

Aging and HIV Infection: Epidemiology and Clinical Issues

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2010 Success

- A single combination pill, taken once daily is well tolerated, and achieves viral suppression in >70%
- In many settings >80% of patients are on this treatment and remain on it for extended periods
- Median CD4 counts are increasing and viral load are declining in most clinics
- AIDS defining events are increasingly rare

Life Expectancy on HAART

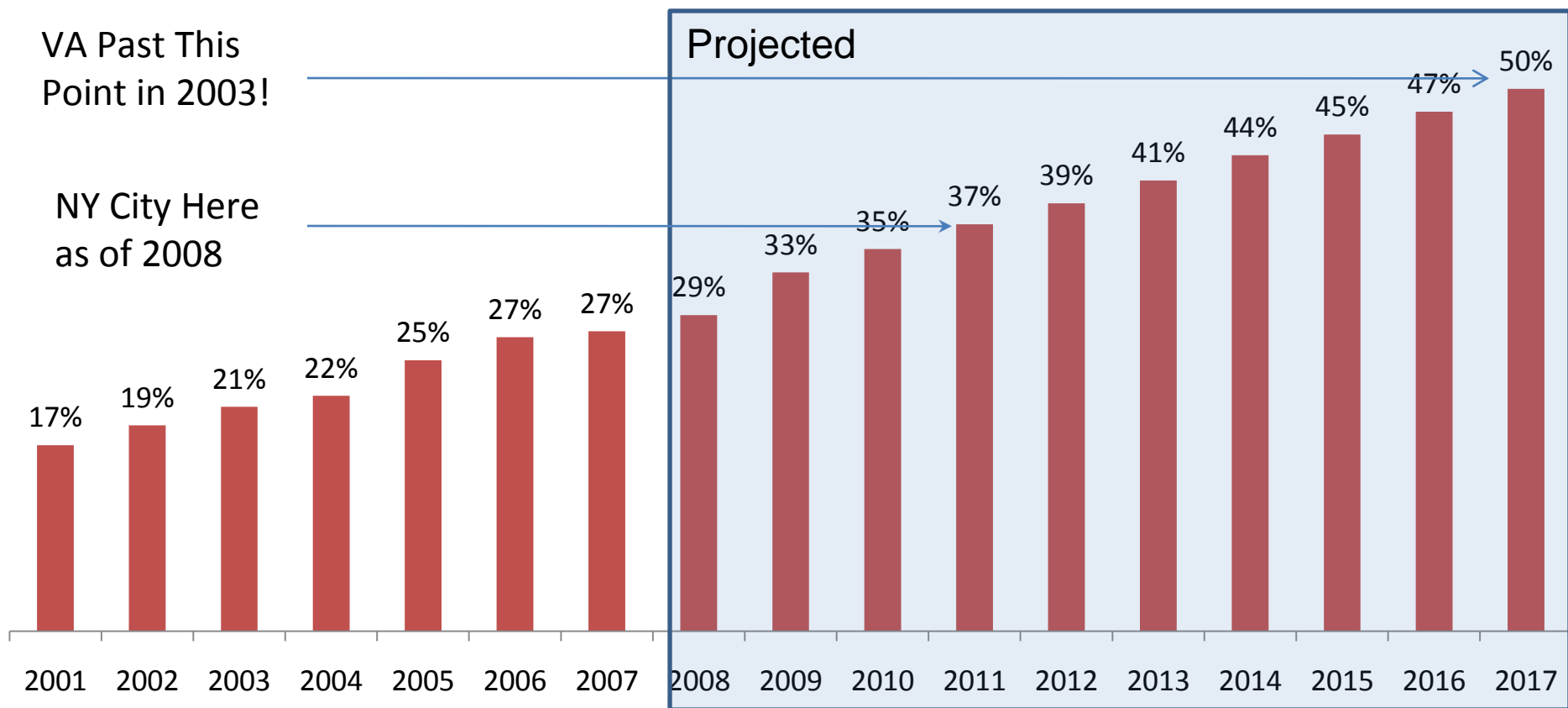
At HAART Initiation	CD4 Cell Count (mm ³)		
	<100	100-199	≥200
A 20 yr old will live to (years)	52	62	70
A 35 yr old will live to (years)	62	65	72
% Remaining Life Lost (all ages)	46%	27%	14%

Adapted from *ART-CC, Lancet 2008;372:293-99*

Epidemiology

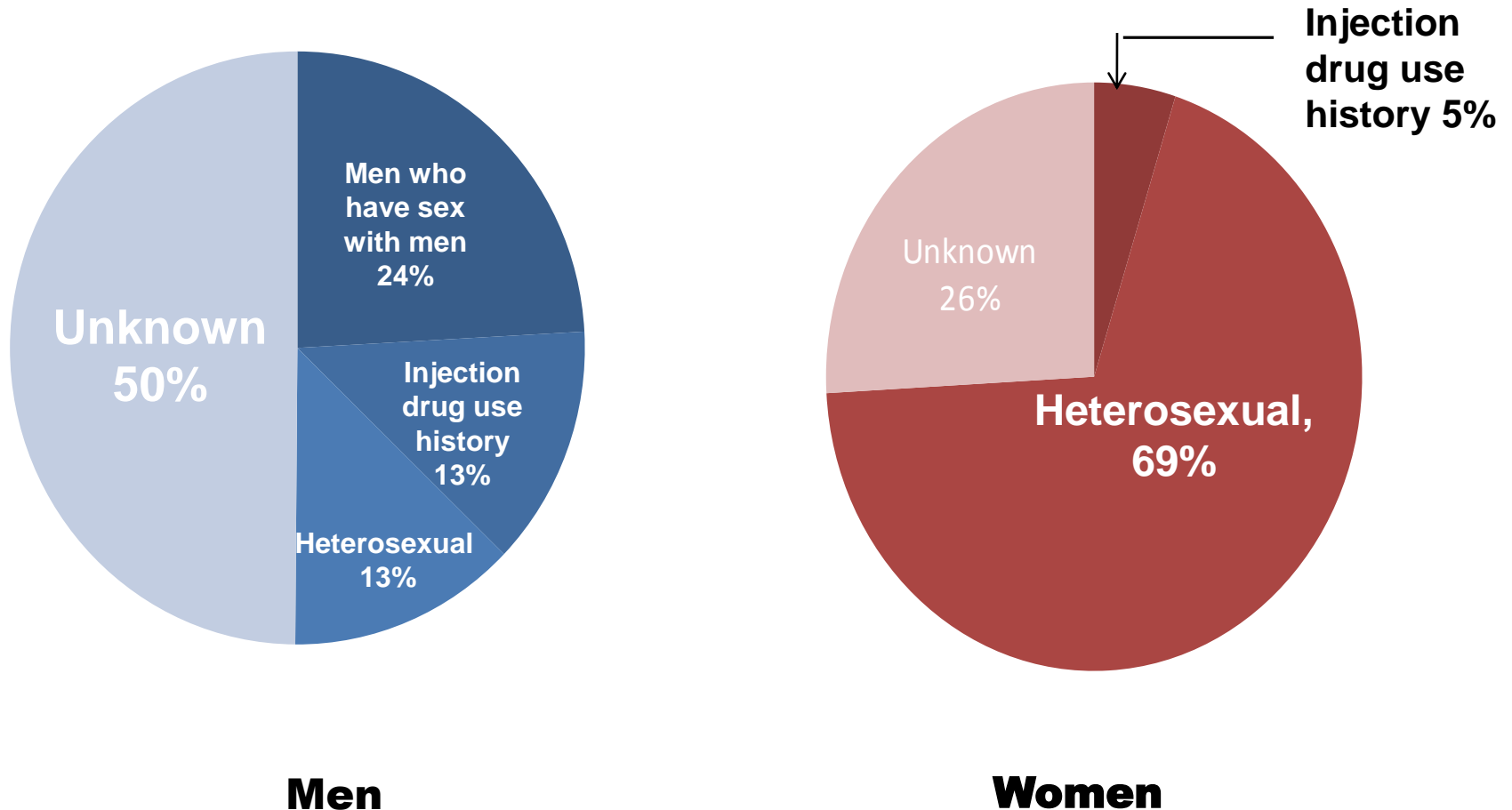
Who is living and dying with HIV?

