

EPIDEMIOLOGÍA DE LAS COMORBILIDADES EN PERSONAS QUE VIVEN CON VIH

Mar Masiá

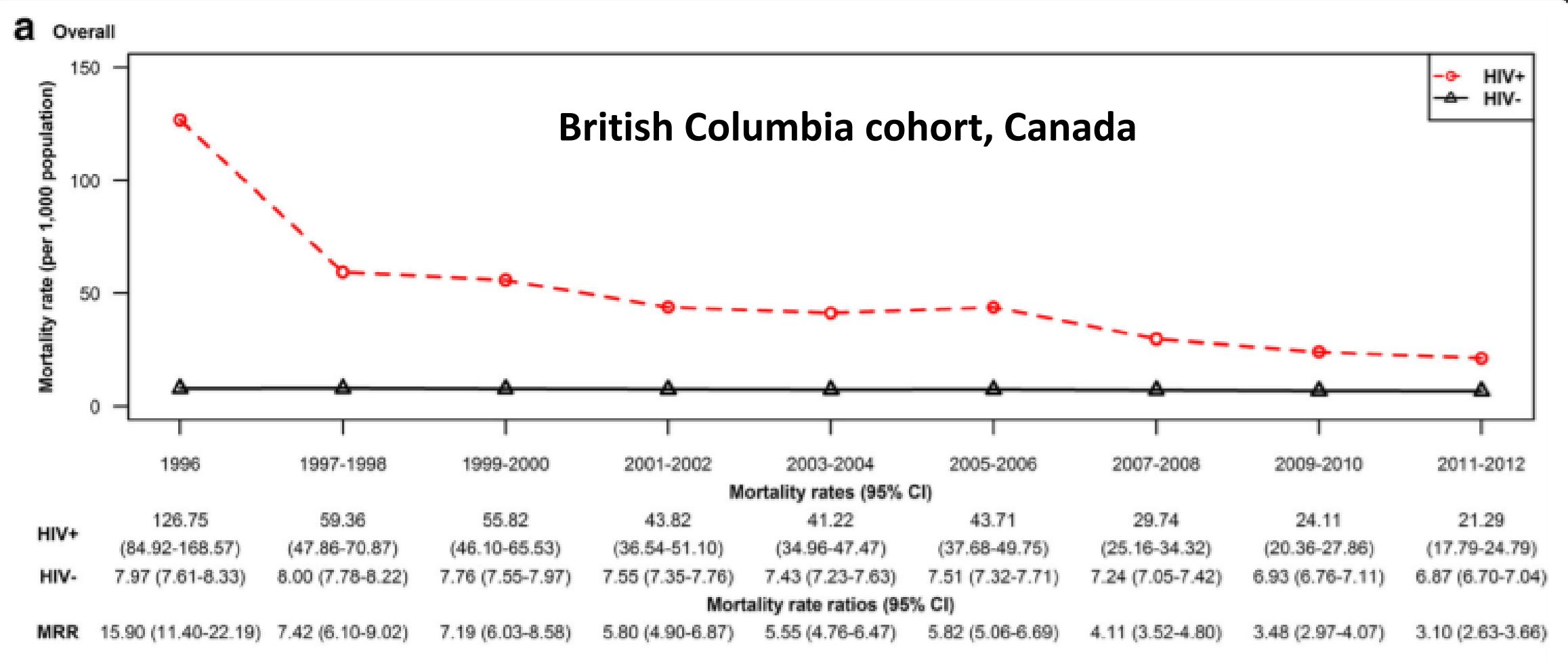
Unidad de Enfermedades Infecciosas
Hospital General Universitario de Elche

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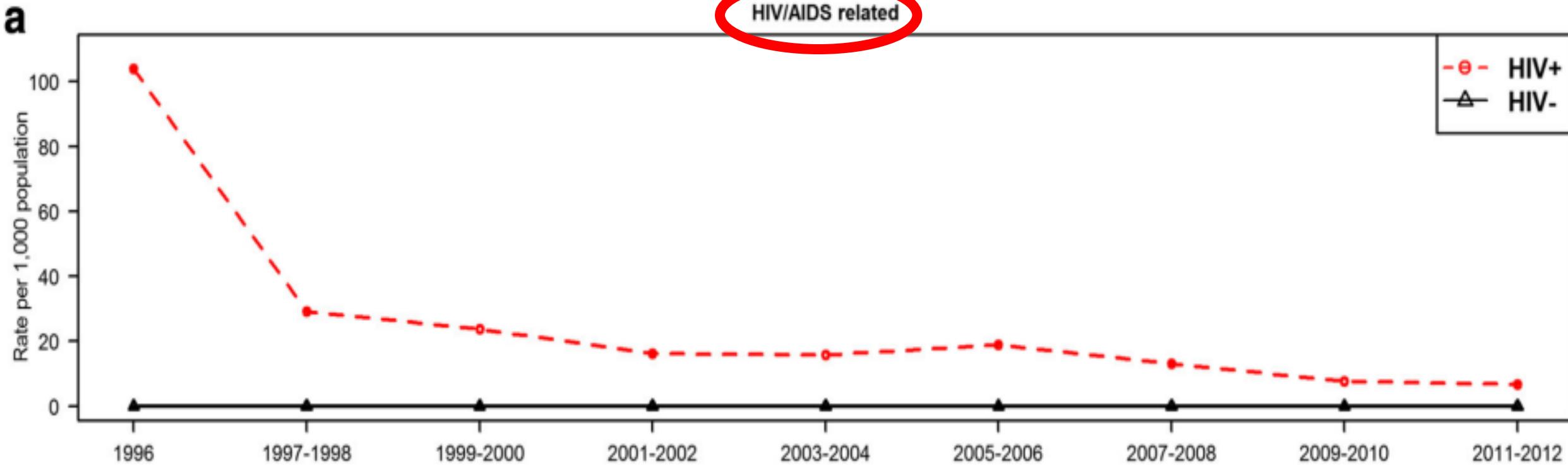
Changes in mortality rates and causes of death in a population-based cohort of persons living with and without HIV from 1996 to 2012

Eyawo et al., BMC Infect Dis 2017



Changes in mortality rates and causes of death in a population-based cohort (British Columbia) of HIV+ and HIV- people from 1996 to 2012

