

# Aging & HIV – an unaddressed timebomb waiting to explode

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[www.natap.org](http://www.natap.org)

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

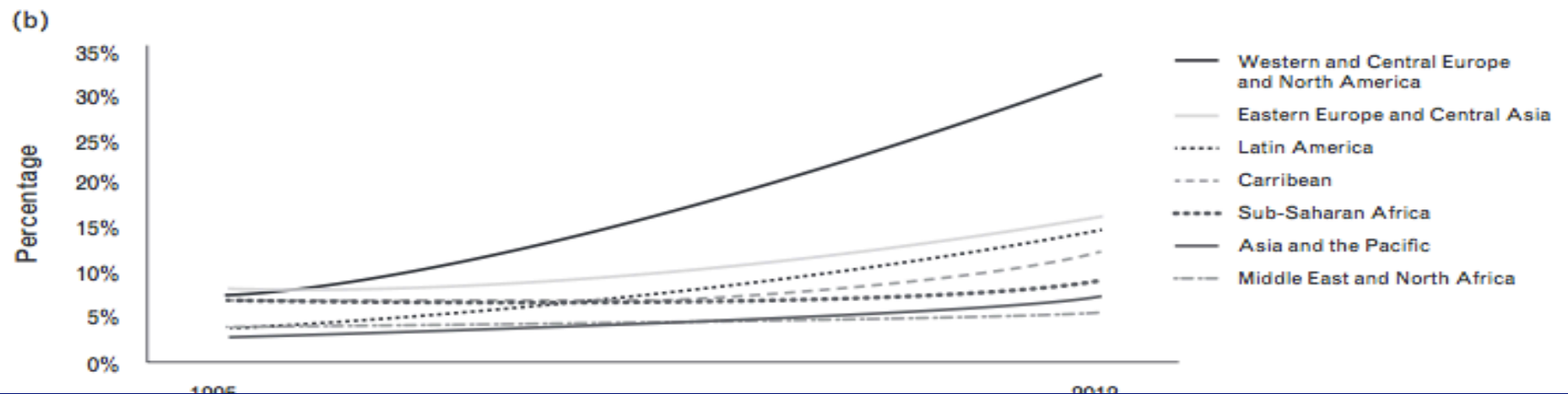
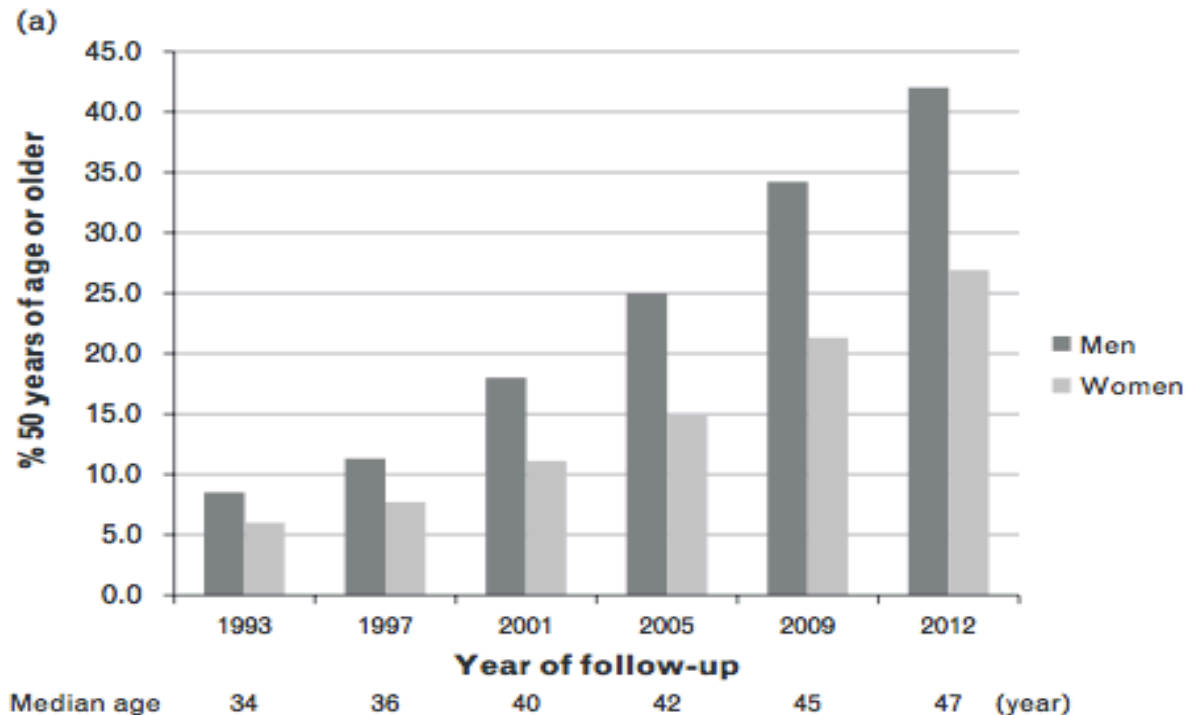


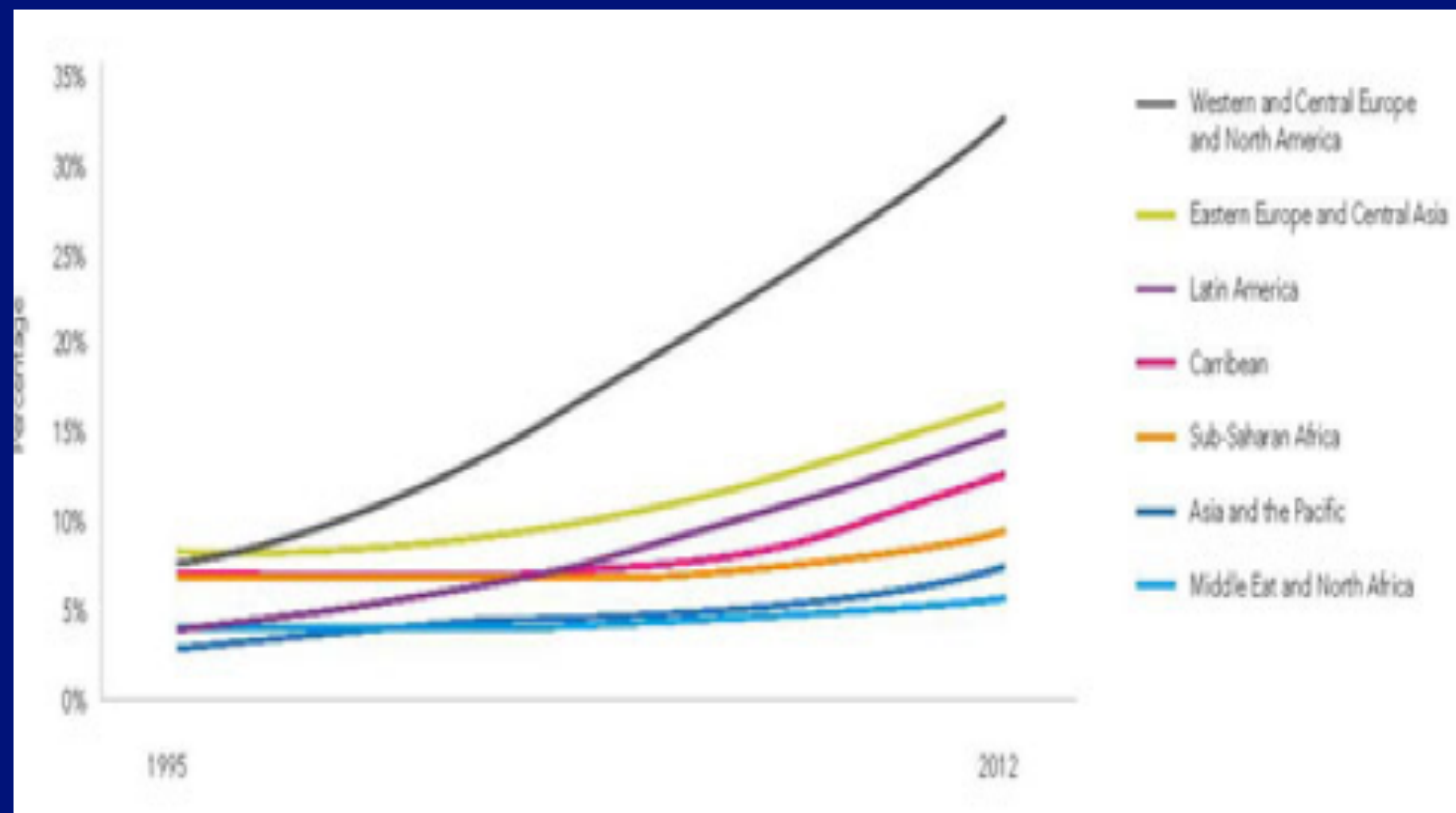
\*Data from 2008, onward projected based on 2001-2007 trends (calculated by author), 2001-2007 data from CDC Surveillance Reports 2007

