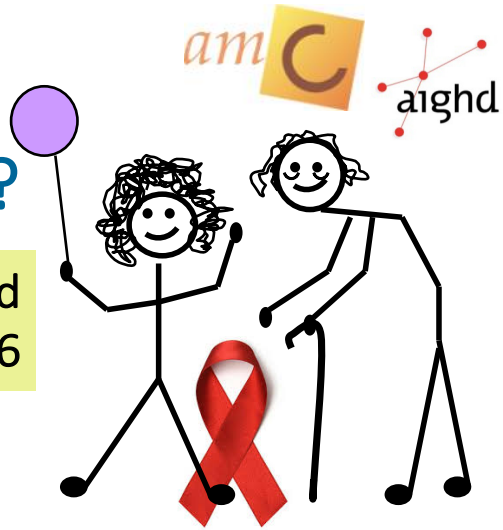
HIV and Ageing:

What does the evidence say?



UNAIDS Programme Coordinating Board
Geneva, 8 December 2016

The Washington Post

Health & Science

The graying of HIV: 1 in 6 new U.S. cases are people older than 50

Peter Reiss
Professor of Medicine
Academic Medical Center,
University of Amsterdam
Director HIV Monitoring Foundation

CATIE's bite-sized HIV and hepatitis C news bulletins.

Older people with HIV face different long-term health challenges

23 March 2016

HIV infection prematurely ages huma by an average of 5 years

CELL PRESS

SHARE

Thanks to combination antiretroviral therapy, many people with HIV can be expected t decades after being infected. Yet doctors have observed that these patients often sho of premature aging. Now a study published April 21 in *Molecular Cell* has applied a higl accurate biomarker to measure just how much HIV infection ages people at the biolog level--an average of almost 5 years.

Managing non-communicable diseases among people living with HIV

PRINT

BBC NEWS

Sign in

Health

Older HIV patients 'need more support'

By Nick Triggle
Health correspondent, BBC News

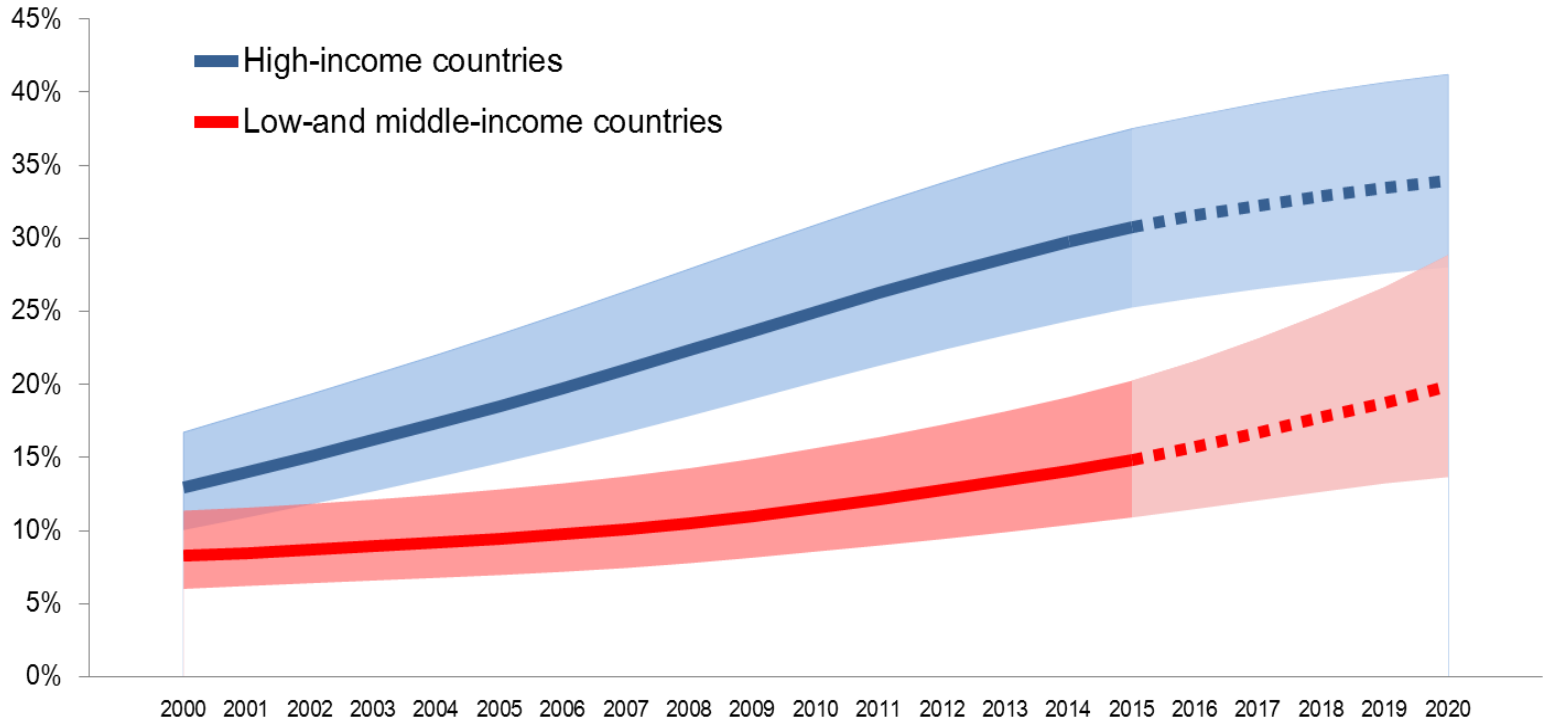
Treated HIV and Life Expectancy: Mind the Gap

- Access to antiretroviral therapy has extended the lives of millions of people worldwide[1]
- The improvement in longevity is greatest for those who start ART earlier
- Life expectancy for treated HIV approaches the general population: ~ 10 year gap[2-5]

Slide courtesy of Judith Currier

1. Walensky R, J Infect Dis. 2006 Jul 1;194(1):11-9
2. Lancet. 2008 Jul 26;372(9635):293-9
3. Losina. Clin Infect Dis. 2009 Nov 15;49(10):1570-8
4. Van Sighem AIDS 2010 Jun 19;24(10):1527-35
5. Lewden. Int J Epidemiol. 2012 Apr;41(2):433-45

Figure 1: Among adults (15+) living with HIV, the percent who are aged 50 and over, high-income countries and low-and middle-income countries, 2000–2020

