



# Aging with HIV vs HIV seroconversion at older age: a diverse population with distinct comorbidity profiles

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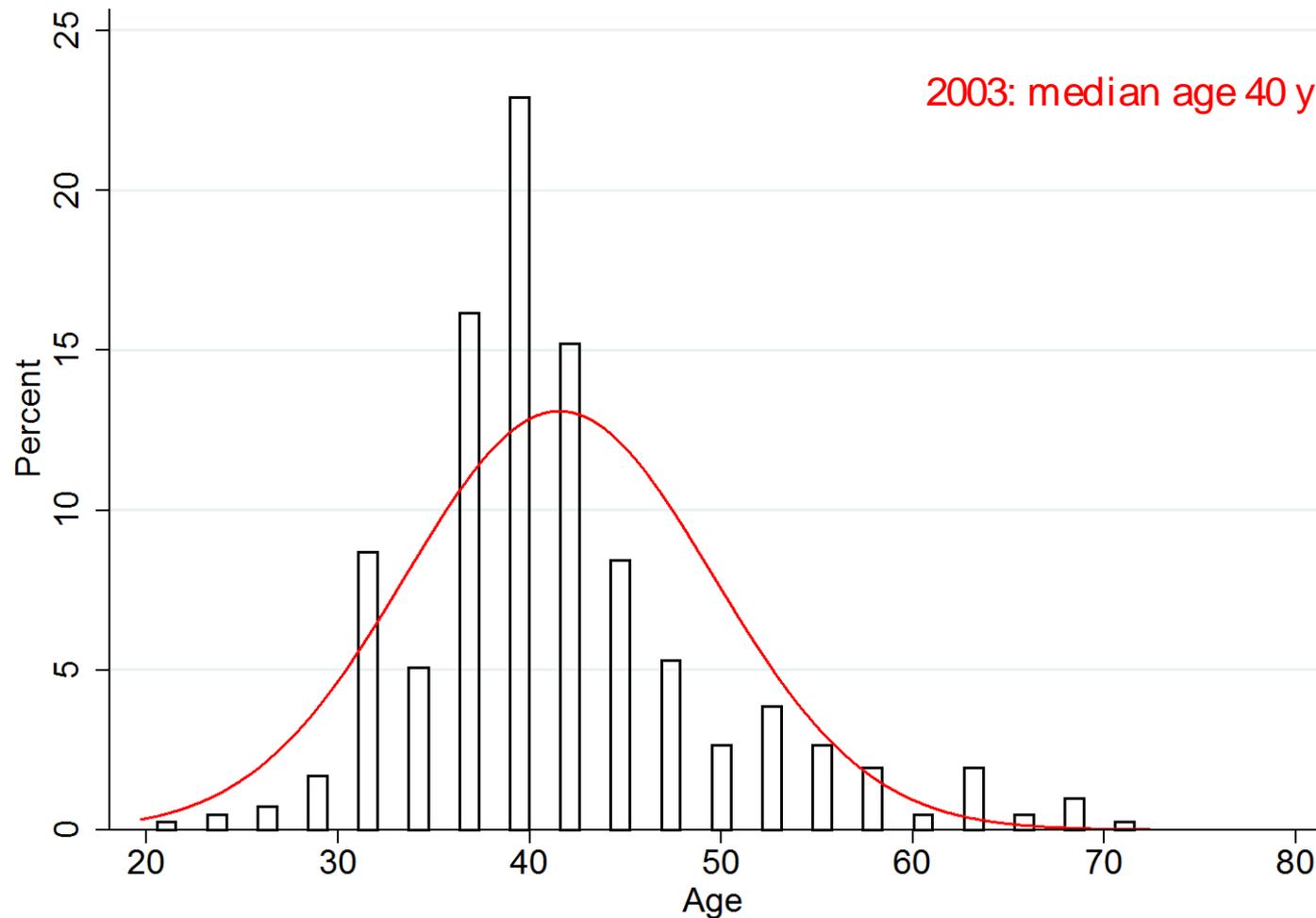
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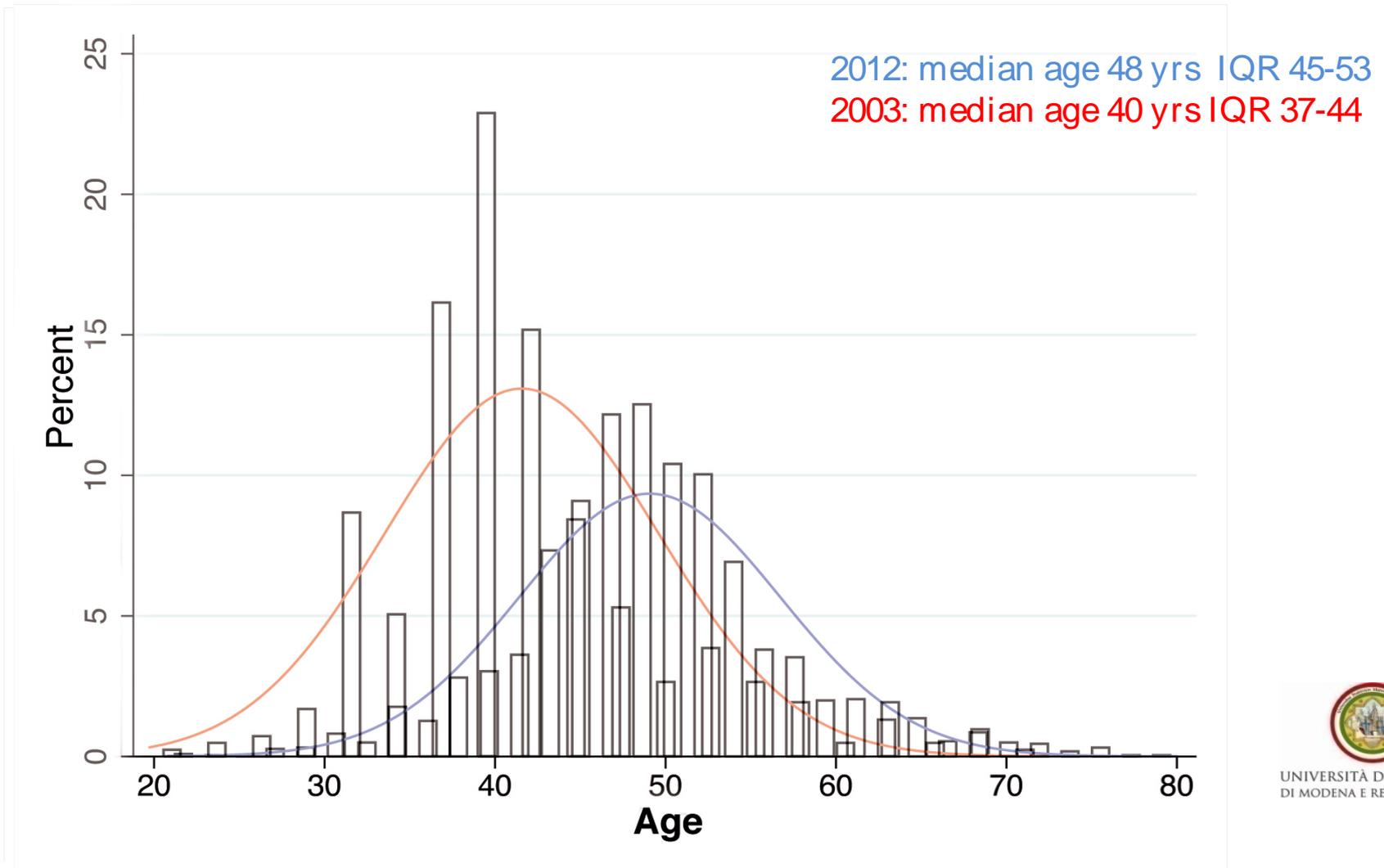
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# Epidemiological trends of HIV patients attending the Metabolic Clinic in the past 10 years



