan CC, Shepherd BE, Gotuzzo E. Accepted at *JIAS.*

- The "graying" of the HIV epidemic necessitates a better understanding of the health care needs of older HIV-positive adults

- Comparison was made between older ART initiators (≥50 yo) and those who were younger (<50 yo) using a cohort of more than 26,000 ART initiators in Latin America and the Caribbean

IeDEA International epidemiology Databases to Evaluate AIDS

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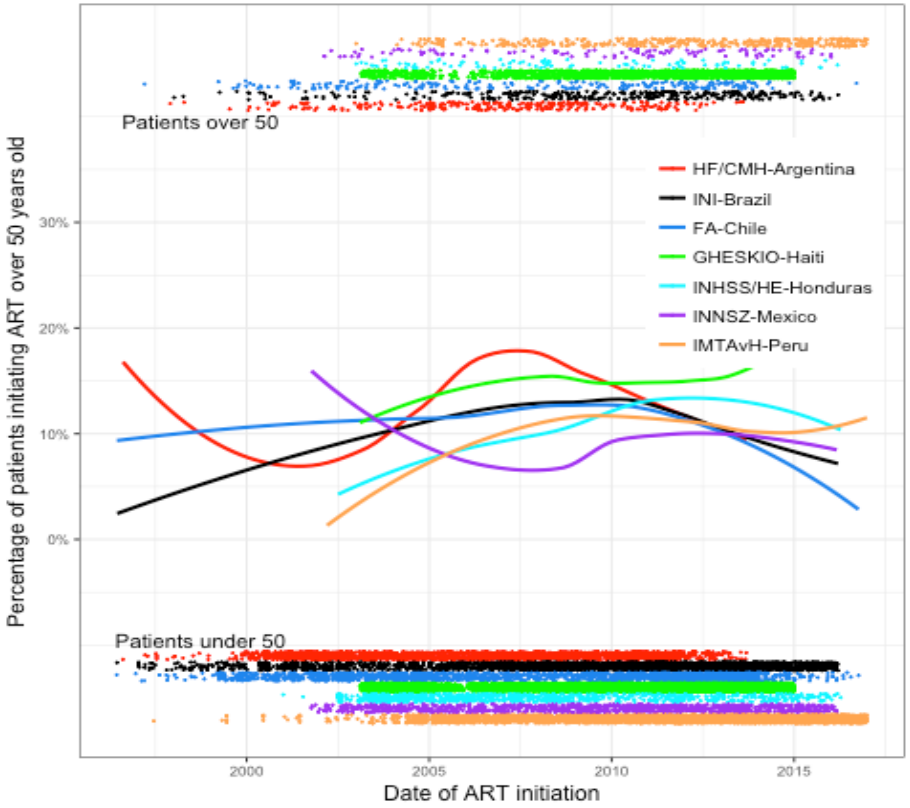
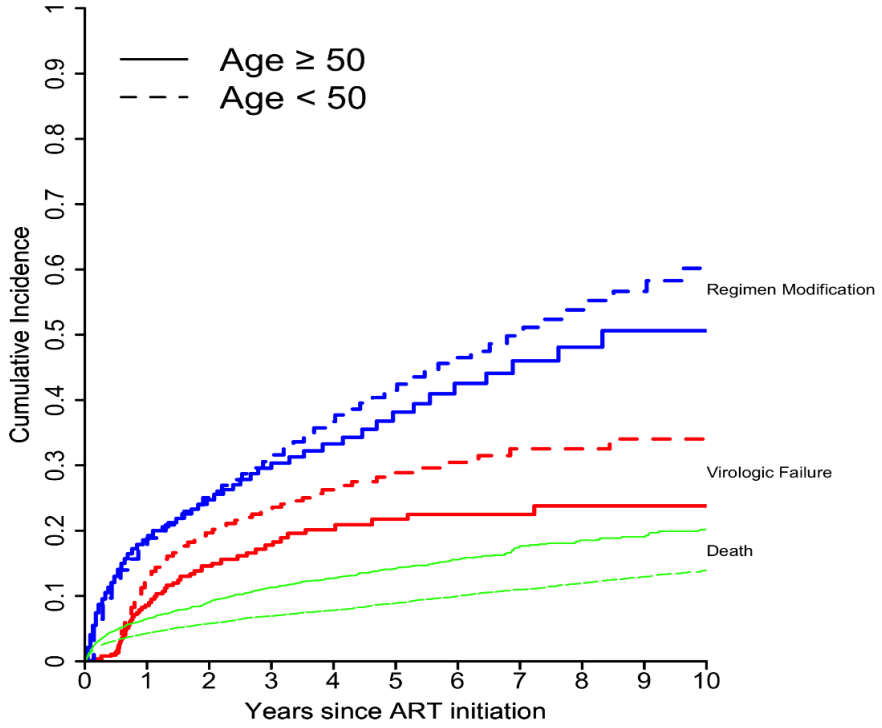


Estimated **proportion of ART initiators older than 50 years** during the study period

Older age at ART initiation was associated with **<u>increased</u>** mortality and **<u>decreased</u>** risk of virologic failure.



Central Africa-IeDEA Research Highlights 2017

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International Epidemiology Databases to Evaluate AIDS
CENTRAL AFRICA

Impact of ART eligibility expansions on site-level timely ART initiation: 22 country meta-analysis (MR086)

Aim

- Estimate the change in cumulative incidence of timely ART initiation after national ART eligibility expansions to CD4≤350 and CD4≤500.

Methods

- 284,740 adult ART-naïve patients at 171 IeDEA sites in 22 countries with ART guideline expansions to CD4≤350 and CD4≤500 cells/µL during 2007-2015.
- Outcome: site-level change in cumulative incidence of ART initiation at the original site of HIV care enrollment within 6 months of enrollment (CI-ART 6m), after guideline expansion.
  - CI-ART6m estimated via competing risks regression, with death and pre-ART loss to clinic considered competing events.
  - Comparison of 12-month enrollment periods before and after ART guideline expansion + 6-month buffer around it (i.e. months 18-6 before expansion vs 6-18 after expansion).
- Meta-analysis to estimate pooled effects and random effects meta-regression models to assess correlates of site-level change in CI-ART6m.

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International Epidemiology Databases to Evaluate AIDS
CENTRAL AFRICA

Impact of ART eligibility expansions on site-level timely ART initiation: 22 country meta-analysis (MR086)

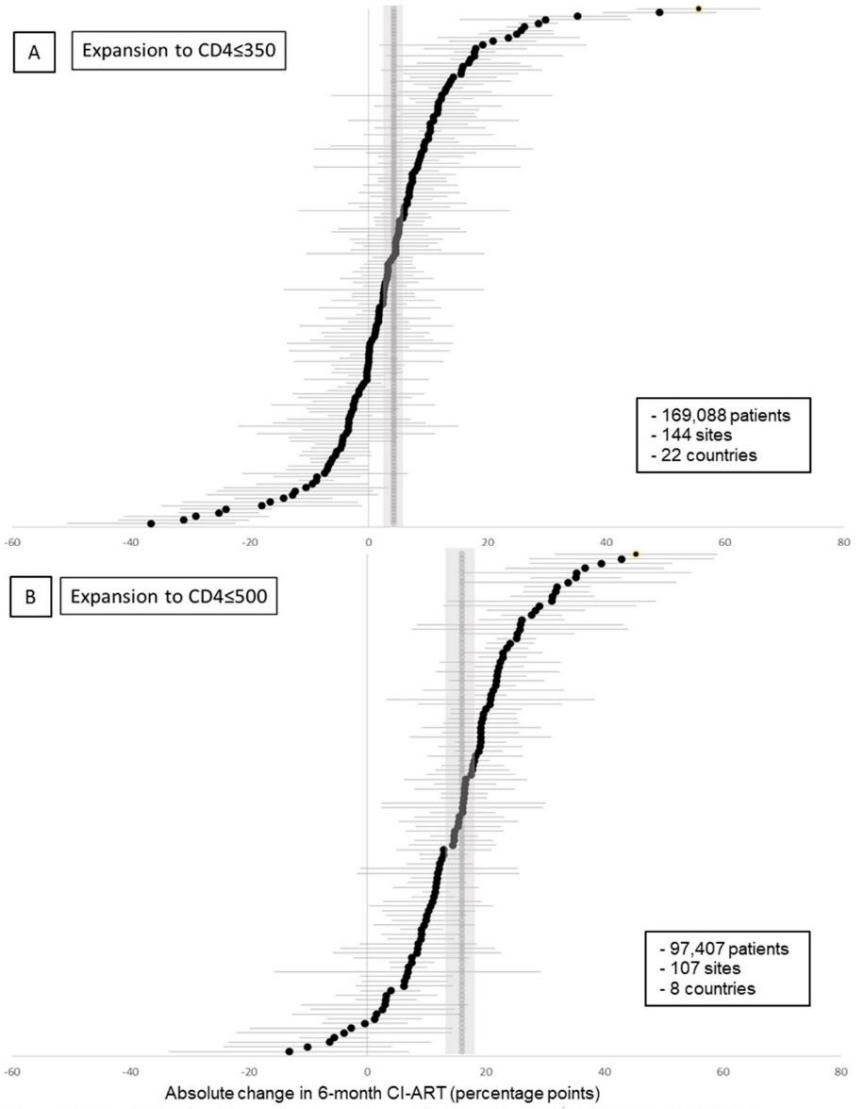


Figure. Site-level absolute changes in 6-month cumulative incidence of ART initiation (CI-ART) after guideline expansions to (A) CD4≤350 and (B) CD4≤500; estimated confidence intervals in gray.

- After ART eligibility guidelines expanded to CD4≤350 cells/µL, site-level CI-ART6m increased by an average of +4.3 percentage points (pp). After guideline expansion to CD4≤500 cells/µL, CI-ART6m increased by +16.0 pp.
- Increases in CI-ART6m largest among:
  - Sites with higher baseline median enrolment CD4 counts and lower baseline levels of CI-ART.
  - Young and newly eligible patients (with less advanced disease).
- No decreases observed among previously eligible patients.

Tymejczyk et al, MR086 (PLoS Medicine, in press)

IeDEA International Epidemiology Databases to Evaluate AIDS CENTRAL AFRICA

Screening and treatment of mental health and substance use disorders at HIV treatment sites in low-and middle-income countries (MR096)

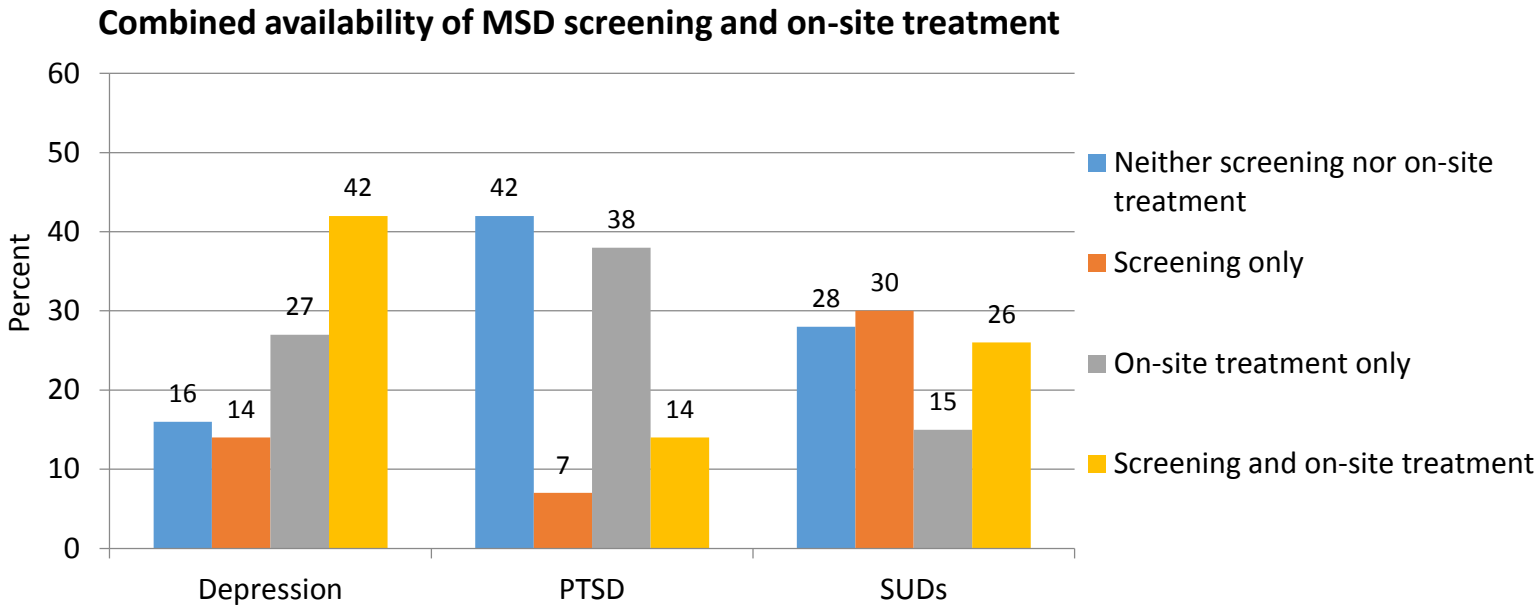
Aim

- To describe current mental health and substance use disorder screening and management practices in a representative sample of IeDEA HIV treatment sites in LMICs