Projected Proportion of those Living With HIV in United States 50+ Years* 2001-2017



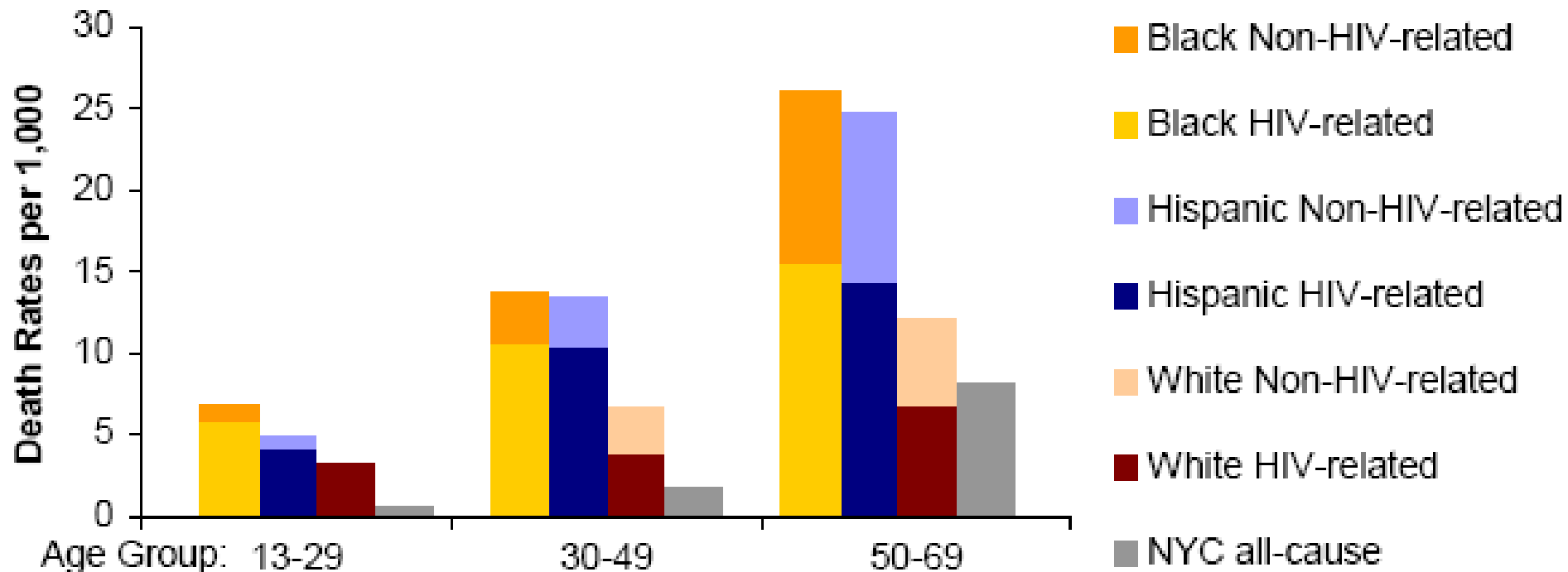
*Data from 2008, onward projected based on 2001-2007 trends (calculated by author), 2001-2007 data from CDC Surveillance Reports 2007

