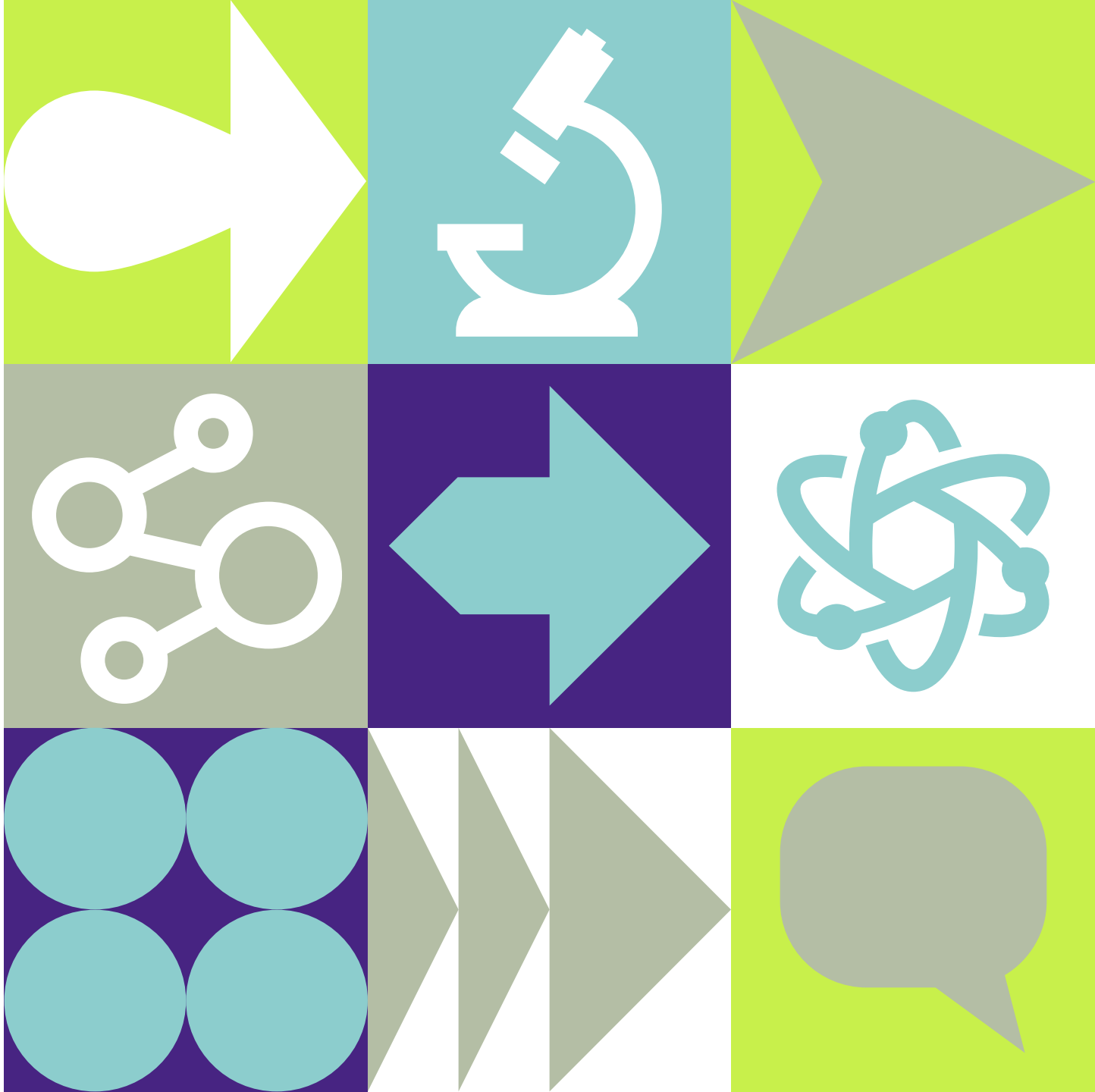
IAS 2021

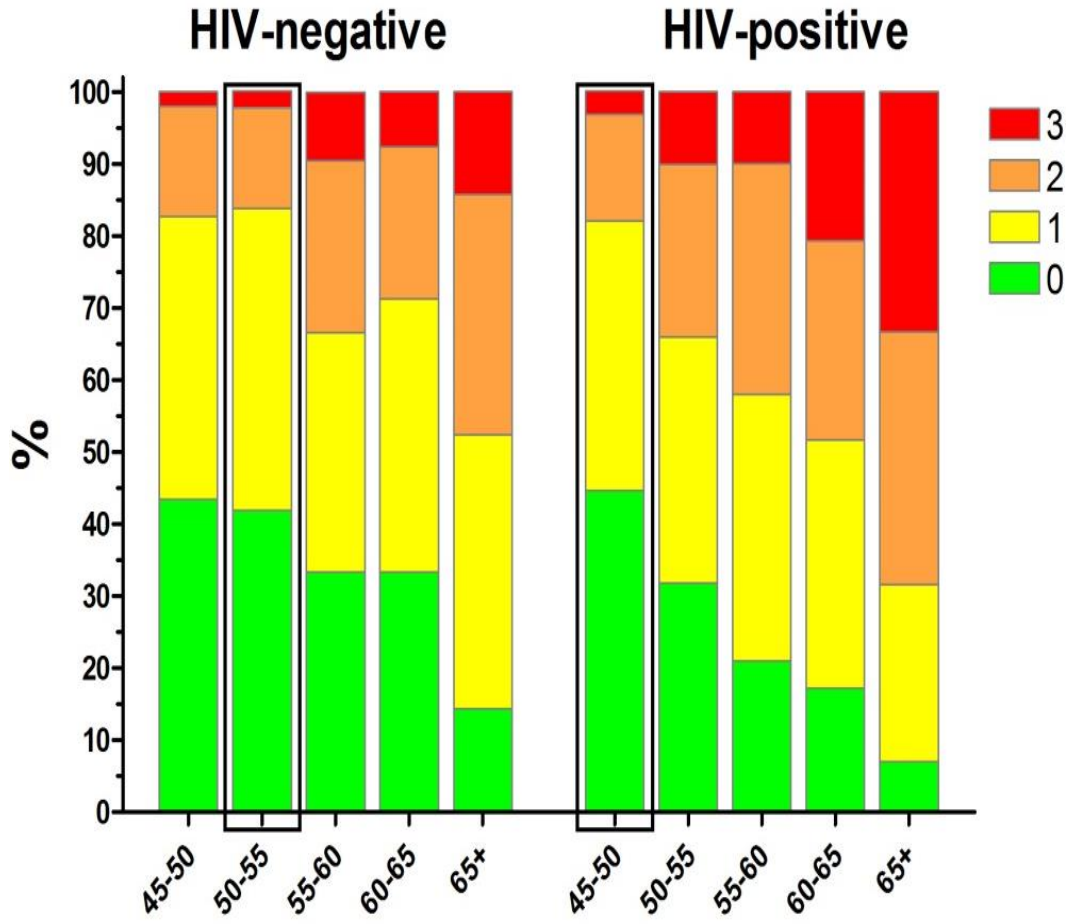
Co-morbidities In People Living With HIV: Host- Or HIV-Associated