Slide Courtesy of Amy Justice, MD, PhD

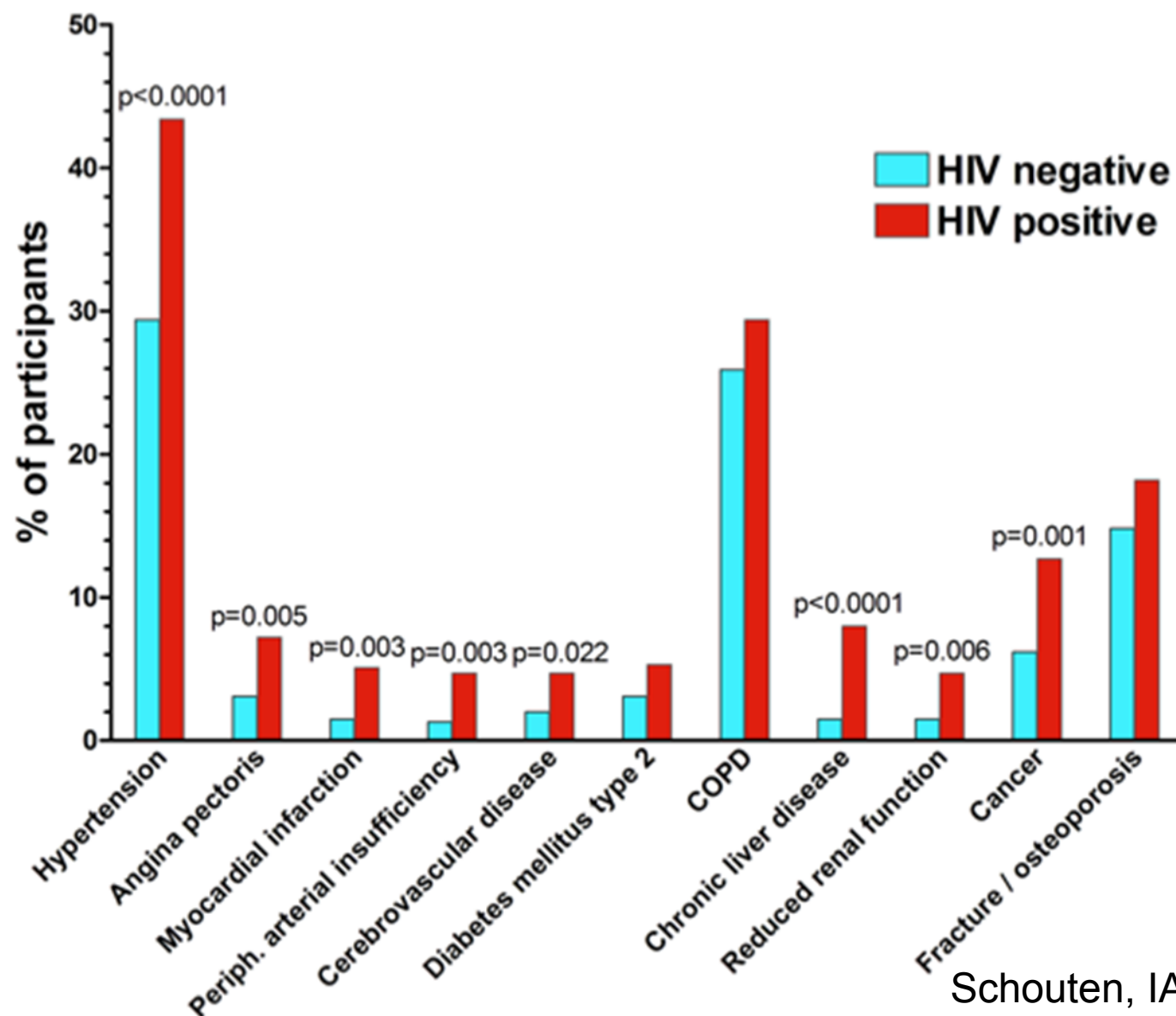
(a) Proportion of patients 50 years of age or older in the French Hospital database on HIV (FHDH ANRS CO4) by year of follow-up. (b) People aged 50 years or older, as a percentage of all adults 15 years or older living with HIV by region, 1995–2012 (UNAIDS 2012)

Dominique Costagliola Curr Opin HIV AIDS 2014 Demographics of HIV and aging



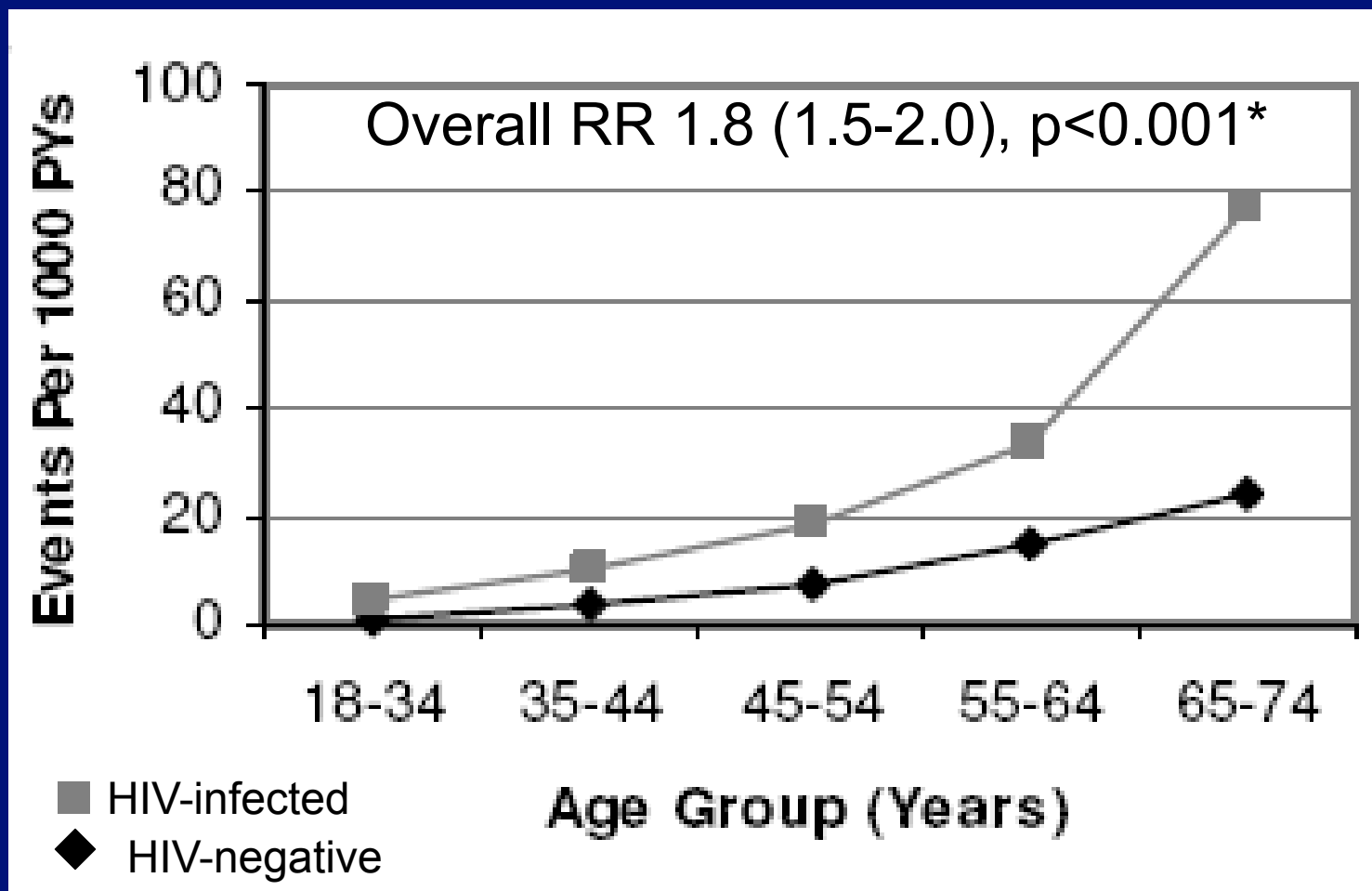


# Comorbidity distribution



Schouten, IAS, 2012

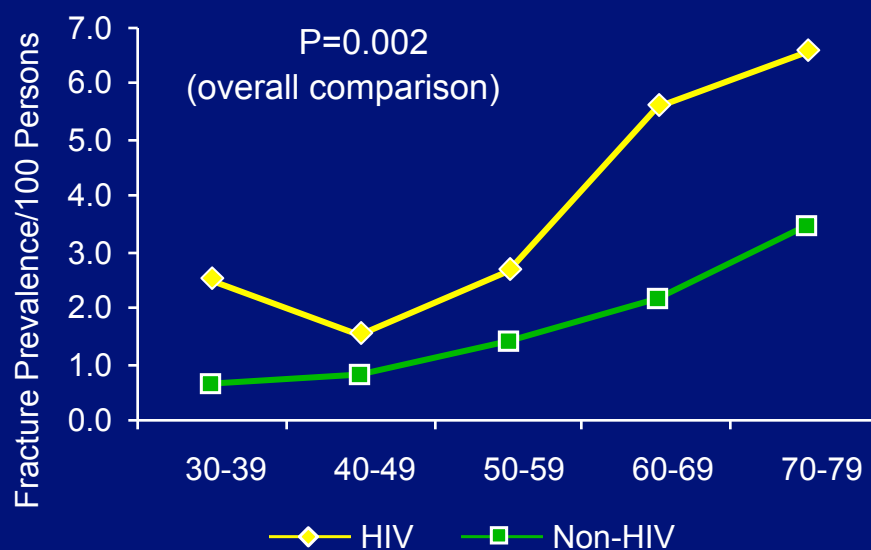
# Myocardial Infarction in HIV-infected and uninfected Patients: MGH Study