Risk Category of Those 50+ Years Diagnosed with HIV in 2007, NY City



HIV Among 50+ in NYC 2004-2008

Death Rates⁴ by Age and Race/Ethnicity⁵



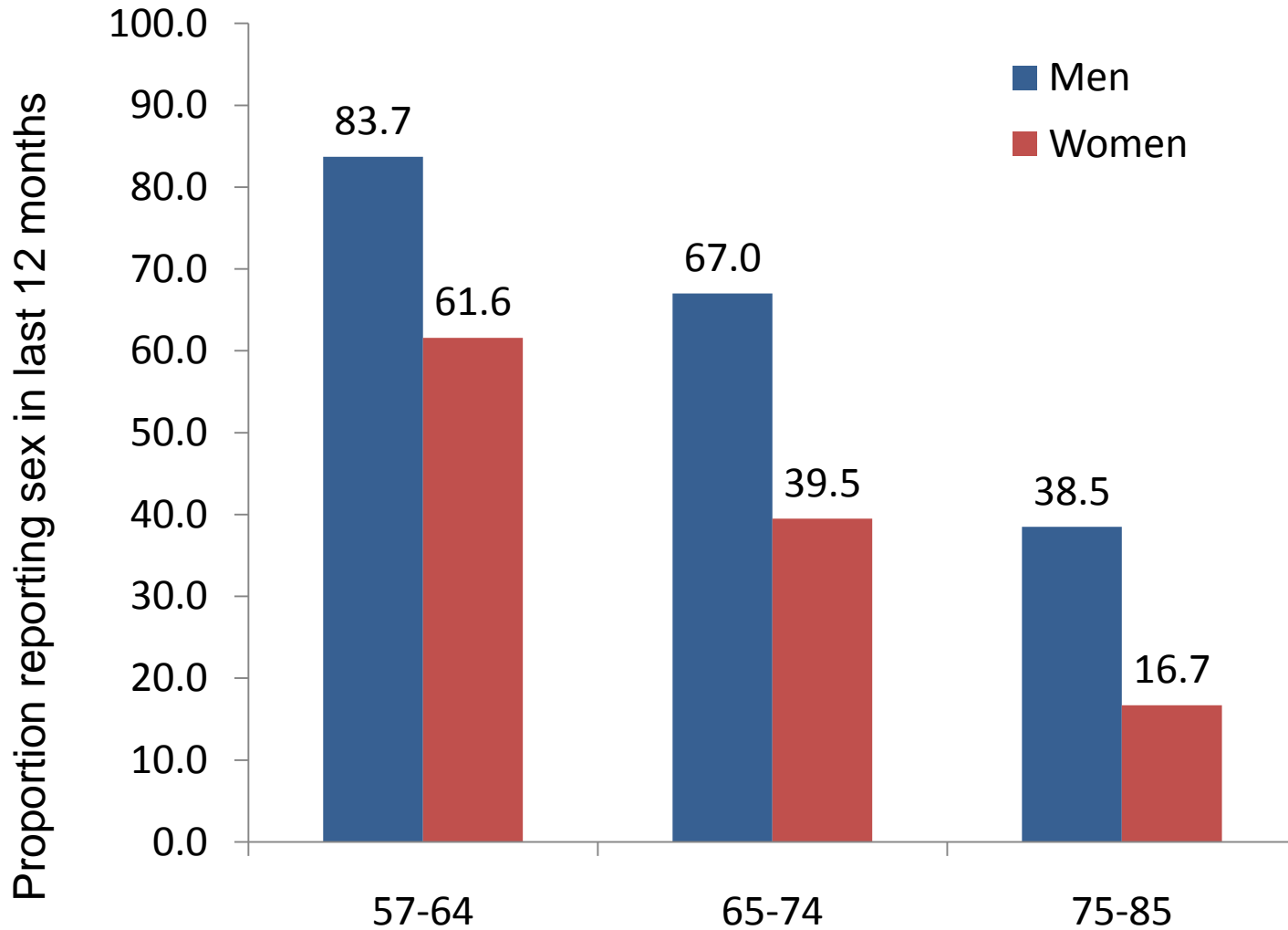
Clinical Issues

New Infections

Timing and Response to HAART

Non AIDS Conditions and
Individualized Care

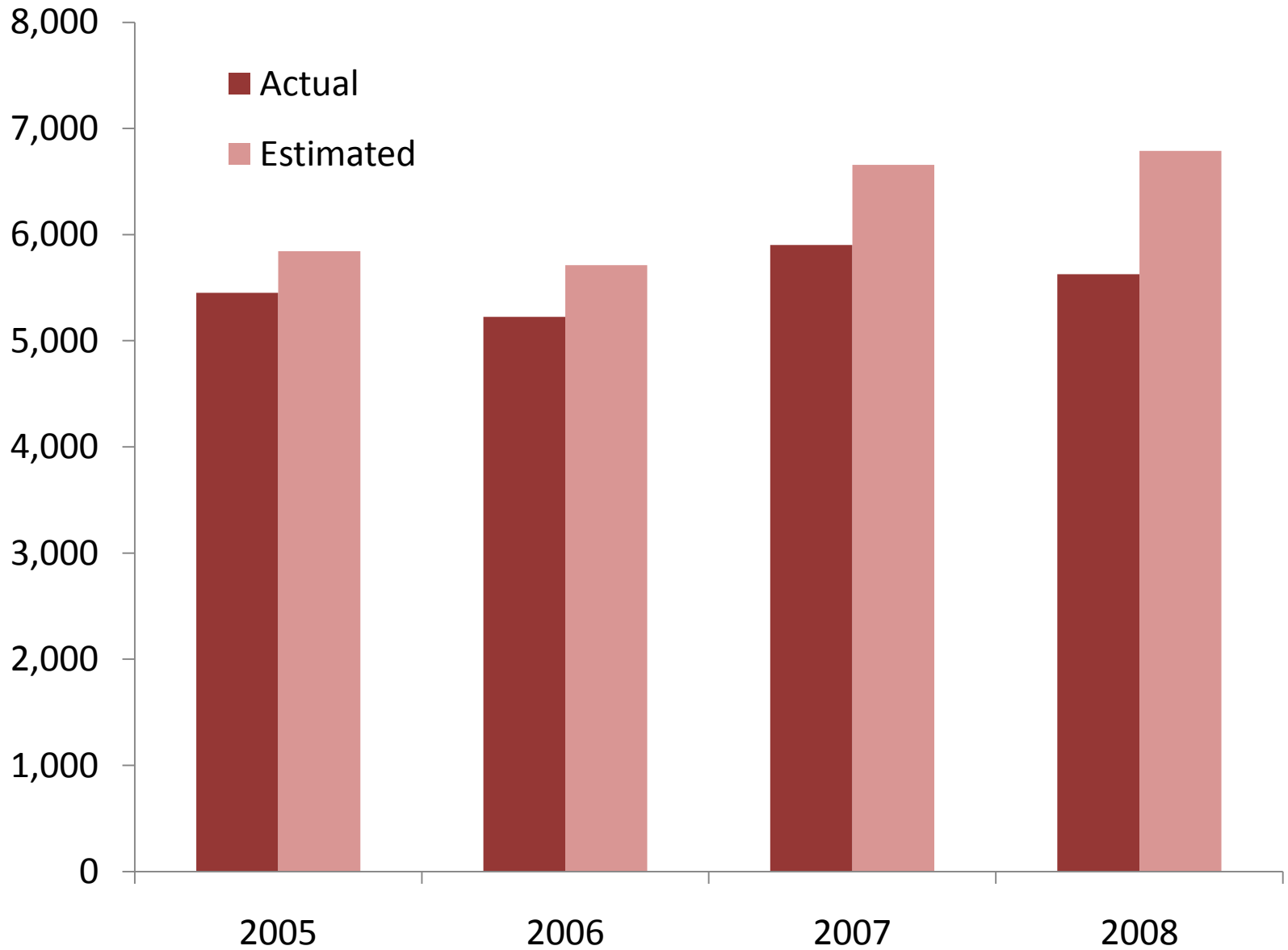
Sex is Not Only for the Young



Sexual Risks Specific to Older Adults

- Newly single (widowed/divorced) status
- Ratio of men to women increasingly skewed
- Less likely to use condoms
 - Post menopausal women pregnancy no longer possible
 - Men may have erectile dysfunction complicating condom use
- Lower estrogen lead to vaginal dryness and increased risk of virus entering blood stream