Methods

- Site survey was conducted with a stratified random sample of HIV treatment sites across the 6 LMIC IeDEA regions (Aug 2016-May 2017)
- Where possible, sampling frame was stratified at the country-level by: site setting (urban/rural), patient population (adults, children, both), and level of care (health center, district hospital, regional hospital)
- Respondents were asked separately about screening and management practices for: depression, PTSD, substance use disorders, and other serious mental illnesses
- Sample: 95 IeDEA sites participated across 29 LMICs

Screening and treatment of mental health and substance use disorders at HIV treatment sites in low-and middle-income countries (MR096)



- Most HIV sites surveyed reported some integration of MSD services, but numerous gaps persist
- Screening for PTSD was less commonly reported than reported than screening for depression or SUDs
- On-site treatment was more commonly reported for depression as compared to PTSD or SUDs
- Pediatric clinics were less likely to report MSD screening compared to adult clinics
- Rural clinics and private sector clinics were less likely to report on-site MSD treatment compared to urban clinics and public sector clinics

Parcesepe et al, MR096 (revise & resubmit, JIAS)

IeDEA International Epidemiology Databases to Evaluate AIDS CENTRAL AFRICA

Impact of ART eligibility expansions To Treat All on timely ART initiation: 11 country analysis (MR103)

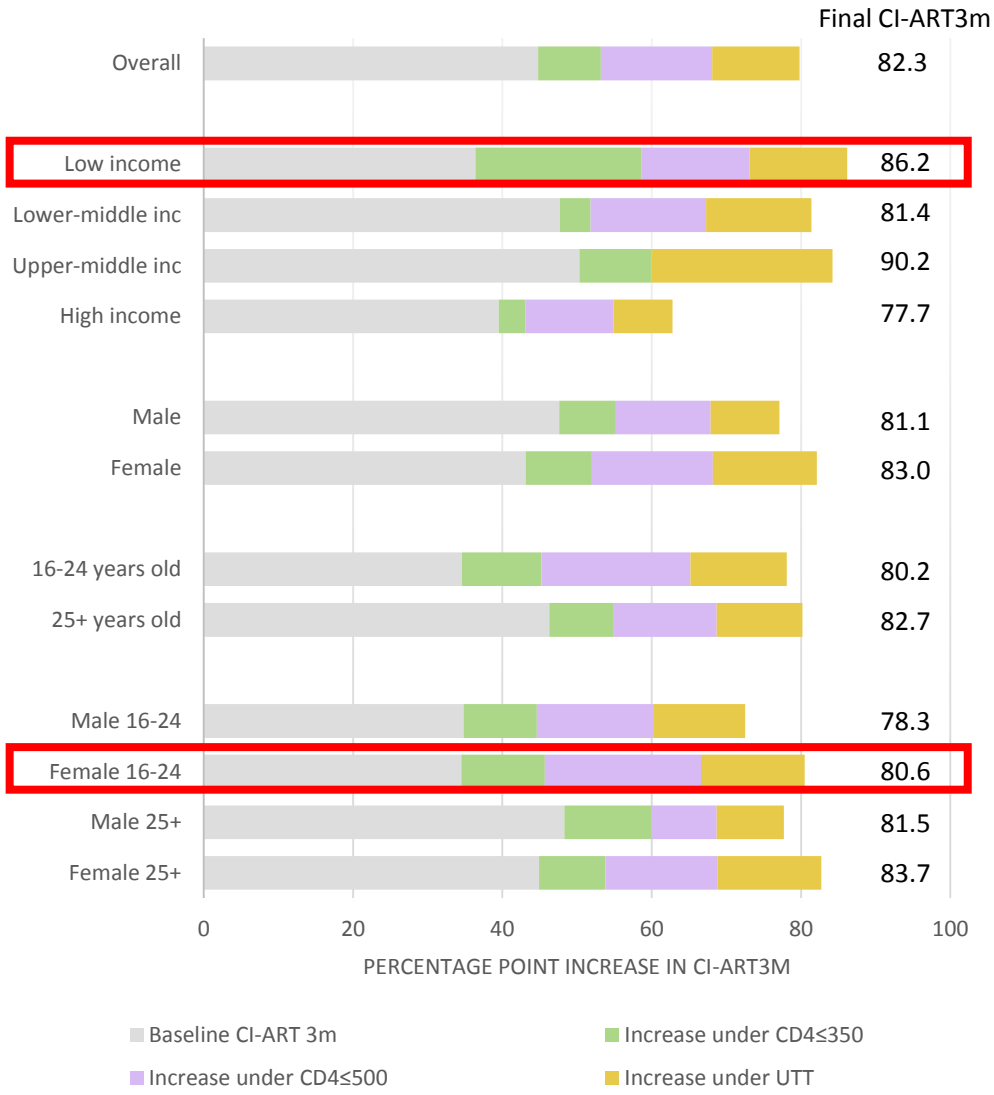
Aim

- Assess cumulative incidence of timely ART initiation under successive country-level ART eligibility criteria, ranging from CD4≤200 to universal testing and treatment (UTT).

Methods

- 846,712 adult ART-naïve patients newly enrolled in HIV care between 2004 and 2017, from 11 countries with current national UTT policies and known dates of at least one prior major HIV eligibility expansion.
- Outcome: cumulative proportion of ART initiation at the original site of HIV care enrollment by 3 months after enrollment in care (CI-ART3m).
  - Stratified by guideline period during which patients enrolled in HIV care:
    Period 1: CD4≤200 / Period 2: CD4≤350 / Period 3: CD4≤500 / Period 4: UTT

Impact of ART eligibility expansions To Treat All on timely ART initiation: 11 country analysis (MR103)



- Increases in CI-ART3m under successive guideline expansions, including UTT, observed in all strata.
- Overall, largest increases in CI-ART3m in low-income countries: from 36% before expansion to 86% under UTT.
- Increases in CI-ART3m under CD4≤500 and UTT largest among women and young patients aged 16-24 years old, narrowing or reversing age- and sex-based gaps.
- Under UTT, median CD4 counts at enrollment in HIV care ranged from 284 to 413 cells/µL across country income groups, and from 283 to 408 cells/µL across age groups.

Tymejczyk et al, MR103 (accepted poster, IWHOD 2018)

leDEA
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Implementation of 'Treat-All': Results from the 2017 IeDEA Site Assessment (MR112)

Aims

- To describe site-level capacity and practice related to HIV care, including the current status of UTT implementation and the timing of site-level UTT implementation relative to national guideline adoption.

Methods

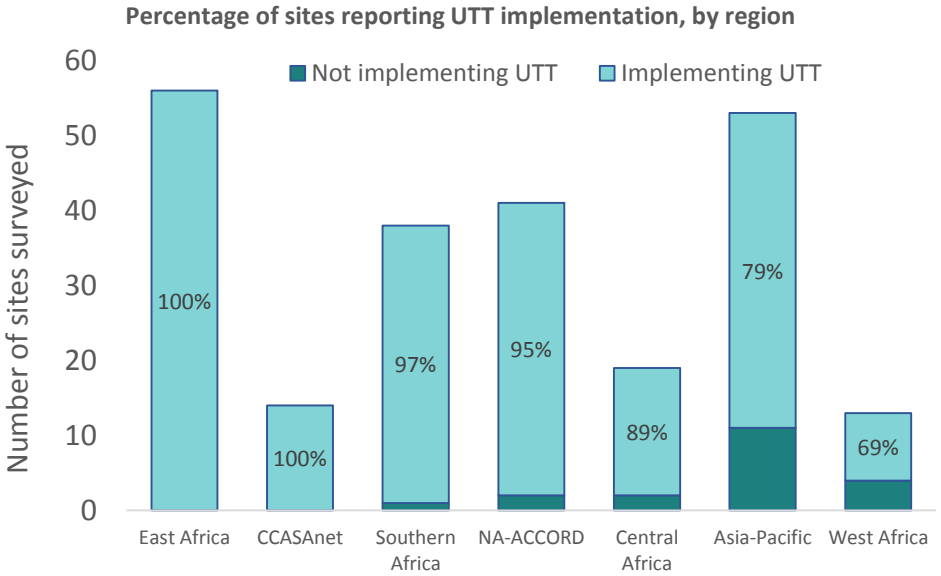
- Cross-sectional survey administered to 255 IeDEA sites in 44 countries (July-December 2017).
  - Complete responses were received from 234 sites (92%).
- Eligibility criteria:
  - IeDEA sites that are active (contributing data to IeDEA cohort in 2017).
  - IeDEA sites which are not nested within a larger cohort or program (i.e., report data for own patients).

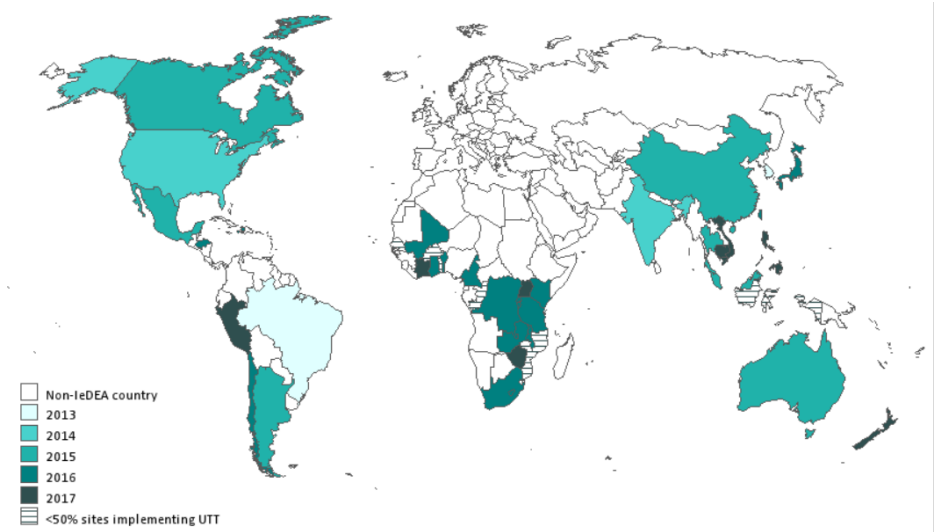
IeDEA
International Epidemiology Databases to Evaluate AIDS
CENTRAL AFRICA

Implementation of 'Treat-All': Results from the 2017 IeDEA Site Assessment (MR112)

- 214/234 (91%) sites reported implementation of UTT (i.e., initiating all patients on ART regardless of CD4 count or clinical criteria).
- Site-level implementation of UTT nearly universal across sites in most IeDEA regions, but lower among the Asia-Pacific and West Africa IeDEA sites.
- 204/214 IeDEA sites (95%) reported year of UTT implementation at their site.
  - Median year earliest at North American sites (2014) and the Asia-Pacific and Central/South America sites (2015).
  - Median year of UTT implementation later among East, Central, and Southern Africa sites (2016) and in West Africa (2017).
- 36% of sites reported implementing UTT <u>prior to</u> national adoption of UTT guidelines.
- Among sites in countries where UTT has been adopted nationally (N=181), median time from national guideline change to site implementation was +2 months (IQR: 0 to +7 months).

Brazier et al, MR112 (accepted poster, IWHOD 2018)





Predictors of ART initiation and loss to follow up under Treat All in Rwanda (CA-1704)

Aims

- Describe rate of ART initiation under newly-implemented Treat All guidelines
- Identify predictors of ART initiation and loss to follow up under Treat All

Methods

- Setting: Rwanda – small Central African country, population 12 million
  - HIV prevalence ~3% (higher in capital Kigali, ~7%)
  - Implemented Treat All nationally in July 2016
- Cohort study of 1332 PWLH newly enrolling in 10 health centers affiliated with CA-IeDEA from 1 July 2016 – 12 December 2017
- Data sources:
  - Clinical data obtained from health centers
  - Site characteristics collected as part of IeDEA-wide 2017 site survey
- Outcomes
  - **ART initiation** modeled using multilevel log binomial regression
  - **Time to ART initiation** and **Time to loss to follow up** modeled using multilevel Cox regression

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Predictors of ART initiation and loss to follow up under Treat All in Rwanda (CA-1704)

Among 1332 patients newly enrolling in care after Treat All Implementation:

- 1259 (95%) initiated ART
  - 89% initiated within 30d
  - 98% initiated within 90d
- Median time to ART initiation: 7 days

Among 654 patients with sufficient follow-up time:

- 381 (58%) had post-ART viral load measured
- 260 (68%) virally suppressed
- 578 (88%) retained in care at 6 months

Selected predictors of more rapid ART initiation

	CRUDE HR (95% CI)	ADJUSTED HR (95% CI)
Female v. Male	0.98 (0.88-1.09)	1.04 (0.92-1.18)
15-24y v. >24y	0.89 (0.79-1.02)	0.87 (0.76-1.01)
PMTCT v. VCT	**1.52 (1.36-1.69)**	**1.41 (1.18-1.69)**
CD4 <500 v. > 500	0.98 (0.92-1.05)	1.01 (0.86-1.15)
Large v. small site	1.16 (0.97-1.34)	1.13 (0.97-1.33)
Age-specific v. all-ages clinic	1.07 (0.88-1.32)	1.48 (1.16-1.89)
4 vs < 4 counseling sessions	**0.77 (0.66-0.90)**	**0.58 (0.42-0.79)**