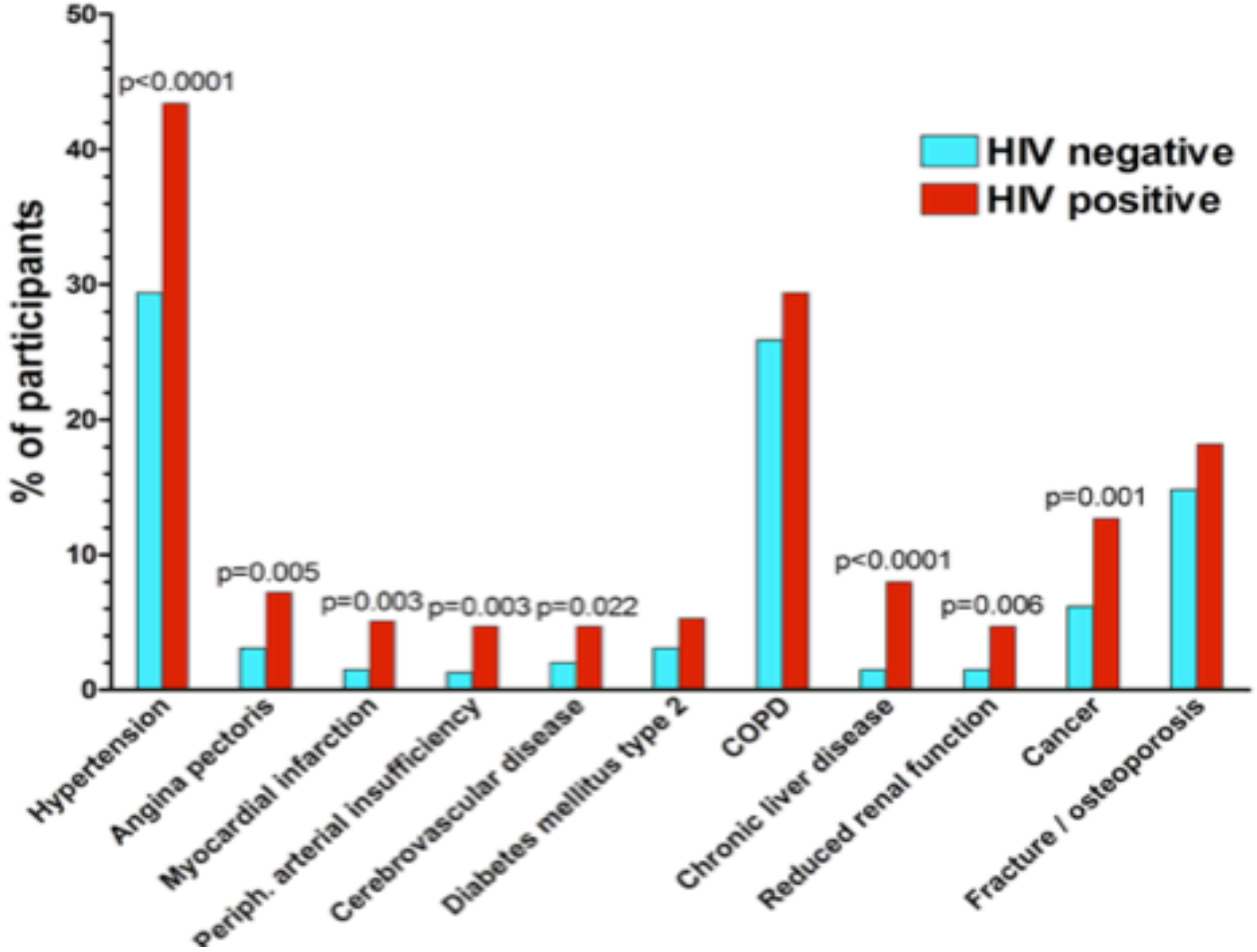
Lene Ryom
MD PhD
CHIP, Center of Excellence for Health, Immunity & Infections,
Rigshospitalet,
Copenhagen, Denmark