New HIV Diagnoses Over Age 50 Years



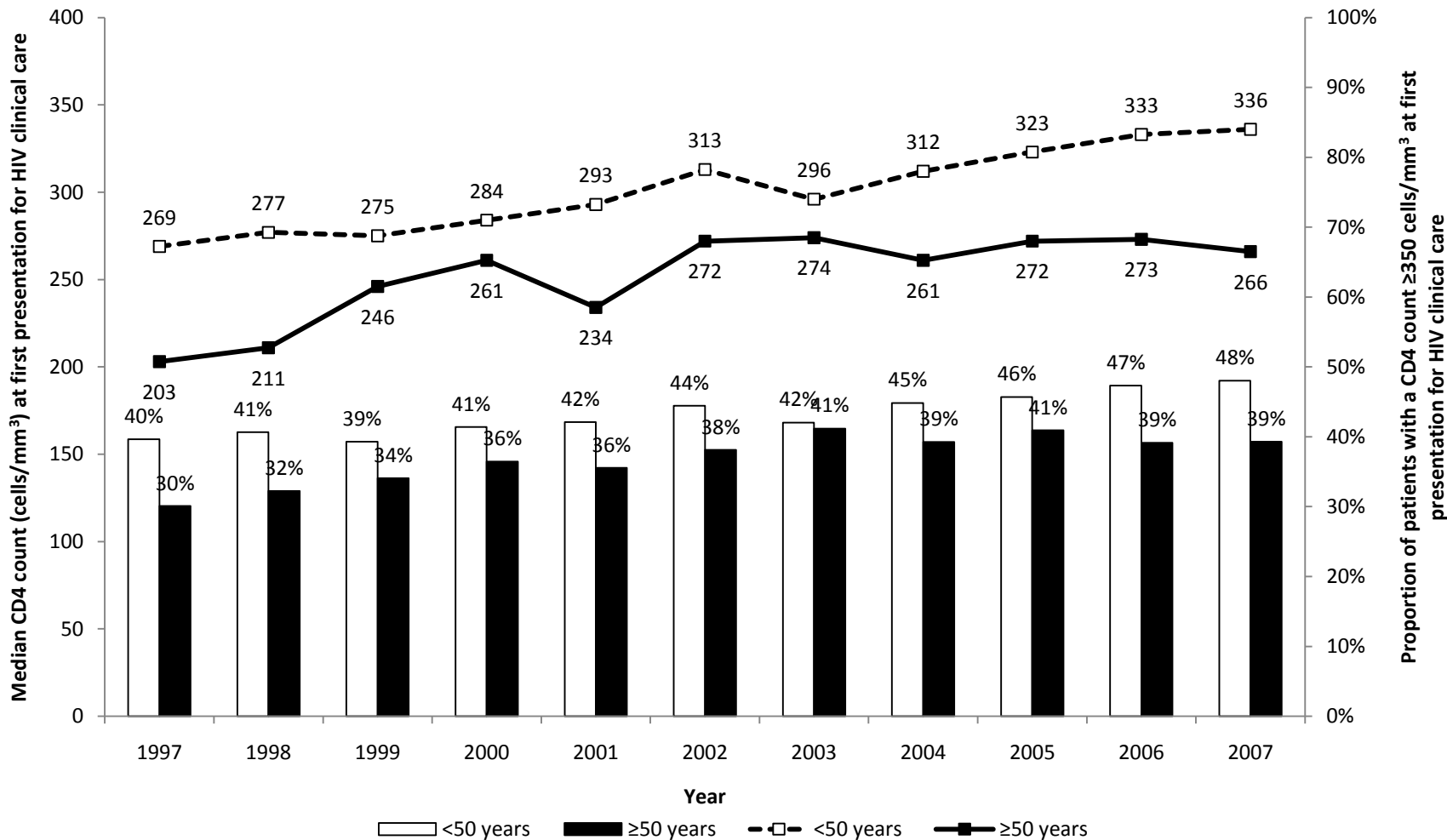
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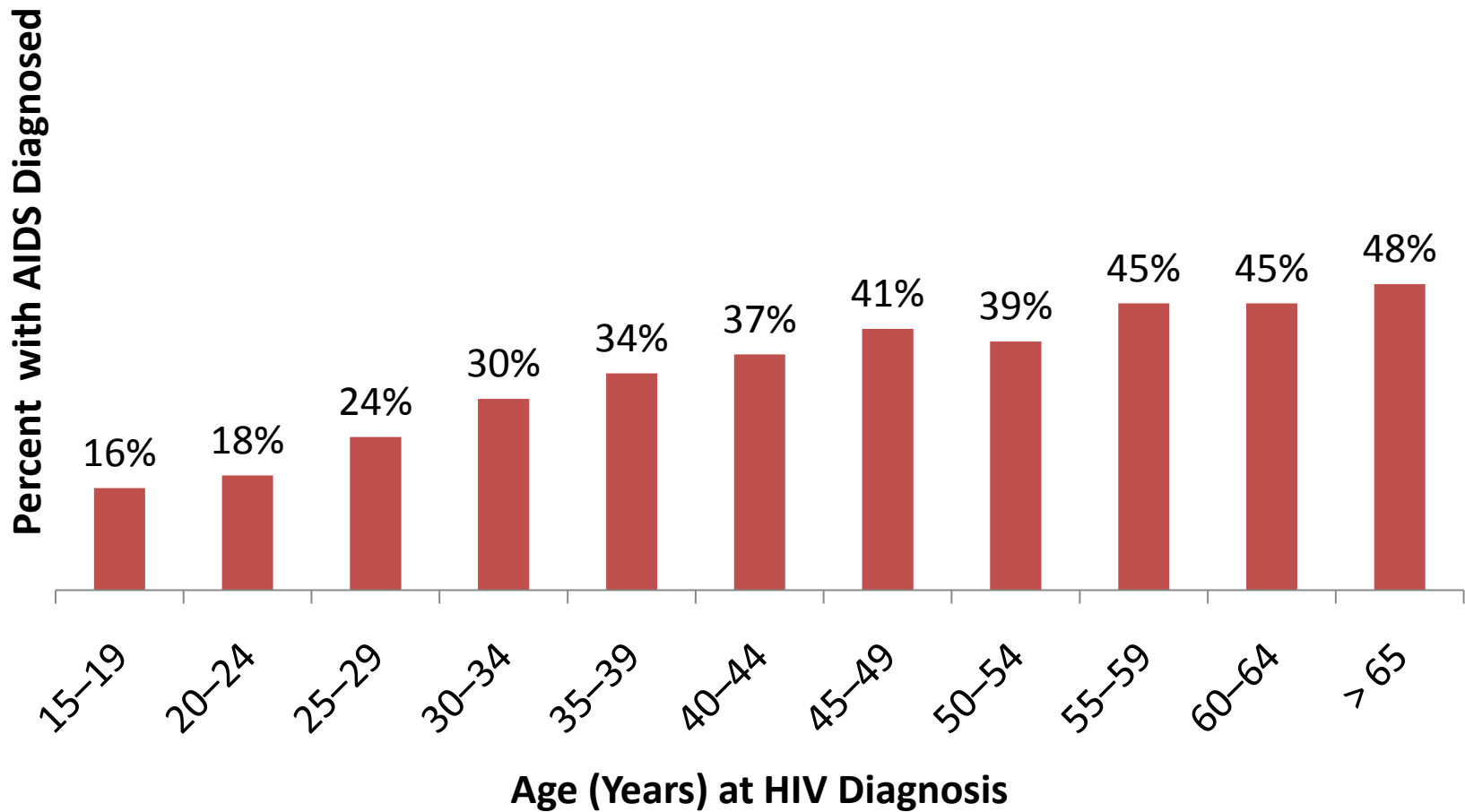
Non AIDS Conditions and
Individualized Care