Selected predictors of 6-month loss to follow up

	CRUDE HR (95% CI)	ADJUSTED HR (95% CI)
Female v. Male	1.05 (0.71-1.55)	1.01 (0.62-1.64)
15-24y v. >24y	1.65 (0.89-3.04)	1.49 (0.83-2.67)
PMTCT v. VCT	0.91 (0.55-1.49)	0.70 (0.34-1.45)
CD4 <500 v. > 500	1.15 (0.89-1.48)	1.13 (0.60-2.13)
Large v. small site	0.66 (0.3-1.41)	0.69 (0.41-1.14)
Age-specific v. all-ages clinic	1.07 (0.88-1.32)	1.07 (0.64-1.79)
4 vs < 4 counseling sessions	0.65 (0.35-1.22)	**0.59 (0.36-0.97)**

Ross et al, CA-1704

East Africa IeDEA

The Five Most Significant Papers of 2017

"I wanted to safeguard the baby": a qualitative study to understand the experiences of Option B+ for pregnant women and the potential implications for "test and treat" in four sub-Saharan African settings

Objective:

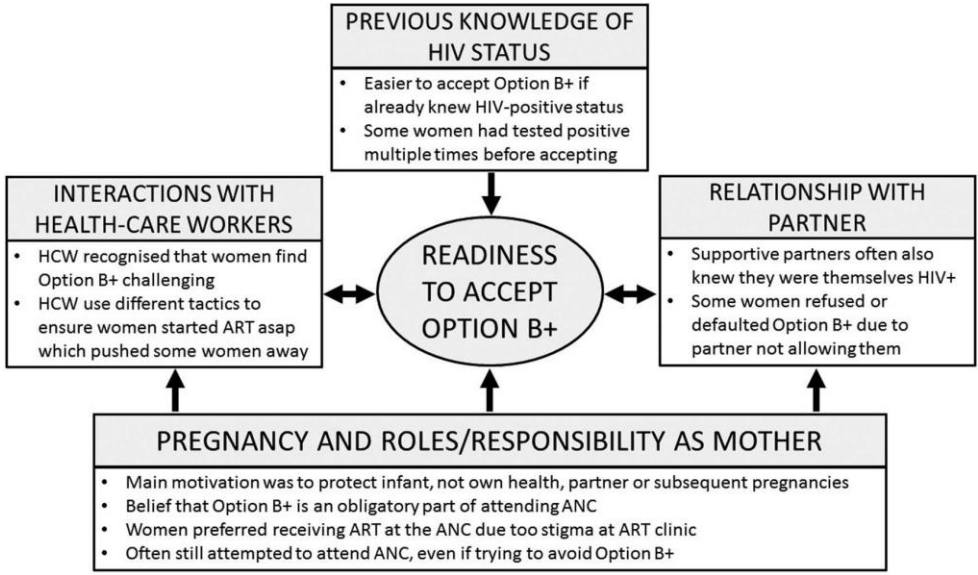
- Explore how psychosocial and contextual drivers influence engagement with Option B+

Methods:

- 4 health & demographic surveillance sites in Malawi, Tanzania & Uganda
- 22 HIV-positive women pregnant since Option B+ available
- 15 health care workers (HCWs) in HIV service delivery
- In-depth interviews conducted in 2015
- Thematic content analysis investigating influences on engagement with Option B+

Results:

- Feeling 'ready' was key to initiating ART on diagnosis day
- Influenced by prior knowledge of HIV+, interactions with HCWs & relationship with partners
- Desire to protect their baby was the main motivation to initiating ART
- HCWs feelings of responsibility to protect infant drove them to using strong persuasive techniques



McLean E, et al. Sex Transm Infect 2017;0:1–5

Increased prevalence of pregnancy and comparative risk of program attrition among individuals starting HIV treatment in East Africa

Objective:

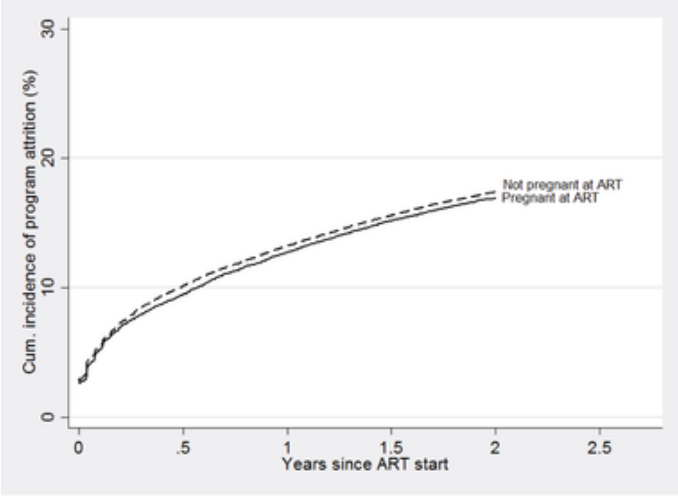
- Examine trends over time in the proportion pregnant, their characteristics and program attrition rates compared to others initiating & on ART

Methods:

- HIV-infected individuals 13 years or older starting ART 2004–2014

Results:

- 156,474 individuals (67.0% women) started ART
- Proportion starting ART pregnant increased from 5.3% to 12.2%
- No significant difference in the cumulative incidence of program attrition at 6 months among pregnant and non-pregnant women
- Healthy pregnant compared to non-pregnant women had a higher attrition rate, 9.6% versus 6.5%
- Among sicker pregnant compared to non-pregnant women had lower attrition rate, 8.4% versus 14.4%



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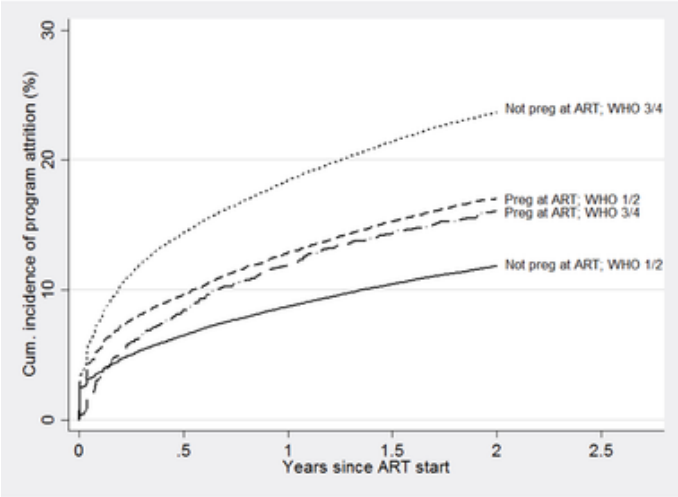


b

Holmes. PLOS ONE 13(1): e0190828

IeDEA

"Evaluating the Impact of a HIV Low-Risk Express Care Task-Shifting Program: A Case Study of the Targeted Learning Roadmap."

$$\mathbb{E}Y_{\bar{a}}(t^*) = \mathbb{E}[\mathbb{E}[\cdots \mathbb{E}[\mathbb{E}[Y(t^*)|\bar{L}^{\bar{a}}(t^*-1)]|\bar{L}^{\bar{a}}(t^*-2)]\cdots|\bar{L}^{\bar{a}}(0)]]$$

Care Model: Care for low risk patients shifted from physicians to nurses

- Patients were followed ≤ 3 years

Objective: to estimate

- The effect of LREC implementation at each clinic
- The effect of LREC enrollment (after implementation)

Target parameter

- The probability of patients remaining alive and "in-care" (i.e. not lost to follow up) under each counterfactual intervention

Results:

- Enrolling immediately into the LREC program at eligibility resulted in highest in-care survival
- Immediate availability, but never enrolling had the lowest

Table 1: Proportion of visits responsibility assigned between the (a) standard and (b) LREC models of care provision.

Clinical monitoring	Standard model		LREC model	
	P/CO	Nurse	P/CO	Nurse
Request CD4/viral load measures	All	None	All	None
Monitor/support ART adherence	All	All	1/3	All
Determine functional status	All	None	1/3	2/3
Identify/manage ART side effects	All	None	1/3	2/3
Identify/manage opportunistic infections	All	None	1/3	2/3

Notes: P, Physician; CO, Clinical Officer.

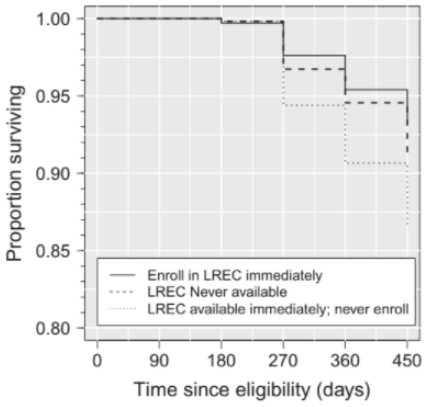
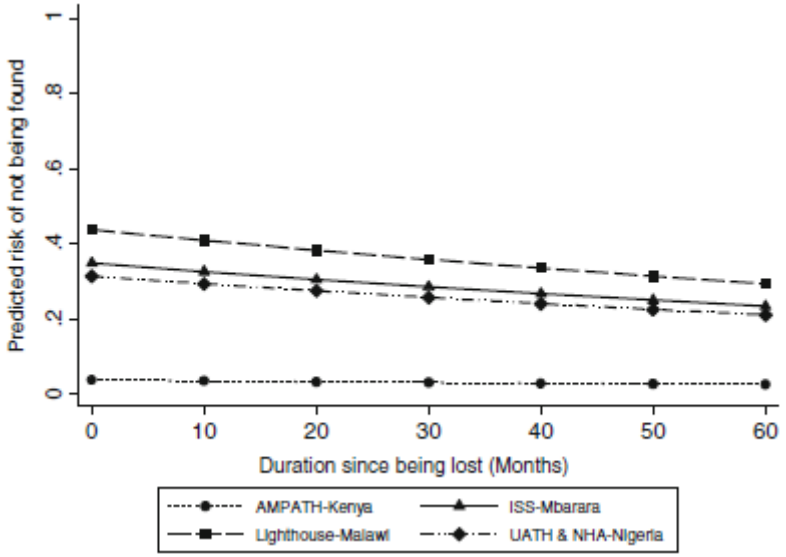


Figure 5: Survival curves adjusting for potential confounders.

Tran. Epidemiol Methods. 2016 Dec;5(1):69-91

Updating Vital Statistics by tracking in the community among patients with epidemic Kaposi Sarcoma who are lost to follow-up in sub-Saharan Africa

- **Objective**
  - Assessed feasibility of updating the vital status of patients with HIV-associated KS who were LTFU
- **Methods**
  - Between 2009-2012, at five sites in Kenya, Uganda, Nigeria, and Malawi
  - Electronic records (EMR) used to identify all newly diagnosed KS in HIV-infected adults
  - Identified the LTFU and updated vital status using manual chart review, phone and physical tracking
- **Results**
  - 1,222 patients newly diagnosed with KS (678 Kenya, 173 Uganda, 314 Malawi, 57 Nigeria)
  - 440 were LTFU per EMR (18 of 440 (4.1%) misclassified)
  - Vital status updated 331/422 (78%)
    - Chart Review: 24 (5.7%)
    - Telephone: 111 (26%)
    - Physical Tracing: 196 (46%)
  - Duration of being lost not associated with success of tracking
- **Conclusion**
  - It is feasible to update vital status in a large fraction of LTFU patients with HIV-associated KS in sub-Saharan Africa



Semeere et al. BMC Cancer 2017 **17**:611

The Causal Effect of Tracing by Peer Health Workers on Return to Clinic Among Patients Who Were Lost to Follow-up From Antiretroviral Therapy in Eastern Africa: A "Natural Experiment" Arising From Surveillance of Lost Patients

Objectives:

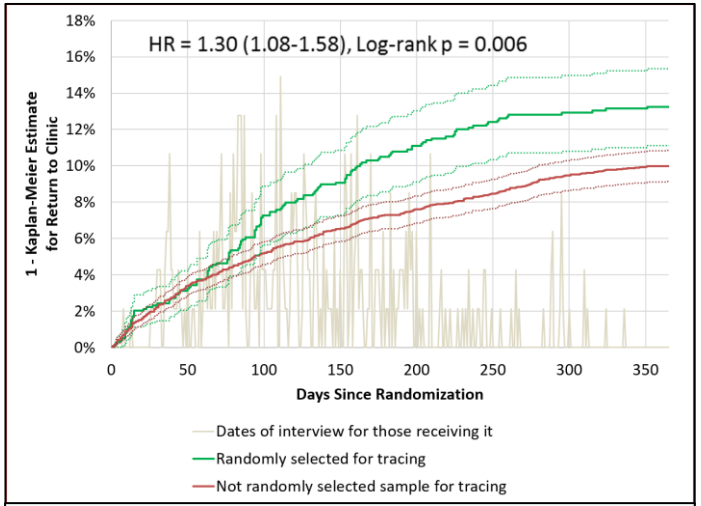
- Randomly allocate "intervention" (selection for tracing) to assess the causal effect of tracing on return to the original clinic
- Estimate the causal effect of tracing on return in those who were alive, out of care and contacted in person

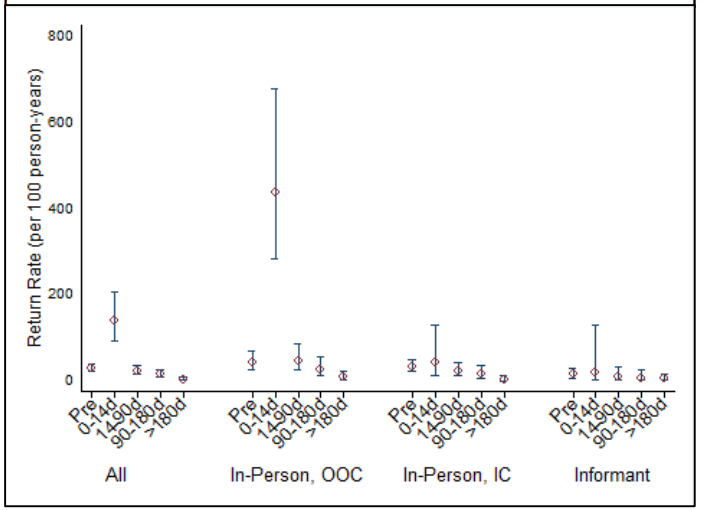
Results:

- Tracing has a small effect on return among all lost patients
- Tracing has a large effect on return among those who are lost, alive, not in care elsewhere and contacted in person

Conclusion:

- Strong evidence that tracing lost patients has an effect on return





Bershetyn. Clin Infect Dis. 2017 Jun 1;64(11):1547-1554

IeDEA

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IeDEA Southern Africa 2017 Research Highlights

Estimating the impact of antiretroviral treatment on adult mortality trends in South Africa: A mathematical modelling study

Johnson et al (2017). PLoS Medicine. 14(12): e1002468. PMC5726614.

