FUNDACIÓ LLUITA CONTRA LA SIDA

HIV WORKSHOP
COMPREHENSIVE MANAGEMENT OF AGING IN HIV-INFECTED SUBJECTS

Increased and accelerated age-related complications in HIV-infected patients

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THE CHANGING SPECTRUM OF HIV CARE

1996 2005

Pre-HAART

Early-HAART

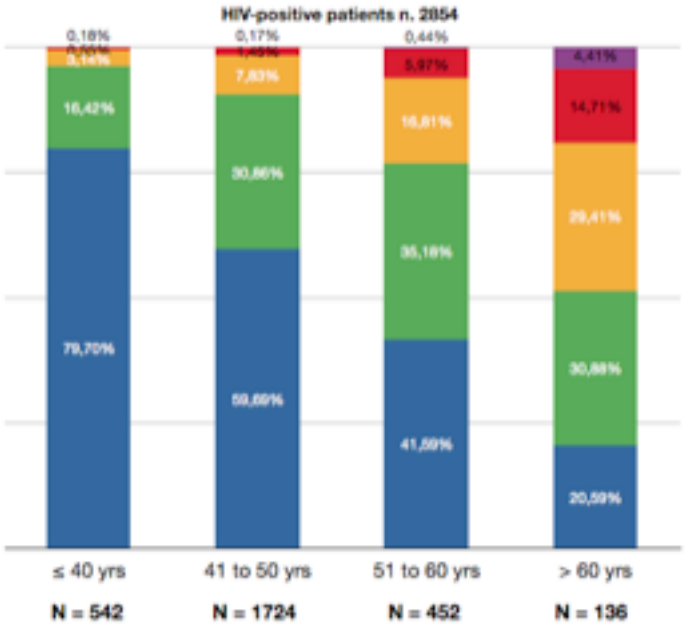
Late-HAART

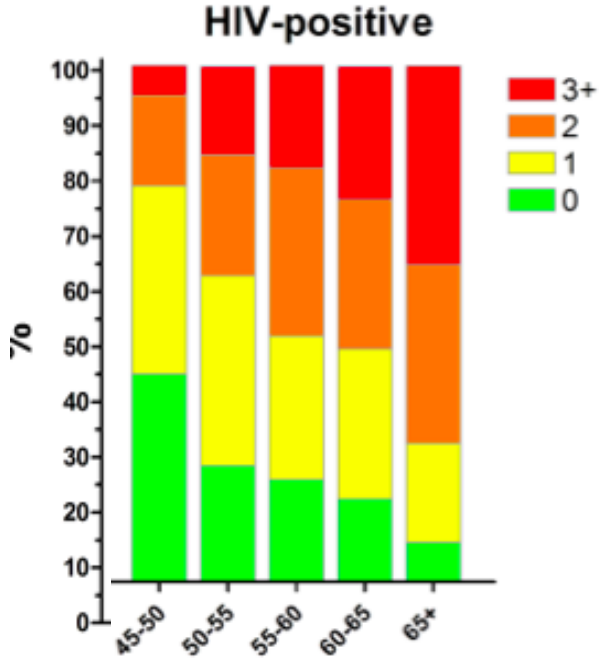
Opportunistic infections
AIDS cancers

Lipodystrophy
Co-morbidities

Multimorbidity
Frailty & Disability

High prevalence of Co-morbidities (HANA) and Polypatholiogy in HIV infected aging cohorts





In Modena cohort Pp on the 50's was 20% in the AgeHIV cohort was 35%
Pp prevalence was higher in cases than controls in all age strata

Guaraldi G, CID 2011 Dec;53(11):1120-6

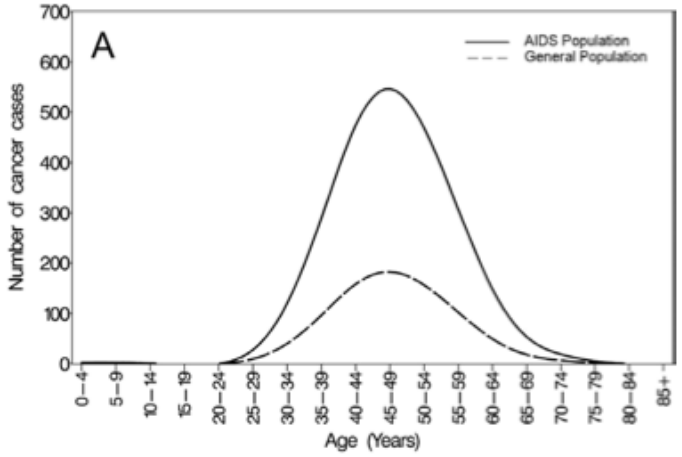
Schouten J, XIX International AIDS Conference

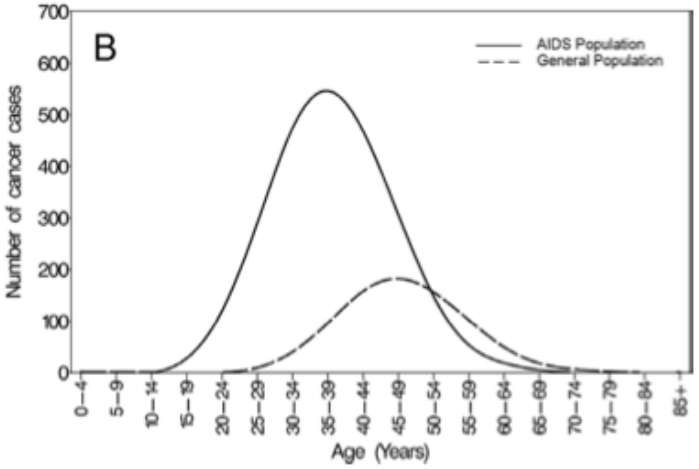
Journals of Gerontology: MEDICAL SCIENCES
Cite journal as: J Gerontol A Biol Sci Med Sci
doi:10.1093/gerona/glt168

Review Article

Is HIV a Model of Accelerated or Accentuated Aging?

Sophia Pathai,[1,*] Hendren Bajillan,[2,*] Alan L. Landay,[3,4] and Kevin P. High[5]

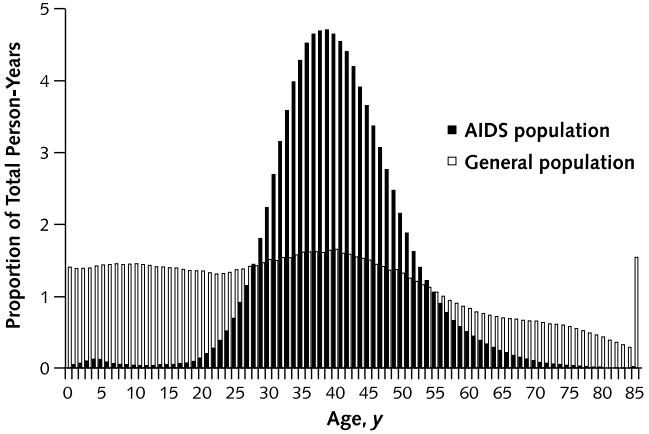




Accentuated Aging: cancer (and **geriatric syndroms**) occurs at the same ages but more often among HIV-infected participants than among HIV-uninfected comparators.
This configure a **Premature aging process.**

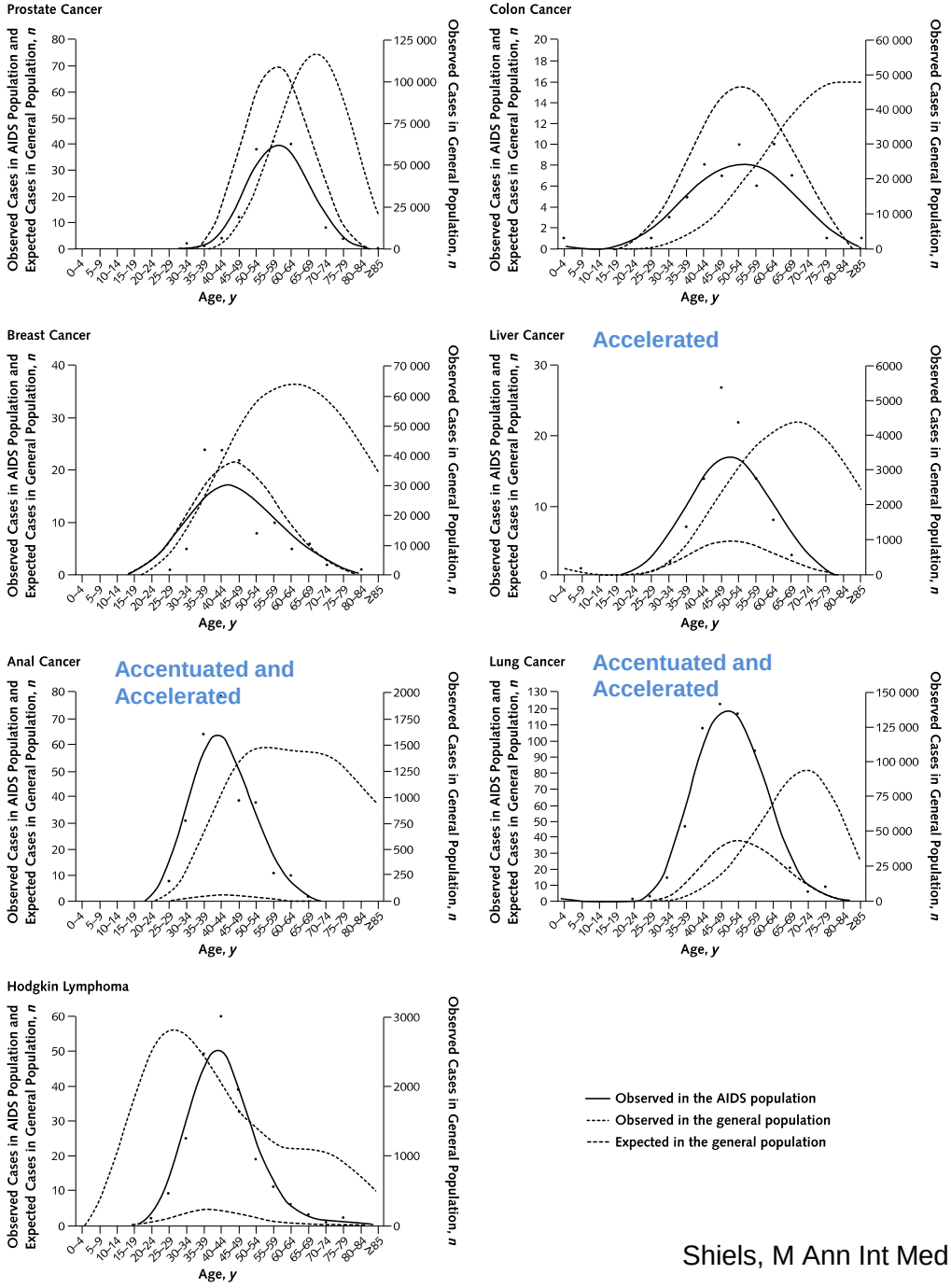
Accelerated Aging and accentuated aging**:** cancer (and **geriatric syndroms**) occurs earlier among HIV-infected participants compared with HIV-uninfected comparators and there are more cancer events.

Age at Cancer Diagnosis Among Persons With AIDS in the United States



Age distribution in the AIDS and general populations

Standardized incidence ratios (SIRs), were calculated as the number of observed cases in the AIDS population divided by the number of expected cases in the general population, adjusted for the underlying population structures.



Shiels, M Ann Int Med 2010

Potential covariates and Confounders

Demographics
Age, gender, ethnicity, yrs education, socio-economic, un/employment, etc.

NeuroPsych
HAND, dementia, depression, disposition/mood, substance ab/use, etc

Medical-Physion
Other meds, cardiometabolic risk, hepatorenal status, cancer BMD, lat/lean, endocrine and inflammtory markers, lifestyle, tobacco, rec. drugs, diet, physiscal inactivity, ADL, IADL, etc

HIV Related
Yrs HIV, AIDS dx, HIV med compliance-complication, CD4, plasma and CSF viremia, immune activation, co-infections, chronic inflammation, etc

Social Vulnerability aspects
Poverty, food security, Access to care, social justice, etc.