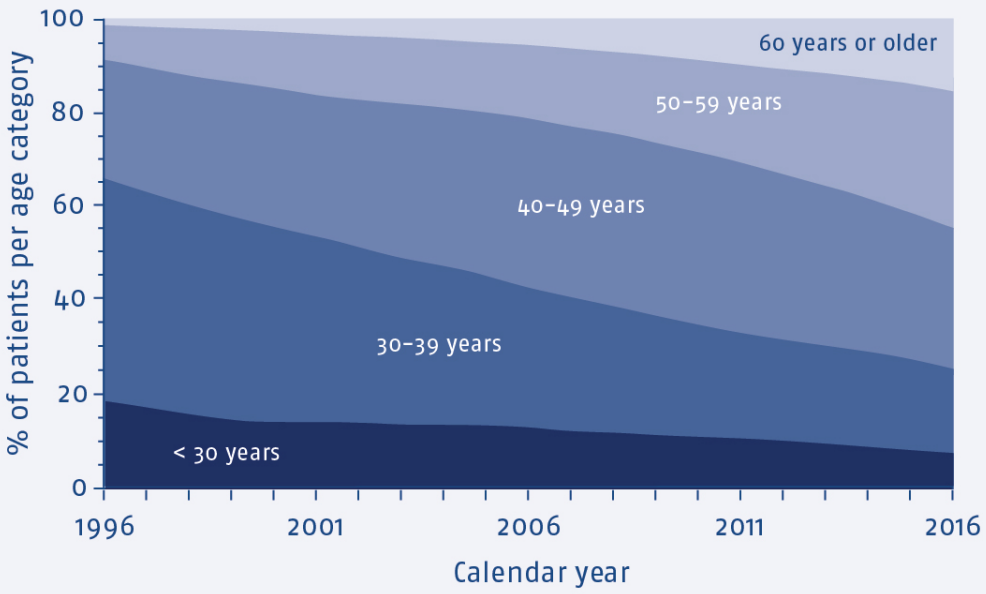


Source: UNAIDS 2016 Estimates. Projections 2016-2020 are based on an assumed scale-up of ART to reach 81% coverage by 2020.
Note: Based on 2015 high-income and low-and-middle-income countries definitions.

Population of patients in care in the Netherlands increasingly ages

The Graying of AIDS

Of the almost 19000 HIV patients in care in the Netherlands



2015:
median age 48

45 % 50-plus

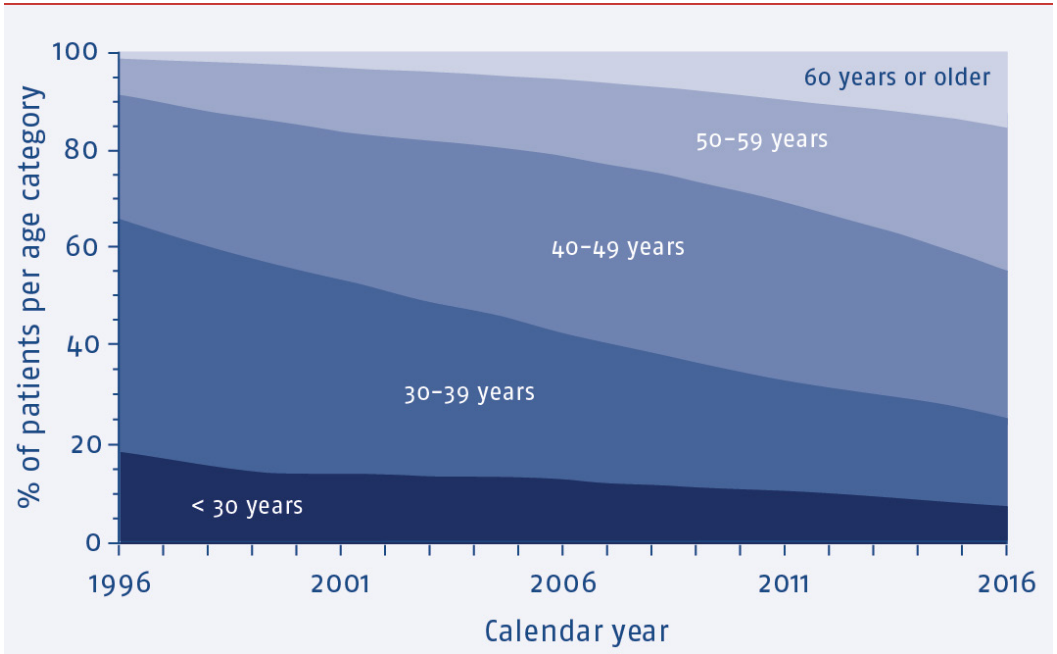
15 % 60-plus

HIV Monitoring

Mounting impression that chronic non-communicable co-morbidities seemed more common in people with HIV, possibly occurring at relatively young age, including in those on suppressive antiviral treatment