Delayed Presentation By Age (NA ACCORD)



12 Months after HIV Diagnosis by Age, 2007

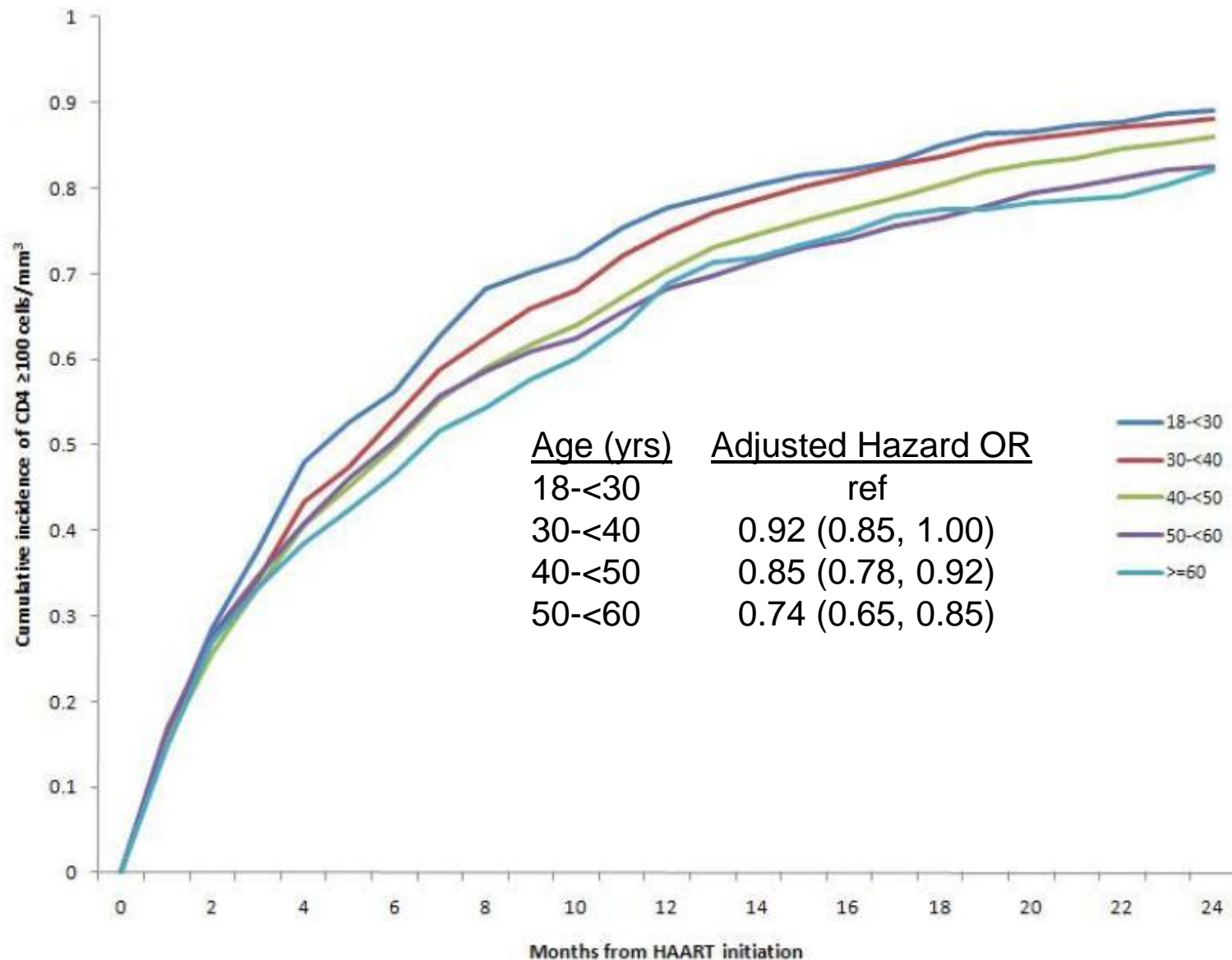
(37 states with confidential name-based HIV infection reporting)



Immunity in HIV and Aging

- Synergistic effects of HIV and Aging lead to:
 - Reduced naïve T cell numbers
 - Increased levels of “senescent” T cells
 - Reduced naïve CD4 diversity
- These changes accompanied by:
 - Low level immune activation and inflammation
 - In gut , loss of mucosal integrity/microbial translocation, contributes to inflammation