alive AIDS Linked to the IntraVenous Experience

WIHS Women's Interagency HIV Study

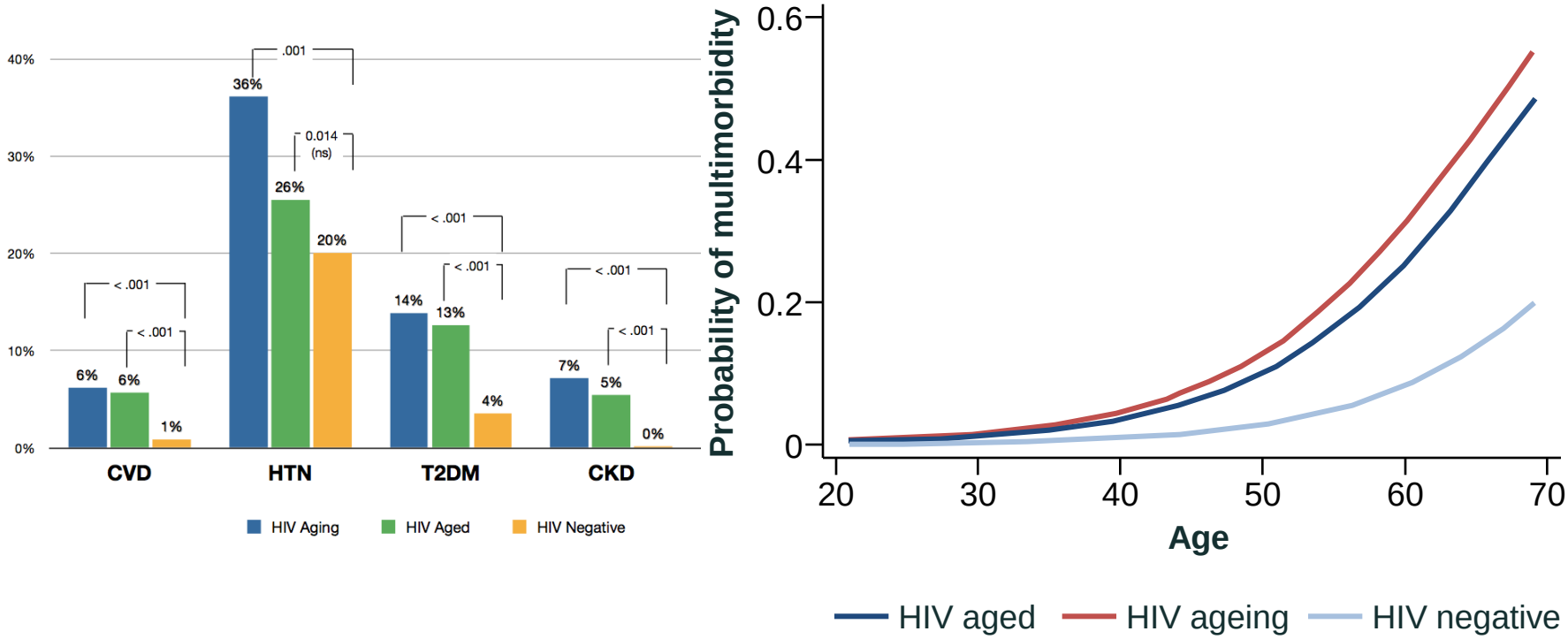
MULTICENTER AIDS COHORT STUDY MACS

SWISS HIV COHORT STUDY CoLaus

'Pharmacokinetic and Clinical Observations in People over Fifty' POPPY UK and Ireland

agehiv cohort study The Netherlands

Aging vs aged patients: Prevalence and probability for multimorbidities increases with HIV duration

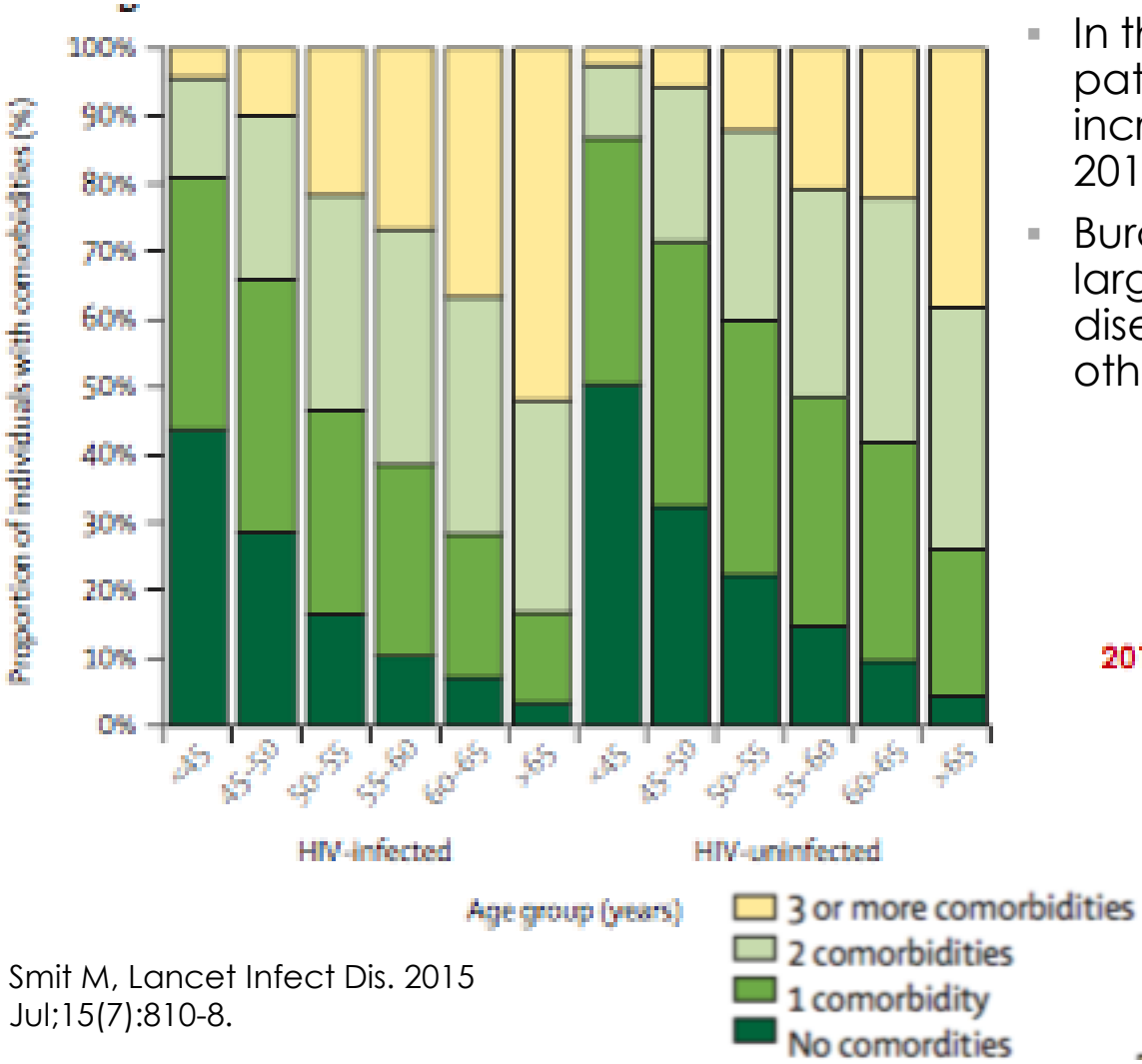


At any age, long-term infected people (ageing patients) had a 5-fold accentuated risk of multimorbidity than HIV-negative controls, while more recently infected people (aged patients) had an intermediate risk compared with the control group

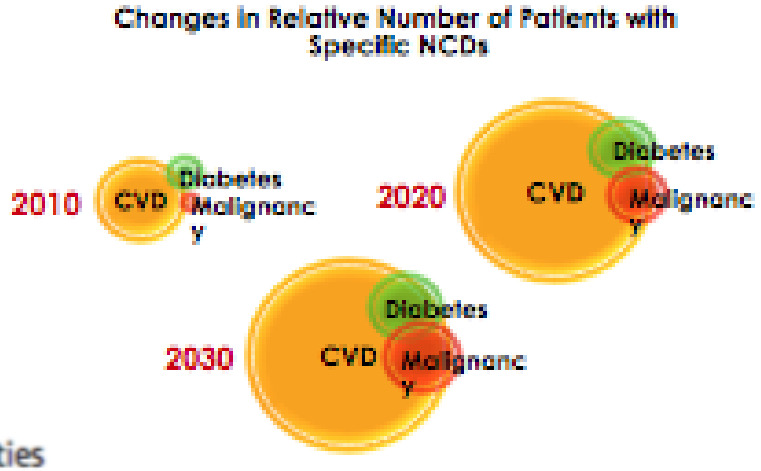
Guaraldi G, et alPLoS One. 2015 Apr 13;10(4):e0118531

Future challenges for clinical care of an ageing population infected with HIV: a modelling study

Mikaela Smit, Kees Brinkman, Suzanne Geerlings, Colette Smit, Kalyani Thyagarajan, Ard van Sighem, Frank de Wolf, Timothy B Hallett, on behalf of the ATHENA observational cohort



- In the ATHENA cohort, proportion of patients on ART aged ≥50 years old will increase from 28% to 73% between 2010 and 2030
- Burden of NCDs mostly driven by larger increases in cardiovascular disease compared with increases in other comorbidities



Smit M, Lancet Infect Dis. 2015 Jul;15(7):810-8.

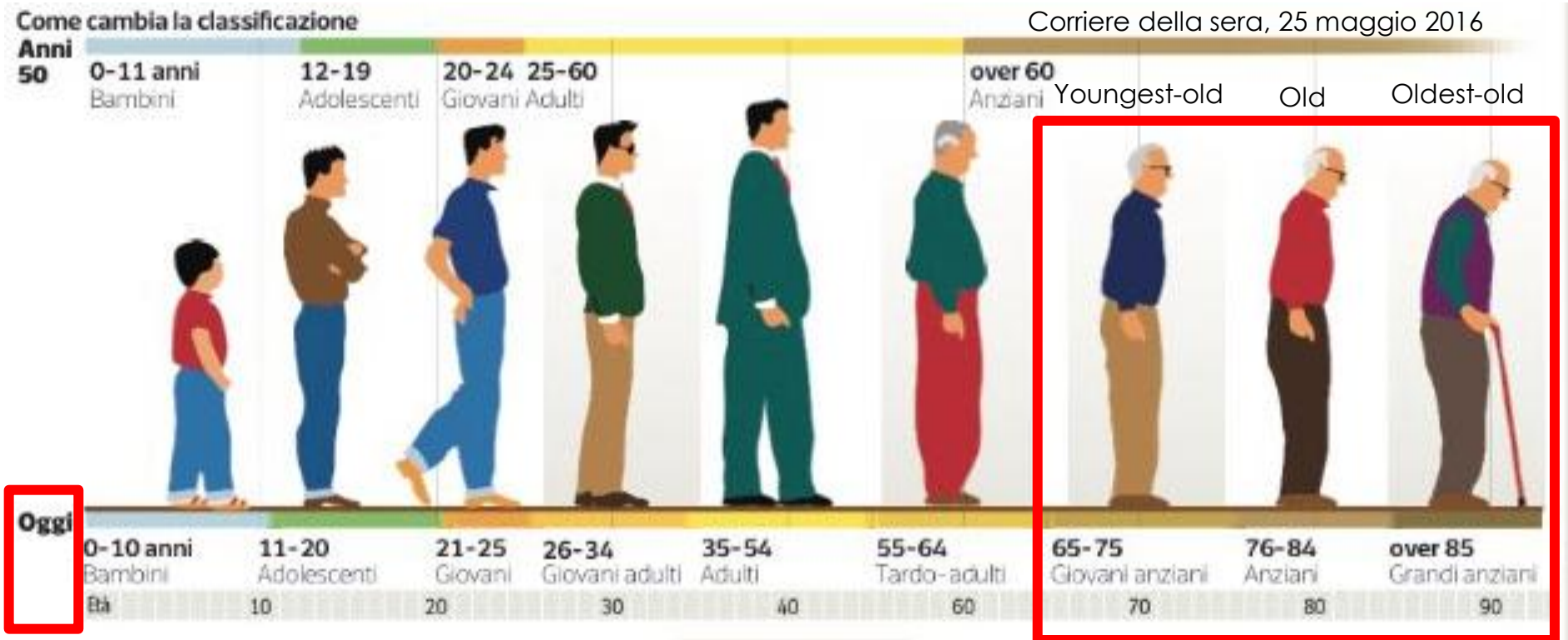
A geriatric definition of old-Age:

65-75 YRS: Youngest old

76-84 YRS: Old

>85: Oldest-old

Corriere della sera, 25 maggio 2016



Frailty has been proposed as a measure of biological (opposed to chronological) aging

83 years old;
HTN, Hyperlipidemia, prior MI

83 years old;
HTN, Hyperlipidemia, prior MI

This variable vulnerability among people of the same chronological age is known as **frailty**

WYSIWYG!

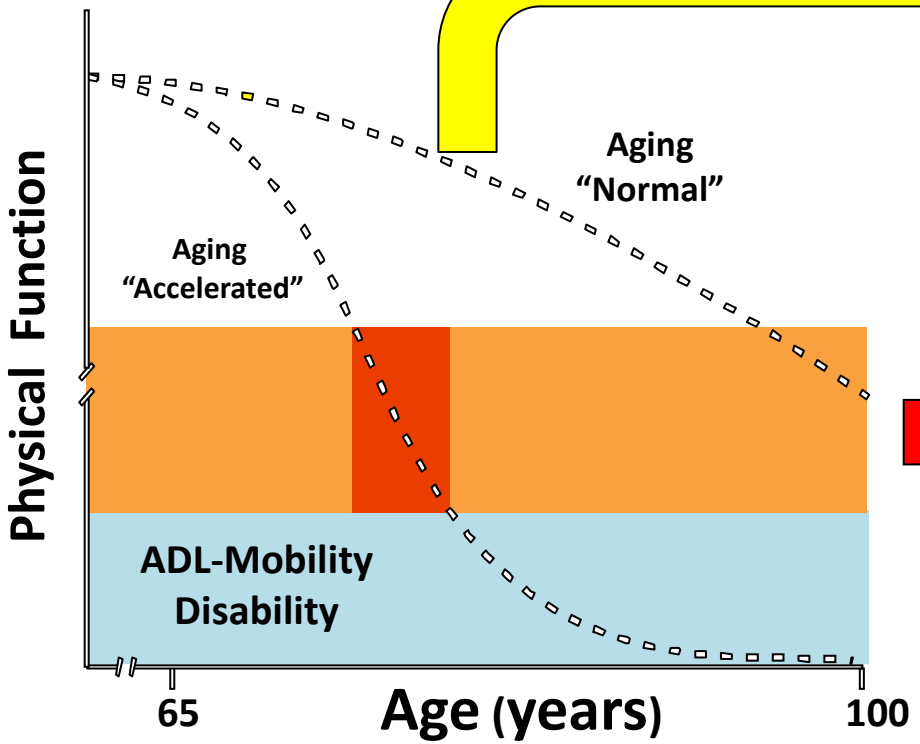
What you see, is what you get

Frailty as a deficit accumulation

- Frailty can be operationalized as deficit accumulation and can be expressed in a frailty index
- Can be summarised as a scale from Robust to Terminally Ill
- A frailty index derived from routinely collected clinical data can offer insights into the biology of aging using mathematics of complex systems

Rockwood et al. Lancet 1999;353:205-6

Trajectories of physical function in older subjects



Robust

Frail and pre-frail
Reversible

Disable
ADL-Mobility Dependence

Objective

We aimed to estimate levels of Frailty and its implications for HIV care in Italy up to 2030.