Nothing to disclose

Co-morbidities & Ageing





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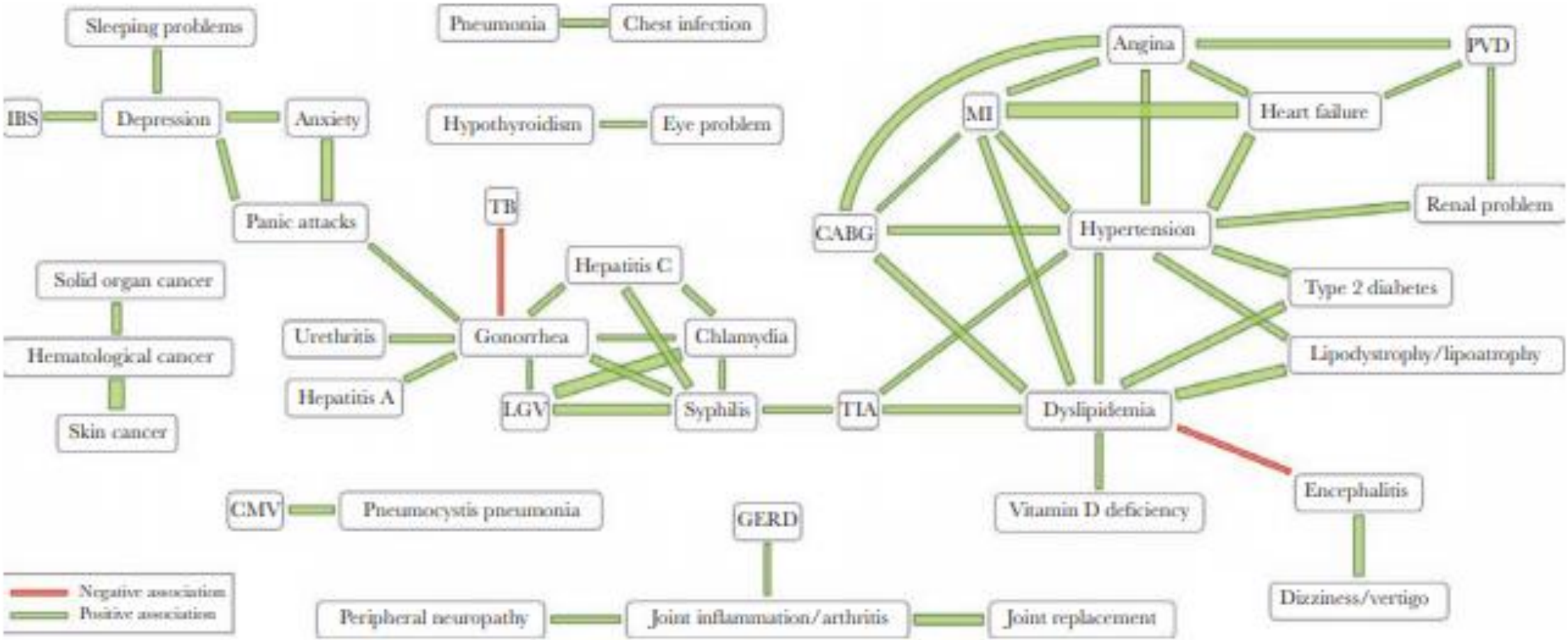
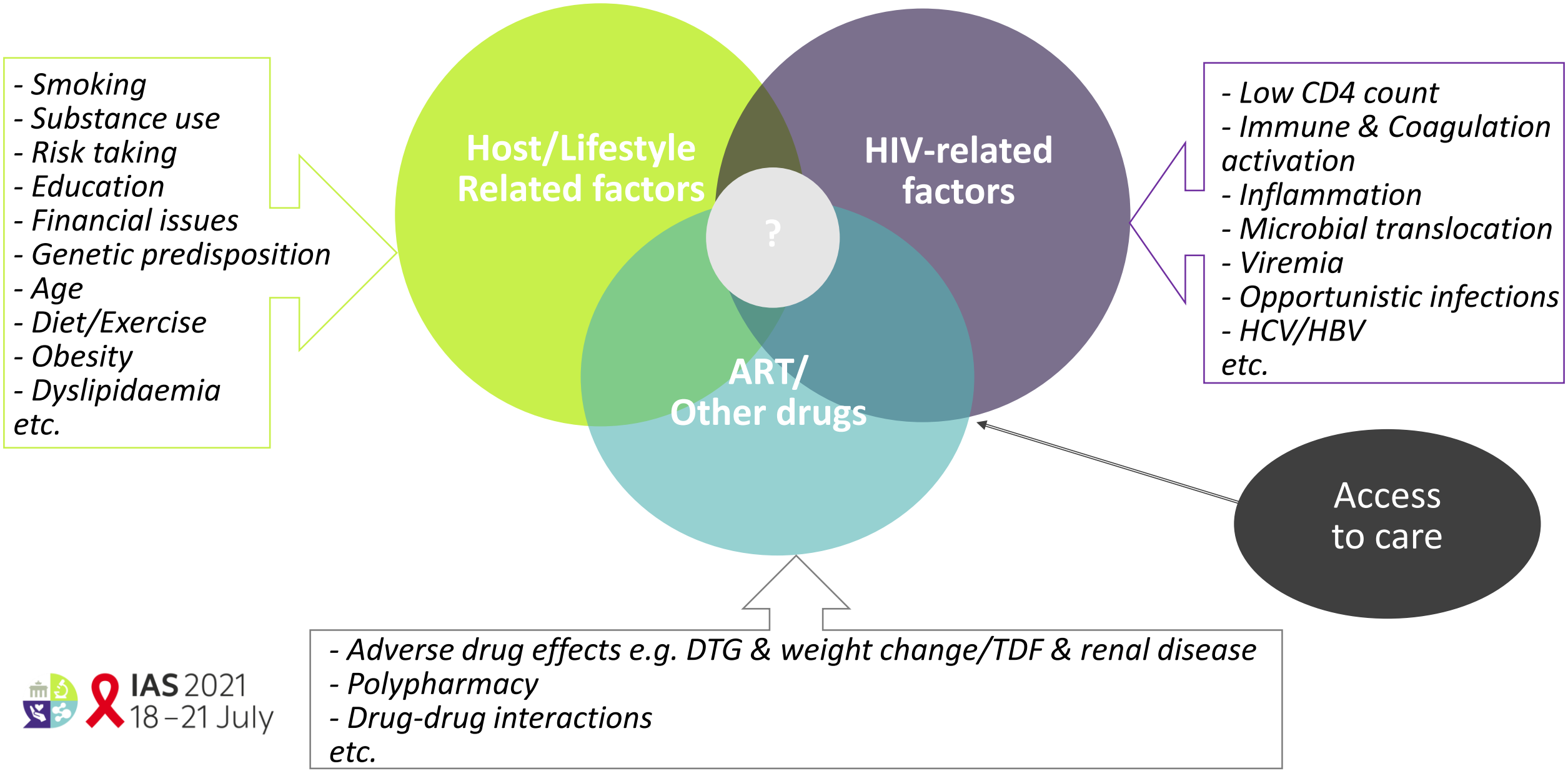
Schouten J for Age in HIV CID 2014

Disease Clusters Suggesting Common Underlying Pathogenesis



Francesco DD for Age in HIV and Poppy Open Forum Infect Dis 2018

Mechanisms?
Factors Associated with Co-morbidities in PLWH



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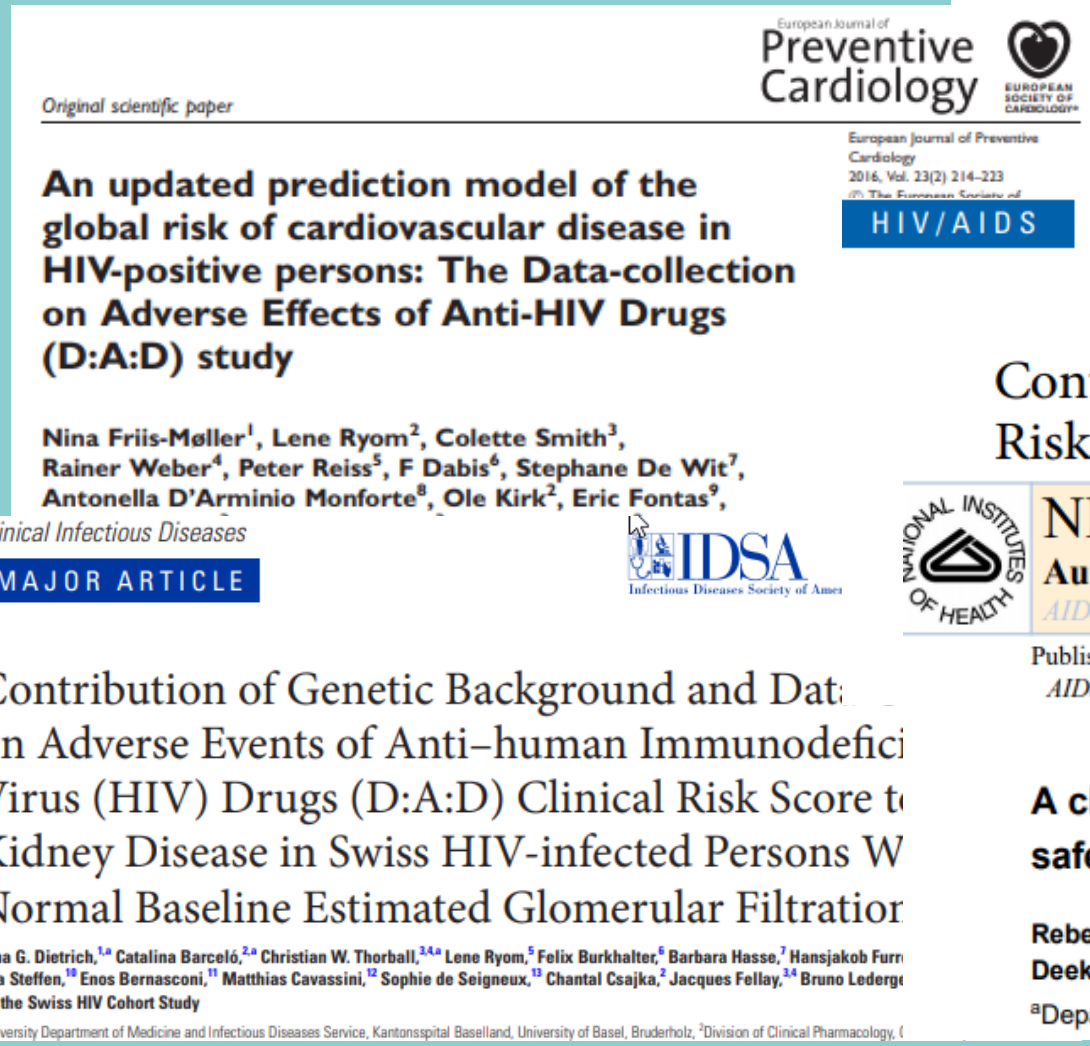
Impact of Individual Risk Factors

