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SERVIZO GALEGO de SAÚDE | Xerencia de Xestión Integrada A Coruña

Cáncer y VIH

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X Curso Avances en Infección VIH y Hepatitis Virales
A Coruña, 5 de Febrero de 2016

Cancer & HIV

- The burden of cancer… A growing problem ….
- NADCs. Lung Cancer
- Risk cancer factors. Cancer pathogenesis
- Impact of HIV/HCV co-infection
- Prevention: A vital need for risk factors reduction efforts
- Take home messages

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The burden of cancer.

A growing problem …. in general population

Estimated New Cases

Males			Females		
Prostate	180,890	21%	Breast	246,660	29%
Lung & bronchus	117,920	14%	Lung & bronchus	106,470	13%
Colon & rectum	70,820	8%	Colon & rectum	63,670	8%
Urinary bladder	58,950	7%	Uterine corpus	60,050	7%
Melanoma of the skin	46,870	6%	Thyroid	49,350	6%
Non-Hodgkin lymphoma	40,170	5%	Non-Hodgkin lymphoma	32,410	4%
Kidney & renal pelvis	39,650	5%	Melanoma of the skin	29,510	3%
Oral cavity & pharynx	34,780	4%	Leukemia	26,050	3%
Leukemia	34,090	4%	Pancreas	25,400	3%
Liver & intrahepatic bile duct	28,410	3%	Kidney & renal pelvis	23,050	3%
All Sites	**841,390**	**100%**	**All Sites**	**843,820**	**100%**

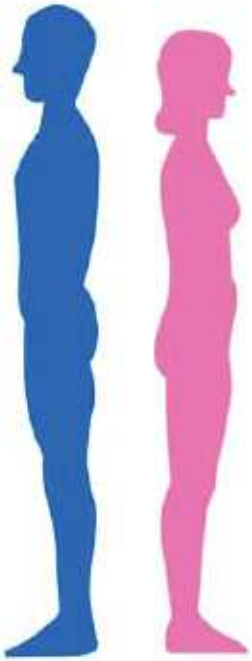


FIGURE 1. Ten Leading Cancer Types for the Estimated New Cancer Cases and Deaths by Sex, United States, 2016.
Estimates are rounded to the nearest 10 and cases exclude basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder.

SIEGEL RL ET AL. CANCER STATISTICS,2016. CA CANCER J CLIN 2016;66:7-30

The burden of cancer.

A growing problem …. in general population

Estimated Deaths

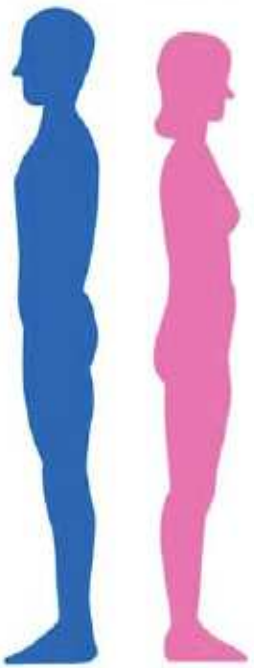
Males				Females		
Lung & bronchus	85,920	27%		Lung & bronchus	72,160	26%
Prostate	26,120	8%		Breast	40,450	14%
Colon & rectum	26,020	8%		Colon & rectum	23,170	8%
Pancreas	21,450	7%		Pancreas	20,330	7%
Liver & intrahepatic bile duct	18,280	6%		Ovary	14,240	5%
Leukemia	14,130	4%		Uterine corpus	10,470	4%
Esophagus	12,720	4%		Leukemia	10,270	4%
Urinary bladder	11,820	4%		Liver & intrahepatic bile duct	8,890	3%
Non-Hodgkin lymphoma	11,520	4%		Non-Hodgkin lymphoma	8,630	3%
Brain & other nervous system	9,440	3%		Brain & other nervous system	6,610	2%
All Sites	**314,290**	**100%**		**All Sites**	**281,400**	**100%**

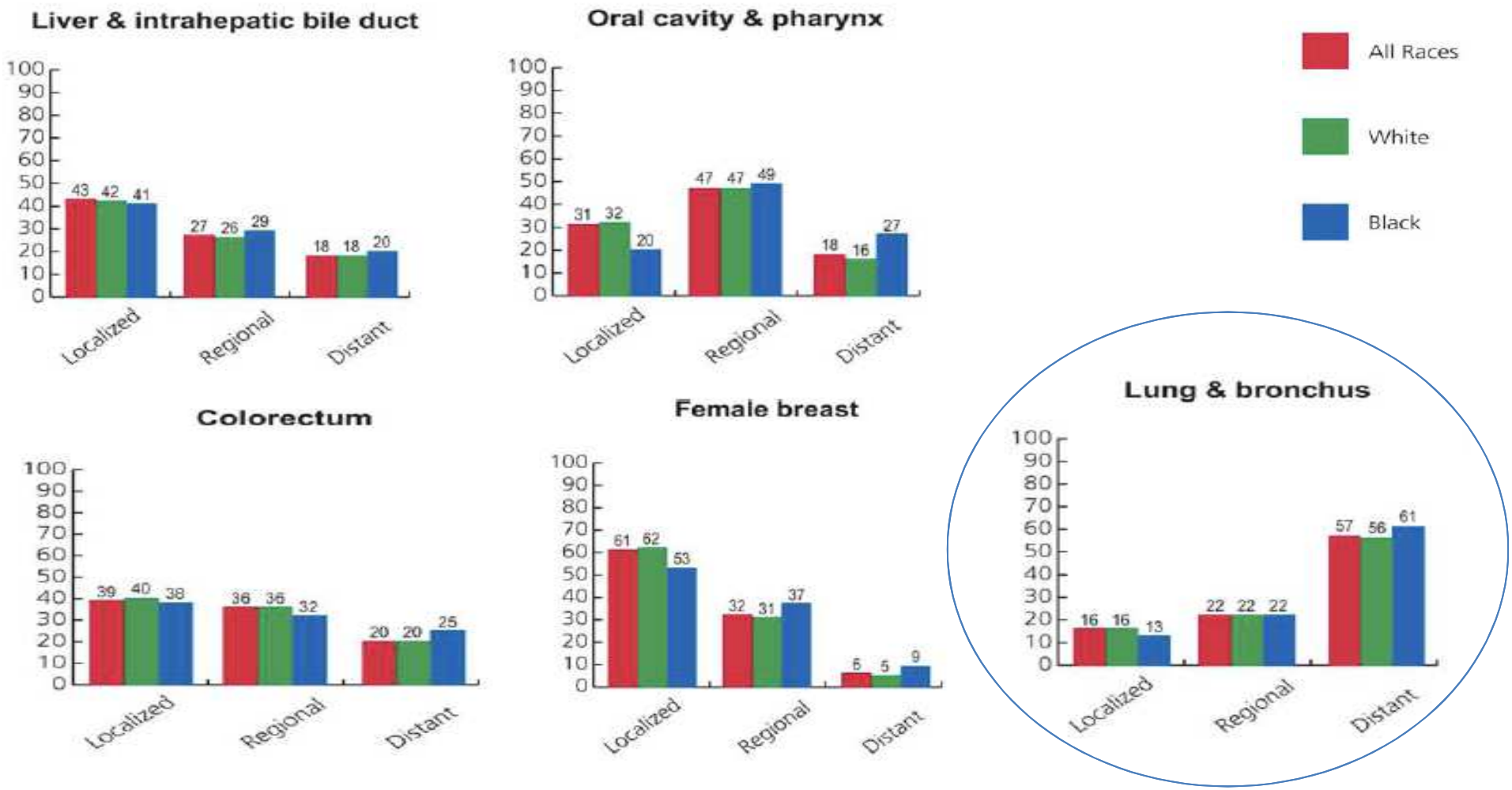
FIGURE 1. Ten Leading Cancer Types for the Estimated New Cancer Cases and Deaths by Sex, United States, 2016.
Estimates are rounded to the nearest 10 and cases exclude basal cell and squamous cell skin cancers and in situ carcinoma except urinary bladder.

SIEGEL RL ET AL. CANCER STATISTICS,2016. CA CANCER J CLIN 2016;66:7-30

The burden of cancer.

A growing problem …. in general population

FIGURE 5. Stage Distribution of Selected Cancers by Race, United States, 2005 to 2011.



SIEGEL RL ET AL. CANCER STATISTICS,2016. CA CANCER J CLIN 2016;66:7-30

The burden of cancer.