Population of patients in care in the Netherlands is will age further…

Increasing age of the HIV-positive population in care, now…

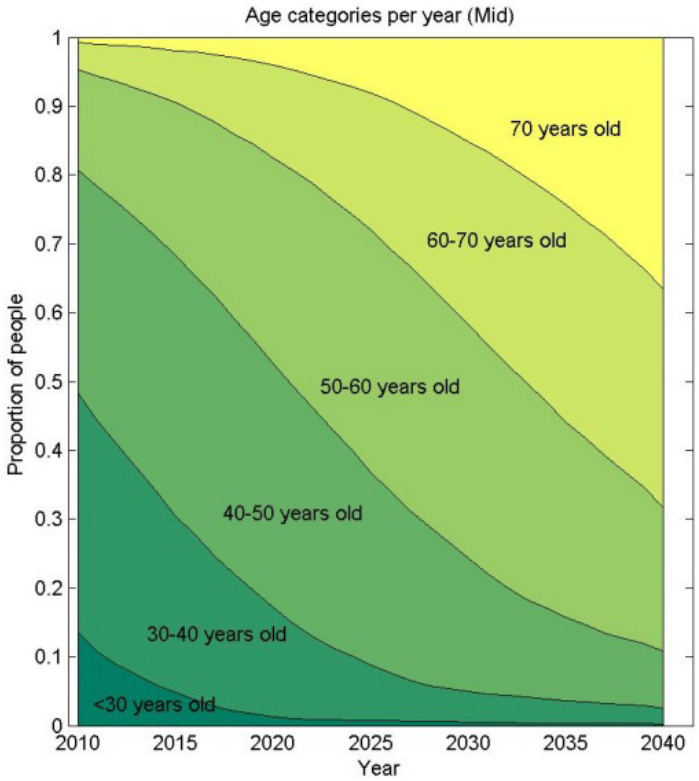


Stichting HIV Monitoring; Monitoring Report 2016

2015:
45% > 50 yrs

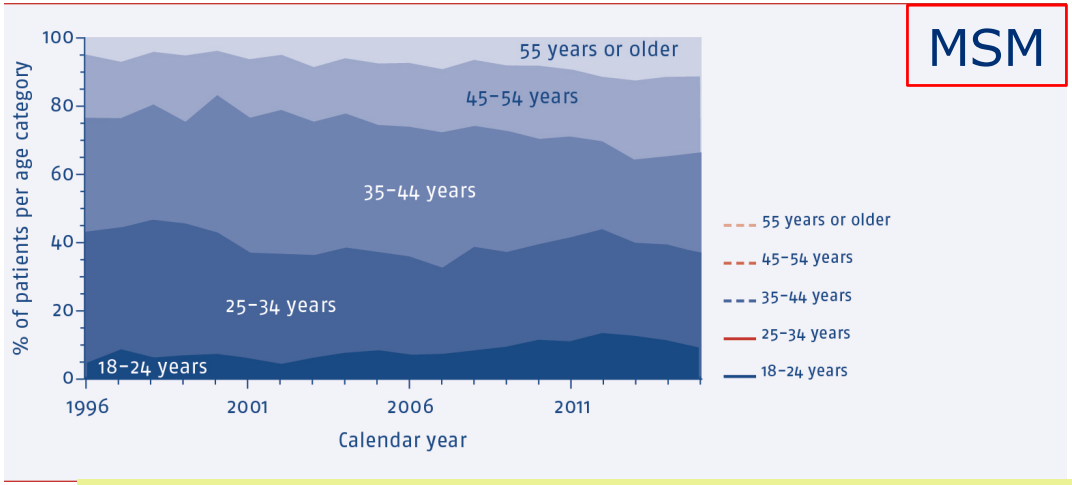
2030:
75% > 50 yrs

… and in the future



Smit et al, Lancet ID 2015

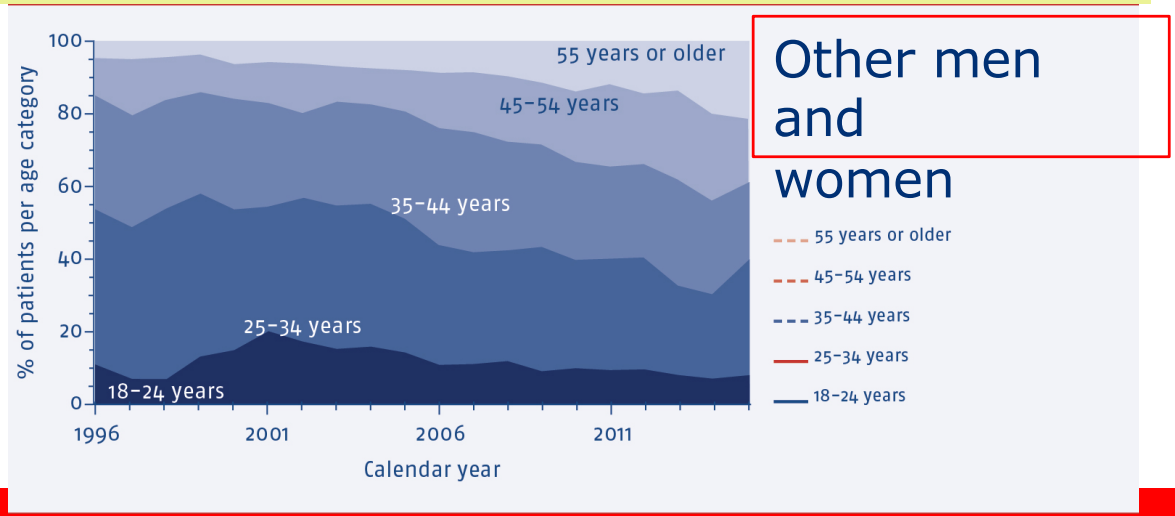
Increase in proportion of people who are diagnosed HIV-positive at older age



About 25% of newly diagnosed persons in 2015 were > 50 yrs:

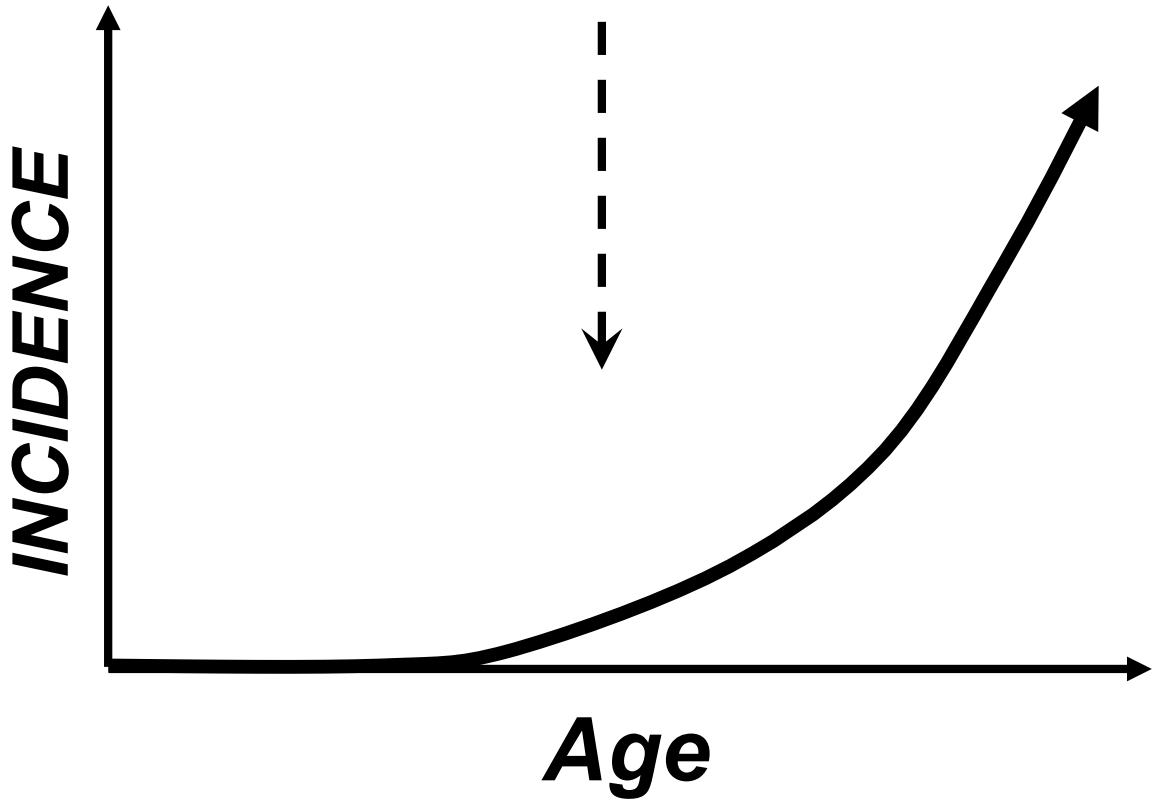
More often the case for Dutch MSM & other Dutch men and women than for those from other regions of origin than the Netherlands

