NORTHWEST AIDS EDUCATION AND TRAINING CENTER

HIV and Aging

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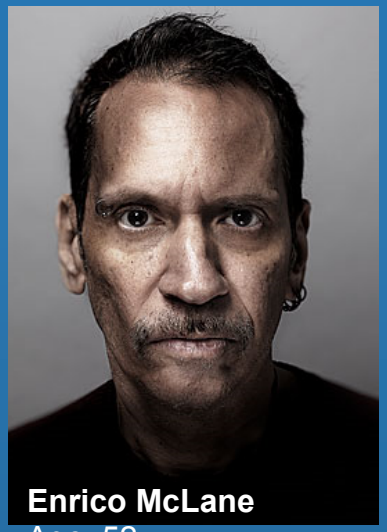
February, 7 2013

NW AETC | echo

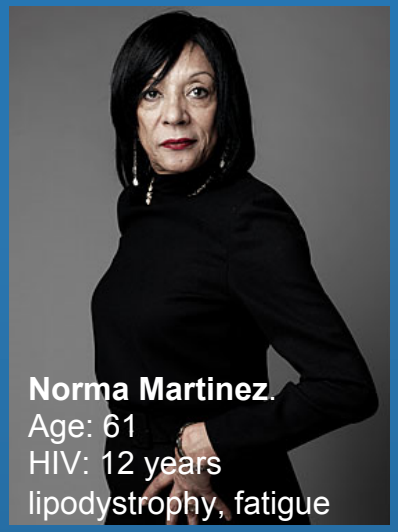
Objectives

- Review Current Knowledge about HIV in older patients (Epidemiology, Clinical Outcomes w ART)
- Discuss Aging Phenomena in HIV
- Discuss the Advent of Non-AIDS health-related conditions in older patients with HIV Infection
- Discuss Psychosocial Issues / Advance Directives

Faces of HIV

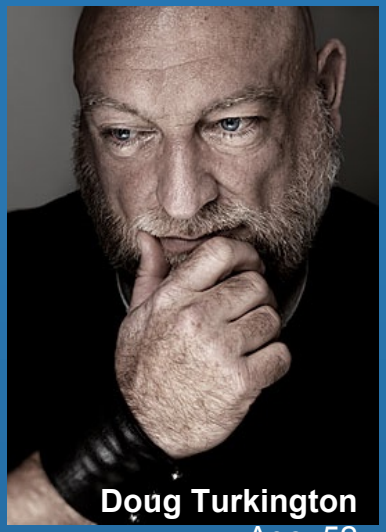


Enrico McLane
Age: 52
HIV: 17 years
Short-term memory loss
two hip replacements



Norma Martinez.
Age: 61
HIV: 12 years
lipodystrophy, fatigue

Joe Westmoreland
Age: 53
HIV: 27 years
memory loss, fatigue,
peripheral neuropathy
in feet and hands



Doug Turkington
Age: 52
HIV: 20 years
osteoporosis, two
hip replacements.

Cesar Figueroa /
Age: 50
HIV: 20 years
Dementia,
neuropathy,
depression

Mike Weyand.
Age: 58
HIV: 20 years
Osteoporosis,
lipodystrophy,
memory loss

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NA-ACCORD

North American AIDS Cohort Collaboration on Research and Design

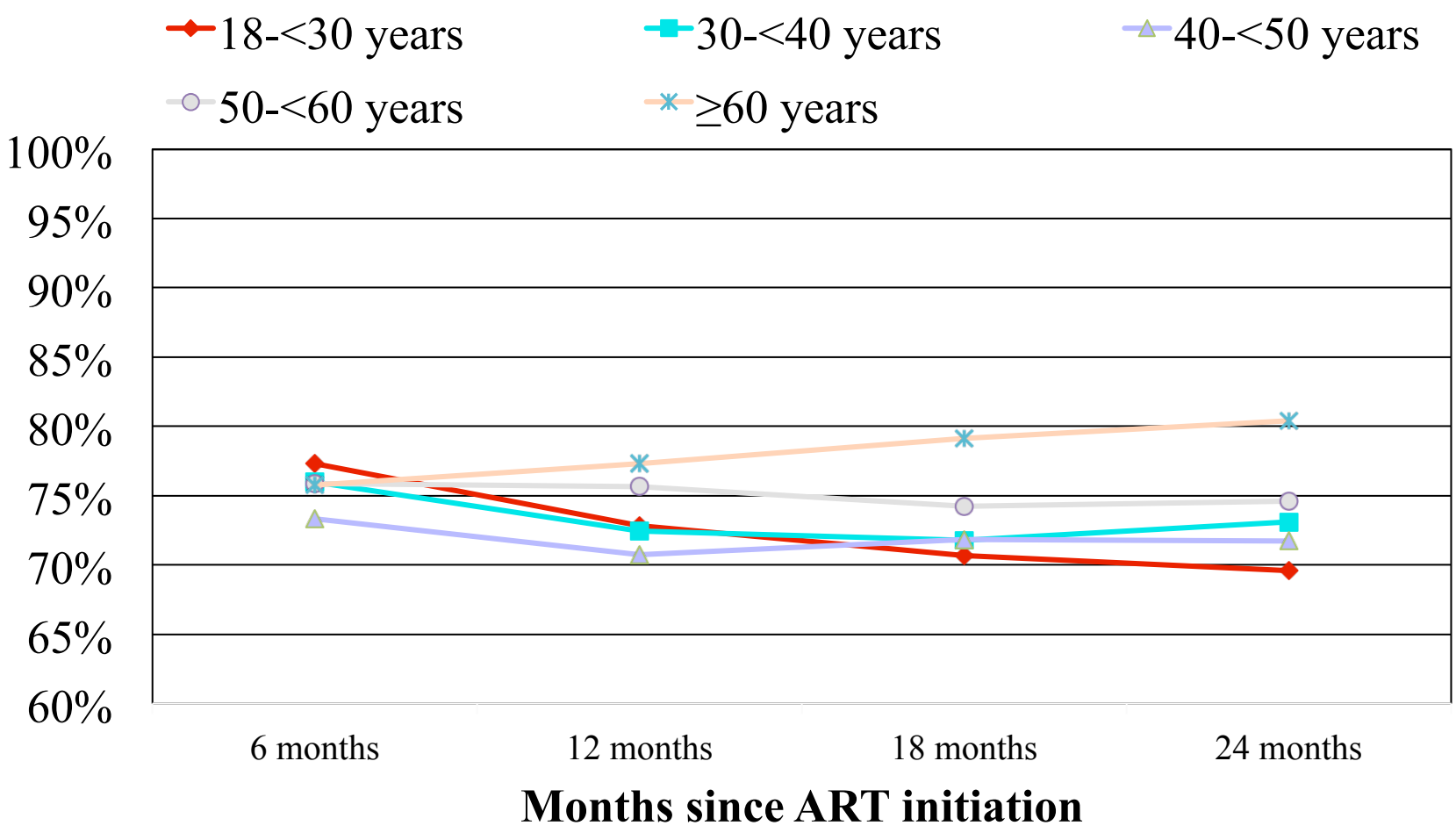
Age	US	NA-ACCORD
18-19	3764	38
20-24	21197	468
25-29	39603	1164
30-34	54895	1863
35-39	83935	3128
40-44	121465	4765
45-49	128546	5455
50-54	94957	4236
55-59	57359	2658
60-64	28141	1345
>64	22103	910