A growing problem …. in HIV population

Kaposi Sarcoma, 1983

The burden of cancer.
A growing problem …. in HIV population

Lancet HIV 2015; 2: e438–44

Causes of hospital admission among people living with HIV worldwide: a systematic review and meta-analysis

Nathan Ford, Zara Shubber, Graeme Meintjes, Beatriz Grinsztejn, Serge Eholie, Edward J Mills, Mary-Ann Davies, Marco Vitoria, Martina Penazzato, Sabin Nsanzimana, Lisa Frigati, Daniel O'Brien, Tom Ellman, Olawale Ajose, Alexandra Calmy, Meg Doherty

shm Journal of HOSPITAL MEDICINE www.journalofhospitalmedicine.com

ORIGINAL RESEARCH

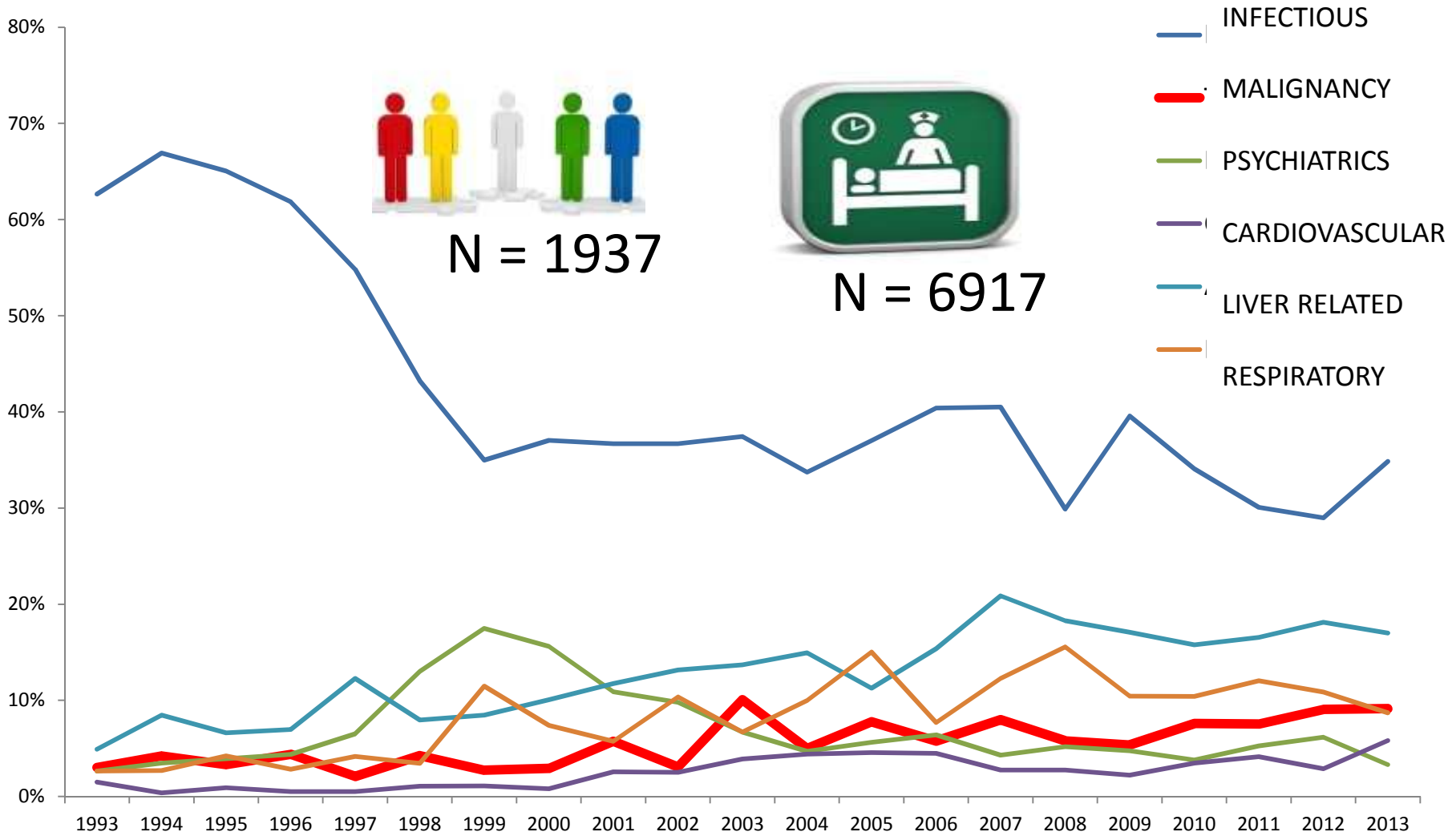
Trends in Hospital Deaths Among Human Immunodeficiency Virus–Infected Patients During the Antiretroviral Therapy Era, 1995 to 2011

Annie Cowell, MD[1], Sheela V. Shenoi, MD, MPH[2*], Tassos C. Kyriakides, PhD[3], Gerald Friedland, MD[2], Lydia Aoun Barakat, MD[2]

[1]Department of Internal Medicine, Section of Infectious Diseases, University of California, San Diego, California; [2]Department of Internal Medicine, Section of Infectious Diseases, AIDS Program, Yale University School of Medicine, New Haven, Connecticut; [3]Yale Center for Analytical Sciences, Yale School of Public Health, New Haven, Connecticut.

The burden of cancer.

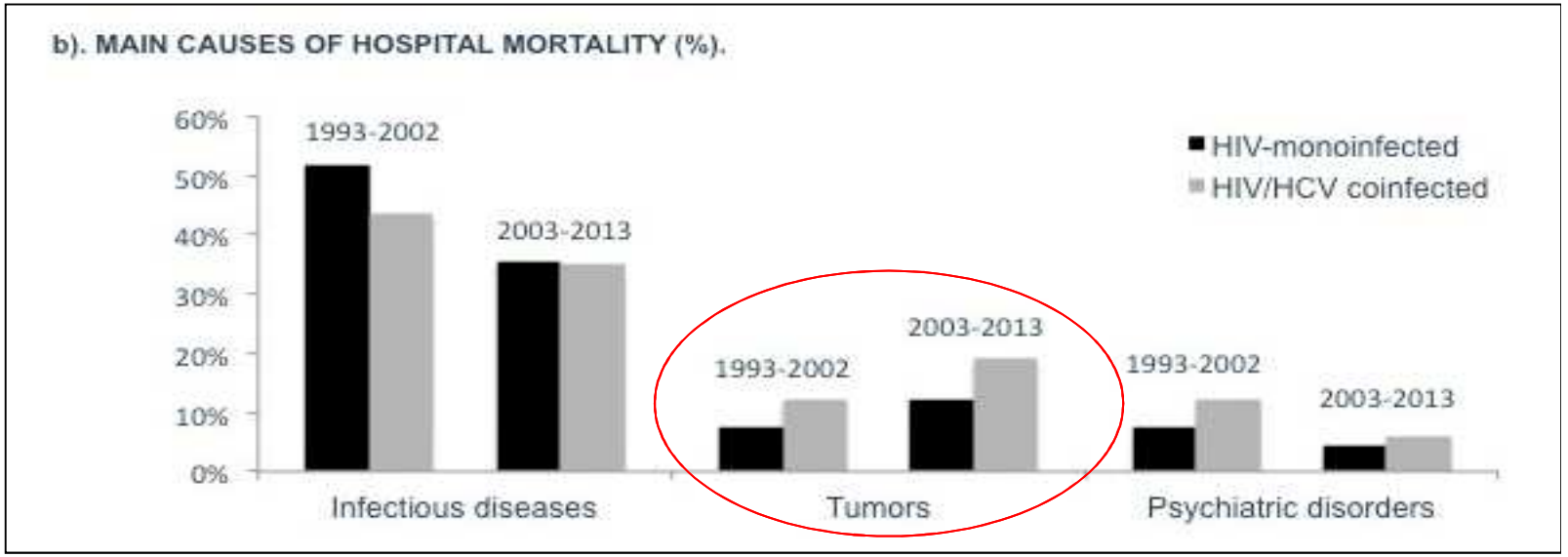
A growing problem …. in HIV population



MEIJIDE H, MENA A, OSORIO I ET AL. TRENDS IN HOSPITALIZATIONS ,RE ADMISSIONS AND IN-HOSPITAL MORTALITY AMONG HIV-INFECTED PATIENTS (1993-2013). IN PRESS

The burden of cancer.
A growing problem …. in HIV population

Hospitalization reasons (%)	1993-2002 (N=3463)	2003-2013 (N=3454)	Relative change (%) (CI95%)
Infectious diseases	49.1	35.3	**-28.1 (-32.0; -23.9)**
Aids-defining infection	52.3	36.5	**-30.2 (-36.0; -23.9)**
Psyquiatric illness	9.1	5.2	**-42.7 (-52.0; -31.6)**
Malignancies	3.6	7.8	**115.8 (75.4; 165.3)**
Aids-defining tumors	65.2	42.6	**-34.8 (-46.0; -21.2)**
Cardiac diseases	1.2	3.7	**205.6 (116.3; 331.6)**
Digestive disorders	9.2	16.1	**74.8 (53.6; 98.9)**
Hepatic decompensations	4.2	8.5	**103.3 (67.6; 146.6)**
Chronic respiratory diseases	5.6	11.0	**96.4 (66.3; 131.9)**