Eyawo et al, BMC Infect Dis 2017



Cohorte nacional danesa, 1995-2014

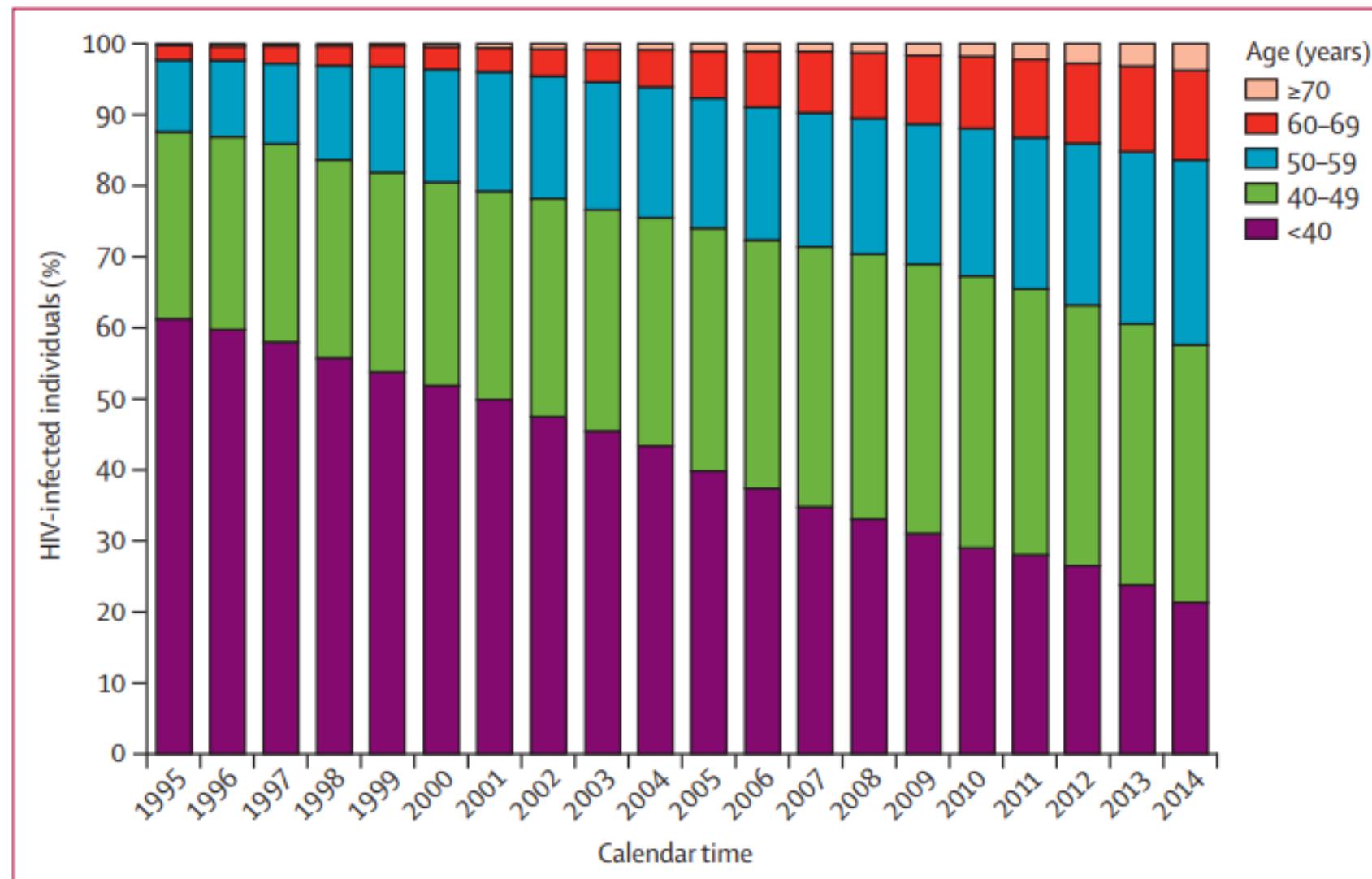


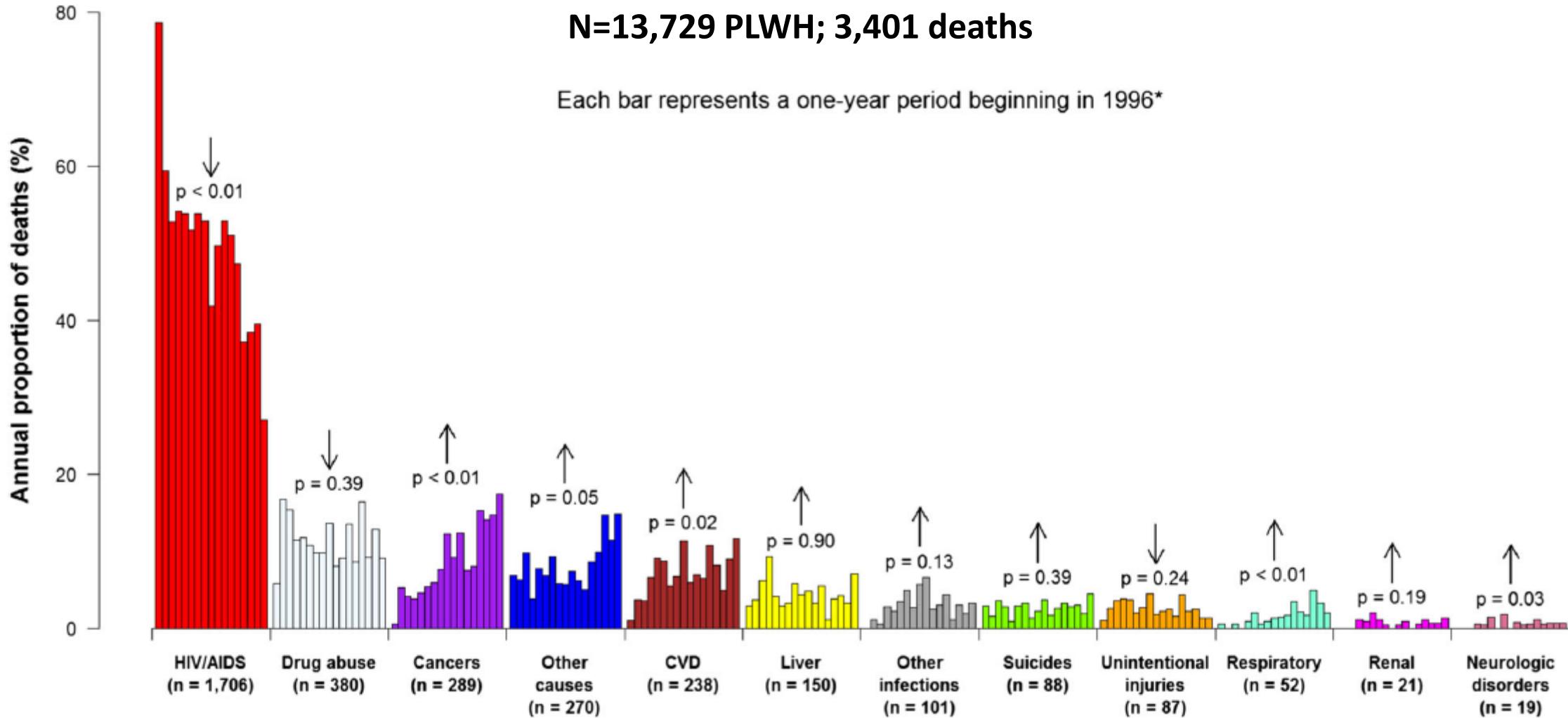
Figure 1: Changes in age with calendar time for the Danish HIV Cohort Study



Changes in mortality rates and causes of death in a population-based cohort (British Columbia) of HIV+ people from 1996 to 2012

a HIV-infected

Eyawo et al, BMC Infect Dis 2017



Mortality and causes of death in people diagnosed with HIV in the era of highly active antiretroviral therapy compared with the general population: an analysis of a national observational cohort (England and Wales, 1997-2012)



Croxford et al,
Lancet Public Health
2017

88,994 PLWH	Mortality rate per 10 000 person-years (95% CI)	Observed deaths	Expected deaths*	Standardised mortality ratio (95% CI)
People diagnosed with HIV	375 874 person-years			
All-cause mortality	60.8 (58.4-63.4)	2288	816	2.8 (2.7-2.9)
Non-AIDS deaths	33.9 (32.1-35.8)	1275	803	1.6 (1.5-1.7)
Non-AIDS infections	5.3 (4.6-6.1)	198	29	6.8 (5.9-7.8)
Non-AIDS cancers	7.4 (6.6-8.3)	279	264	1.1 (0.94-1.2)
Cardiovascular disease and stroke	6.0 (5.3-6.8)	226	195	1.2 (1.0-1.3)
Liver disease	4.1 (3.5-4.8)	154	56	2.8 (2.3-3.2)
Accident	1.8 (1.4-2.3)	69	56	1.2 (0.96-1.6)
Suicide	1.5 (1.2-2.0)	58	40	1.5 (1.1-1.9)
Substance misuse	2.5 (2.0-3.0)	93	40	2.3 (1.9-2.8)
Other causes	5.3 (4.6-6.1)	198	123	1.6 (1.4-1.9)