Falls and Instrumental Activities of Daily Living (IADL) were used as proxy of **geriatric syndromes** and **disability** in the geriatric population

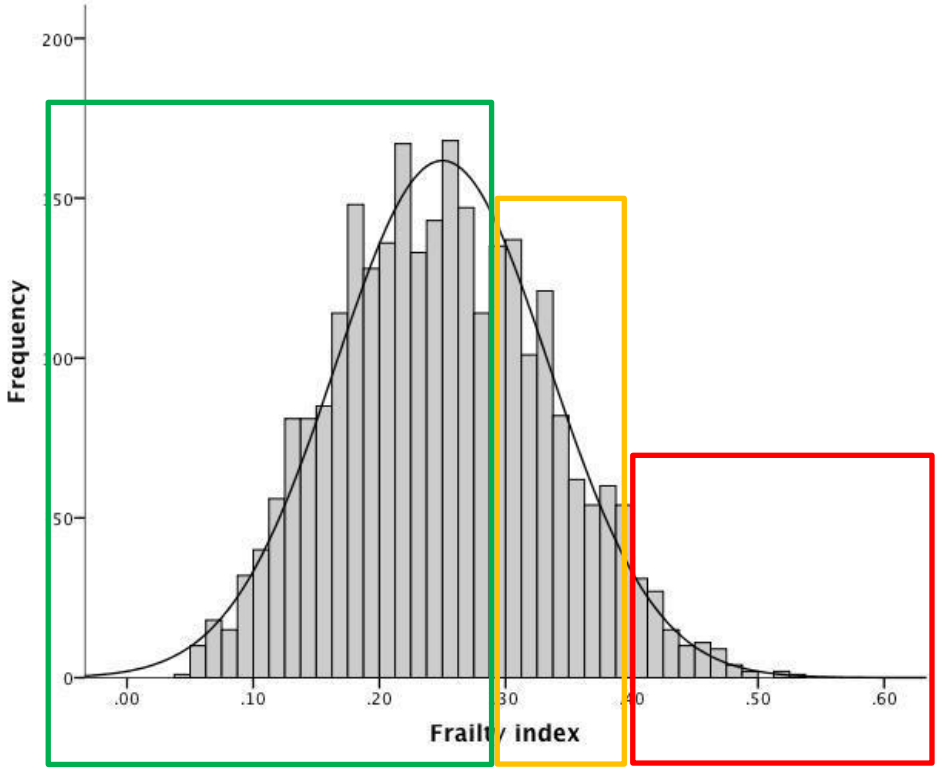
COBRA
CO-MORBIDITY IN RELATION TO AIDS

Methods

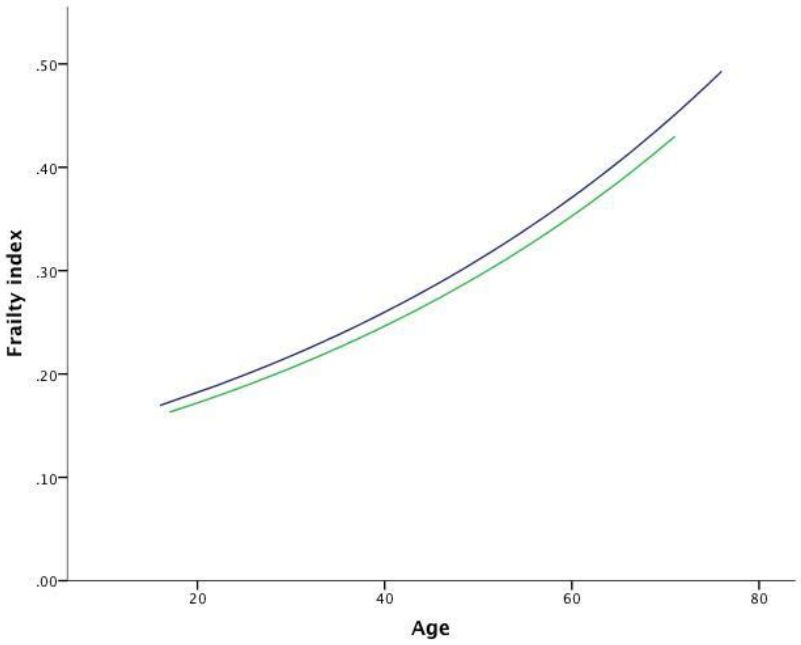
- ✓ **Geriatric age categories** were chosen: <35, 35-49, 50-64, 65-75, >75
- ✓ An individual-based model of the ageing population of the Modena HIV Metabolic Clinic cohort(MHMC) was constructed using data collected between 2009 and 2015 from **2982 patients.**
- ✓ The model follows patients enrolled to the clinic up to 2015 and generates new entries on a yearly basis up to 2030. **Number, age and gender of new entries were modelled using trends observed in the period 2009-2015.**

- ✓ **The relationship between age and gender, falls and disability, observed in 2014-2015 at MHMC was postulated to constant over time.**

FI distribution at MHC



Distribution of frailty index scores at first visit. Bars represent 0.01 frailty index score groupings. Solid line indicates normal distribution.



Average frailty index score at each age. Lines represent exponential best fit. Solid line is men, dashed line is women.

Guaraldi G. AIDS. 2015 Aug 24;29(13):1633–41.

Results

Socio-demographic, anthropometric and lifestyle characteristics

	HIV-positive (N=2982)
Gender, n (%)	
Female	951 (31.9%)
Age in years, median (IQR)	49 (45, 54)
BMI (kg/m^2), median (Q1, Q3)	23.5 (21.4, 26.0)
Waist (cm), median (Q1, Q3)	87 (81, 94)
Smoking, n (%)	
No smoking	1756 (58.9%)
1-10 cigarettes per day	516 (17.3%)
>10 cigarettes per day	672 (22.5%)

HIV-specific characteristics

	HIV-positive (N=2982)
Likely route of transmission, n (%)	
Homosexual sex	881 (29.5%)
CDC classification "C", n (%)	699 (23.4%)
Years since HIV diagnosis, median (Q1, Q3)	19.7 (12.8, 24.4)
Currently on cART, n (%)	2810 (92.5%)
Duration of cART (years), median (Q1, Q3)	5.2 (2.6, 7.8)
Currently on NRTIs, n (%)	2319 (82.5%)
Currently on PIs, n (%)	1550 (55.2%)
Currently on NNRTIs, n (%)	1103 (39.3%)
Currently on other drugs, n (%)	569 (20.6%)
CD4 count (cells/μL), median (Q1, Q3)	648 (474, 841)
Nadir CD4 count (cells/μL), median (Q1, Q3)	200 (86, 300)

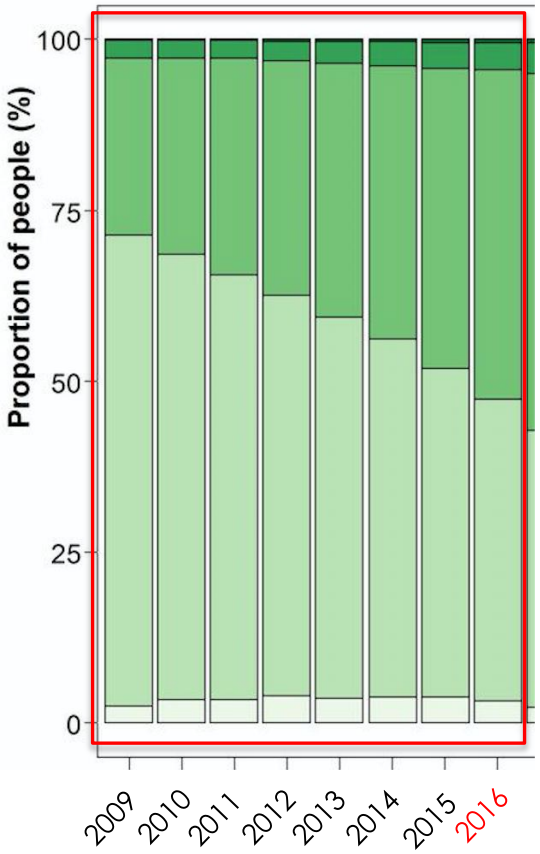
Prevalence of comorbidities

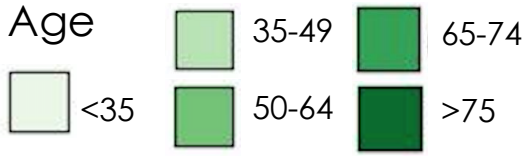
	MHMC (N=2982)
Cardiovascular disease, n (%)	142 (4.8%)
Hypertension, n (%)	1088 (36.5%)
Impaired Fasting Glucose, n (%)	602 (20.2%)
Type 2 Diabetes, n (%)	393 (13.2%)
Lipodystrophy, n (%)	2265 (76.0%)
Dyslipidaemia, n (%)	2449 (82.1%)
NAFLD, n (%)	701 (23.5%)
Renal Insufficiency, n (%)	284 (9.5%)
CKD, n (%)	28 (0.9%)
Liver cirrhosis, n (%)	352 (11.8%)
Vitamin D insufficiency, n (%)	2061 (69.1%)
Osteoporosis, n (%)	269 (9%)
COPD, n (%)	91 (3.1%)
Any AIDS malignancy, n (%)	77 (2.6%)

Prevalence of comorbidities

	MHMC (N=2982)	ATHENA (N=10278)
Cardiovascular disease, n (%)	142 (4.8%)	372 (4%)
Hypertension, n (%)	1088 (36.5%)	2379 (23%)
Impaired Fasting Glucose, n (%)	602 (20.2%)	
Type 2 Diabetes, n (%)	393 (13.2%)	578 (6%)
Lipodystrophy, n (%)	2265 (76.0%)	
Dyslipidaemia, n (%)	2449 (82.1%)	
NAFLD, n (%)	701 (23.5%)	
Renal Insufficiency, n (%)	284 (9.5%)	
CKD, n (%)	28 (0.9%)	1399 (14%)
Liver cirrhosis, n (%)	352 (11.8%)	
Vitamin D insufficiency, n (%)	2061 (69.1%)	
Osteoporosis, n (%)	269 (9%)	829 (8%)
COPD, n (%)	91 (3.1%)	
Any AIDS malignancy, n (%)	77 (2.6%)	765 (7%)

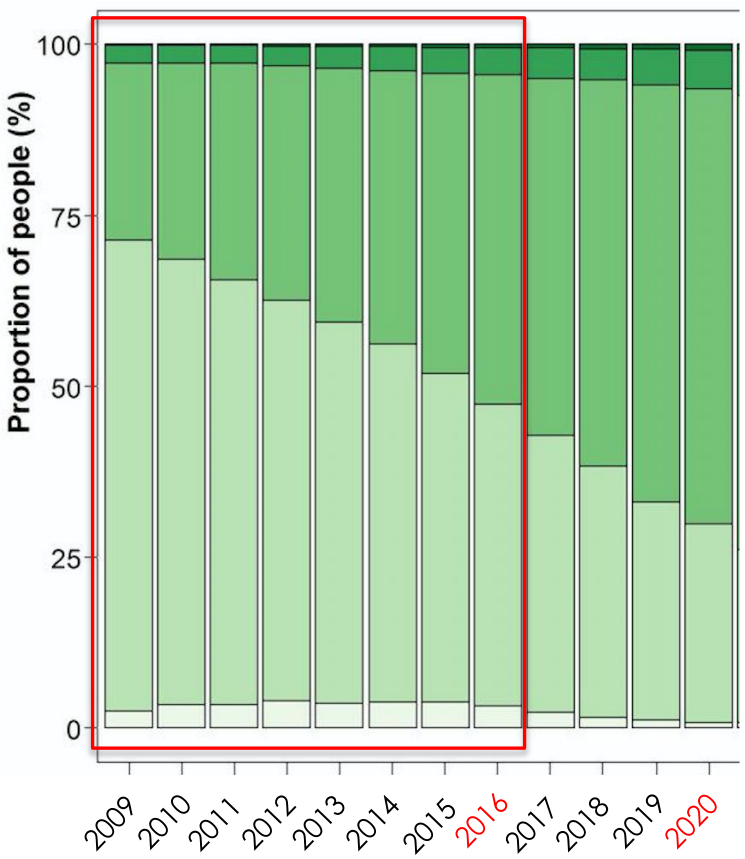
Observed (red area) and projected age distribution of HIV-infected patients