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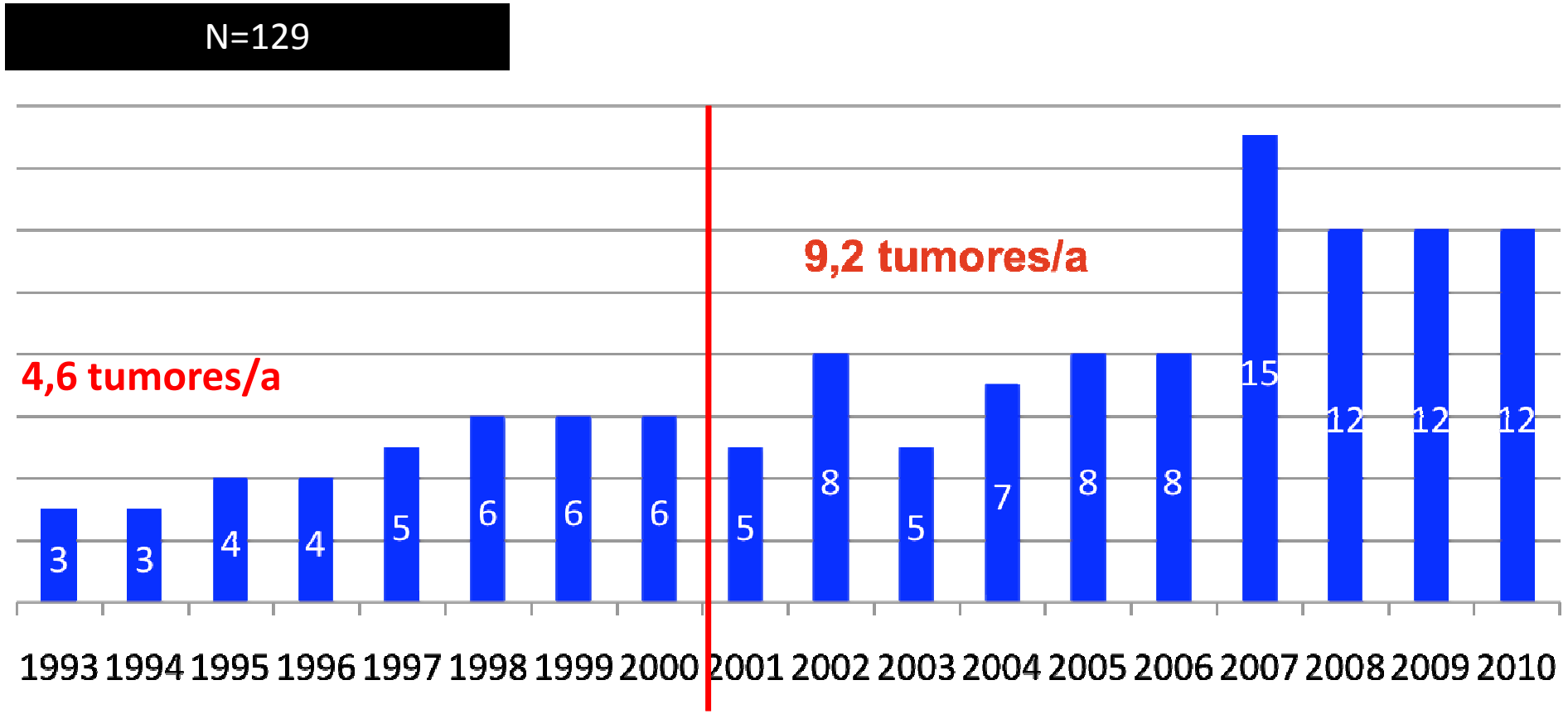


MEIJIDE H ET AL. MALIGNANCIES IN HIV INFECTED PATIENTS. DESCRIPTIVE STUDY OF 129 CASES BETWEEN 1993-2010. REV CHIL INFECTOL 2013; 30(2):156-61.

The burden of cancer.
A growing problem …. in HIV population

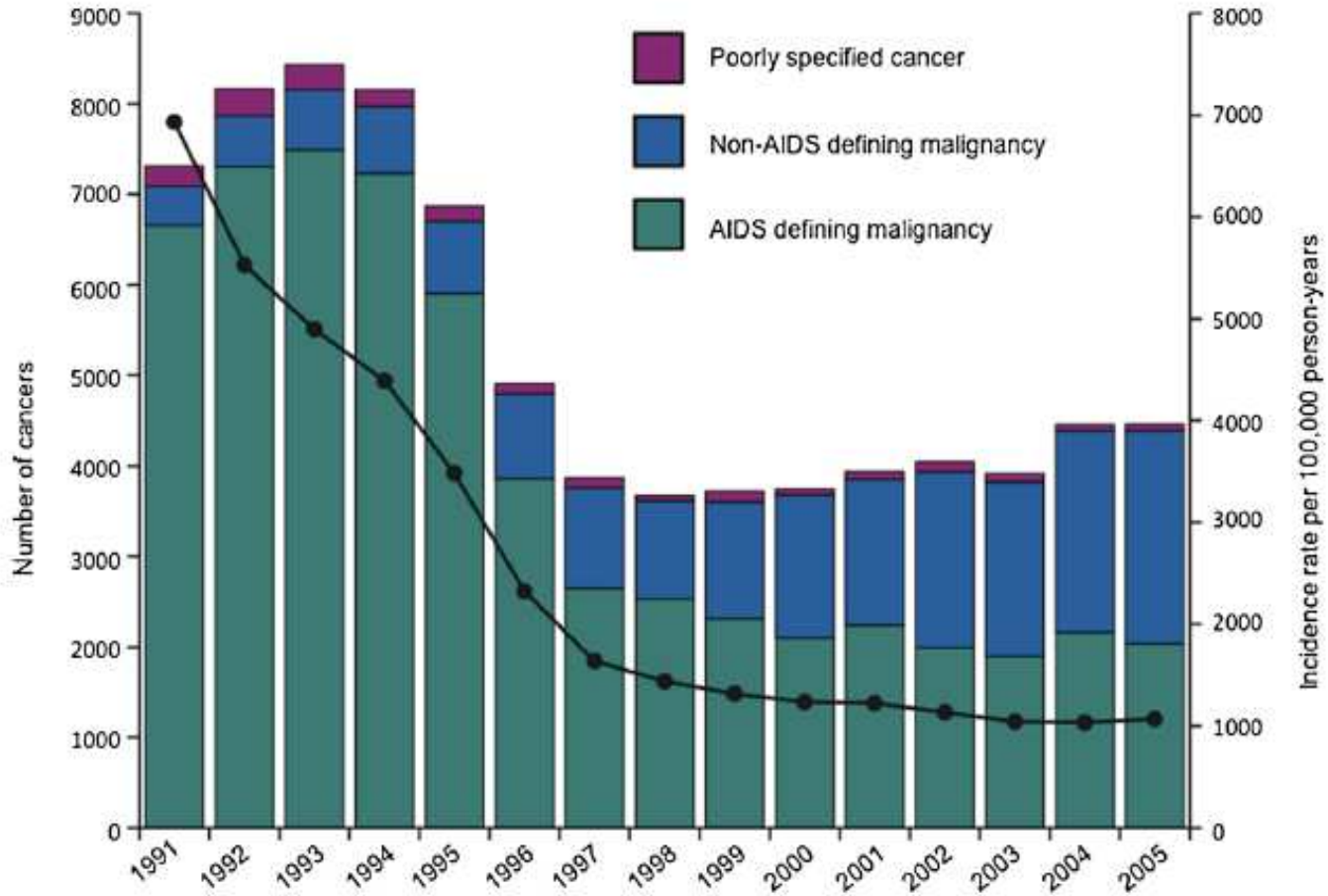
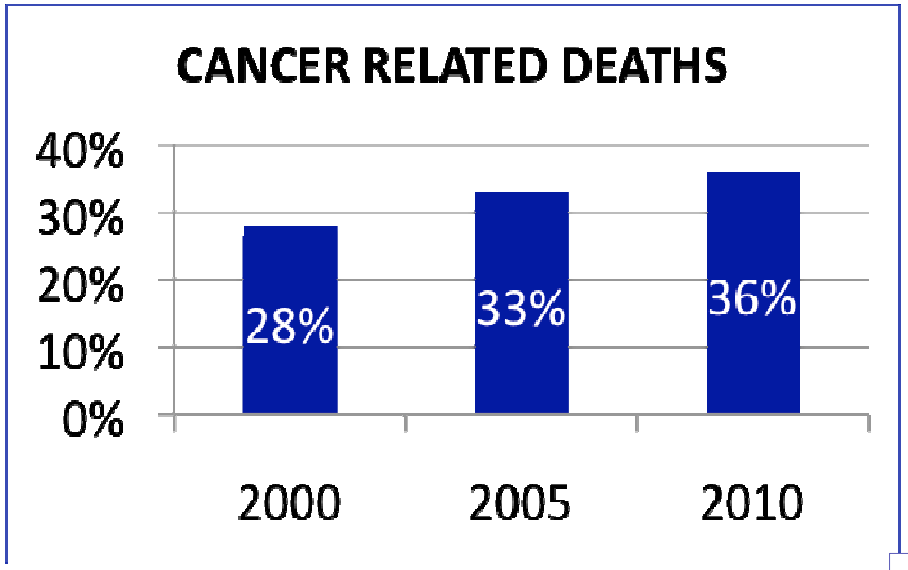
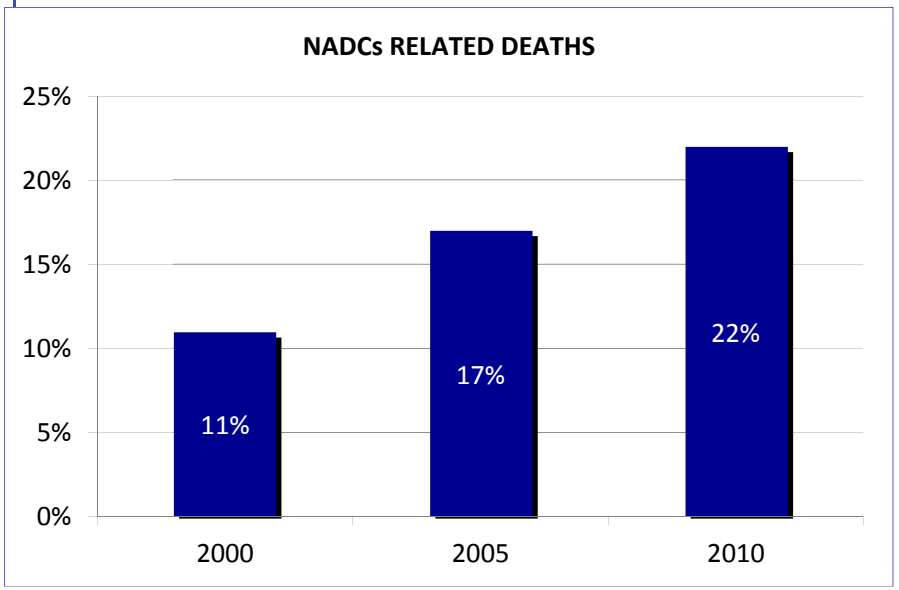