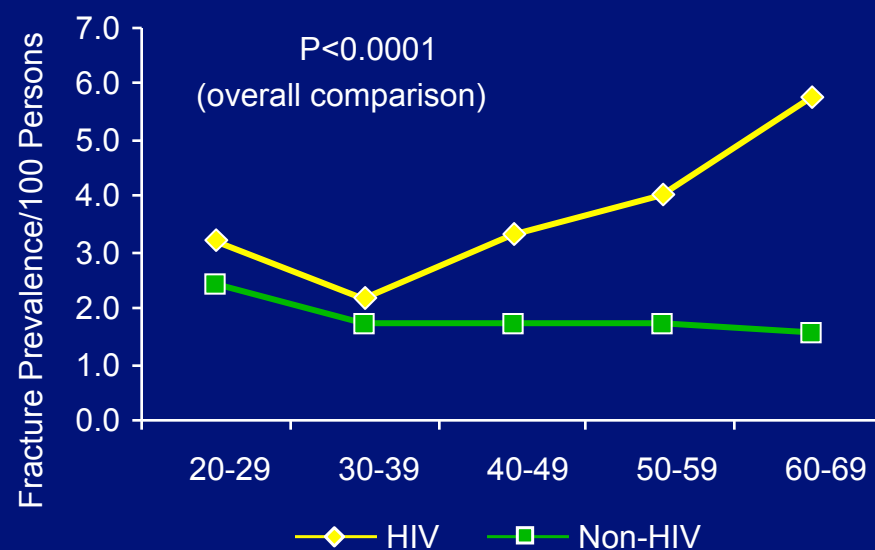
\*adjusted for age, gender, race, HTN, DM, dyslipidemia

Triant, JCEM, 2007

# Fracture Prevalence in HIV-infected and non-HIV-infected Persons in MGH/Partners Healthcare System: 1996-2008



Women



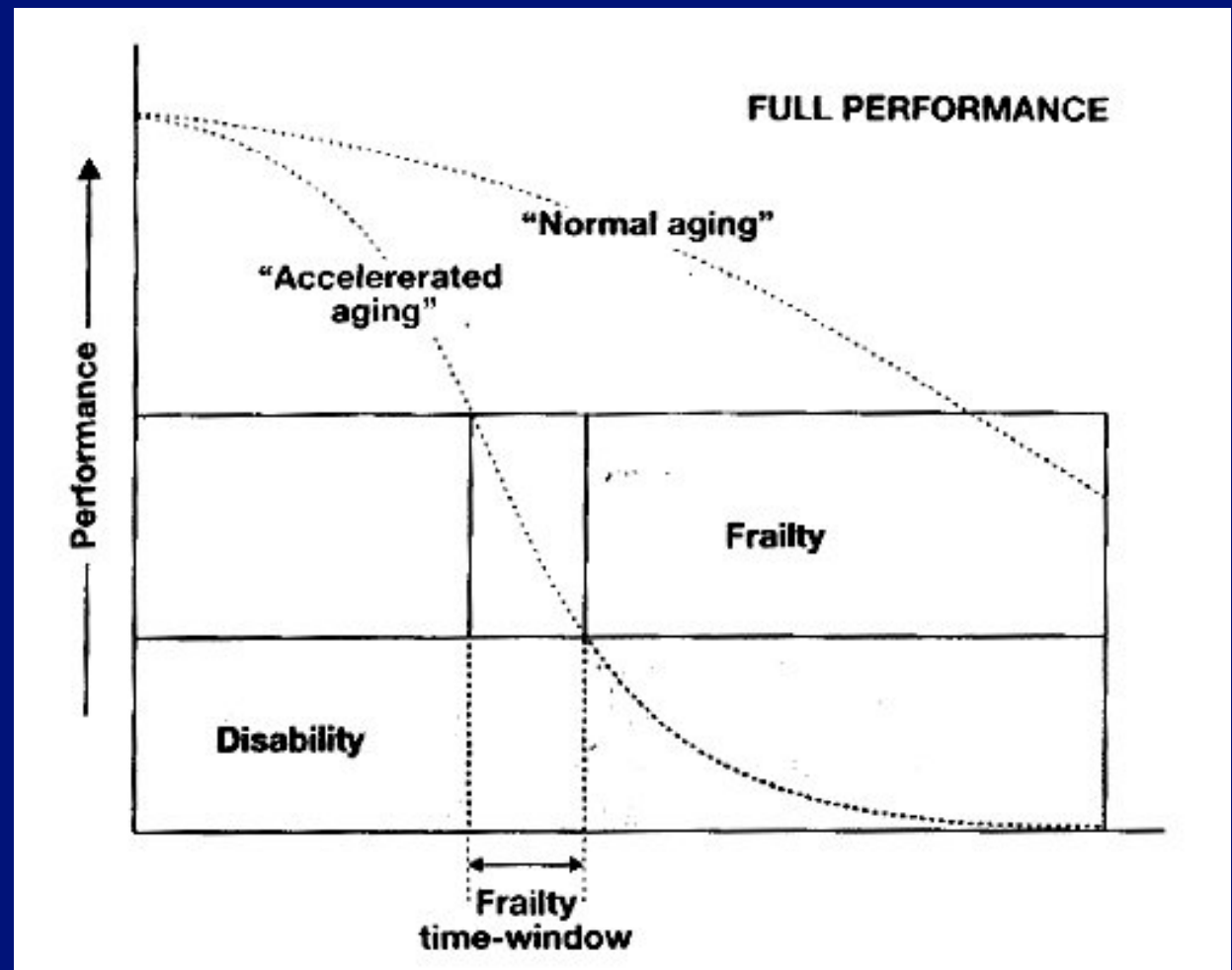
Men

8,525 HIV-infected  
2,208,792 non HIV-infected patients

# Frailty: A Brief Overview

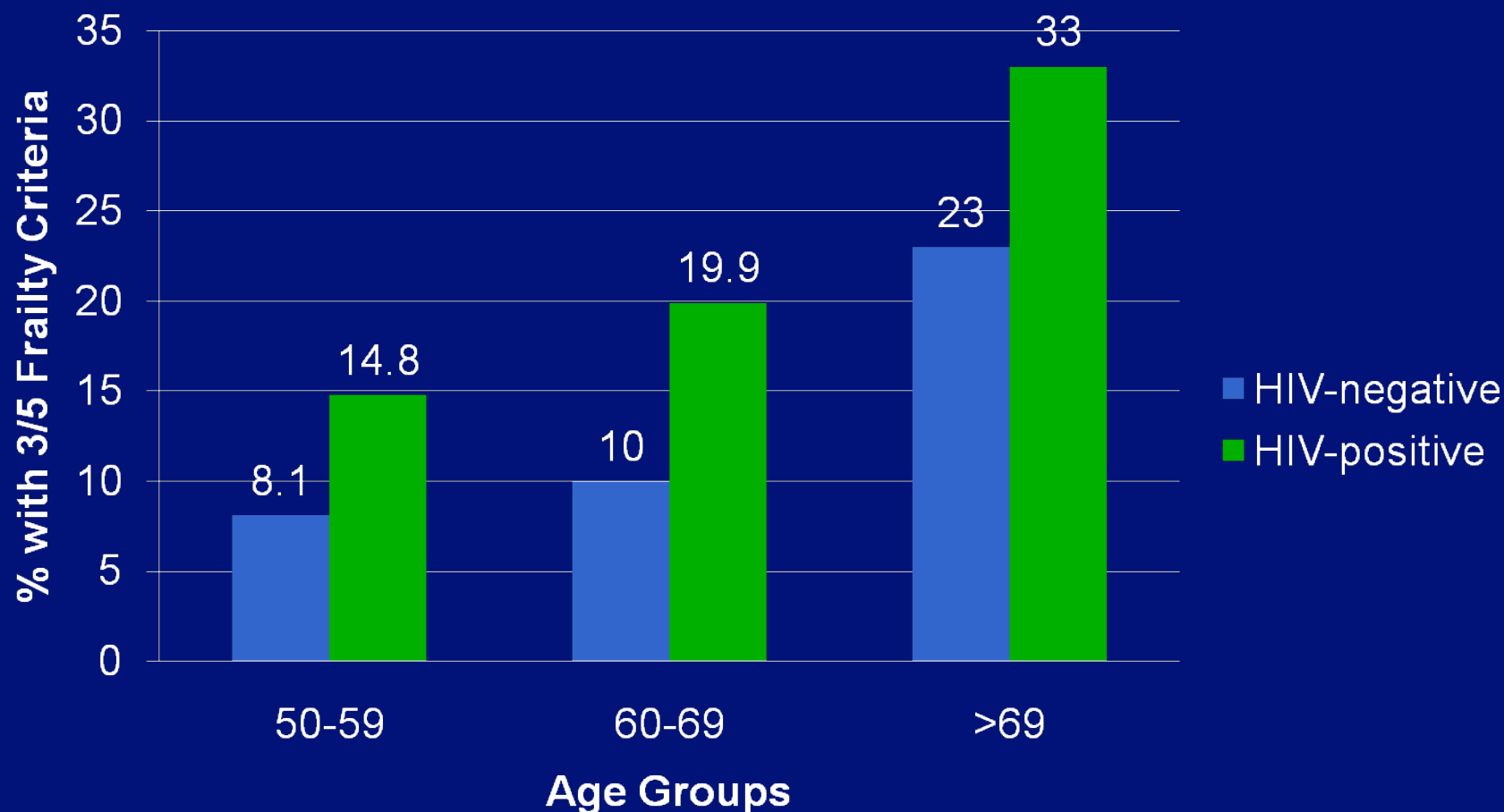
Slide 8

- **Weight loss**
- **Weakness**
- **Exhaustion**
- **Slowness**
- **↓ Physical Activity**

