AGING AND THE EVOLUTION OF COMORBIDITIES AMONG HIV PATIENTS IN THE EUROSIDA COHORT

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BACKGROUND and OBJECTIVE

Significant advances in antiretroviral therapy (ART) have increased life expectancy of people living with HIV (PWHIV)[1]. Prevalence of non-AIDS related comorbidities (e.g., diabetes and hypertension) is increased in PWHIV compared to the general population[2]. PLWHIV are more likely to develop comorbidities, due to age, exposure to risk factors, ART and HIV related factors, potentially requiring different, long-term healthcare management[3,4, 5]. In this context, it is important to characterize the evolution of the prevalence of these comorbidities and related risk factors. This will inform management of HIV care in general, including the choice of ART. The objective of this study is to characterize the non-AIDS related comorbidities prevalence and risk and factors for the development of renal impairment, bone fractures and cardiovascular (CV) events over time.

METHODS

EuroSIDA is a prospective cohort which systematically collects epidemiological, clinical, biological, and therapeutic data for more than 22,000 patients, followed in 35 European countries, Israel and Argentina. Two cross-sectional analyses were conducted in 2006 and 2014 in EuroSIDA cohort regarding patients' and disease characteristics, non-AIDS comorbidities and their risk factors, and treatment (ART and co-medication) by age groups. Inclusion criteria comprised patients recruited to EuroSIDA cohort before 01/01/2007 or 01/01/2015, for 2006 and 2014 analyses, respectively. Adult patients (>16 years) were selected if they had ≥1 clinical visit in one of these calendar years. Patients lost to follow-up before 01/01/2006 or 01/01/2014 were excluded.

The following definitions were used in the analysis:

- Cardiovascular Disease (CVD) Events including stroke, carotid endarterectomy, coronary bypass or angioplasty;
- Obesity - Body Mass Index (BMI) ≥30 kg/m^2.
- Chronic kidney disease (CKD) – defined as a confirmed [>3 months apart using CKD-EPI formula] eGFR <60mL/min for those with first eGFR> 60mL/min or a confirmed 25% decline where the first EGFR<60mL/min;
- nadir eGFR – defined as the lowest eGFR measured during 2006 or 2014;
- Bone fractures – any reported bone fracture since 2004 with documented date and site.
- Hypertension - systolic blood pressure (BP) ≥140mmgHg and/or diastolic BP ≥90mmHg and/or on hypertensive drugs,
- Dyslipidaemia - total cholesterol ≥ 6.2mmol/L, HDL ≤0.9mmol/L or triglycerides ≥2.3mmol/L;
- Diabetes - clinical diagnosis and/or antidiabetics/insulin use;
- Risk score for CV development using Data Collection on Adverse Events of Anti-HIV Drugs (D:A:D) CVD 5-year risk score and Framingham 10-year CVD risk score;
- Risk score for CKD development using D:A:D CKD risk score.
- Recent diagnosis – testing positive in 2 years prior Jun 2006 or Jun 2014;
- Recent ART (cART) – starting as cART from ART naïve in 2 years prior Jun 2006 or Jun 2014;

RESULTS

A total of 9,554 patients were included in 2006 and 11,504 patients in 2014. **Table 1** depicts main patient characteristics, and CV medication. PLWHIV in both years are predominantly Caucasian males, diagnosed and under treatment for over 2 years. The proportion of patients aged 50 years or older increased from 25.2% in 2006, to 44.0% in 2014, and the population with CV medication, both ever (21.0% *vs.* 31.8%) and on-going (17.6% *vs.* 26.8%), increased when compared to data from 2006.

Between 2006 to 2014, apart from smoking, the prevalence of all comorbidities and risk factors increased in the overall population, particularly for hypertension (25.4% vs. 40.6% in 2006 and 2014 respectively). This variation is also observed for the subgroup of patients ≥50 years, except for diabetes, where it decreased by 0.9%, and smoking which increased by 3.7% between 2006 and 2014 - **Figure 1**.

The proportion of patients with eGFR rates <60 was similar over time, however, the proportion of patients ≥50 years in this group increased from 4.2% in 2006 to 5.3% in 2014 - **Figure 2**.

There was an increase of 5.0% of patients in renal DAD high risk group. This is particularly observed for patients ≥50 years which increased from 24.3% in 2006 to 36.9% in 2014, in the high risk group - **Figure 3**.