US Trends in ARV Use AIM 157:325-35, 2012

Clinical Outcomes in Older Patients Treated with ART

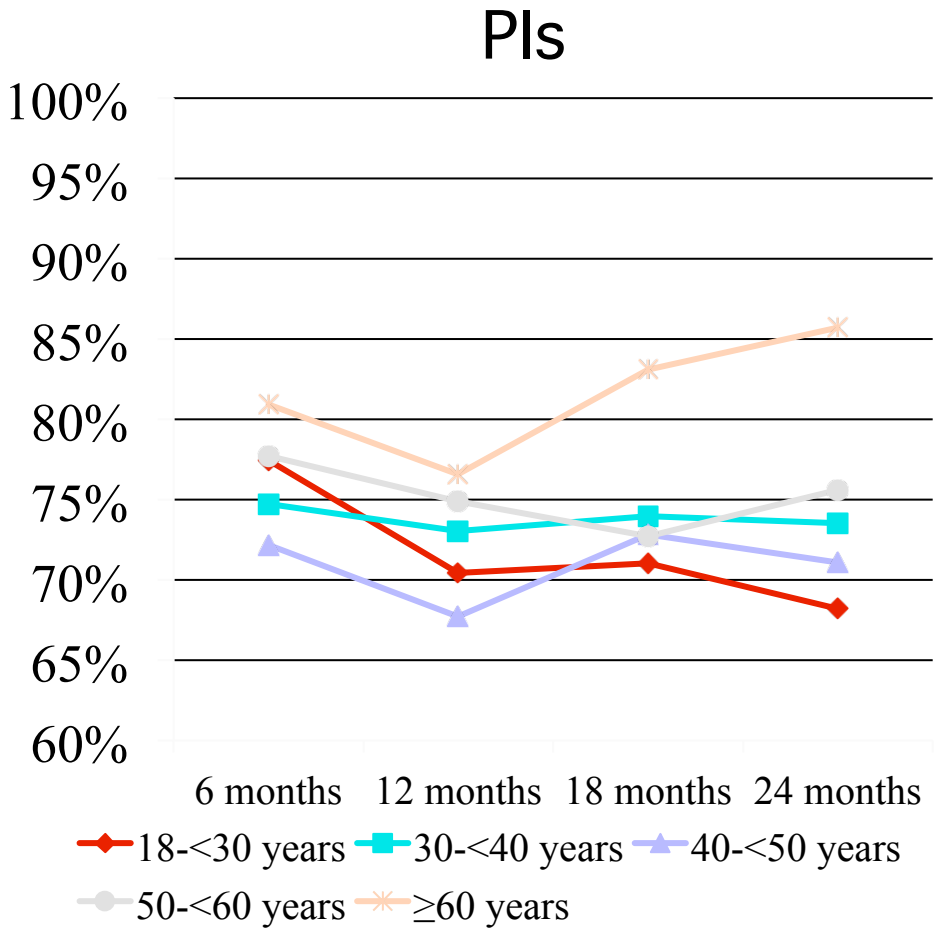
- Virologic Suppression
- Immunologic Response
- Mortality

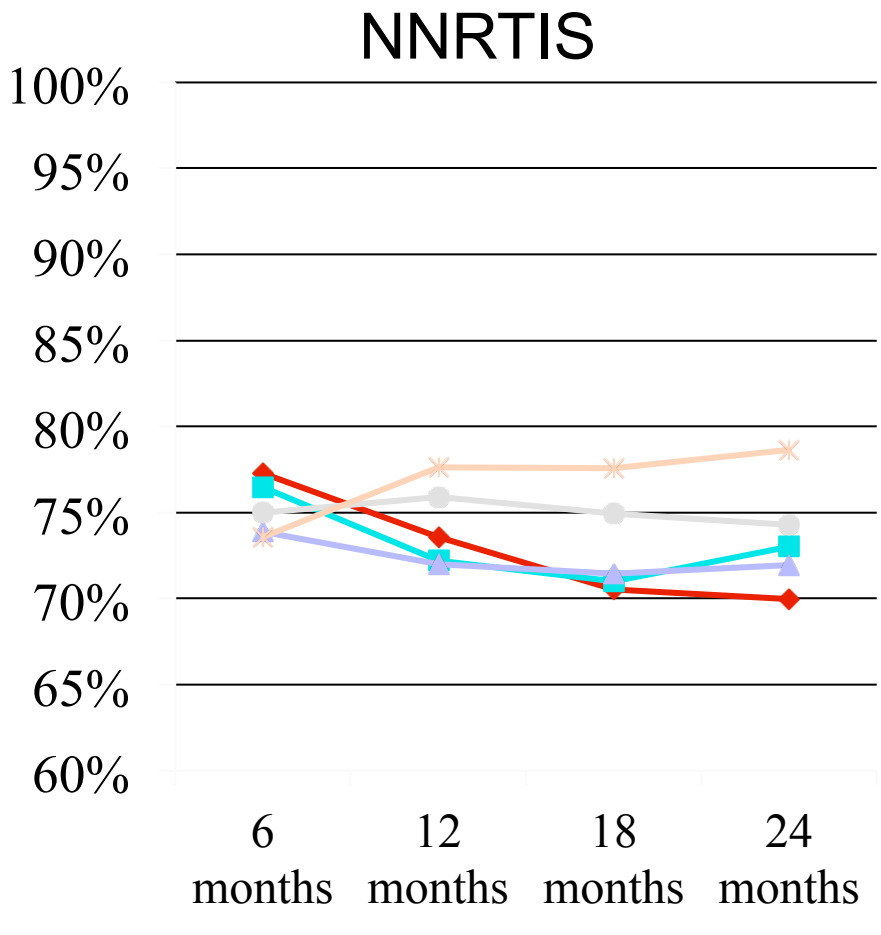
Percent with VL suppression across time by Age



Althoff IEDEA Feb 2010

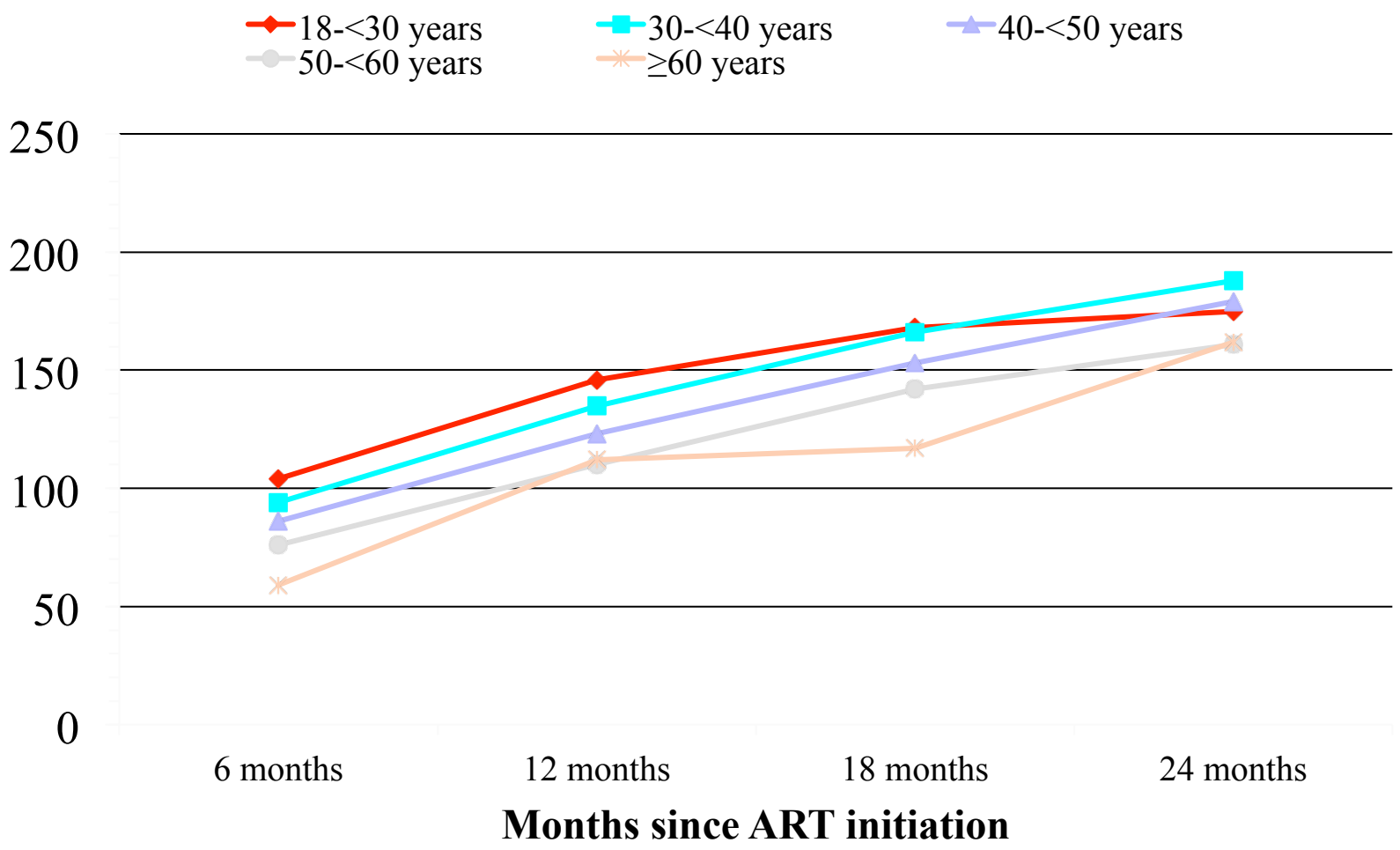
Percent with VL suppression across time by Age group and Regimen