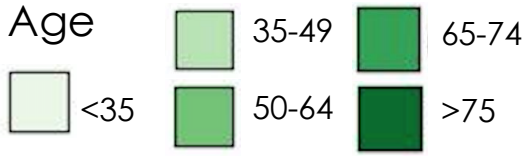




Geriatric Age categories	**65-7 yrs**	**>74 yrs**
2016	3.8%	0.5%

Observed (red area) and projected age distribution of HIV-infected patients





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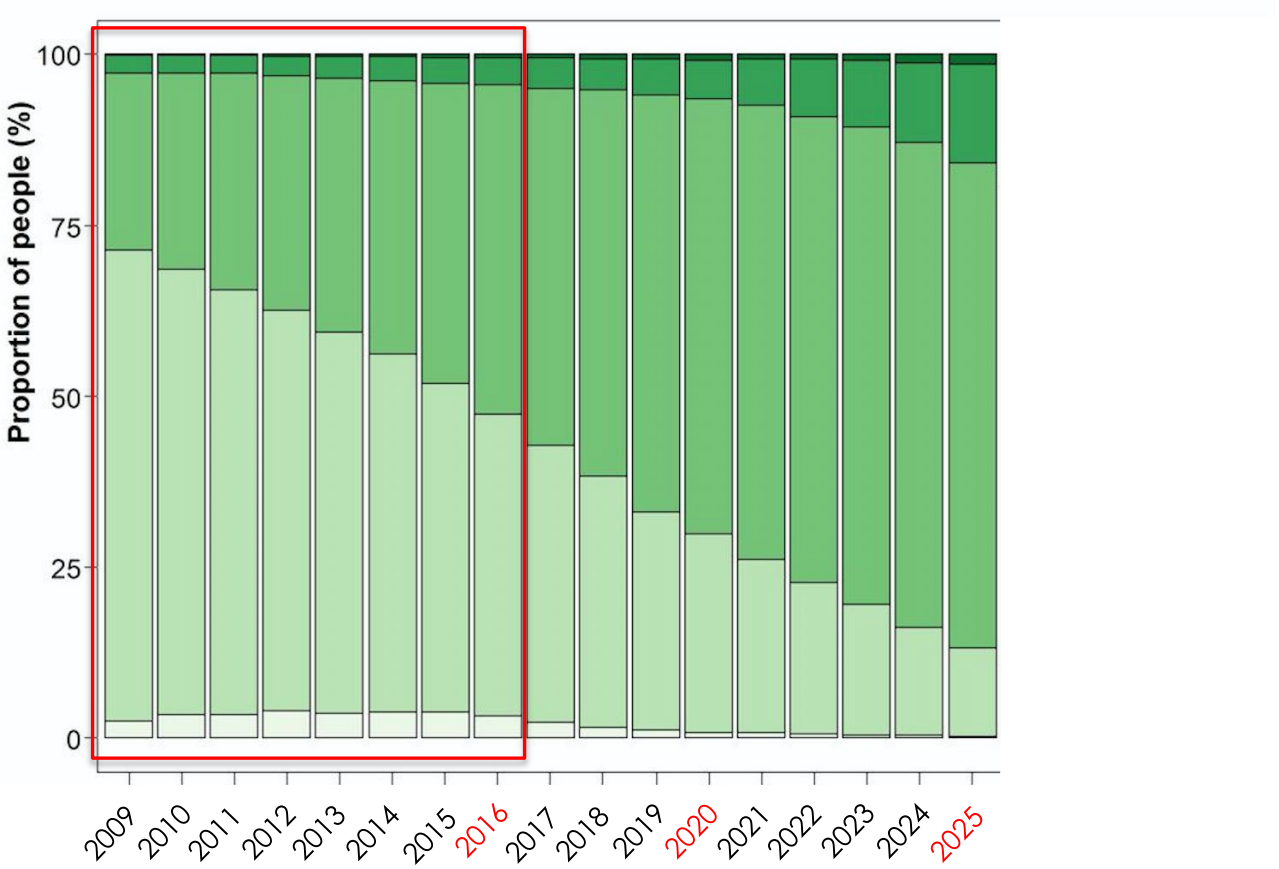

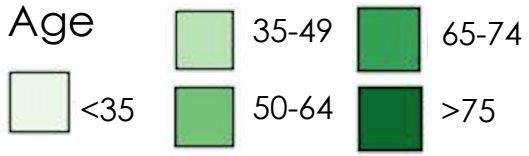

Geriatric Age categories	**65-7 yrs**	**>74 yrs**
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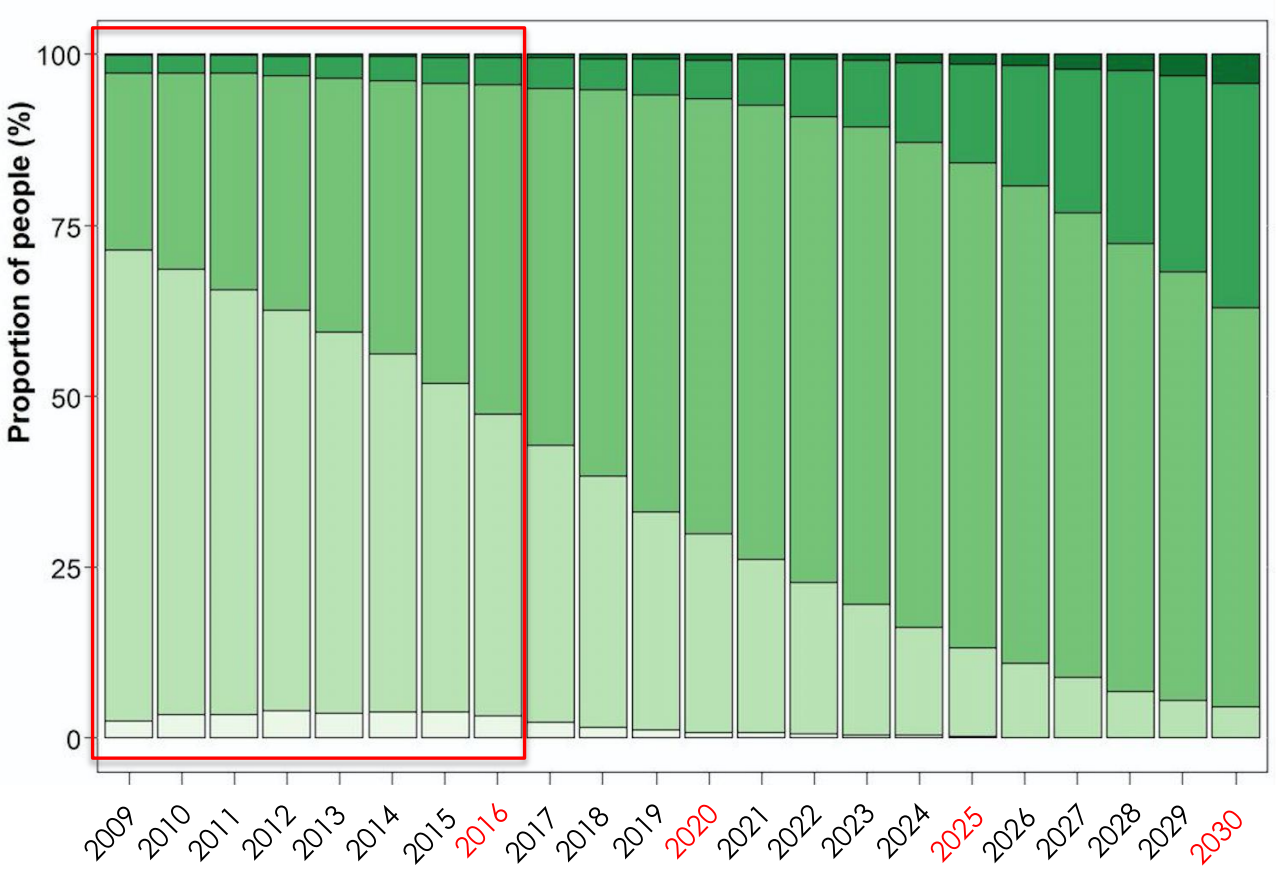
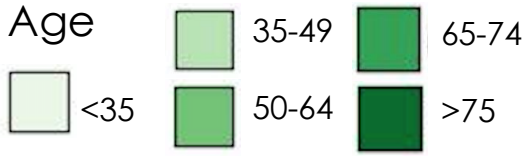
Observed (red area) and projected age distribution of HIV-infected patients

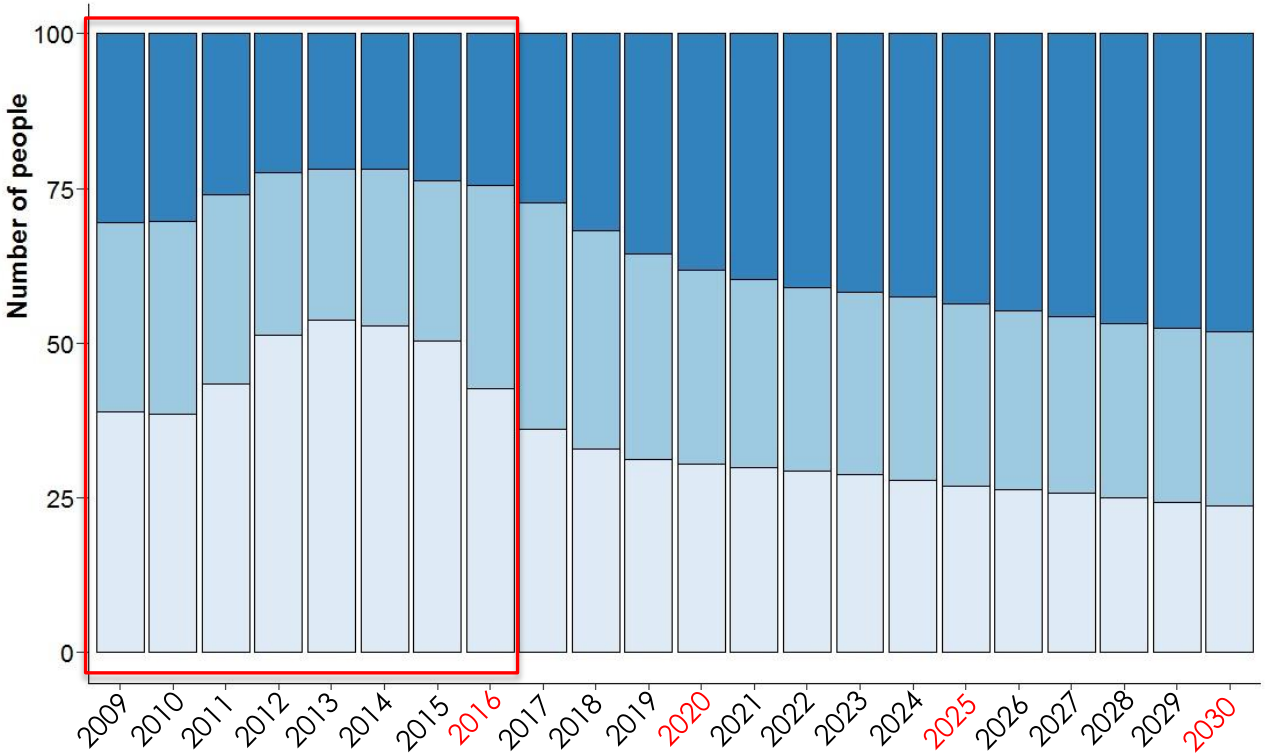




Geriatric Age categories	65-7 yrs	>74 yrs
2016	3.8%	0.5%
2020	5.7%	0.8
2025	14.4%	1.4%
2030	32.9%	4.1%

In 15 years time the HIV geriatric population will increase from 4% to 37%

Observed (red area) and predicted burden of Frailty in HIV-infected patients between 2009 and 2030 as simulated by the model



Frailty Index 0-0.3 0.3-0.4 >=0.4

Frailty categories	Frail FI: 0.3-0.4	Most Frail FI>0.4
2016	32.8%	24.5%
2020	31.3%	38.2%
2025	29.5%	43.6%
2030	28.0%	48.2%

In 15 years time the most frail HIV population will increase from 24% to 48%

Male ω

2002
39 yrs

CD4=477 cells/µL
HIV1-RNA<40 copies/mL
TDF+FTC+NEV

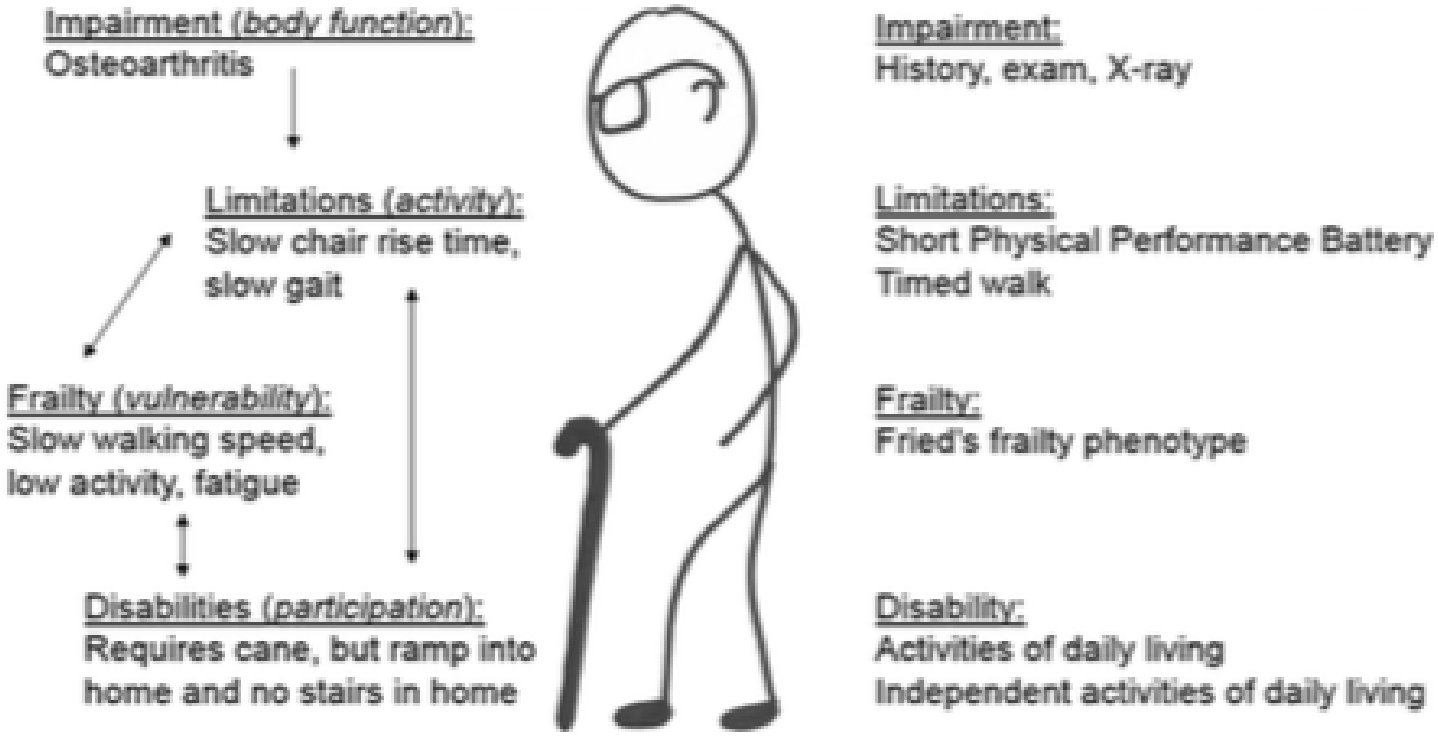
2015
50 yrs

CD4=715 cells/µL
HIV1-RNA<40 copies/mL
TDF+FTC+NEV

2016
51 yrs

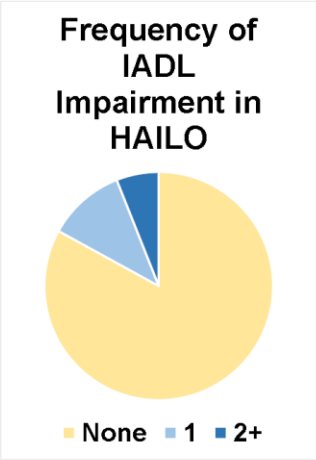
CD4=357 cells/µL
HIV1-RNAnon detectable
RAL+NEV