Background

Although substantial reductions in adult mortality have been observed in sub-Saharan Africa since the start of the ART rollout, there have been no formal evaluations of the impact of ART.

Objective

To estimate how much of the adult mortality decline in South Africa was due to ART and how much mortality might have been reduced if the ART rollout had not been delayed.

Methods

A mathematical model of HIV in South Africa was calibrated to recorded death statistics and was used to evaluate counterfactual scenarios (no ART versus ART rollout without delays).

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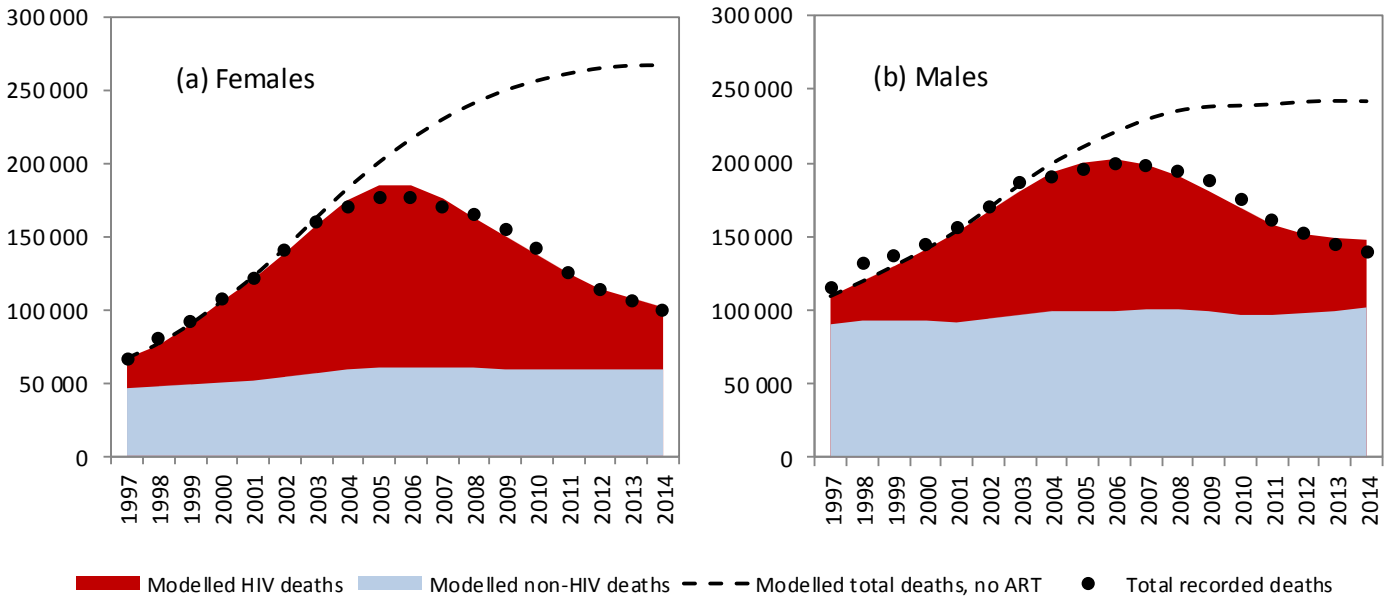
Estimating the impact of antiretroviral treatment on adult mortality trends in South Africa: A mathematical modelling study (continued)

Results

Figure: Trends in modelled and recorded deaths in adults (ages 20-59 years)



Conclusion

- In the period up to 2014, HIV accounted for 2.70 million adult deaths in SA – but would have been 1.72 million higher without ART.
- 6.15 million life years saved, but saving could have been 8.80 million if delays in ART rollout had not occurred.

Global Trends in CD4 Cell Count at the Start of Antiretroviral Therapy: Collaborative Study of Treatment Programs

The IeDEA and COHERE cohort collaborations
Clin Infect Dis. 2018 Jan 25. doi: 10.1093/cid/cix915. PMID: 29373672, in process.

Background

Early initiation of ART at higher CD4 cell counts prevents disease progression and reduces sexual transmission of HIV.

Objective

Description of temporal trends in CD4 cell counts of HIV-infected patients at ART start.

Methods

Weighted additive mixed models to estimate time trends of median CD4 cell count at ART start by sex and country income group.

IeDEA

Results

Figure: Estimated trends in median CD4 cell count at the start of ART in adults by sex and country income group

Conclusion

- Overall increase in median CD4 at ART start over the past few years, but median CD4 count is still <350 cells/µL in all country income groups in 2015.
- Substantial additional efforts and resources are needed to increase testing coverage with the aim of achieving earlier diagnosis, linkage to care, and initiation of ART globally

Trends in hepatitis B virus testing practices and management in HIV clinics across sub-Saharan Africa

Coffie et al. BMC Infect Dis. 2017 Nov 1;17(Suppl 1):706. PMC5688463.

Background

Over 8% of HIV-infected individuals are co-infected with hepatitis B virus (HBV) in sub-Saharan Africa (SSA). Knowledge of HBV status is important to guide the selection of antiretroviral therapy (ART) and monitor/prevent liver-related complications. We describe changes in testing practices and management of HBV infection over a 3-year period in HIV clinics across SSA.

Objective

To describe the uptake of HBV and HCV testing among HIV-infected individuals initiating antiretroviral therapy in sub-Saharan Africa

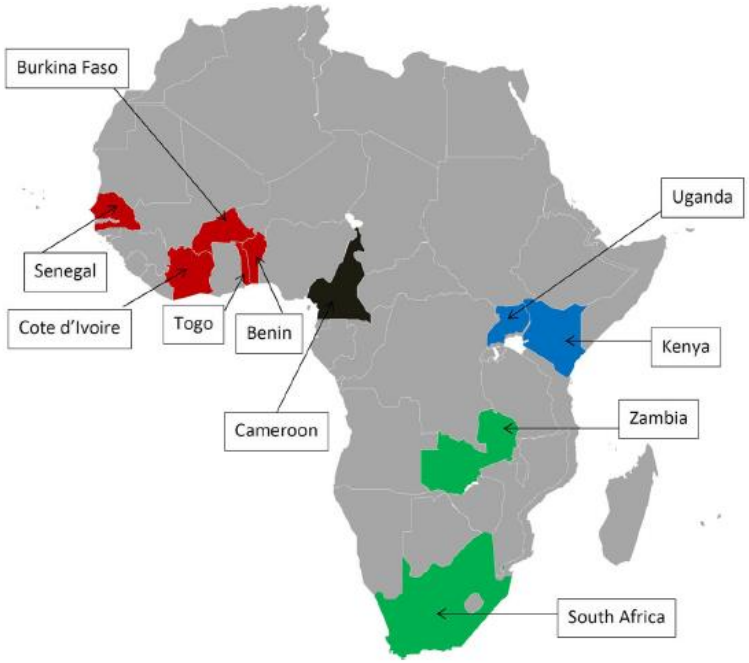
Methods

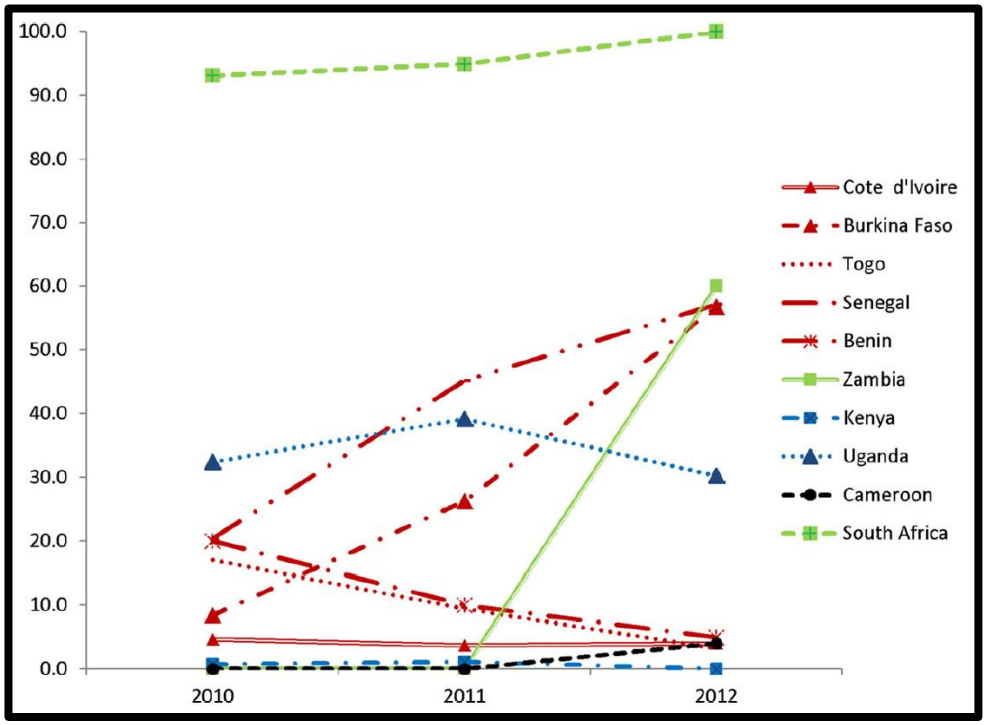
A medical chart review was conducted in large urban HIV treatment centers in Côte d'Ivoire, Benin, Burkina Faso, Cameroon, Kenya, Senegal, South Africa, Togo, Uganda and Zambia. Of the patients who started ART between 2010 and 2012, 100 per year were randomly selected from each clinic. Demographic, clinical and laboratory information as well as treatment histories were collected using a standardized questionnaire. We examined changes over time in the proportion of patients tested for HBV (HBV surface antigen-positivity), identified predictors of HBV testing using logistic regression, and assessed the proportion of patients initiating a tenofovir-containing ART.

Trends in hepatitis B virus testing practices and management in HIV clinics across sub-Saharan Africa (continued)

Results

3,579 HIV-infected individuals from 10 countries in SSA were included.





Conclusion

The systematic screening for HBV infection in HIV-positive patients before ART initiation was limited in most African countries and its uptake varied widely across clinics. Overall, the prescription of TDF increased over time, with 90% of HIV/HBV-coinfected patients receiving this drug in 2012.

Comparison of Kaposi Sarcoma Risk in HIV-Positive Adults Across 5 Continents: A Multiregional Multicohort Study

The AIDS-defining Cancer Project Working Group for IeDEA and COHERE in EuroCoord
Clin Infect Dis. 2017 Oct 15;65(8):1316-1326. doi: 10.1093/cid/cix480. PMID: 28531260, in process.

Background

Kaposi sarcoma (KS) is one of the most common tumors in people living with HIV. KS is caused by human herpesvirus 8 (HHV-8), and the prevalence of HHV-8 varies across geographic regions.

Objectives

We compared KS incidence rates in HIV-positive adults on combination antiretroviral therapy (ART) across the Asia-Pacific, South Africa, Latin America, North America, and Europe, and examined risk factors for developing KS.

Methods

We analyzed data from IeDEA and COHERE and compared the risk of incident KS after starting ART across regions using flexible parametric survival models.