Fig. 1 Estimated counts and incidence rates of cancers for people living with AIDS in the USA. *Bars* depict the estimated number of cancers, and *point* connected by lines depicts incidence rates standardized to the USA population by age group, race, and sex. Reproduced with permission from Journal of the National Cancer Institute 2011 [18]

A growing problem …. in HIV population





VANDENHENDE M-A ET AL. CANCER-RELATED CAUSES OF DEATH AMONG HIV-INFECTED PATIENTS IN FRANCE IN 2010. PLoSONE.2015; 10(6):E0129550.doi:10.137

The burden of cancer.

A growing problem …. in HIV population

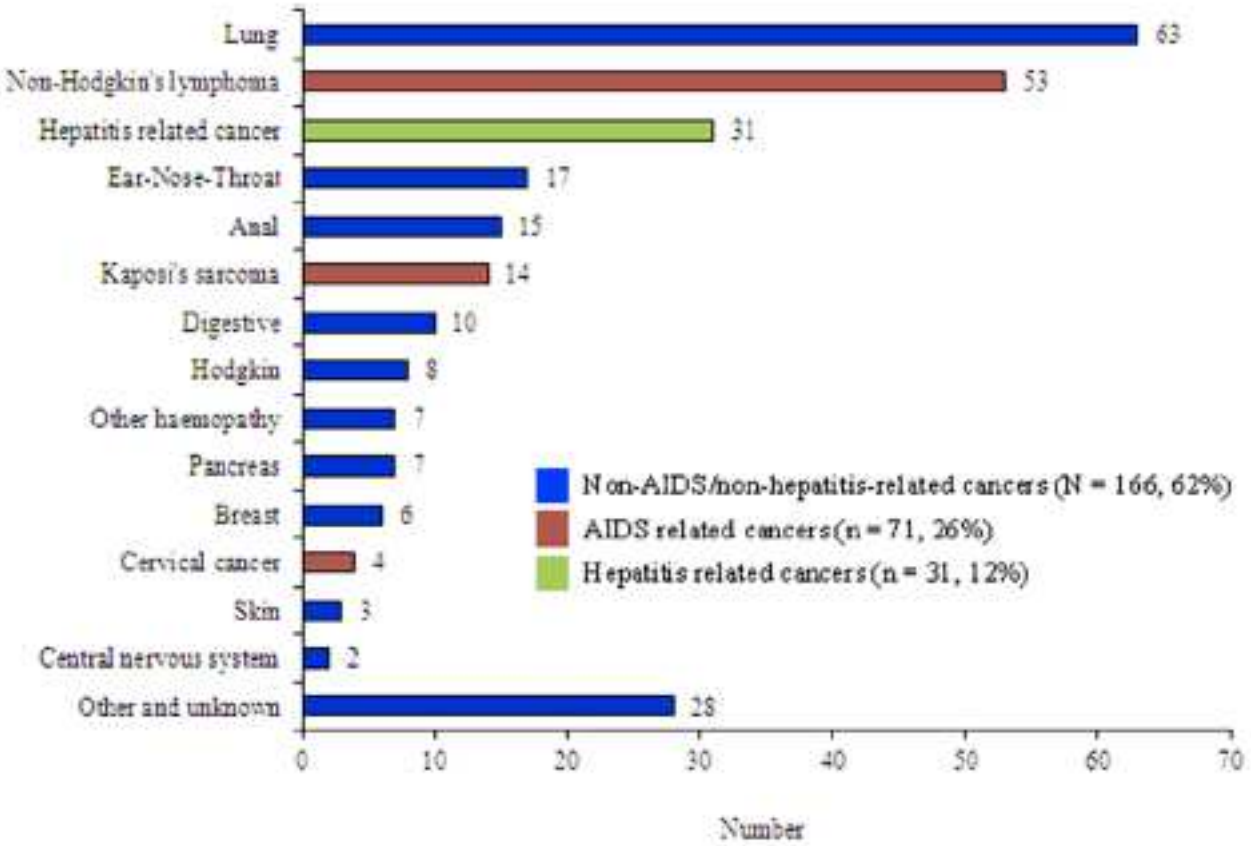


Fig 1. Location of cancers (N = 268) among HIV-infected adults with underlying cause of death being cancer (N = 262), Mortalité 2010 survey, France.

VANDENHENDE M-A ET AL. CANCER-RELATED CAUSES OF DEATH AMONG HIV-INFECTED PATIENTS IN FRANCE IN 2010. PLoSONE.2015; 10(6):E0129550.doi:10.137