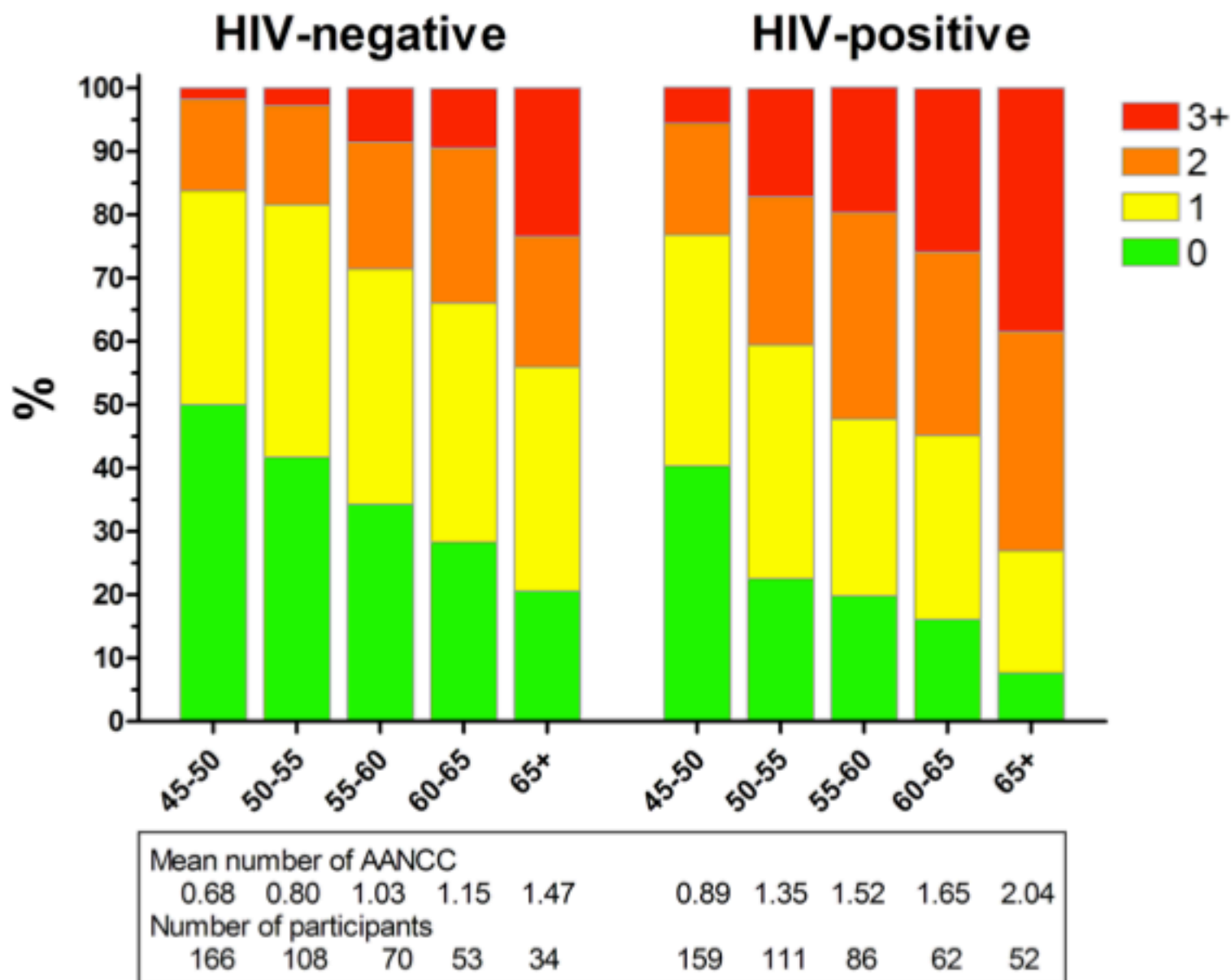




# HIV+ Men Are More Frail At a Younger Age vs HIV- Men: MACS



# Comorbidity in relation to age



# Patient Factors

## Non-Modifiable

(Things You Can't Change)

- Age
- Sex
- Genes (Your Family)

## Modifiable

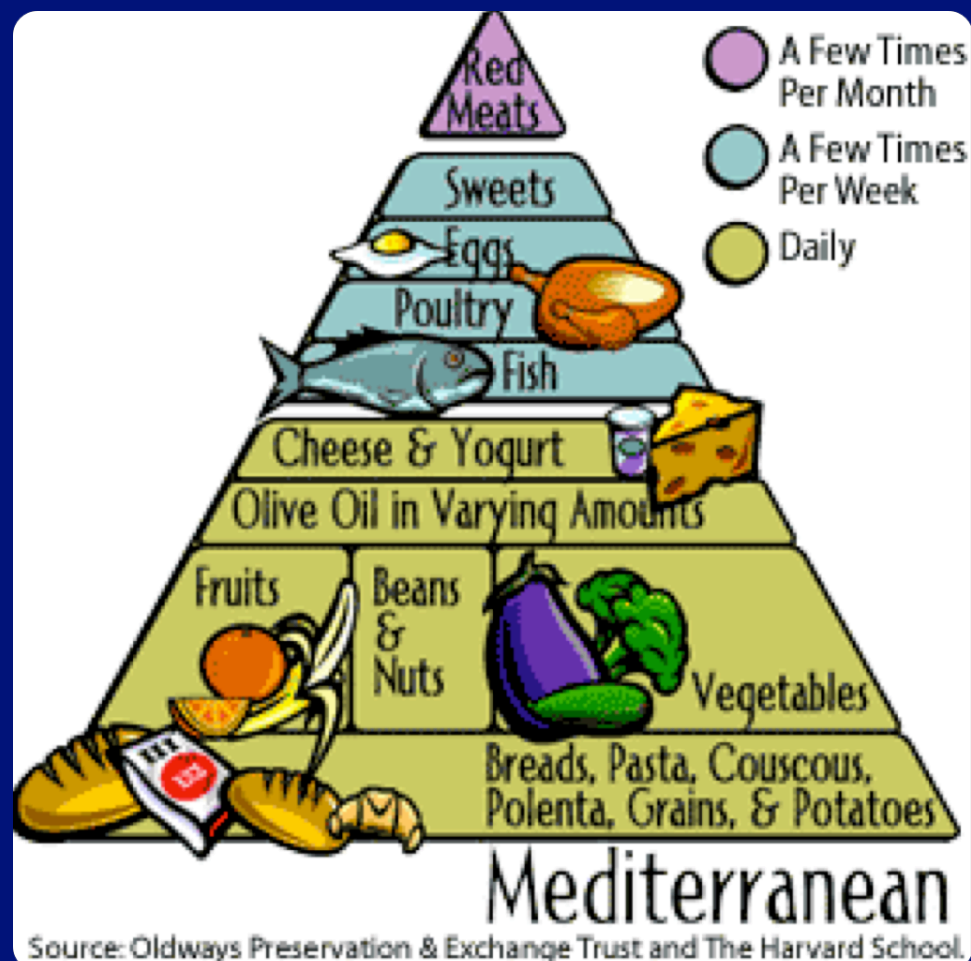
(Things You Can Change)

- Weight
- Smoking
- Alcohol
- Exercise
- Eating
- Adherence to ART

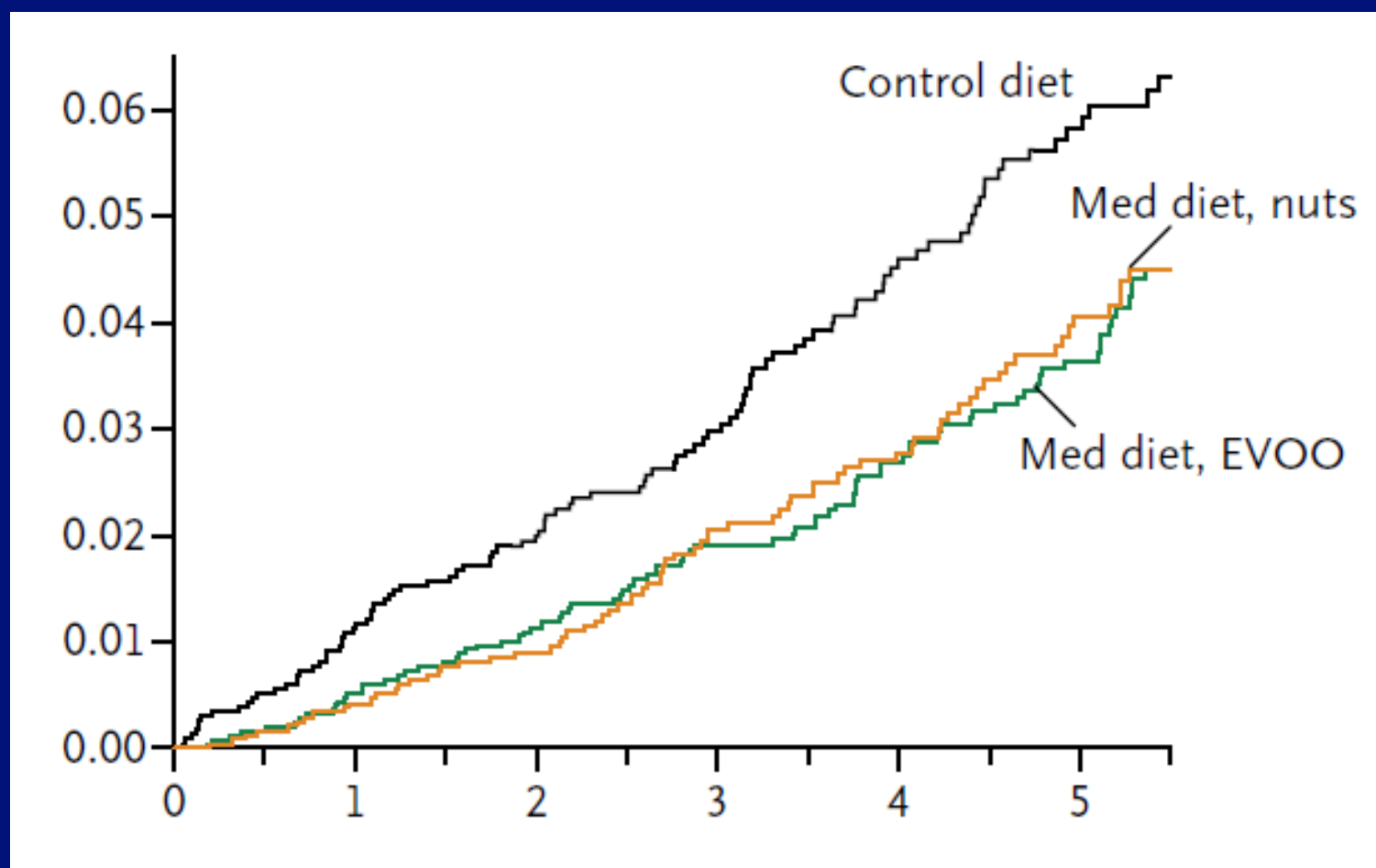
# General Rules for Prevention

- Optimize a Healthy Lifestyle
- Make sure known risk factors are identified and treated/addressed
- Get screened
- Know about your diseases