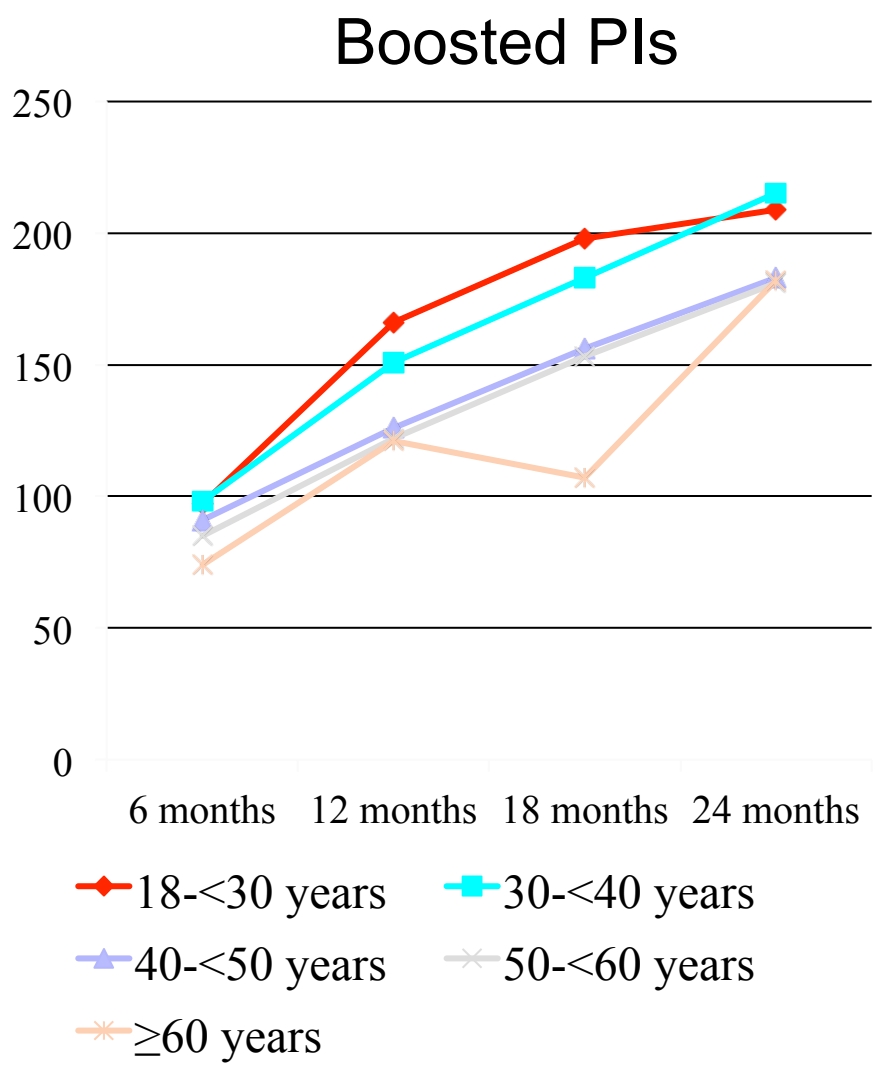
Althoff K IEDEA Feb 2010

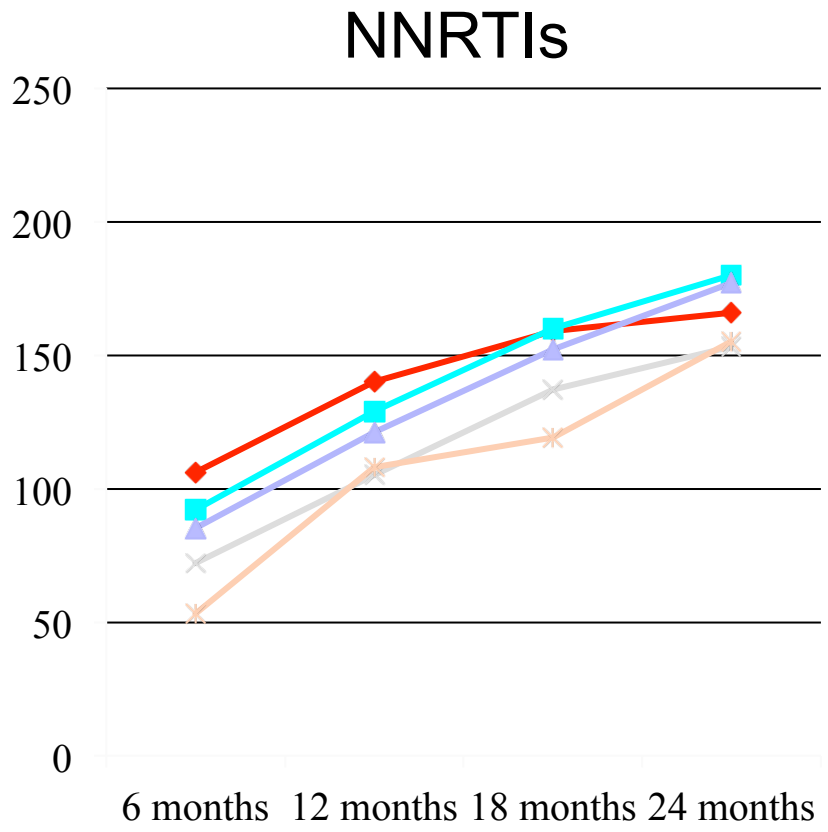
Mean Increase in CD4 by Age 2 years after HAART



