HIV and Ageing: What does the evidence say?

The Washington Post
Health & Science

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

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Older people with HIV face different long-term health challenges

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HIV infection prematurely ages humans by an average of 5 years

Managing non-communicable diseases among people living with HIV

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

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
- The improvement in longevity is greatest for those who start ART earlier
- Life expectancy for treated HIV approaches the general population: ~ 10 year gap

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.
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...

2015:
45% > 50 yrs

2030:
75% > 50 yrs

... and in the future

Stichting HIV Monitoring; Monitoring Report 2016

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 are over 45 yrs of age
Age-related chronic diseases rise exponentially with age

Age is the largest single risk factor
Chronic disease drivers (known and suspected) acting in concert in HIV

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

... more multiple co-morbidities are predicted in the future

Mostly CVD, diabetes and malignancies...

... with CVD medication contributing greatest burden

Smit et al, Lancet ID 2015
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

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

Median age at diagnosis = 67.5 years

Without appropriate adjustment for differences in age distribution, one could wrongly conclude HIV to be associated with comorbidity 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

Median age at diagnosis = 57.5 years

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%
- Significant liver fibrosis: 38.2% vs. 29.5%
- CKD: 26% vs. 7%
- Arterial stiffness: 7.9 vs. 7.7 m/s
- Low bone mineral density: 13% vs. 7%
- WM hyperintensities: 1.0 vs. 0.7 mL
- GMV: 659 vs. 673 mL
- FA: 0.477 vs. 0.484
- Cognitive impairment: 17% vs. 5%
Multiple (HIV-specific) factors contribute to a higher burden of (individual) comorbidities

- **WHR**
  - 32% vs. 25%
  - 84% vs. 62%
- **Overweight**
  - 41% vs. 43%
- **Underweight**
  - 8% vs. 3%
Multiple (HIV-specific) factors contribute to a higher burden of (individual) comorbidities

(nadir) 180 cells/μL 31%
May HIV and Antiretroviral Therapy Interact with the Biology of Ageing?

A prospective comparative cohort study of comorbidity and ageing with HIV

Host
Lifestyle (smoking etc) (epi-)genetic

HIV
Persistent Immune Dysregulation & Inflammation in treated HIV disease

ART
Toxicity

Clinical Chronic Co-morbidity

“Inflammageing”

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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