# The Mediterranean Diet



# Effect of Mediterranean Diet on Heart Attack and Stroke



Estruch, NEJM, 2013

# Lifestyle Modification: Exercise

- 150 minutes/week of exercise (minimum)
  - Do something you like (combination of cardio/strength)
- Set a fitness goal (eg 5K race)
- Find a fitness buddy
- Unplug
- Be active during day: If job is sedentary, take breaks to walk
- Take stairs rather than elevator; park further away to walk to work

# Cancers in HIV Disease

## AIDS-Defining

- Kaposi's Sarcoma
- Non-Hodgkin's Lymphoma (systemic and CNS)
- Invasive Cervical Carcinoma

## Virus

HHV-8

EBV, HHV-8

HPV

## Non-AIDS Defining

- Anal Cancer
- Hodgkin's Disease
- Leiomyosarcoma (pediatric)
- Squamous Carcinoma (oral)
- Merkel cell Carcinoma
- Hepatoma

HPV

EBV

EBV

HPV

MCV

HBV, HCV



# Change in Incidence of Cancers in HIV in the HAART Era in USA

- Kaposi's sarcoma
- CNS Lymphoma
- Lymphoma (NHL)
- Lymphoma (HD)
- Cervical Cancer
- Anal Cancer
- Lung Cancer
- Prostate
- Breast
- Hepatoma



# Cancer Prevention

- Stop Smoking
- Hepatitis and HPV vaccination
- Yearly cervical and anal Pap tests
- Colon cancer screening
- Breast, prostate exam every year
- Advise sunscreen and avoid overexposure
- If Hepatitis B or C positive, screening for liver cancer

# How to Avoid Osteoporosis

- Get 1000-2000 IU of Vitamin D daily (if you already have osteoporosis, get your vitamin D checked)
- Get calcium in your diet (dairy products)
- Exercise
- Get a bone density test over age 50
- If you have fallen or are worried about it, tell your doctor
- Stop smoking

## **HIV & Aging - Mental Needs: Policy, Mental Health Services Program, Comorbidities, Services for Aging/ Older HIV+**

what is lacking is a discussion about the problems older HIV+ individuals are & will be facing & the services that will be needed.

# inability to function

- loss of income/housing, retirement/care facilities & stigma/prejudice (against HIV, lifestyle)
- More medical needs, **Hepatitis C**
- Polypharmacy
- Less mobility, getting to medical care, getting around
- difficulty in mobility (shopping, getting out for social activities), managing one's home, of course managing one's increasing health issues, and keeping busy and satisfied
- Anxiety/stress: "acute stress may be associated with transient immune activation, chronic stress seems more consistently associated with immune downregulation or depression"
- Depression, neuro-cognitive impairment - **isolation**
- increased substance abuse
- emotional instability
- **suicide**
- non-adherence
- Support Services lacking to address medical & non-medical needs

- long-term housing; and the decreasing ability to care for themselves
- Stigma & ageism in HIV+
- A United States study of 262 people with HIV found that older people with HIV had significantly higher medical comorbidity burden (as measured with the Charlson Co-morbidity Index): almost half had at least one major medical comorbidity, including diabetes (18%), neurocognitive impairment (15%), **Hepatitis C (30-90%)** and malignancy (12%) [11].
- In a cohort study of 1230 injection drug users (IDUs), HIV+ participants had an increased risk of frailty (odds ratio = 1.66; 95% confidence interval, CI 1.24-2.21) [14], and depressive symptoms were independently associated with frailty."
- The process of aging may be more challenging for people living with HIV than for the general population.
- This is because of the detrimental effects that HIV and its treatment have on normal aging processes as well as other factors, such as HIV-related stigma, loss of friends and social networks
- According to a case-controlled study comparing HIV+ and HIV- older people, people with HIV are less happy, less resilient, and have poorer attitudes toward their aging [10].
- They also report lower physical and mental health, and experience more negative life-events, anxiety, and perceived stress.
- On the other hand, both groups reported similar levels of optimism, mastery, and social support.

- Mental, neurological, and substance use (MNS) disorders occur frequently in patients with HIV and are associated with negative outcomes, including reduced adherence to antiretroviral medications (cART), and diminished quality of life
- MNS disorders may occur at rates that exceed those of physical co-morbidities [1]. Depression is twice as common in people living with HIV (especially when symptomatic) than in uninfected individuals
- HAND prevalence ranges from 20% to 56% worldwide, and is especially high in older patients and those with advanced immuno-suppression. In low-income countries, HAND is compounded by poverty, opportunistic central nervous infections, and assessment challenges
- **A variety of mechanisms links MNS disorders to HIV disease.**
- **First, the social conditions under which most patients with HIV live (e.g., limited employment, housing and food insecurity, exposure to stigma, and fear of serostatus disclosure) contribute to the development and exacerbation of MNS disorders [8].**
- **MNS disorders, in turn, are associated with greater suffering, including poorer psychological adjustment to a chronic, progressive and life-threatening illness; lower quality of life [9],[10]; worse HIV treatment adherence and outcomes [5], [6]; and an increased risk of HIV transmission [11].**

- HIV co-morbid substance use disorders can influence HIV transmission by increasing vulnerability to sexual exploitation and impairing the judgment required to engage in safe sexual practices [11],[12].
- **HIV directly affects the central nervous system (CNS), with increasing evidence of long-term cognitive effects that may, despite achievement of non-detectable viral load, not be reversible with currently available cART [13].** [Recent research finds HIV enters brain very quickly after infection & is forever present]
- **High rates of mild NCI persist at all stages of HIV infection, despite improved viral suppression and immune reconstitution with CART....."Pattern of NCI also differed: pre-CART had more impairment in motor skills, cognitive speed, and verbal fluency, whereas CART era involved more memory (learning) and executive function impairment**
- About 50% of people living with HIV will develop HIV-associated neurocognitive impairments and disorders (HAND).....**HAND can have damaging effects on older adults' psychosocial well being.....healthcare providers, front-line workers, and policy makers should have a greater understanding of the experience of aging with HIV**
- HIV also puts individuals at risk for acquiring other infectious and non-infectious conditions that affect the CNS-including malaria, tuberculosis, and lymphomas -and further impair CNS function [7].



## Coping Styles and Illicit Drug Use in Older Adults With HIV/AIDS

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Duke University

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Ohio University College of Osteopathic Medicine

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Duke University

- **“drug use in HIV-positive older adults is prevalent”**
- **“Findings from this study suggest that the ways individuals cope with HIV-related stress are highly correlated with drug use.....**
- **....assessing drug use in HIV clinics and other nontraditional settings may help to identify drug use among older adults”**
- This study describes the prevalence of drug use and examines psychosocial predictors of drug use in a sample of HIV-infected adults aged 50 and older
- Participants were 301 HIV-positive older adults enrolled in a clinical trial of a coping intervention aimed to reduce their depressive symptoms
- 202 men and 99 females, ranging in age from 50 to 76 (average=55.5, SD 4.8).
- This study .....was conducted in New York, NY, Columbus, OH, and Cincinnati, OH
- While more participants were from New York City (79.1%) than Ohio (20.9%), they did not differ on rates of drug use. A little over half the participants were African American (58%), self-identified as heterosexual (54%), and had an annual income of less than \$10,000 (54%).