CD4 Response to cART by Age



Clinical Issues

New Infections

Timing and Response to HAART

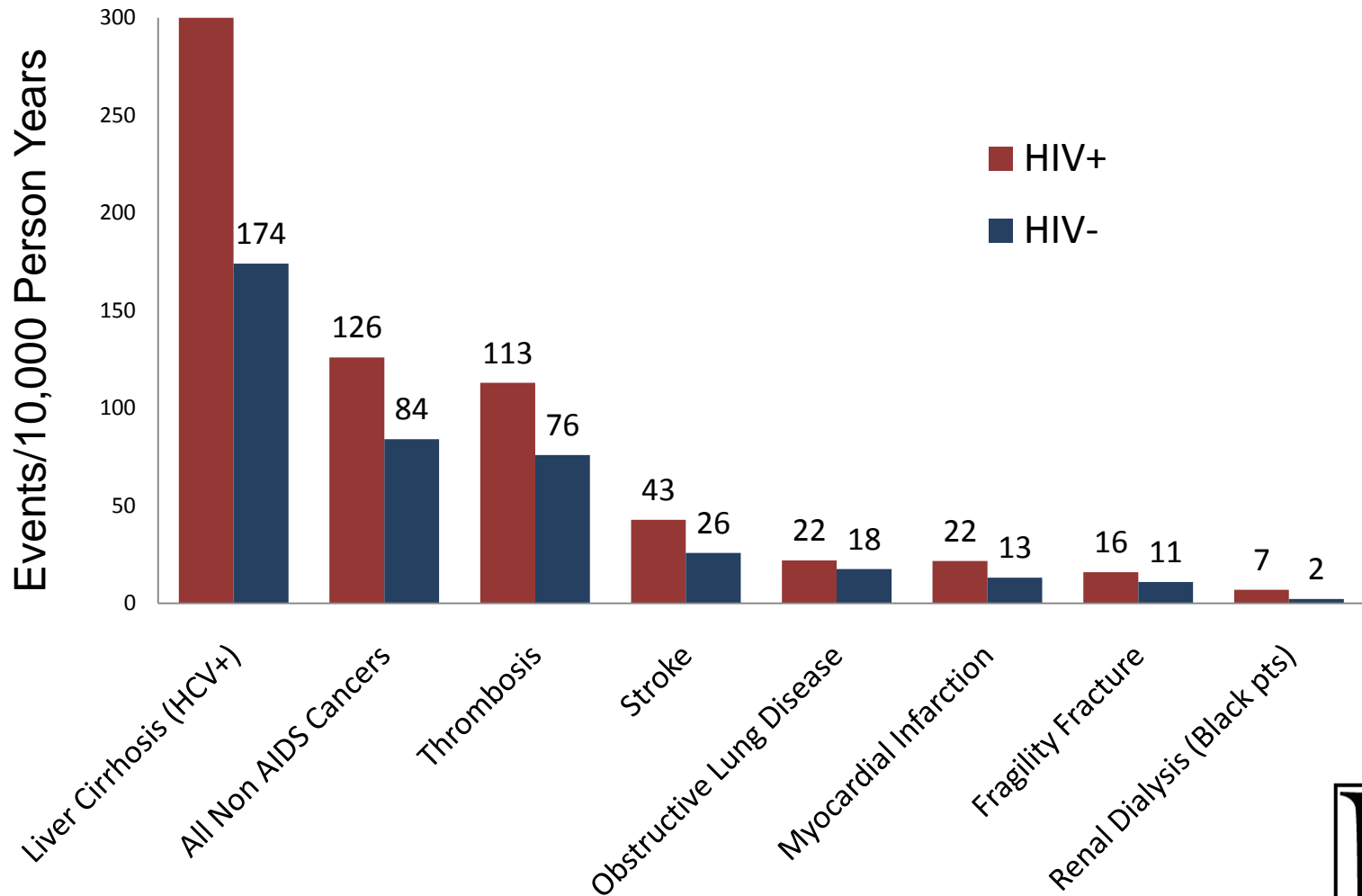
Non AIDS Conditions and
Individualized Care

Non AIDS Events Are Associated with HIV Disease Progression*

	Treatment Sparing	Treatment Intensive	Total
All Cause Death	55	30	85
Serious OI	13	2	15
Nonserious OI	63	18	81
Major CAD, Renal, or Liver Disease	65	39	104

*More AIDS and “Non-AIDS” Events Among Treatment Sparing Arm (HR 1.7 in SMART) *NEJM* 2006;355:2283-96

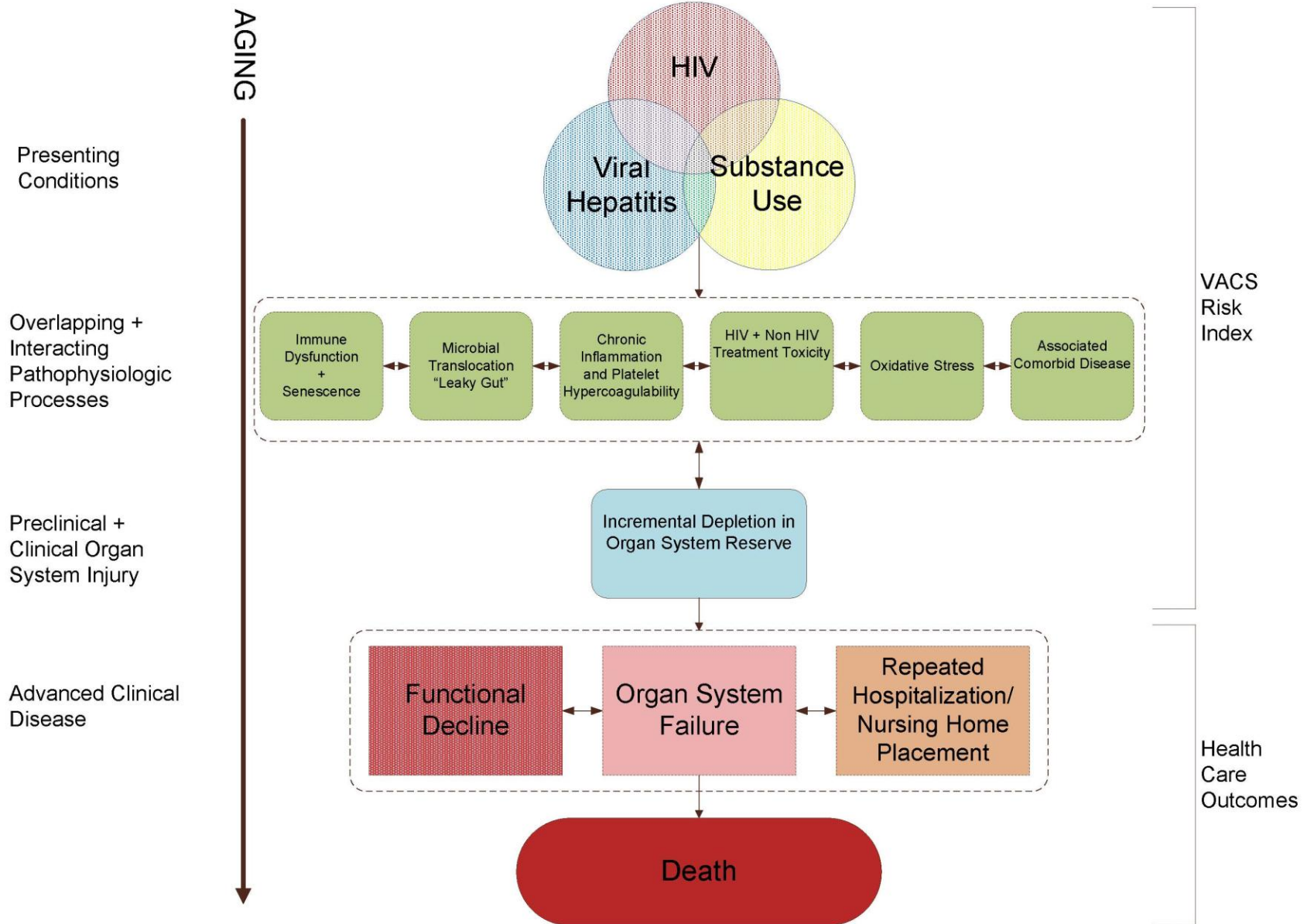
HANA Events Among HIV Infected and Demographically Matched Uninfected