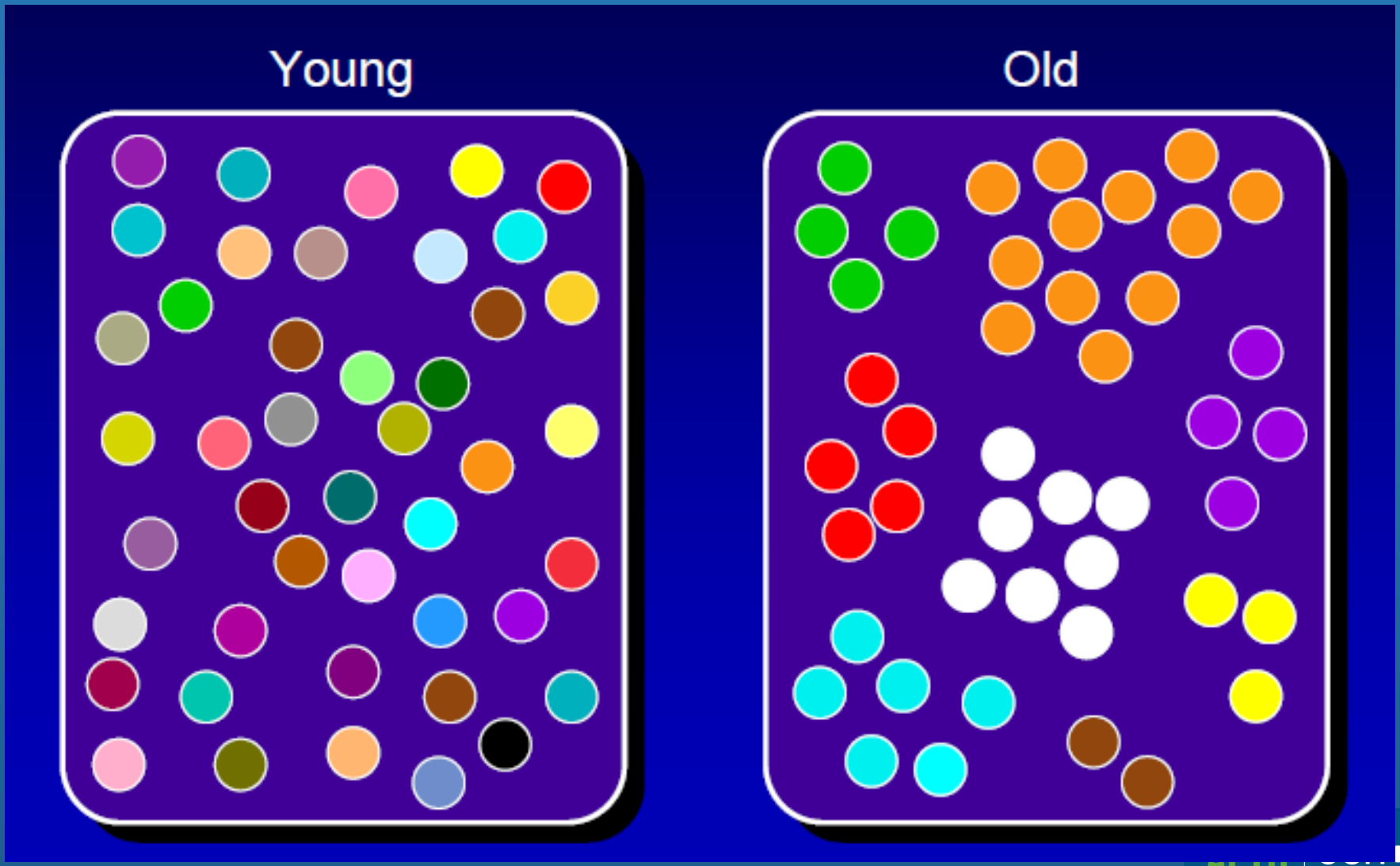
Althoff K IEDEA Feb 2010

Mean Increase in CD4 by age and regimen





Aging Reduces T cell Diversity

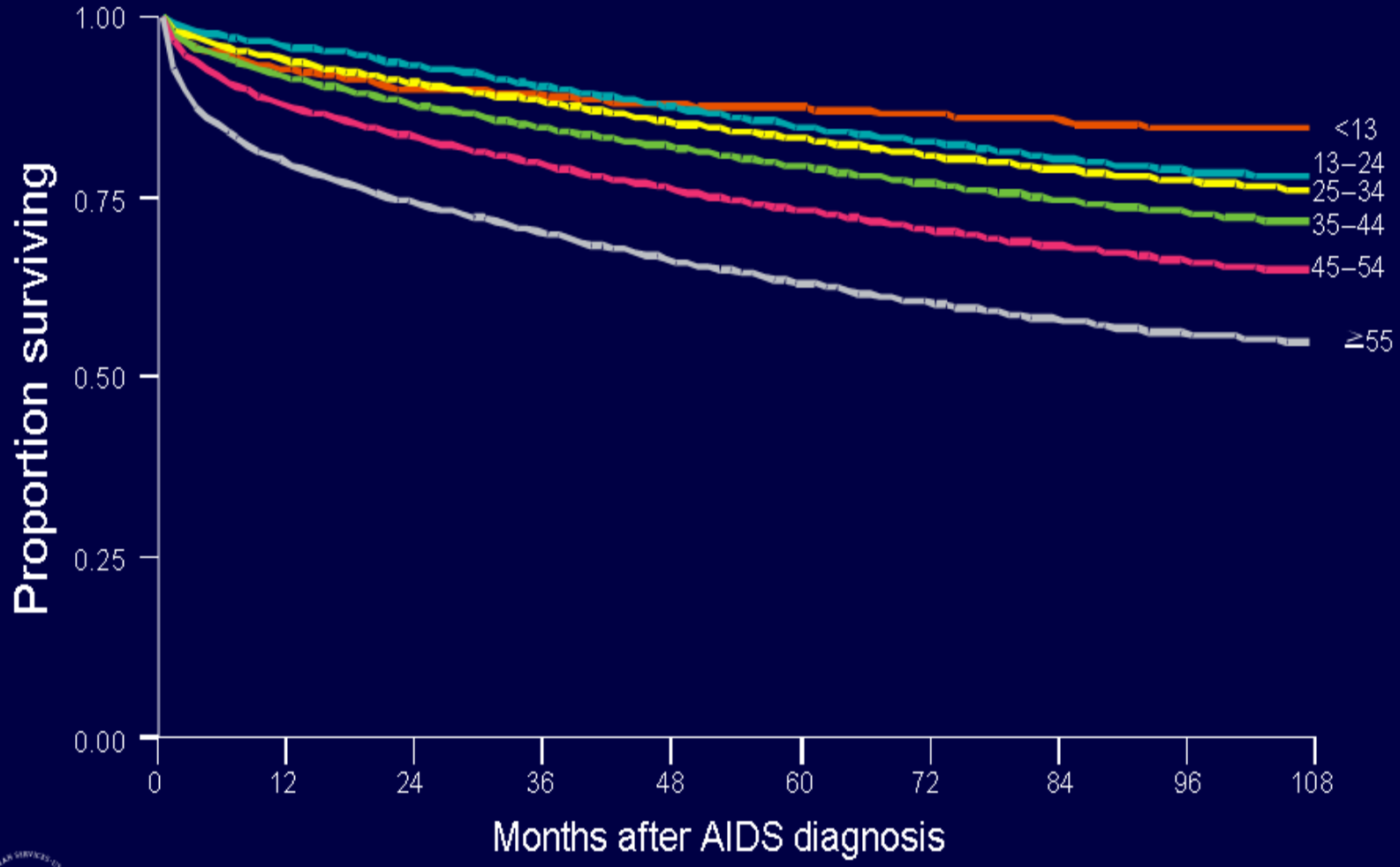


Slide courtesy Jorg Goronzy, MD

Immunosenescence

- Immune system in older persons
  - Increased populations of terminally differentiated CD8 cells (CD28 negative)
  - Reduced level of naïve CD4 and CD8 cells, with reduced T cell proliferation
  - Increased T cell activation, with increased levels of inflammatory markers
  - Thymic insufficiency / failure
- All are accelerated in HIV

Proportion of Persons Surviving, by Number of Months after AIDS Diagnosis during 1997–2004 and by Age Group—United States and Dependent Areas



HIV Outcomes:
What we Know Already

Adherence	Older>Younger
HIV-1 RNA suppression	Older >Younger, doesn't vary by class
CD4 response	Younger>Older
Mortality	Older >Younger, usually due to non HIV causes