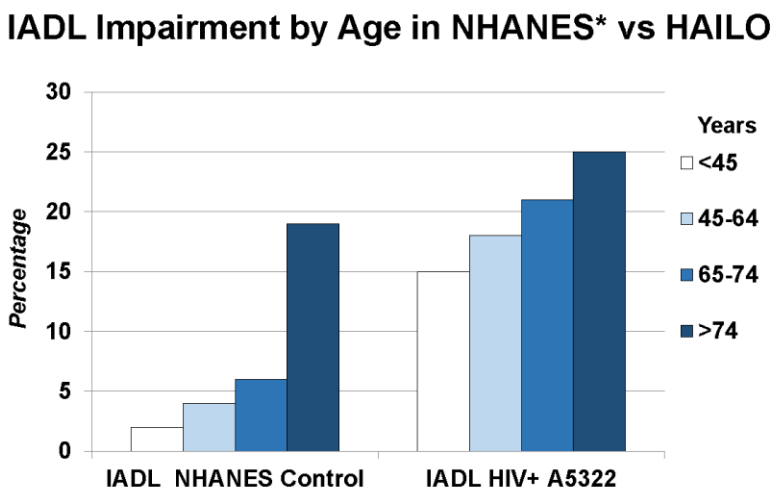
PATIENT AGEING TRAJECTORY

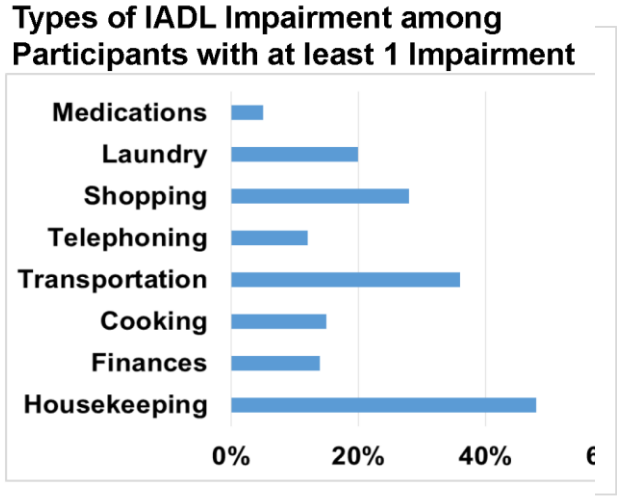


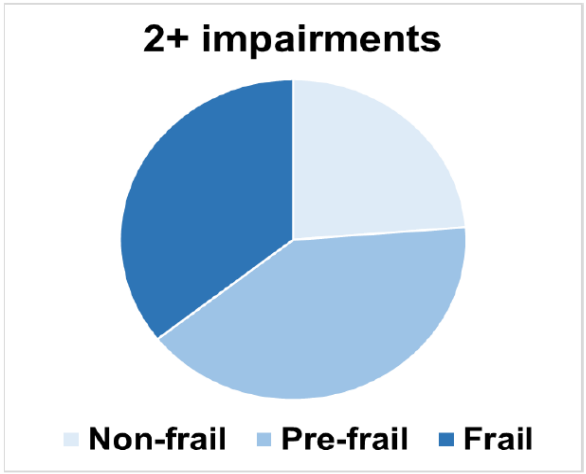
Erlandson, K. M.,et al. Current HIV/AIDS Reports, 11(3), 279–290.

Factors Associated With Limitations in Daily Activity Among Older HIV+ Adults









- ✓ In HIV+ older adults, IADL impairment occurs more frequently among those with neuroimpairment or frailty.
- ✓ Modifiable risk factors (smoking, low physical activity) provide targets for interventions to help maintain independent living

Erlandosn K, P-721 CROI 2016

Geriatric Syndromes in Older HIV-Infected Adults

Meredith Greene, MD,† Kenneth E. Covinsky, MD, MPH,*† Victor Valcour, MD, PhD,*‡ Yinghui Miao, MD, MPH,*† Joy Madamba, BS,§ Harry Lampiris, MD,#‖ Irena Stijacic Cenzer, MA,*† Jeffrey Martin, MD, MPH,¶ and Steven G. Deeks, MD§*

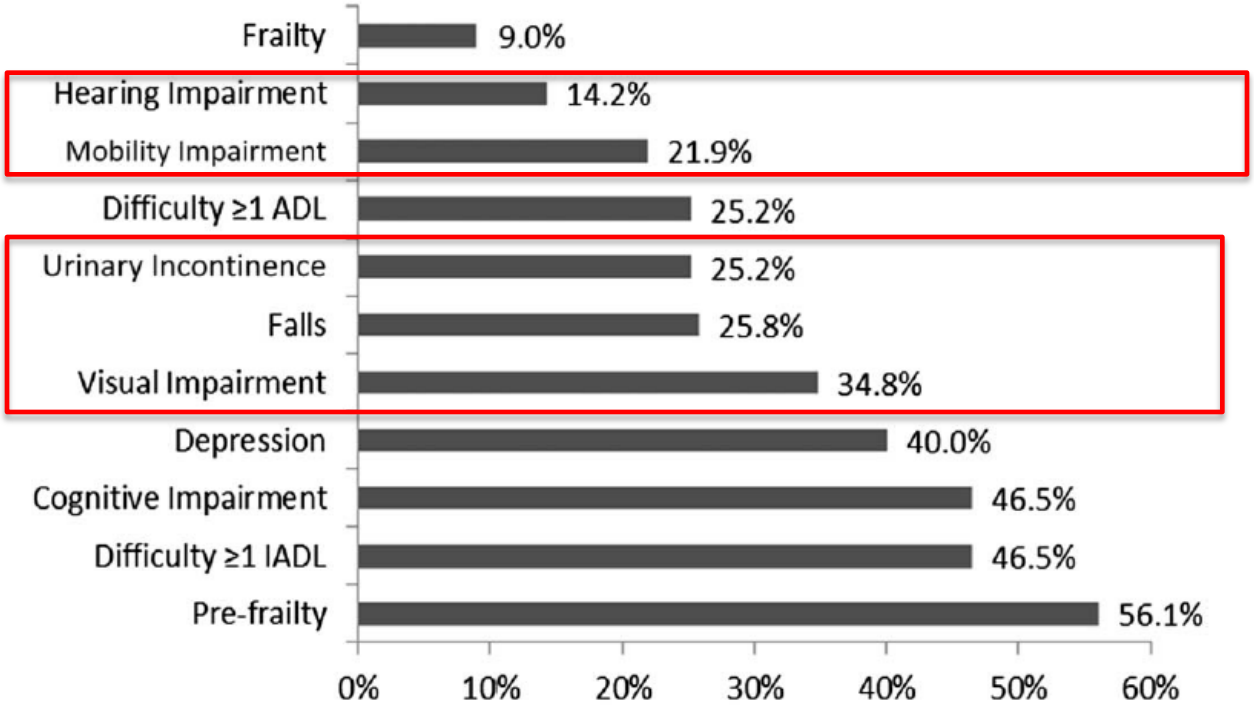
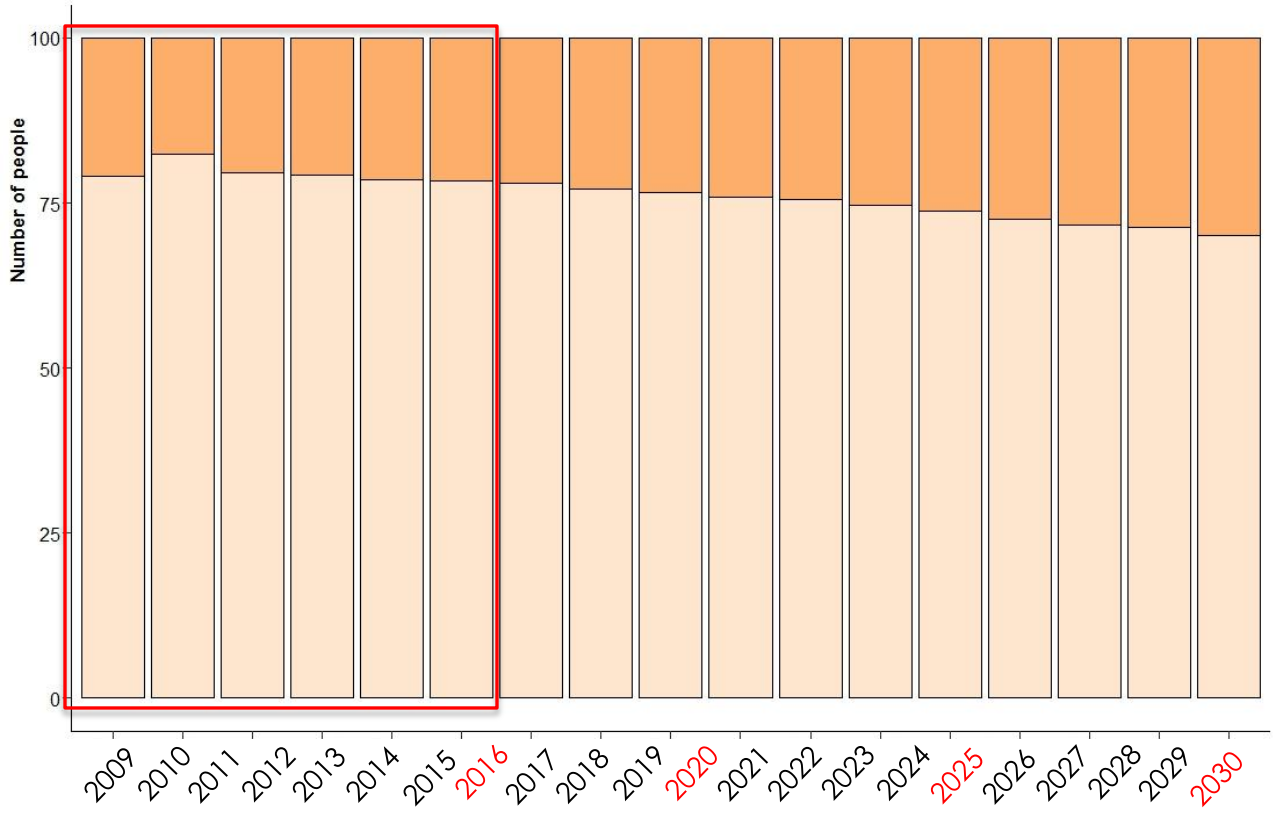
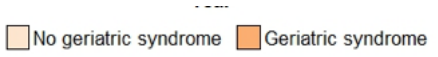


FIGURE 1. Frequencies of geriatric syndromes. Each bar reflects the percentage of participants with each geriatric syndrome. Actual percentages are shown at the end of each bar. Horizontal axis only shown to 60%.