The CVD 5-year DAD risk score show an increase in the proportion of patients with high or very high risk groups (from 9.5% in 2006 to 14.3% in 2014 for both groups), which was almost exclusively due to patients aged ≥50 years -**Figure 4**.

In 2014 overall proportion of patients with Framingham 10-year cardiovascular high risk score increased by 6.6% compared to 2006. This was particularly evident among those aged >50 (14.5% vs. 22.2%) - **Figure 5**.

Table 1 - Sociodemographic and clinical characteristics

	2006 (N=9,554) n (%)	2014 (N=11,504) n (%)
Male gender	7,029 (73.6)	8,275 (71.9)
Caucasians	8,312 (87.0)	10,164 (88.4)
Age, years		
<30	942 (9.9)	443 (3.9)
30-49	6202 (64.9)	5,997 (52.2)
>50	2,410 (25.2)	5,064 (44.0)
BMI		
<18.5-24.8	6,056 (63.4)	5,878 (51.0)
25-29.9	2,005 (21.0)	2,718 (23.6)
>30	407 (4.3)	735 (6.4)
Smoking status		
Never	2,483 (26.0)	3,443 (29.9)
Current	3,029 (31.7)	3,401 (29.6)
Past	687 (7.2)	1,612 (14.0)
Recent cART	643 (6.7)	475 (4.1)
Not recent HIV diagnosis	8,660 (90.6)	7,647 (95.8)

BMI: Body Mass Index; CV: Cardiovascular; ART: antiretroviral therapy

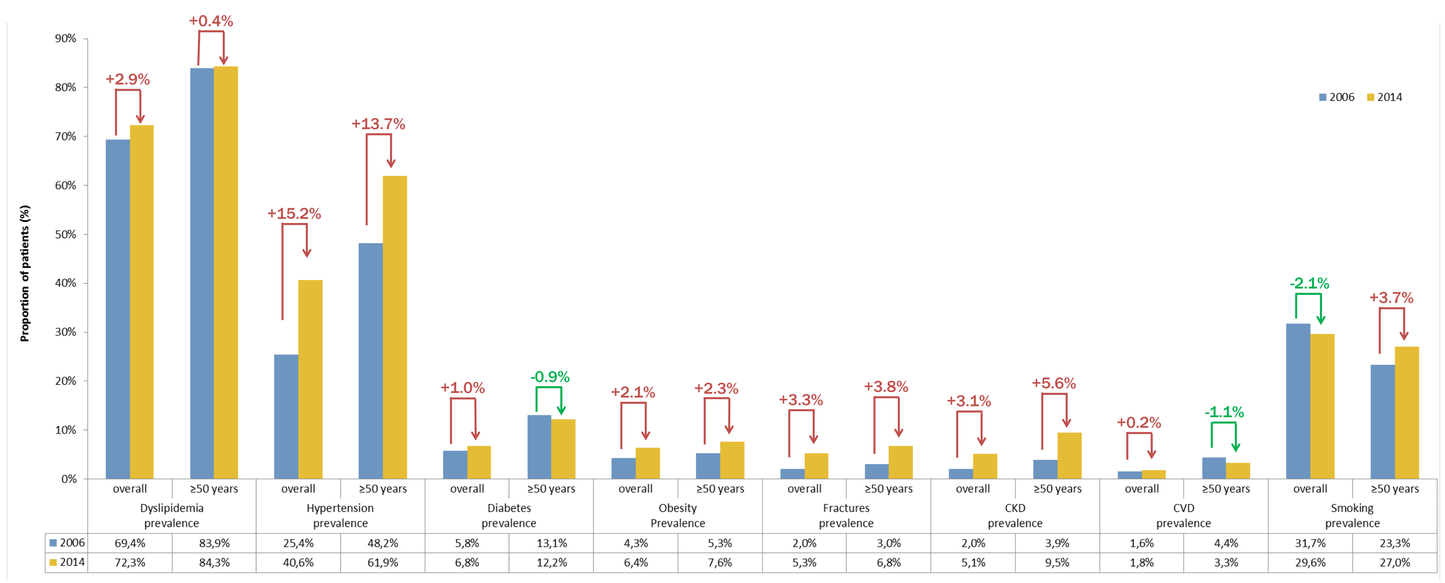
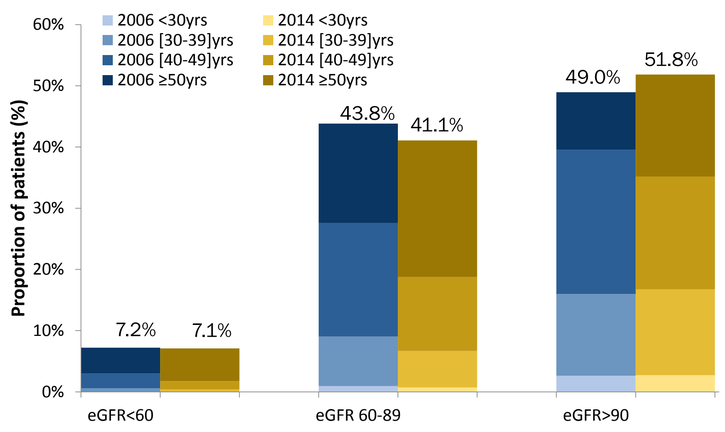
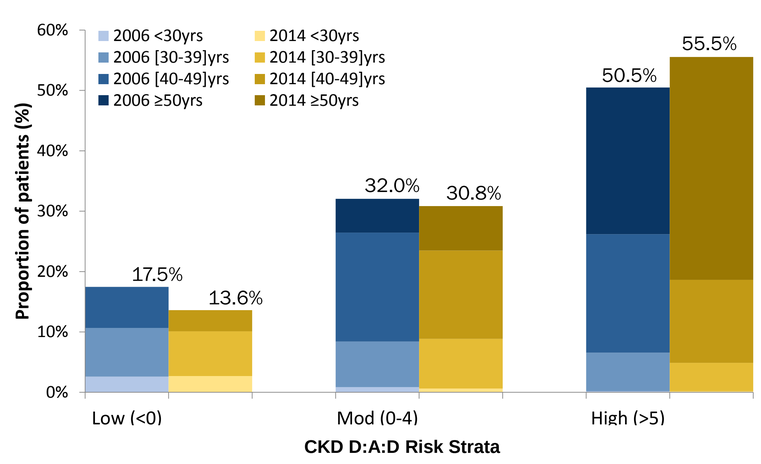