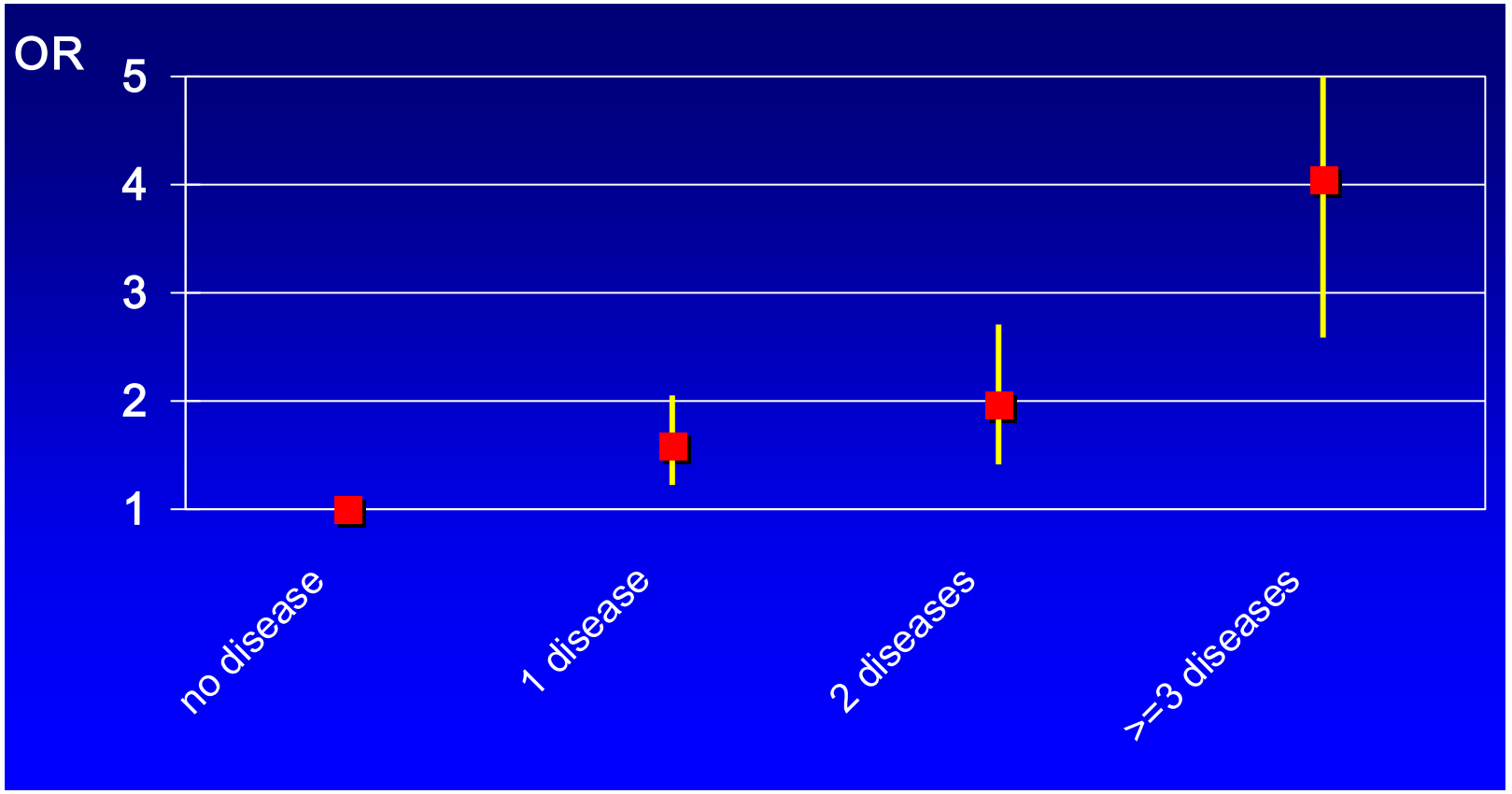
Non HIV Causes of Death Since ~2000

Source	Of Known	Leading Causes (%)	Reference
NY State Death Certificates	26%	Alcohol/drug abuse (31%), CVD (24%), Cancer (21%)	Ann Intern Med 2006;145:397-406
Barcelona Death Certificates	60%	Liver (23%), Infection (14%), Cancer (11%), CVD (6%)	HIV Med 2007:8;251-8
HOPS Ascertainment	63%	Liver (18%), CVD (18%), Pulmonary (16%), Renal (12%), GI (11%), Infection (10%) Cancer (8%)	J Acquir Immune Defic Syndr 2006;43:27-34
Cascade Ascertainment	63%	Liver (20%), Infections (24%), Unintentional (33%), Cancer (10%), CVD (9%)	AIDS 2006; 20;741-9

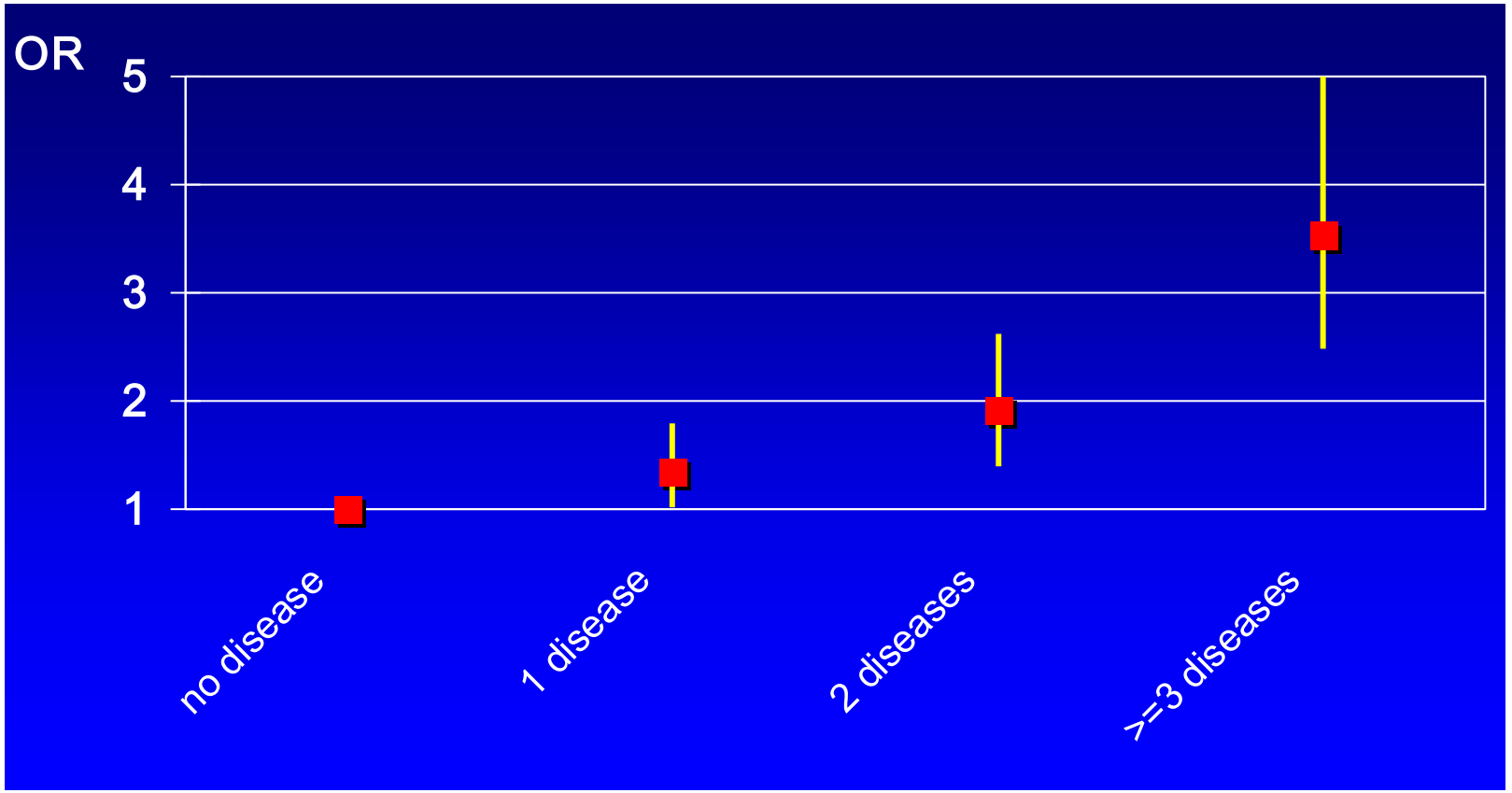
Definitions

- Comorbidity: additional diseases beyond the index disease
- Multimorbidity: co-occurrence of diseases and functional consequences (the whole is worse than sum of the parts) = the aggregate burden of illness
- Age, several conditions, function/cognition