Late presentation more common in those who enter care and areover 45 yrs of age



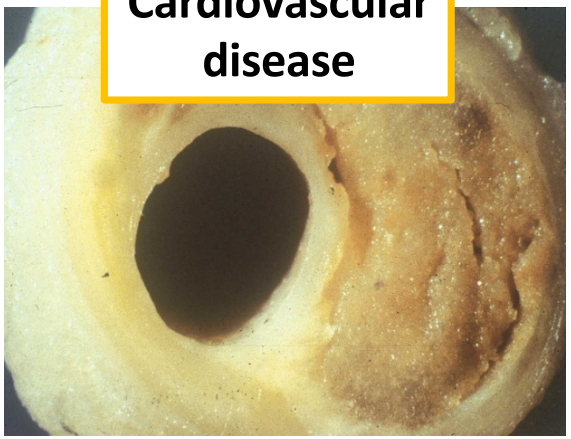
HIV Monitoring

Age-related chronic diseases rise exponentially with age



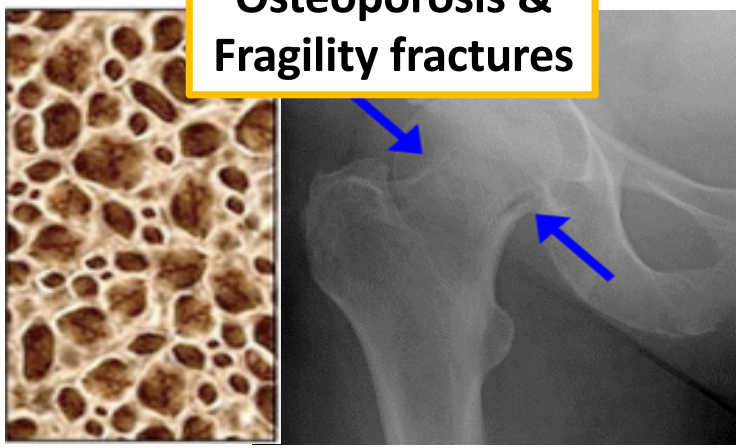
Age is the largest single risk factor

Cardiovascular disease

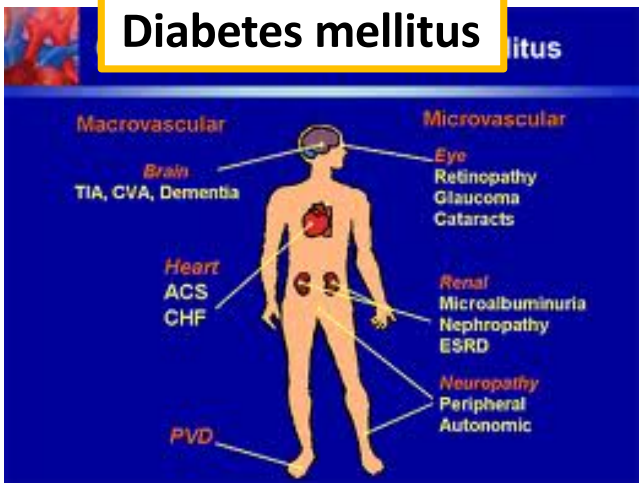


Non-AIDS cancers

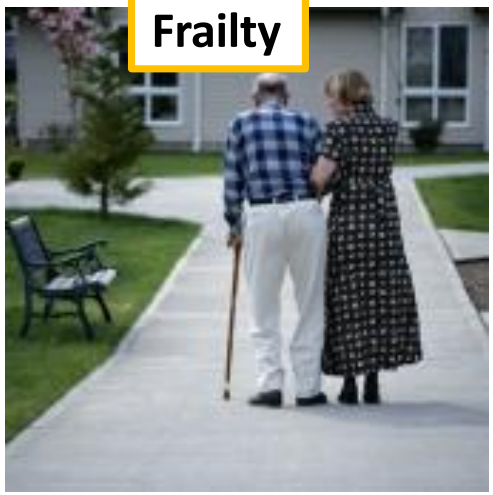
Osteoporosis & Fragility fractures



Diabetes mellitus



Frailty

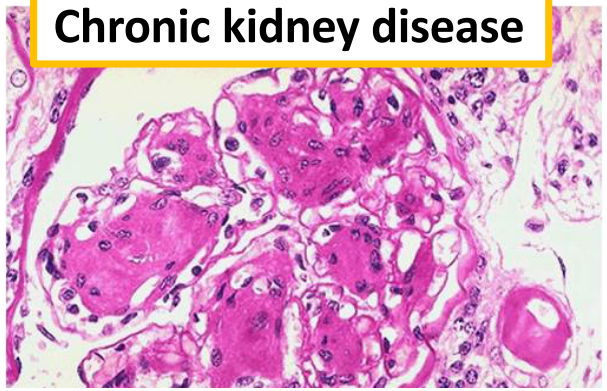


Neurocognitive decline