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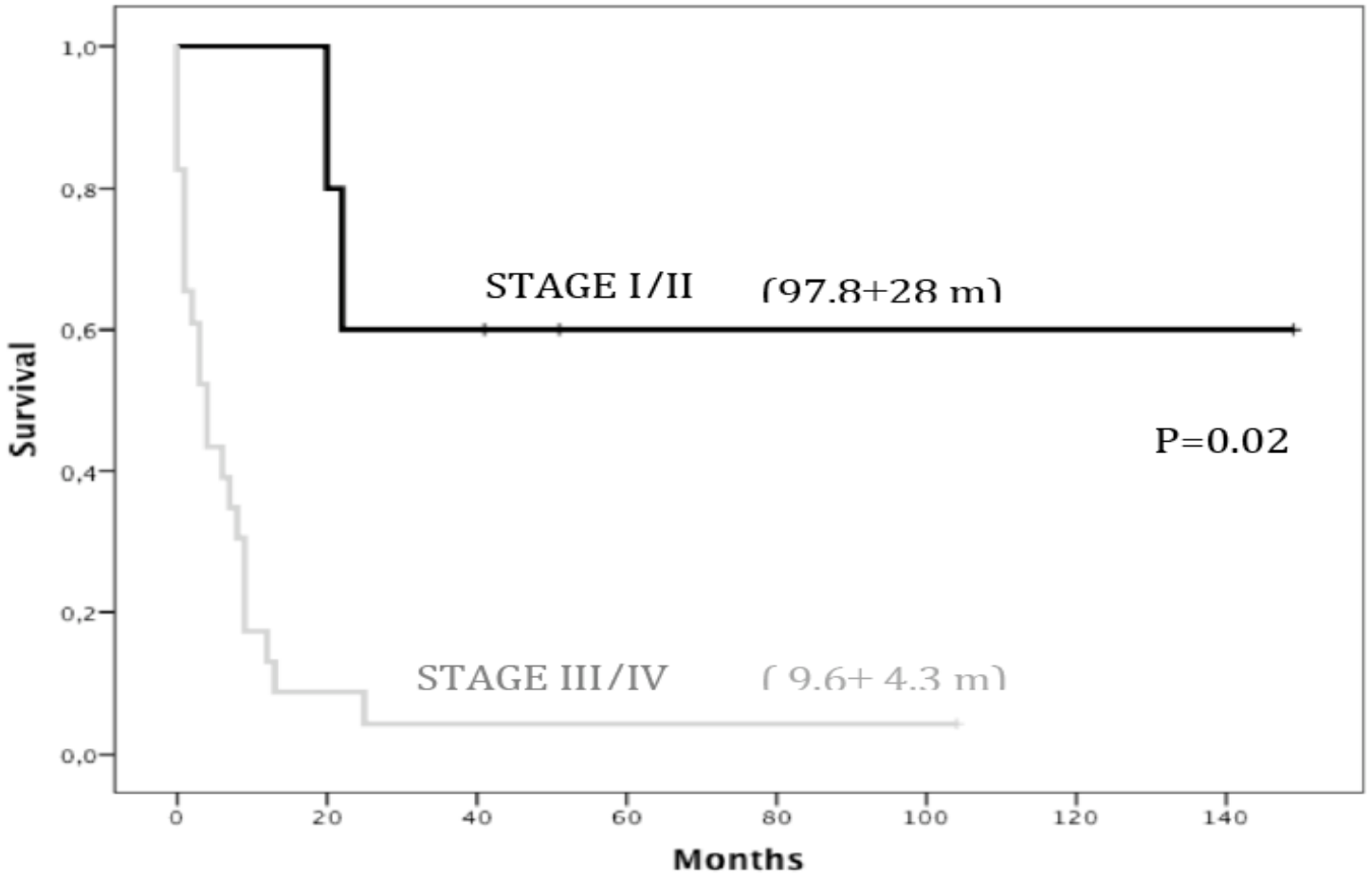
NADCs. Lung Cancer

Study	Years	No. of patients	Median age (years)	Male (%)	Smoking (%)	IDUs (%)	AdenoCa (%)	CD4>200 cells/µl (%)	Stage III/IV (%)	Median OS (Months)
Brock et al. (2006)	1986-2004	92	46	67	99	58	48	-	87	6.3
Engles et al. (2006)	1989-2003	33	46	67	85	57	48	51	-	-
Chatuverdi et al. (2007)	1980-2002	393	47	85	80	33	34	28	-	-
Hakimian et al. (2007)	1996-2003	34	44	68	100	59	-	62	90	5.2
Lavole et al. (2009)	1996-2007	49	46	67	99	17	67	-	84	8.1
D´Jaen et al. (2010)	1996-2008	75	50	83	99	30	46	-	77	9
Pakkala et al. (2012)	1995-2008	80	52	80	100	25	38	-	78	6.1
Clifford et al. (2012)	1984-2010	68	50	79	76	37	-	45	-	-
Okuma et al. (2015)	1988-2013	43	60	97	91	0	59	85	63	25
Meijide et al (2015)	1993-2013	28	49	82	85	50	50	67	78	12.3

MENA A, MEIJIDE H, MARCOS PJ. LUNG CANCER IN HIV-INFECTED PATIENTS. AIDS REVIEWS 2016. IN PRESS

NADCs. Lung Cancer

Figure 1. Kaplan Meier survival analysis (mean survival ± SD in months) comparing lung cancer stages at moment of diagnosis.



MEIJIDE H, MENA A, MARCOS PJ ET AL. LUNG CANCER IN PATIENTS LIVING WITH HUMAN IMMUNODEFICIENCY VIRUS INFECTION. AIDS. 2015;29(17):2363-4.

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Risk cancer factors

TRADITIONAL CANCER RISK FACTORS

AGING
ENVIROMENTAL LIFESTYLE
NUTRITION
ALCOHOL
TOBACCO
ONCOGENIC VIRUSES

RISK FACTORS SPECIFIC TO HIV

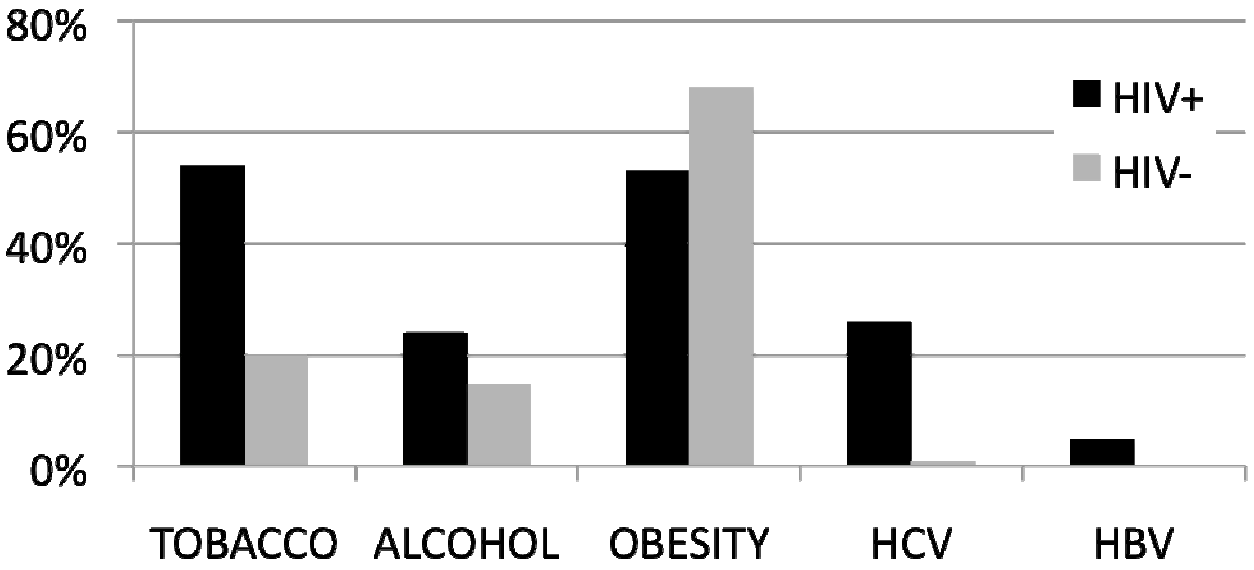
DIRECT HIV EFFECTS
IMMUNOSUPRESION
INFLAMMATION
ART

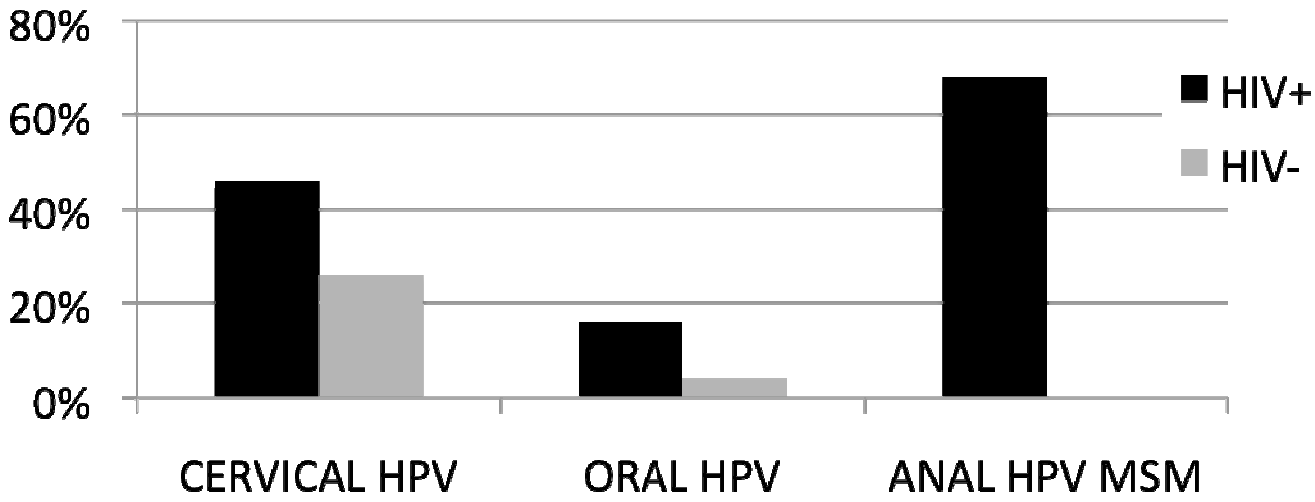
PARK LS ET AL. PREVALENCE OF NON-HIV CANCER RISK FACTORS IN PERSONS LIVING WITH HIV/AIDS. AIDS. 2016;30:273-291

BRICKMAN C. CANCER IN THE HIV-INFECTED HOST: EPIDEMIOLOGY AND PAHOGENESIS. CURR HIV/AIDS REP (2015); 12:388-396.