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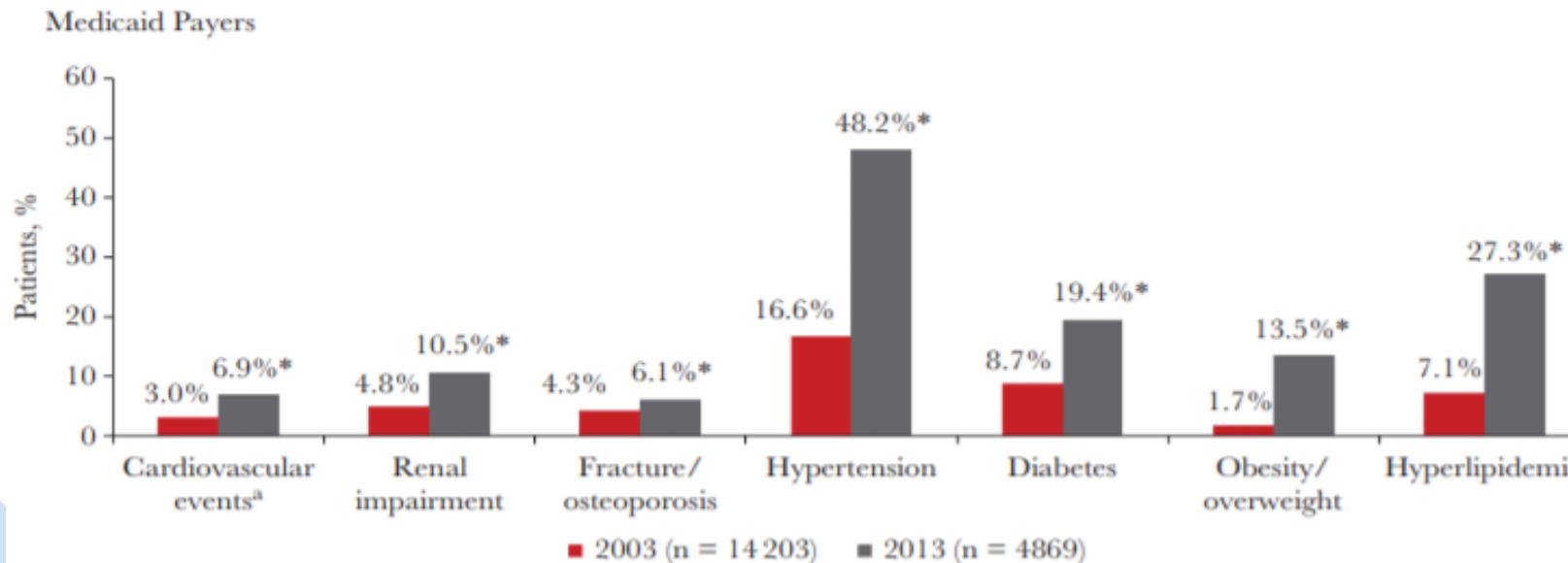
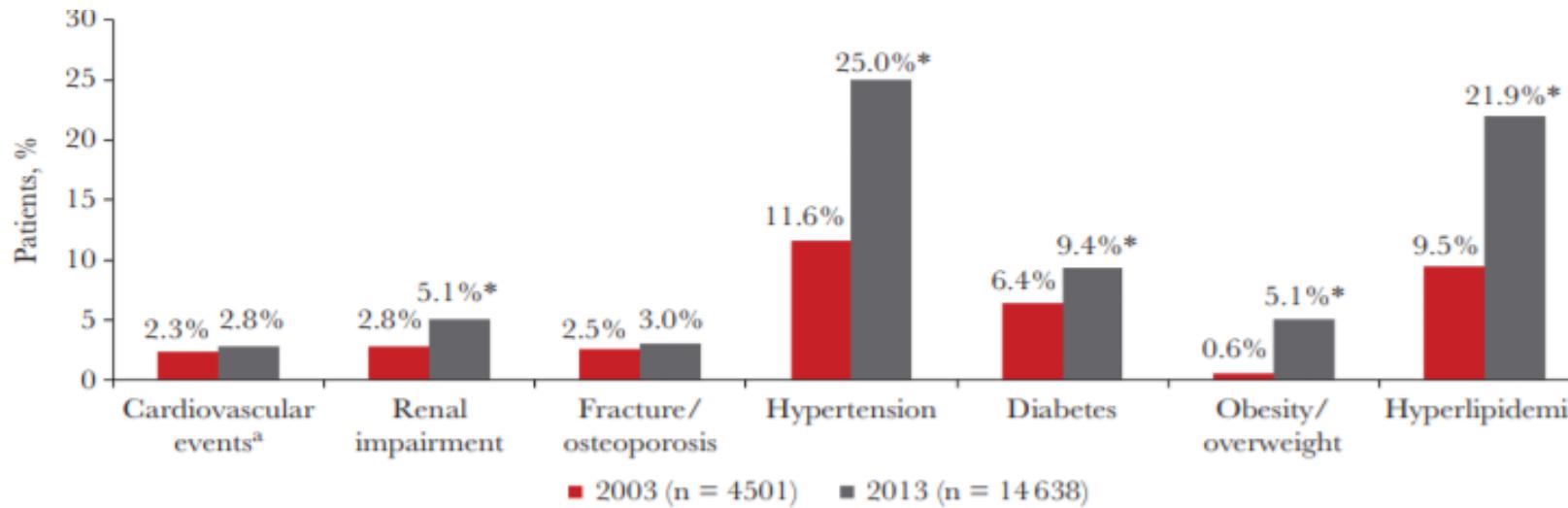
Distribution of causes of death in CoRIS and in the general population from 2004 to 2014

	General population	CoRIS
Cause of Death	N (%)	N (%)
AIDS-associated diseases	11529 (0.30 %)	154 (41.85 %)
Liver disease	143085 (3.72 %)	34 (9.24 %)
Non-AIDS-defining Malignancies	1006780 (26.15 %)	52 (14.13 %)
Non-AIDS Infections	133787 (3.47 %)	26 (7.07 %)
Cardiovascular disease	1214711 (31.55 %)	9 (2.45 %)
Diseases of the blood	14174 (0.37 %)	1 (0.27 %)
Pulmonary diseases	332309 (8.63 %)	9 (2.45 %)
Central nervous system diseases	179137 (4.65 %)	2 (0.54 %)
Drug abuse	5875 (0.15 %)	8 (2.17 %)
External causes	113277 (2.94 %)	7 (1.90 %)
Suicide	34048 (0.88 %)	8 (2.17 %)
Other diseases	594126 (15.43 %)	11 (2.99 %)
Undefined and unknown causes	67874 (1.76 %)	47 (12.77 %)
TOTAL	3850712 (100.00 %)	368 (100.00 %)

Alejos et al, Medicine
2016

Comorbidities Among US Patients With Prevalent HIV Infection—A Trend Analysis

Gallant, J Infect Dis 2017



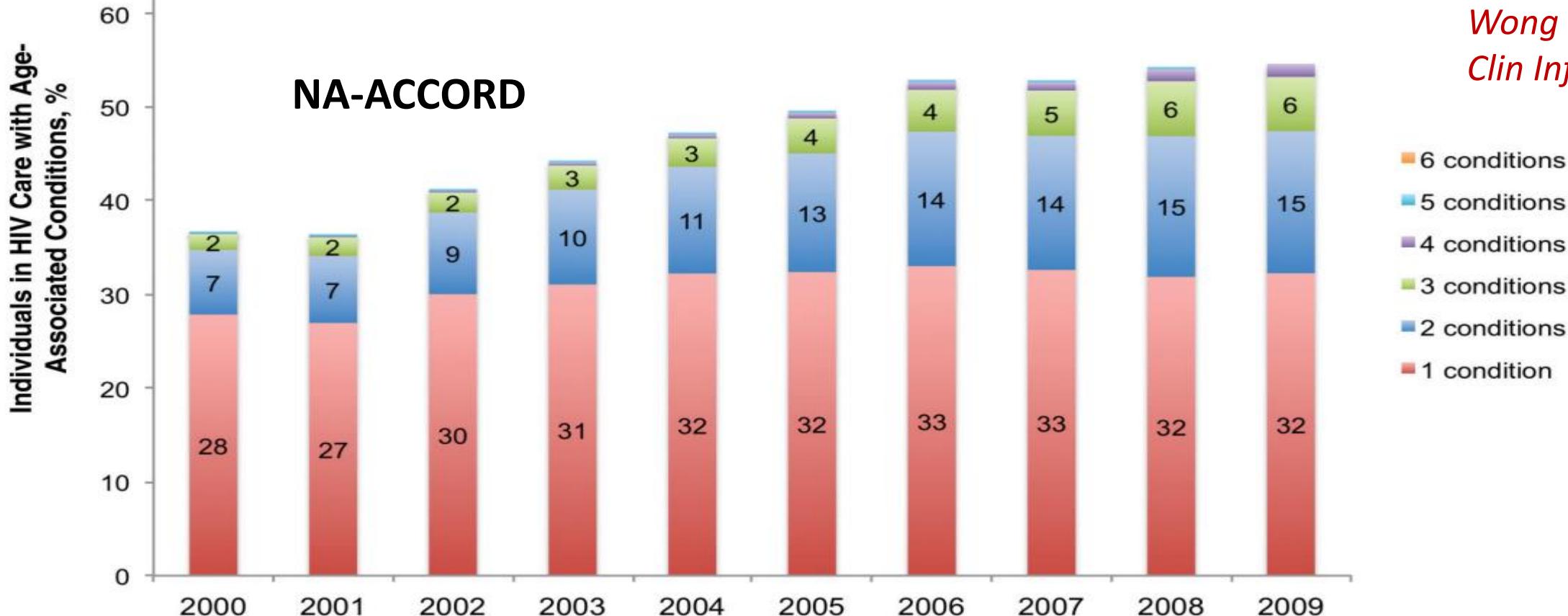
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Multimorbidity Among Persons Living with Human Immunodeficiency Virus in the United States