IeDEA

Comparison of Kaposi Sarcoma Risk in HIV-Positive Adults Across 5 Continents: A Multiregional Multicohort Study (continued)

Results

Figure 1: KS incidence rates* by time since ART initiation in men and women

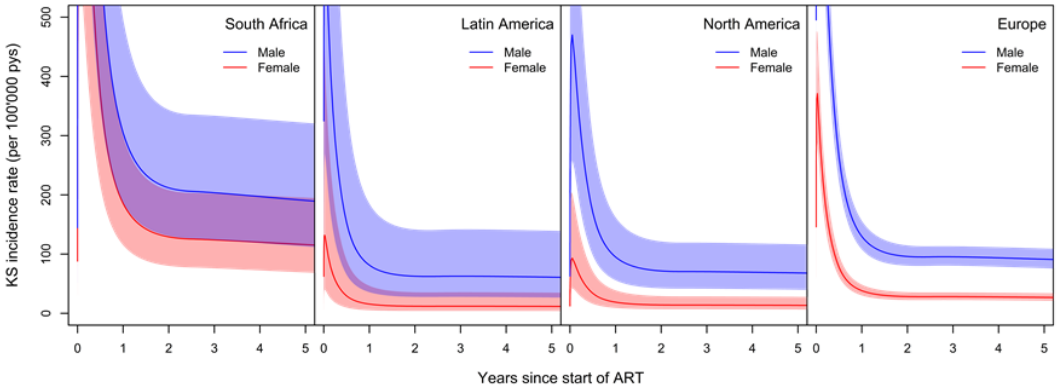
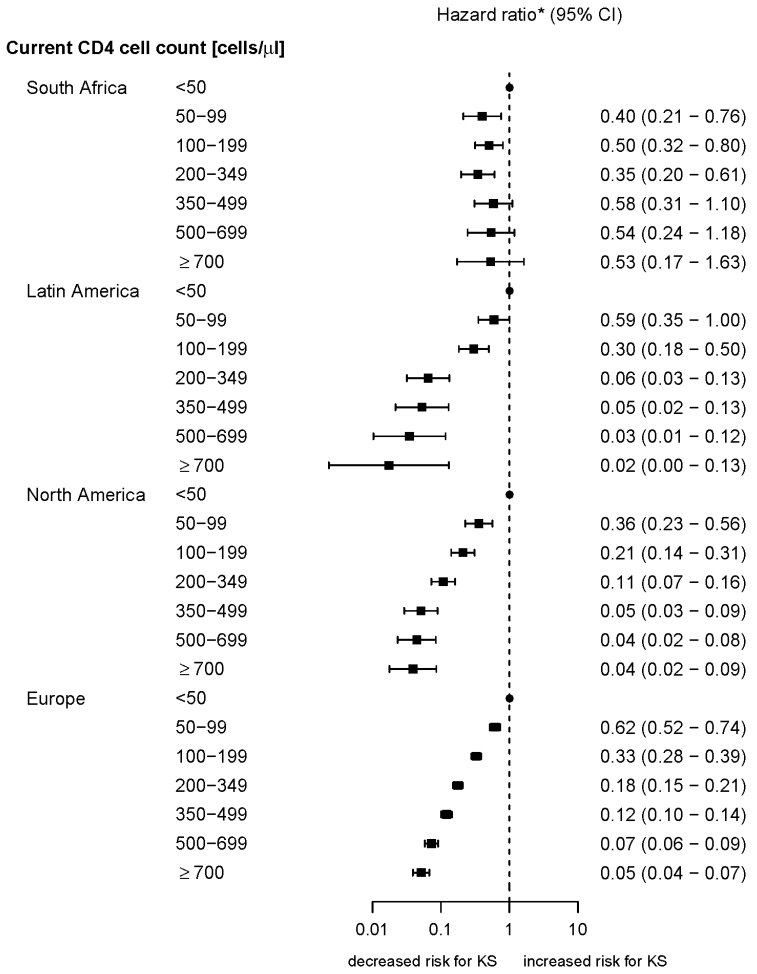


Figure 2: Regional effect of current CD4 cell count on KS risk



Conclusions

- Men and women in South Africa and men who have sex with men remain at increased KS risk, likely due to high HHV-8 coinfection rates.
- Early ART initiation and maintenance of high CD4 cell counts are essential to further reducing KS incidence, but additional measures might be needed, especially in Southern Africa.

HIV transmission and retention among HIV-exposed children in Malawi's PMTCT program

Haas et al. J Int AIDS Soc. 2017 Sep 4;20(1):21947. PMC5640313.

Background

HIV-infected pregnant and breastfeeding women receive ART under Option B+. HIV-exposed children are enrolled in the national PMTCT program, but many are lost to follow-up.

Objective

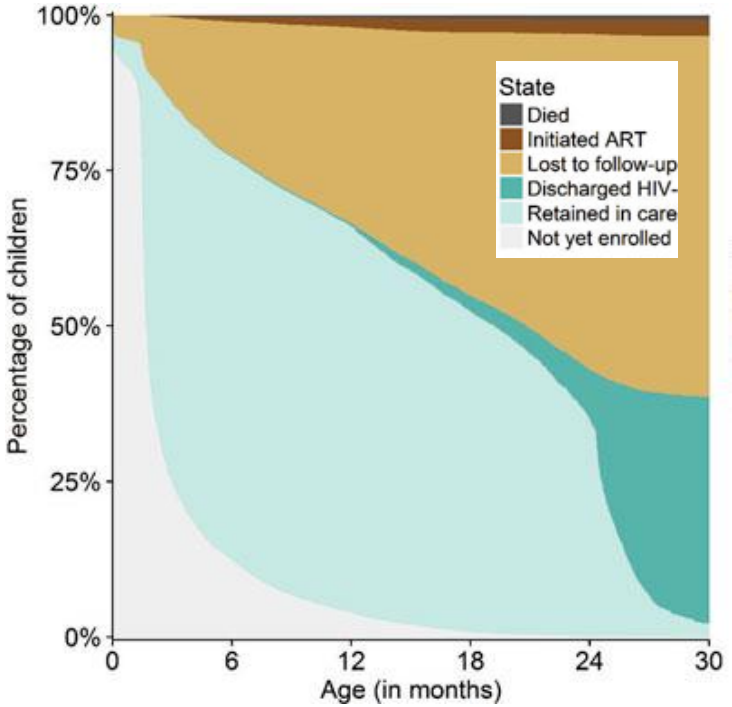
We estimated the cumulative incidence of vertical HIV transmission, taking loss to follow-up into account.

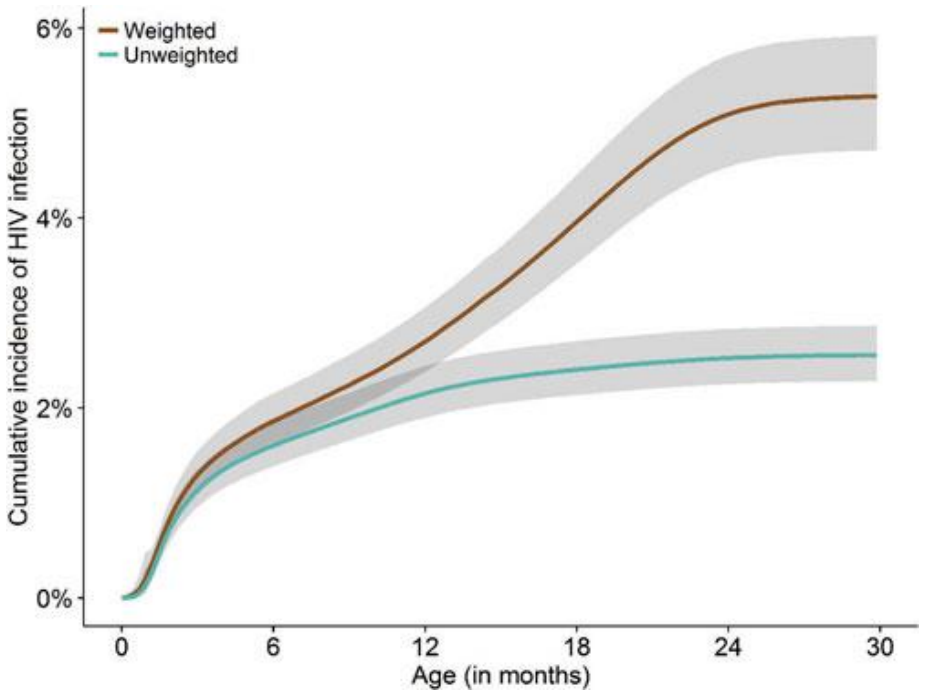
Methods

We did a cohort study at 21 health facilities in Malawi. We used multistate models to estimate the probability of loss to follow-up, death, ART initiation and discharge and pooled logistic regression and inverse probability of censoring weighting to estimate the vertical HIV transmission risk.

HIV transmission and retention among HIV-exposed children in Malawi's PMTCT program (continued)

Results





- 11,285 HIV-exposed children enrolled.
- 58% were loss to follow-up (LTFU) by 30 months.

- Estimated transmission rate in all children: 5.3%.
- 2.6% diagnosed in the program and initiated on ART.

Conclusion

- Confirmed mother-to-child transmission rates were low, but due to poor retention only about half of HIV-infected children were diagnosed.

Five papers from year 2017 the IeDEA West Africa collaboration

March 2018

#1 Transition from paediatric to adult care of adolescents living with HIV in sub-Saharan Africa: challenges, youth-friendly models, and outcomes

Dahourou DL, Gautier-Lafaye C, Teasdale CA, Renner L, Yotebieng M, Desmonde S, Ayaya S, Davies MA, Leroy V. J Int AIDS Soc. 2017 May 16;20(Suppl 3):21528.

Introduction

- The number of adolescents with perinatally or behaviourally acquired HIV is increasing in low-income countries
- As they survive, there is a pressing need to transfer them from paediatric to adult care

Objective

- Review recent evidence on their transition outcomes in Africa, highlighting the specific needs and challenges in these populations and settings, and the different models of care for transition

Methods

- We searched PubMed bibliographic database, HIV conference content, and grey literature from January 2000 to August 2016 with the following keywords: HIV infections AND (adolescents or youth) AND transition AND Africa
- All qualitative and quantitative, experimental and observational studies including HIV-infected patients aged 10–24 years with information on transition were eligible

IeDEA

Results

- Few data on transition outcomes for HIV-infected adolescents are available from Africa settings, mainly from Southern and East Africa reported on the barriers to successful transition:
  - Lack of adequate infrastructure
  - Staff training and communication between paediatric and adult clinicians
  - Fear of stigma of adolescents and youth living with HIV
- Most countries have no specific national guidelines on when to disclose HIV status or when and how to transition to adult care
- Several models of care adapted to the adolescent transition question have been implemented
  - Teen clinics
  - Peer educators
  - Use of social media
- However, regardless of the model, very high attrition has been observed among adolescents and youth compared to younger children or older adults
- There is a need to identify sub-groups at higher risk of loss to follow-up for targeted care and peer support.

#2 Physical function, grip strength and frailty in people living with HIV in sub-Saharan Africa: systematic review.

Bernard C[1,2], Dabis F[1,2], de Rekeneire N[1,2]. Trop Med Int Health. 2017 May;22(5):516-525.

Introduction

- Dramatic demographic change in HIV == patients getting older
- Functional decline, disability and frailty = common with aging

Burden of these impairments ➔ underestimated in HIV-infected adults, particularly in those living older while taking ART

Methods

- Systematic review
- 12 articles included – 6 African countries
- 5 articles = alterations of physical alterations // 1 article on disability

Results

- 2 articles out of 5 = low gait speed
- Disability = 27% in rural places / 3% in urban places
- Lower grip strength (nearly 4 kg) in PLHIV in comparison with uninfected patients
- Frailty : no consensus

Conclusions - Limitations:

- Few studies conducted in West Africa
- No specific study in older HIV patients
- Methodological problems (no normative data, mix sample = patients on ART or not, no consensus concerning the tools)

#3 Prevalence and factors associated with depression in people living with HIV in sub-Saharan Africa: A systematic review and meta-analysis

Bernard C, Dabis F, de Rekeneire N. PLoS One. 2017 Aug 4;12(8):e0181960.

Introduction

- Depression = one of the most common psychiatric disorders,
- Two- to three-times more prevalent in PLHIV than in the general population in many settings but neglected in sub-Saharan Africa
- Patients aged above 18 years old

Objective: To summarize the available evidence on the prevalence of depression and associated factors according to the scales used and the treatment status in PLHIV in SSA

Methods

- Patients aged above 18 years old
- Full-text publications between 1996 to April 2016
- Qualitative review + Meta-analysis

Results in PLHIV on ART

- Pooled prevalence:
  - ✓ Major depressive disorder : 12%
  - ✓ Severe depressive symptoms : between 14% and 32%

➔ Pooled prevalence = varied substantially according to the measurement scale used and also for a given scale even for the same cut-off or the same number of items

- Associated factors:
  - ✓ Major depressive disorder: quality of life, additional comorbidities, prior history of MDD
  - ✓ Severe depressive symptoms: poor social conditions

➔ Focus on papers using the most used scales >> a limited number of publications

Conclusions

- Depression in PLHIV represents an increasing concern in SSA
- The prevalence of depression is high even if the variability of the data does not allow to describe precisely the phenomenon and to identify strong predictors

#4 Trends in hepatitis B virus testing practices and management in HIV clinics across sub-Saharan Africa

Coffie PA, Egger M, Vinikoor MJ, Zannou M, Diero L, Patassi A, Kuniholm MH, Seydi M, Bado G, Ocama P, Andersson MI, Messou E, Minga A, Easterbrook P, Anastos K, Dabis F, Wandeler G; IeDEA collaboration. BMC Infect Dis. 2017 Nov 1;17(Suppl 1):706.