# The mean age of treated HIV patients (pts) is increasing



# The mean age at HIV seroconversion in the Modena University HIV cohort is increasing

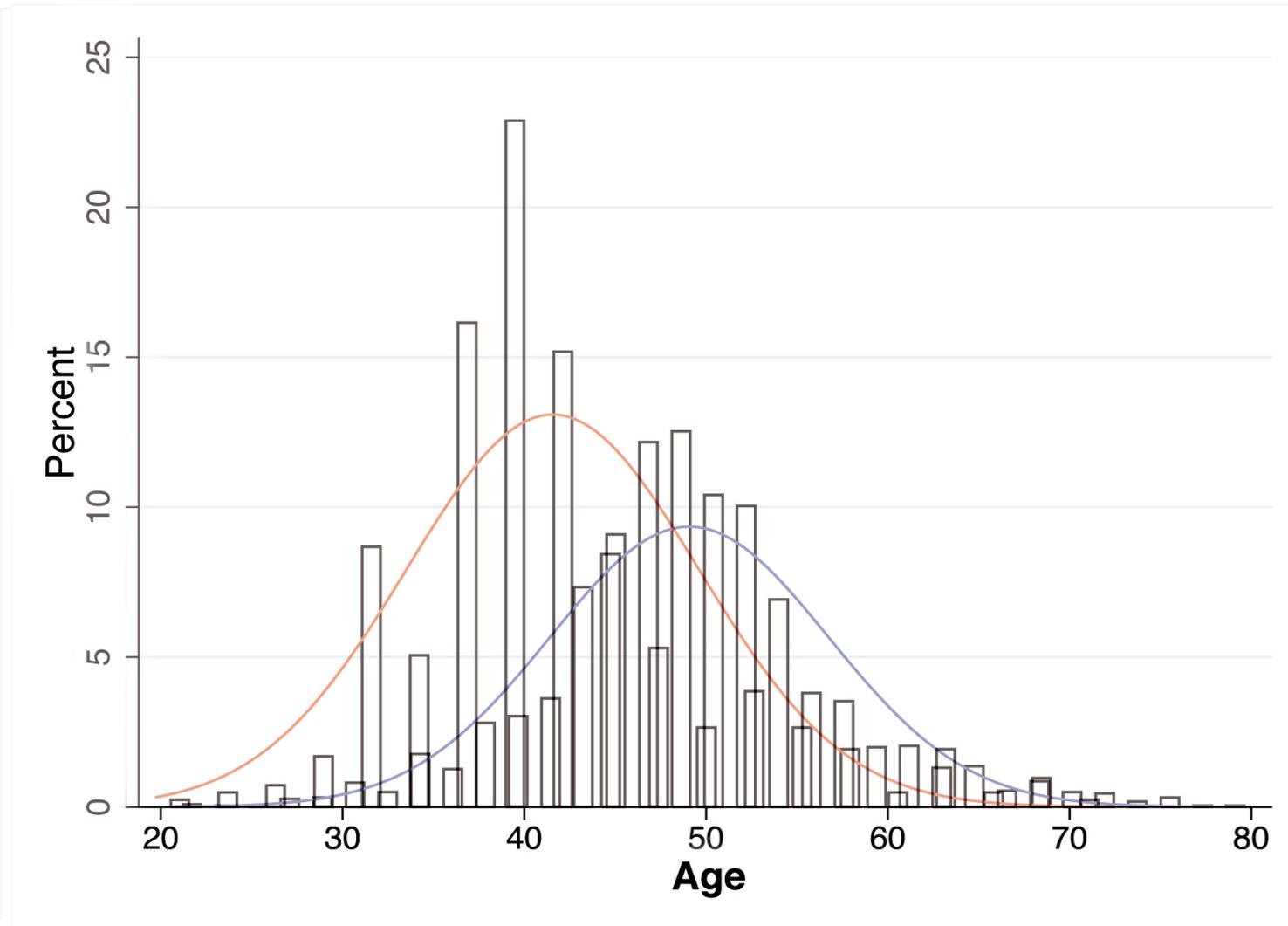
2003: median  
age 33 yrs



2012: median  
age 43 yrs



# The mean age of treated HIV patients (pts) is increasing

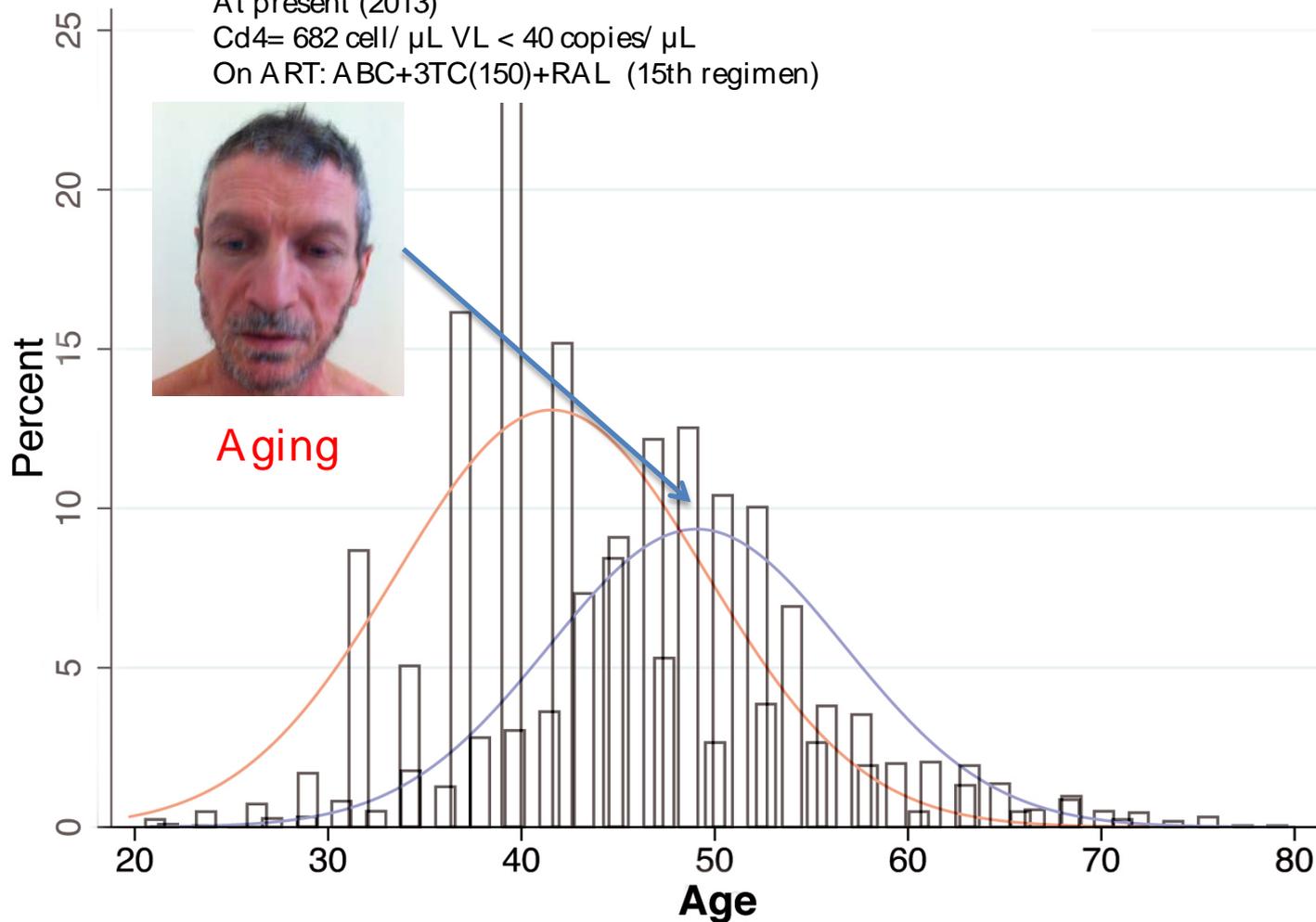


# The mean age of treated HIV patients (pts) is increasing

Mr A, 50 yrs,  
HIV diagnosis 1986  
At present (2013)  
Cd4= 682 cell/  $\mu$ L VL < 40 copies/  $\mu$ L  
On ART: ABC+3TC(150)+RAL (15th regimen)



Aging



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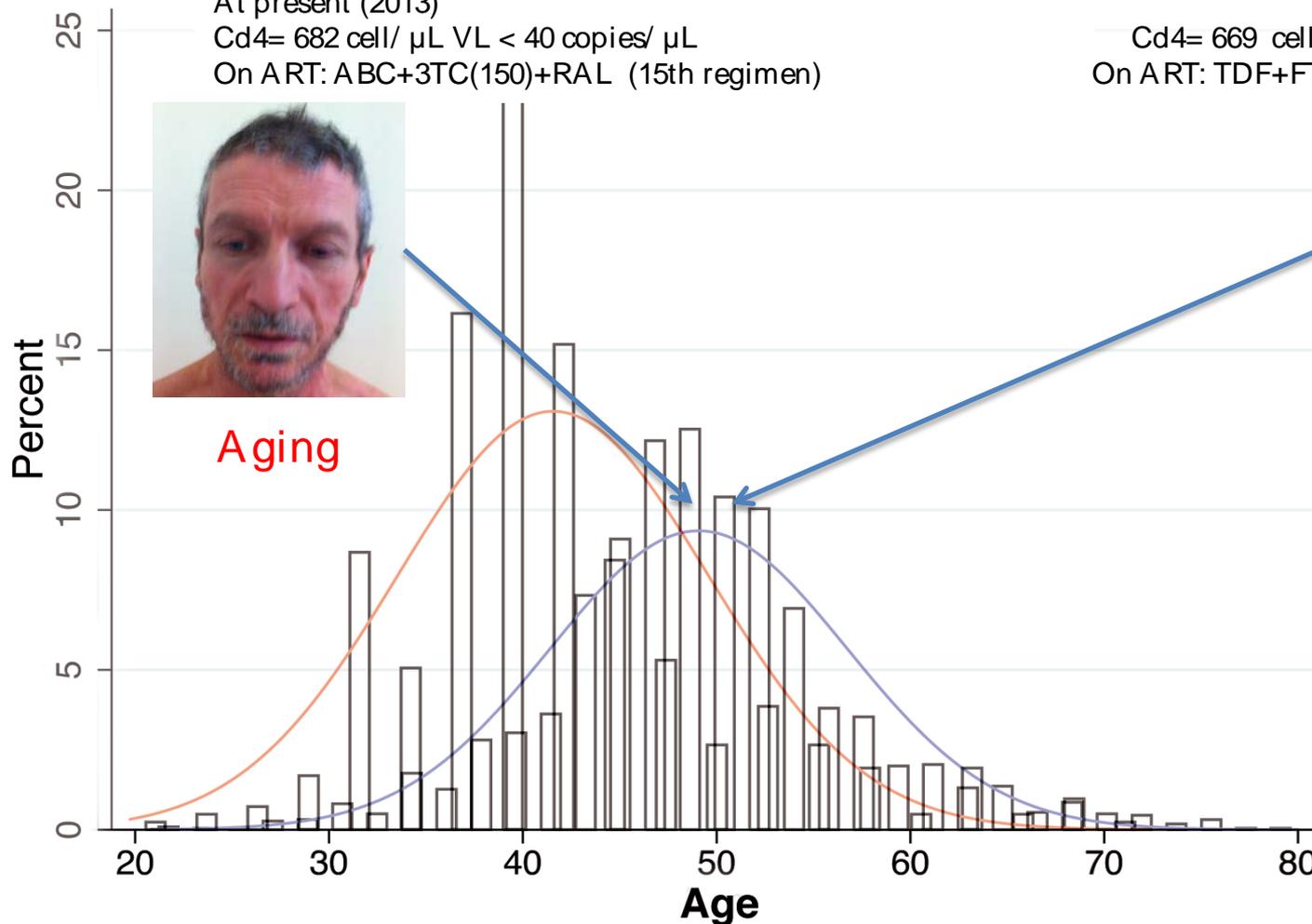


**Aging**

**Mr. B**, 50 yrs,  
HIV diagnosis 2006  
At present (2013)  