- Life Years Lost
- Population Attributable Fraction (PAF)
- Numbers Needed to Treat to Harm (NNTH)
- Risk/Prediction Scores



Original scientific paper

European Journal of Preventive Cardiology

European Journal of Preventive Cardiology
2016, Vol. 23(2) 214–223

An updated prediction model of the global risk of cardiovascular disease in HIV-positive persons: The Data-collection on Adverse Effects of Anti-HIV Drugs (D:A:D) study

Nina Friis-Møller[1], Lene Ryom[2], Colette Smith[3], Rainer Weber[4], Peter Reiss[5], F Dabis[6], Stephane De Wit[7], Antonella D'Arminio Monforte[8], Ole Kirk[2], Eric Fontas[9],

Clinical Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of Ame

Contribution of Genetic Background and Dat
on Adverse Events of Anti–human Immunodefici
Virus (HIV) Drugs (D:A:D) Clinical Risk Score t
Kidney Disease in Swiss HIV-infected Persons W
Normal Baseline Estimated Glomerular Filtratior

Léna G. Dietrich,[1,a] Catalina Barceló,[2,a] Christian W. Thorball,[3,4,a] Lene Ryom,[5] Felix Burkhalter,[6] Barbara Hasse,[7] Hansjakob Furr
Ana Steffen,[10] Enos Bernasconi,[11] Matthias Cavassini,[12] Sophie de Seigneux,[13] Chantal Csajka,[2] Jacques Fellay,[3,4] Bruno Lederge
for the Swiss HIV Cohort Study

[1]University Department of Medicine and Infectious Diseases Service, Kantonsspital Baselland, University of Basel, Bruderholz, [2]Division of Clinical Pharmacology, (

PLOS | MEDICINE

RESEARCH ARTICLE

Development and Validation of a Risk Score for Chronic Kidney Disease in HIV Infection Using Prospective Cohort Data from the D:A:D Study

Amanda Mocroft[1]*, Jens D. Lundgren[2], Michael Ross[3], Matthew Law[4], Peter Reiss[5], Ole Kirk[2], Colette Smith[1], Deborah Wentworth[6], Jacqueline Neuhaus[6], Christoph A. Fux[7],

HIV/AIDS MAJOR ARTICLE

Contribution of Genetic Background, Traditional Risk Factors, and HIV-Related Factors to

NIH Public Access
Author Manuscript
AIDS. Author manuscript; available in PMC 2014 October 07.

Published in final edited form as:
AIDS. 2014 June 1; 28(9): 1289–1295. doi:10.1097/QAD.0000000000000258.

A chronic kidney disease risk score to determine tenofovir safety in a prospective cohort of HIV-positive male veterans

Rebecca Scherzer[a,b], Monica Gandhi[a,c], Michelle M. Estrella[d], Phyllis C. Tien[a,b], Steve
Deeks[a,c], Carl Grunfeld[a,b], Carmen A. Peralta[a,b], and Michael G. Shlipak[a,b]

[a]Department of Medicine, University of California, San Francisco, California

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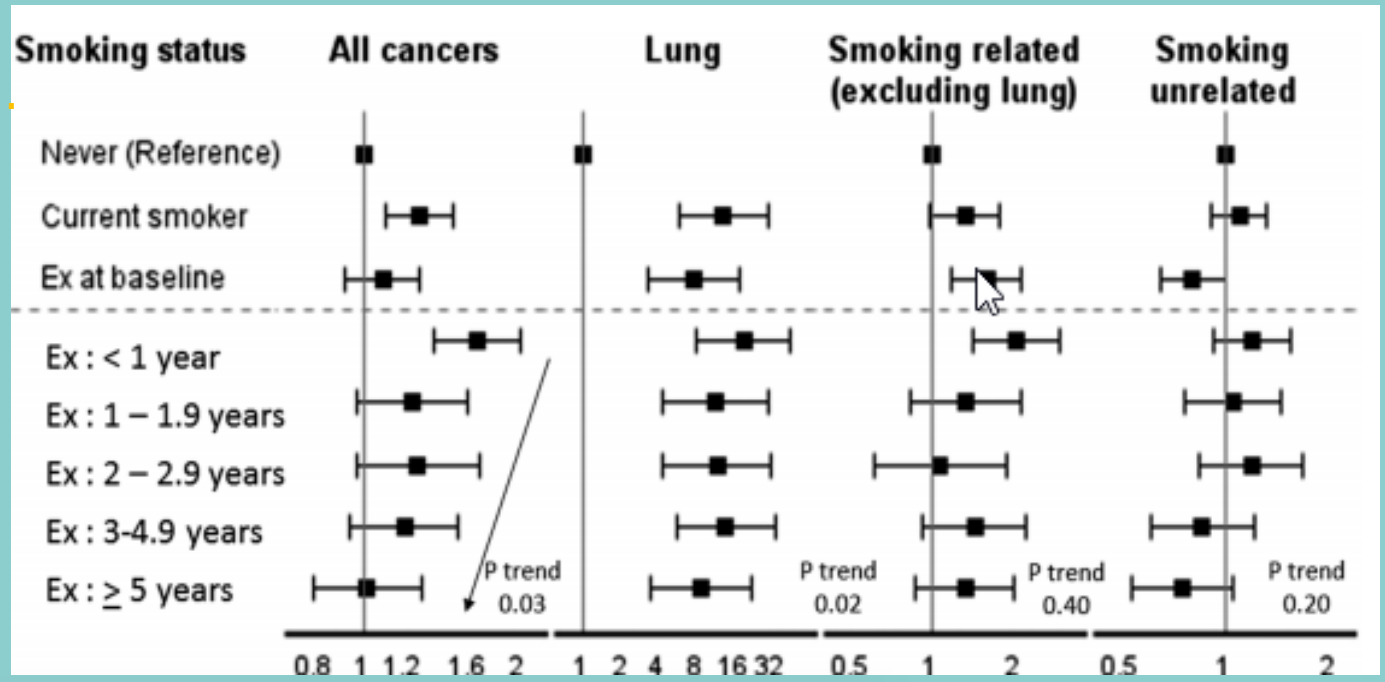
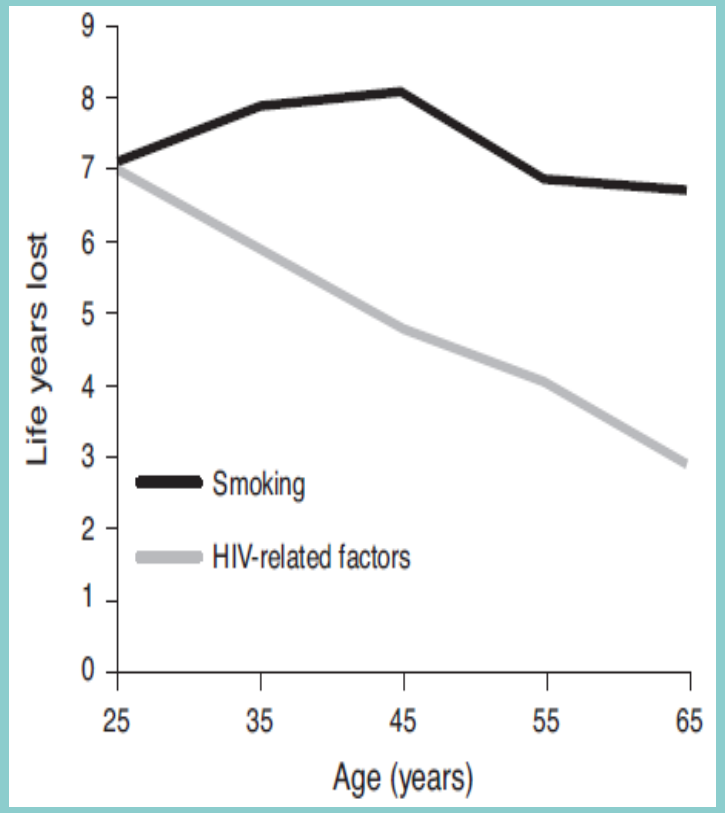
Smoking, Loss of Life Years, Cancer & CVD Risks in PLWH