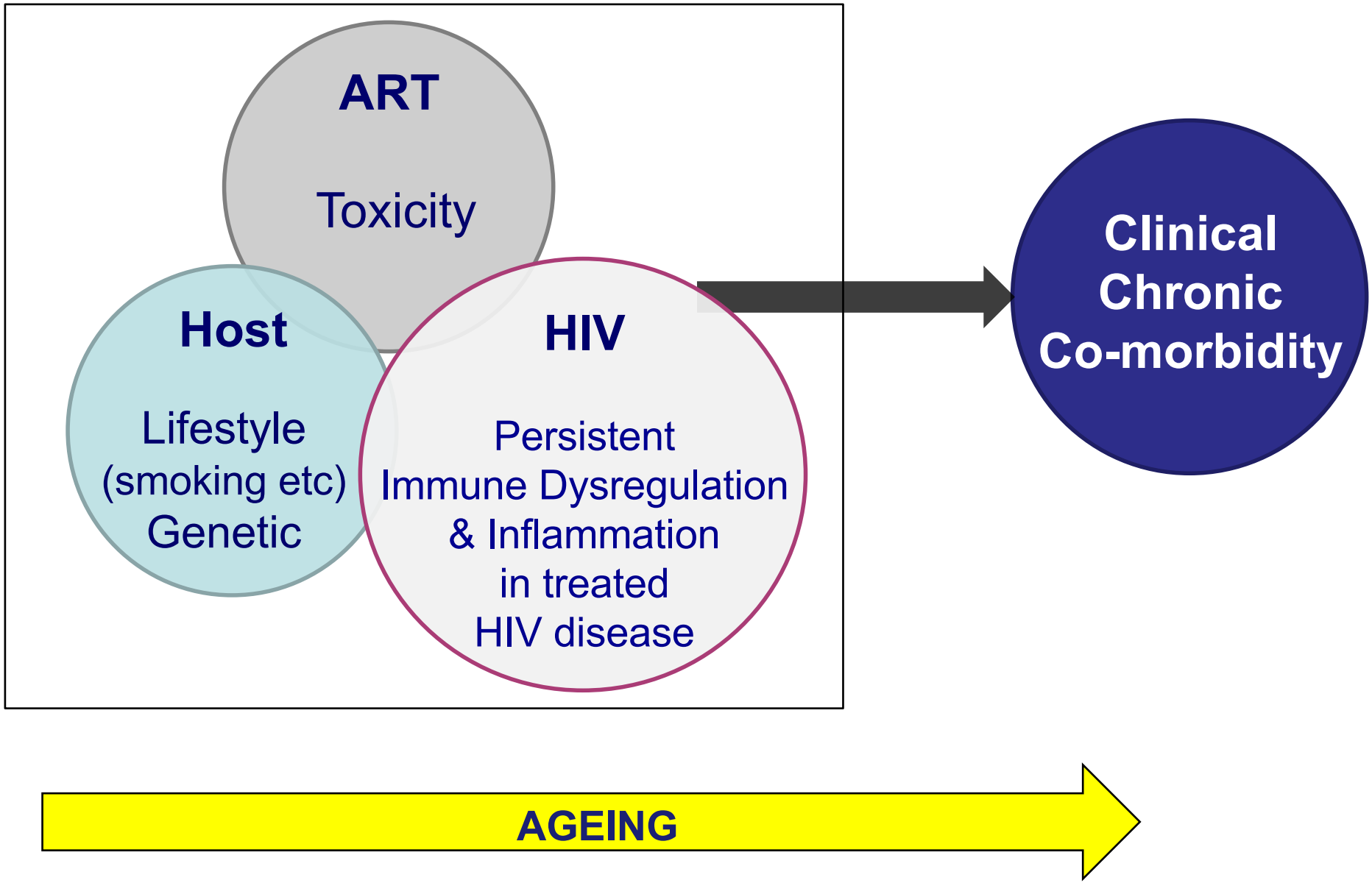
Chronic liver disease

Chronic obstructive pulmonary disease

Chronic kidney disease



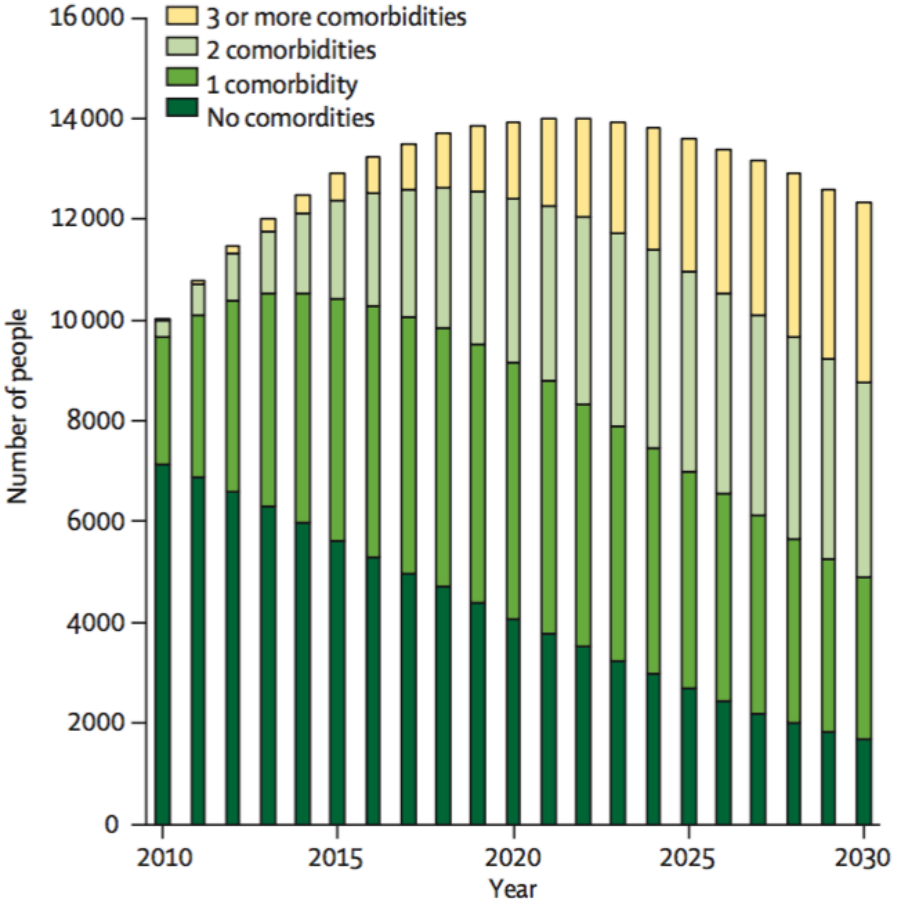
Chronic disease drivers (known and suspected) **acting in concert in HIV**



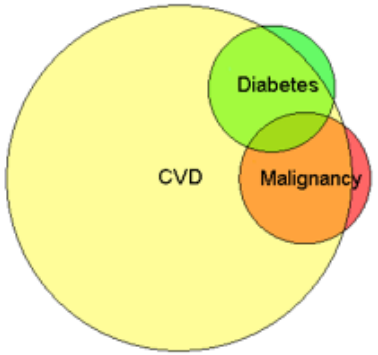
Deeks SG, *et al*. *BMJ* 2009; **338**:a3172

Higher incidence of non-AIDS comorbidities among HIV-positive patients in the Netherlands

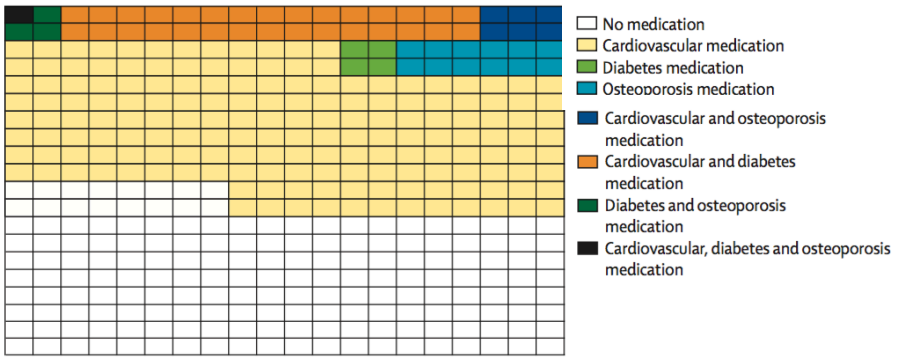
… more multiple co-morbidities are predicted in the future