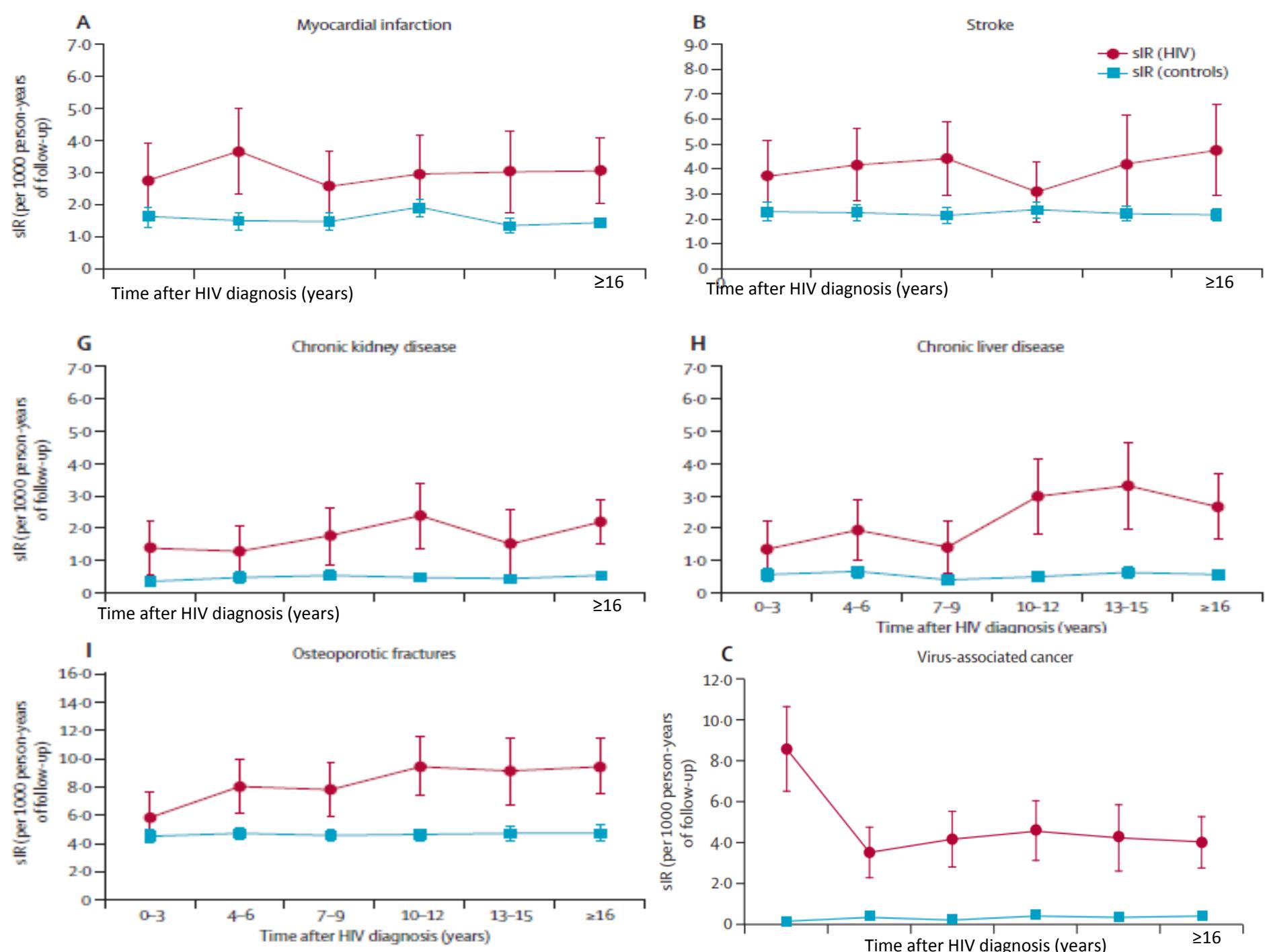
Wong et al,
Clin Infect Dis 2018



Conditions, No.	n	n	n	n	n	n	n	n	n	
4	4172	6325	8365	9121	9733	10 861	11 166	12 277	9074	3705
1	1162	1705	2512	2833	3137	3517	3687	4004	2892	1195
2	287	452	727	923	1108	1375	1601	1756	1363	562
3	73	126	179	234	296	405	499	592	530	214
4	2	8	16	30	39	69	96	111	120	52
5	0	1	1	1	1	1	8	10	8	3
6	0	0	0	0	0	0	0	0	1	0

Incidencia de comorbilidades por años de seguimiento, Dinamarca 1995-2014

Rasmussen, Lancet HIV 2015



Comorbidity is more common and occurs earlier in persons living with HIV than in HIV-uninfected matched controls, aged 50 years and older: A cross-sectional study