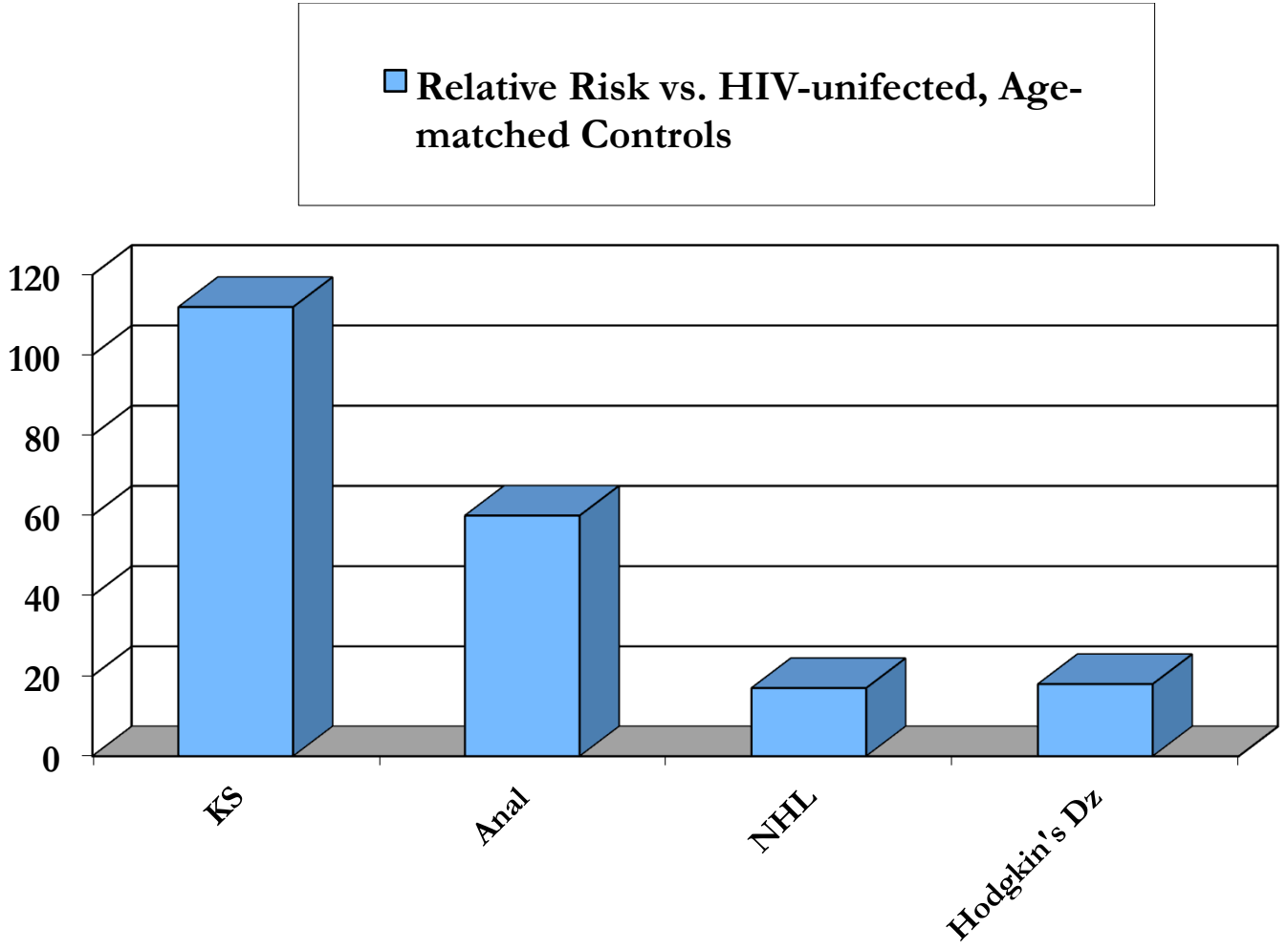
Impact of multimorbidity on 3-year decline in physical functioning



Impact of multimorbidity on 3-year mortality



Incidence of Cancer in HIV-Infected Persons in the Post-HAART Era



Patel, et al. Ann Int Med 2008; 148:728-36

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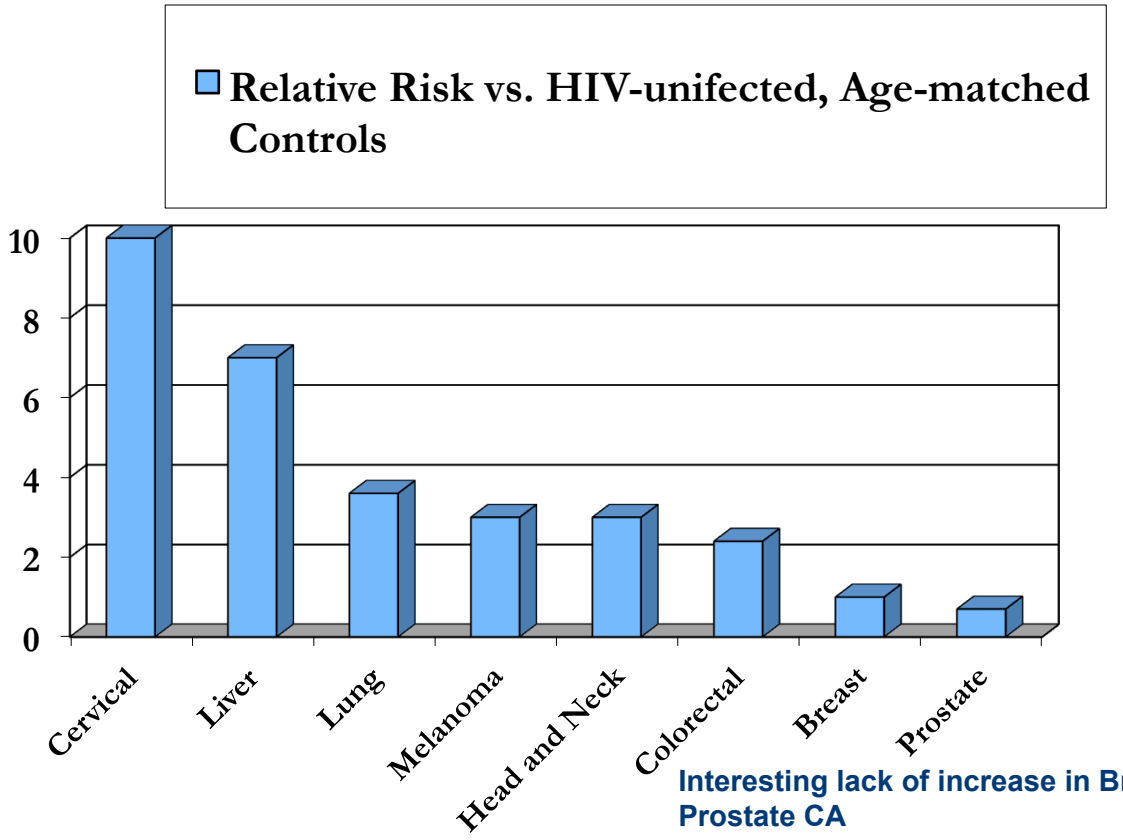


Interesting lack of increase in Breast or Prostate CA

Patel, et al. Ann Int Med 2008; 148:728-36

Age at cancer diagnosis among people with AIDS and in the general population 1980-2006

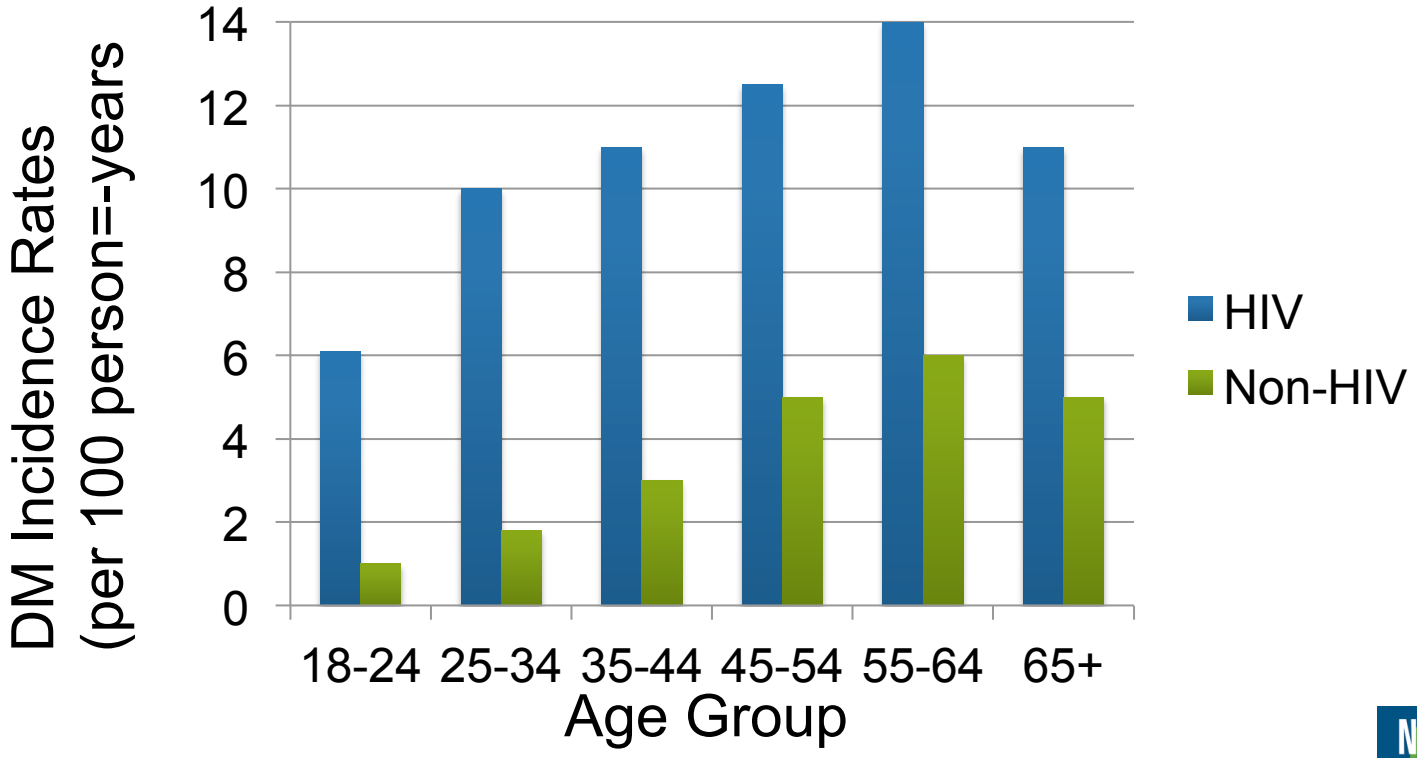
	Observed	Expected in age adjusted group	P value
Cervical	39	41	.03
Rectal	46	51	.002
Lung	49	53	.001
Hodgkin's	41	38	<.001
Breast	44.5	45	.2
Prostate	59	59	.5

For most cancers: there is no difference in age at cancer diagnosis among persons with AIDS compared to the general population.