Cancer Risk

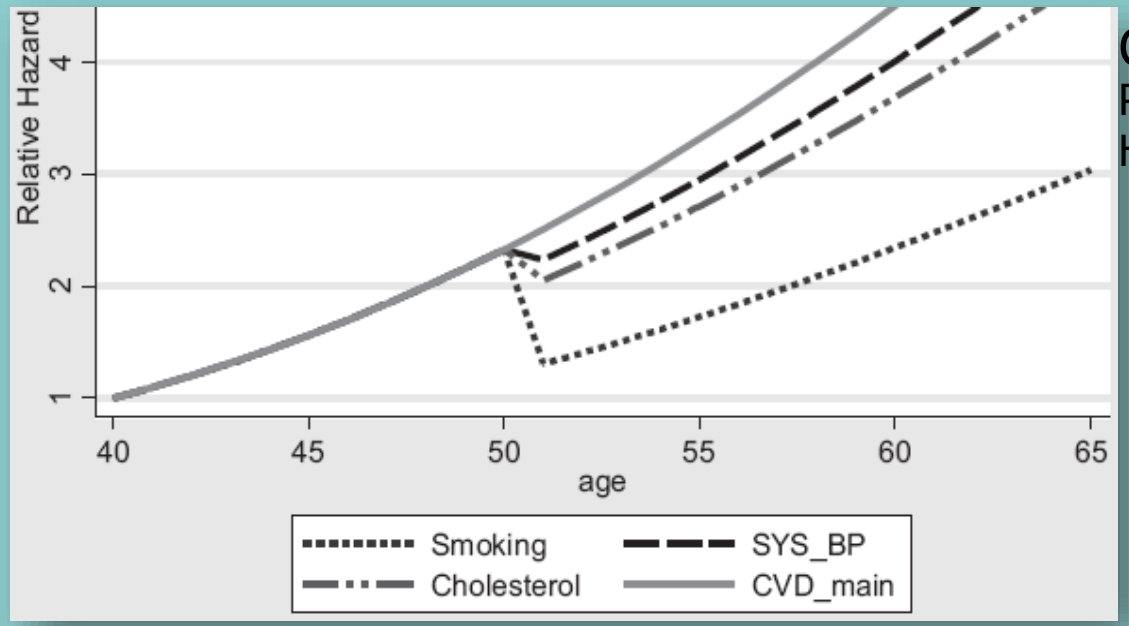
Shepherd L for D:A:D CID 2019



Loss of Life Years



Helleberg M for The Danish HIV Cohort AIDS 2015



CVD Risk Modification

Petoumenos K for D:A:D HIV Med 2014

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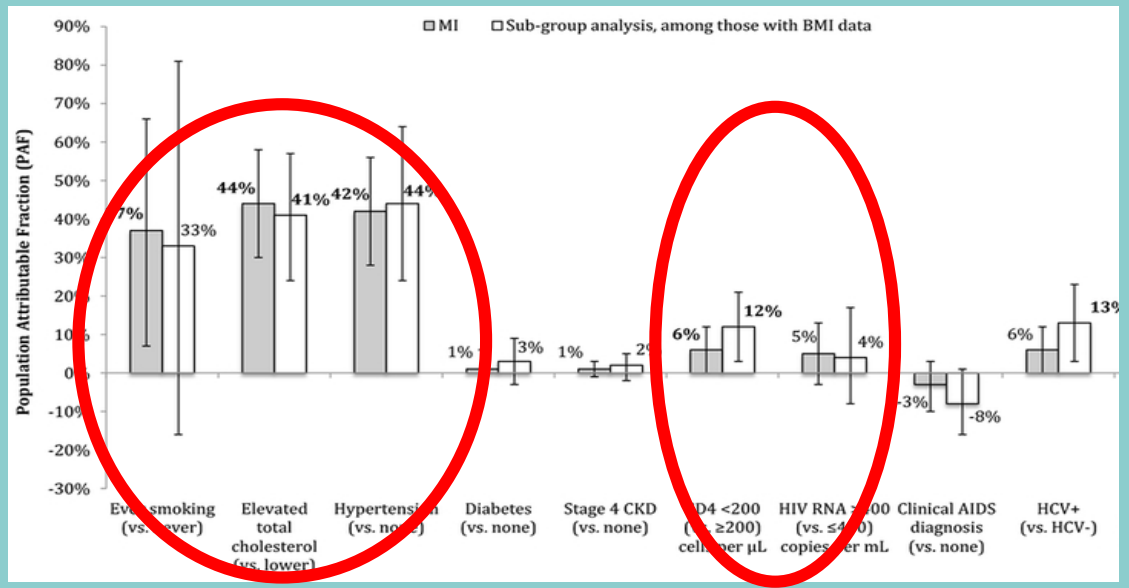
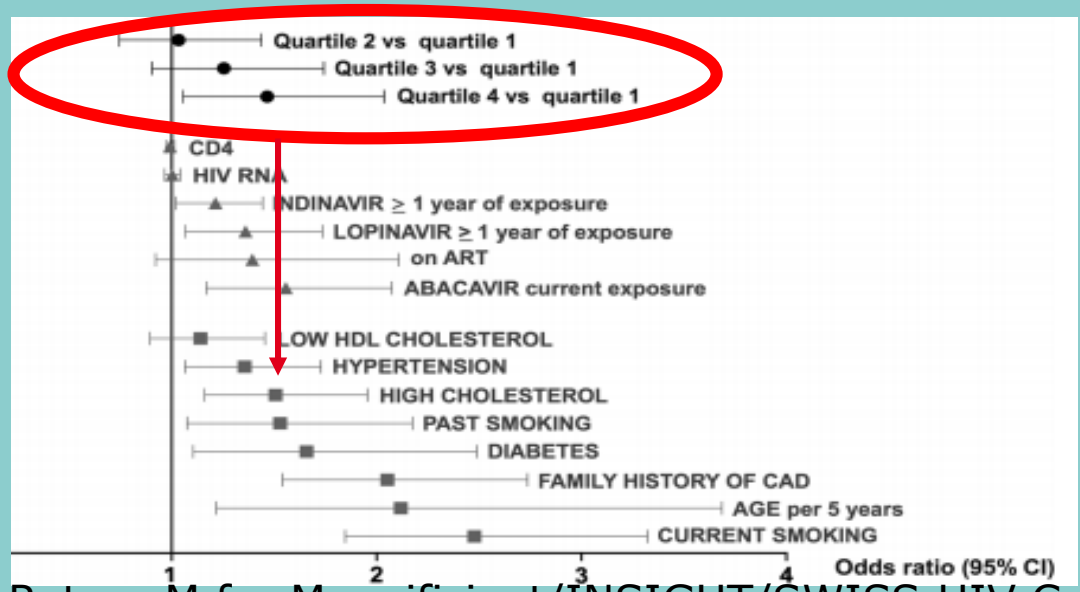
Impact of Risk Factors for Cardiovascular Disease