Cd4= 669 cell/  $\mu$ L VL < 40 copies/  $\mu$ L  
On ART: TDF+FTC+EFV (1st regimen)



**Aged**



# Objective

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To assess the prevalence of and risk factors for HIV Associated Non AIDS (HANA) conditions and multimorbidity (Mm) in seropositive pts aging with HIV or seroconverting at an older age and compared them to matched HIV seronegatives.



Aging vs Aged

HANA

Mm



# Methods

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Case-control study 1:1:3

Metabolic clinic cohort:

**Group 1: Aging pts**

HIV duration  $\geq 20.6$  years

**Group 2: Aged pts**

HIV duration  $< 11.3$  years

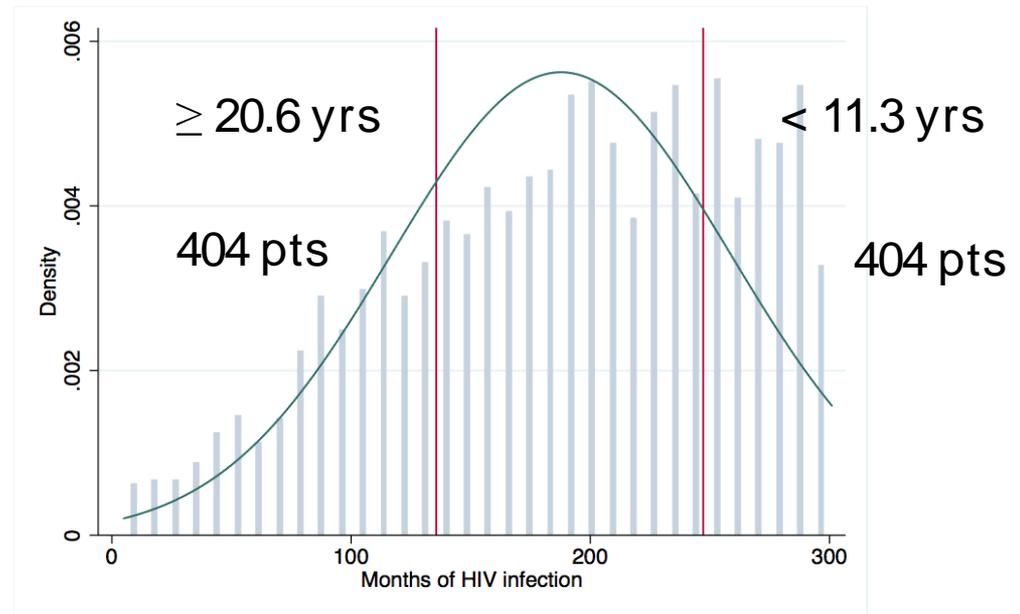
CINECA ARNO database

(Guaraldi G, CID 2011)