Maciel, Int J Infect Dis 2018

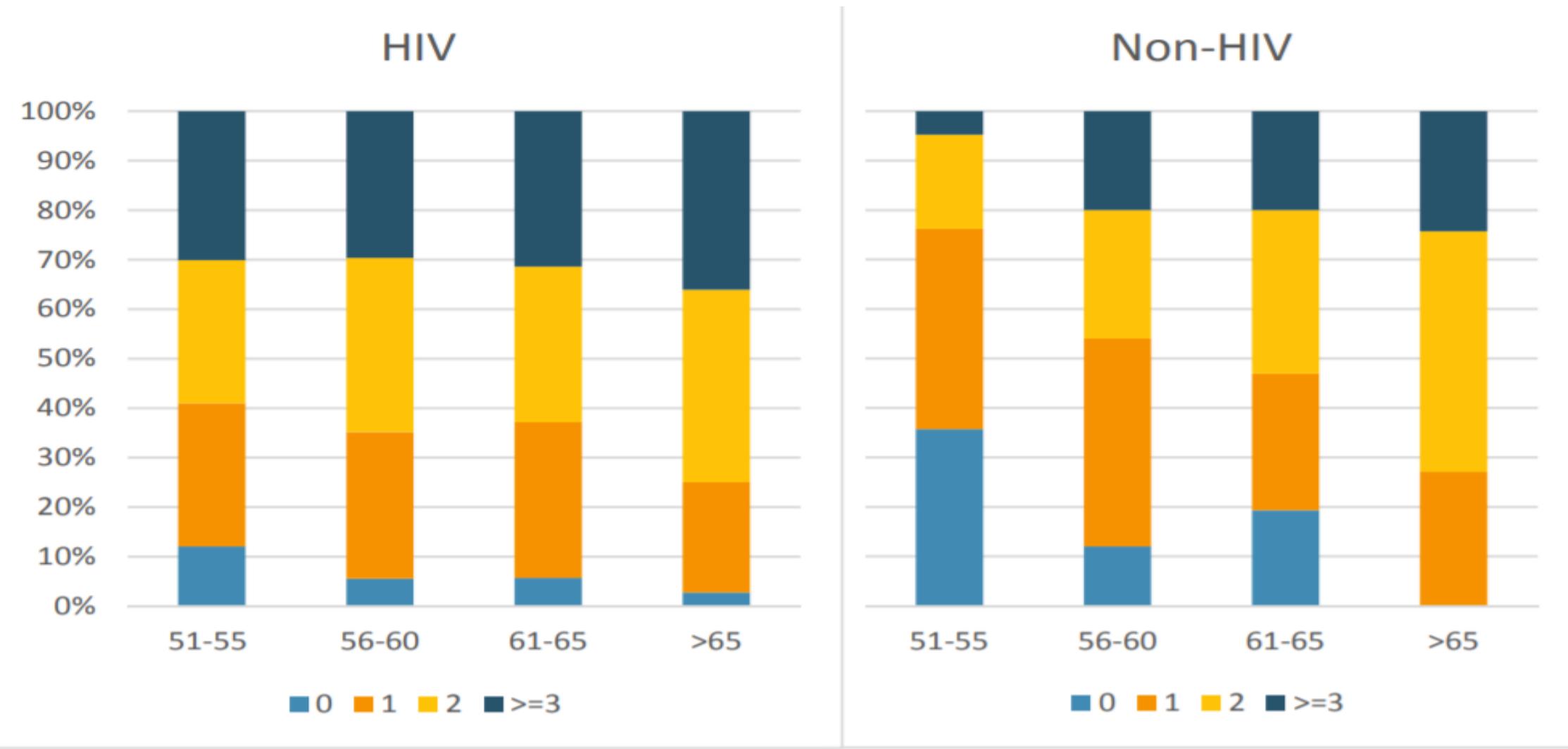
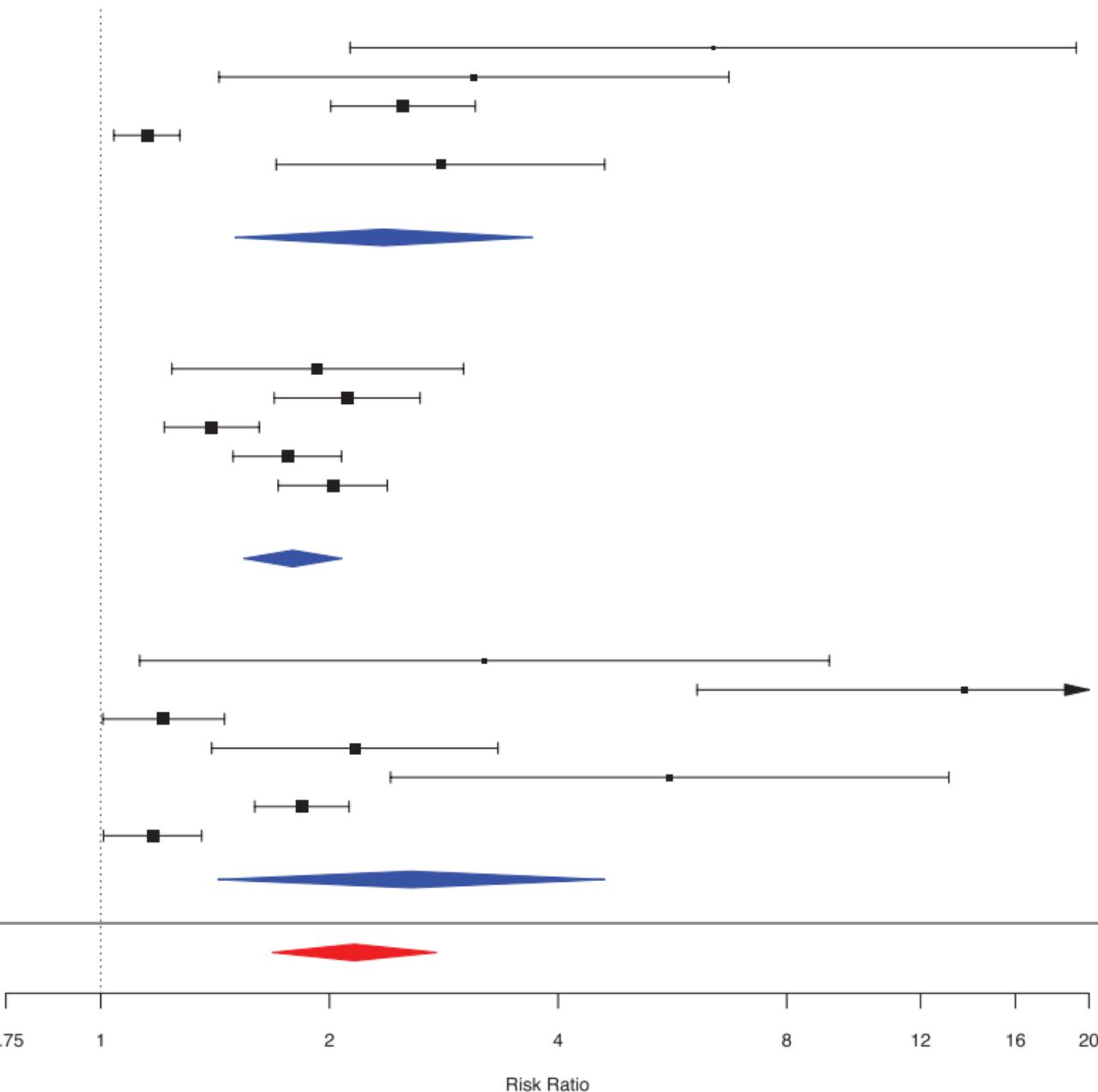


Figure 1. Distribution of the number of comorbidities stratified by age: comparison between HIV and non-HIV patients.

Pooled risk ratio for risk of cardiovascular disease in people living with HIV in comparison with those without stratified by type of event

Author(s)	Year	Weights	Risk Ratio [95% CI]
Cardiovascular events			
Gardner et al	2003	3.0	6.40 [2.13 , 19.25]
Aldaz et al	2011	4.3	3.10 [1.30 , 6.10]
Helleberg et al	2012	6.9	2.50 [2.00 , 3.10]
Tripathi et al	2014	7.2	1.15 [1.04 , 1.27]
Womack et al	2014	5.7	2.80 [1.70 , 4.60]
RE Model (Q = 60.48, df = 4; I^2 = 89.2% [95% CI 71.6 – 99.2])			2.36 [1.50 , 3.70]
Myocardial infarction			
Triant et al	2009	5.9	1.93 [1.21 , 2.93]
Durand et al	2011	6.9	2.11 [1.69 , 2.63]
Klein et al	2015	7.2	1.40 [1.20 , 1.60]
Althoff et al	2015	7.1	1.76 [1.49 , 2.07]
Rasmussen et al. ¹	2015	7.1	2.02 [1.71 , 2.38]
RE Model (Q = 15.06, df = 4; I^2 = 64.6% [95% CI 19.9 – 95.7])			1.79 [1.54 , 2.08]
Stroke			
Qureshi et al	1997	3.2	3.20 [1.10 , 8.90]
Cole et al	2004	4.1	13.70 [6.10 , 30.80]
Chow et al	2012	7.0	1.21 [1.01 , 1.46]
Mateen et al	2013	6.0	2.16 [1.39 , 3.31]
Walker et al	2013	4.0	5.61 [2.41 , 13.09]
Rasmussen et al. ²	2015	7.2	1.84 [1.60 , 2.13]
Sico et al	2015	7.1	1.17 [1.01 , 1.36]
RE Model (Q = 66.52, df = 6; I^2 = 97.0% [95% CI 92.8 – 99.5])			2.56 [1.43 , 4.61]
RE Model Studies (Q = 156.91, df = 16; I^2 = 94.9% [95% CI 91.4 – 98.7])			2.16 [1.68 , 2.77]



Decreasing rates of acute myocardial infarction in people living with HIV: a nationwide cohort study in Spain, 2004–2015 (CoRIS cohort)