Althoff K for NA-ACCORD Lancet HIV 2019



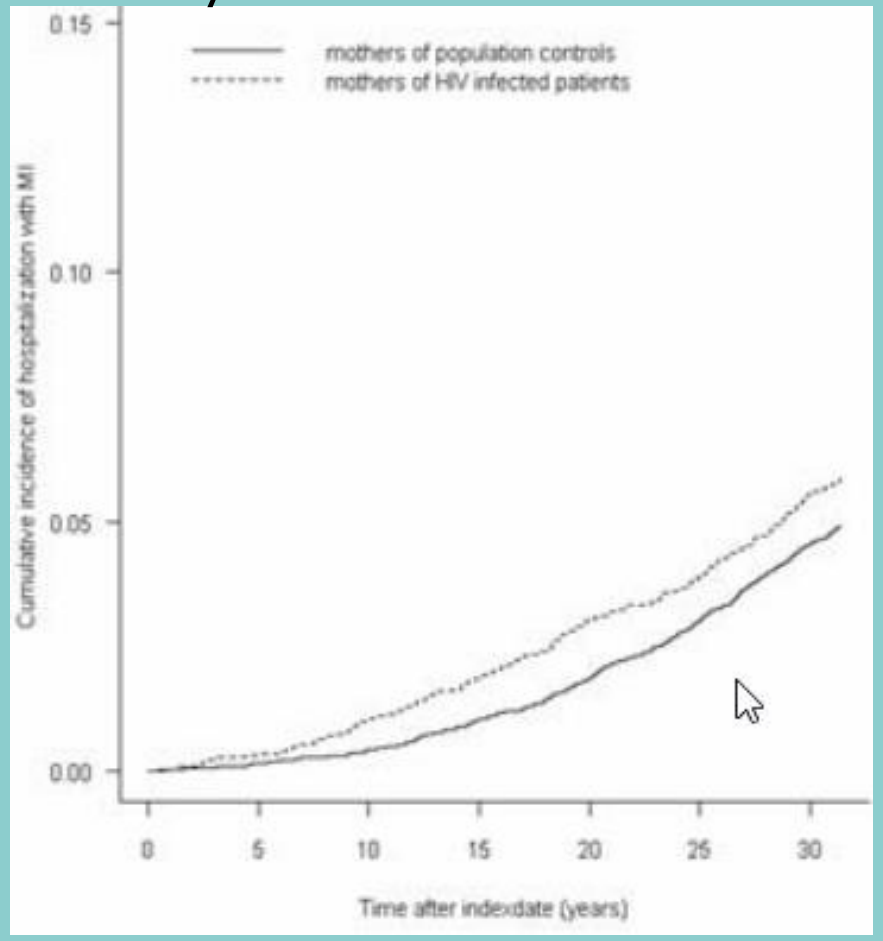
Rotger M for Magnificient/INSIGHT/SWISS HIV Cohort CID 2013

	Full model				Reduced model			
Predictor	HR	(95% CI)	*p*	β	HR	(95% CI)	*p*	β
Ln age	22.0	(16.3, 29.6)	<0.001	3.090	24.0	(17.9, 32.1)	<0.001	3.178
Male *vs.* female	1.37	(1.13, 1.66)	0.001	0.314	1.41	(1.16, 1.71)	<0.001	0.344
Diabetes (yes *vs.* no)	1.96	(1.59, 2.42)	<0.001	0.675	2.08	(1.69, 2.56)	<0.001	0.731
Family history (yes *vs.* no)	1.37	(1.14, 1.64)	0.001	0.314	1.39	(1.16, 1.67)	<0.001	0.330
Smoke								
Current *vs.* never	2.25	(1.91, 2.63)	<0.001	0.809	2.26	(1.93, 2.65)	<0.001	0.816
Former *vs.* never	1.24	(1.01, 1.51)	0.038	0.213	1.27	(1.04, 1.55)	0.019	0.239
Ln cholesterol (mmol/l)	2.58	(2.04, 3.27)	<0.001	0.948	2.98	(2.35, 3.78)	<0.001	1.092
Ln HDL (mmol/l)	0.61	(0.51, 0.72)	<0.001	−0.501	0.59	(0.50, 0.71)	<0.001	−0.519
Ln systolic blood pressure (mmHg)	4.59	(2.84, 7.42)	<0.001	1.523	4.56	(2.82, 7.39)	<0.001	1.518
Ln2 CD4 [illegible] (cells/mm³)	0.89	(0.84, 0.94)	<0.001	−0.119	0.89	(0.84, 0.94)	<0.001	−0.114
Receiving abacavir (yes *vs.* no)	1.47	(1.26, 1.71)	<0.001	0.384	–			
PI exposure (per year)	1.048	(1.009, 1.088)	0.015	0.0467	–			
NRTI exposure (per year)	1.028	(1.003, 1.054)	0.028	0.0278	–			