**Group 3: General Population**

HIV negative

Distribution of HIV duration in the MC cohort during the enrolment window: 2003 – 2012



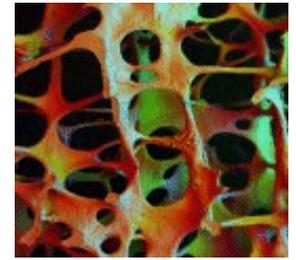
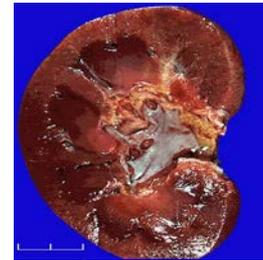
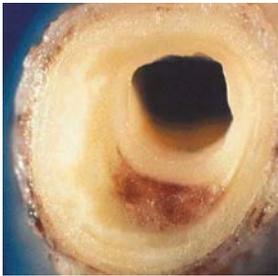
**Matching criteria:**

- ✓ Age
- ✓ Sex
- ✓ Geographical area of origin

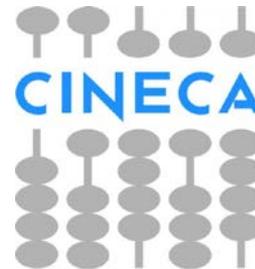
# Materials and Methods

End points:

1. **HANA conditions:** including: CVD, Htn, T2DM, renal failure.  
BMD in HIV only (Low BMD=-2SD t-score)



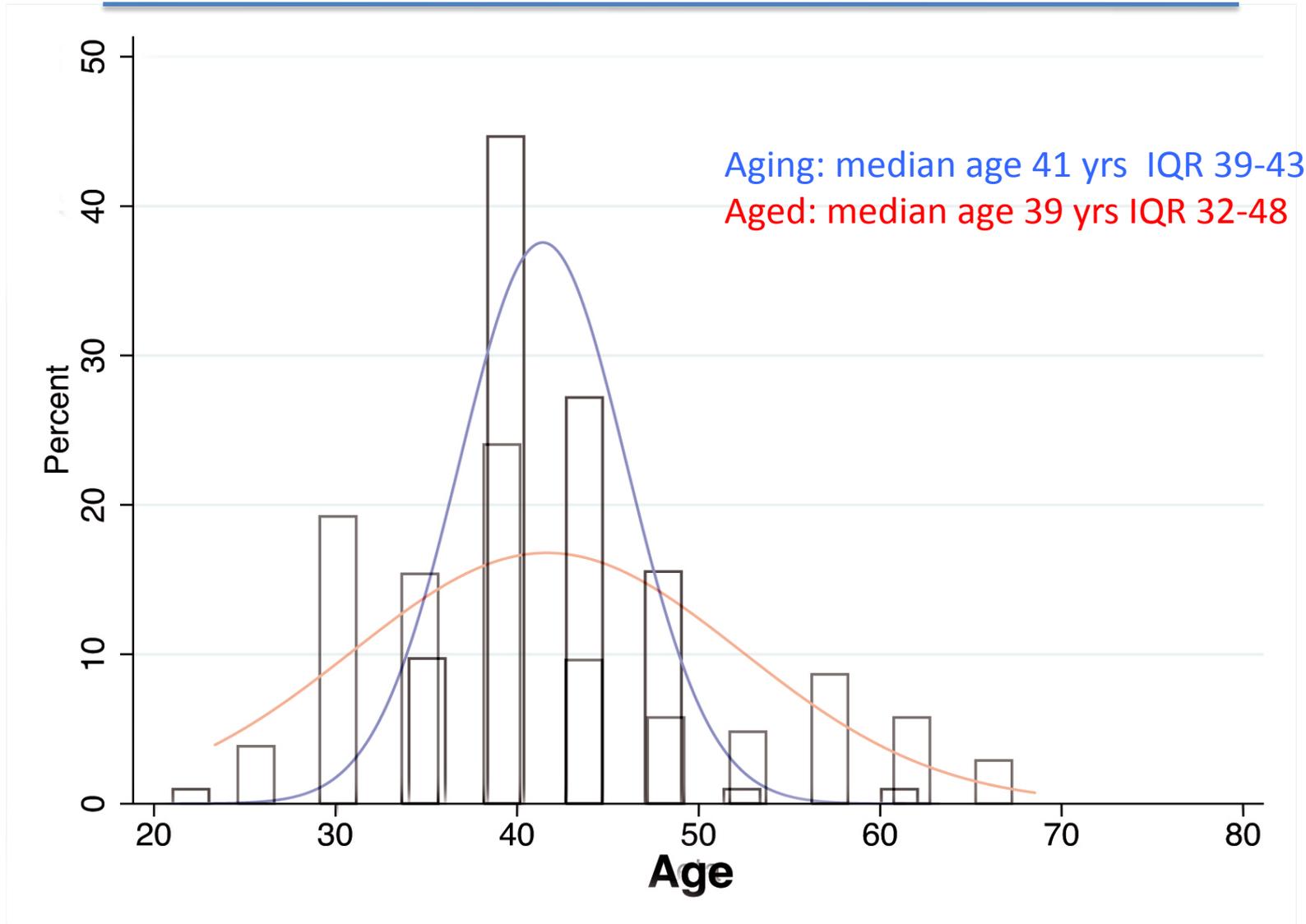
- ✓ Anamnestic/diagnostic
- ✓ Drug tracing