Shiels CROI and AIM 2010

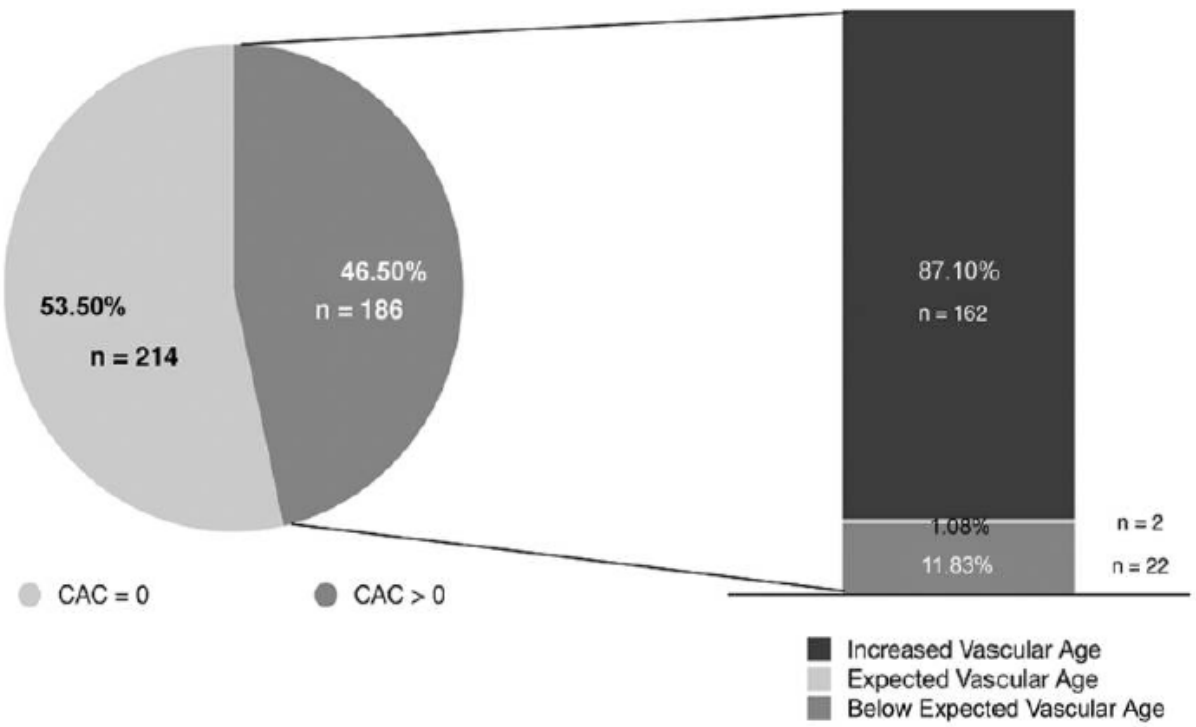
Increasing Prevalence in Diabetes With Age in Both HIV-Infected and Non-Infected Populations

- Medi-Cal database July 1994–June 2000 examined for diabetes mellitus (DM) age-specific incidence rates (DM diagnosed by ICD-9 codes)
- 7219 HIV (61% male) and 2,792,971 non-HIV (30% male) individuals, for a total 7,101,180 person-years



Currier J et al. 9th CROI; 2002; Seattle. Abstract 677.

Accelerated Coronary Aging in HIV-infected patients > age 40 (avg. ART ~ 11 yrs)



Avg vascular age 15 yrs > chronologic age

Thus Increased Arterial Calcium

Increased Risk Factor Profiles = Increased CAD

Guaraldi G, et al. Clin Inf Dis 2009;49:1756-62

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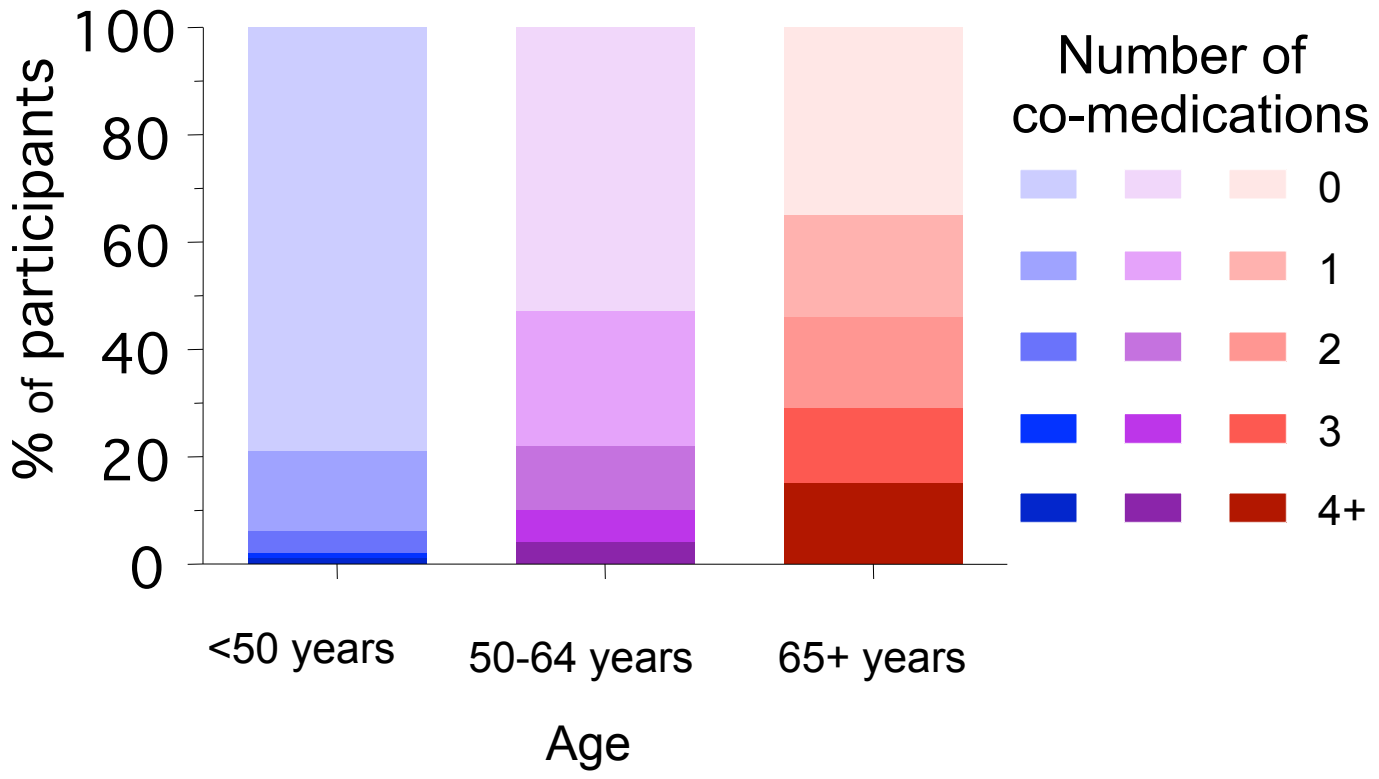
Number of non-HIV meds by age



Neurologic Issues in HIV and Aging

- In patients enrolled in the Hawaii Aging HIV Cohort:
  - HIV-associated dementia 2x greater in subjects age ≥50 vs those age 20-39 (OR 2.13 [1.02-4.44])
  - Increased Risk of HAD remains significant after adjustment for ART, HIV-1 RNA, CD4, education, race, drug use, and Beck Depression Inventory score (OR 3.26, [1.32-8.07])