# Illicit Drug Use in Older HIV+

- One-quarter used illicit drugs in the past 60 days (48% any cocaine, 48% weekly marijuana, 44% any other drugs) with an average of 36 days for marijuana and 15 days for cocaine
- Most commonly used substances were cocaine (n=36, 48.0%), marijuana (n=36, 48.0%), and other drugs, including opioids and benzodiazepines (n=33, 44.0%).....heroin, ecstasy, GHB, crystal meth, ketamine, abuse of prescription drugs, and any other injection drug use.....More frequent alcohol consumption was also associated with drug use.
- They also reported a lower quality of life, higher levels of depression, greater use of self-destructive avoidance, and less frequent use of solution-focused coping and spiritual coping.
- Self-destructive avoidance was positively associated and spiritual coping was negatively associated with drug use.
- These findings suggest that assessment of drug abuse should be a routine part of care for older patients in HIV clinics.
- Furthermore, interventions designed to increase spiritual coping and decrease self-destructive avoidance may be particularly efficacious for HIV-infected older adults

## Drug Use Over 2-Times Greater in Older HIV+ vs HIV-negative

- **This study identified high rates of illicit drug use among HIV-positive adults aged 50 and older**
- In the past 60 days, nearly one-quarter of participants were categorized as drug users.
- For comparison, among respondents aged 50 to 59 in the general population who completed the National Survey on Drug Use and Health, 9.4% reported use of any illicit drug (marijuana, cocaine, heroin, hallucinogens, inhalants, or nonmedical use of pain relievers, tranquilizers, stimulants, or sedatives) in the past year
- **Thus, drug use may be over two times higher in HIV-positive compared to HIV-negative older adults**
- Notably, illicit drug use was defined more stringently and over a shorter period of time (2 months vs. 12 months) in our study, suggesting that the difference in drug use may be even greater.
- Furthermore, the rate of drug use in our sample is comparable to that of younger HIV-positive adults
- In a nationally representative sample of HIV-infected adults, approximately half reported using any illicit drug (marijuana, sedatives, amphetamines, analgesics, cocaine, inhalants, lysergic acid diethylamide or hallucinogens, or heroin) during the previous 12 months

## Stress, drug Use, depression, avoidance

- Living with HIV is associated with high levels of stress, including disclosure concerns, HIV-related neurocognitive impairment , and stigmatization
- association between depression and drug use disorders is well-established in the general population and in HIV-positive samples
- suggested that the principle motivation behind drug use is to escape or avoid experiences of negative affect or stress
- HIV-positive adults also report using drugs to cope with stressful situations and with emotional distress
- methamphetamine use in HIV-positive gay men, participants explained that drugs were used to self-medicate the negative affect associated with having HIV
- rates of depression are nearly two times higher in HIV-positive individuals than the general population
- although depression is generally lower in older adults than their younger and middle-aged counterparts, it remains elevated in older individuals infected with HIV

## **Veterans Aging Cohort Study (VACS) Justice 2004**

- drug abuse decreased with age in HIV-negative persons but not in HIV-positive persons
- HIV is believed to accelerate the aging process. As a result, HIV-positive older adults are prescribed high amounts of medications and live with an elevated level of comorbid health conditions, including opportunistic infections, hypertension, and dementia

# Psychosocial, mental health, and behavioral issues of aging with HIV



## Psychosocial, mental health, and behavioral issues of aging with HIV

*Sergio Rueda<sup>a,b,c</sup>, Stephanie Law<sup>d</sup>, and Sean B. Rourke<sup>a,b,e</sup>*

**Curr Opin HIV AIDS 2014**

The present review focuses on the recent evidence exploring the psychosocial challenges facing older adults living with HIV.

As people age, there is a need to emphasize psychosocial and cognitive rehabilitation specifically for HAND [35·] and the associated comorbidities [36-38]; particular attention is warranted as well on the primary and secondary prevention efforts to address the medical, mental health, and addiction complications which can contribute to the development of cognitive impairments in HIV

We conducted a series of electronic searches to capture the peer-reviewed literature from January 2013 until February 2014 related to mental health and quality of life, neurocognitive functioning, social isolation and support, and coping with HIV

impact of retirement on the health and economic security of people with HIV

- **individuals with greater minority burden (i.e., the number of minority statuses, including being gay or bisexual, nonwhite, disabled, low-income, foreign-born, and speaking English as a second language) experienced greater HIV-related stigma, which was associated with greater mental health burden**
- As people age, there is a need to emphasize psychosocial and cognitive rehabilitation specifically for HAND [35-] and the associated comorbidities [36-38]; particular attention is warranted as well on the primary and secondary prevention efforts to address the medical, mental health, and addiction complications which can contribute to the development of cognitive impairments in HIV
- **healthcare providers, front-line workers, and policy makers should have a greater understanding of the experience of aging with HIV.....policy makers** need to develop new policies or adapt the existing ones to improve their social and economic outlook
- The study suggests that managing HAND should focus on triggers that worsen the condition, not just on the impairments themselves. In addition to affecting function, HAND can have damaging effects on older adults' **psychosocial well being**

# Policy, Research, Programs, Housing

- **intersection of HIV, aging, and health raises a host of issues that health research, policy, and practice need to address, including challenges related to mental health, quality of life, neurocognitive functioning, social isolation and support, and coping with aging and HIV**
- Front-line providers at AIDS service organizations will need to develop and integrate more programs and services that mitigate the social isolation and stigma experienced by many older people with HIV and help them cope with aging with HIV
- Interdisciplinary teams will need to find new ways to organize care and share the knowledge and skills required to address the complex mental health needs of older people with HIV in an environment in which no single discipline holds all the expertise
- **housing models** could remove some of the barriers to subsidized housing and ensure that retirement homes and long-term facilities become more welcoming places for older people with HIV



- In terms of sex differences, Storholm et al.[17] found that men were significantly more likely than women to report a lack of positive relations with others (50 vs. 39%), purpose in life (51 vs. 39%), self-acceptance (51 vs. 42%), and environmental mastery (53 vs. 35%).
- Another study, however, found that gay and bisexual men reported higher mental health-related quality of life than heterosexual men and women [16], and gay men reported less HIV-related stigma than women or heterosexual and bisexual men, which may be associated with the supportive networking within the gay community, better programs and services from AIDS service organizations, and the experience of having lived with HIV for many years.
- Older people with HIV often compare themselves to their HIV-peers and report experiencing an **earlier and more rapid decline in health**, which increases **anxiety** about the future [18,19].
- The more medical comorbidities someone experiences, the poorer their quality of life.....
- In a United States multistate study, 94% of people with HIV aged 50 years or older (n = 452) had at least one other chronic illness, with an average of three comorbid conditions (including depression) [13]. Commonly reported chronic illnesses included high blood pressure (46%), chronic pain other than headache and back pain (45%), hepatitis (39%), arthritis (35%), diabetes (21%), and major depression (14% reported symptoms consistent with major depression).
- The presence of more chronic conditions was also associated with decreased functioning

# Cognitive Functioning, HIV, Aging

- About 50% of people living with **HIV will develop HIV-associated neurocognitive impairments and disorders (HAND)**
- Combination antiretroviral therapy (cART) is allowing people with HIV to live longer, but it is not sufficient on its own to prevent neurocognitive problems in those with the milder forms of HAND - asymptomatic neuropsychological impairment (ANI) and HIV-associated neurocognitive disorder (MND)
- Important research work is necessary in the context of aging, as MND can significantly affect people's ability to work, adherence to medication and function in their daily lives
- Cognitive function in HIV is associated with a host of medical and psychiatric factors [24,25,27], including demographics, HIV disease severity, substance use, and comorbid conditions

- recent study.....older people with HIV consistently performed worse on eight of nine neuropsychological and everyday functioning tests
- older age was associated with about a five-fold higher odds of developing memory deficits: about half of those over age 50 had measurable memory impairment
- driving performance of older people with HIV was less efficient and slower than their younger counterparts
- HAND resulted in difficulties with work and social relationships [isolation]

- Older people with HIV often compare themselves to their HIV-peers and report experiencing an **earlier and more rapid decline in health**, which increases anxiety about the future
- The process of aging may be more challenging for people living with HIV than for the general population
- uncertainties include concerns regarding the ability of healthcare providers to provide high-quality care at the intersection of aging and HIV; the financial situation and transition to retirement, including adequate pension; the availability of appropriate
- older adults with HIV often need to negotiate multiple identities and the resulting stigma(s) attached to those identities, including ageism, homophobia, and HIV-related stigma
- Although ageism plays a role in the overall stigma experienced by older adults with HIV, some also report experiencing stigma and rejection from their HIV-contemporaries
- Many express concerns about being discriminated against by other older people if they have to move into old-age care facilities
- Whereas disclosure is important for people with HIV to receive social support, **perceived and internalized stigma** affects disclosure among older adults living with HIV