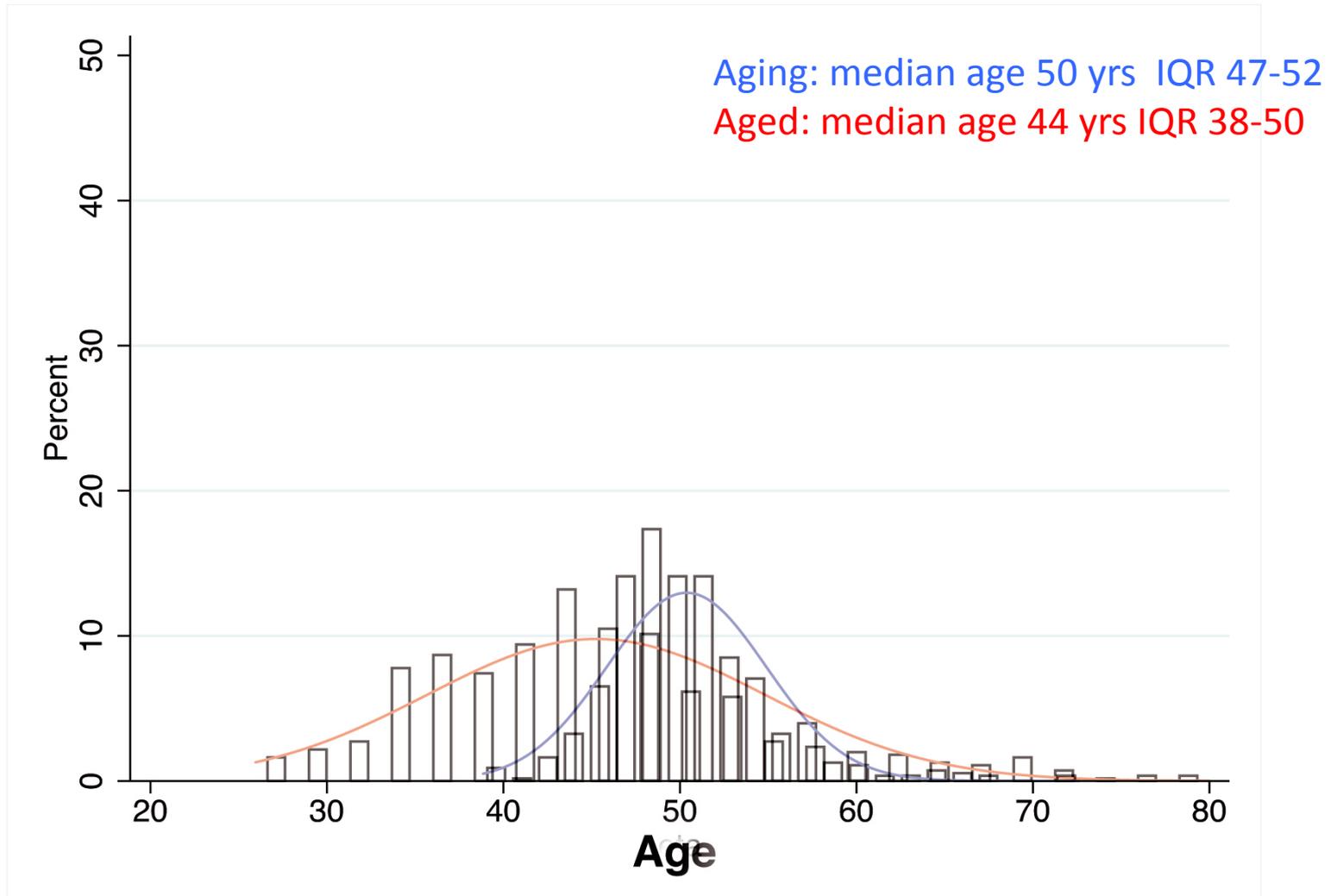
- ✓ ICD9
- ✓ Drug tracing

2. **Multimorbidity (Mm)** was defined as the association of 2 or more HANA conditions

# Relative contribution of Aging and Aged pts in the age distribution of the cohort in 2003



# Relative contribution of Aging and Aged pts in the age distribution of the cohort in 2012



# Statistical methods

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- Comparison among groups were performed using  $X^2$  test for categorical variables and T-test or Mann-Whitney U-test for normally and non-normally distributed continuous variables, respectively.
- Univariate and multivariable logistic regression analyses were performed to assess factors associated with individual HANA conditions and with Multimorbidity. Same analyses were performed in the HIV-infected subpopulation.

# Results

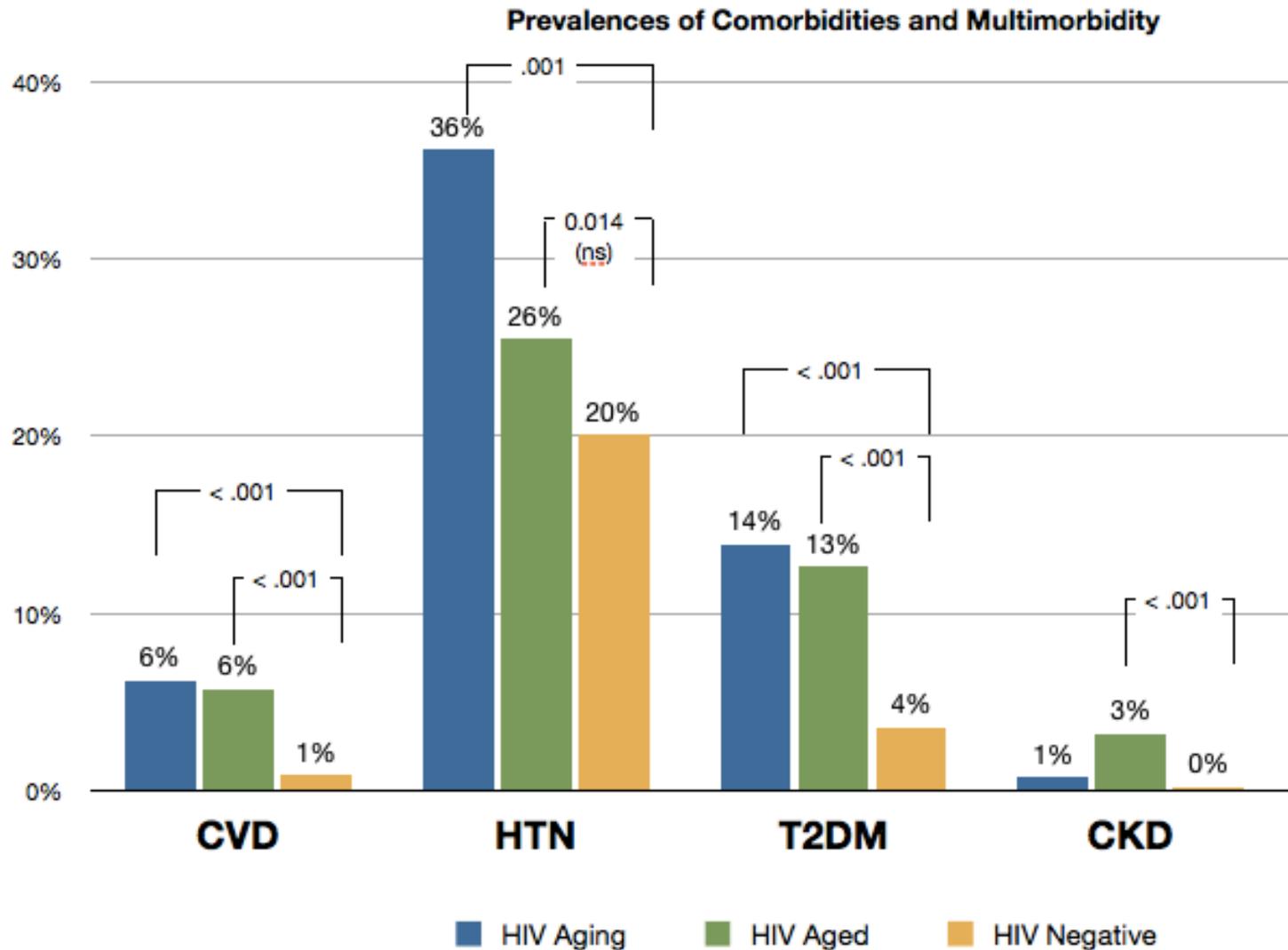
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Metabolic clinic cohort and CINECA ARNO database had same age and sex per protocol.