JAIDS 2015

Observed (red area) and predicted burden of Falls in HIV-infected patients between 2009 and 2030 as simulated by the model

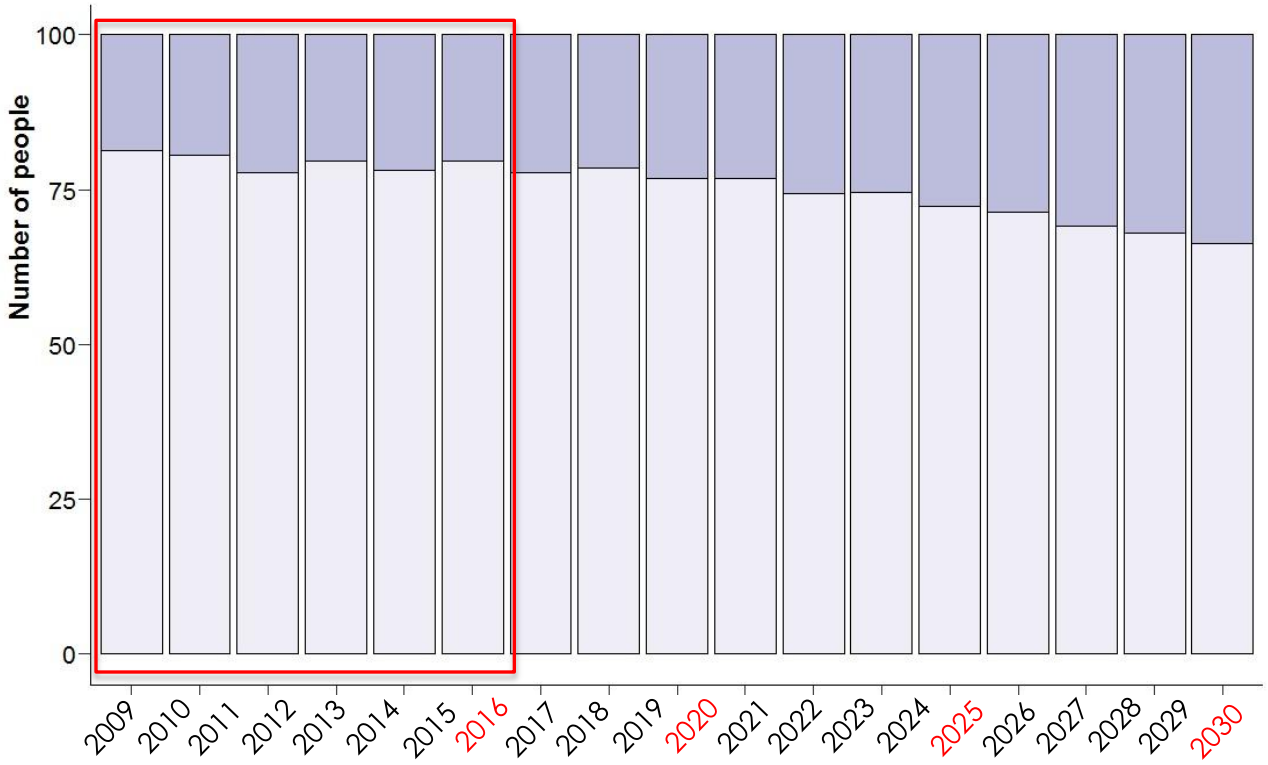




	Falls
2016	20.4%
2020	21.9%
2025	25.3%
2030	29.8%

In 15 years time 30% of PLWH will experience a geriatric syndrome

Observed (red area) and predicted burden of IADL in HIV-infected patients between 2009 and 2030 as simulated by the model

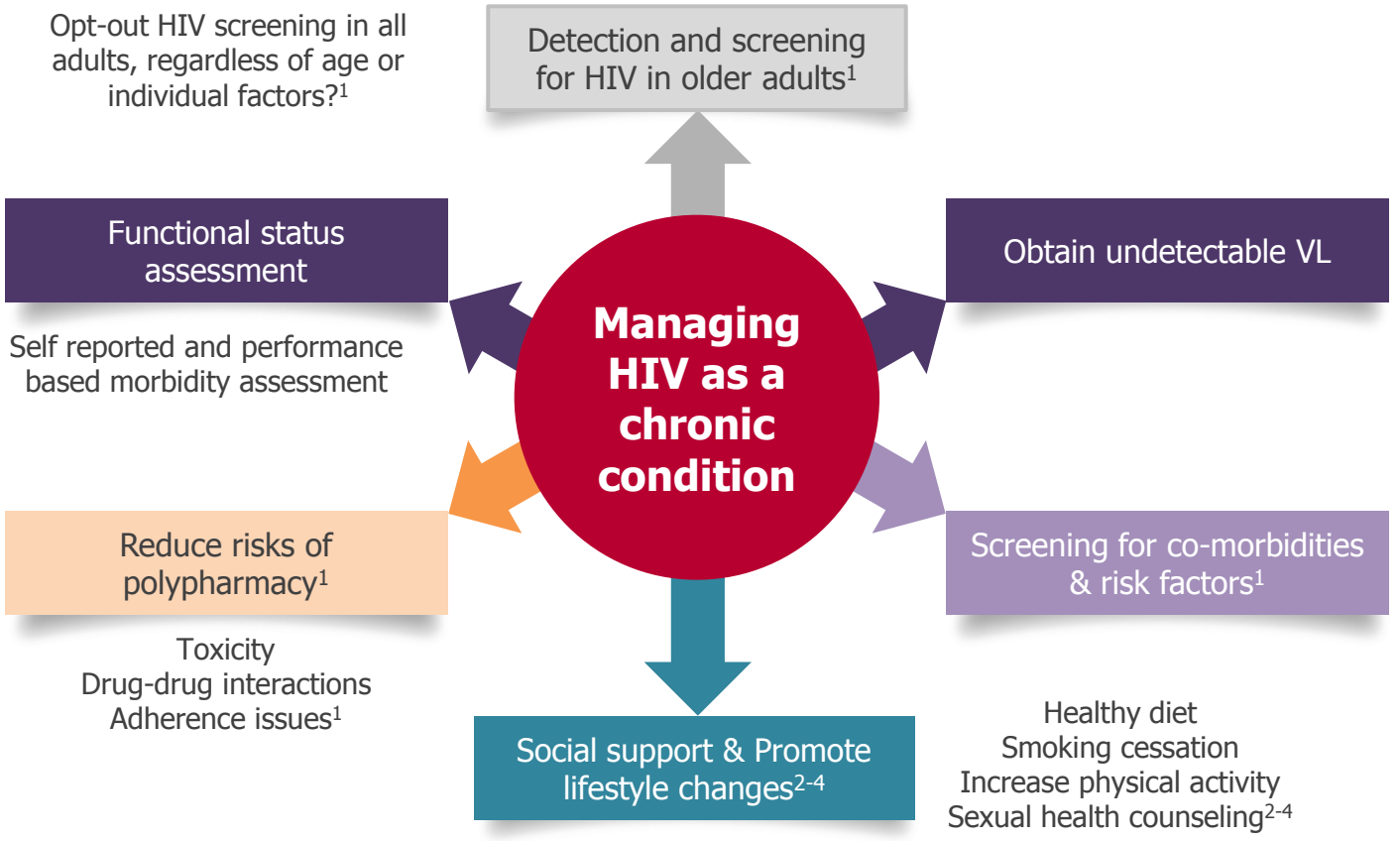


No disability Disability

	IADL>1
2016	22.2%
2020	22.3%
2025	26.3%
2030	33.7%

In 15 years time 34% of PLWH will be disable

How to manage HIV as a chronic condition

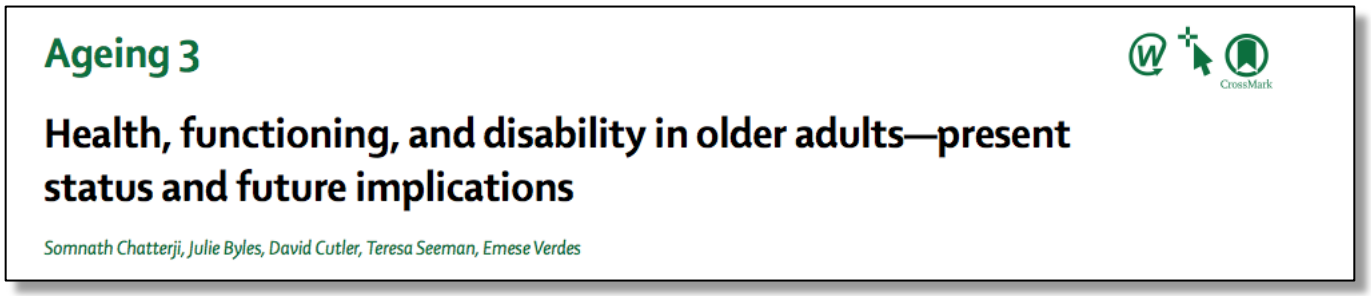


*if plasma HIV RNA levels > 50,000 copies/ml, greater than 100-point decline in CD4 count in prior 12 months, or risk factors for CVD.

1.The HIV and Aging Consensus Project: Recommended Treatment Strategies for Clinicians Managing Older Patients with HIV 2011.
Available at http://www.aahivm.org/hivandagingforum Accessed April 2012;

2. Fitch K,et al. AIDS. 2006;20:1843-1850;
3. Petoumenos K, et al. HIV Med 2011; 12:412-421;
4. Lindau ST, et al. NEJM. 2007;357:762-774.

Life expectancy **vs healthy life expectancy**



Ageing 3

Health, functioning, and disability in older adults—present status and future implications

Somnath Chatterji, Julie Byles, David Cutler, Teresa Seeman, Emese Verdes

Healthy life expectancy is a measure that combines mortality and morbidity information in one index, expressing the number of healthy years of life lost because of poor health, and incorporating a range of severities to quantify poor health

- ✓ Chronic diseases
- ✓ Special population
- ✓ Multymorbidity
- ✓ Complex cases
- ✓ Ageing

Data from the Global Burden of Disease 2010 show that from 1990 to 2010, as life expectancy rose 20 years healthy life expectancy increased more slowly (0·75 years for each year of increase in life expectancy).

JAMA®
The Journal of the American Medical Association

Improving Primary Care for Patients With Chronic Illness

The chronic care model is a guide to higher-quality chronic illness management within primary care. The model predicts that improvement in its 6 interrelated components—self-management support, clinical information systems, delivery system redesign, decision support, health care organization, and community resources—can produce system reform in which informed, activated patients interact with prepared, proactive practice teams. Case studies are provided describing how components of the chronic care model have been implemented in the primary care practices of 4 health care organizations.

JAMA. 2002;288:1775-1779 www.jama.com

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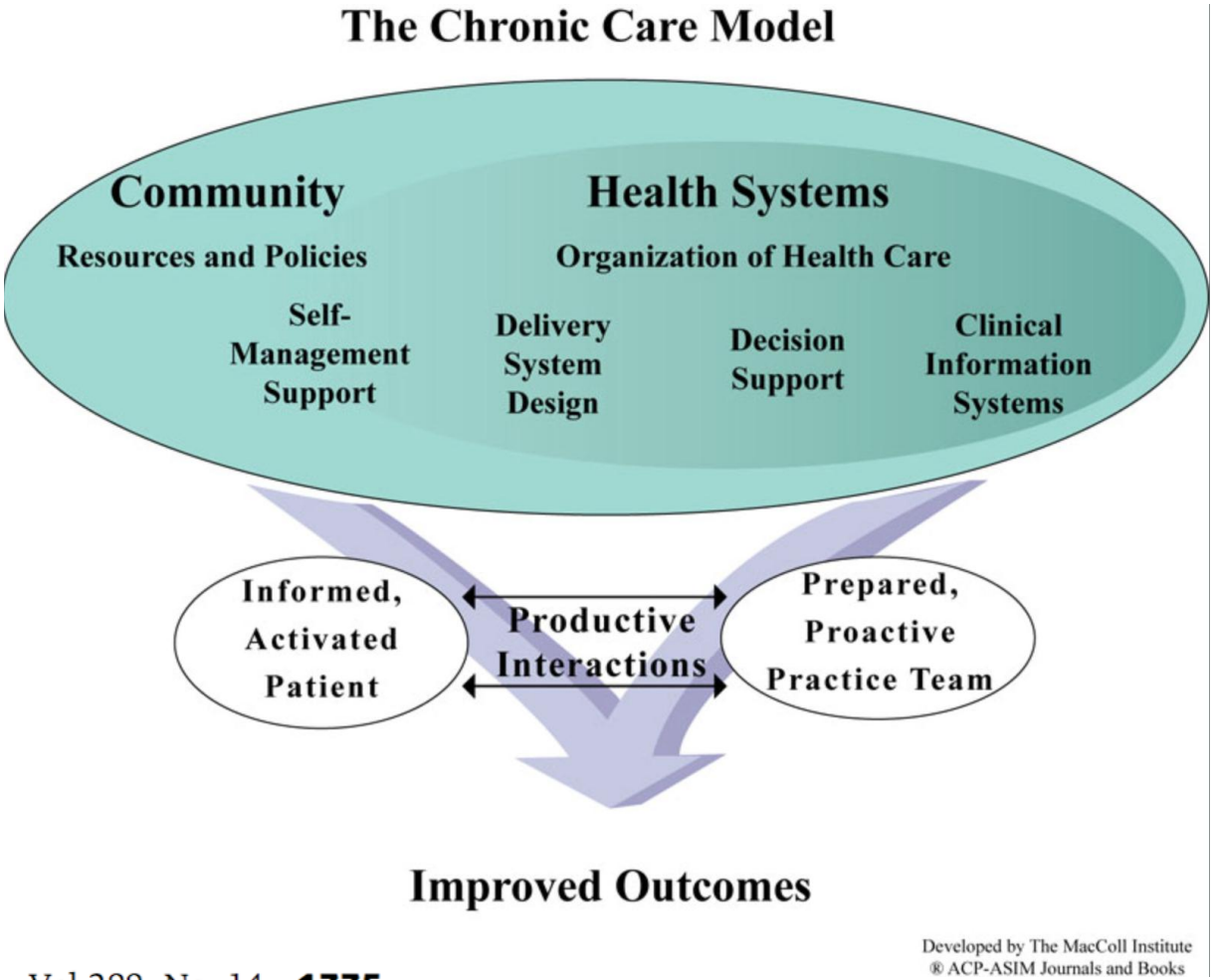
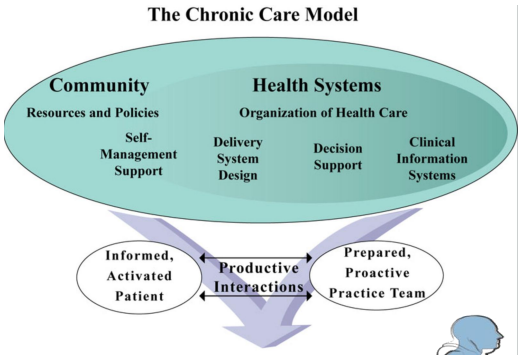
Improving Primary Care for Patients With Chronic Illness





Delivery System Design: Assure the delivery of effective, efficient clinical care and self-management support