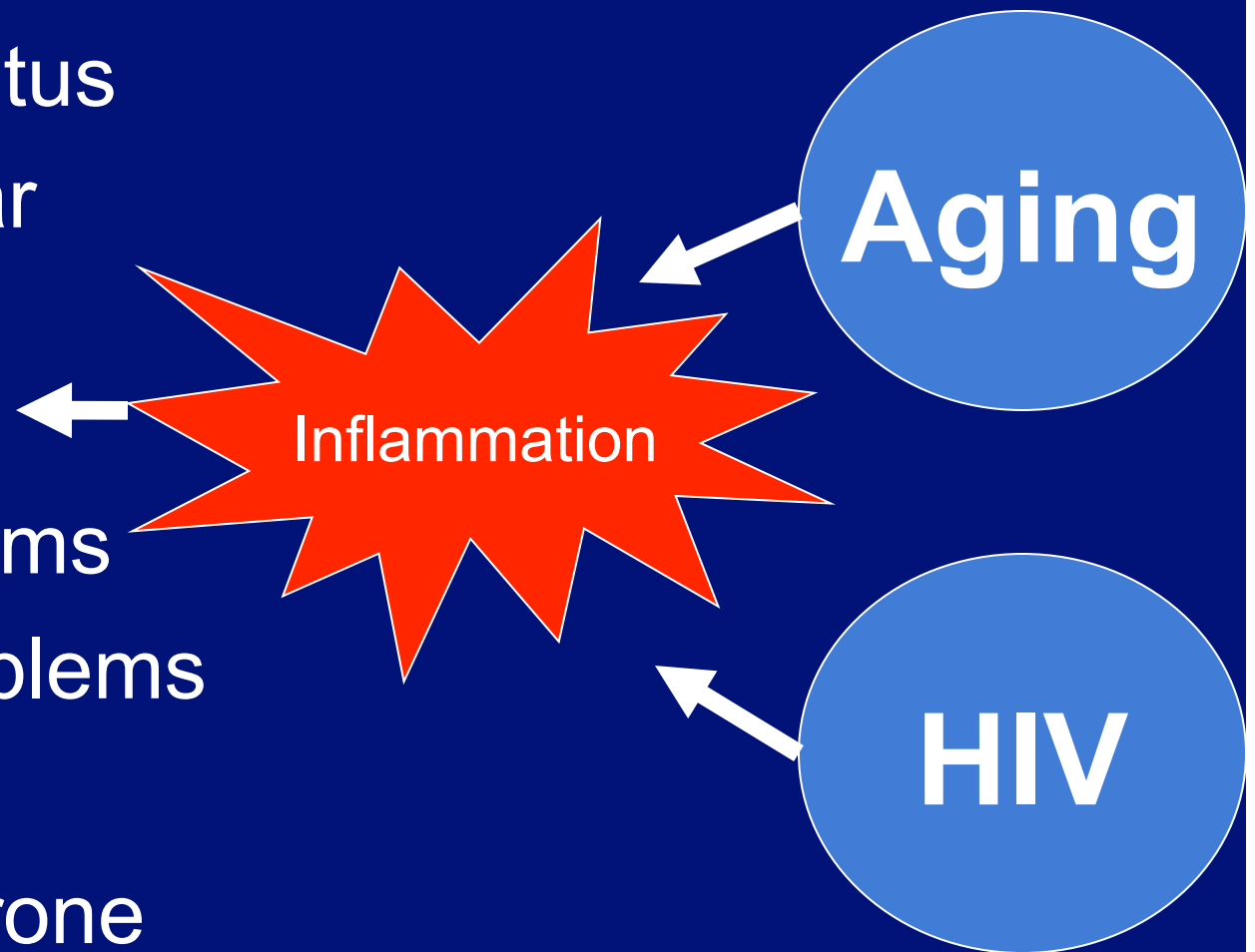
# Solutions

- There are no solutions because
- There is no ongoing dialogue
- Advocates & activists need to force the government & HIV leaders to begin discussions & forge solutions

- Diabetes
- Cardiovascular Disease
- Cancer
- Kidney Problems
- Cognitive Problems
- Osteoporosis
- Low Testosterone

# Important Role of Inflammation

- Diabetes Mellitus
- Cardiovascular Disease
- Cancer
- Kidney Problems
- Cognitive Problems
- Osteoporosis
- Low Testosterone





# Inflammation predicts disease in treated HIV infection, as it does in the general population

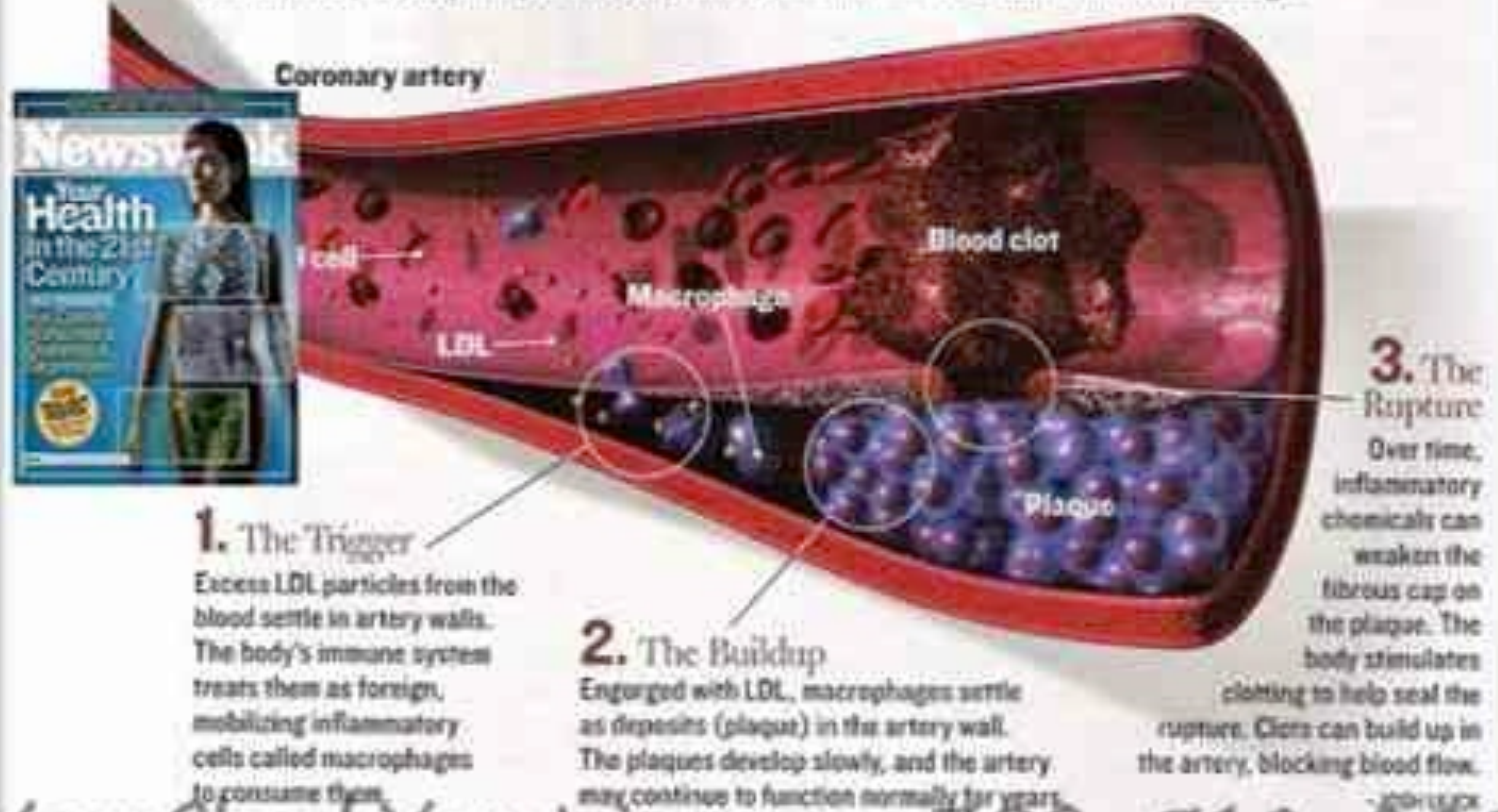
- Mortality (Kuller, PLoS Med, 2008, Sandler JID 2011, Tien JAIDS 2011)
- Cardiovascular Disease (Baker, CROI 2013)
- Lymphoma (Breen, Cancer Epi Bio Prev, 2010)
- Venous Thromboembolism (Musselwhite, AIDS, 2011)
- Type II Diabetes (Brown, Diabetes Care, 2010)
- Cognitive Dysfunction (Burdo AIDS 2012)
- Frailty (Erlandson, JID 2013)

Slide courtesy of Steve Deeks



## How Inflammation Causes Heart Disease

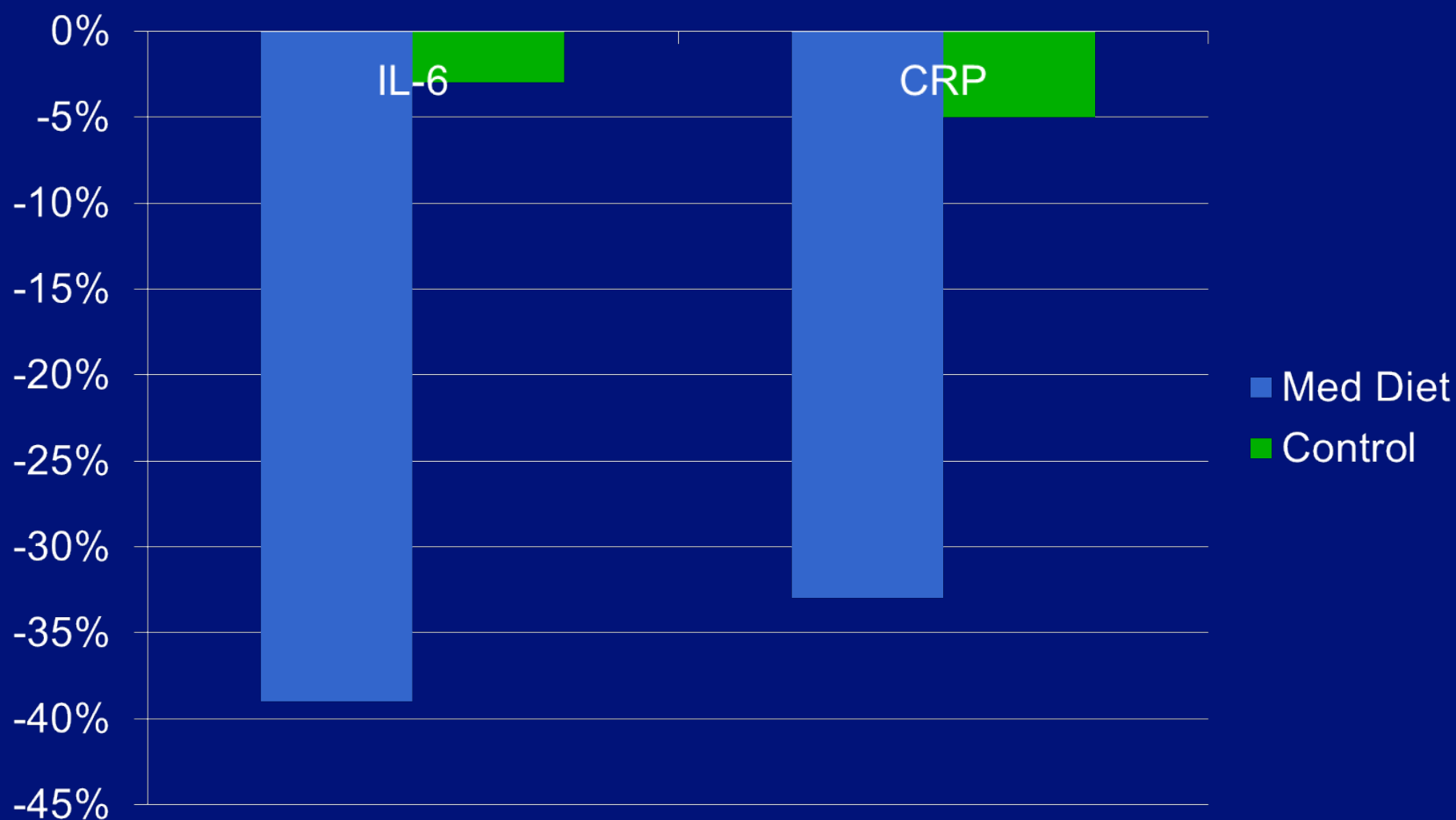
Doctors used to think that clogged arteries were caused by the passive buildup of bad cholesterol (LDL). As it turns out, the body's response to LDL, in the form of inflammation, causes most of the damage.