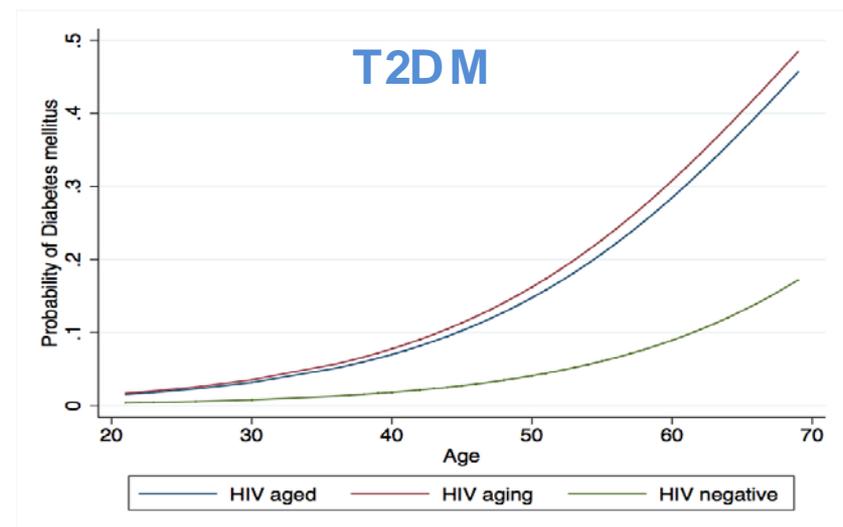
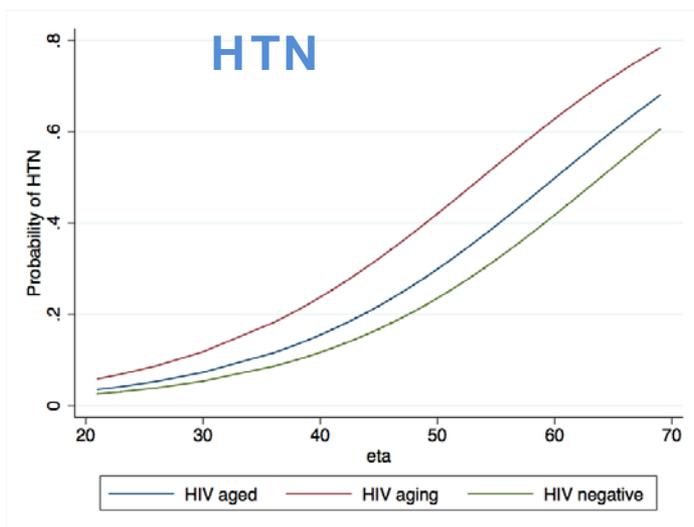
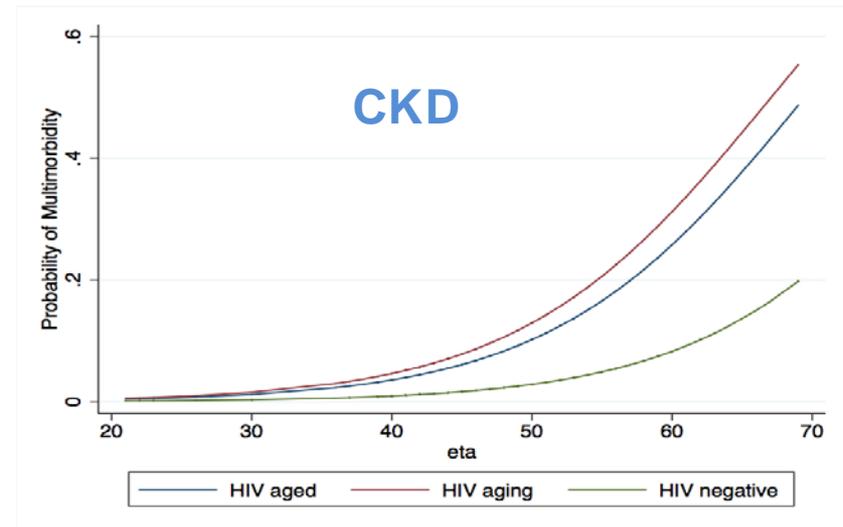
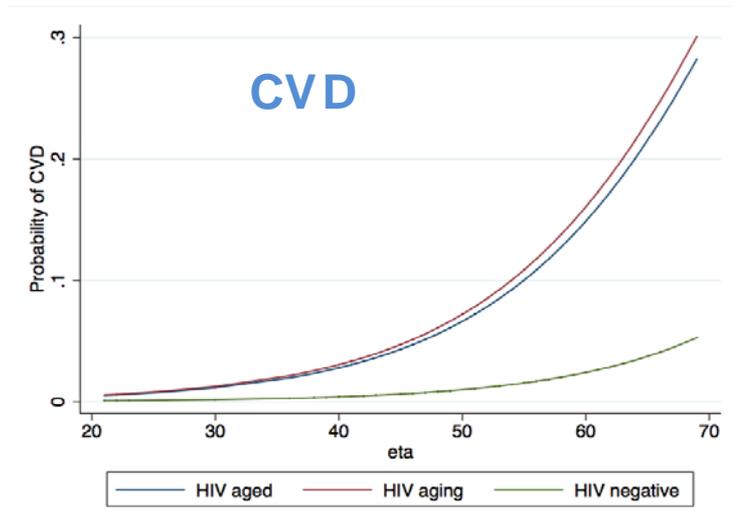
Life style, anthropometric and metabolic data are not collected in the CINECA ARNO database

	HIV aging	HIV aged	Overall p-value
N° (%)	404	404	–
Men (%)	287 (71)	287 (71)	1
Age (S.D.)	46.68 (±6)	46.68 (±6)	1
Smoke (%)			<b>0.017</b>
None	192 (49)	207 (60)	
Moderate	71 (18)	45 (13)	
Intense	122 (31)	93 (26)	
<b>Anthropometry</b>			
BMI (kg/ m <sup>2</sup> ) (S.D.)	23.2 (±3.7)	24.6 (±4.7)	<b>&lt;0.001</b>
Waist circumference (cm) (S.D.)	87 (±10)	89.3 (±12)	<b>0.007</b>
Lipodistrophy (%)			<b>&lt;0.001</b>
No lipodistrophy	46 (12)	83 (23.2)	
Lipoatrophy	160 (41)	101 (28)	
Fat accumulation	180 (46)	173 (48)	
<b>Cardiovascular and Metabolic</b>			
Triglycerides (mmol/ L) (IQR)	150 [105-230]	146 [100-230]	0.83
Total Cholesterol (mmol/ L) (S.D.)	183 (±44)	199 (±50)	<b>&lt;0.001</b>
High Density Lipoprotein (mmol/ L) (S.D.)	45 (±14)	45 (±13)	0.7
Low Density Lipoprotein (mmol/ L) (S.D.)	106 (±35)	119 (±35)	<b>&lt;0.001</b>
Fasting Glucose (mmol/ L) (IQR)	91 [85-101]	92 [86-100]	0.96
HOMA (S.D.)	3.5 [2.1-5.2]	2.6 [1.5-4.2]	<b>0.001</b>