RAFFETTI E ET AL. SYSTEMIC INFLAMMATION-BASED BIOMARKERS IN HIV SUBJECT WIH SOLID CANCER. JAIDS 2015;69:585-592.

Risk cancer factors





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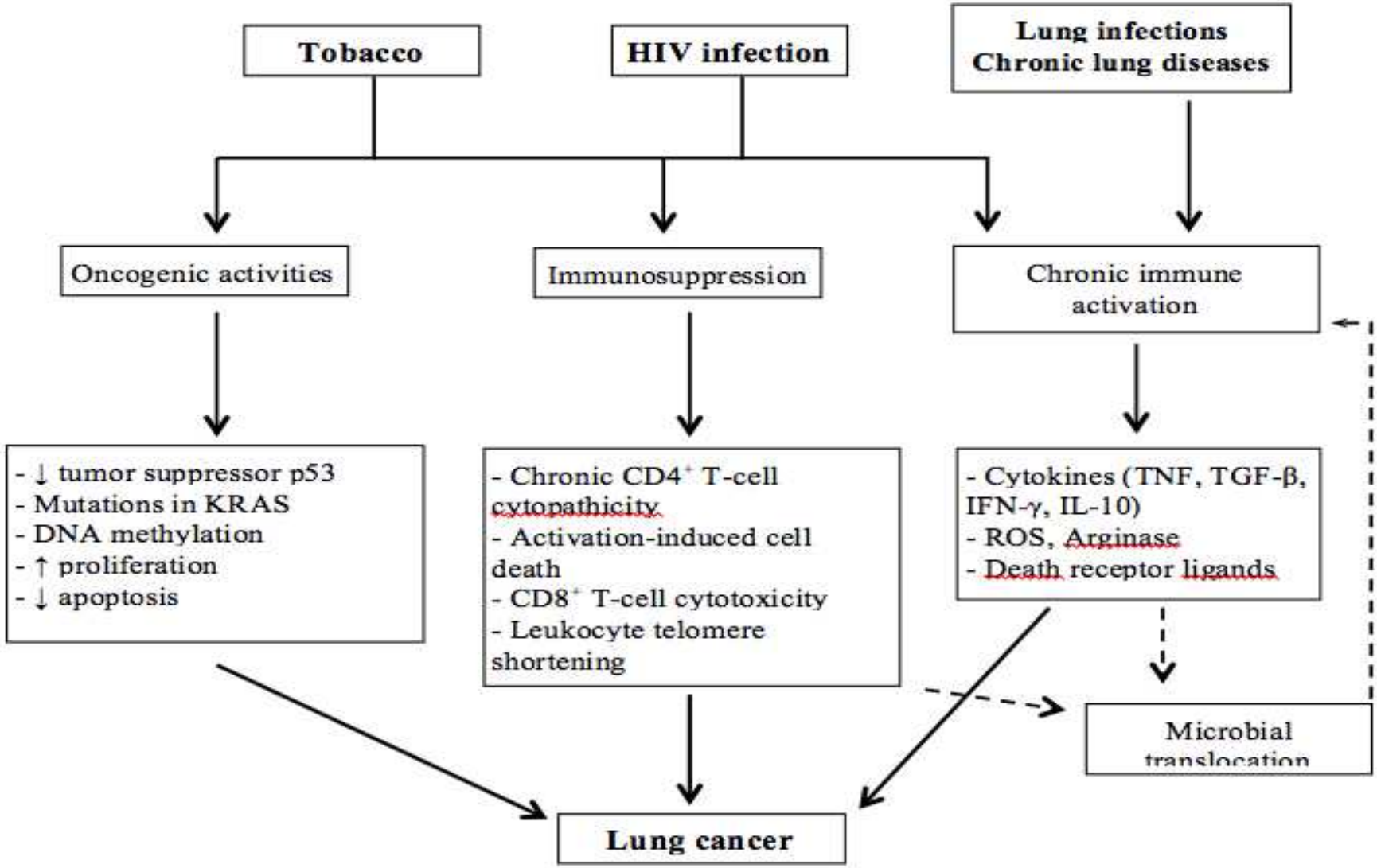
Risk cancer factors. Cancer pathogenesis



MENA A, MEIJIDE H, MARCOS PJ. LUNG CANCER IN HIV-INFECTED PATIENTS. AIDS REVIEWS 2016. IN PRESS

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Impact of HIV/HCV co-infection

	N	Tumors	AIDS-defining tumors	Non-AIDS-defining tumors
HIV/HCV	857	68 (7.9%)	16 (1.9%)	52 (6.1%)
HIV	1461	117 (8.0%)	63 (4.3%)	54 (3.7%)
Total	2318	185 (8.0%)	79 (3.4%)	106 (4.6%)

	HIV (N=117)	HIV/HCV (N=68)	p
Age (years)	44.8±12.6	43.7±7.8	0.5
Males (%)	87.2	70.6	0.005
Risk factor (%)			
- IDUs	19.8	75.2	<0.001
- MSM	26.4	1.4	<0.001
- Heterosexual	26.4	5.8	<0.001
- Unknown	26.4	17.6	0.1
CD4 nadir (cells/μL)	128 (52-286)	146 (63-210)	0.2
CD4 count (cells/μL)	234 (110-446)	243 (160-367)	0.6
Undetectable HIV viral-load (<400 cop/mL)	55.1	44.4	0.1
Patients on ART (%)	54.9	67.7	0.07
Time on ART (years)	1.0 (0-6.0)	8.0 (4.0-11.5)	<0.001
CDC-C category (%)	76.5	72.6	0.5

MEIJIDE H ET AL. INCREASING INCIDENCE OF CANCER IN PERSONS LIVING WITH HIV COINFECTED WITH HCV. AN ADDITIONAL IMPACT OF HCV INFECTION.