# How to Beat Inflammation

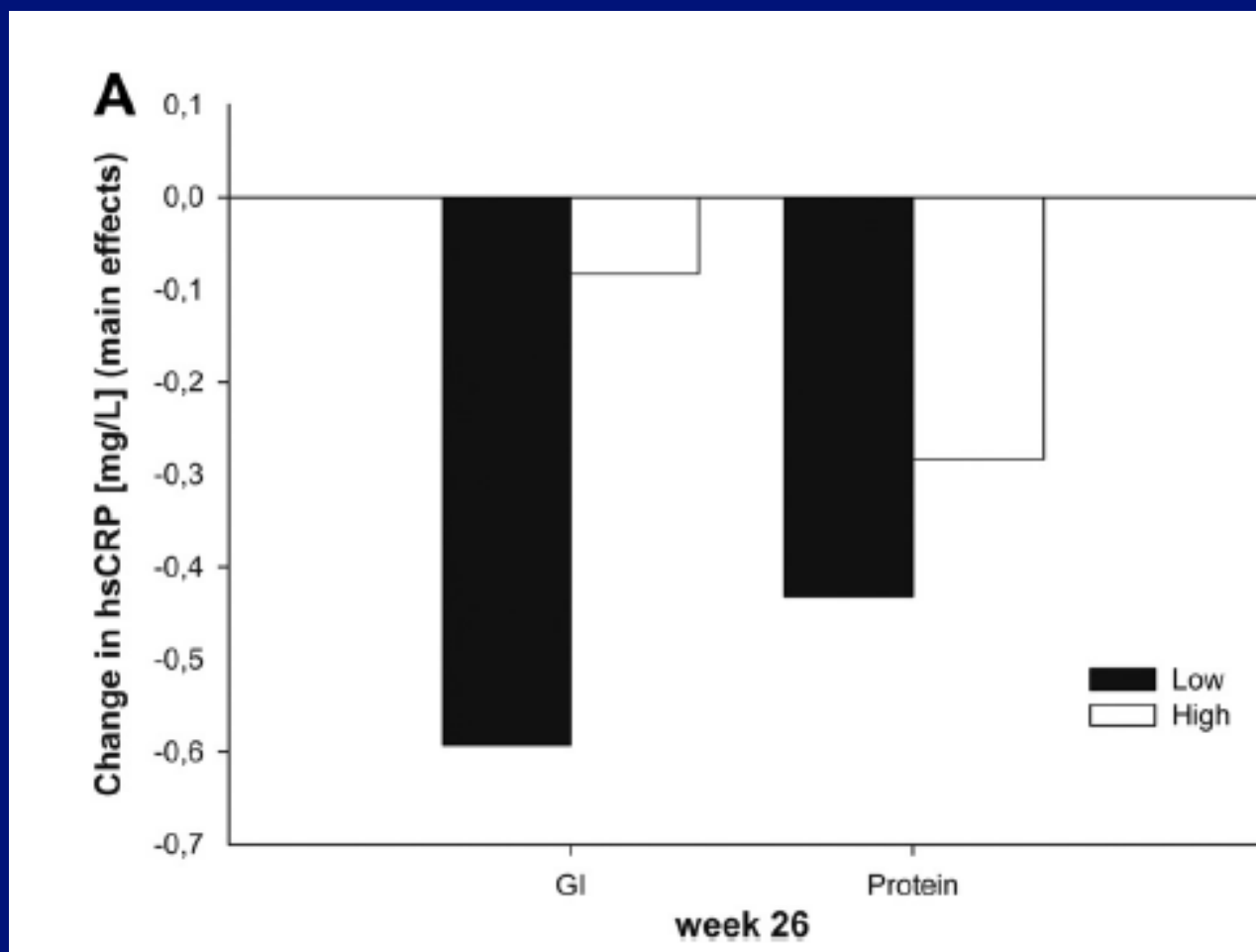
- Continue your HIV medications. Stay undetectable
- Stop smoking
- Maintain normal weight
- If overweight, lose at least 5-10% of body weight
- Exercise
- Have a healthy diet
- Cut down on alcohol, avoid drugs

# Effect of Mediterranean Diet on Inflammation

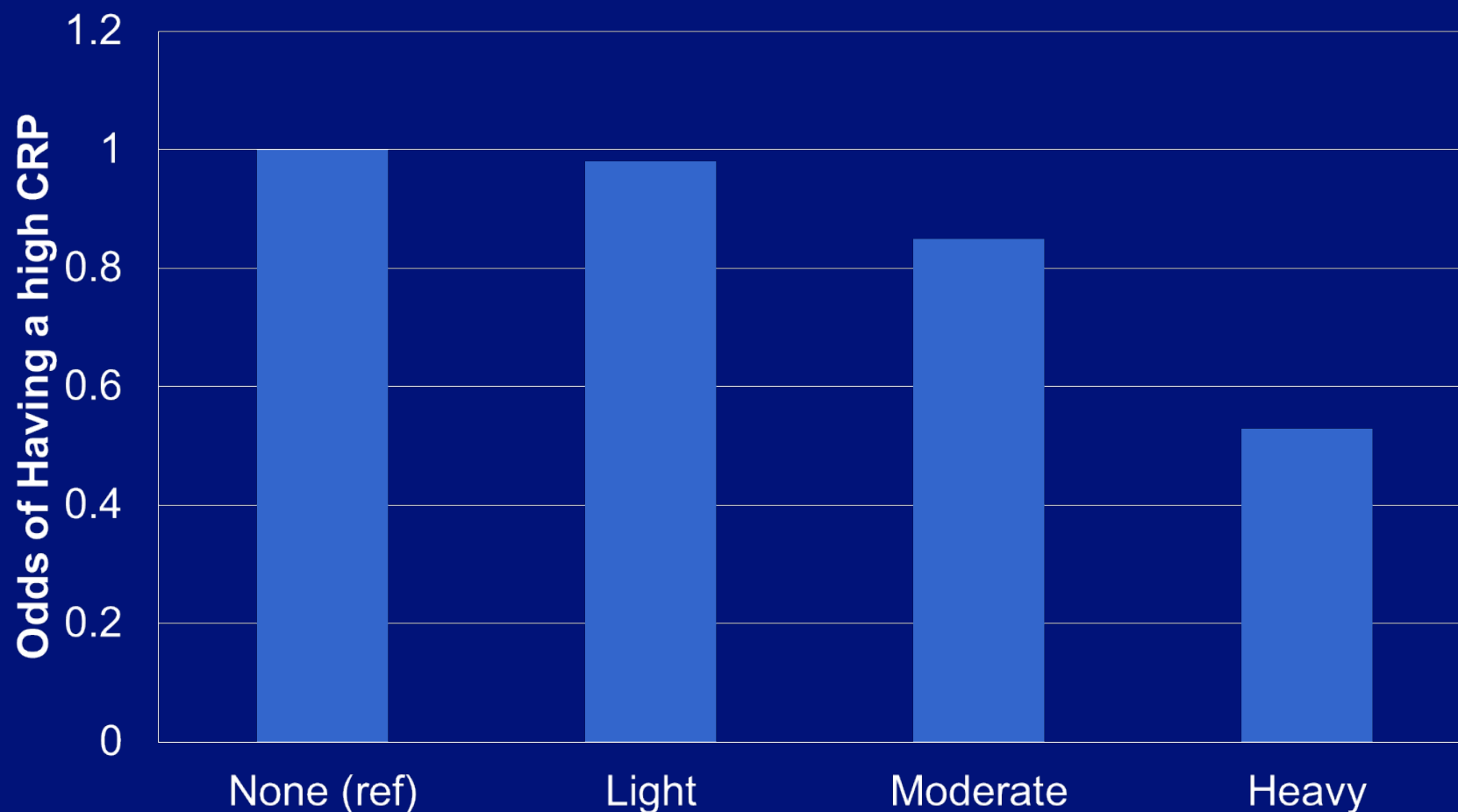


Esposito, JAMA, 2004

# Effect of Glycemic Index on Inflammation



# More Physical Activity is Associated with Less Inflammation



Adjusted for age, sex, ethnicity, education,  
work status, smoking status, HTN, BMI, HDL, ASA

Ford, Epidemiology, 2002