Friis-Moeller N for D:A:D Eur J Prev Cardiology 2016

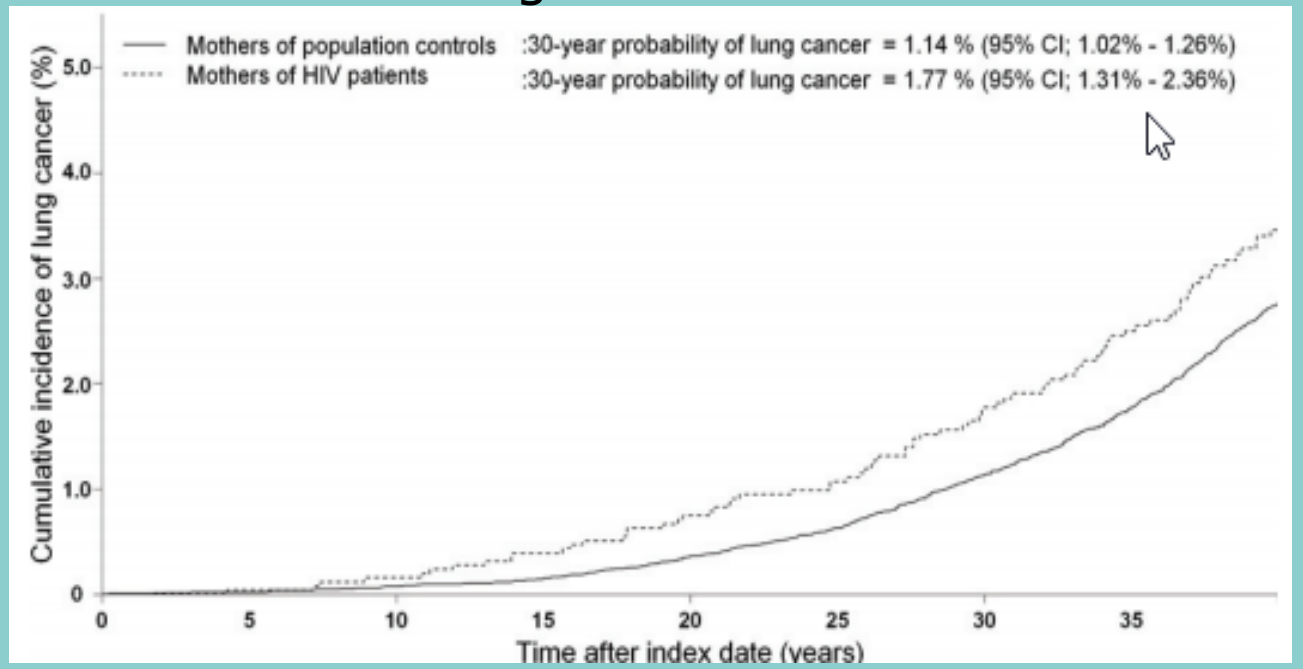
Comorbidities in Parents of PLWH & of HIV-negative Controls

Myocardial Infarction



Rasmussen LD for The Danish HIV Cohort
BMC Infect Dis 2010

Lung Cancer



Ensig F for The Danish HIV Cohort BMC cancer 2011

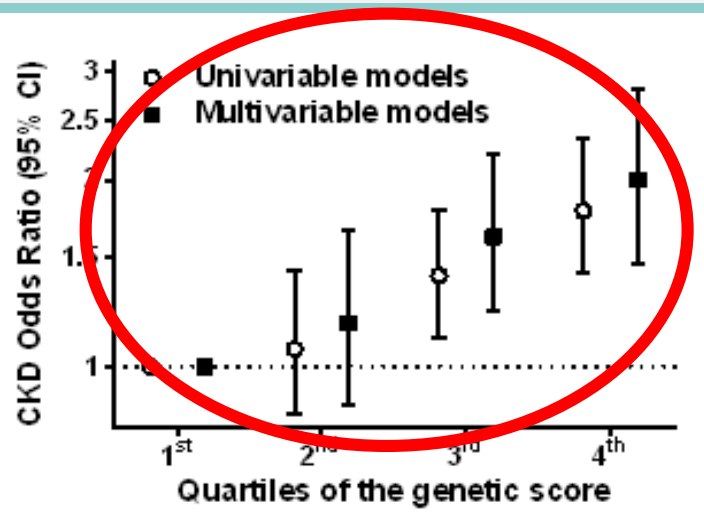
Impact of Risk Factors for Renal Disease

D:A:D risk-score for CKD =

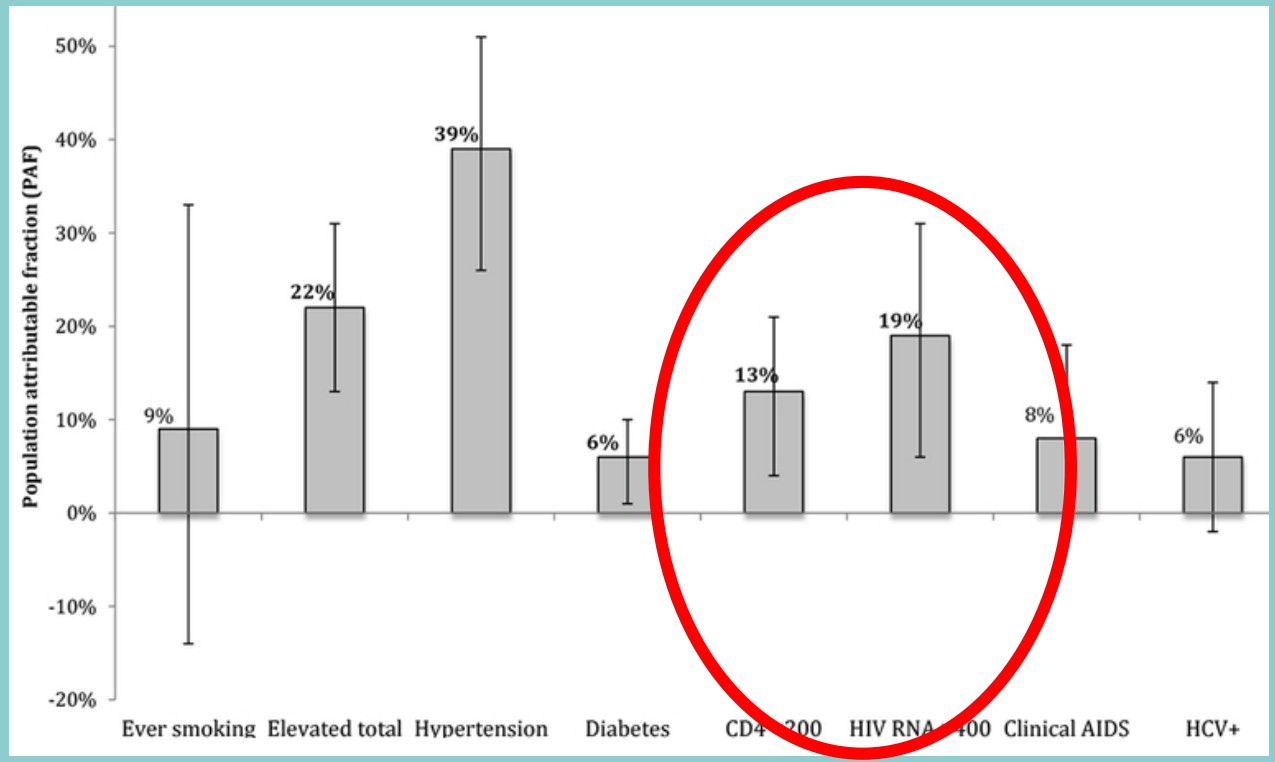
+	2	IDU
+	1	HCV antibody +ve
+	4	aged 35-50
+	7	aged 50-60
+	10	aged >60
+	6	baseline eGFR < 70
-	6	baseline eGFR > 90
+	1	female
+	1	nadir CD4 <200/mm^3
+	1	hypertensive
+	1	prior CVD
+	2	diabetic

CKD risk	Score	NNTH for LPV/r, ATV	NNTH for TDF, ATV/r,
Low	<0	1395	603
Medium	0-4	142	61
High	≥5	20	9