Mental Health

HIV physicians

QoL

Psychologist

Nurse

Physical function

Beyond HIV undetectability

Frailty

Occupational therapist

Multidimensional assessment of HEALTH

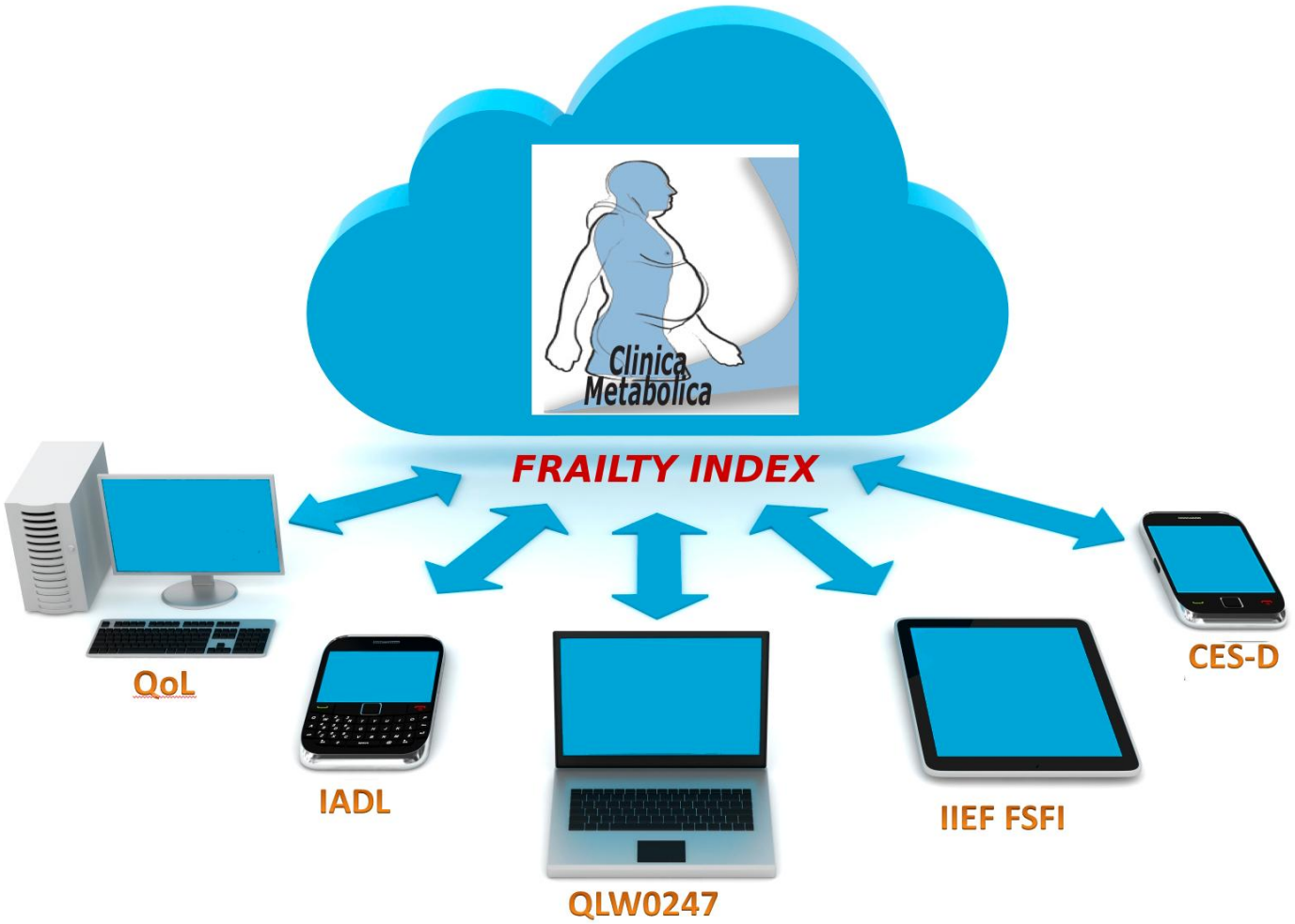
Pharmacist

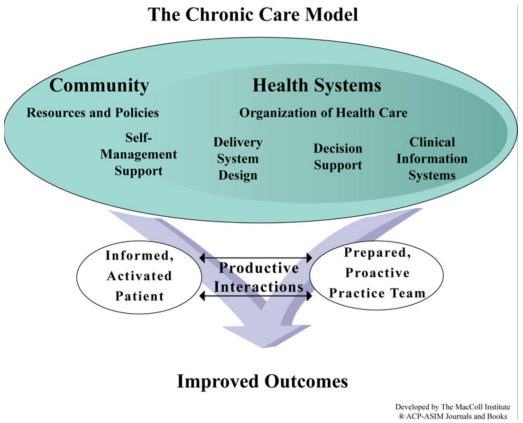
Non HIV specialists

Geriatric syndromes

Disability

CLINICAL MANAGEMENT:
Health care organization & Delivery system design

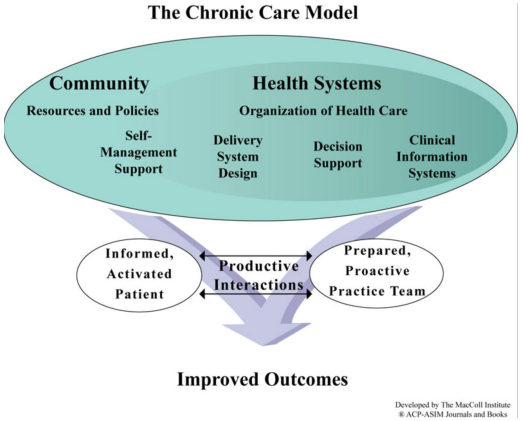




Decision Support: Promote clinical care that is consistent with scientific evidence and patient preferences

HIV & hepatitis drug interactions

- http://www.hiv-druginteractions.org
- http://www.hep-druginteractions.org



Clinical Information Systems:

Organize patient and population data to facilitate efficient and effective care

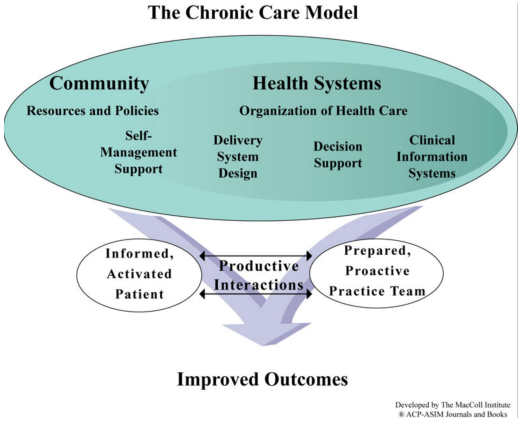
Successful Aging... beyond the absence or regardless co-morbidities and HIV

Measure of disease

T0 → T18mts

mysawh

Measure of Health



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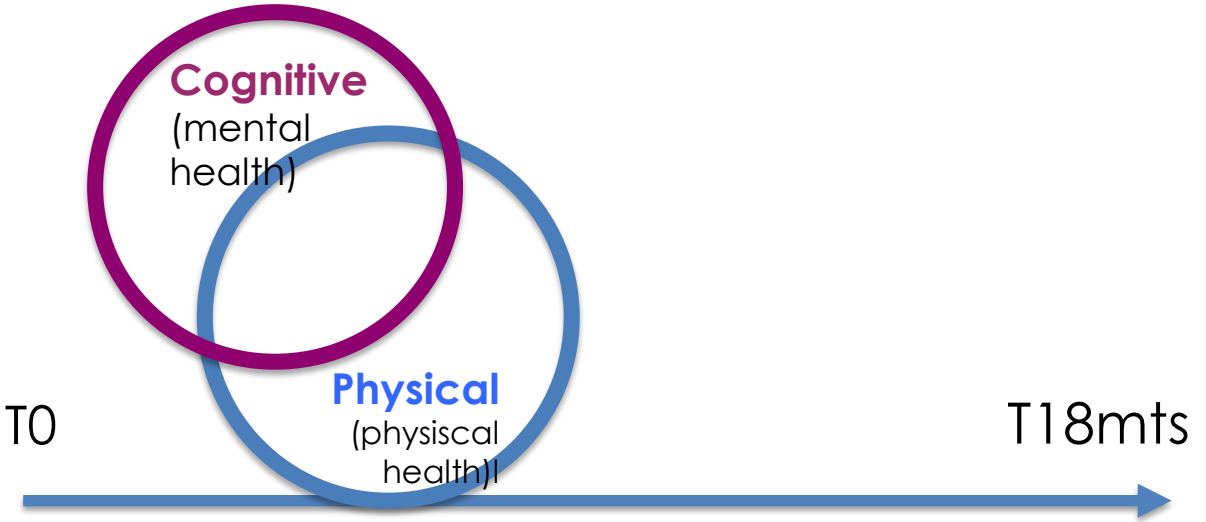

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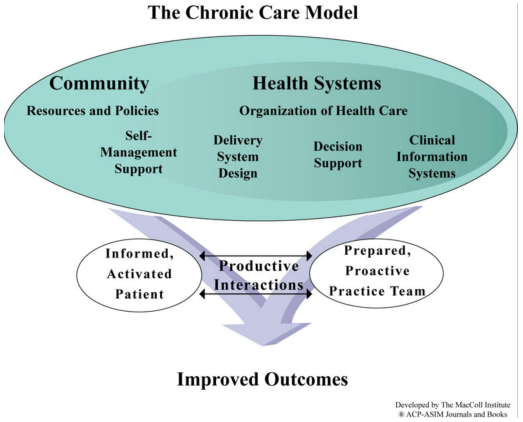

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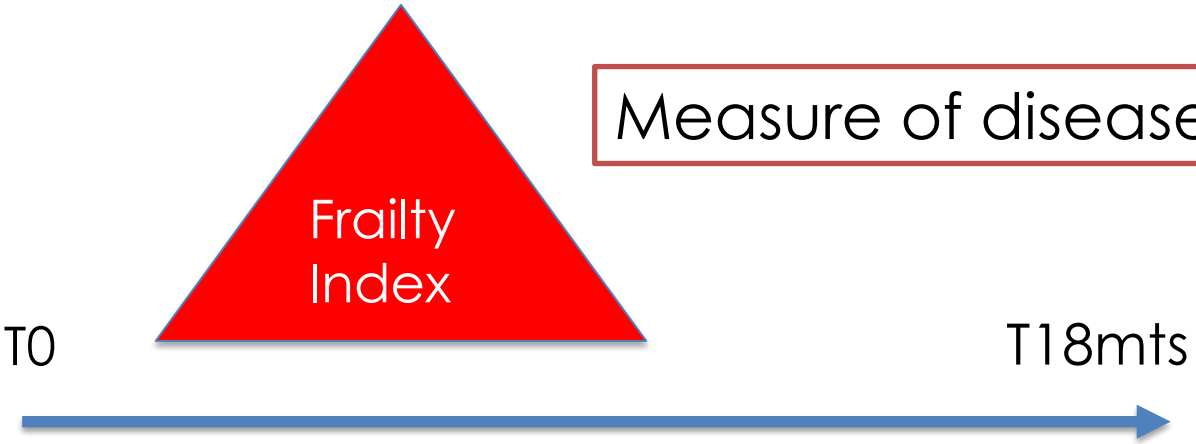

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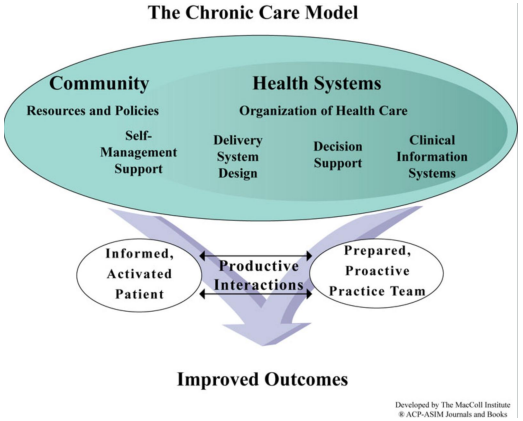

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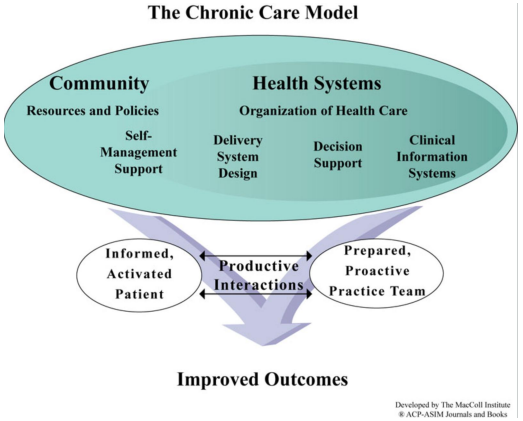
Physiologic al data (steps, sleep, calories

GARMIN



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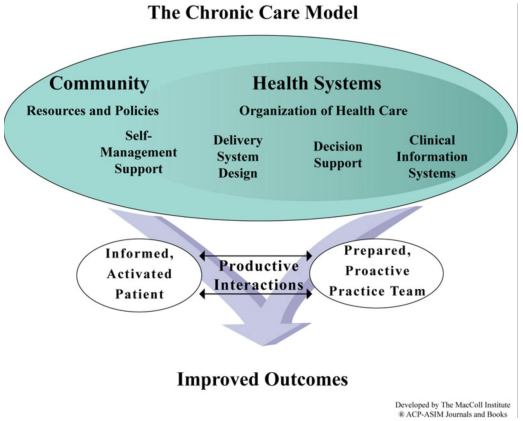
Emotional & Spiritual (Ecological Momentary Assessment

mysawh

Mood
Socialization
Smoke
Spiritual
Eating behaviour
....