# Prevalence of HANA condition



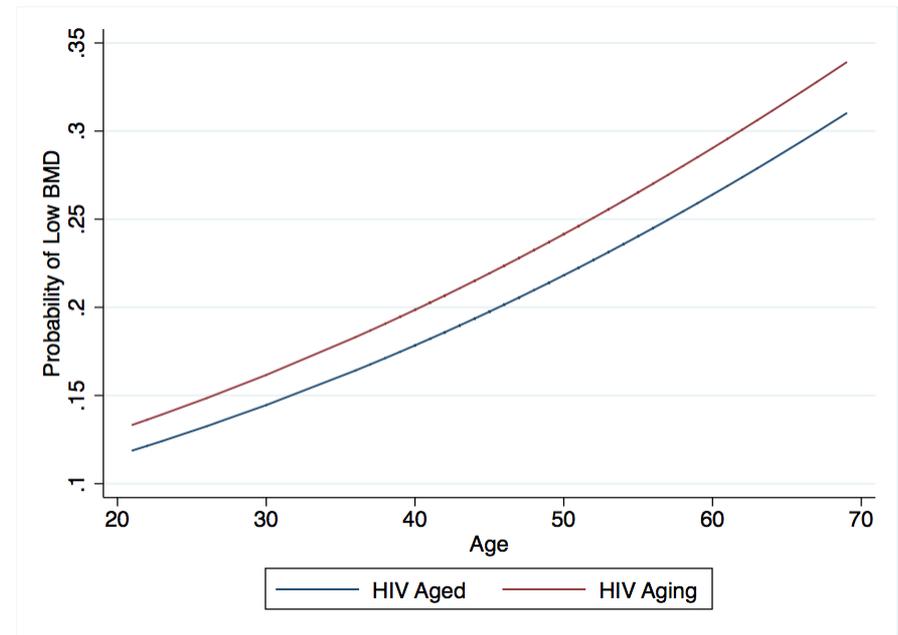
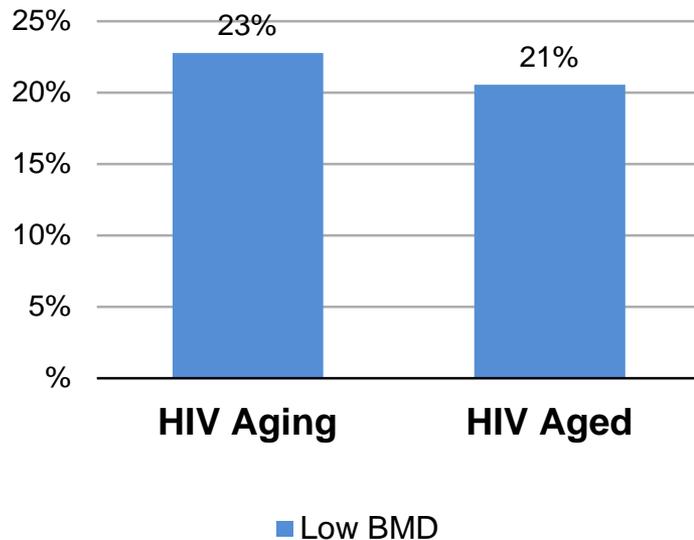
# Comparative risk for HANA condition



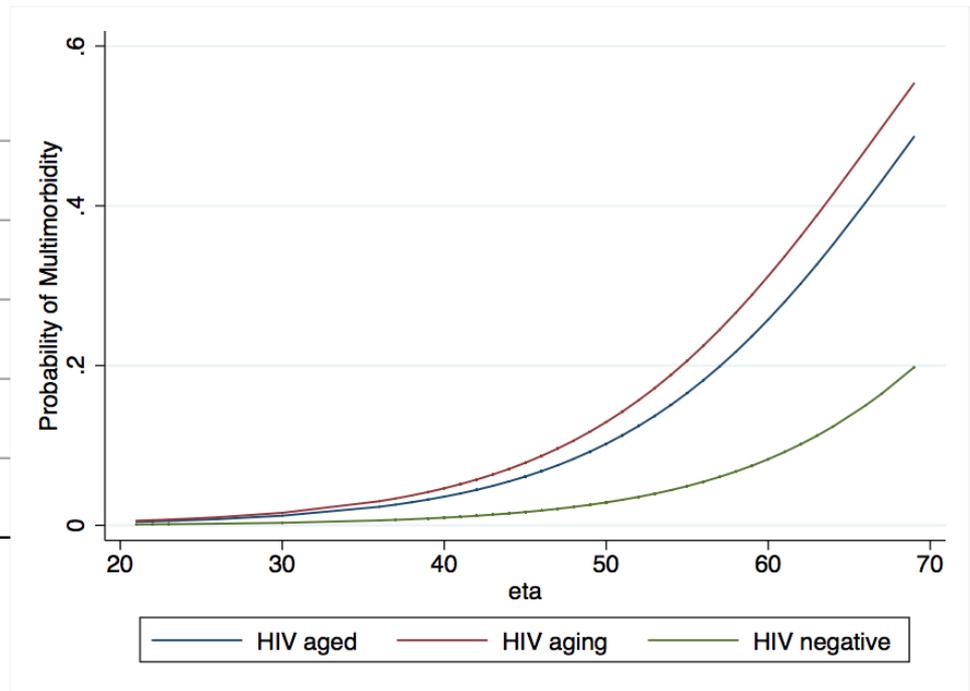
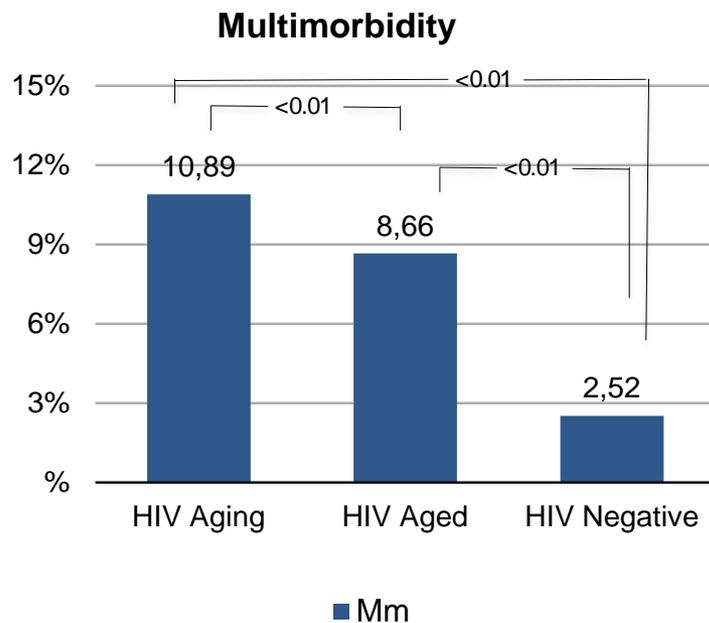
# Prevalence of and probability for Low BMD in HIV patients

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Prevalence of Low BMD in HIV+