Mocroft A for D:A:D
PLOS Med 2015

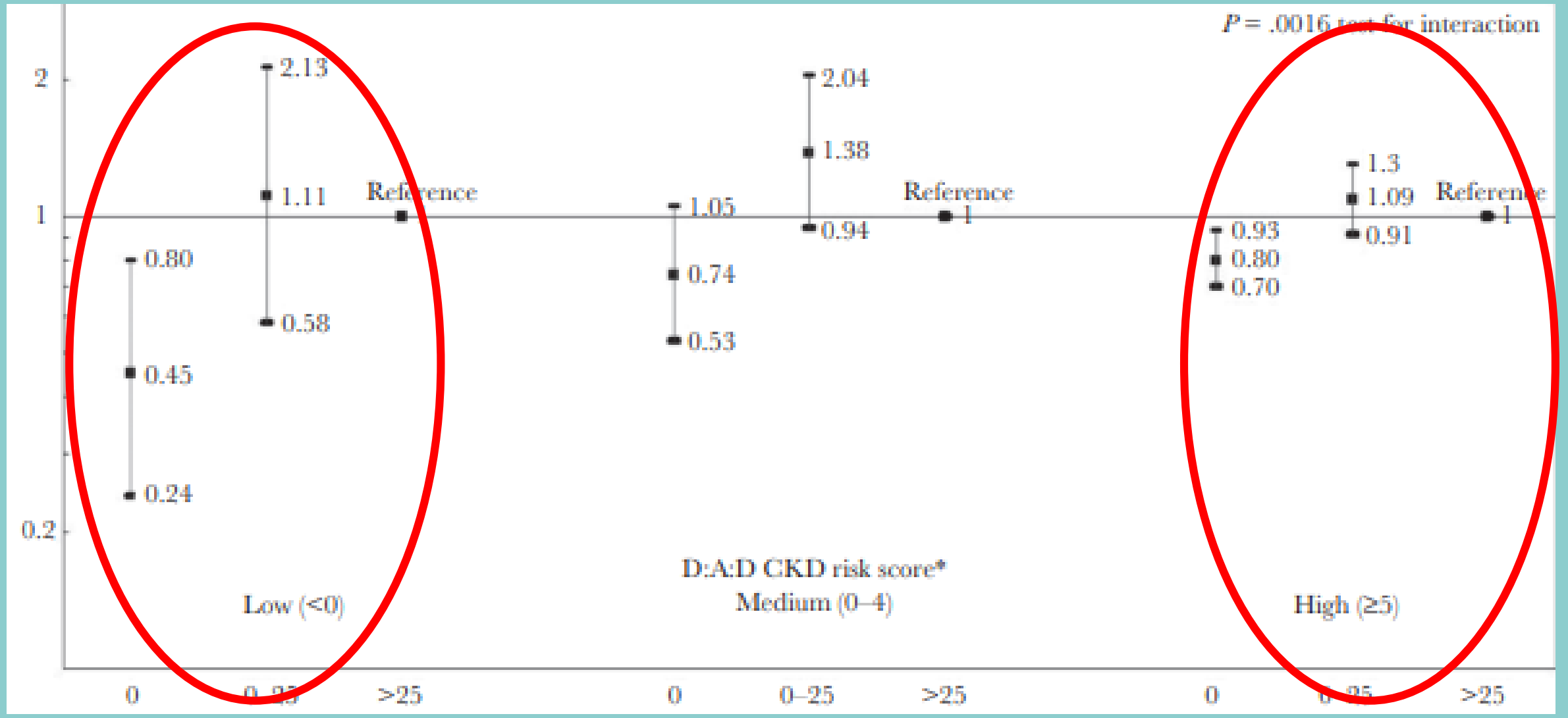


Dietrich LG for
The Swiss HIV Cohort
CID 2020



Althoff K for NA-ACCORD Lancet HIV 2019

Interaction Between CD4 count & Other Renal Risk Factors



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Ryom L for D:A:D JID 2021

Myocardial Infarction in PLWH With Access To Optimal Care vs. HIV-negative Controls

Calendar Year	Incidence Rate/100 000 py		Rate Ratio[a] (95% CI)	
	HIV-positive	HIV-negative	Unadjusted	Adjusted
1996–2011	268	165	1.6 (1.5–1.8)	1.4 (1.2–1.6)
1996–1999	276	136	2.0 (1.5, 2.8)	1.8 (1.3, 2.6)
2000–2003	324	162	2.0 (1.6, 2.5)	1.7 (1.4, 2.1)
2004–2007	270	178	1.5 (1.2, 1.9)	1.3 (1.0, 1.6)
2008–2009	245	167	1.5 (1.1, 2.0)	1.3 (.9, 1.7)
2010–2011	195	165	1.2 (.9, 1.6)	1.0 (.7, 1.4)

Klein D for Kaiser Permanente CID 2015

EACS Co-morbidity Management Guidelines V10.1 2020

	Assessment	At HIV diagnosis	Prior to starting ART	Follow-up frequency	Comment
CO-MORBIDITIES					
Haematology	FBC	+	+	3-12 months	
	Haemoglobinopathies	+			Screen at risk persons
	G6PD	+			Screen at risk persons
Body Composition	Body-mass index	+	+	Annual	
Cardiovascular Disease	Risk assessment (Framingham score[iii])	+	+	2 years	Should be performed in all men > 40 years and women > 50 years without CVD
	ECG	+	+/-	As indicated	Consider baseline ECG prior to starting ARVs associated with potential conduction problems
Hypertension	Blood pressure	+	+	Annual	
Lipids	TC, HDL-c, LDL-c, TG[iv]	+	+	Annual	Repeat in fasting state if used for medical intervention (i.e. ≥ 8h without caloric intake)
Glucose	Serum glucose	+	+	Annual	Consider oral glucose tolerance test / HbA1c if fasting glucose levels of 5.7-6.9 mmol/L (100-125 mg/dL)
Pulmonary Disease	Respiratory symptoms and risk factors[xii]	+	+	Annual	If severe shortness of breath is reported with preserved spirometry, echocardiography may be performed to rule out heart failure and/or pulmonary hypertension
	Spirometry			As indicated	Spirometry should be performed in all symptomatic persons[xii]
Liver Disease	Risk assessment[v]	+	+	Annual	
	ALT/AST, ALP, Bilirubin	+	+	3-12 months	More frequent monitoring prior to starting and on treatment with hepatotoxic drugs
	Staging of liver fibrosis			12 months	In HCV and/or HBV co-infected persons (e.g. FibroScan, serum fibrosis markers)
	Hepatic ultrasound			6 months	Persons with liver cirrhosis[xiii]

https://www.eacsociety.org/guidelines/eacs-guidelines.html

Conclusions

- Irrespectively of the underlying cause(s) ageing PLWH experience disproportionally high rates of non-AIDS co-morbidities
    - CVD studies show risk may be overcome w/optimal management- other co-morbidities?

- Lifestyle/host factors are key drivers for several co-morbidities, however contribution of HIV-related factors & ART should not be overlooked
    - Impact differs for individual co-morbidities/presence of other factors/cumulative nature
    - The more risk factors the more likely incident disease

- Closely related risk profiles, suggest effective interventions against common factors incl smoking, dyslipidemia & hypertension may have wide-ranging multimorbidity impact

- Multidisciplinary efforts focusing on systematic risk assessments & management are required, recommendations are available e.g. in the EACS Guidelines

- Need studies to assess which interventions are most effective for different co-morbidities, when to initiate & impacts of moderating HIV-related inflammation/coagulation activation