Smit et al, Lancet ID 2015

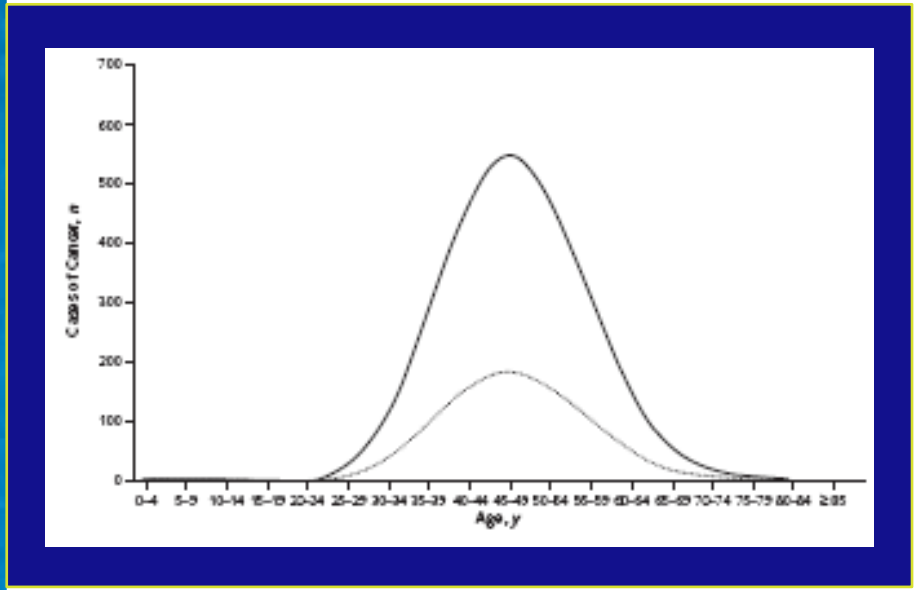


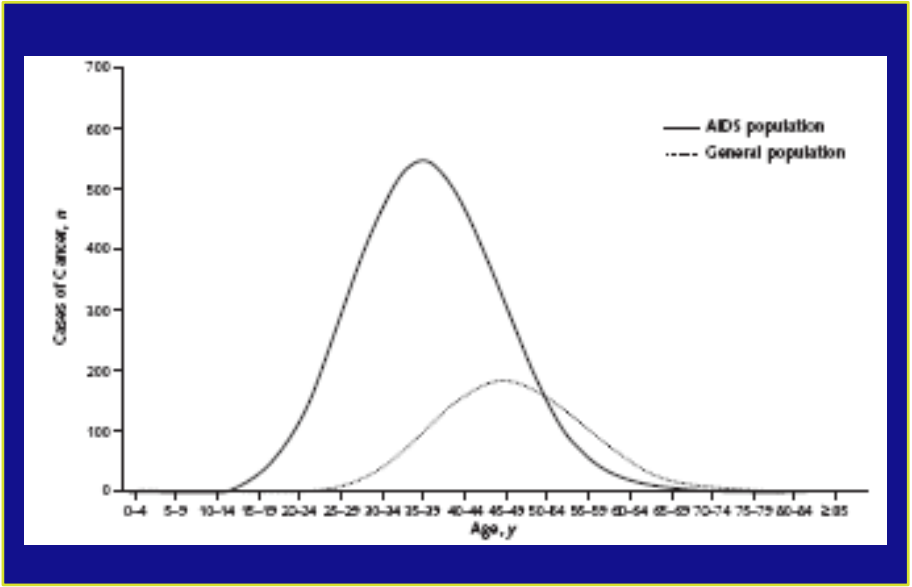
Mostly CVD, diabetes and malignancies…



… with CVD medication contributing greatest burden

Are age-related chronic conditions which contribute to the persistent survival gap just Accentuated or also Accelerated in HIV?





Accentuated risk
Condition occurs at the same age but more often in those with HIV than among HIV-uninfected comparators

Accentuated & Accelerated
Condition occurs more often and at younger age among those with HIV than among HIV-uninfected comparators

Shiels MS. Age at Cancer Diagnosis among persons with AIDS in the US. Ann Intern Med 2010:153:452-460

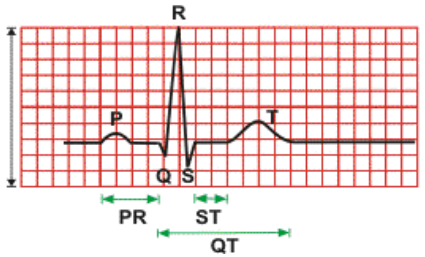
Prospective comparative observational cohort study with standardized screening for comorbidities, organ dysfunction and risk factors

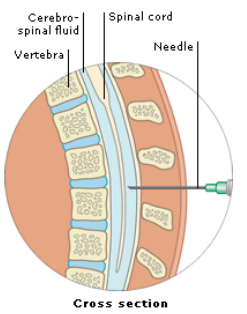
agehiv cohort study

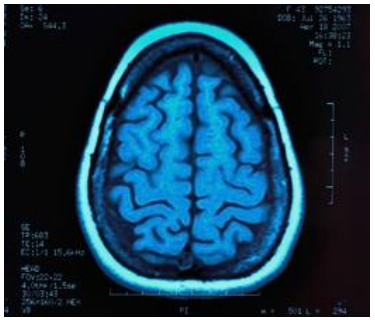
COBRA
CO-MORBIDITY IN RELATION TO AIDS

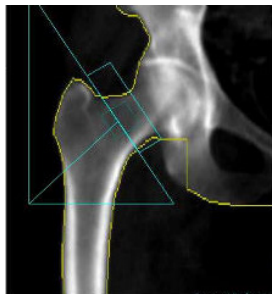
POPPY
Pharmacokinetic and clinical observations in people over 50

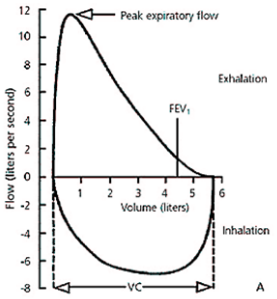
BLUE GREEN YELLOW
PINK RED ORANGE
GREY BLACK PURPLE
TAN WHITE BROWN

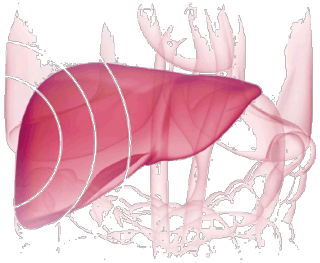








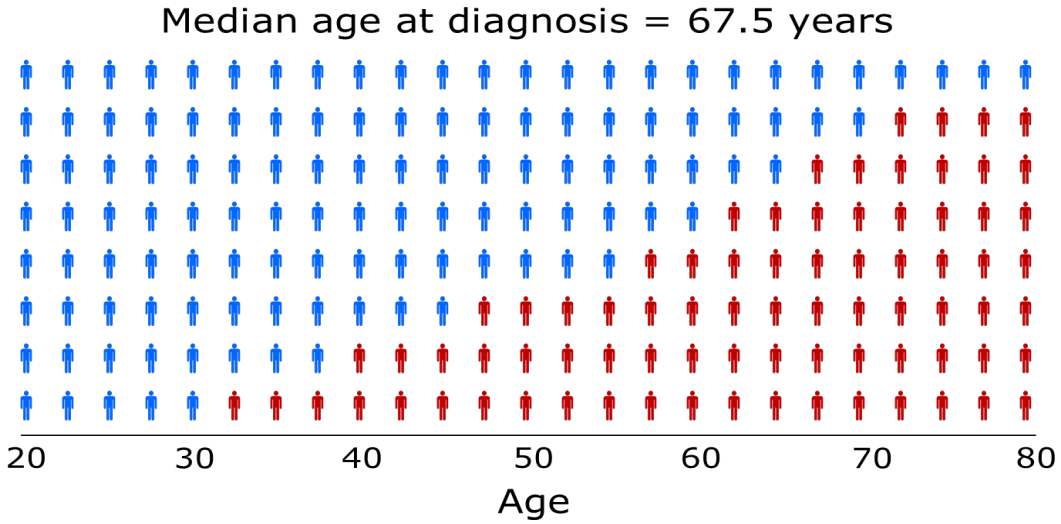




L P E D
P E C F D
E D F C Z P

Major strength of the AGEhIV & COBRA cohorts: a highly comparable control group with very similar age distribution & solid data on confounders