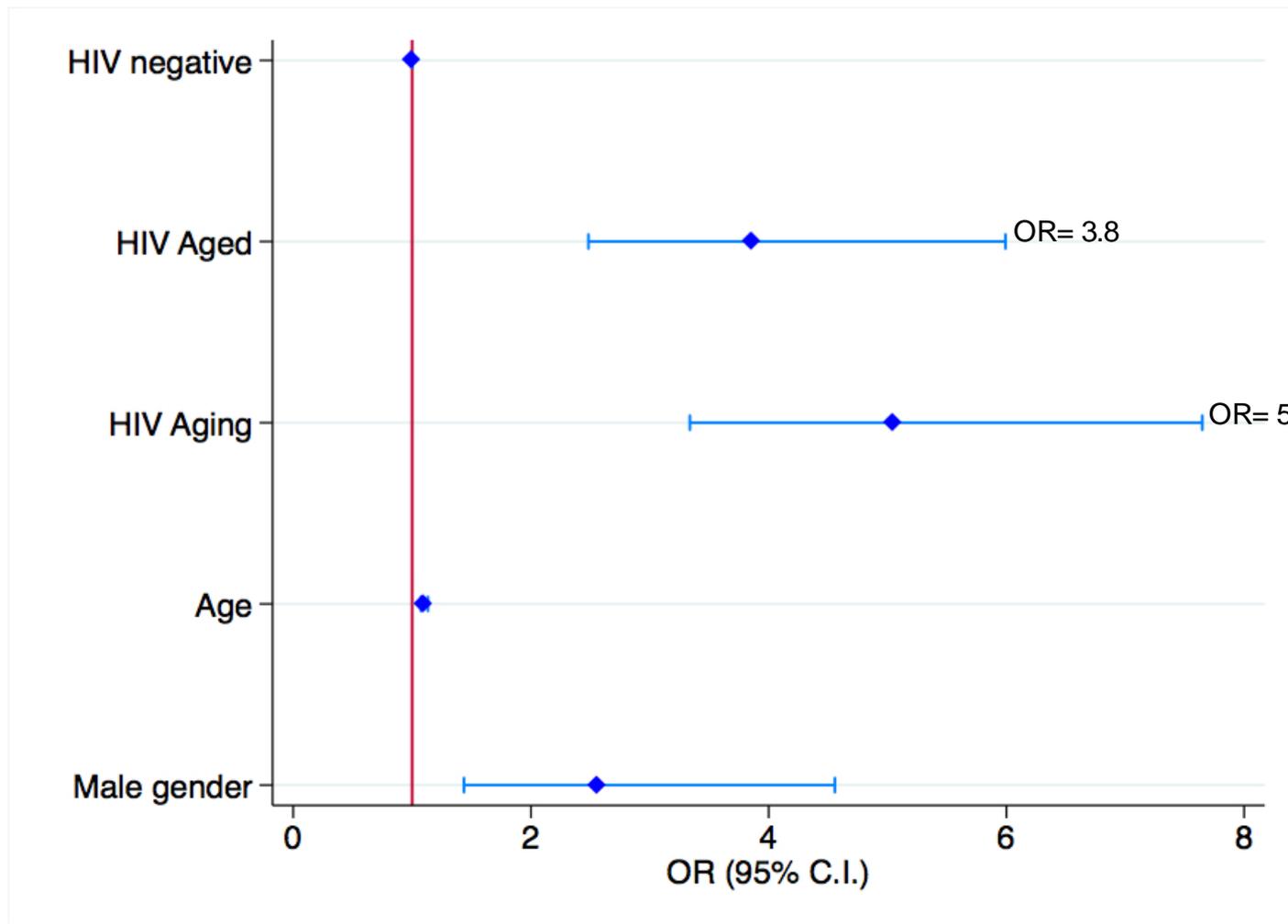


# Prevalence of and probability for M m

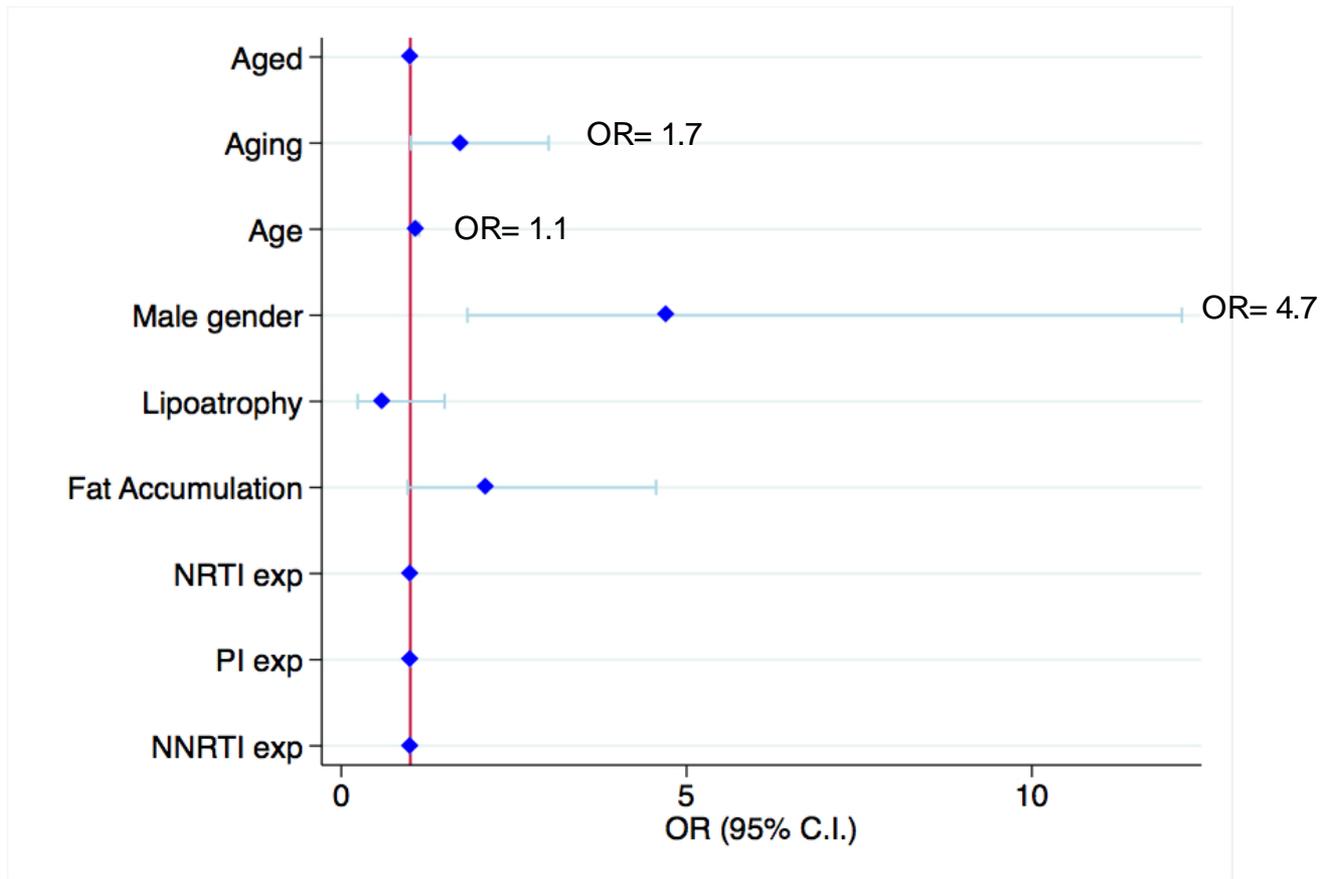


At any age the risk for M m was 5 fold ACCENTUATED in Aging pts compared to controls while Aged pts had an intermediate risk

# Multivariable logistic regression for predictors of M m in the whole cohort



# Multivariable logistic regression for predictors of Mm in HIV patients



# Discussion

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- At any age the risk for individual HANA conditions plus Mm was 5 fold higher in patients Aging with HIV compared to controls while pts seroconverting at an older age had an intermediate risk.
- This analysis shows that older HIV pts are heterogeneous. Host factors and duration of HIV exposure are involved in the increased risk of Mm compared to the general population.
- This study contributes to support an Accentuated Aging phenotype in HIV infected patients