Endocrinologic Morbidity

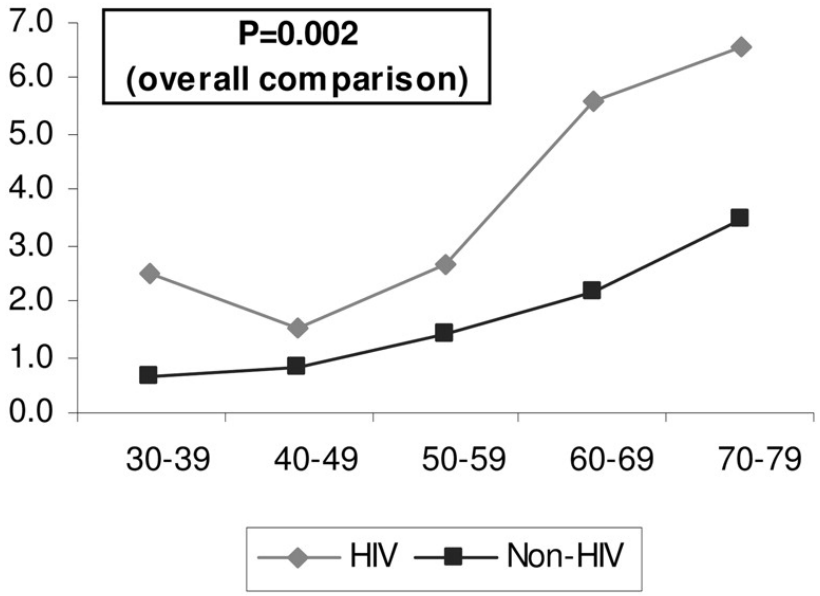
- **Testosterone Deficiency:** 54% of HIV-infected patients had testosterone <300 ng/dL.
- Low androgen levels were associated with increasing age, HIV+ IDU, HCV+ and use of psychotropic medications

- **Menopause:** Occurs at younger age in HIV infection average age 46 (IQR 39-49)
- Associated with increased symptoms of estrogen withdrawal

Klein CID 2005; Schoenbaum E CID 2005

BMD is lower and Fracture Prevalence is higher in HIV infection

- BMD lower in HIV+ men at the femoral neck (p<.05) and lumbar spine (p=0.06);
- Differences significant after adjusting for age, weight, race, testosterone level, and prednisone and IDU
- A 38% increase in fracture rate among HIV+ men

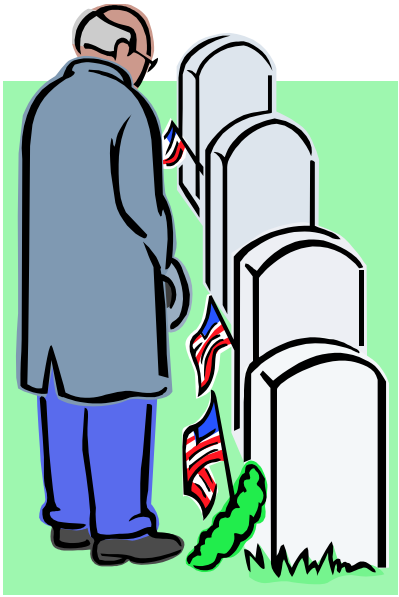


Arnsten AIDS 2007

Triant J Clin Endo Metab 2008

Psychosocial Issues

- Isolation
- Lack of support
- Financial issues
- DPOA / Directives



Eras of the HIV Epidemic

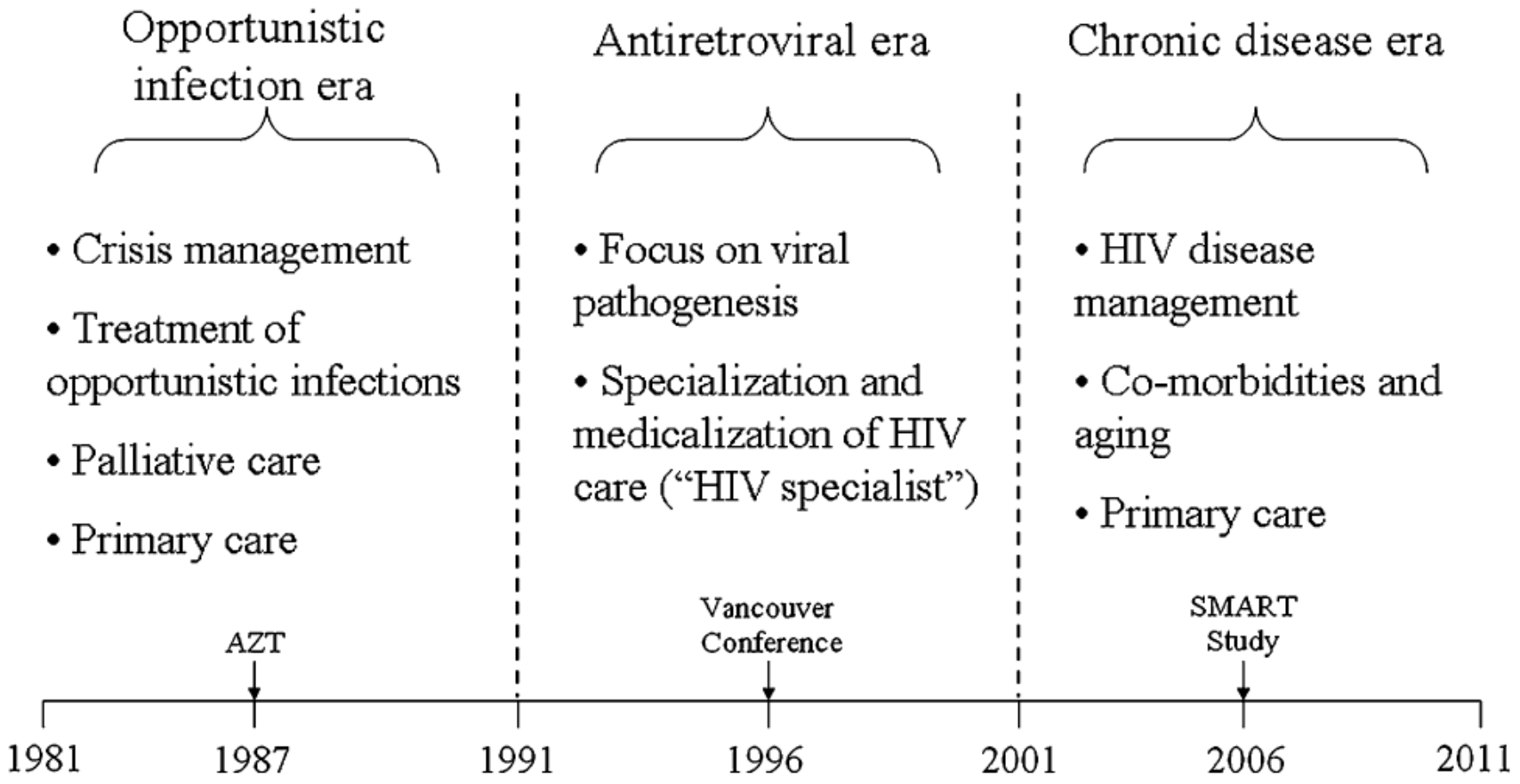


FIGURE 1. The HIV/AIDS epidemic: major clinical themes over 3 distinct eras, 1981–2011.

Chu and Selwyn, J Urban Health. 2011 Mar 1

Conclusions

- HIV / AIDS in US is increasingly an older population
- Compared to younger patients, older HIV patients have:
  - Better virologic response, Less immunologic boost, Shortened survival
- Comorbid disease is prevalent
- Psychosocial issues and advanced directives are important, especially in the setting of multi-morbidity

Resources

- http://aidsinfo.nih.gov/guidelines
- http://www.aahivm.org/hivandagingforum
- http://www.americangeriatrics.org
- Summary Report from the HIV & Aging Consensus Project: Treatment Strategies for Clinicians Managing Older Individuals with HIV Infection. JAGS 60:974-9, 2012
- Patient-Centered Care for Older Adults with Multiple Chronic Conditions. JAGS 60:1957-68, 2012