Masiá et al, HIV Med 2018



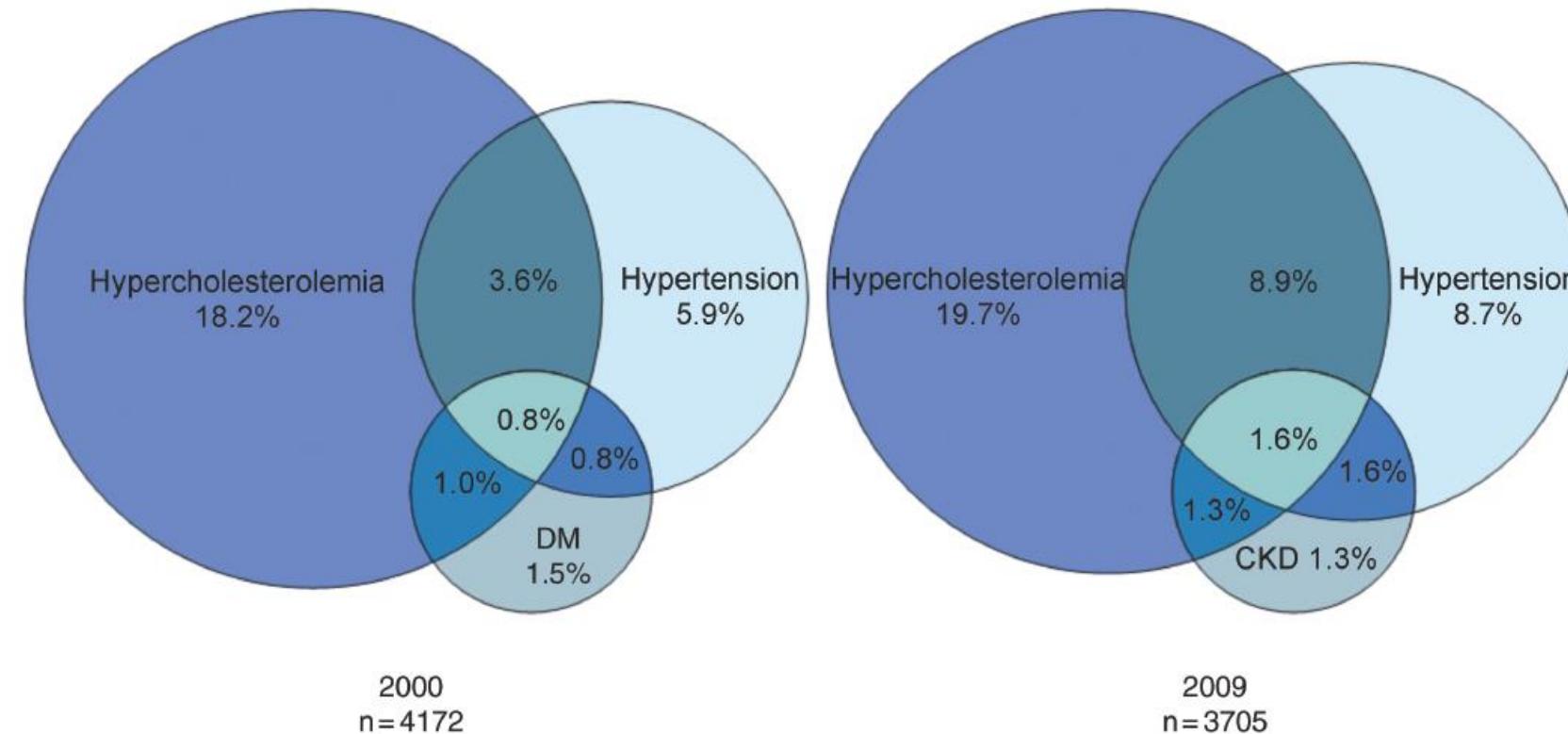
Decreasing rates of acute myocardial infarction in people living with HIV: a nationwide cohort study in Spain, 2004–2015 (CoRIS cohort)

Masiá et al, *HIV Med* 2018



Multimorbidity Among Persons Living with Human Immunodeficiency Virus in the United States

The 3 most-common age-associated conditions, 2000-2009 (NA-ACCORD)



Decreasing rates of acute myocardial infarction in people living with HIV: a nationwide cohort study in Spain, 2004–2015

Masiá et al, HIV Med 2018

Poisson regression model assessing the hazard of acute myocardial infarction occurrence

Variable	Hazard Ratio (95% CI)	P value
Age (35-44) years	2.86 (0.94-8.72)	0.065
Age (45-54) years	10.39 (3.58-30.10)	<0.001
Age (55-64) years	12.13 (3.65-40.36)	<0.001
Age (65-74) years	33.21 (9.40-117.27)	<0.001
Age (75-85) years	15.98 (1.75-146.16)	0.014
CD4 cell count (100-200) cel/ μ L	0.47 (0.13-1.70)	0.252
CD4 cell count (201-350) cel/ μ L	0.53 (0.17-1.63)	0.271
CD4 cell count (351-500) cel/ μ L	0.29 (0.10-0.90)	0.032
CD4 cell count (\geq 500) cel/ μ L	0.24 (0.08-0.70)	0.010
HIV RNA (\geq 200) copies/ml	2.62 (1.55-4.44)	<0.001
Calendar period (2010-2015)	0.42 (0.25-0.69)	<0.001

Table 3. Incidence rates of cerebrovascular events in PLWH by sex and age stratum in the Cohort of HIV Adults of the AIDS Research Network (CoRIS) compared to the Spanish general population.

Age stratum (years)	General population		CoRIS		IRR	(95% CI)	p value
	IR	(95% CI)	IR	(95% CI)			
Both sexes							
25-34	12	(12-12)	21	(4-64)	1.74	(0.36-5.11)	0.493
35-44	37	(37-37)	91	(52-148)	2.44	(1.39-3.97)	0.003
45-54	115	(115-116)	221	(141-329)	1.91	(1.22-2.84)	0.005
55-64	285	(284-287)	320	(159-572)	1.12	(0.55-2.00)	0.788
65-74	660	(657-662)	931	(425-1768)	1.41	(0.64-2.67)	0.388
75-85	1296	(1292-1299)	1571	(428-4024)	1.21	(0.33-3.10)	0.839
All ages*	183	(182-183)	260	(184-364)	1.42	(1.10-1.74)	0.038
Males							
25-34	12	(12-13)	18	(2-65)	1.41	(0.17-5.10)	0.827
35-44	43	(42-44)	84	(43-148)	1.95	(1.00-3.40)	0.048
45-54	153	(151-154)	171	(96-283)	1.12	(0.62-1.85)	0.721
55-64	403	(401-405)	251	(101-518)	0.64	(0.25-1.28)	0.259
65-74	877	(873-881)	1084	(496-2059)	1.23	(0.56-2.34)	0.616
75-85	1531	(1525-1537)	1314	(271-3841)	0.85	(0.17-2.50)	1.000
All ages*	238	(238-239)	244	(163-357)	1.02	(0.65-1.38)	0.396
Females							
25-34	12	(11-12)	37	(1-210)	3.08	(0.07-17)	0.553
35-44	31	(30-31)	120	(32-308)	3.85	(1.05-9.8)	0.043
45-54	78	(77-79)	375	(162-740)	4.78	(2.06-9.43)	0.001
55-64	173	(171-174)	610	(166-1563)	3.52	(0.96-9.01)	0.057
65-74	471	(468-473)	0	(0-2697)	0	(0-5.72)	1.000
75-85	1131	(1127-1136)	3202	(80-17841)	2.82	(0.07-15.76)	0.595
All ages*	133	(132-133)	324	(127-820)	2.44	(1.68-3.19)	0.027



Cancer risk in HIV-infected people in the USA from 1996 to 2012: a population-based, registry-linkage study

Hernández-
Ramírez et al,
Lancet HIV 2017

	Observed cases	SIR (95% CI)
Non-AIDS-defining cancers	14 344	1·21 (1·19–1·23)*
Virus-related non-AIDS- defining cancers	4144	5·39 (5·23–5·55)*
Human papillomavirus- related oral cavity or pharynx	297	1·64 (1·46–1·84)*
Anus	1568	19·06 (18·13–20·03)*
Liver	1104	3·21 (3·02–3·41)*
Merkel cell carcinoma	10	2·58 (1·24–4·74)
Vagina	25	3·55 (2·30–5·24)*
Vulva	151	9·35 (7·91–10·96)*
Penis	114	5·33 (4·39–6·40)*
Lung	2475	1.97 (1.89-2.05)

Risk of cancer in HIV-infected patients in Spain, 2004-2015 (CoRIS)

Cocientes de incidencias estandarizadas en relación a la población general española, 2010-2015