FRI-155. EASL 2016

Impact of HIV/HCV co-infection

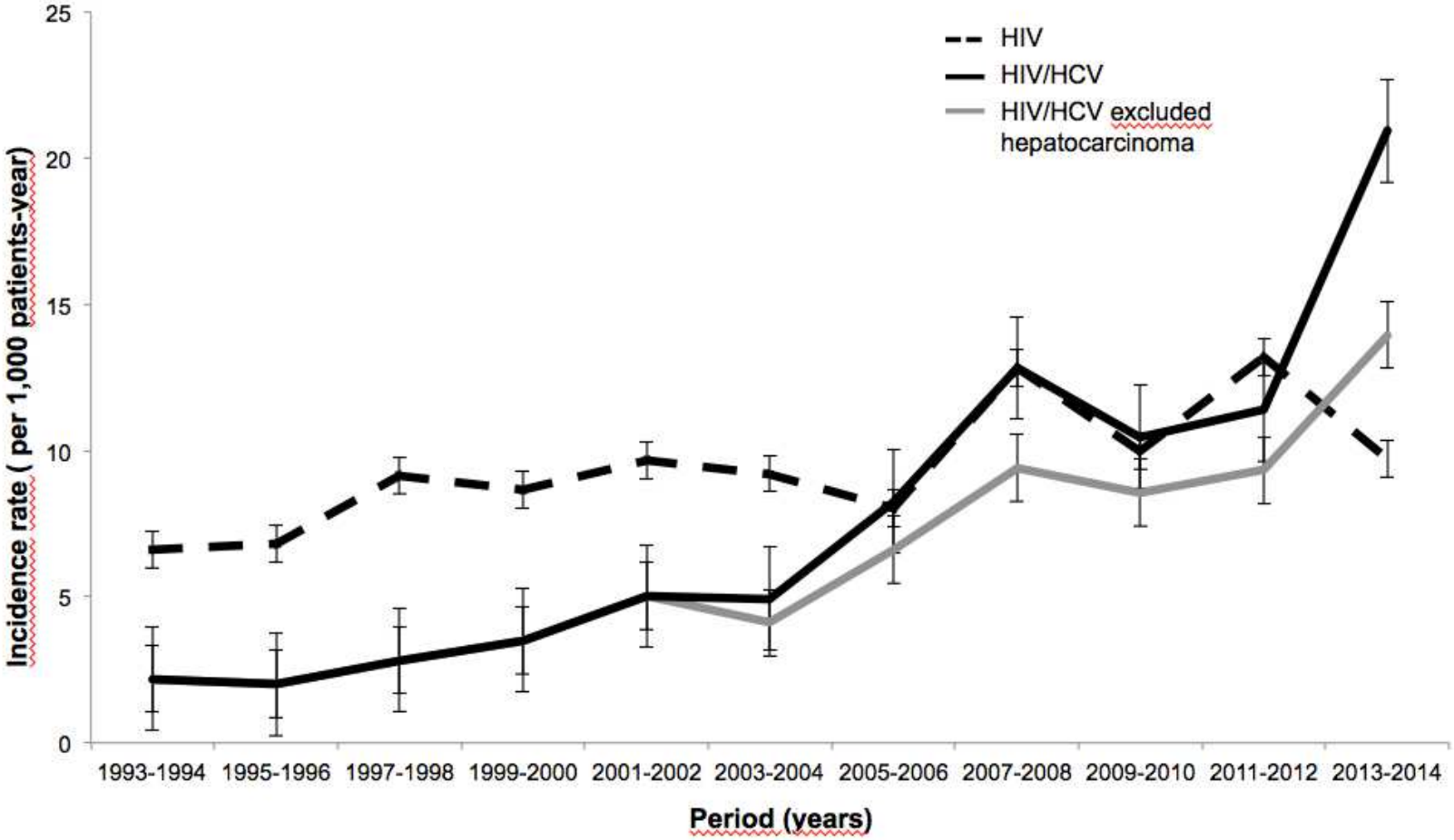


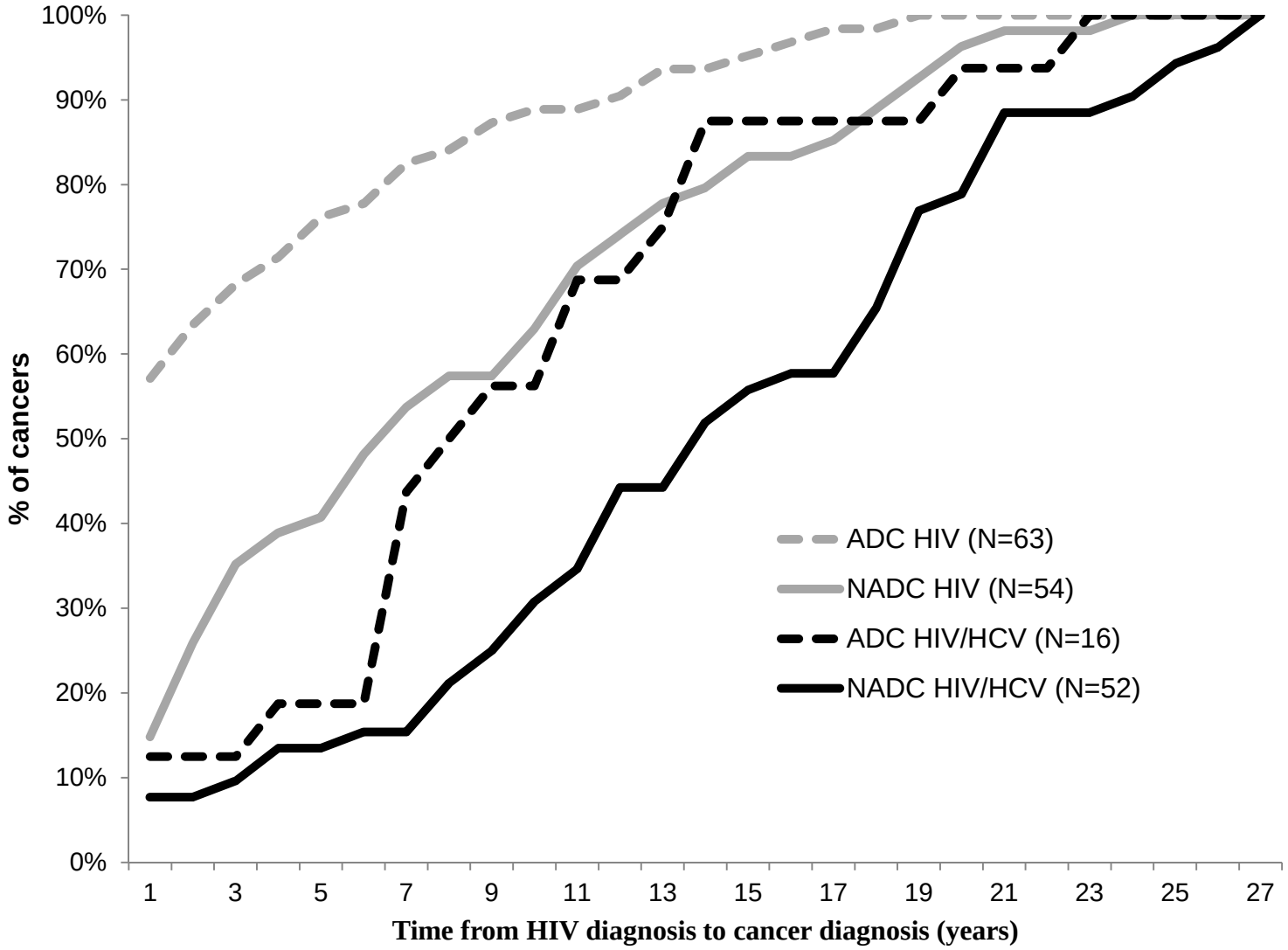
Figure 1. Incidence of malignancies in HIV-monoinfected patients and HIV/HCV-coinfected (including all malignancies and without hepatocellular carcinoma [HCC]).

Impact of HIV/HCV co-infection

	HIV (N=117)	HIV/HCV (N=68)	p
Histology type (%)			
- NHL	32.7	18.6	0.2
- KS	22.2	2.9	<0.001
- HL	9.9	4.4	0.4
- LUNG CANCER	16.8	23.7	0.5
- HCC	0.0	25.0	-
NADCs (%)	46.5	76.5	0.001
Time from HIV diagnosis to cancer (years)			
- NADCs	7.0 (2.0-13.0)	14.0 (9.0-19.0)	<0.001
- ADCs	1.0 (0-5.2)	10.0 (7.0-14.0)	<0.001
One-year mortality (%)	44.4	52.9	0.3
Cancer-related mortality (%)	47.5	45.2	0.5

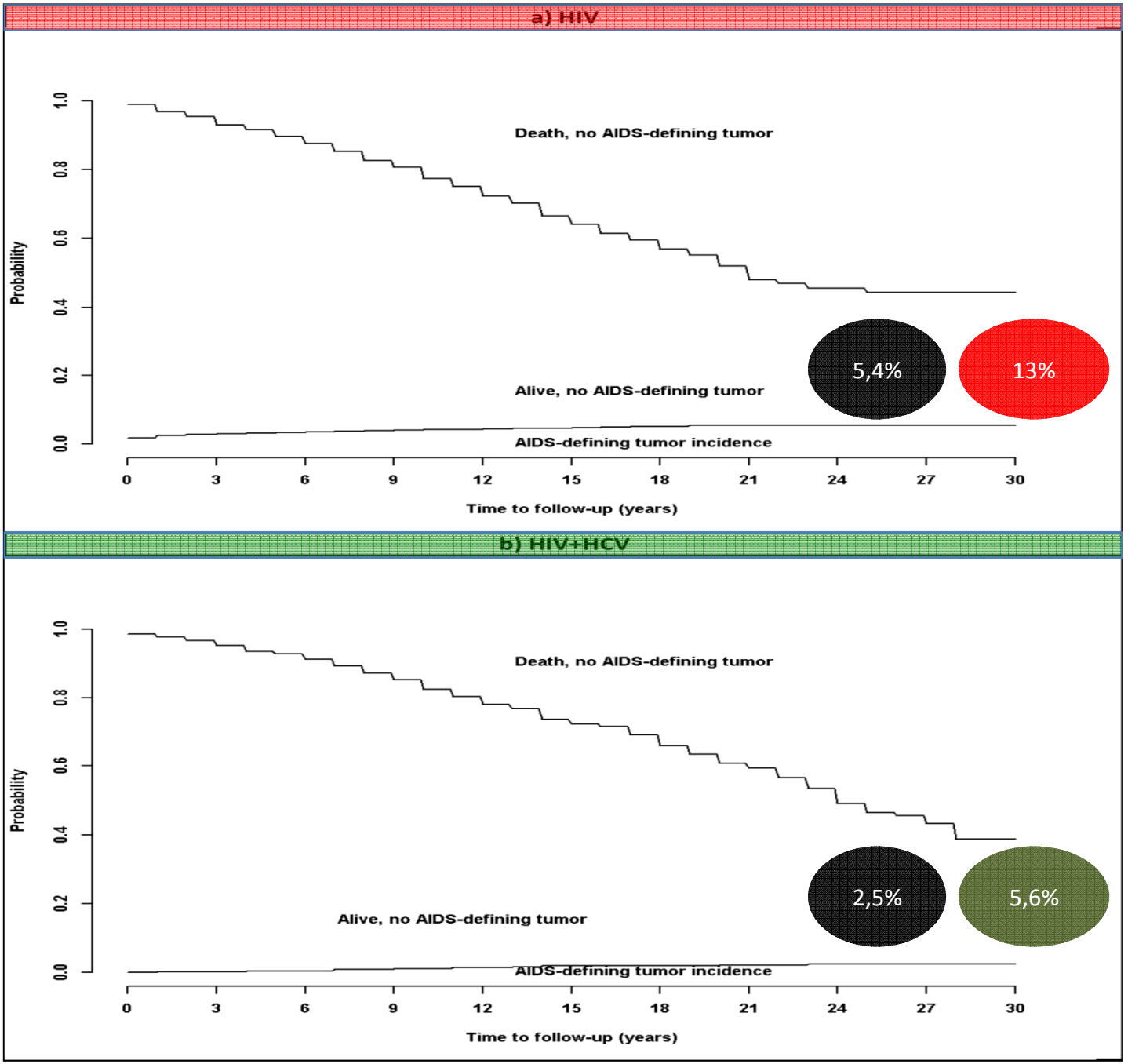
IDU: intravenous drug user; MSM: men who have sex with men; ART: antiretroviral therapy; NHN: Non-Hodgkin lymphoma; KS: Kaposi sarcoma; HL: Hodgkin lymphoma; HCC: hepatocellular carcinoma; NADC: non AIDS-defining cancer; ADC: AIDS-defining cancer