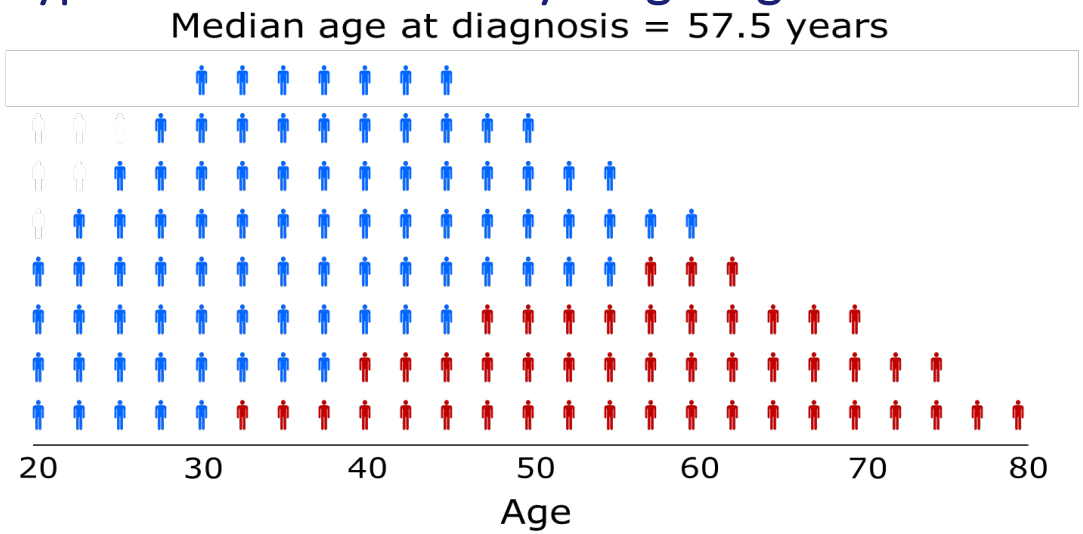
Typical general population cohort with unrestricted age range from 20 to 80 years



Without appropriate adjustment for differences in age distribution, one could wrongly conclude HIV to be associated with comorbidy occurring at younger age

Attributing risk to being HIV-pos needs to account for other factors which may confound the association with comorbidity incidence (gender, ethnic origin, behavioural, lifestyle and viral (coinfections) factors)

Typical HIV cohort with younger age distribution



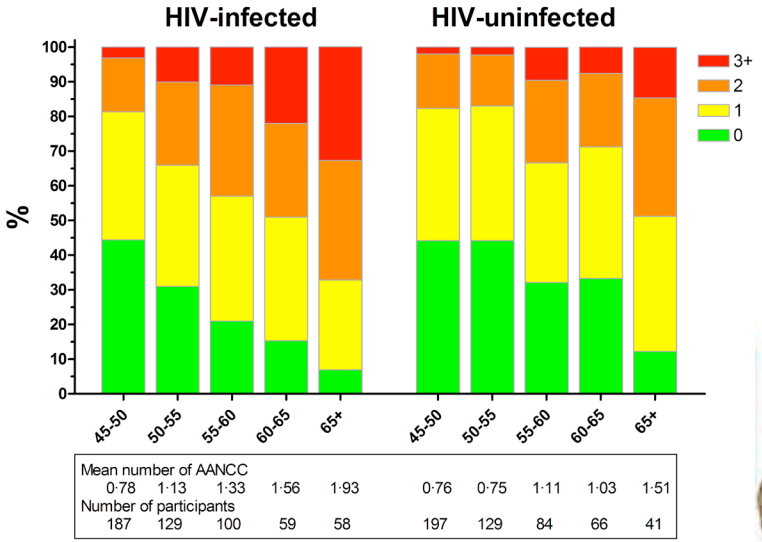
Red figures: individuals in the cohort who have the comorbidity at their age of diagnosis

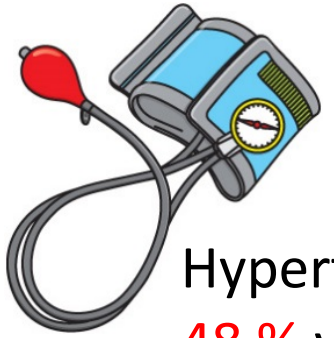
Blue figures: individuals in the cohort who remain free of the comorbidity

Sabin, C., Reiss, P (in press)

Comorbidity burden is higher among HIV+ patients

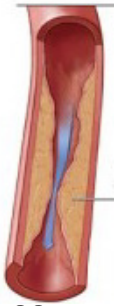
More multimorbidity





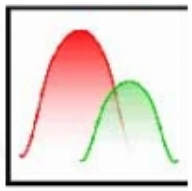
Cardiovascular disease

10 % vs. 5 %



Hypertension

48 % vs. 36 %

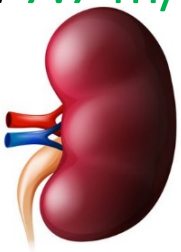


Arterial stiffness

7.9 vs. 7.7 m/s

CKD

26 % vs. 7 %

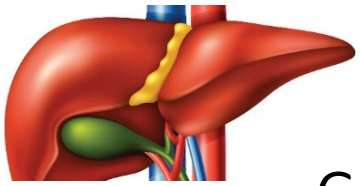


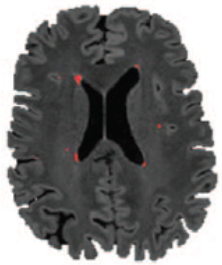
Low bone mineral density

13 % vs. 7 %

Significant liver fibrosis

38.2 % vs. 29.5 %





WM hyperintensities

1.0 vs. 0.7 mL

Cognitive impairment

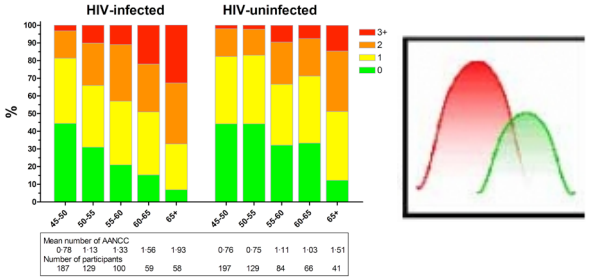
17 % vs. 5 %

GMV 659 vs. 673 mL

FA 0.477 vs. 0.484

Multiple (HIV-specific) factors contribute to a higher burden of (individual) comorbidities