Likely To Increase with Aging

- Effects of chronic “inflammation”
 - Liver disease, lung disease, bone marrow suppression
 - Vascular disease, renal disease
 - Cancer
- Multimorbidity
 - Adverse events from poly pharmacy
 - Organ system injury from multiple causes (frailty)
 - Increased demand for supportive care services
- Need to prioritize care based on individual risk, patient preferences, and likely effectiveness

Final Common Pathway

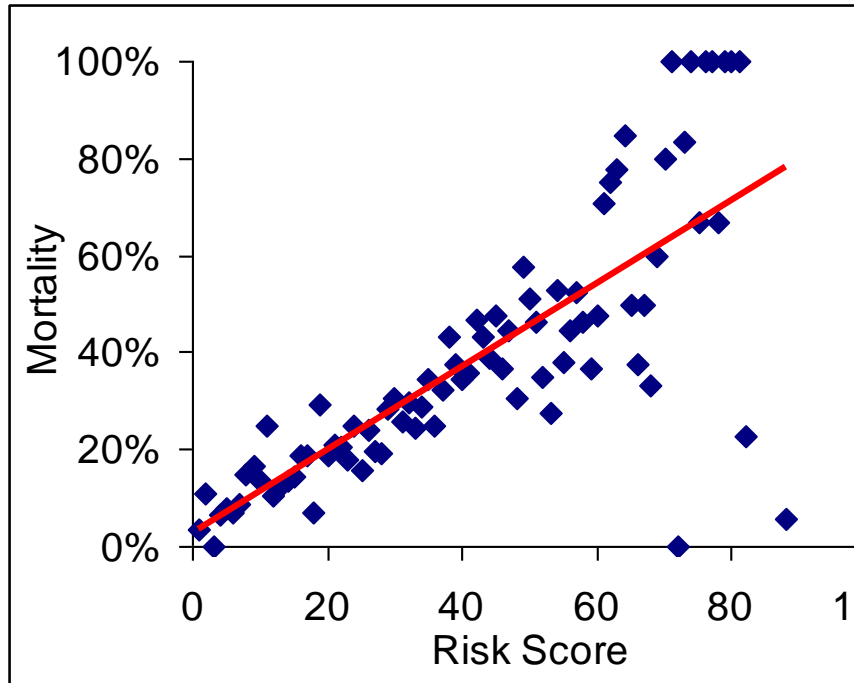


Veterans Aging Cohort Study Risk Index (VACS Index)

- Composed of age and laboratory tests currently recommended for clinical management
 - HIV Biomarkers: HIV-1 RNA, CD4 Count, AIDS defining conditions
 - “non HIV Biomarkers”: Hemoglobin, hepatitis C, composite markers for liver and renal injury
- Developed in US veterans, validated in Europe and North America