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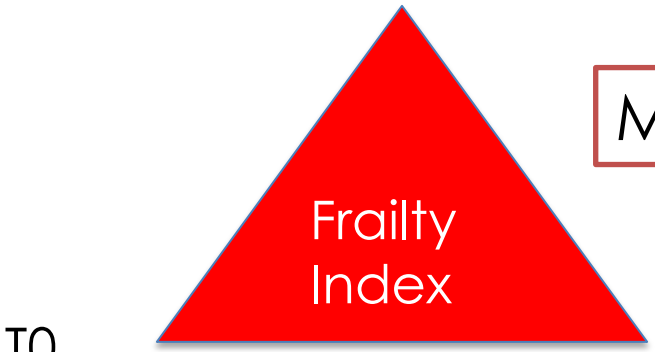


Measure of disease

T0

T18mts

mysawh

Measure of Health

mysawh
Modena

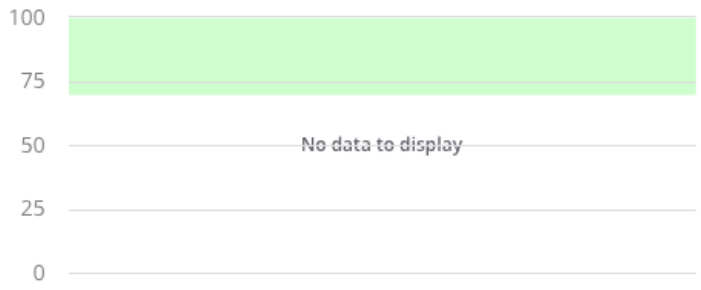
Giovanni Guaraldi

- Visite
- Investigator
- Coach
- Amministrazione
- Profilo

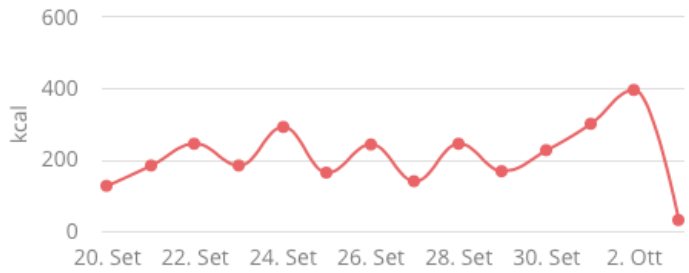
Statistiche paziente: 2842

PAZIENTE CHAT

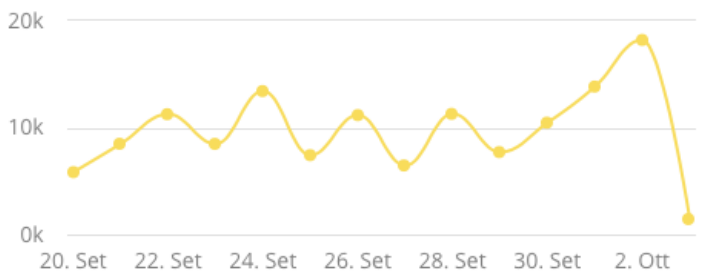
Health Index



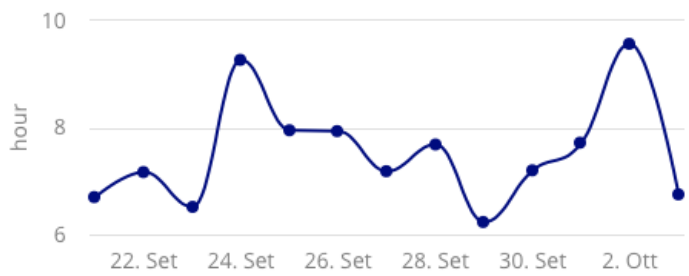
Calories



Step



Sleep



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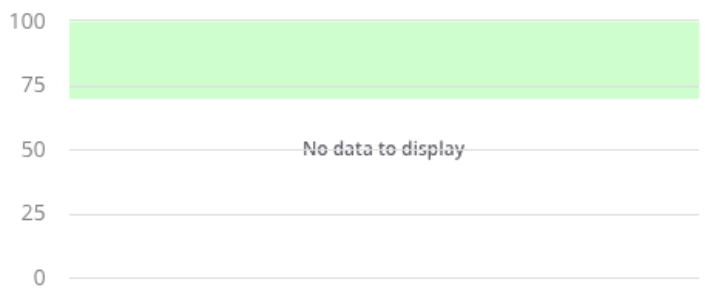
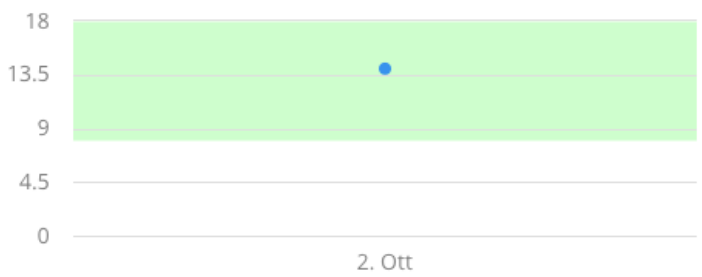
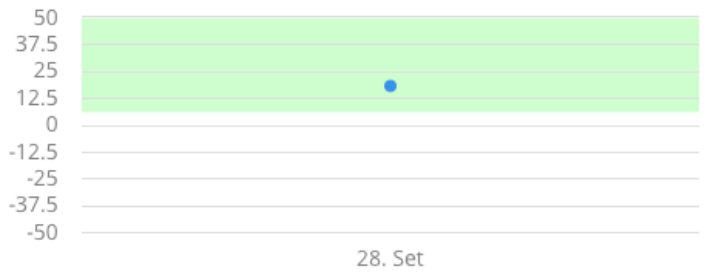


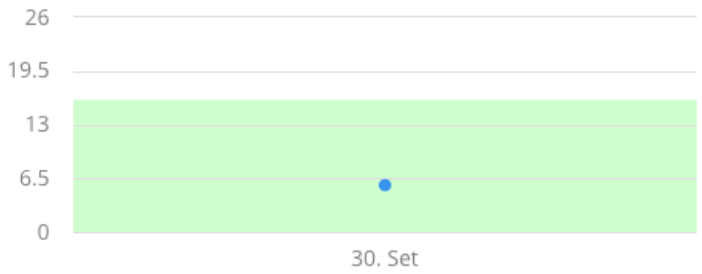
Neurocognitive



Mood



Social Vulnerability



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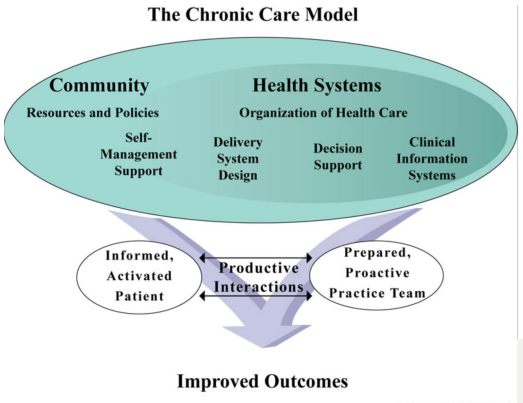


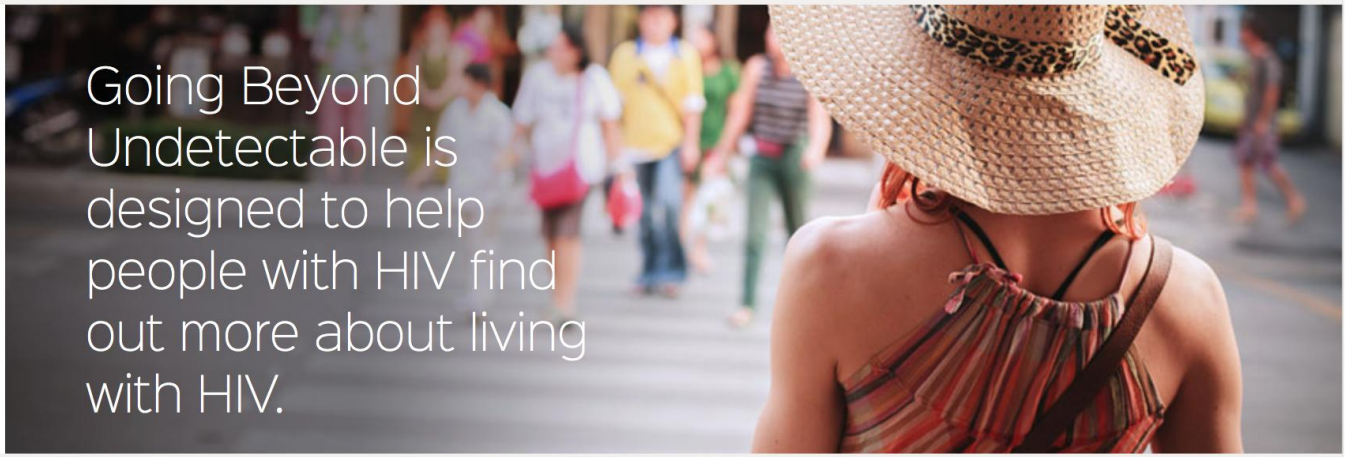
The comunity: Mobilize community resources to meet needs of patients

HIV IS: GOING BEYOND UNDETECTABLE

Search

Home | My Health | My Conversations | My Community | My Life with HIV | Useful Links

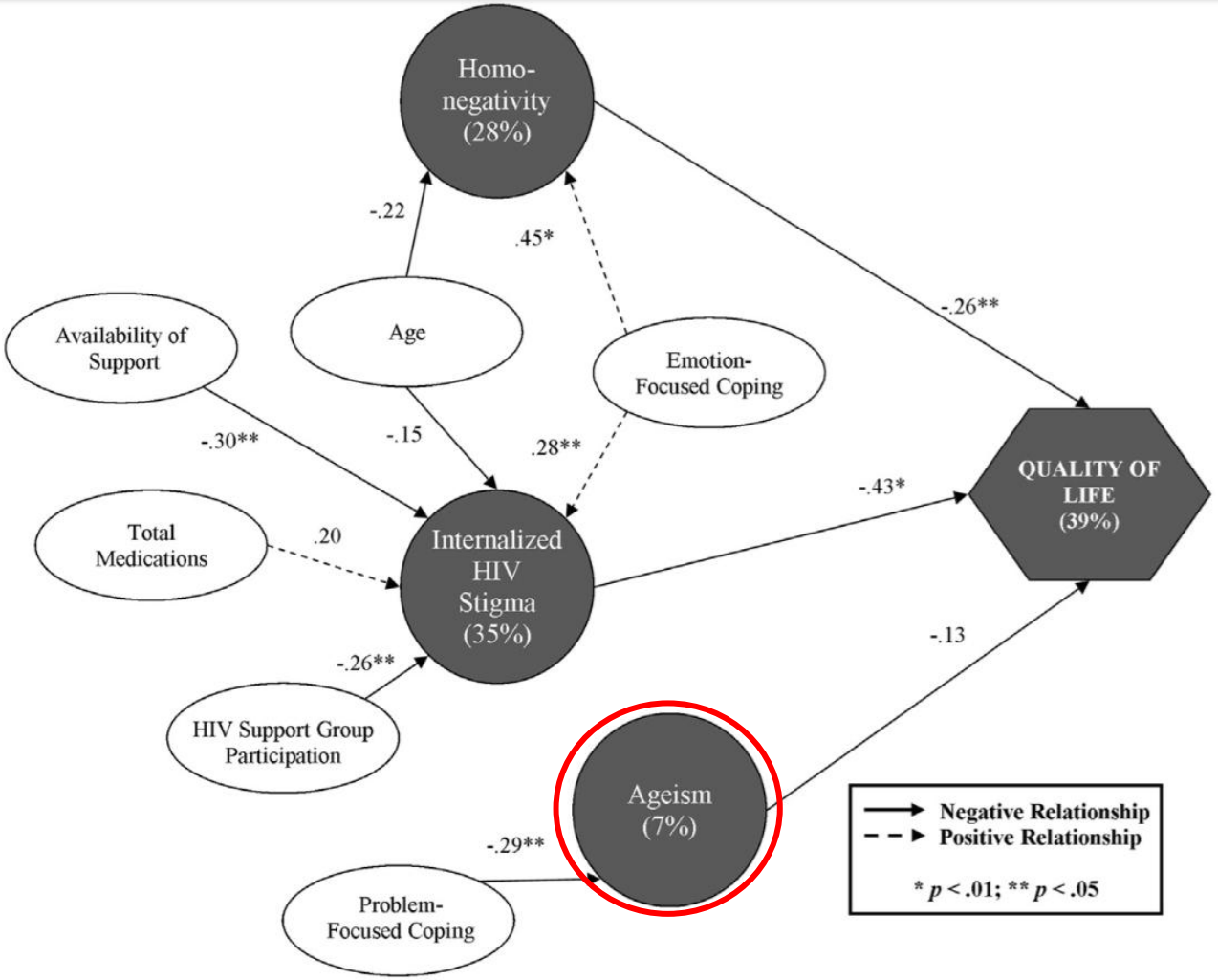
Download the GoBEYOND app



The goal of HIV treatment is to suppress the amount of HIV in the body (viral load) to undetectable levels. Now that most people who take their medicine can achieve an undetectable viral load, it's time to go beyond this to reach other long-term health goals for people living with HIV – Going Beyond Undetectable.

Download the GoBEYOND app

The Multiple Stigma Experience and Quality of Life in Older Gay Men With HIV



Slater LZ et al JOURNAL OF THE ASSOCIATION OF NURSES IN AIDS CARE, Vol. 26, No. 1, January/February 2015, 24-35

Take home message (1/2)

- Comorbidities are the prevalent clinical picture of contemporary HIV disease
- The association of comorbidities into complex multy-morbidity pictures describe patient complexity
- When Multi-morbidity is the norm, frailty and disability turn to be relevant clinical outcomes and allows patient risk stratification beyond the CD4 and HIV VL assessment
- Total patient care allows to integrate the need for reaching un-detectability with the need to take care of comorbidities.

Conceptual slide - based on Expert Opinion of the presenter

Take home message (2/2)

- HIV Care implies a switch from a Inter-disciplinary approach into a Multi-dimensional comprehensive assessment
- Patient visit diversification must be built in an individualised management plan focused on quality of life and prevention of disability
- The increasing numbers of older patients with frailty, geriatric syndromes and disability depict an "geriatric -HIV" scenario. This model suggests evidence-based screening and monitoring protocols to ensure high-quality care.

Conceptual slide - based on Expert Opinion of the presenter

The new target

90-90-90-90-90

90% diagnosed
90% on treatment
90% virally suppressed

90% fit at 90 years

Thank you….
…and stay fit!