32 % vs. 25 %

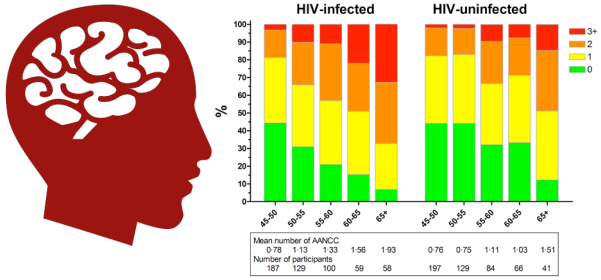


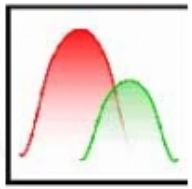
WHR

84 % vs. 62 %

Overweight

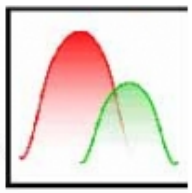
41 % vs. 43%



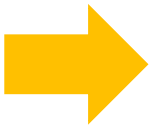


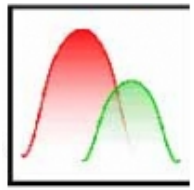
Underweight

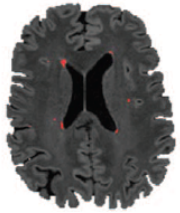
8 % vs. 3%

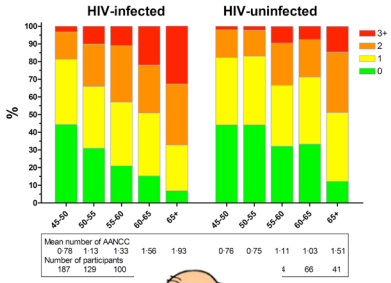


Multiple (HIV-specific) factors contribute to a higher burden of (individual) comorbidities

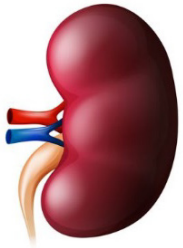


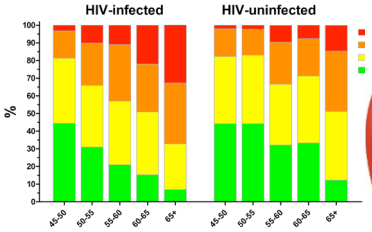


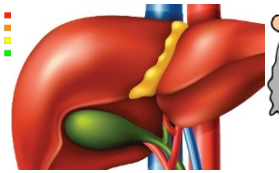




HCV





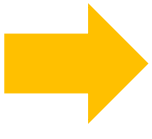


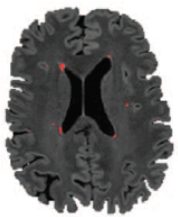
(RTV) (TDF) (d4T) (RTV) (ddI) (PIs)

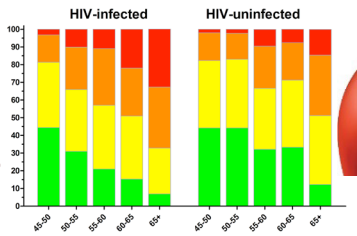
(nadir)

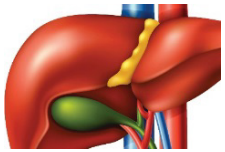
180 cells/µL

31%

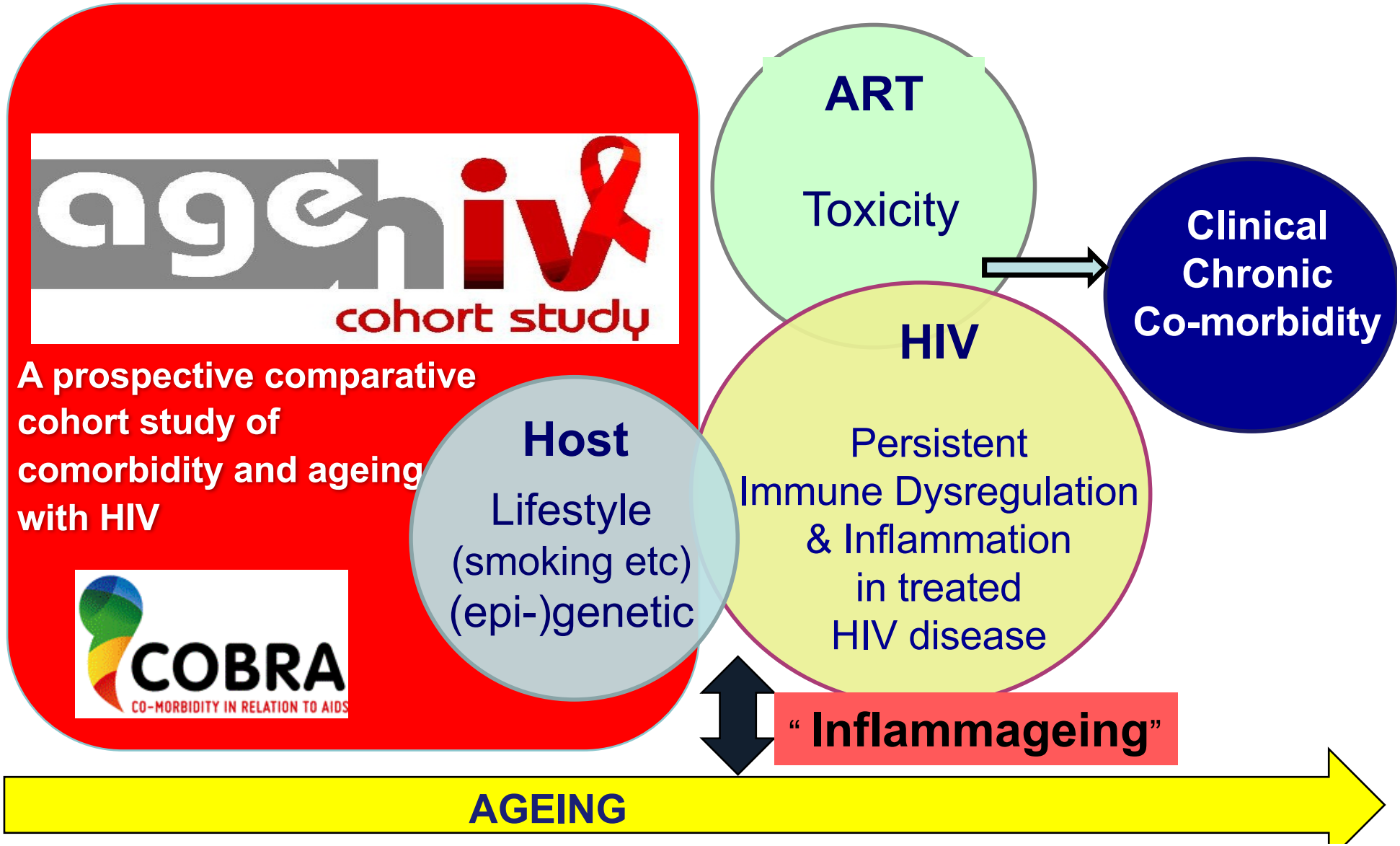








May HIV and Antiretroviral Therapy Interact with the Biology of Ageing?



Summary and lessons learned so far…

- Comorbidity burden consistently increased in HIV
- Traditional (lifestyle-related) factors are key drivers. Additional risk from HIV/ART for some but not all co-morbidities
- Longer time spent at low CD4 counts, rather than longer overall exposure to ART, generally contributes to greater risk
- Persistent inflammation and innate immune activation contributes towards risk for some but not all co-morbidities
- Whether comorbidity onset and/or ageing is accelerated in people with treated HIV infection remains to be determined
- Promotion of healthy lifestyle and management of traditional risk are key. Early HIV diagnosis and treatment reduces risk

Thank you for your attention

"A good head and a good heart are always a formidable combination"

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