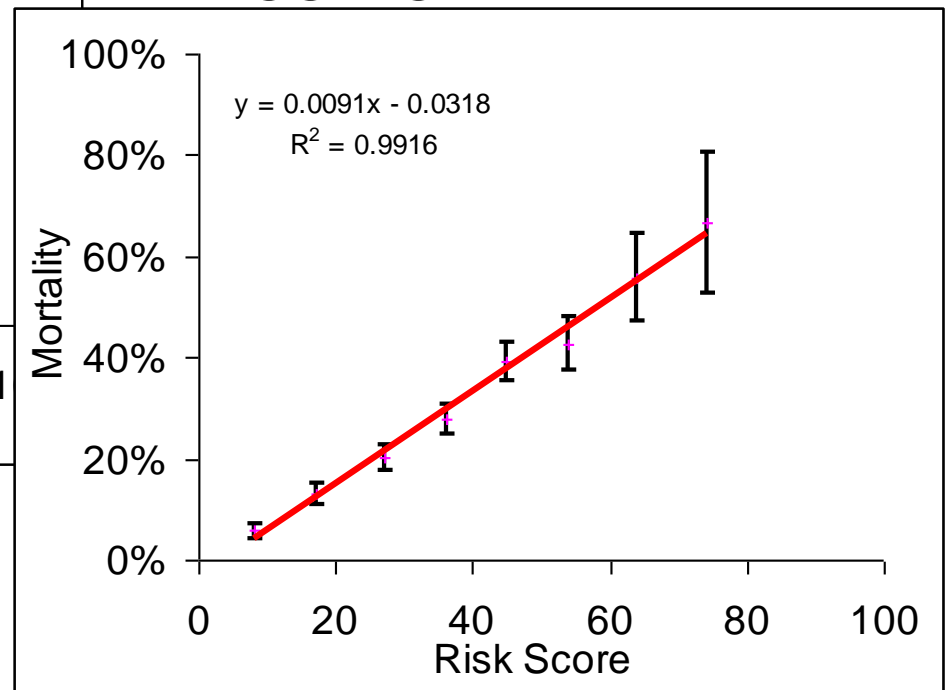


VACS Index Highly Predictive of Long Term (5 Year) All Cause Mortality



Individual Scores

Aggregated Scores

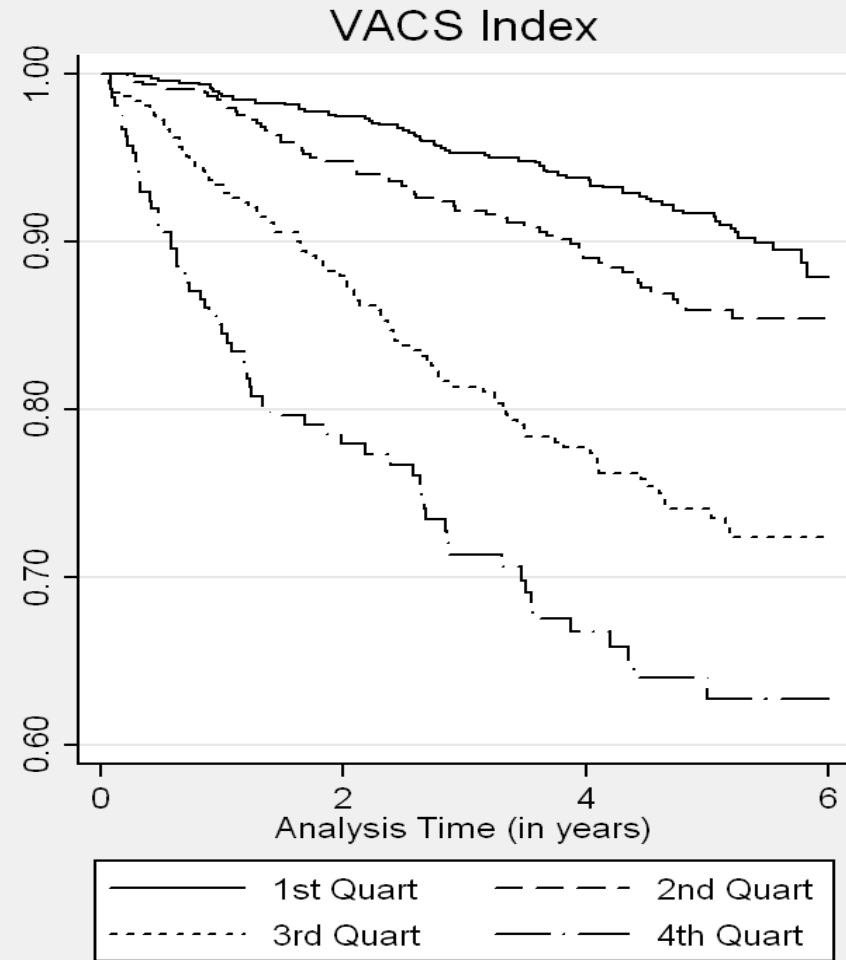
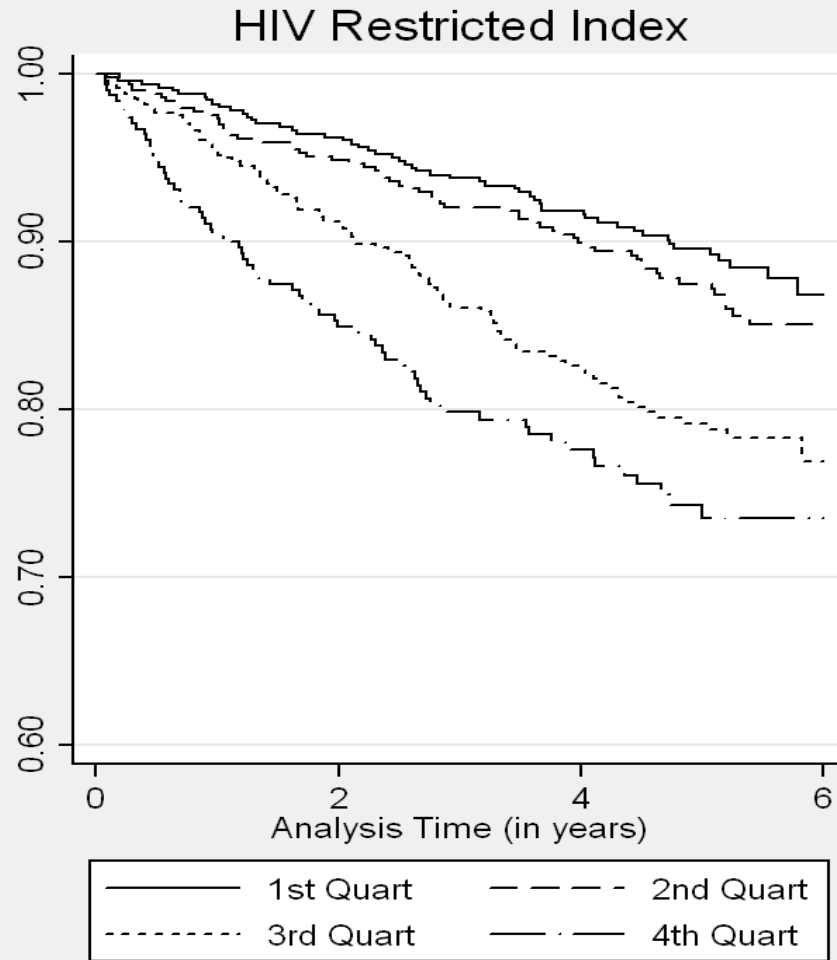


Justice, AC. et. al, *HIV Med.* 2010 Feb;11(2):143-51. Epub 2009 Sep 14.

Justice AC. *HIV and Aging: Time for a New Paradigm.* *Curr HIV/AIDS Rep.* 2010 May;7(2):69-76

MICU Admission Over 6 Years

Kaplan-Meier Survival Estimates



Clinical Summary

- HIV, age, and substance use increase risk of 'non AIDS' conditions
- What is common for those aging with HIV is not identical to uninfected individuals
- Guidelines for aging-related non-AIDS condition require adaptation for those with HIV
 - HANA may justify earlier or more aggressive HAART
 - HAART may cause some conditions, but effects are often less than those of HIV itself
 - Some primary care guidelines may be contra-indicated due to reduced life expectancy and polypharmacy

What Can We Do Now?

- Universal HIV screening and early treatment
- Study joint effects of aging, HIV, substance use to identify ways to intervene
 - Compare effectiveness of intervention on overall risk
 - Tailor HIV treatment and primary care accordingly
- Train those who work with:
 - the aging on special issues surrounding HIV
 - with HIV on special issues surrounding aging



Veterans Aging Cohort Study

- **PI and Co-PI:** AC Justice, DA Fiellin
- **Scientific Officer (NIAAA):** K Bryant
- **Participating VA Medical Centers:** Atlanta (D. Rimland), Baltimore (KA Oursler, R Titanji), Bronx (S Brown, S Garrison), Houston (M Rodriguez-Barradas, N Masozera), Los Angeles (M Goetz, D Leaf), Manhattan-Brooklyn (M Simberkoff, D Blumenthal, H Leaf, J Leung), Pittsburgh (A Butt, E Hoffman), and Washington DC (C Gibert, R Peck)
- **Core Faculty:** K Akgun, S Braithwaite, C Brandt, K Bryant, R Cook, K Crothers, J Chang, S Crystal, N Day, R Dubrow, M Duggal, J Erdos, M Freiberg, M Gaziano, M Gerschenson, A Gordon, J Goulet, N Kim, M Kozal, K Kraemer, V LoRe, S Maisto, K Mattocks, P Miller, P O'Connor, C Parikh, C Rinaldo, J Samet
- **Staff:** H Bathulapalli, T Bohan, D Cohen, A Consorte, P Cunningham, A Dinh, C Frank, K Gordon, J Huston, F Kidwai, F Levin, K McGinnis, L Park, C Rogina, J Rogers, L Sacchetti, M Skanderson, J Tate, E Williams
- **Major Collaborators:** VA Public Health Strategic Healthcare Group, VA Pharmacy Benefits Management, Massachusetts Veterans Epidemiology Research and Information Center (MAVERIC), Yale Center for Interdisciplinary Research on AIDS (CIRA), Center for Health Equity Research and Promotion (CHERP), ART-CC, NA-ACCORD, HIV-Causal
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NY City Department of Public Health

Veterans Healthcare System Public Health

Strategic Healthcare Group

Reference List for bar graphs of HANA incidence rates

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