Figure 1 – Comorbidities and risk factors, in 2006 and 2014, overall and aged ≥50 years



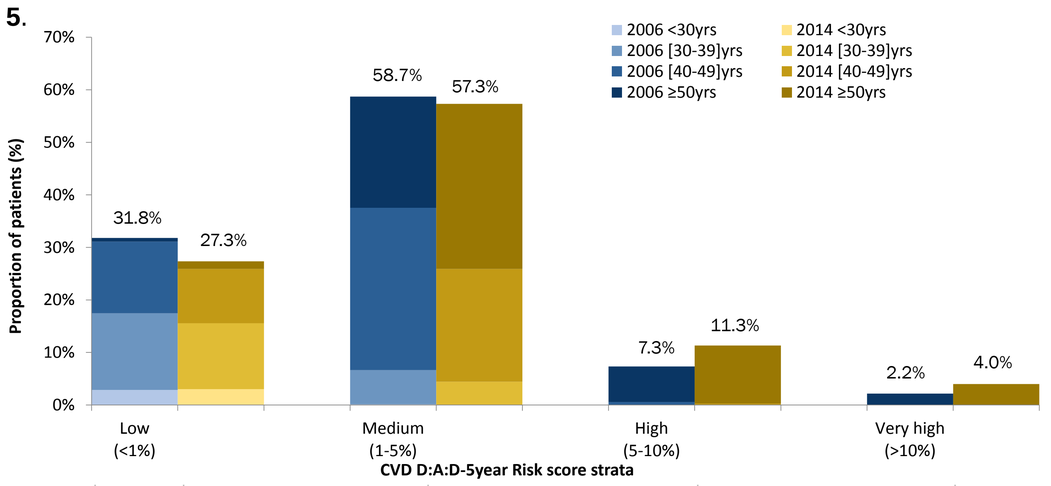
Age Group	2006 (n=489)	2014 (n=566)	2006 (n=2,971)	2014 (n=3,278)	2006 (n=3,318)	2014 (n=4,138)
<30 yrs	0.0%	0.0%	0.9%	0.7%	2.7%	2.7%
[30-39] yrs	0.6%	0.4%	8.1%	6.0%	13.3%	14.0%
[40-49] yrs	2.4%	1.4%	18.5%	12.1%	23.6%	18.4%
≥50 yrs	4.2%	5.3%	16.3%	22.3%	9.4%	16.7%