Impact of HIV/HCV co-infection



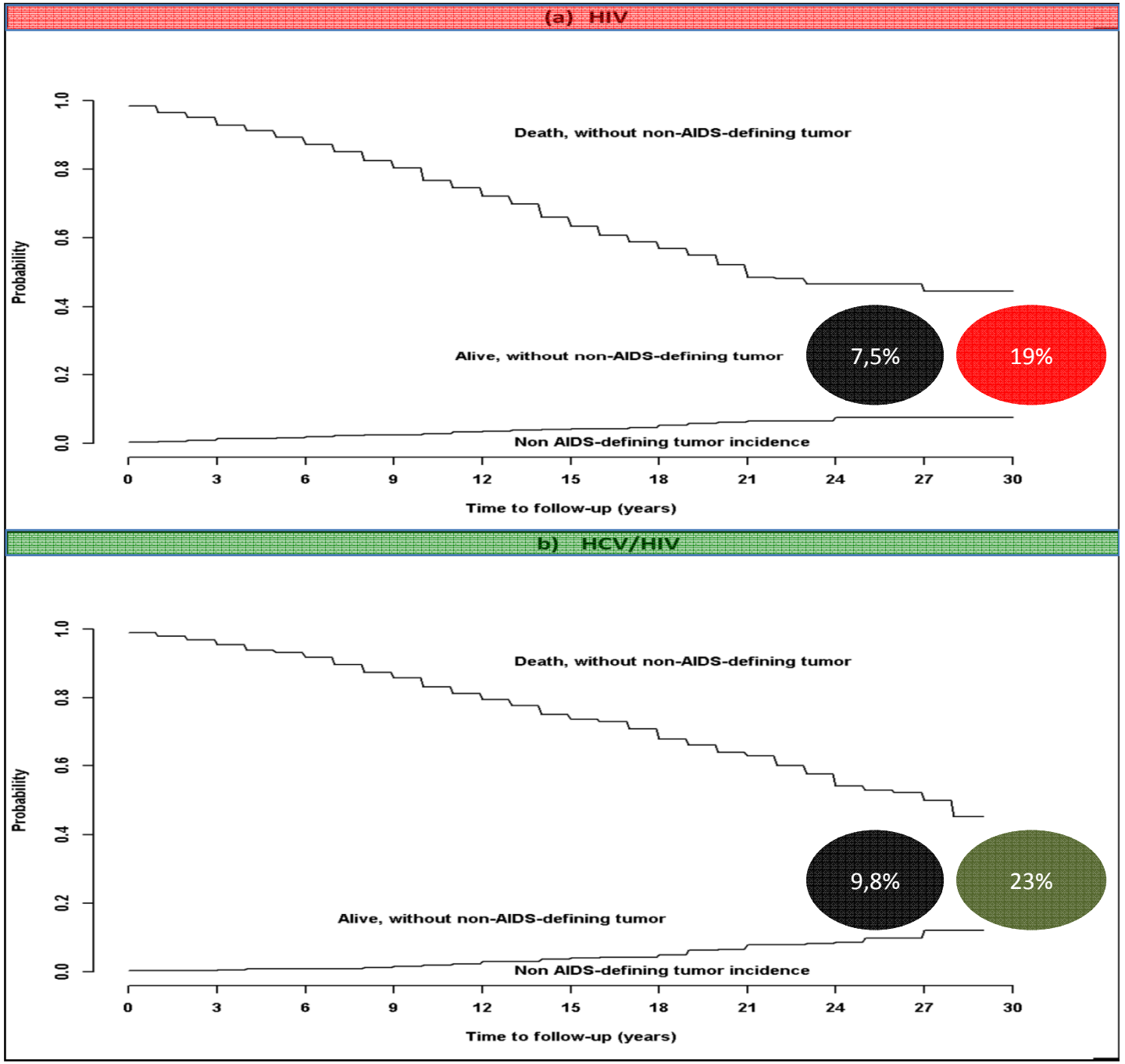
ADCs

Competing Risk Analysis



NADCs

Competing Risk Analysis



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Prevention: A vital need for risk factors reduction efforts

“PREVENTION IS BETTER THAN CURE”

Desiderious Erasmus (c.1466-1536)

PREVENTION STRATEGIES AGAINST CANCER AMONG HIV INFECTED PATIENTS
LIFESTYLE BEHAVIOUR
SMOKING / ALCOHOL HABIT CESSATION
HPV / HBV VACCINATIONS
HCV / HBV TREATMENT + US SCREENING
ANAL CANCER SCREENING
CT LUNG CANCER SCREENING
SCREENING METHODS DERIVED FROM GENERAL POPULATION

CHEN ET AL. RISK OF CANCER IN HIV INFECTED PATIENTS. IMPLICATIONS FOR CANCER PREVENTION. BMC CANCER (2015);15:133.
NON AIDS RELATED MALIGNANCIES: EXPERT CONSENSUS REVIIEW AND PRACTICAL APPLICATIONS. ANN ONCOL.2016;00:1-12.

Prevention: A vital need for risk factors reduction efforts

Cancer: Screening Methods[i]

Problem	Persons	Procedure	Evidence of benefit	Screening interval	Additional comments
Anal cancer	MSM	Digital rectal exam ± anal cytology	Unknown; advocated by some experts	1-3 years	If anal cytology abnormal, anoscopy
Breast cancer	Women 50-70 years	Mammography	↓ Breast cancer mortality	1-3 years	
Cervical cancer	Sexually active women	Liquid based cervical cytology test	↓ Cervical cancer mortality	1-3 years	Target age group should include the 25 to 64 years at least. HPV testing may aid screening
Colorectal cancer	Persons 50-75 years	Faecal occult blood test	↓ Colorectal cancer mortality	1-3 years	Flexible sigmoidscopy at 55-years is an alternative
Hepatocellular carcinoma	Persons with cirrhosis & Persons with HBV irrespective of fibrosis stage	Ultrasound and alpha-foetoprotein	Earlier diagnosis allowing for improved ability for surgical eradication	Every 6 months	
Prostate cancer	Men > 50 years	Digital rectal exam ± prostate specific antigen (PSA)	Use of PSA is controversial	1-3 years	Pros: ↑ early diagnosis. Cons: overtreatment; ambiguity about size of ↓ cancer-related mortality

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In conclussion …

- Cancer & HIV are inextricably linked.
- Cancer pathogenesis … still left unanswered.
- Role of HIV/HCV co-infection in cancer ?
- Management of HIV infected with cancer requieres a multidisciplinary approach.
- Prevention is better than cure.

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Héctor Meijide Míguez
Grupo de Virología Clínica _ INIBIC _ CHUAC
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X Curso Avances en Infección VIH y Hepatitis Virales
A Coruña, 5 de Febrero de 2016