Objective

Describe changes in testing practices related to viral hepatitis over a 3-year period in HIV clinics in SSA

Methods

- A medical chart review was conducted in 11 large urban HIV treatment centers in Côte d'Ivoire (3 sites), Benin, Burkina Faso, Senegal, Togo, Cameroon, Kenya, Uganda, South Africa, Zambia (1 site each)
- Of the patients who started ART between 2010 and 2012, 100 per year were randomly selected from each clinic
- Demographic, clinical and laboratory information were collected using a standardized questionnaire with a special focus on screening and management of HBV and hepatitis C virus (HCV) infections

IeDEA

Results

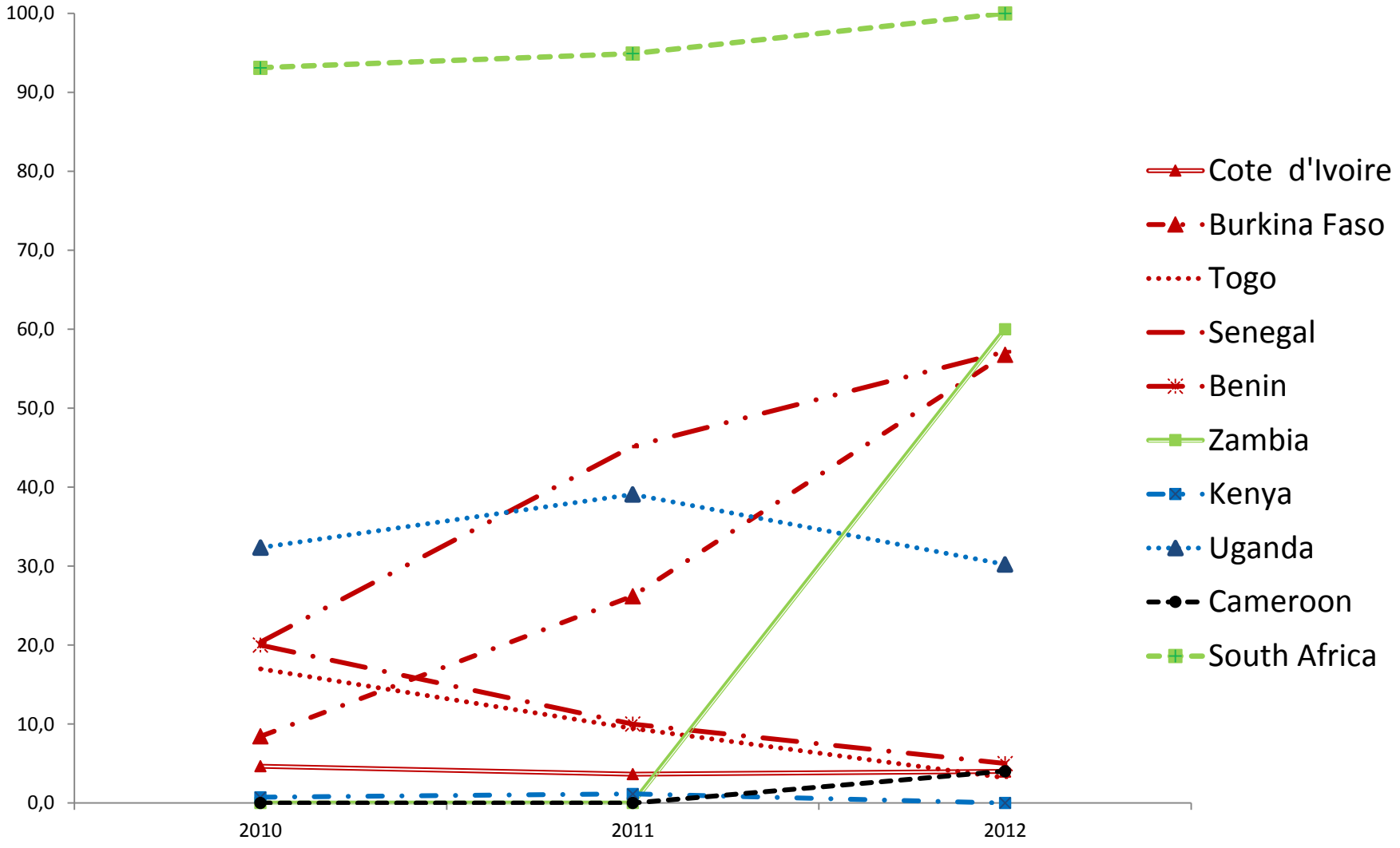


Fig. Changes in HBsAg screening over time, by country (2010–2012)(Red: West Africa; blue: East Africa; black: Central Africa; green: Southern Africa)

#5 Hepatitis B treatment eligibility in West Africa: Uncertainties and need for prospective cohort studies

Jaquet A, Nouaman M, Tine J, Tanon A, Anoma C, Inwoley A, Attia A, Ekouevi D, Seydi M, Dabis F, Wandeler G. Liver Int. 2017 Aug;37(8):1116-1121.

Background

While universal screening of hepatitis B virus (HBV) is recommended in high burden countries, little is known about the proportion of HBV-infected persons in need of antiviral therapy in these settings

Objective

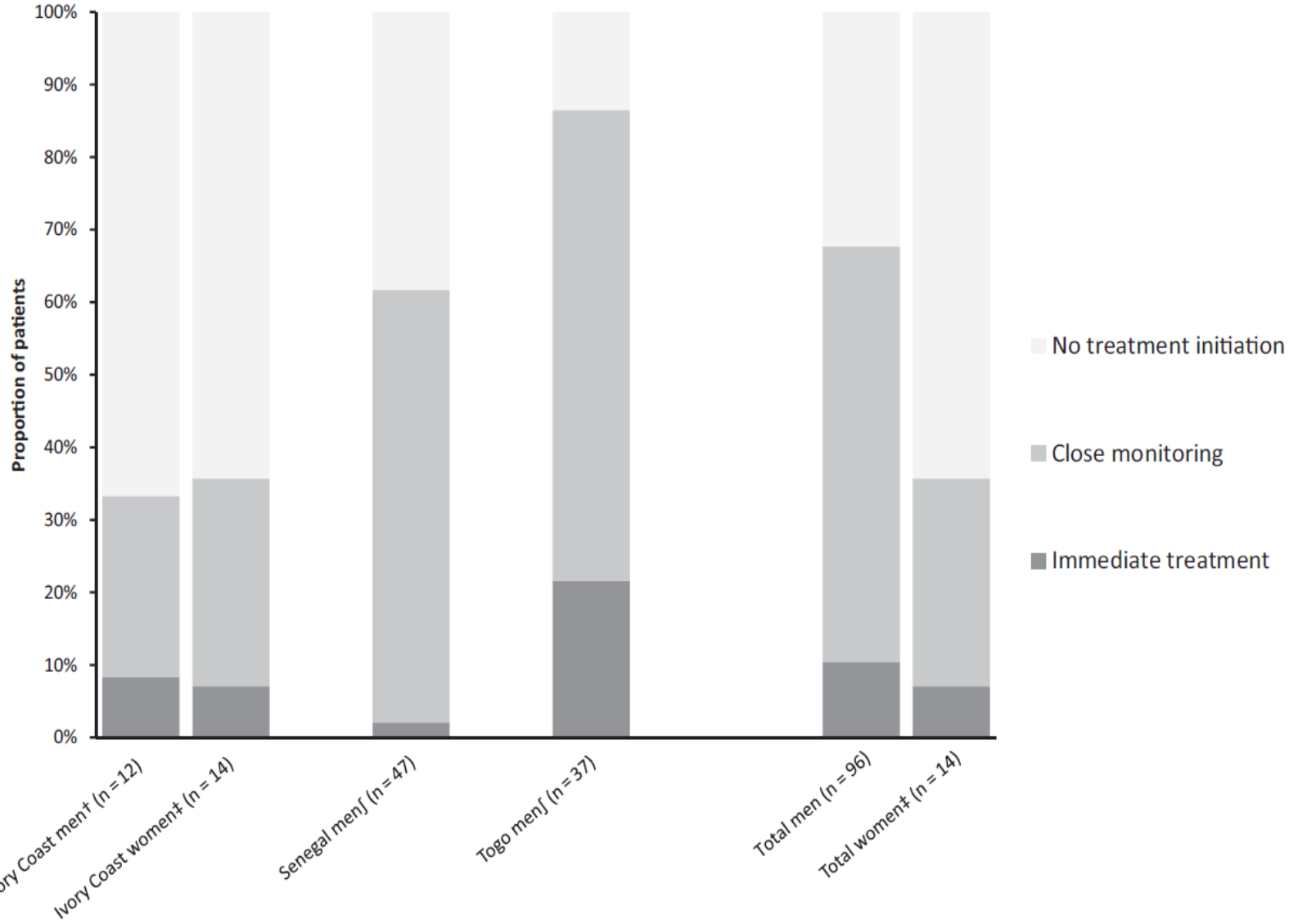
Estimate the proportion of patients eligible for antiviral therapy among a sample of HBV-infected inmates, female sex workers (FSW) and men who have sex with men (MSM) in West Africa

Methods

- Prisoners in Senegal and Togo as well as FSW and MSM in Cote d'Ivoire were screened for HBV infection
- All HBsAg-positive participants underwent transient elastography, alanine aminotransferase (ALT) and HBV viral load (VL) quantification
- Individuals with cirrhosis or those aged >30 years with an HBV replication ≥20 000 IU/mL and elevated ALT were considered eligible for antiviral therapy

IeDEA

Results



Proportion of hepatitis B virus (HBV)-infected participants eligible for antiviral treatment or in need of close monitoring according to the WHO guidelines* in Lome (Togo), Dakar (Senegal) and Abidjan (Cote d'Ivoire) 2013-2015 (n=110).

IeDEA

NA-ACCORD

Increased Risk of Myocardial Infarction in HIV-Infected Individuals in North America Compared With the General Population.

Drozd DR, et al. JAIDS 2017; 75:568-576.

***Background**:* Previous studies of cardiovascular disease (CVD) among HIV-infected individuals have been limited by the inability to validate and differentiate atherosclerotic type 1 myocardial infarctions (T1MIs) from other events. This study defined the incidence of T1MIs and risk attributable to traditional and HIV-specific factors among participants in NA-ACCORD and compared adjusted incidence rates (IRs) to the general population Atherosclerosis Risk in Communities (ARIC) cohort.

***Methods**:* Ascertained and adjudicated incident MIs among individuals enrolled in 7 NA-ACCORD cohorts between 1995 and 2014. Calculated IRs, adjusted incidence rate ratios (aIRRs), and 95% confidence intervals of risk factors for T1MI using Poisson regression, and compared aIRRs of T1MIs in NA-ACCORD with those from ARIC.

Results: Among 29,169 PWH adults, the IR for T1MIs was 2.57 (2.30 to 2.86) per 1000 person-years, and the aIRR was significantly higher compared with ARIC [1.30 (1.09 to 1.56)]. In addition to the traditional CVD risk factors, a lower CD4 was associated with increased risk of T1MI.

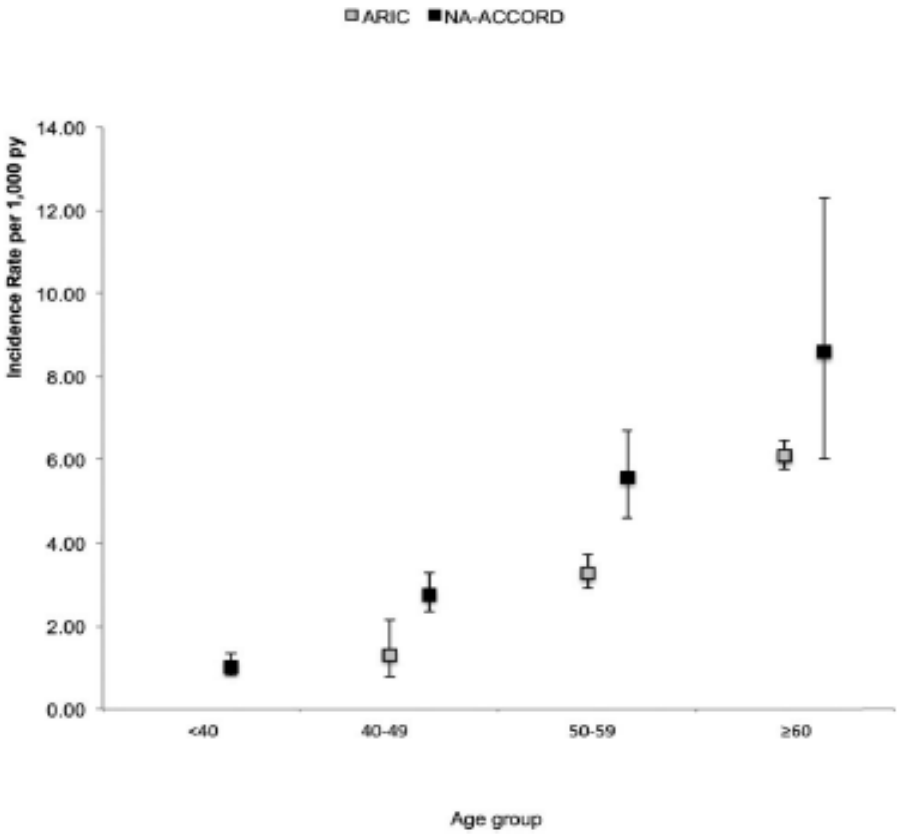


FIGURE 1. IRs of MI by age per 1000 person-years among HIV-infected individuals in NA-ACCORD and the general population in ARIC.

TABLE 2. Multivariable Analysis of Time-Updated Traditional CVD and HIV-Related Factors* in Association With Risk of T1MI Among HIV-Infected Individuals in NA-ACCORD

Characteristic	T1MI Risk aIRR	95% CI
Age, yrs		
<40	1.00	
40–49	**2.92**	**1.88** to **4.52**
50–59	**4.04**	**2.57** to **6.37**
60–69	**6.47**	**3.91** to **10.70**
Sex		
Male	1.00	
Female	0.75	0.52 to 1.07
Race/ethnicity		
White	1.00	
Black	**0.72**	**0.54** to **0.95**
Hispanic	0.65	0.39 to 1.07
Other/unknown	0.60	0.32 to 1.14
HIV transmission risk		
MSM	1.00	
IDU	1.11	0.78 to 1.57
Heterosexual	0.87	0.62 to 1.22
Other/unknown	1.09	0.71 to 1.67
Enrollment into cohort		
1995–2000	1.00	
2001–2005	**0.65**	**0.50** to **0.85**
2006–2014	**0.55**	**0.39** to **0.79**
Cigarette smoking		
Never	1.00	
Ever	**1.47**	**1.08** to **2.00**
Hypertension		
No	1.00	
Yes	**2.49**	**1.93** to **3.20**
Diabetes mellitus		
No	1.00	
Yes	**1.40**	**1.05** to **1.86**
Elevated total cholesterol		
No	1.00	
Yes	1.23	0.96 to 1.58

TABLE 2. (*Continued*) Multivariable Analysis of Time-Updated Traditional CVD and HIV-Related Factors* in Association With Risk of T1MI Among HIV-Infected Individuals in NA-ACCORD

Characteristic	T1MI Risk aIRR	95% CI
Chronic kidney disease		
eGFR ≥30	1.00	
eGFR <30	**6.03**	**4.11** to **8.85**
CD4 count, cells/mm^3		
<100	**2.19**	**1.44** to **3.33**
100–199	**1.60**	**1.09** to **2.34**
200–349	**1.37**	**1.01** to **1.86**
350–499	1.32	0.98 to 1.77
≥500	1.00	

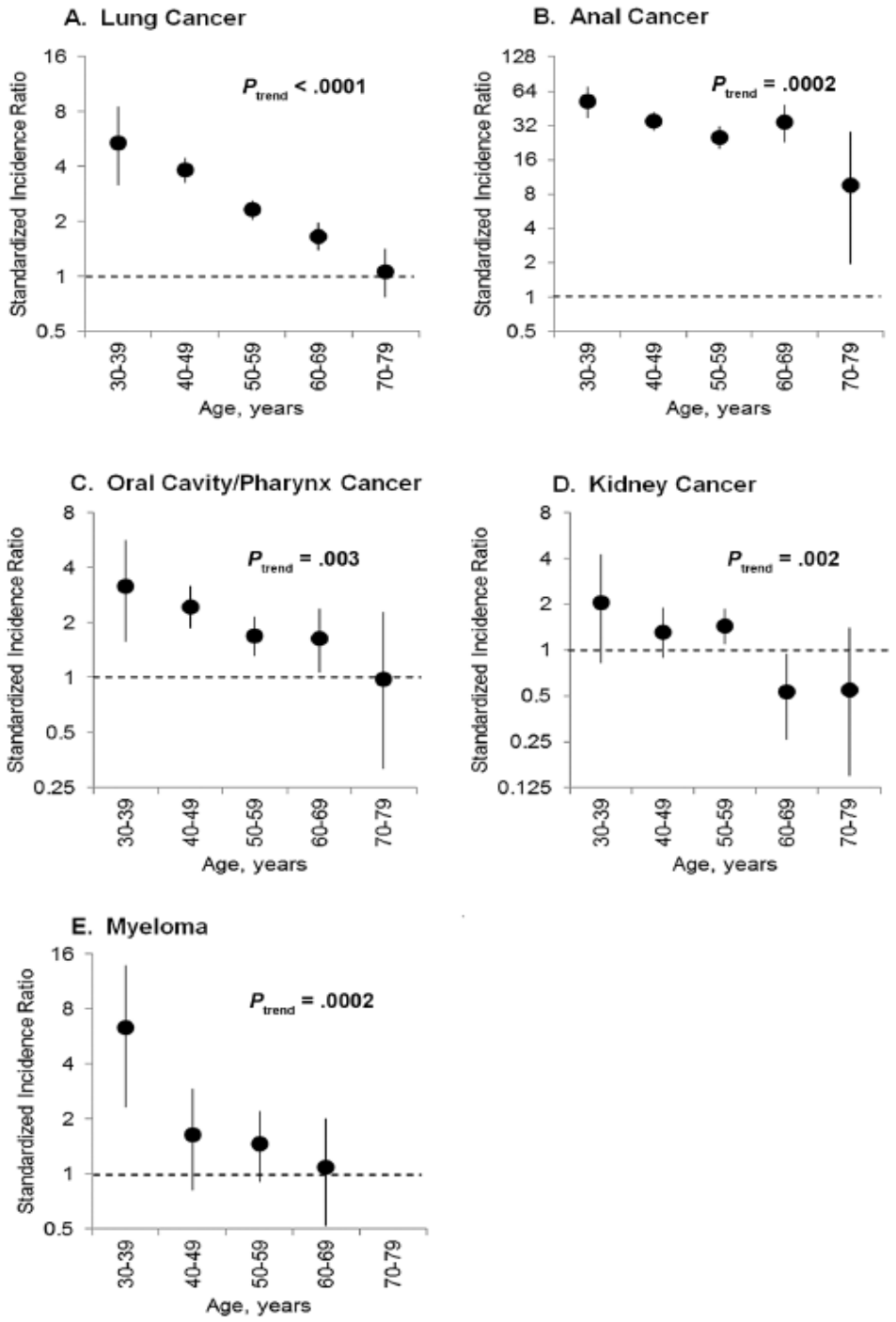
HIV Infection, Immunosuppression, and Age at Diagnosisof Non-AIDS-Defining Cancers.

Shiels MS, et al Clin Infect Dis 2017; 64:468-475.

- ***Background.*** It is unclear whether immunosuppression leads to younger ages at cancer diagnosis among people living with HIV (PLWH). A previous study found that most cancers are not diagnosed at a younger age in people with AIDS, with the exception of anal and lung cancers. This study extends prior work to include all PLWH and examines associations between AIDS, CD4 count, and age at cancer diagnosis.
- ***Methods.*** Comparison of the median age at cancer diagnosis between PLWH in the NA-ACCORD and the general population using data from the Surveillance, Epidemiology and End Results Program. Statistical weights were used to adjust for population differences. Median age at cancer diagnosis was compared by AIDS status and CD4 count.

Results. After adjusting for population differences, younger ages at diagnosis ($P < .05$) were observed for PLWH compared with the general population for lung (difference in medians = 4 years), anal (difference = 4), oral cavity/pharynx (difference = 2), and kidney cancers (difference = 2) and myeloma (difference = 4).

Among PLWH, having an AIDS-defining event was associated with a younger age at myeloma diagnosis (difference = 4; P = .01), and CD4 count <200 cells/µL (vs ≥500) was associated with a younger age at lung cancer diagnosis (difference = 4; P = .006).



Cancer-Attributable Mortality Among People With Treated Human Immunodeficiency Virus Infection in North America

Engels EA, et al Clin Infec Dis 2017; 65:636-643.

Background. Cancer remains an important cause of morbidity and mortality in people with human immunodeficiency virus (PWHIV) on effective antiretroviral therapy (ART). Estimates of cancer-attributable mortality can inform public health efforts.

Methods. We evaluated 46 956 PWHIV receiving ART in NA-ACCORD. Using information on incident cancers and deaths, calculated population-attributable fractions (PAFs), estimating the proportion of deaths due to cancer. Calculations were based on proportional hazards models adjusted for age, sex, race, HIV risk group, calendar year, cohort, CD4 count, and viral load.

Results. There were 1997 incident cancers and 8956 deaths during 267,145 person-years of follow-up, and 11.9% of decedents had a prior cancer. An estimated 9.8% of deaths were attributable to cancer (cancer-attributable mortality rate 327 per 100 000 person-years). PAFs were 2.6% for AIDS-defining cancers (ADCs, including non-Hodgkin lymphoma, 2.0% of deaths) and 7.1% for non-AIDS–defining cancers (NADCs: lung cancer, 2.3%; liver cancer, 0.9%). PAFs for NADCs were higher in males and increased strongly with age, reaching 12.5% in PWHIV aged 55+ years. Mortality rates attributable to ADCs and NADCs were highest for PWHIV with CD4 counts <100 cells/mm3. PAFs for NADCs increased during 1995–2009, reaching 10.1% in 2006–2009.

Table 2. Cancer-Attributable Mortality Among Human Immunodeficiency Virus–Infected Individuals in North America

Cancer	Total Cancer Cases, N	Deaths With Prior Cancer, N	Pd, %[a]	Unadjusted Analysis HR	Unadjusted Analysis PAF, %	Unadjusted Analysis (95% CI)	Adjusted Analysis[b] HR	Adjusted Analysis[b] PAF, %	Adjusted Analysis[b] (95% CI)
Total	1997	1069	11.9	6.27	10.0	(9.3–10.7)	5.54	9.8	(9.1–10.5)
AIDS-defining cancers	570	303	3.4	6.22	2.8	(2.5–3.2)	4.11	2.6	(2.2–2.9)
Kaposi sarcoma	252	95	1.1	3.45	0.8	(0.5–1.0)	2.06	0.5	(0.3–0.8)
Non-Hodgkin lymphoma	312	207	2.3	9.70	2.1	(1.8–2.4)	7.23	2.0	(1.7–2.3)
Cervix	6	1	0.0	—	0.0	—	—	0.0	—
Non-AIDS–defining cancers	1427	766	8.6	5.89	7.1	(6.5–7.7)	5.91	7.1	(6.5–7.7)
Lung	265	222	2.5	20.33	2.4	(2.0–2.7)	14.71	2.3	(2.0–2.6)
Anus	154	62	0.7	3.13	0.5	(0.3–0.6)	2.73	0.4	(0.3–0.6)
Liver	103	80	0.9	23.95	0.9	(0.7–1.1)	31.26	0.9	(0.7–1.1)
Other	905	402	4.5	3.81	3.3	(2.9–3.7)	4.04	3.4	(2.9–3.8)

Abbreviations: CI, confidence interval; HR, hazard ratio; PAF, population-attributable fraction; Pd, proportion of deaths with a prior cancer.

[a] P_d expresses the number of deaths preceded by cancer as a proportion of all deaths in the cohort (N = 8956).

[b] Hazard ratios are computed using age as the time scale and are adjusted for sex, race (non-Hispanic white, non-Hispanic black, other), human immunodeficiency virus (HIV) risk group (men who have sex with men, injection drug users, other/unknown), attained calendar year (before 1/1/2001, 1/1/2001–6/30/2003, 7/1/2003–12/31/2005, after 12/31/2005), cohort, most recent CD4 count (0–49, 50–99, 100–199, 200–499, 500+ cells/mm^3), and most recent HIV viral load (unknown, <500, 500–1999, 2000–19999, 20000–199999, 200000+ copies/mL).

Table 3. Cancer-Attributable Mortality, Stratified Analyses

Subgroup	Total Deaths	Deaths With Prior Cancer All	Deaths With Prior Cancer ADC	Deaths With Prior Cancer NADC	Population-Attributable Fraction, % (95% Confidence Interval)[a] All	Population-Attributable Fraction, % (95% Confidence Interval)[a] ADC	Population-Attributable Fraction, % (95% Confidence Interval)[a] NADC	Overall Mortality Rate, per 100 000 Person-Years	Cancer-Attributable Mortality Rate, per 100 000 Person-Years[a] All	Cancer-Attributable Mortality Rate, per 100 000 Person-Years[a] ADC	Cancer-Attributable Mortality Rate, per 100 000 Person-Years[a] NADC
Sex											
Male	7744	968	270	698	10.2 (9.4–11.0)	2.6 (2.2–3.0)	7.5 (6.8–8.1)	3495	356	91	261
Female	1212	101	33	68	7.2 (5.6–8.8)	2.2 (1.3–3.2)	4.9 (3.6–6.2)	2658	192	59	131
Age, y											
<40	1476	125	89	36	6.9 (5.5–8.4)	4.8 (3.6–6.1)	2.1 (1.3–2.9)	2071	144	100	43
40–44	1409	130	55	75	7.6 (6.1–9.2)	3.0 (1.9–4.0)	4.5 (3.4–5.7)	2567	195	76	117
45–54	3540	372	110	262	8.7 (7.7–9.8)	2.4 (1.8–3.0)	6.2 (5.4–7.1)	3755	329	91	234
55+	2531	442	49	393	13.9 (12.3–15.4)	1.2 (0.6–1.7)	12.5 (11.1–14.0)	5417	751	63	679
Most recent CD4 count, cells/mm^3											
<100	3983	398	195	203	7.6 (6.7–8.6)	3.7 (3.0–4.4)	3.9 (3.2–4.5)	13988	1068	514	539
100–199	1471	206	47	159	11.4 (9.6–13.3)	2.4 (1.5–3.3)	8.9 (7.2–10.5)	4674	535	114	414
200–499	2483	361	54	307	12.6 (11.2–14.0)	1.8 (1.2–2.4)	10.7 (9.4–12.1)	2143	270	38	230
500+	1019	104	7	97	8.8 (6.7–10.5)	0.4 (-0.1 to 0.9)	8.2 (6.4–10.1)	1116	96	4	92
Calendar period											
Before 1/1/2001	1992	178	82	96	7.7 (6.4–9.0)	3.4 (2.6–4.3)	4.2 (3.2–5.1)	4788	368	165	201
1/1/2001–6/30/2003	2140	210	67	143	8.1 (6.8–9.3)	2.4 (1.7–3.2)	5.6 (4.5–6.6)	3782	305	91	211
7/1/2003–12/31/2005	2318	301	82	219	10.5 (9.1–12.0)	2.6 (1.9–3.4)	7.8 (6.6–9.0)	3154	333	83	245
After 12/31/2005	2506	380	72	308	12.1 (10.7–13.6)	1.9 (1.2–2.6)	10.1 (8.7–11.4)	2625	318	50	264

Abbreviations: ADC, AIDS-defining cancer; NADC, non-AIDS–defining cancer.

[a] Population-attributable fraction and cancer-attributable mortality rates are based on hazard ratios adjusted for or stratified on sex, risk group, race, attained calendar year, most recent CD4 count, most HIV viral load, and cohort; the Cox models use age as the timescale.

Risk of End-Stage Renal Disease in HIV-Positive Potential Live Kidney Donors

Muzzaale AD, et al. Am J Trans 2017; 17:1823-32.

Background: New U.S. regulations allow HIV-positive individuals to be live kidney donors; however, potential candidacy for donation is poorly understood given the increased risk of end-stage renal disease (ESRD) associated with HIV infection. To better define this risk, comparison was done of the incidence of ESRD among 41,968 HIV-positive participants of NA-ACORD followed for a median of 5 years with the incidence of ESRD among comparable HIV-negative participants of National Health and Nutrition Examination III.

Methods: Risk associations from multivariable Cox proportional hazards regression were used to derive cumulative incidence estimates for selected HIV-positive scenarios (no history of diabetes, hypertension, AIDS, or hepatitis C virus coinfection) and these estimates were compared with those from similarly selected HIV-negative scenarios.

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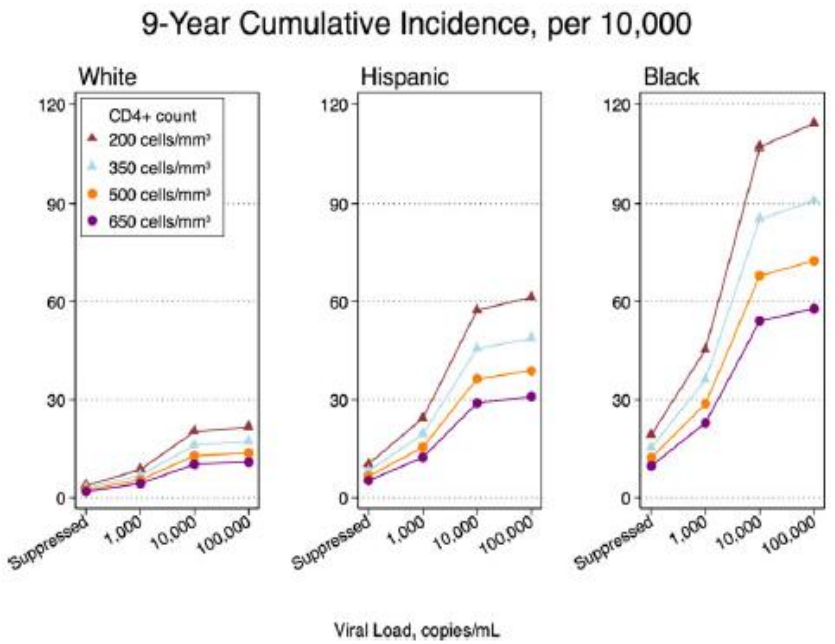

Figure 1: 4235Estimated 9-year cumulative incidence of end-stage renal disease among HIV-positive participants of the North American AIDS Cohort Collaboration on Research and Design according to HIV viral load and CD4⁺ cell count for the hypothetical profile of a 40-year-old man with no diabetes, no hypertension, no hepatitis C virus coinfection, and expected estimated glomerular filtration rate by age and race/ethnicity (95, 95, and 105 mL/min/1.73 m^2 for white, Hispanic, and black individuals, respectively). Scenarios including suppressed viral load and CD4⁺ count >500 cells/μL meet the Department of Human and Health Services criteria for well-controlled HIV infection in a HIV-positive potential live kidney donor (5).

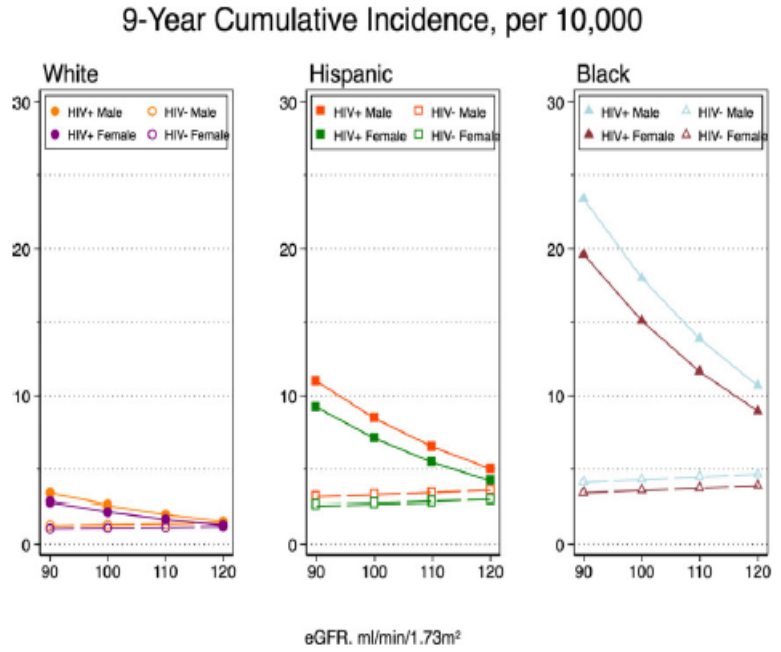

Figure 2: Estimated 9-year cumulative incidence of end-stage renal disease in the North American AIDS Cohort Collaboration on Research and Design and the Third National Health and Nutrition Examination Survey for the hypothetical profile of a 40-year-old with no diabetes, no hypertension, and hepatitis C virus seronegative. Characteristics specific to HIV-positive scenarios from NA-ACCORD: using ART for 1 year (including the TDF formulation of tenofovir), suppressed viral load (<400 copies/mL), CD4⁺ count 500 cells/μL, and no AIDS. Characteristics specific to HIV-negative scenarios from NHANES-III: urinary albumin-to-creatinine ratio 4 mg/g, systolic blood pressure 120 mm Hg.

Table 3: Estimated 9-year cumulative incidence of ESRD among other hypothetical HIV-positive and HIV-negative populations[1]

#	Age	Race	eGFR[3]	Hypertension	9-year risk[2]		
					HIV positive	HIV negative	Risk increase[4]
1	40	White	95	No	3.0	1.3	1.7
2	40	Black	105	No	15.8	4.4	11.4
3	**40**	**White**	**90**	**No**	**3.4**	**1.3**	**2.1**
4	**40**	**Black**	**90**	**No**	**23.4**	**4.1**	**19.3**
5	50	White	90	No	1.8	1.6	0.1
6	50	Black	100	No	9.5	5.5	4.0
7	50	White	90	Yes	4.8	1.7	3.1
8	50	Black	100	Yes	25.5	5.6	19.9
9	30	White	105	No	4.3	1.0	3.3
10	30	Black	115	No	23.0	3.5	19.5

For example, 40-year-old HIV-positive individuals with health characteristics that were similar to those of age-matched kidney donors, viral load <400 copies/ mL, and CD4+ count ≥500 cells/IL, the 9-year cumulative incidence of ESRD was higher than that of their HIV-negative peers, yet still low: 2.5 versus 1.1 per 10 000 among white women, 3.0 versus 1.3 per 10 000 among white men, 13.2 versus 3.6 per 10 000 among black women, and 15.8 versus 4.4 per 10,000 among black men. HIV-positive individuals with no comorbidities and well-controlled disease may be considered low-risk kidney donor candidates

Multimorbidity Among Persons Living with Human Immunodeficiency Virus in the United States.

Wong C, et al. Clin Infect Dis 2018 (in press)

***Background*.** Age-associated conditions are increasingly common among persons living with HIV (PLWH). Multimorbidity and associated polypharmacy can have important implications on clinical care complexity of the PLWH, but has not been well-characterized.

Methods. We examined trends in the co-occurrence of age-associated conditions among PLWH on ART and receiving care in NA-ACCORD clinical sites. Multimorbidity was defined as having ≥2: hypertension, diabetes mellitus, chronic kidney disease, hypercholesterolemia, end-stage liver disease, or non–AIDS-related cancer. Adjusted prevalence ratios (aPR) and 95% confidence intervals (CIs) comparing demographic subgroups were obtained by Poisson regression with robust error variance, using generalized estimating equations for repeated measures.

Results. Among 22,969 adults, 79% were male, 36% were black, and the median baseline age was 40 years (interquartile range, 34–46 years). Between 2000 and 2009, multimorbidity prevalence increased from 8.2% to 22.4% (Ptrend < .001). Adjusting for age, this trend was still significant (P < .001).

There was no difference by sex, but blacks were less likely than whites to have multimorbidity (aPR, 0.87; 95% CI, .77–.99). Multimorbidity was the highest among heterosexuals, relative to men who have sex with men (aPR, 1.16; 95% CI, 1.01–1.34). Hypertension and hypercholesterolemia most commonly co-occurred.

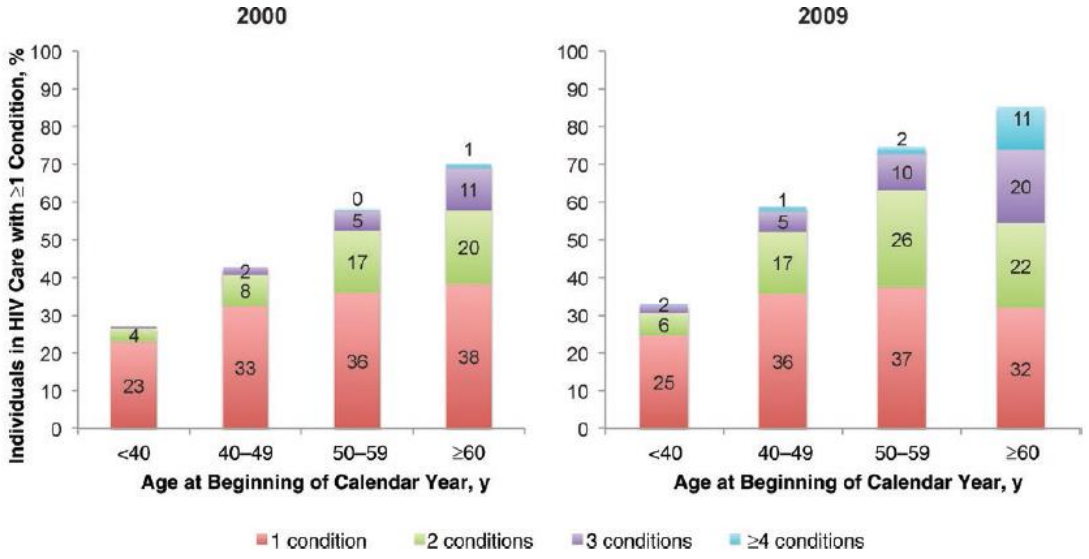

Figure 2. Distribution of age-associated conditions by age among antiretroviral therapy–experienced persons living with human immunodeficiency virus and receiving

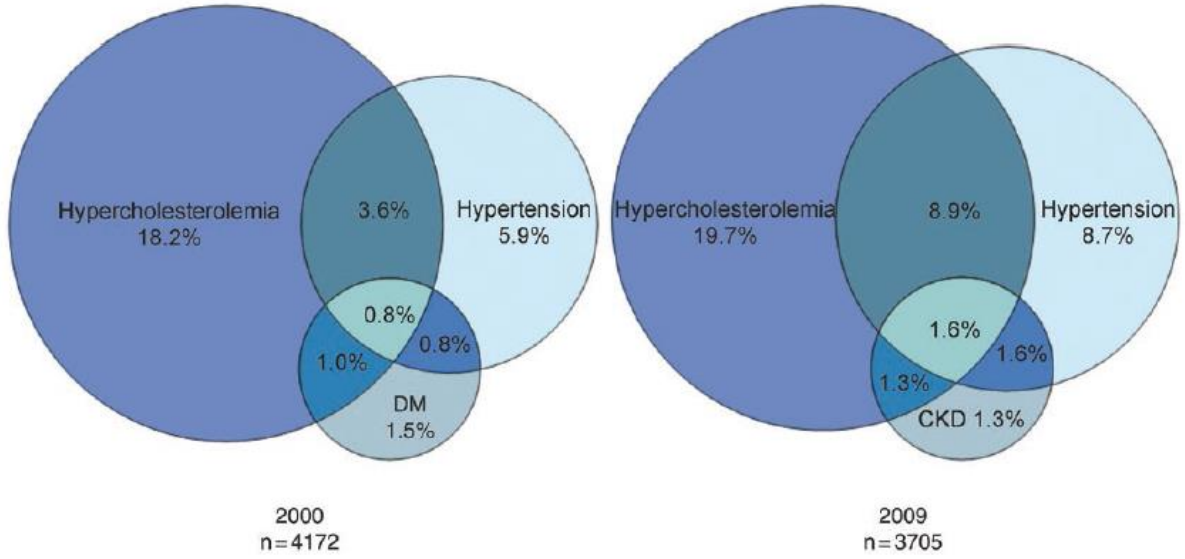

Figure 3. The three most common age-associated conditions among antiretroviral therapy–experienced persons living with human immunodeficiency virus and receiving clinical care in 2000 and 2009. Abbreviations: CKD, chronic kidney disease; DM, diabetes mellitus.


IeDEA
International epidemiology
Databases to Evaluate AIDS