Figure 2 - Distribution of nadir eGFR by age group, in 2006 and 2014



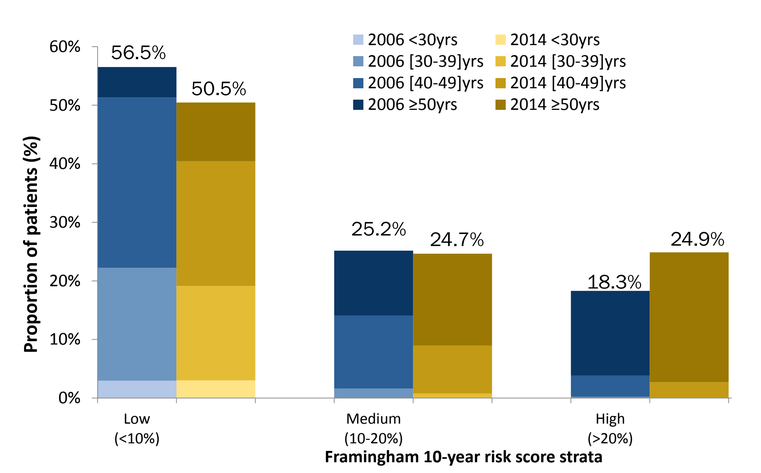
Age group	2006 (n=1,184)	2014 (n=1,086)	2006 (n=2,172)	2014 (n=2,462)	2006 (n=3,422)	2014 (n=4,434)
<30 yrs	2.6%	2.7%	0.8%	0.6%	0.2%	0.2%
[30-39] yrs	8.1%	7.4%	7.6%	8.2%	6.4%	4.7%
[40-49] yrs	6.8%	3.5%	18.0%	14.6%	19.6%	13.7%
≥50 yrs	0.0%	0.0%	5.6%	7.4%	24.3%	36.9%

Figure 3 - DAD risk score by age group, in 2006 and 2014



Age Group	2006 (n=1,784)	2014 (n=1,923)	2006 (n=3,294)	2014 (n=4,032)	2006 (n=411)	2014 (n=797)	2006 (n=122)	2014 (n=281)
<30 yrs	2.9%	3.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
[30-39] yrs	14.6%	12.5%	6.5%	4.4%	0.0%	0.0%	0.0%	0.0%
[40-49] yrs	13.7%	10.4%	30.9%	21.5%	0.6%	0.3%	0.0%	0.0%
≥50 yrs	0.7%	1.4%	21.2%	31.4%	6.8%	11.0%	2.2%	4.0%

Figure 4 - CVD 5-year DAD risk score by age groups, in 2006 and 2014



Age Group	2006 (n=3,172)	2014 (n=3,549)	2006 (n=1,412)	2014 (n=1,734)	2006 (n=1,027)	2014 (n=1,750)
<30 yrs	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%
[30-39] yrs	19.3%	16.1%	1.6%	0.8%	0.2%	0.1%
[40-49] yrs	29.1%	21.3%	12.4%	8.2%	3.6%	2.6%
≥50 yrs	5.2%	10.0%	11.1%	15.7%	14.5%	22.2%

Figure 5 - Framingham risk score by age groups, in 2006 and 2014

CONCLUSION

Between 2006 and 2014, the population aged and presents overall higher prevalence of non-AIDS comorbidities, namely renal and cardiovascular along with increased associated risk factors for these (except smoking). This is particularly evident for patients over 50 years old, who are now almost half the patient population. Careful HIV management, including screening and regular monitoring of the major comorbidities, and optimal selection of ART (that balance HIV outcomes with fewer long-term impact on chronic comorbidities, and the right opportunity costs), could lead to an improved management of these comorbidities and to a continuous improvement of health outcomes and quality of life in PLHIV.

EuroSIDA study group:
http://www.chip.dk/Studies/EuroSIDA/Study-group

Download poster at: www.chip.dk

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