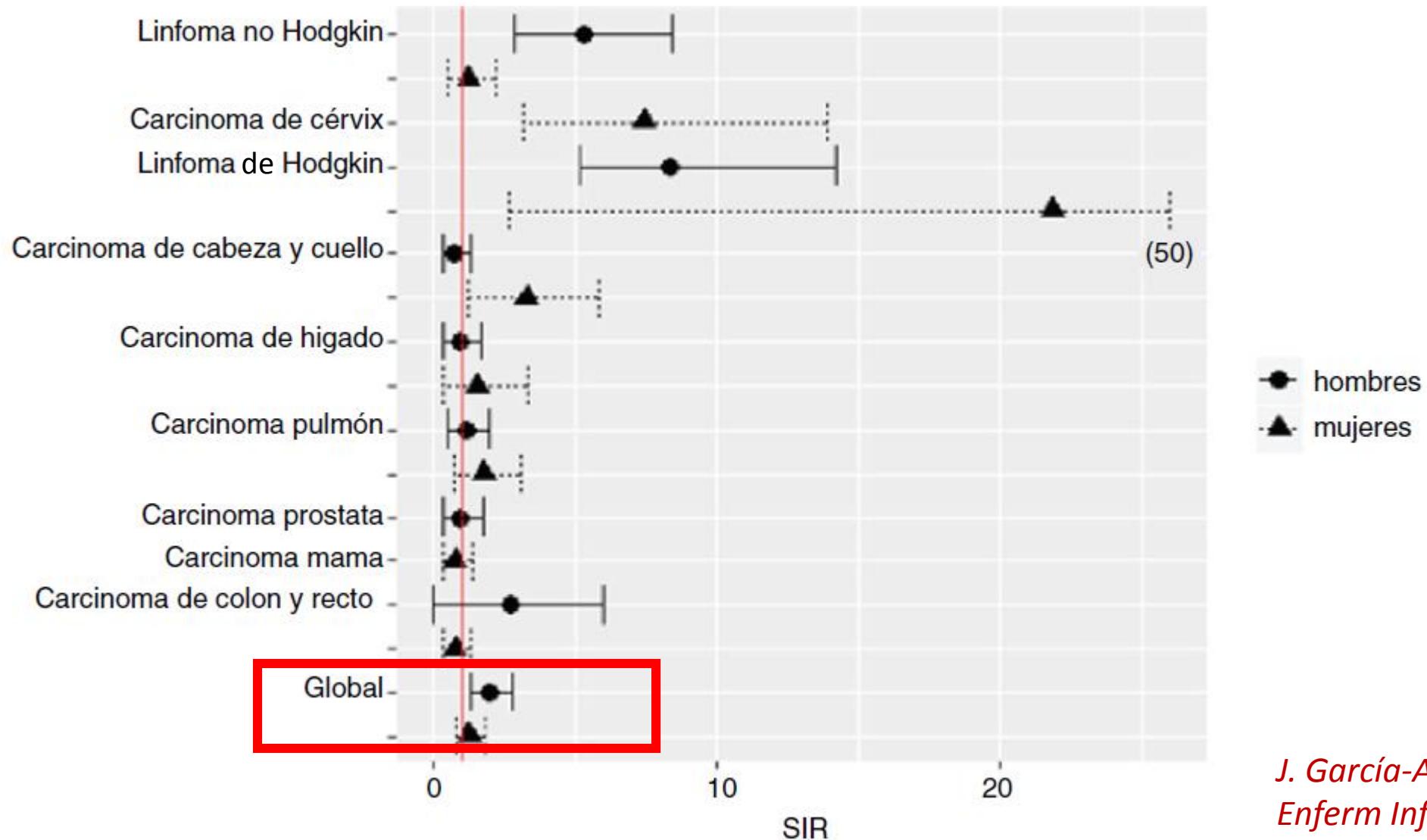
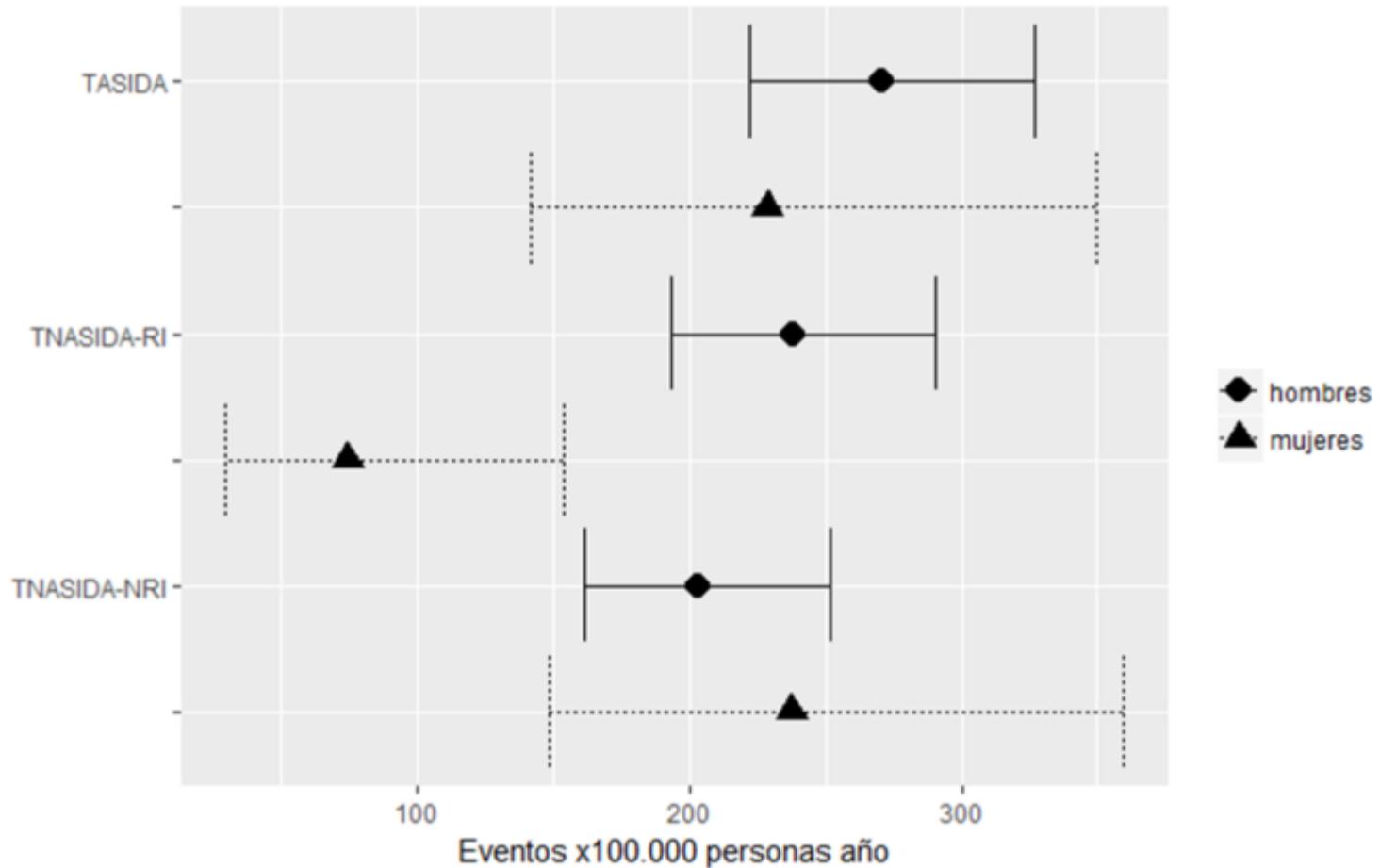


Figura 1. Tasas de incidencia de tumores asociados y no asociados a sida en pacientes con VIH incluidos en CoRIS.

*J. García-Abellán, F. Gutiérrez, et al.
Enferm Infecc Microbiol Clin 2019*



TASIDA, tumores asociados a sida; TNASIDA, tumores no asociados a sida; TNASIDA-RI, tumores asociados a sida relacionados con infección vírica; TNASIDA-NRI, tumores asociados a sida no relacionados con infección vírica.

Una actividad de:

The Hidden Burden of Fractures in People Living With HIV

Premaror, JBMR Plus 2018

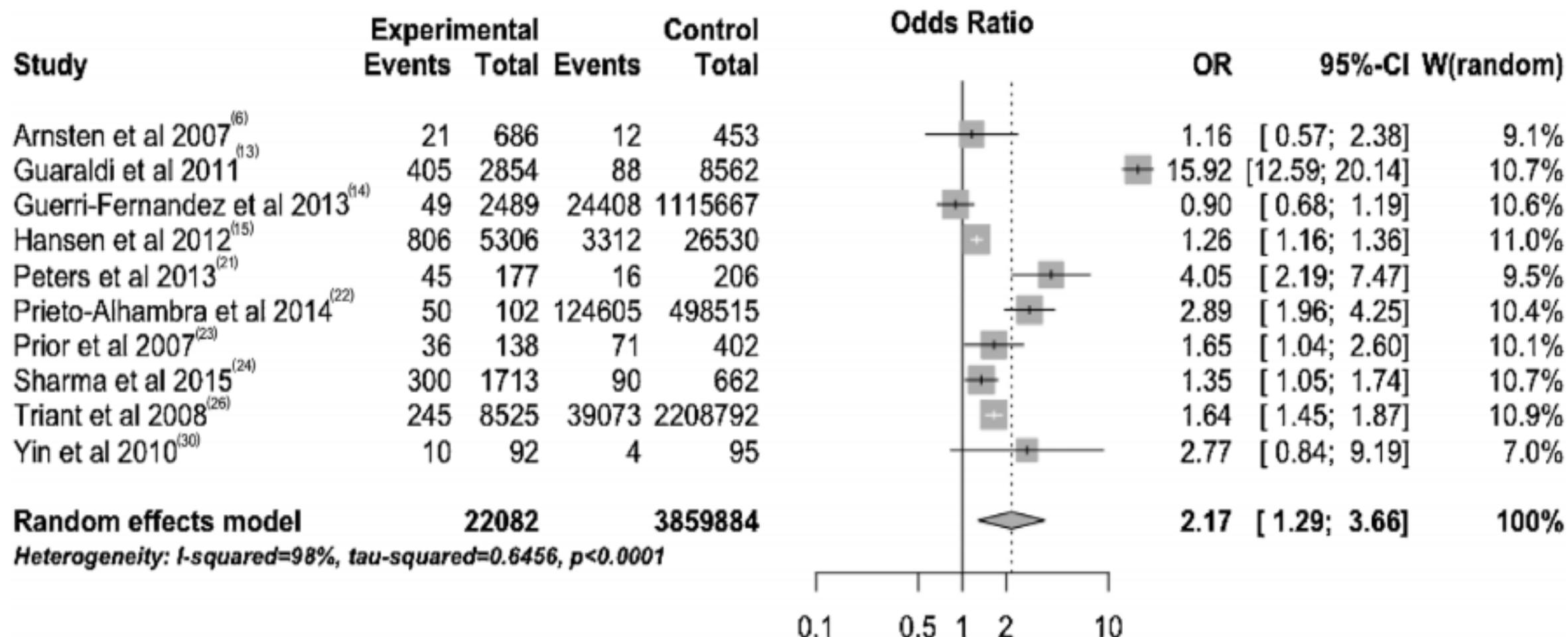


Fig. 1. Forest plot of the odds ratio of total fractures in HIV-positive subjects.

Factors Associated With Bone Disease and Fracture in People Living With HIV

Premar, JBMR Plus 2018

Factors in common with the general population	Factors related to the HIV
Aging ^(6,32,38)	Chronic inflammation ⁽⁵⁵⁾
Previous fractures ^(38,59)	Reconstitution syndrome ⁽⁵⁵⁾
Low BMI ^(32,37,60,61)	ART use ^(8,15,20,27)
Tobacco use ^(38,62)	Co-infection with hepatitis B ⁽⁷⁹⁾
Alcohol abuse ⁽⁶³⁾	Co-infection with hepatitis C ^(33,80,81)
Glucocorticoid use ⁽⁶³⁾	Low CD4 ^(31,32,38,81)
Anticonvulsant use ⁽⁵⁹⁾	AIDS-defining disease ⁽⁸¹⁾
Postmenopausal status ^(6,24,26)	
Hypogonadism ^(38,64)	
Vitamin D deficiency ^(24,65–67)	
White race ^(8,27)	
Diabetes mellitus ⁽⁵⁹⁾	
Frailty ⁽⁶⁹⁾	
Sarcopenia ⁽³⁸⁾	
Selective serotonin reuptake inhibitors ⁽⁷⁰⁾	
Comorbidities ⁽⁷²⁾	
Falls ⁽⁵⁹⁾	
Renal disease ⁽⁵⁹⁾	

HIV = human immunodeficiency virus; AIDS = acquired immunodeficiency syndrome; ART = antiretroviral therapy.

Basic science and pathogenesis of ageing with HIV: potential mechanisms and biomarkers

Lagathu et al, AIDS 2017

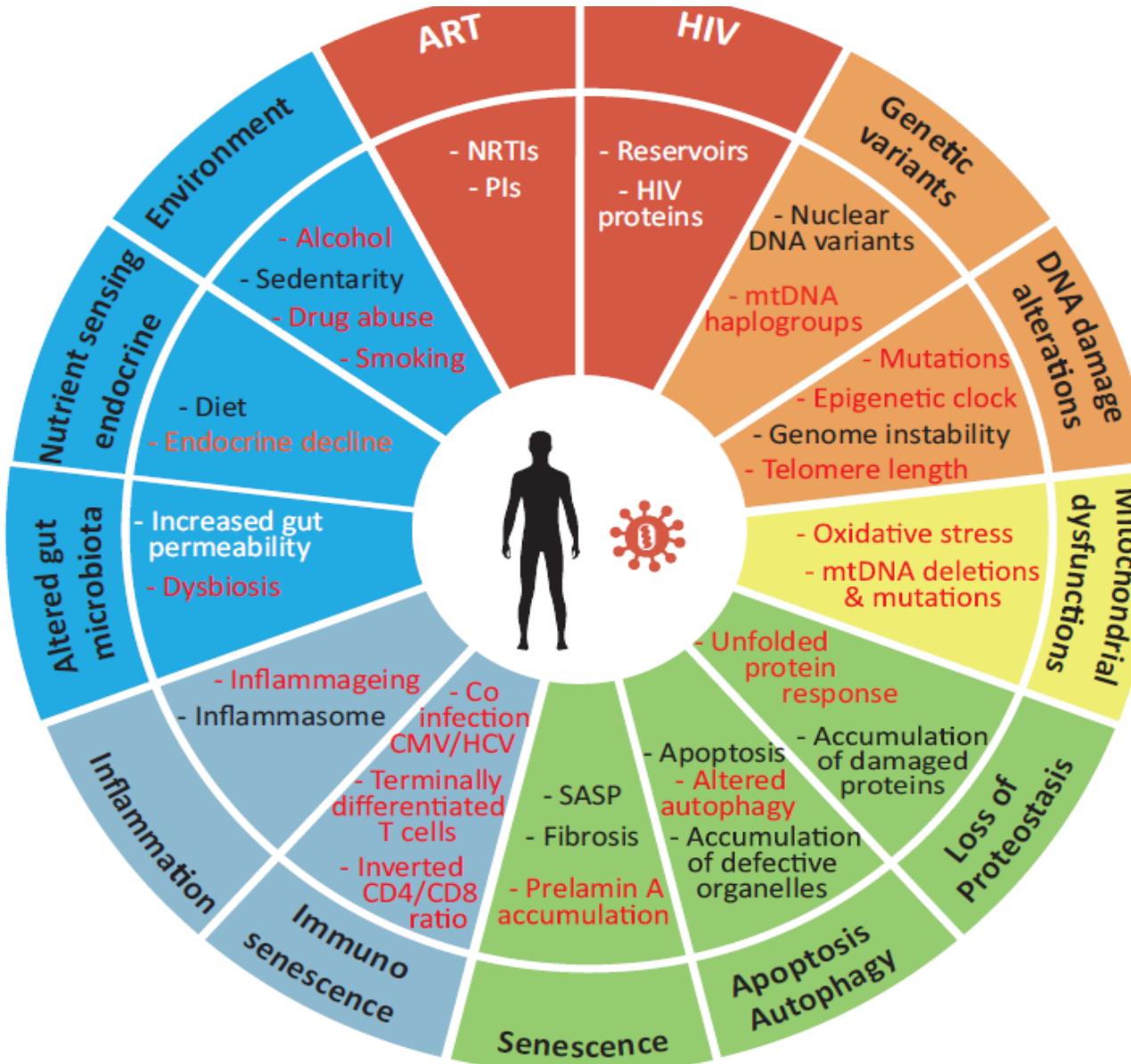


Fig. 1. General and HIV-specific mechanisms of ageing. ART, antiretroviral therapy; CMV, cytomegalovirus; HCV, hepatitis C virus.

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Conclusiones

- Elevada la prevalencia de comorbilidades y multimorbilidad en población con VIH
- La frecuencia de muchas de las comorbilidades en personas que viven con VIH (PVVIH) es mayor que en la población general
- Mecanismos específicos asociados a la infección también contribuyen a la patogénesis de las comorbilidades en PVVIH
- Las comorbilidades son la principal causa de mortalidad en PVVIH y ésta es mayor que en la población general
- Necesidad de medidas específicas en esta población que permitan equiparar el pronóstico de las PVVIH a la población no infectada

Una actividad de:

