10° WORKSHOP NAZIONALE CISAI

MILANO

PREVENZIONE E GESTIONE DELLE CO-MORBIDITÀ ASSOCIATE ALL'INFEZIONE DA HIV

PRESIDENTI
PAOLO BONFANTI
ANTONIO DI BIAGIO

30 SETTEMBRE
1 OTTOBRE
2021

CISAI

FONDAZIONE ASIA

Weight Gain

Lucia Taramasso
Clinica Malattie Infettive
IRCCS Ospedale Policlinico San Martino
Genova

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Disclosures

Lucia Taramasso has been served as a paid consultant to Gilead Sciences, Janssen-Cilag and ViiV Healthcare

Weight gain

- **Weight gain nella popolazione generale**
- **Weight gain e HIV: Da dove siamo partiti e come cambia la sopravvivenza con l'aumento di peso**
- **Fattori correlati all'aumento di peso**
- **Studi nel naive**
- **Studi di switch**

Increasing Rates of Obesity among HIV-Infected Persons during the HIV Epidemic

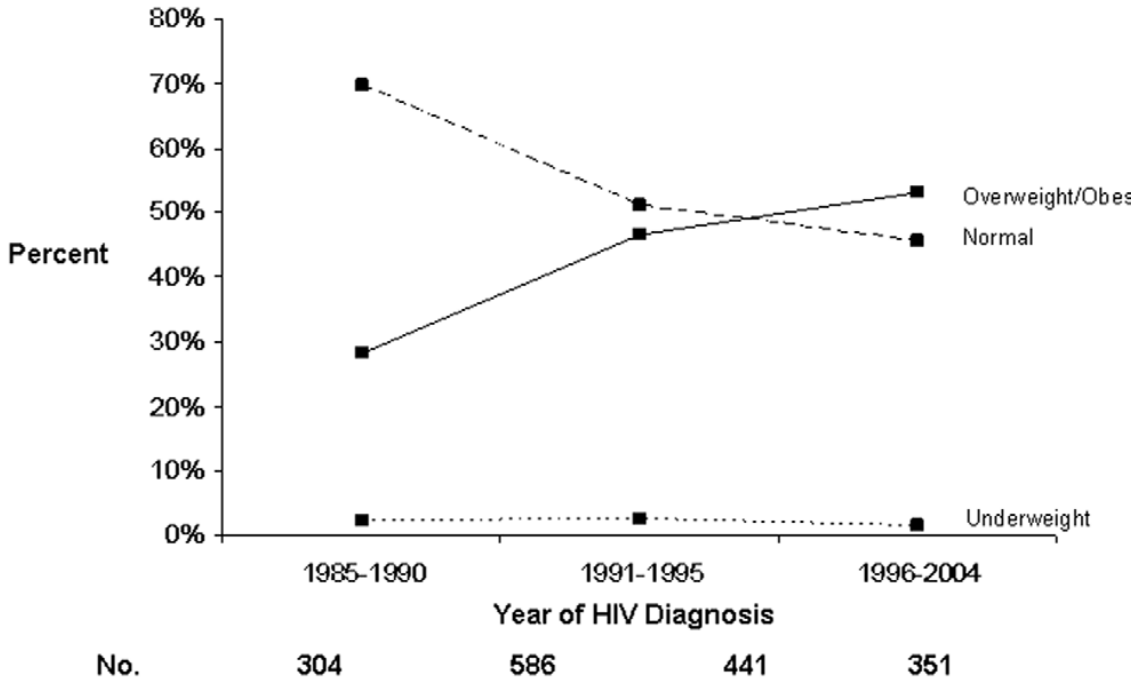

Figure 1. Trends in Weight Categories at HIV Diagnosis during the HIV Epidemic.

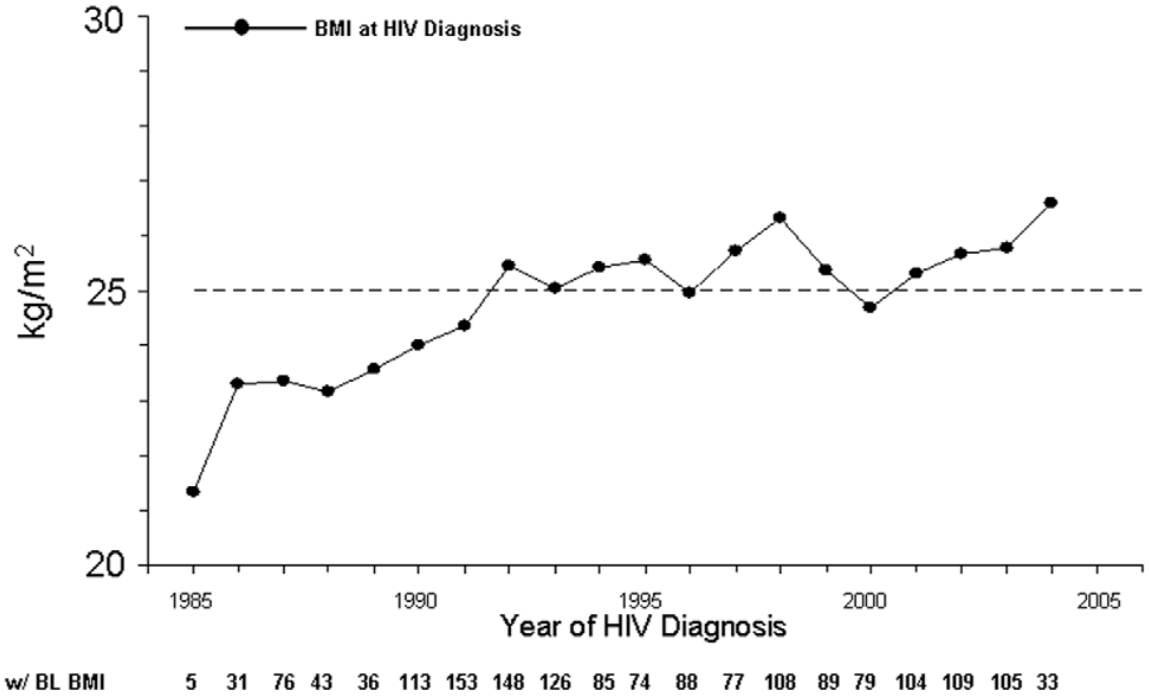

Figure 2. Trends in Mean BMI Measurements at HIV Diagnosis during the HIV Epidemic.

Weight gain in HIV… ma non solo

Crum-Cianflone (2010)
PLoS ONE 5(4): e10106.
doi:10.1371/journal.pone.0010106

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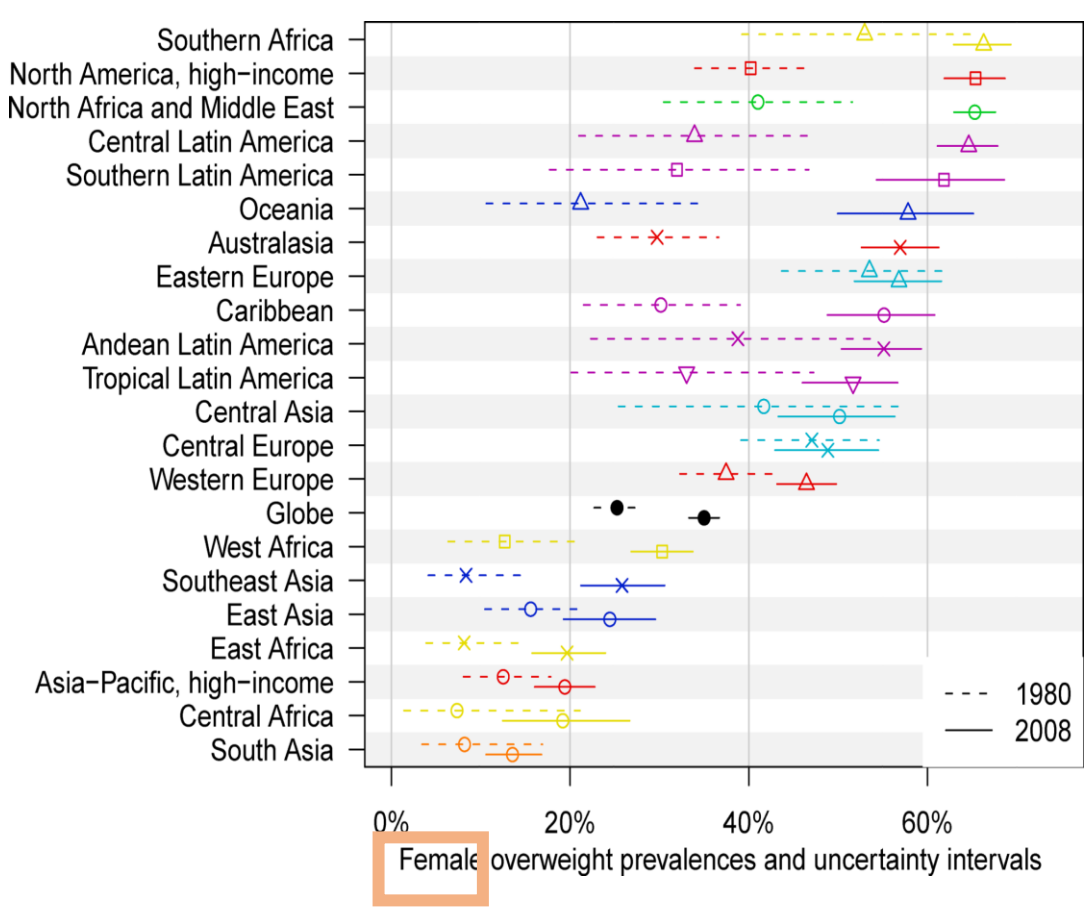
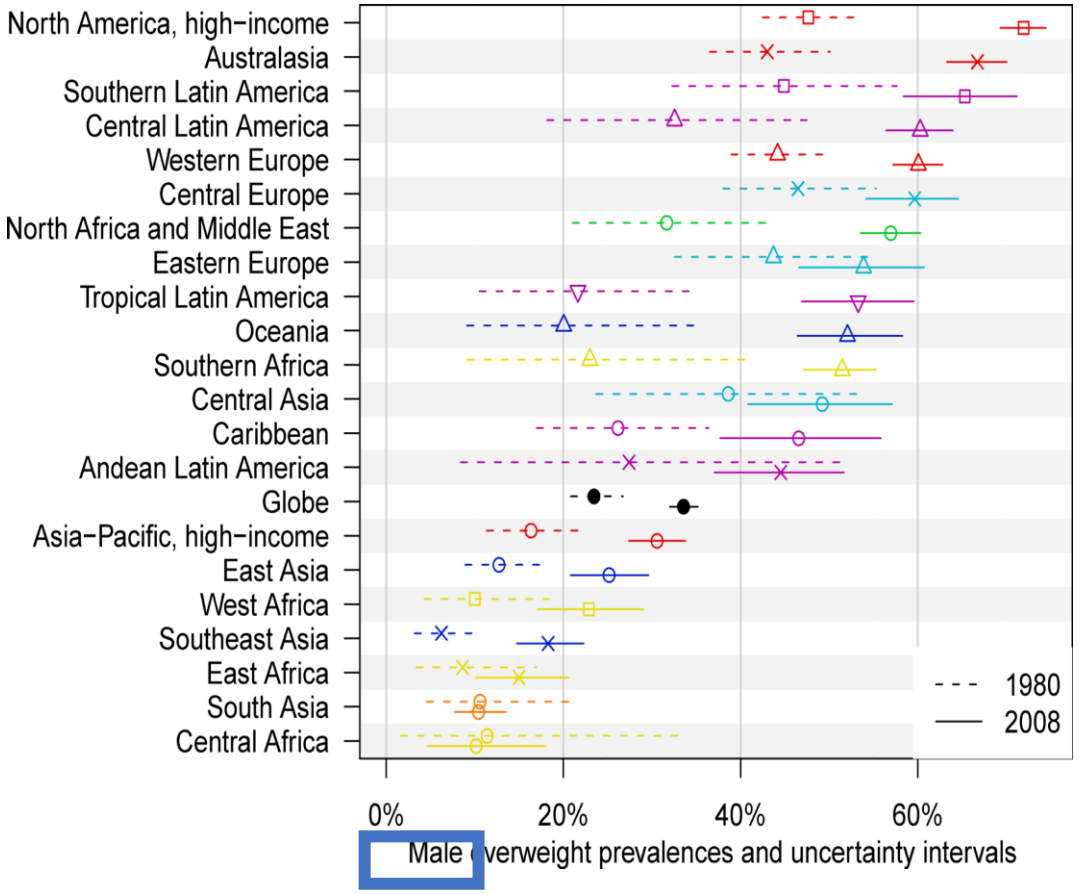
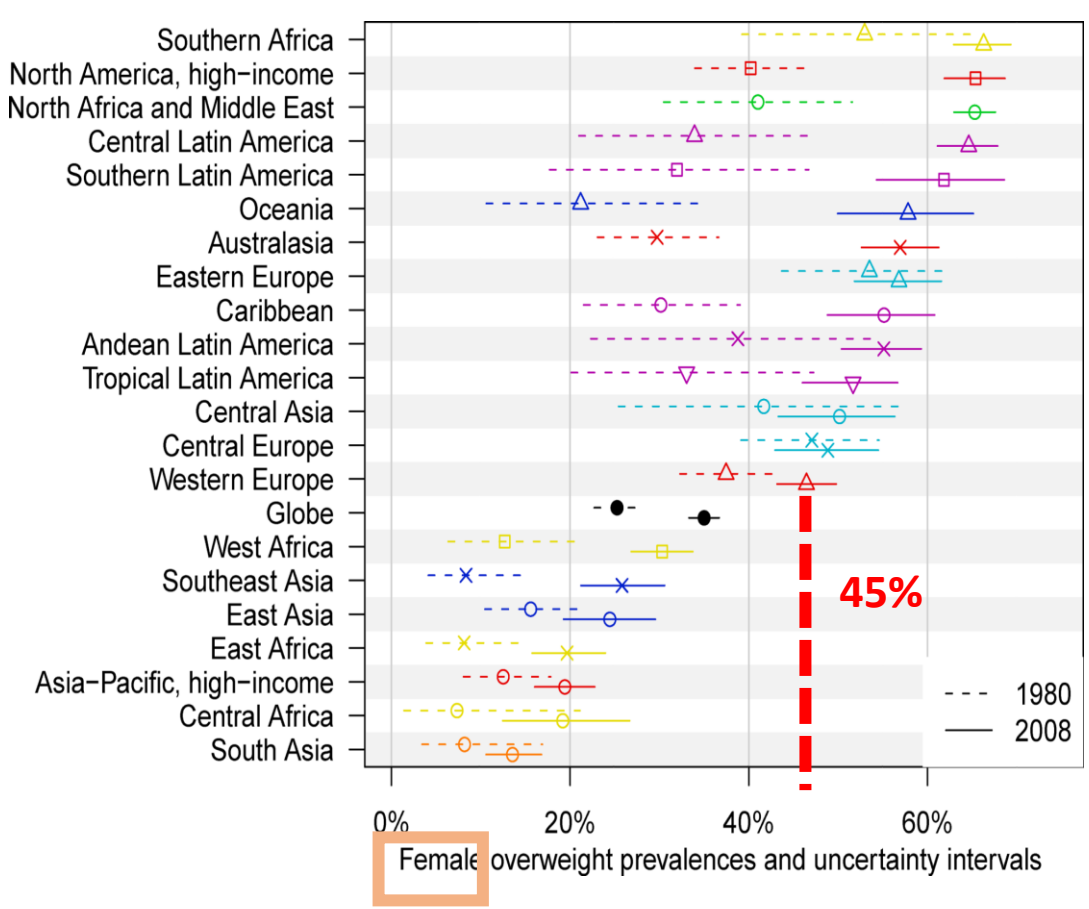


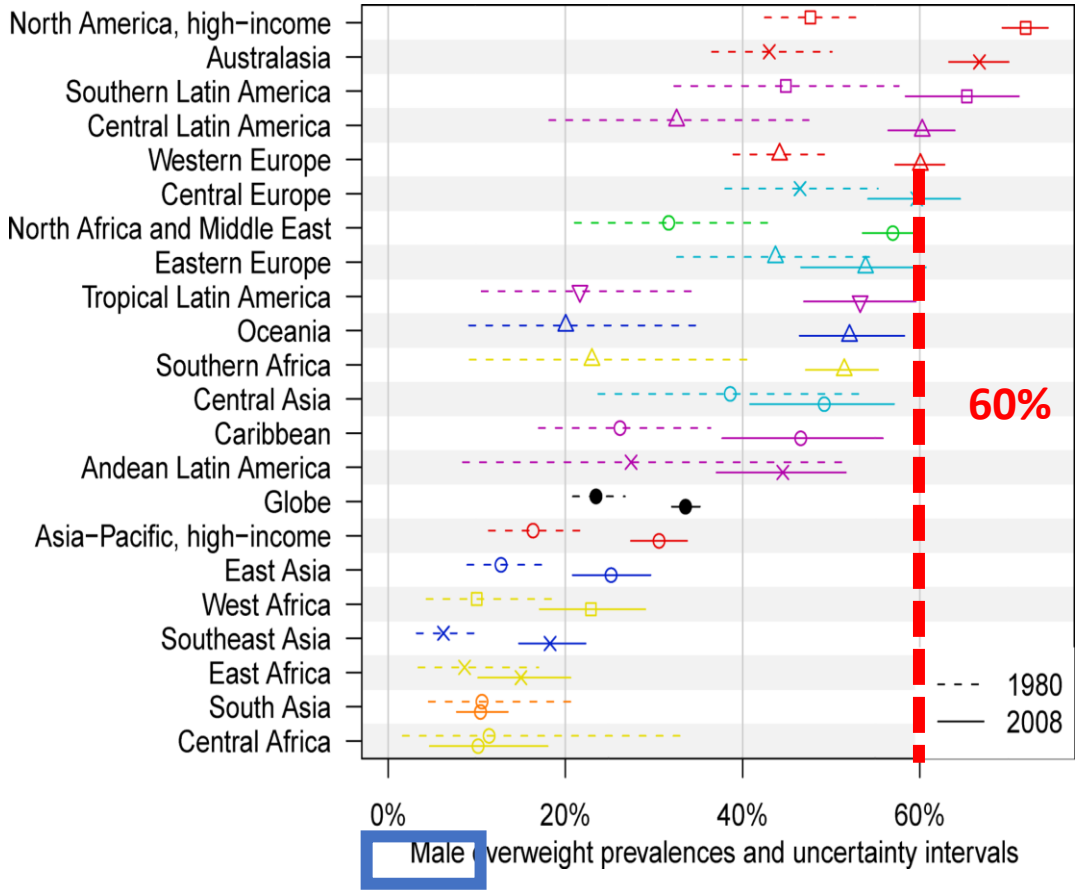


The epidemiology is changing...

OVERWEIGHT

Finucane M, et al. Lancet 2011;377:557–567





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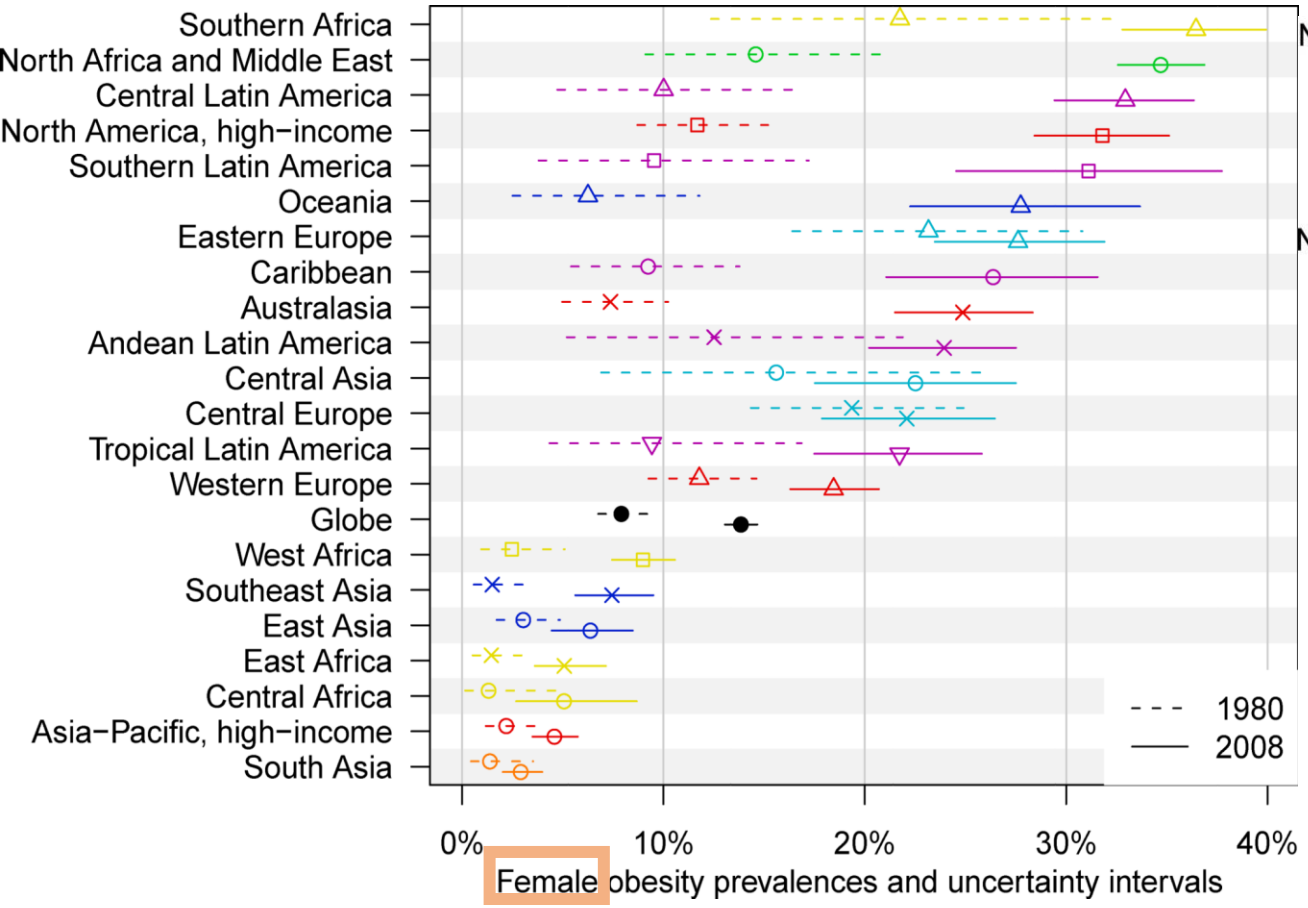

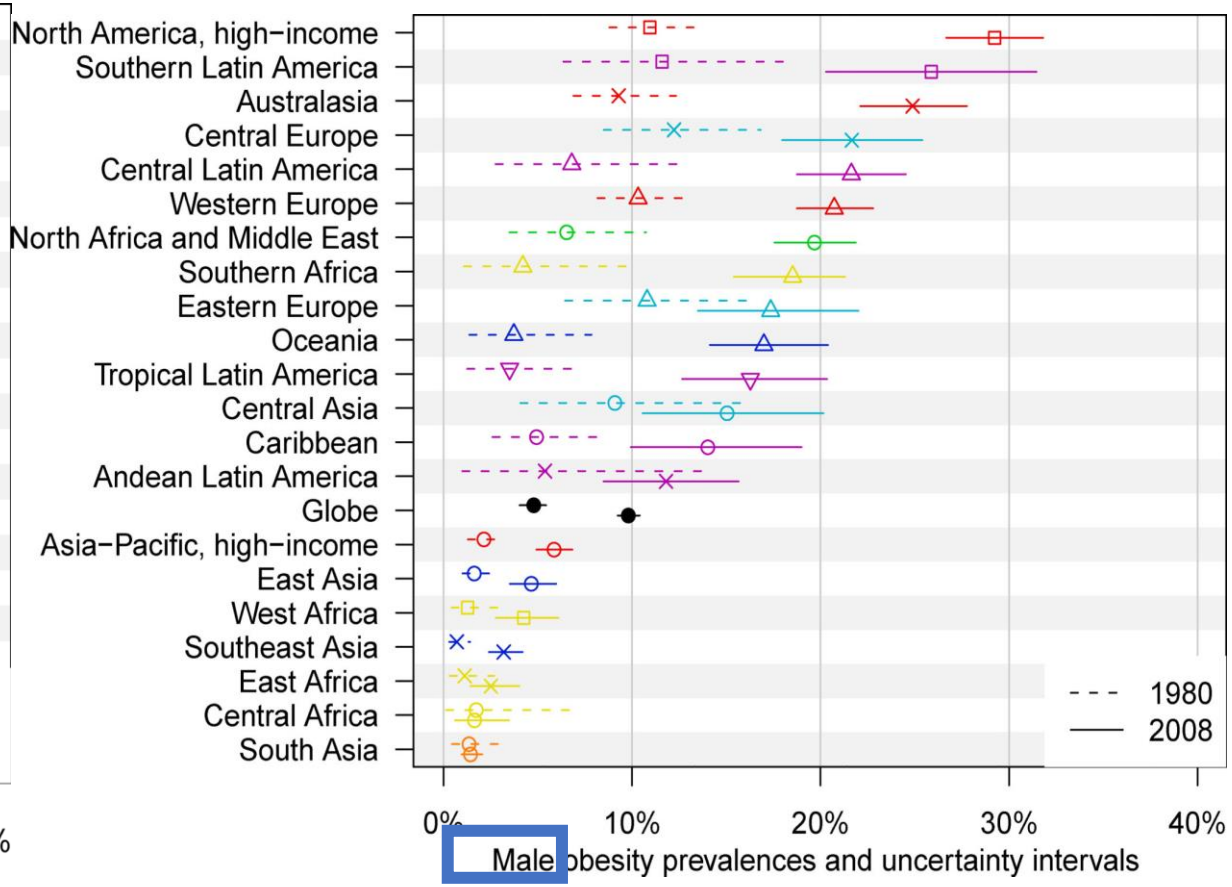

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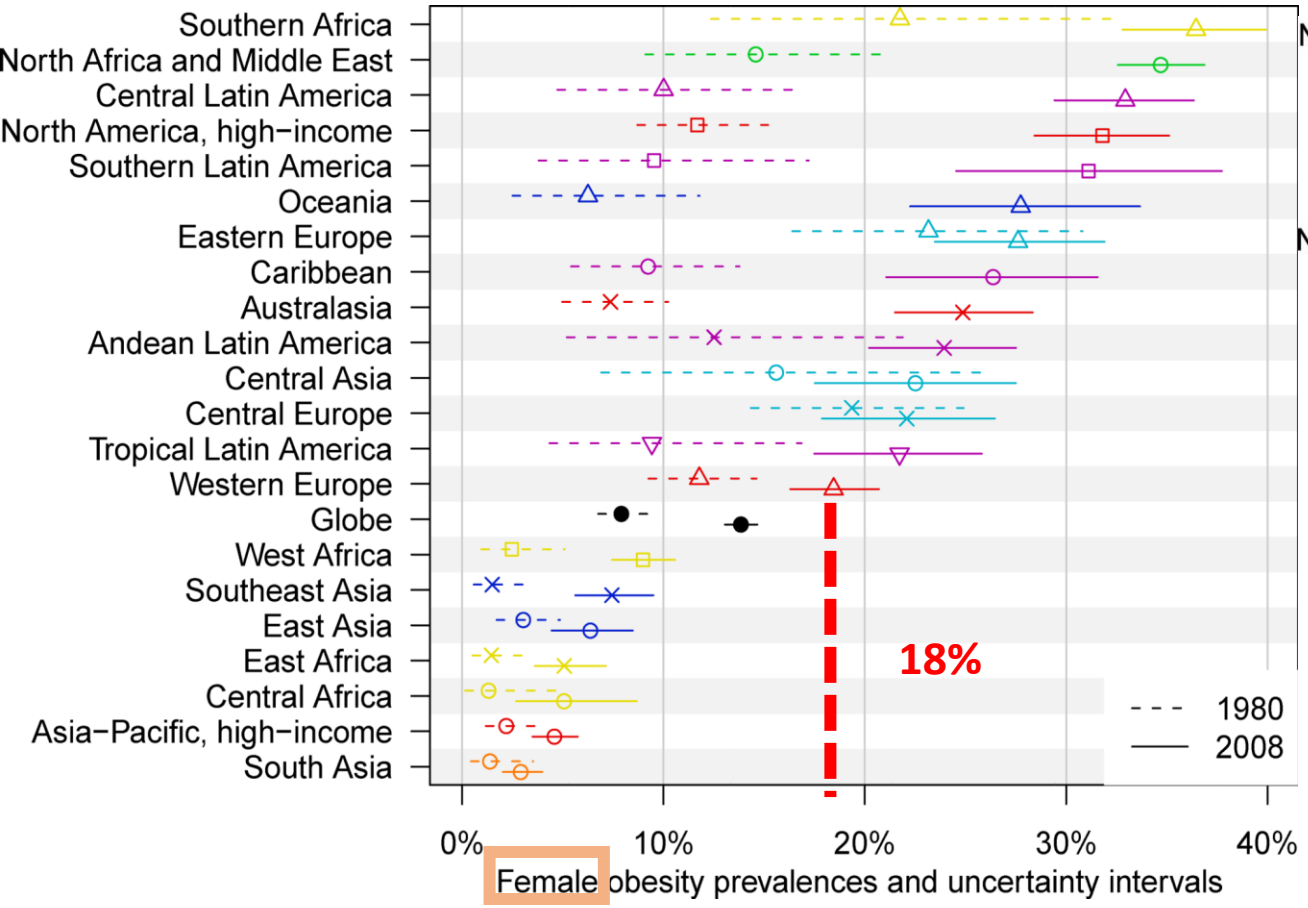

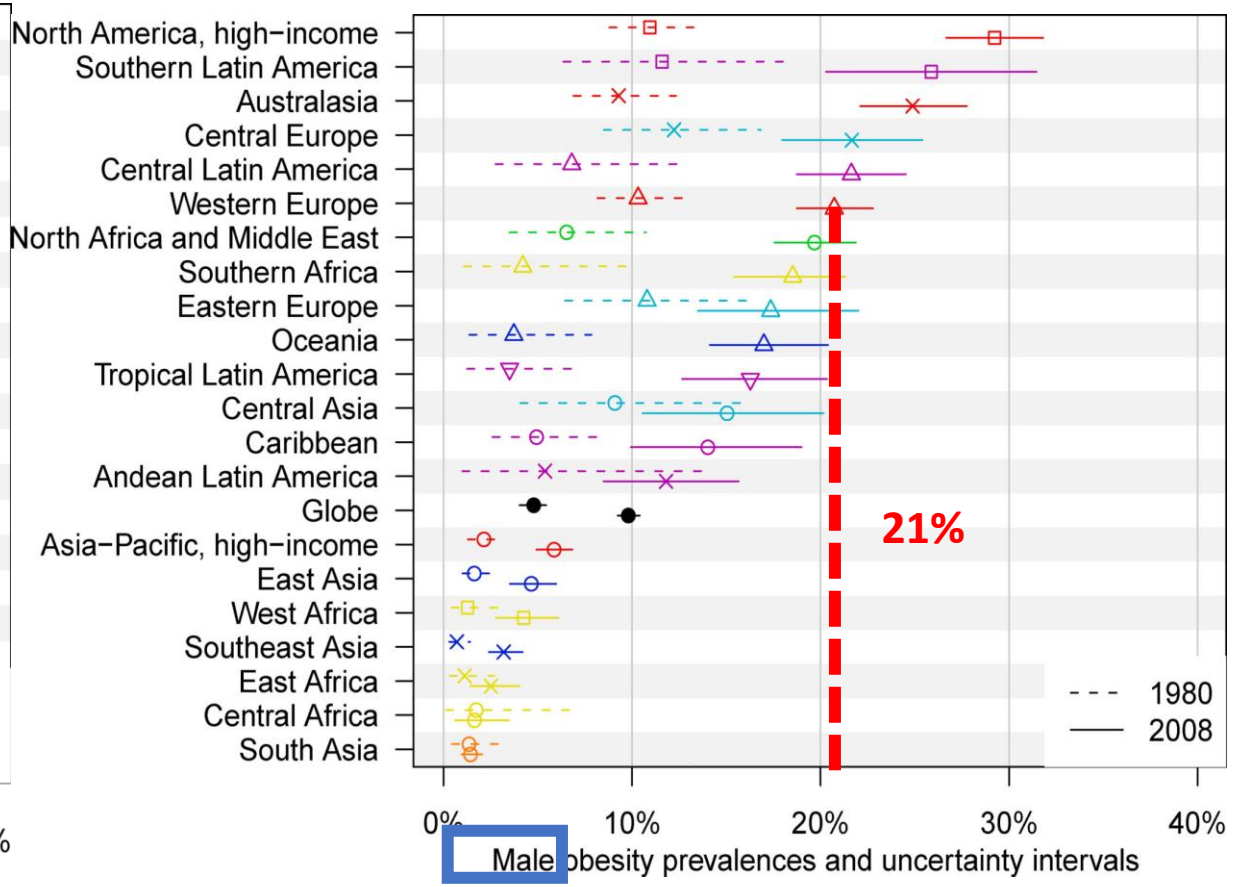

The epidemiology is changing...

OBESITY

Finucane M, et al. Lancet 2011;377:557–567

Metabolic syndrome and body weight in people living with HIV infection: analysis of differences observed in three different cohort studies over a decade

HIV Medicine. 2021;00:1–10.

Lucia Taramasso[1] | Paolo Bonfanti[2] | Elena Ricci[3] | Paolo Maggi[4] | Giancarlo Orofino[5] | Nicola Squillace[2] | Barbara Menzaghi[6] | Giordano Madeddu[7] | Chiara Molteni[8] | Francesca Vichi[9] | Erika Riguccini[10] | Annalisa Saracino[11] | Carmen Santoro[11] | Marta Guastavigna[5] | Daniela Francisci[10] | Antonio Di Biagio[12] | Giuseppe Vittorio De Socio[10] | for the CISAI study group[†]

TABLE 1 Clinical and laboratory features in HIV-infected patients enrolled in the SiMOne (2005), HIV-HY (2011) and STOPSHIV (2015) studies

Variable	SiMOne 2005 ($n = 1243$)	HIV-HY 2011 ($n = 854$)	STOPSHIV 2015 ($n = 917$)	p
Men [n (%)]	892 (71.8)	616 (72.1)	702 (76.6)	0.03
Age (years) (mean ± SD)	43.2 ± 9.2	50.3 ± 9.4	48.7 ± 10.6	< 0.0001
BMI (kg m^{-2}) (mean ± SD)	23.6 ± 3.4	24.5 ± 3.9	24.5 ± 4.0	< 0.0001
BMI (kg m^{-2}) [n (%)]				
≤ 18.5	67 (5.4)	32 (3.8)	47 (5.1)	
18.6–25.0	805 (65.2)	483 (56.7)	506 (55.2)	
25.1–30.0	303 (24.5)	266 (31.2)	287 (31.3)	
≥ 30.1	60 (4.9)	71 (8.3)	76 (8.3)	< 0.0001

Metabolic syndrome and body weight in people living with HIV infection: analysis of differences observed in three different cohort studies over a decade

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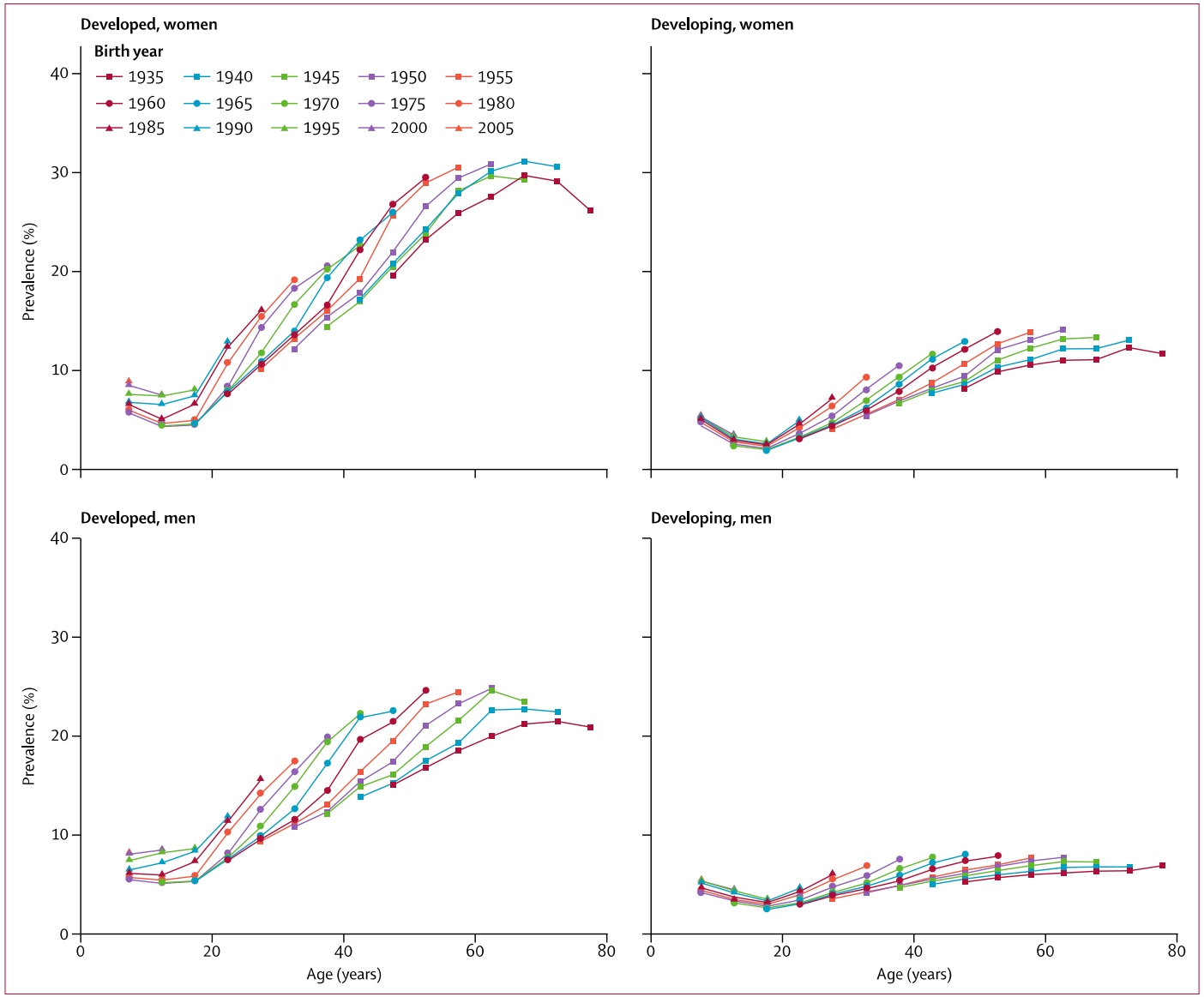

Figure 4: Prevalence of obesity by age across birth cohorts for men and women in developed and developing countries

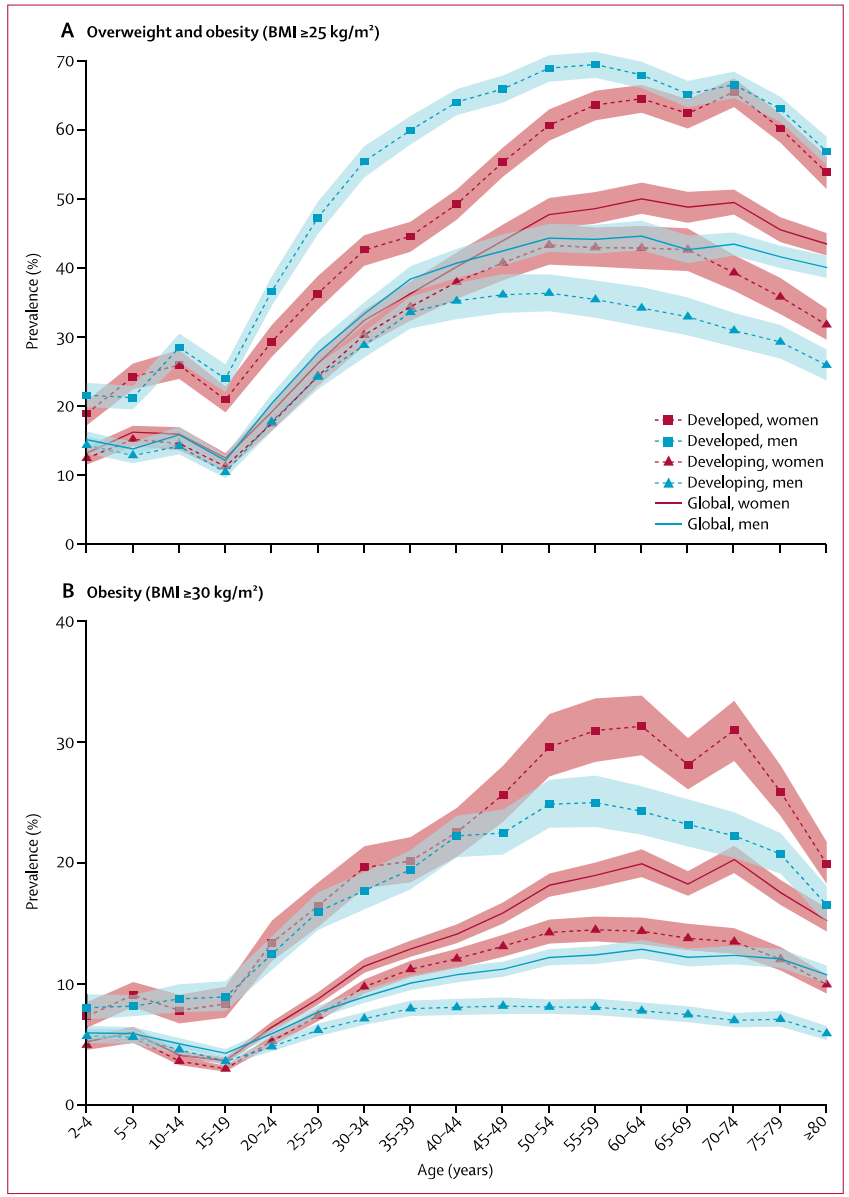

Figure 3: Prevalence of overweight and obesity and obesity alone, by age and sex, 2013
BMI=body-mass index.

...And people are ageing

Ng M, et al. Lancet 2014;384:766–781

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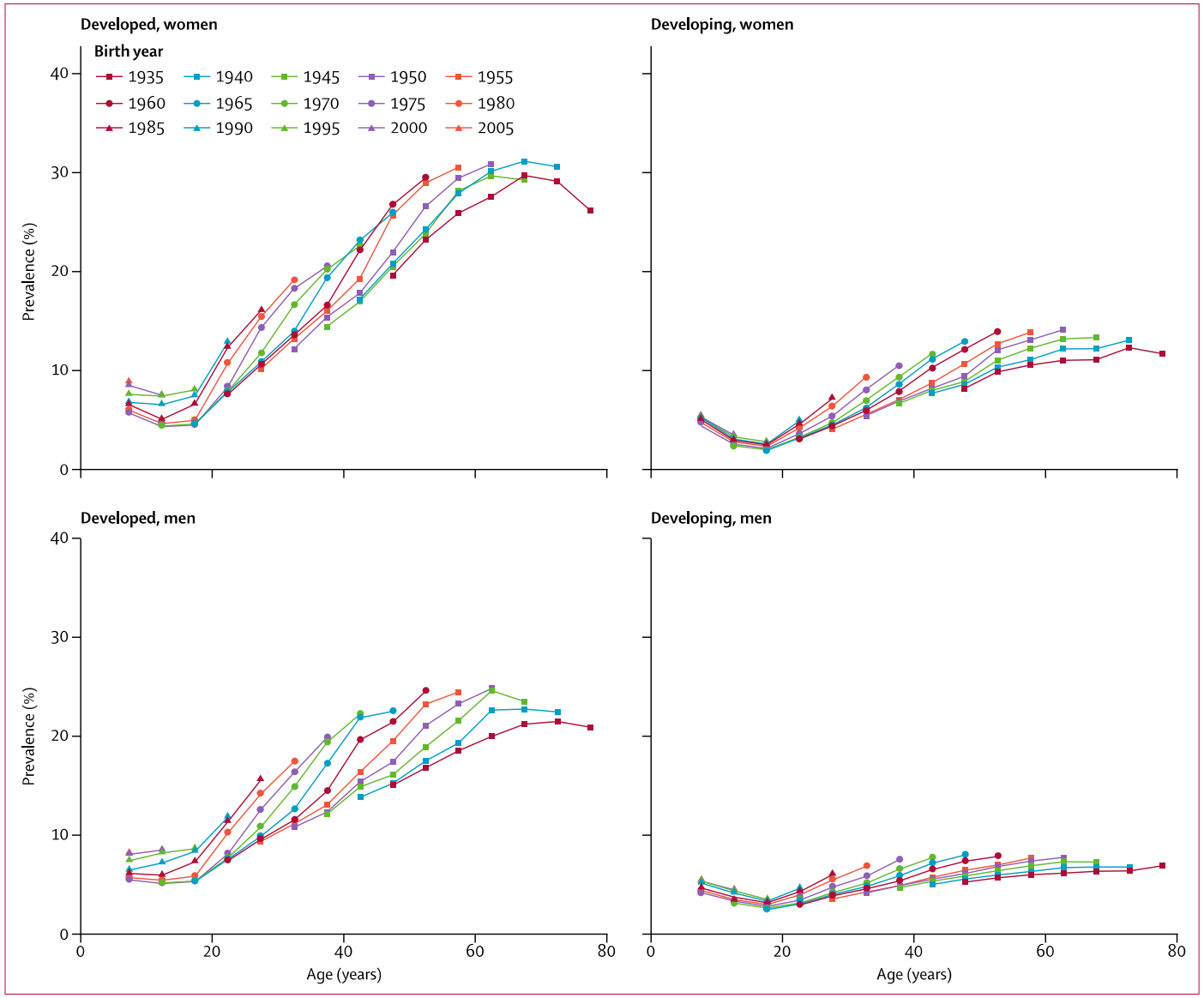

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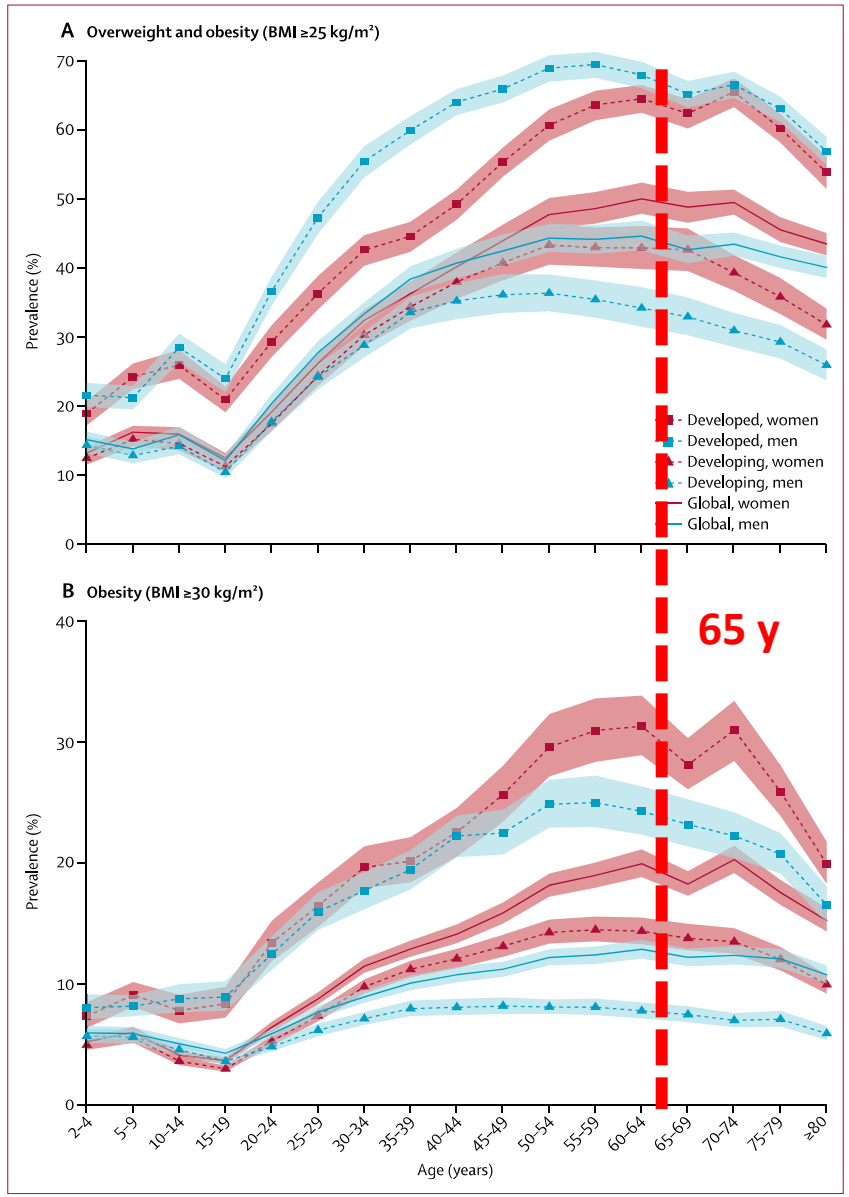

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The New York Times

THE SCIENCE OF FAT

After 'The Biggest Loser,' Their Bodies Fought to Regain Weight

Contestants lost hundreds of pounds during Season 8, but gained them back. A study of their struggles helps explain why so many people fail to keep off the weight they lose.

weight cycling

Approximately 80% of individuals who intentionally achieve weight loss of ≥10% body weight will regain that weight within **one year**

Wing RR, Hill JO Annu Rev Nutr. 2001; 21:323-41

Clearly, a negative energy balance is needed to produce weight loss. A negative energy balance can be achieved by either decreasing intake or increasing expenditure. Research studies consistently show that successful weight loss maintainers change both their intake and their expenditure in order to lose weight and maintain their losses

FACTORS ASSOCIATED WITH WEIGHT REGAIN (GENERAL POPULATION)

- Recent weight loss (fewer than 2 years versus more than 2 years)
- Larger weight losses (>30% of maximum weight versus <30%),
- higher levels of depression, disinhibition, and binge eating

Wing RR, Hill JO Annu Rev Nutr. 2001; 21:323-41

FACTORS ASSOCIATED WITH WEIGHT GAIN (HIV NAIVE)

- Female sex
- Low BMI
- Low CD4
- High HIV RNA
- Black

- Recent weight loss ?
- Larger weight losses ?
- higher levels of depression, disinhibition, and binge eating ?

Weight gain and HIV

Return to health?
Return to previous lifestile (including unhealthy lifestiles in some cases…?)

… still lower prevalence of overweight and obesity compared to general population

Weight gain

- Weight gain nella popolazione generale
- **Weight gain e HIV: Da dove siamo partiti e come cambia la sopravvivenza con l'aumento di peso**
- **Fattori correlati all'aumento di peso**
- **Studi nel naive**
- **Studi di switch**

Pre-ART ERA: wasting syndrome

Weight Change After Antiretroviral Therapy and Mortality

Bianca Yuh,[1] Janet Tate,[1,2] Adeel A. Butt,[3,4] Kristina Crothers,[5] Matthew Freiberg,[3,4] David Leaf,[6,7] Mary Logeais,[8] David Rimland,[9,10] Maria C. Rodriguez-Barradas,[11,12] Christopher Ruser,[1,2] and Amy C. Justice[1,2]

[1]Yale University School of Medicine, New Haven, and [2]Veterans Affairs (VA) Connecticut Healthcare System, West Haven; [3]VA Pittsburgh Healthcare System, and [4]University of Pittsburgh School of Medicine, Pennsylvania; [5]University of Washington School of Medicine, Seattle; [6]UCLA School of Medicine, and [7]Greater Los Angeles VA Healthcare System, California; [8]University of Minnesota Medical School, Minneapolis; [9]Atlanta VA Medical Center, and [10]Emory University School of Medicine, Atlanta, Georgia; [11]Michael E. Debakey VA Medical Center, and [12]Baylor College of Medicine, Houston, Texas

Human immunodeficiency virus (HIV) infection, prior to the widespread availability of combination antiretroviral therapy (ART), was dubbed "slim disease" and was characterized by weight loss and wasting. Thus, the rap- idly growing prevalence of overweight and obesity among HIV-infected individuals receiving ART is a new phenomenon with unknown implications

4311 HIV-INFECTED PATIENTS (127 WOMEN AND 4184 MEN), MEAN AGE 47.9 YEARS. 54% WERE BLACK

After 12 months of ART, median weight gain was **2.7 kg** (IQR −1.3 to 7.7 kg) and did not differ by sex (P = .55).

- **6% underweight,** 73% WG, **7.3 Kg** (IQR, 1.7 to 15.0 kg),
- **52% normal,** 56% WG, **3.2 Kg** (IQR, −0.5 to 8.2 kg),
- **30% overweight,** 47% WG, **1.8 Kg** (IQR, −2.3 to 6.4 kg),
- **12% obese,** 44% WG, **0.9 kg** (IQR, −3.2 to 5.5 kg).

ELIGIBLE HIV-INFECTED PATIENTS FOR THIS STUDY WERE IN VA CARE BETWEEN 1 JANUARY 1999 AND 30 SEPTEMBER 2008 AND INITIATED ART AFTER 1 JANUARY 2000

ADJUSTED HAZARD RATIOS FOR MORTALITY BY BASELINE BODY MASS INDEX AND WEIGHT CHANGE AMONG HIV-INFECTED VETERANS AFTER 12 MONTHS OF ANTIRETROVIRAL THERAPY

Baseline BMI, kg/m^2	Weight Change	No.	Died	HR[a]	(95% CI)	*P* Value
Overall	Total	4311	708			
	Lost >5 pounds	836	187	1.53	(1.25–1.87)	<.0001
	Stayed ±5 pounds	1241	194	1.00		
	Gained 5–9.9 pounds	561	87	0.94	(.73–1.22)	.65
	Gained 10–19.9 pounds	772	101	0.65	(.51–.83)	.0004
	Gained 20–29.9 pounds	439	61	0.58	(.43–.77)	.0002
	Gained ≥30 pounds	462	78	0.58	(.44–.76)	<.0001

1 Kg = 0,45 Pound

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<18.5	Total	247	86			
(Underweight)	Lost >5 pounds	18	11	1.28	(.63–2.60)	.49
	Stayed ±5 pounds	53	27	1.00		
	Gained 5–9.9 pounds	20	6	0.51	(.21–1.23)	.13
	Gained 10–19.9 pounds	51	15	0.47	(.25–.88)	.02
	Gained 20–29.9 pounds	34	7	0.29	(.13–.68)	.004
	Gained ≥30 pounds	71	20	0.38	(.21–.70)	.002
18.5–24.9	Total	2224	385			
(Normal)	Lost >5 pounds	333	93	1.63	(1.24–2.15)	.0004
	Stayed ±5 pounds	665	115	1.00		
	Gained 5–9.9 pounds	300	54	0.93	(.67–1.29)	.66
	Gained 10–19.9 pounds	425	55	0.56	(.41–.78)	.001
	Gained 20–29.9 pounds	255	35	0.52	(.35–.76)	.001
	Gained ≥30 pounds	246	33	0.42	(.28–.62)	<.0001

1 Kg = 0,45 Pound

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25–29.9	Total	1300	163			
(Overweight)	Lost >5 pounds	327	53	1.70	(1.12–2.56)	.01
	Stayed ±5 pounds	375	40	1.00		
	Gained 5–9.9 pounds	163	19	0.71	(.42–1.22)	.22
	Gained 10–19.9 pounds	223	20	0.75	(.40–1.40)	.36
	Gained 20–29.9 pounds	112	13	1.01	(.57–1.78)	.97
	Gained ≥30 pounds	100	18	1.18	(.68–2.04)	.56
≥30	Total	540	74			
(Obese)	Lost >5 pounds	158	30	2.63	(1.35–5.14)	.005
	Stayed ±5 pounds	148	12	1.00		
	Gained 5–9.9 pounds	78	8	1.31	(.53–3.20)	.56
	Gained 10–19.9 pounds	73	11	1.79	(.79–4.05)	.16
	Gained 20–29.9 pounds	38	6	1.42	(.53–3.81)	.49
	Gained ≥30 pounds	45	7	1.34	(.52–3.44)	.54

1 Kg = 0,45 Pound

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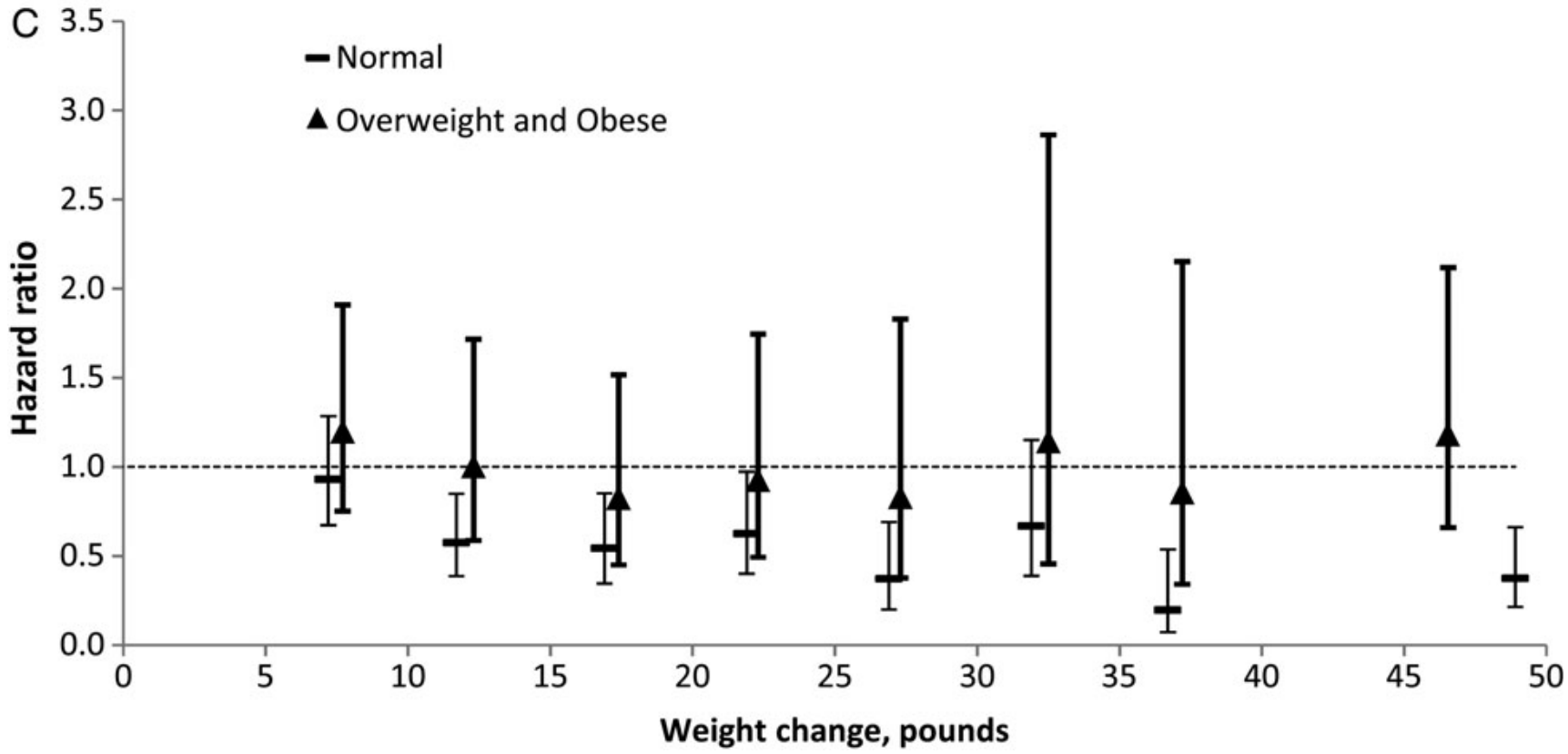
- No evidence of an inflection point.
- Significantly reduced mortality risk for normal- weight patients up to a 30-pound (13.6 kg) weight gain, but no significant benefit or harm associated with weight gain in overweight/obese patients



DOI: 10.1111/hiv.12294
HIV Medicine (2016), **17**, 255–268

ORIGINAL RESEARCH

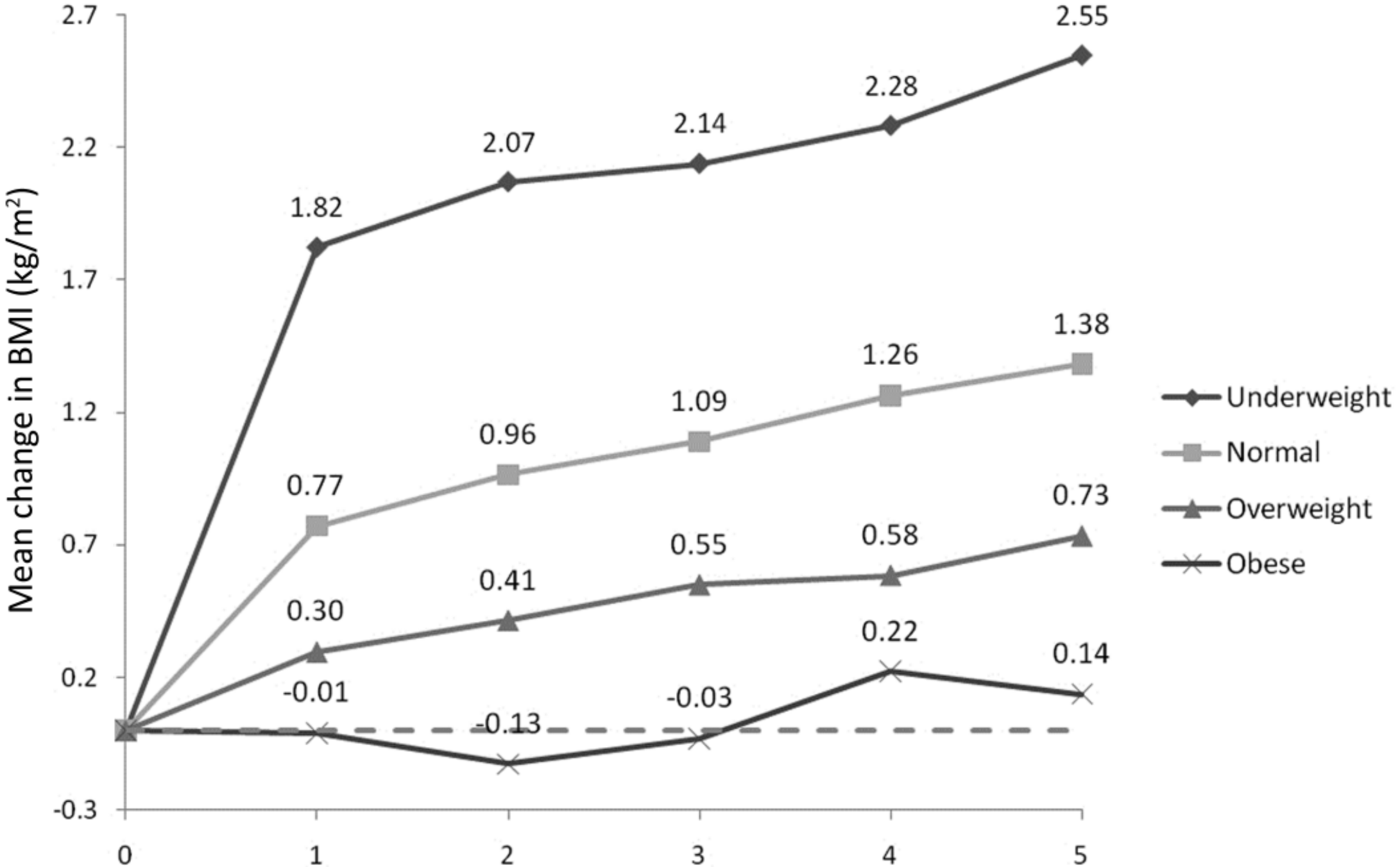
Short-term weight gain after antiretroviral therapy initiation and subsequent risk of cardiovascular disease and diabetes: the D:A:D study*

AC Achhra,[1] A Mocroft,[2] P Reiss,[3] C Sabin,[2] L Ryom,[4] S de Wit,[5] CJ Smith,[2] A d'Arminio Monforte,[6] A Phillips,[2] R Weber,[7] J Lundgren[8] and MG Law[1] for the D:A:D Study Group

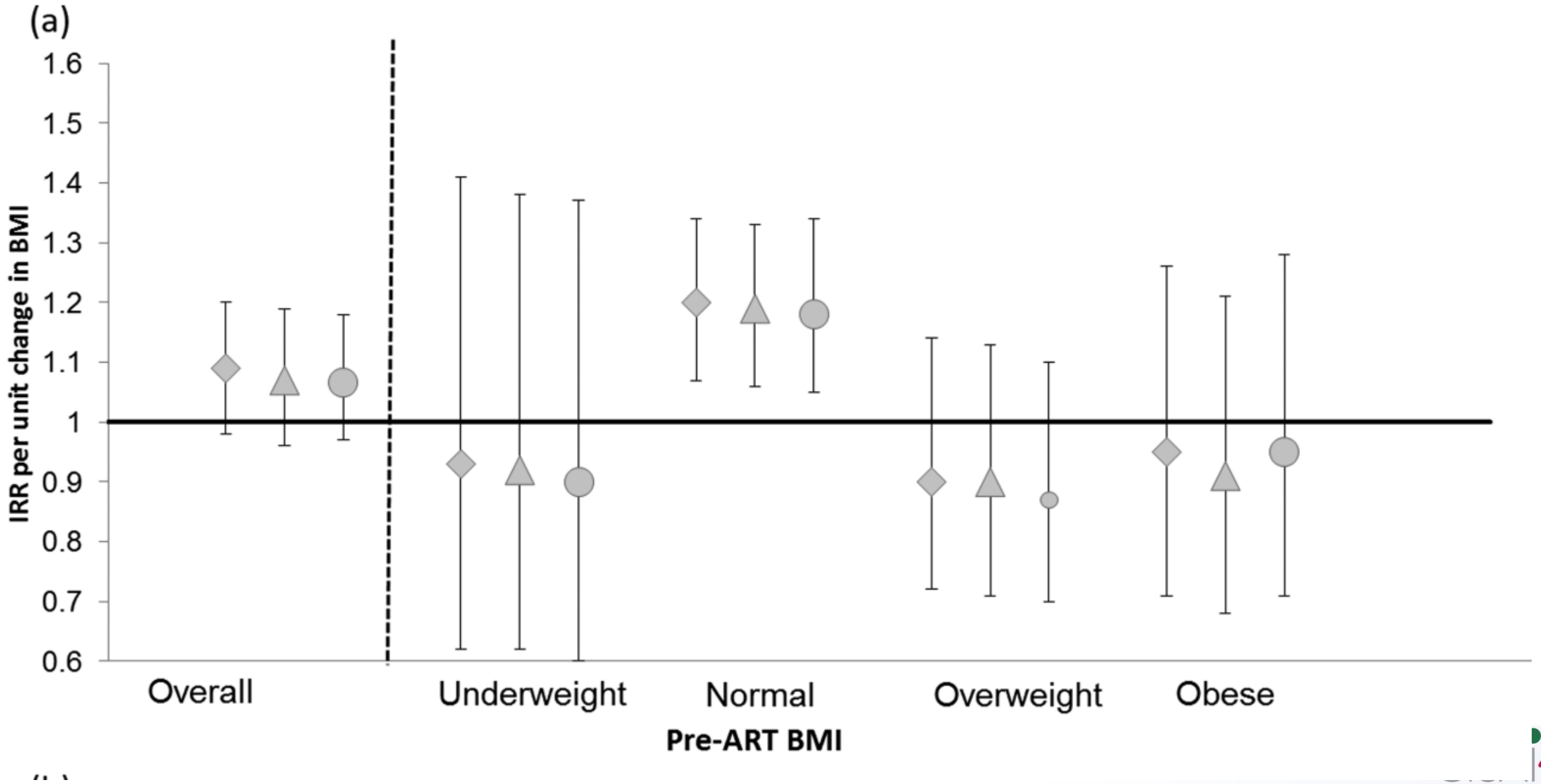
[1]Kirby Institute, UNSW Australia, Sydney, NSW, Australia, [2]Research Department of Infection & Population Health, University College London, London, UK, [3]Division of Infectious Diseases and Department of Global Health, University of Amsterdam, Amsterdam, The Netherlands, [4]University of Copenhagen, Copenhagen, Denmark, [5]Infectious Diseases Department, Saint-Pierre University Hospital, Brussels, Belgium, [6]University of Milan Clinic of Infectious Diseases, Milan, Italy, [7]University Hospital in Zurich, Zurich, Switzerland and [8]Rigshospitalet & University of Copenhagen, Copenhagen, Denmark

SOLO NAIVE
9321 pazienti inclusi
43982 pyfu

CISAI
FONDAZIONE ASIA



Achhra et al, HIV Med 2016



Achhra et al, HIV Med 2016

J Acquir Immune Defic Syndr • Volume 86, Number 5, April 15, 2021

CLINICAL SCIENCE

Effect of Changes in Body Mass Index on the Risk of Cardiovascular Disease and Diabetes Mellitus in HIV-Positive Individuals: Results From the D:A:D Study

Kathy Petoumenos, PhD,[a] Locadiah Kuwanda, MMed Statistics,[a] Lene Ryom, MD, PhD,[b] Amanda Mocroft, PhD,[c] Peter Reiss, MD, PhD,[d,e] Stephane De Wit, MD,[f] Christian Pradier, MD,[g] Fabrice Bonnet, MD, PhD,[h] Andrew Phillips, PhD,[c] Camilla I. Hatleberg, MD, PhD,[b] Antonella d'Arminio Monforte, MD, PhD,[i] Rainer Weber, MD, DTM&H,[j] Caroline A. Sabin, PhD,[c] Jens Lundgren, MD, DMSc, PhD,[b] and Matthew G. Law, PhD,[a] for the D:A:D Study Group

SOLO NAIVE
9,321 pazienti inclusi
43,982 PYFU

NAIVE e EXPERIENCED
43,805 pazienti inclusi
365,287 PYFU

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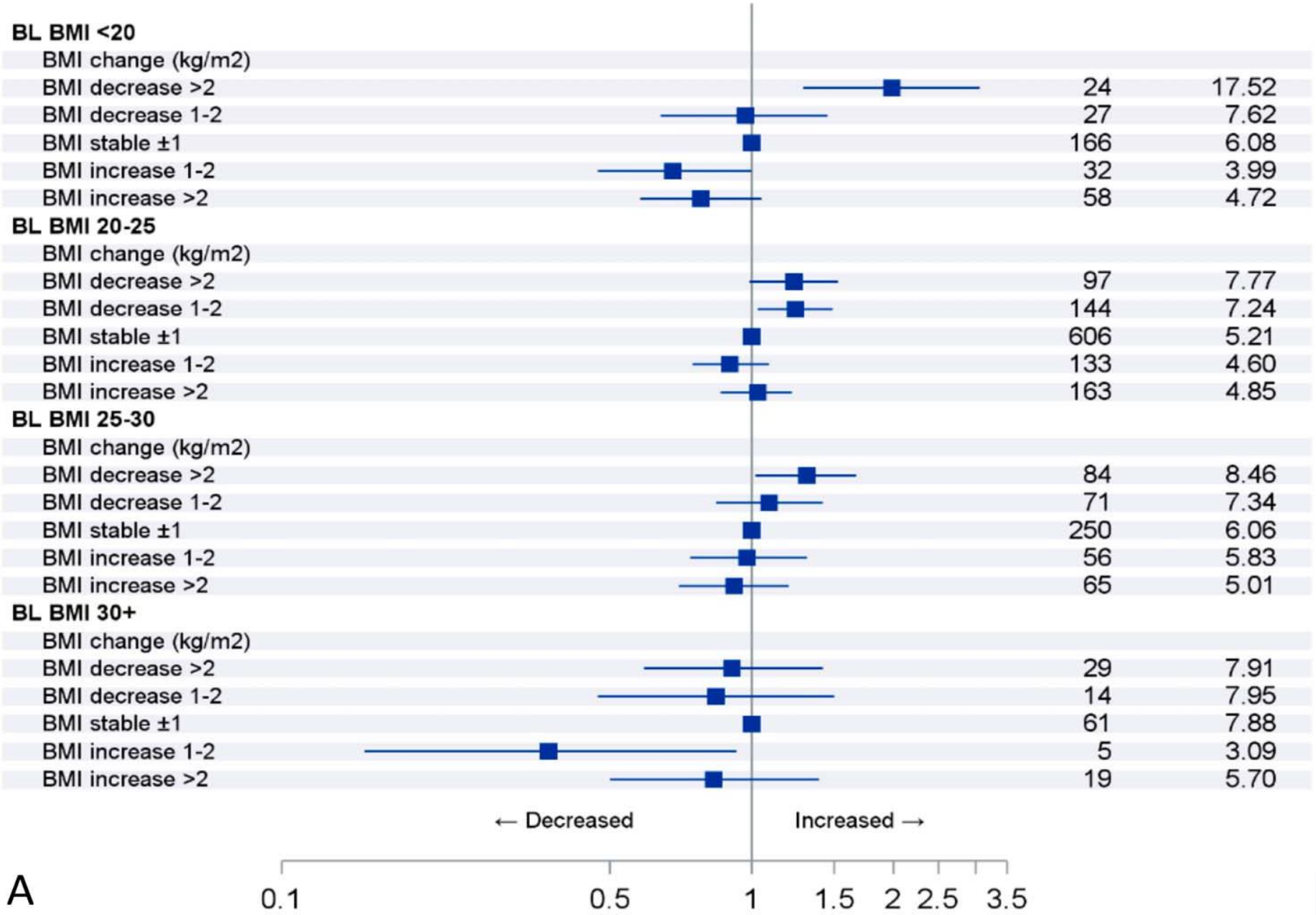
BL BMI <20
BMI change (kg/m2)
BMI decrease >2 24 17.52
BMI decrease 1-2 27 7.62
BMI stable ±1 166 6.08
BMI increase 1-2 32 3.99
BMI increase >2 58 4.72
BL BMI 20-25
BMI change (kg/m2)
BMI decrease >2 97 7.77
BMI decrease 1-2 144 7.24
BMI stable ±1 606 5.21
BMI increase 1-2 133 4.60
BMI increase >2 163 4.85
BL BMI 25-30
BMI change (kg/m2)
BMI decrease >2 84 8.46
BMI decrease 1-2 71 7.34
BMI stable ±1 250 6.06
BMI increase 1-2 56 5.83
BMI increase >2 65 5.01
BL BMI 30+
BMI change (kg/m2)
BMI decrease >2 29 7.91
BMI decrease 1-2 14 7.95
BMI stable ±1 61 7.88
BMI increase 1-2 5 3.09
BMI increase >2 19 5.70
← Decreased
Increased →
0.1
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2
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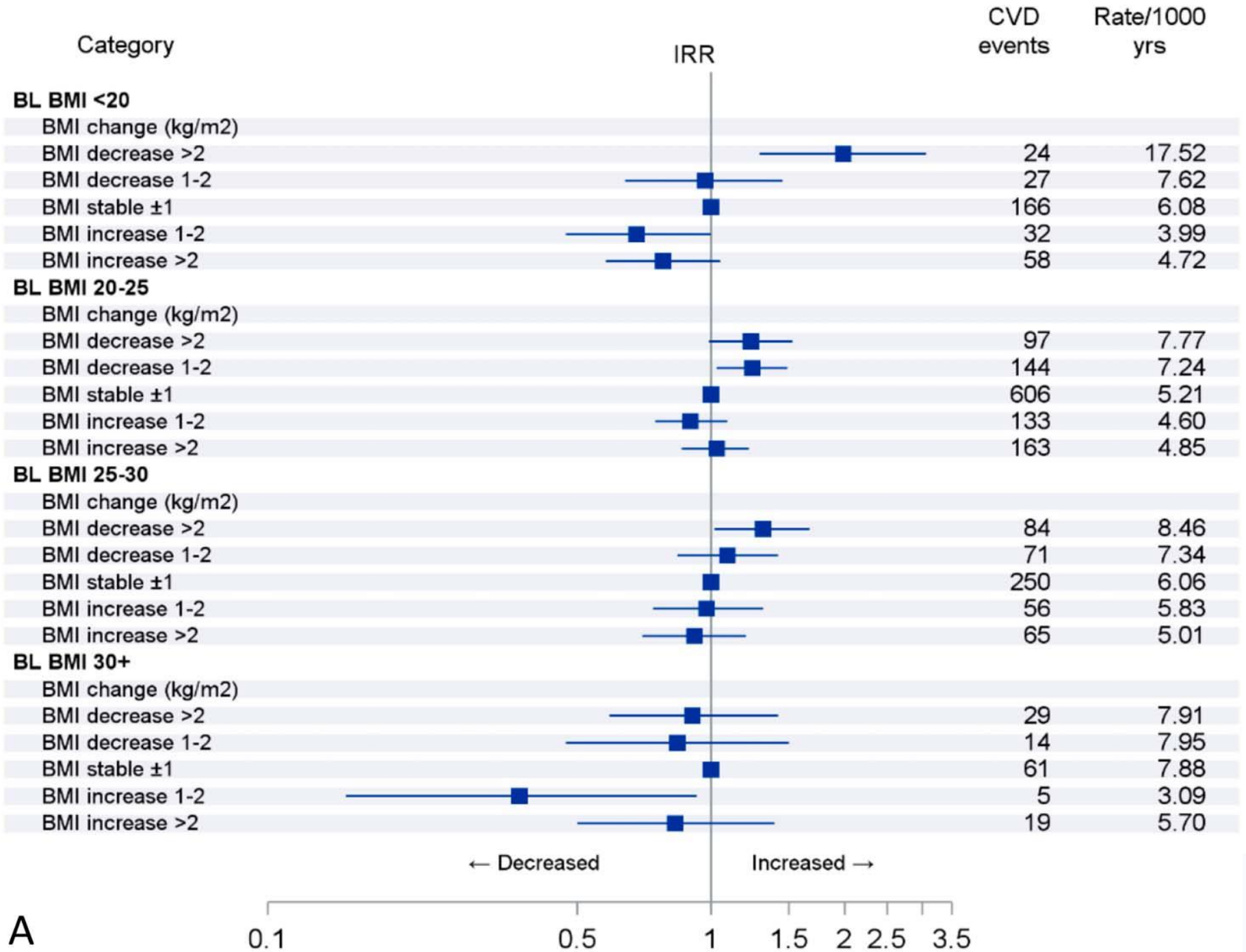
Category
IRR
CVD events
Rate/1000 yrs
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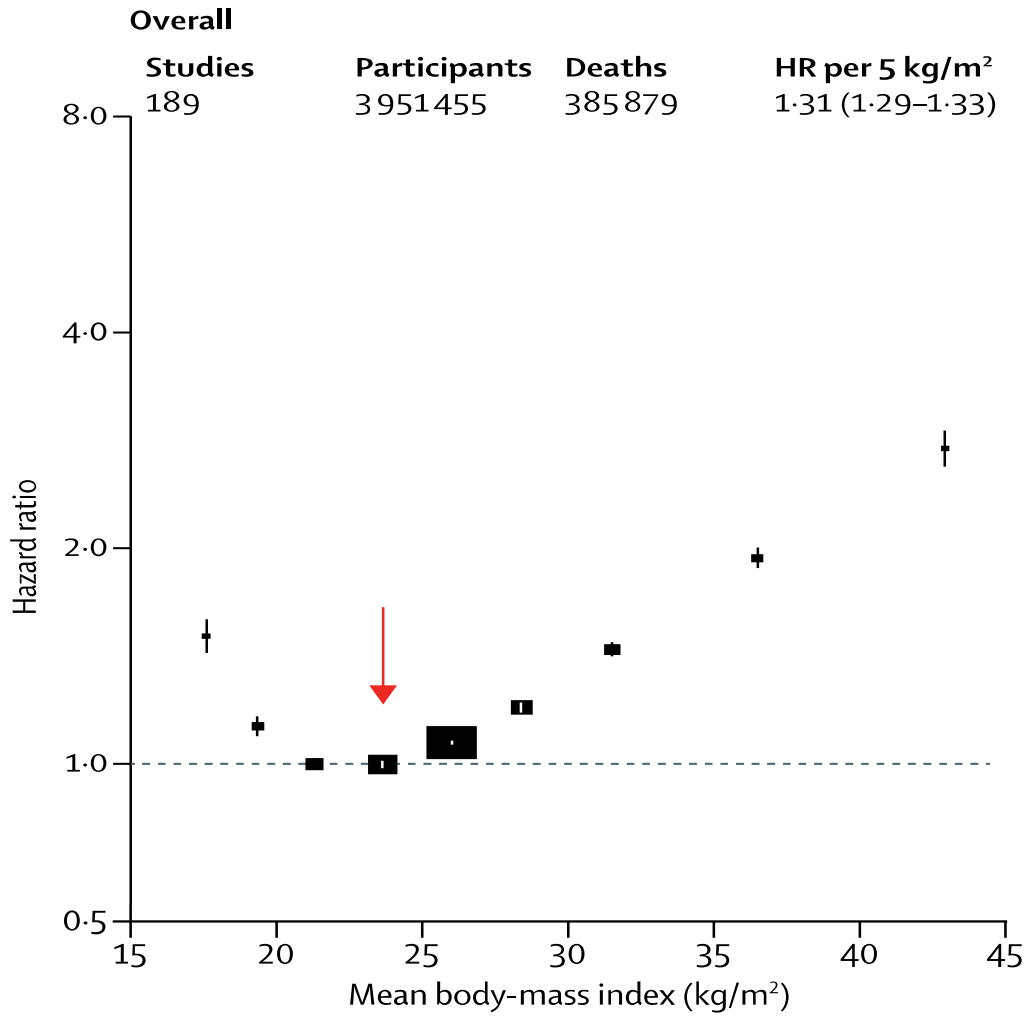
BMI stable ±1 61 7.88
BMI increase 1-2 5 3.09
BMI increase >2 19 5.70
← Decreased
Increased →
0.1
0.5
1
1.5
2
2.5
3.5

A

Body-mass index and all-cause mortality: individual-participant-data meta-analysis of 239 prospective studies in four continents

*The Global BMI Mortality Collaboration**

LANCET , 2016



- 5 kg/m2 → aumento mortalità di circa il 30% SOLO NEI SOGGETTI SOVRAPPESO
- Stima del rischio simile in tutte le regioni del globo
- HR più elevati per
  - MASCHI (50% VS 30% PER FEMMINE)
  - Età <50 52% VS. 50-69 37% VS.70-89 21%

How much weight is too much weight?

- 5-10-15 kg
- 10%
- 7%
- 5%
- Transition to overweight/obesity
- Any amount in already overweight/obese people
- Development of diabetes or metabolic syndrome
- Whatever undesired

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- 5-10-15 kg
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- 7%
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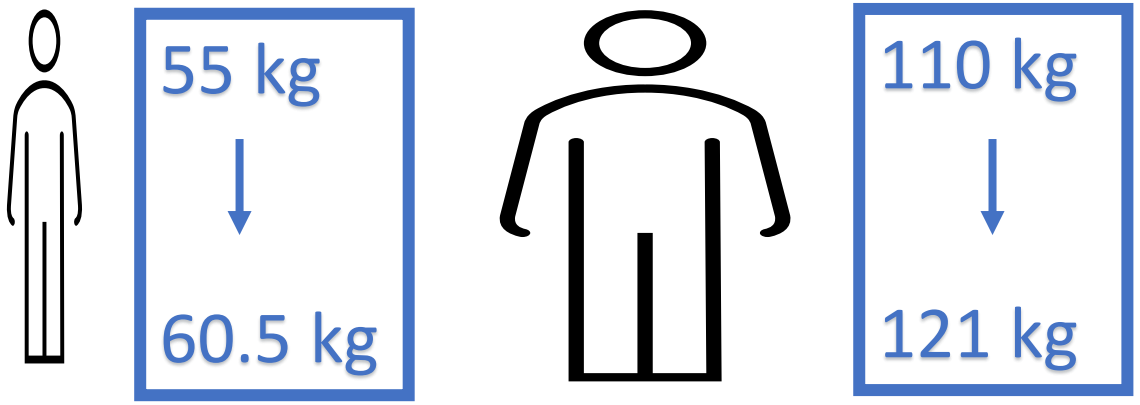
- Development of diabetes or metabolic syndrome
- Whatever undesired



Weight gain

- Weight gain beyond HIV
- Weight gain e HIV: Da dove siamo partiti e come cambia la sopravvivenza con l'aumento di peso
- **Fattori correlati all'aumento di peso**
- **Studi nel naive**
- **Studi di switch**
- **Distribuzione del tessuto adiposo nell'aumento di peso**
- **Diabete e resistenza insulinica**
- **Data gap (incluse popolazioni speciali)**

Factor Associated with weight gain: PRE-INSTI ERA

- age,
- baseline BMI,
- protease inhibitor–based ART regimen,
- baseline VACS Index

Each 5-point increment of VACS Index score was associated with 0.94 pounds of weight gain. Further investigation revealed that of the VACS Index components, age, CD4 cell count, and hemoglobin were strong predictors of weight gain, whereas HIV-1 RNA, FIB-4 score, estimated glomerular filtration rate, and hepatitis C status were not**. Baseline CD4** count **<100** cells/µL was associated with an odds ratio (OR) of 2.6 (95% CI, 2.3–3.0) and **hemoglobin <12** g/dL with an OR of 2.6 (95% CI, 2.2–3.0) for gaining ≥10 pounds.

CISAI FONDAZIONE ASIA

INSTI-ERA

Risk factors for weight gain in ART-initiation and switch situations

ART-initiation

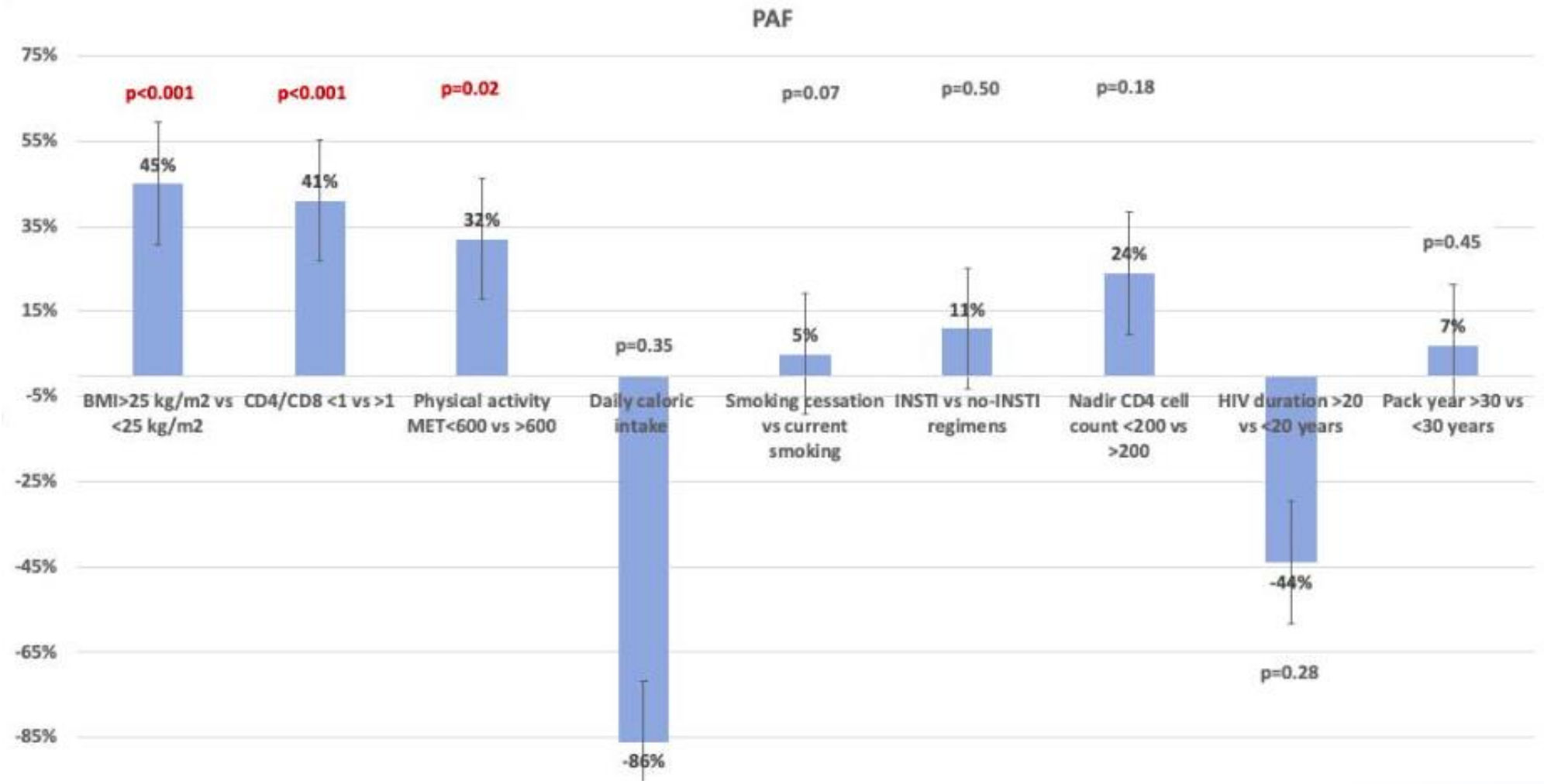
- Less than 40 years
- **Return to health process, major risk factors: Low CD4, high VL, low BMI**
- Global fat gain and increased lean mass
- Molecules
  - INSTI: DTG=BIC>RAL>EVG/c
  - NRTI: TAF, TDF protective?
  - PI
  - NNRTI: EFV protective?
- Women
- Black

Switch situations in ART-controlled pts

- Over 50 years
- No reason for return to health
- Global fat gain and maintained lean mass
- **Risk factors: High BMI, age**
- Molecules
  - INSTI: DTG>RAL>EVG/c
  - NRTI: TAF >TDF
  - PI? EFV?
- Women
- Black and White
- Metabolic consequences : improved lipid levels, worsened insulin resistance?

CROI 2020, Boston, Currier J. Themed discussion *Fat in focus*

Contribution of INSTI, BMI, physical activity or caloric intake to weight gain in PWH



Guaraldi et al. CROI 2021 POSTER # 675

Population attributable fraction (PAF) tool to quantify the proportion of WG that could be avoided if particular risk factors were not present .

PAF for WG was the greatest for BMI (45%, p<0.001), followed by CD4/CD8 ratio (41%, p<0.001) and physical activity (32%, p<0.02).

CISAI FONDAZIONE ASIA

Weight gain

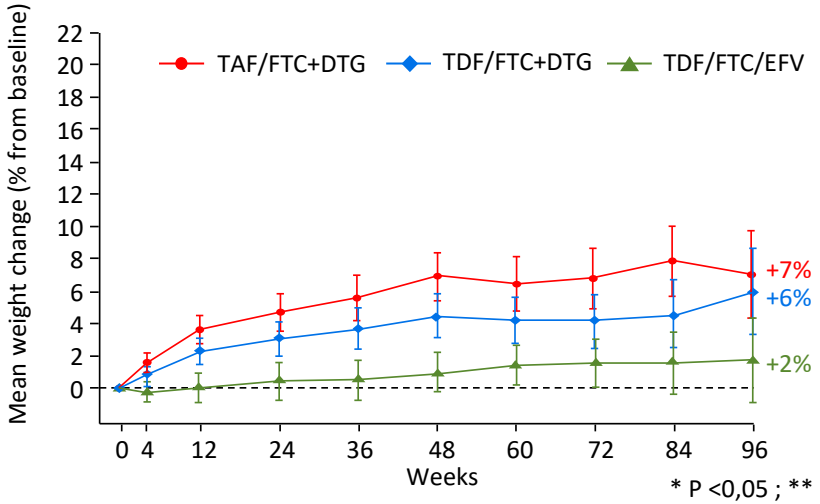
- Weight gain nella popolazione generale
- Weight gain e HIV: Da dove siamo partiti e come cambia la sopravvivenza con l'aumento di peso
- Fattori correlati all'aumento di peso
- **Studi nel naive**
- **Studi di switch**

ADVANCE study: 1st line open-label randomized ART in Johannesburg

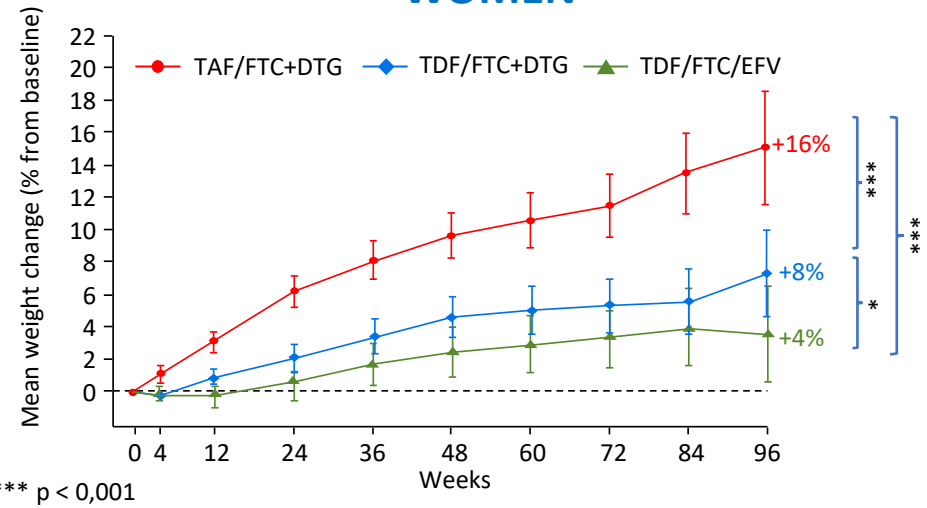
Percentage weight change (%) to w96 (incomplete data W48-W96)

- **TAF/FTC + DTG (N = 351) vs TDF/3TC + DTG (N = 351) vs TDF/3TC/EFV600 (N = 351)**

MEN



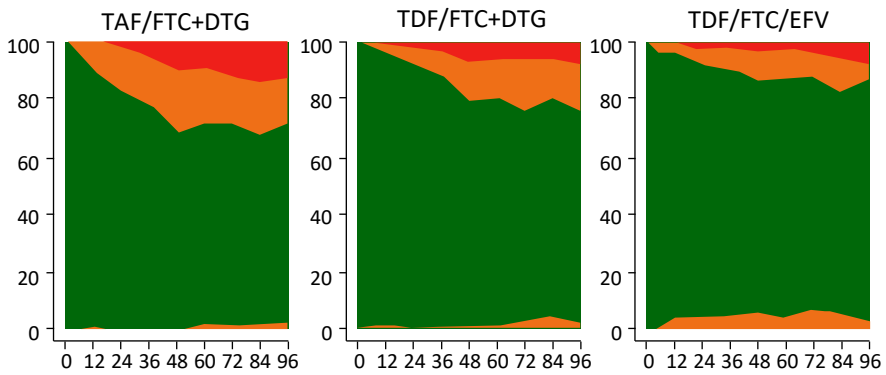
WOMEN



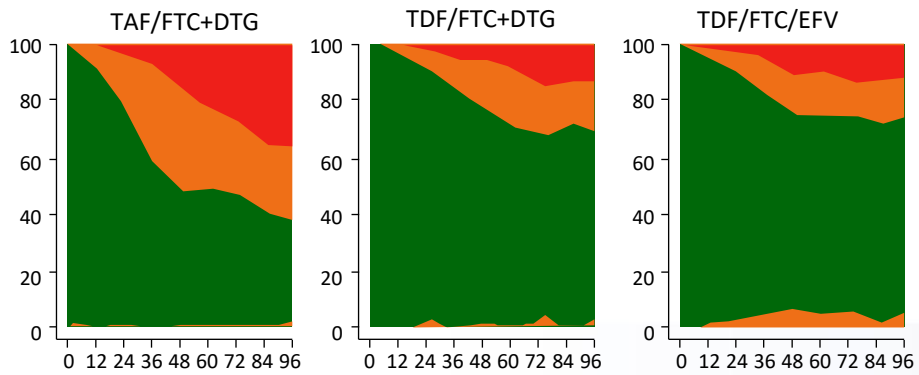
* P <0,05 ; ** p < 0,01 ; *** p < 0,001

Percentage weight change over time

MEN



WOMEN

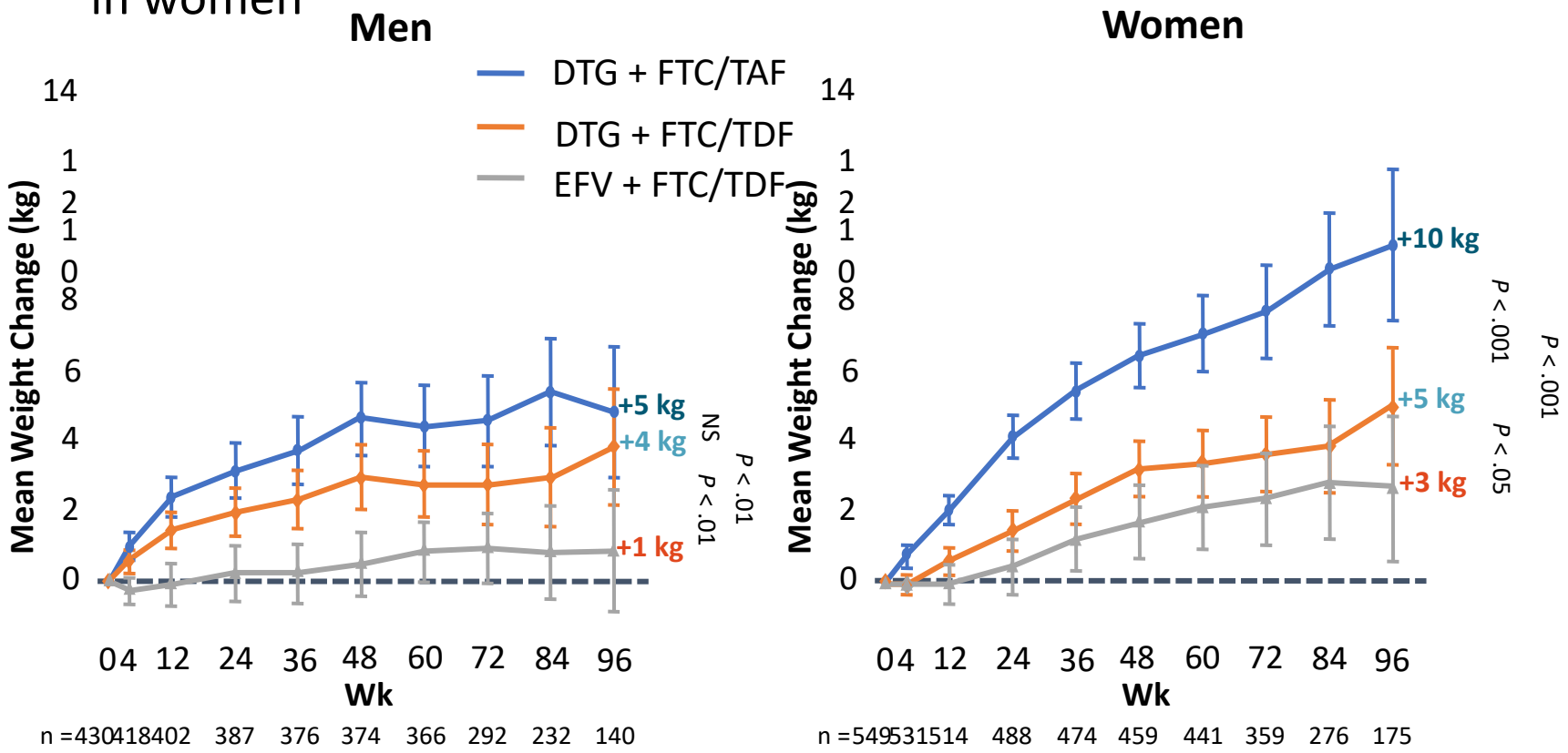


Hill A, IAS 2019, Abs. MOABX0102LB

CISAI FONDAZIONE ASIA

ADVANCE: Mean Change in Weight to Wk 96 by Sex

- Significantly greater weight increase* with DTG vs EFV, with TAF vs TDF; plateauing in weight gain after Wk 48 observed in men but not in women



Hill. IAS 2019. Abstr MOAX0102LB.

*Wilcoxon rank-sum comparison at Wk 96.

Perceptions? Administered before weight gain information leaflet and consent

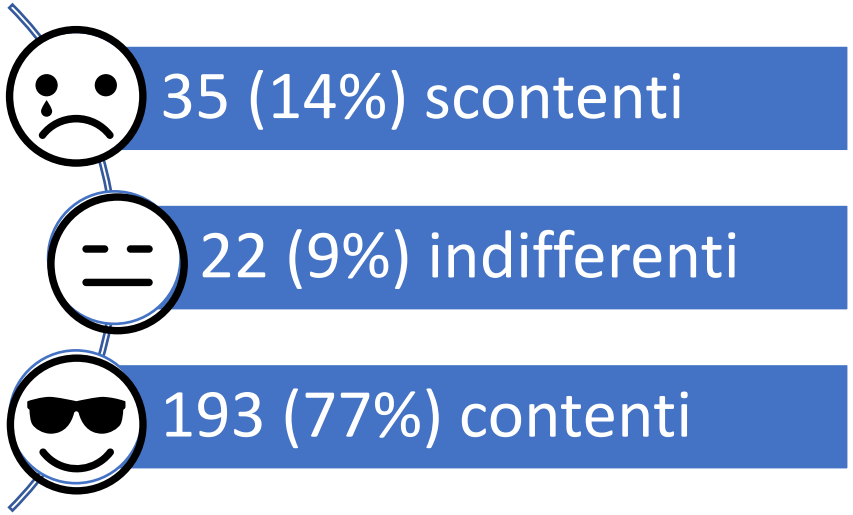
- 68 participants surveyed by 15 July 2019: 51 women, 17 men
- No discontinuations for weight gain; most participant's estimation of their weight gain was similar to the actual weight gain, with a few wild exceptions
- 8 women reported unhappiness with weight gain (one actually had lost 1.3 kg); 3 had actually gained < 5%, while 4 had > 10% weight gain. 2 of those who gained > 10% of their baseline weight expressed that they were very unhappy
- 6 women participants reported uneven weight gain: 3 abdominal, 2 upper body, 1 hip area, and 1 lower body
- 2 men reported unhappiness with weight loss (verified weight loss for both)
- Most participants were happy with the weight gain, even though they had to get new clothes as their pre-ART clothes could not fit anymore. Some viewed the weight gain as "return to health" although they had not reported weight loss at screening.

Source: **Dr Simiso Sokhela**

Presented at IAS 2019,
slides MOAX0102LB

ADVANCE: percezione dell'aumento di peso

- 250 persone intervistate (150 femmine, 93 maschi)



Su 20 persone intervistate con aumento di peso >20% solo 2 non erano soddisfatte
Nessuno ha richiesto sospensione o variazione della ART per variazione di peso

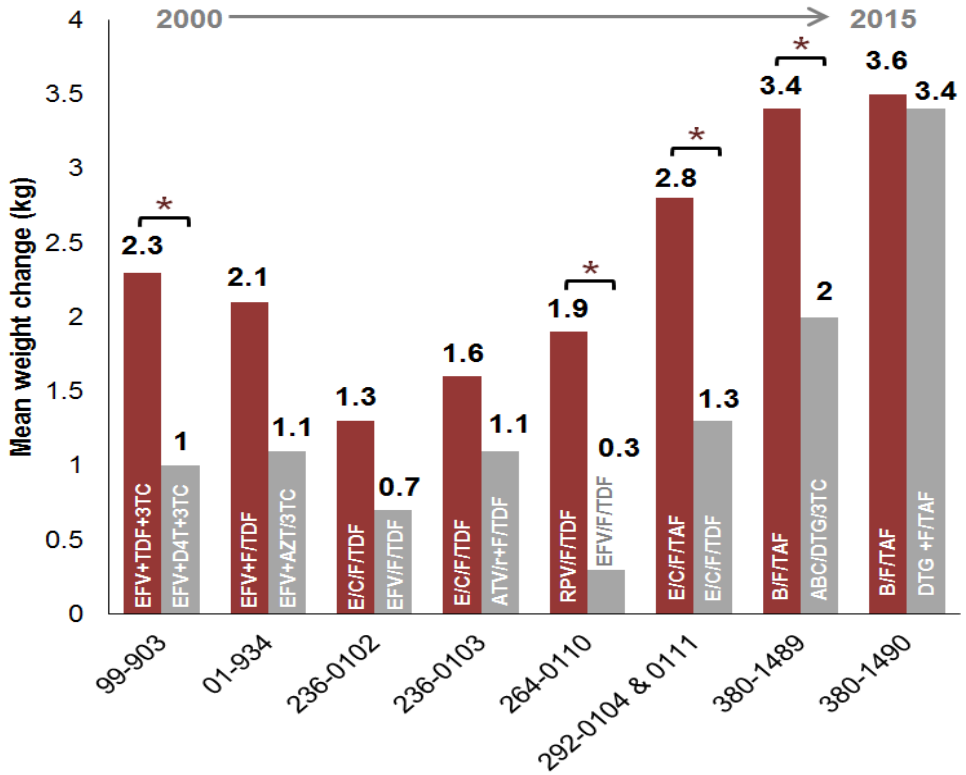
Presented at IAS 2019, slides MOAX0102LB

Clinical Infectious Diseases

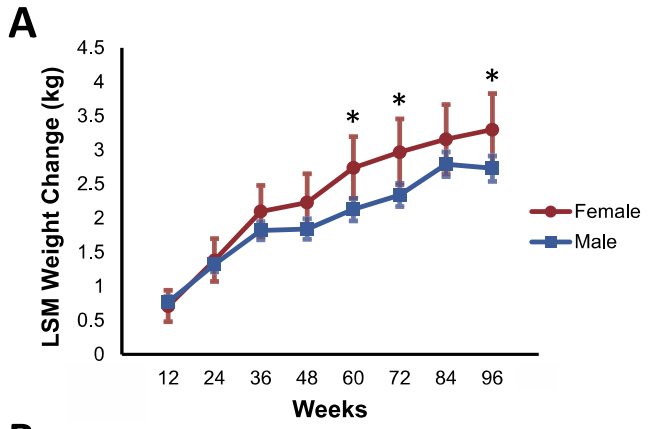
MAJOR ARTICLE

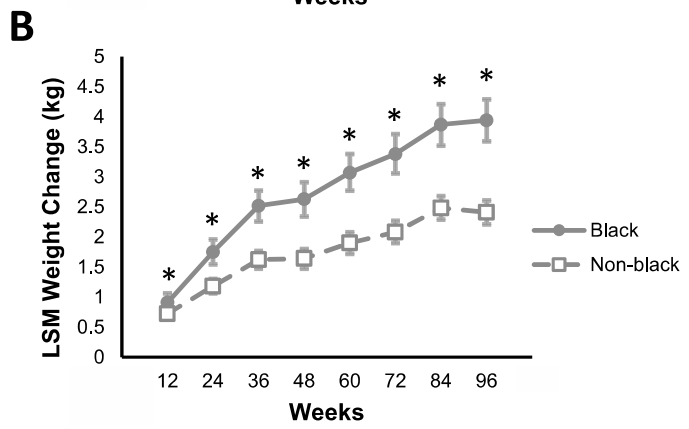
Weight Gain Following Initiation of Antiretroviral Therapy: Risk Factors in Randomized Comparative Clinical Trials

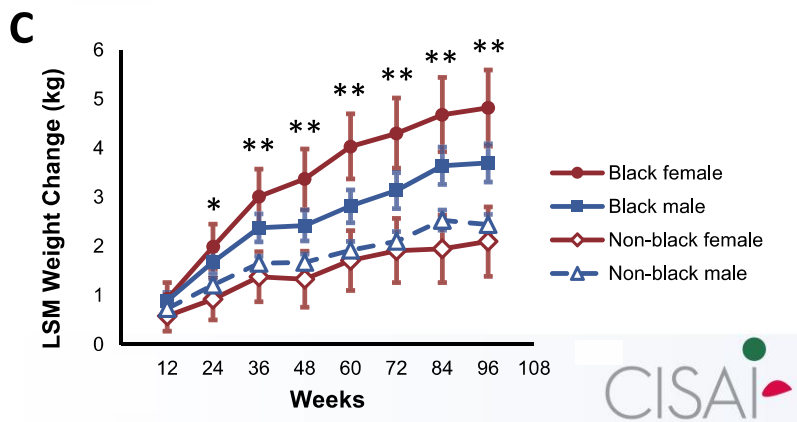
Paul E. Sax,[1] Kristine M. Erlandson,[2] Jordan E. Lake,[3] Grace A. McComsey,[4] Chloe Orkin,[5] Stefan Esser,[6] Todd T. Brown,[7] Jürgen K. Rockstroh,[8] Xuelian Wei,[9] Christoph C. Carter,[9] Lijie Zhong,[9] Diana M. Brainard,[9] Kathleen Melbourne,[9] Moupali Das,[9] Hans-Jürgen Stellbrink,[10] Frank A. Post,[11] Laura Waters,[12] and John R. Koethe[13]

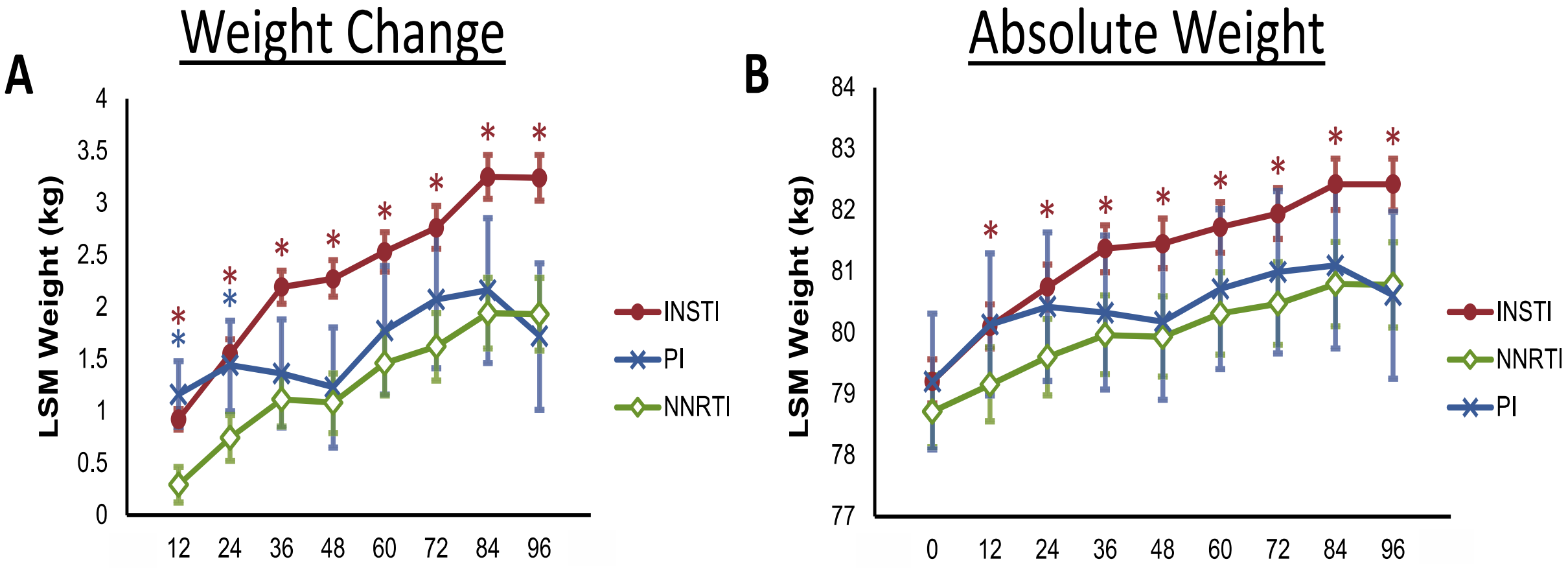


- Females gained more weight than males
- Black participants gained significantly more weight than non-Black participants
- The greatest weight gain was seen among Black females, followed by Black males



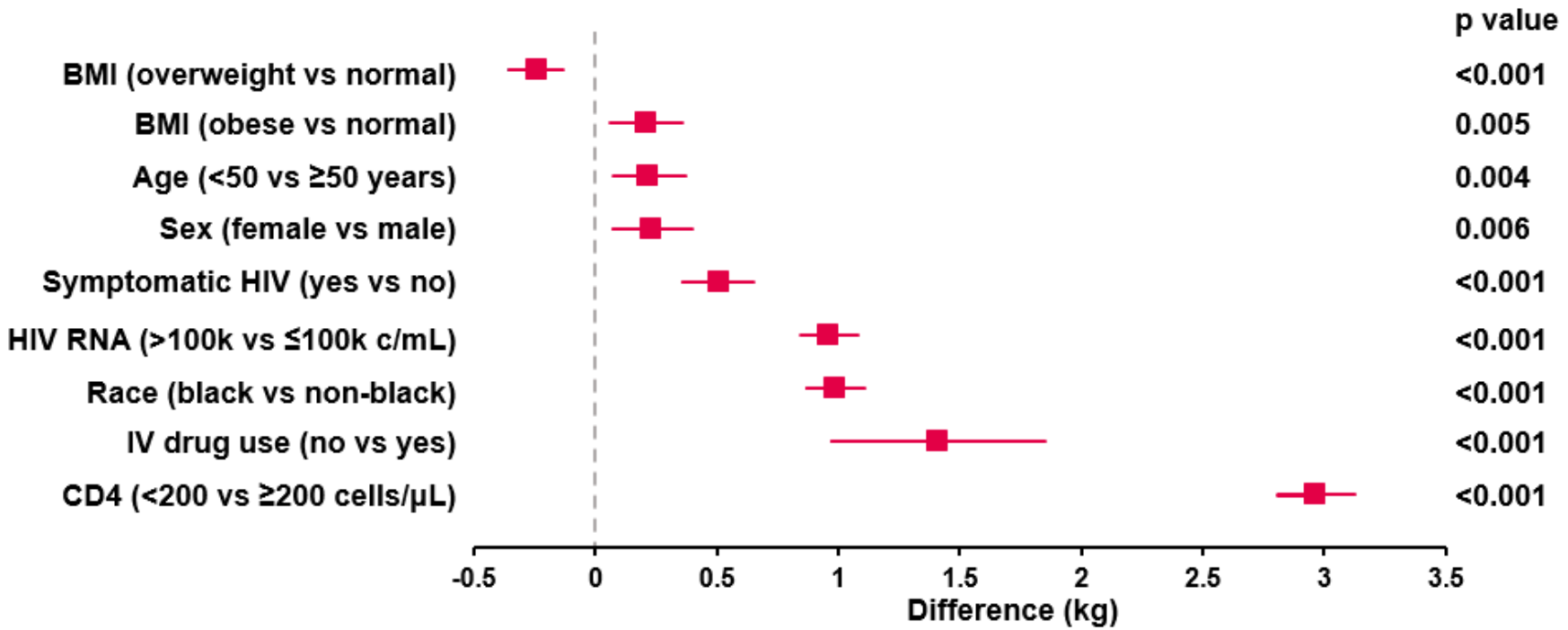






Sax P, et al. CID 2019. 14 Oct epub

Baseline Risk Factors for Weight Increase



HIV, demographic & ART risk factors for Weight increase

- ↓ CD4 count
- ↑ HIV-1 RNA
- Non-overweight/obese
- Symptomatic
- No IV drug user

- Female
- Black

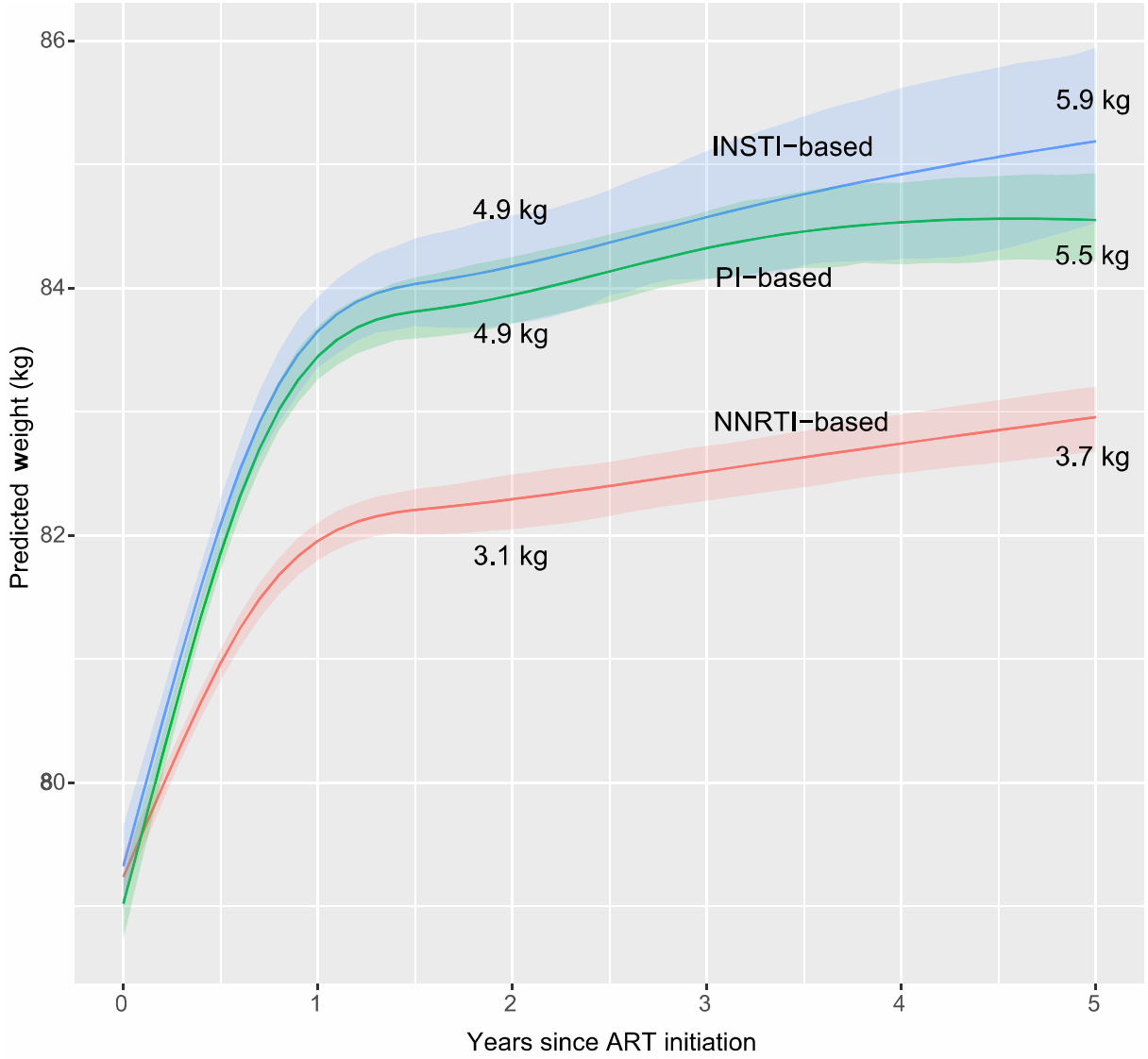
- BIC/DTG > EFV
- EVG/c > EFV
- RPV > EFV
- TAF > ABC, TDF or EFV

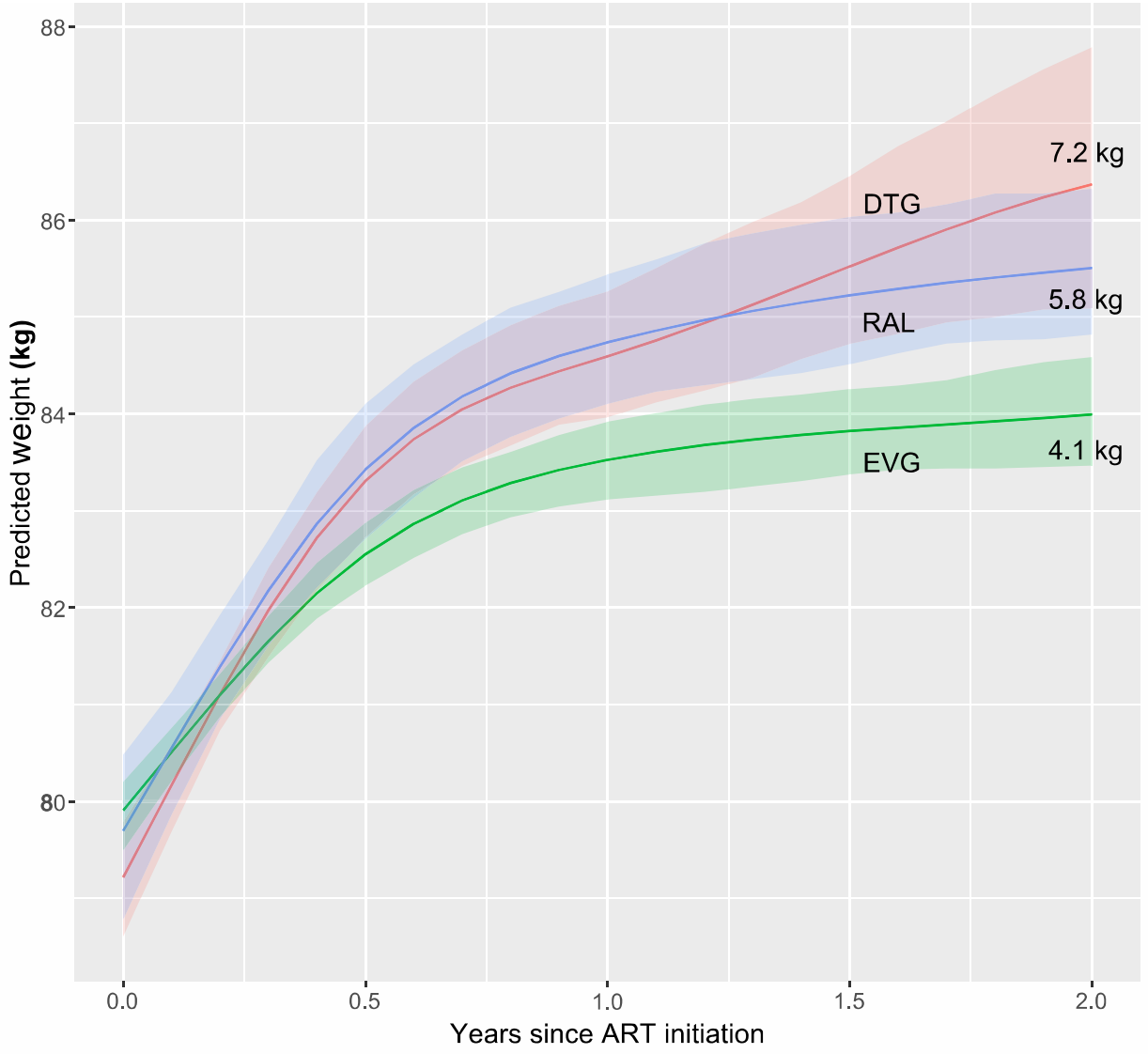
- Weight gain was common following ART initiation: ~50% of participants gained at least 3% body weight with a median weight gain of 2kg over 2 years of follow-up:
  - This degree of weight gain mirrors the obesity trend observed in the general US population.

Sax PE, et al. CID 2019 Oct 14

PROIEZIONI WEIGHT GAIN a 5 e 2 ANNI

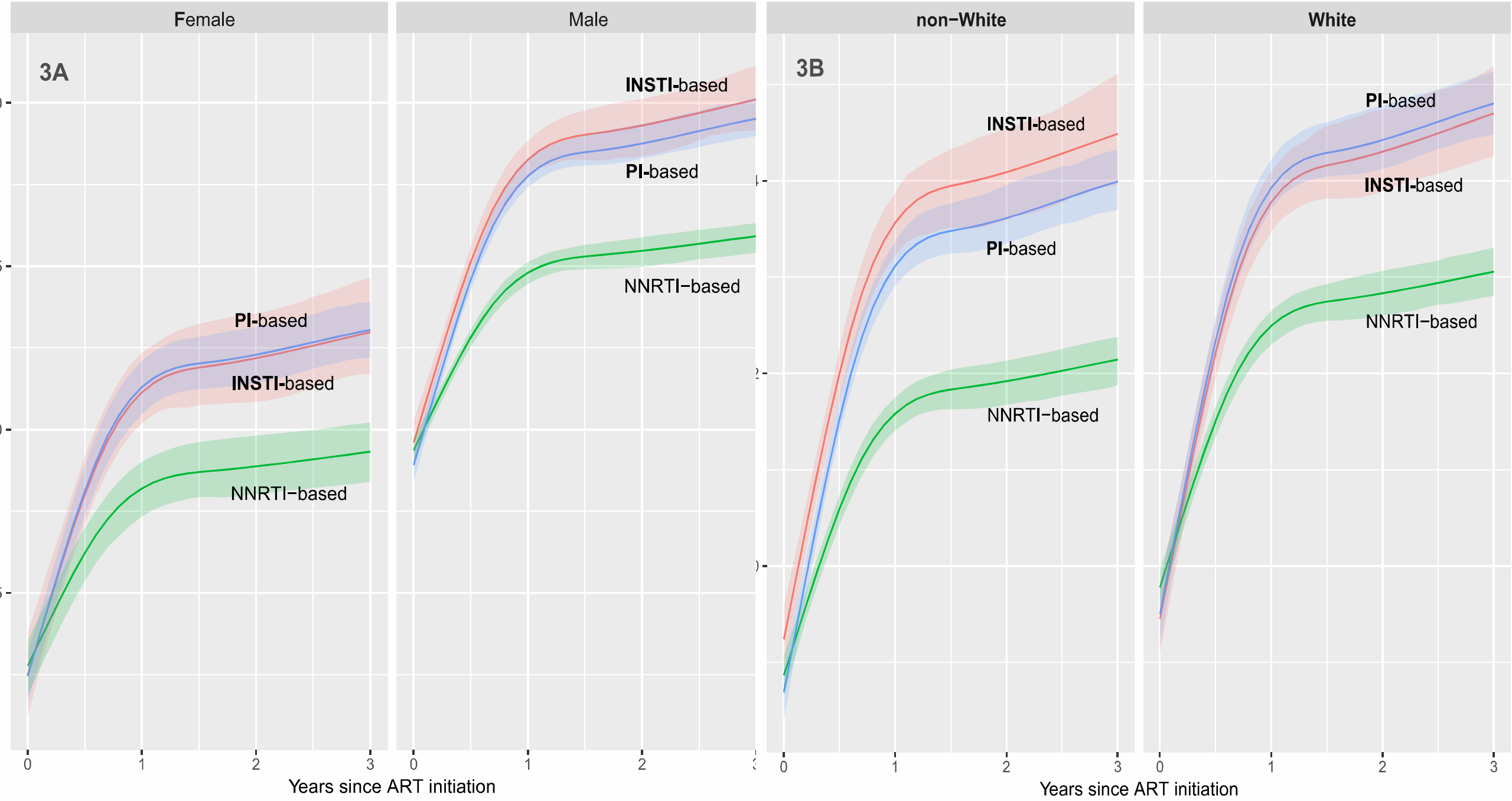
22,972 PLWH: 20% started INSTI-based regimens:1624 raltegravir (RAL), 2085 elvitegravir (EVG) and 929 dolutegravir (DTG)

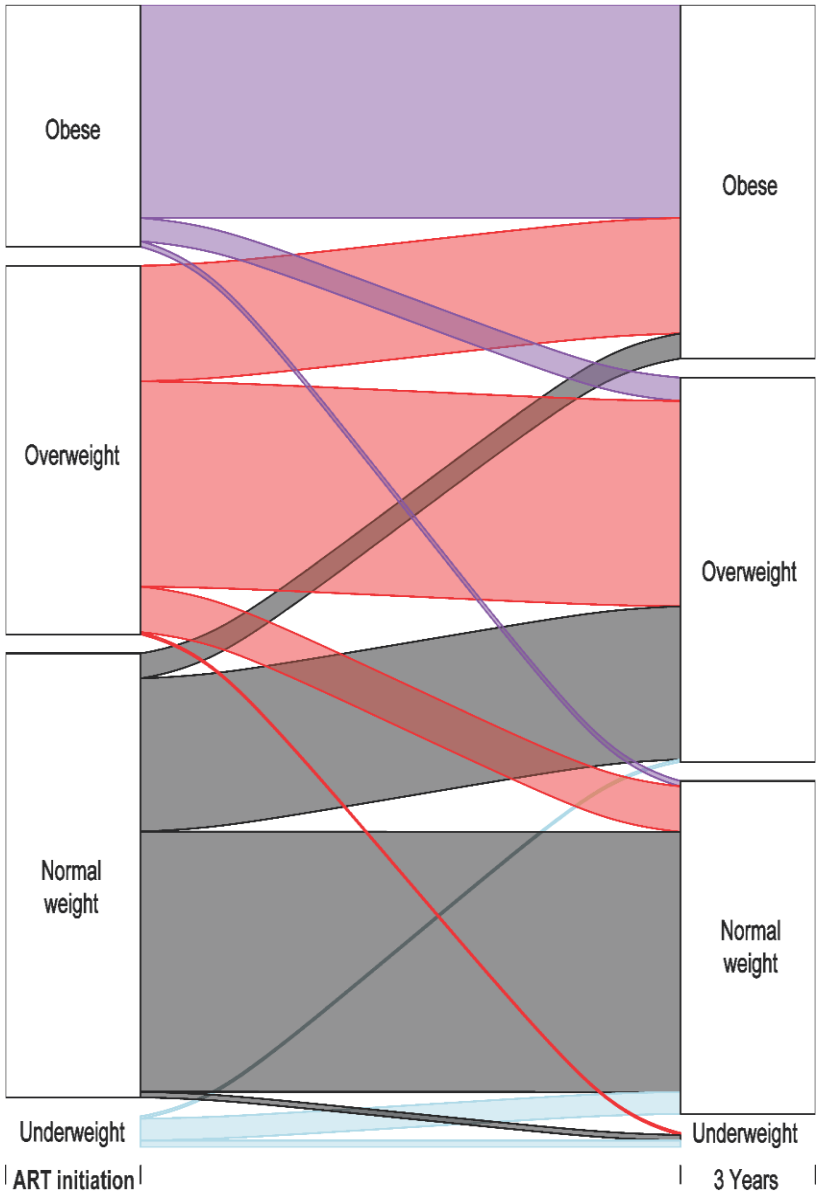




BOURGI K et al JIAS 2020, 23: e25484

BOURGI K et al JIAS 2020, 23: e25484





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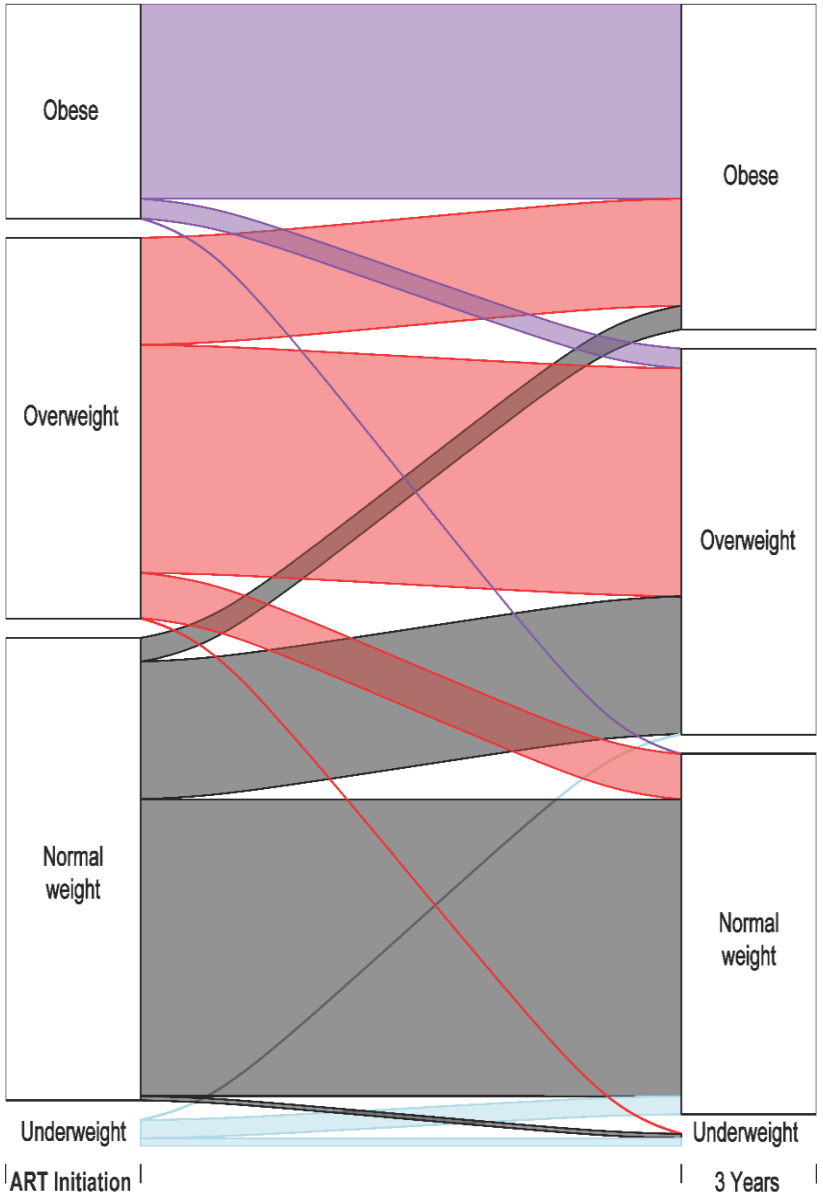

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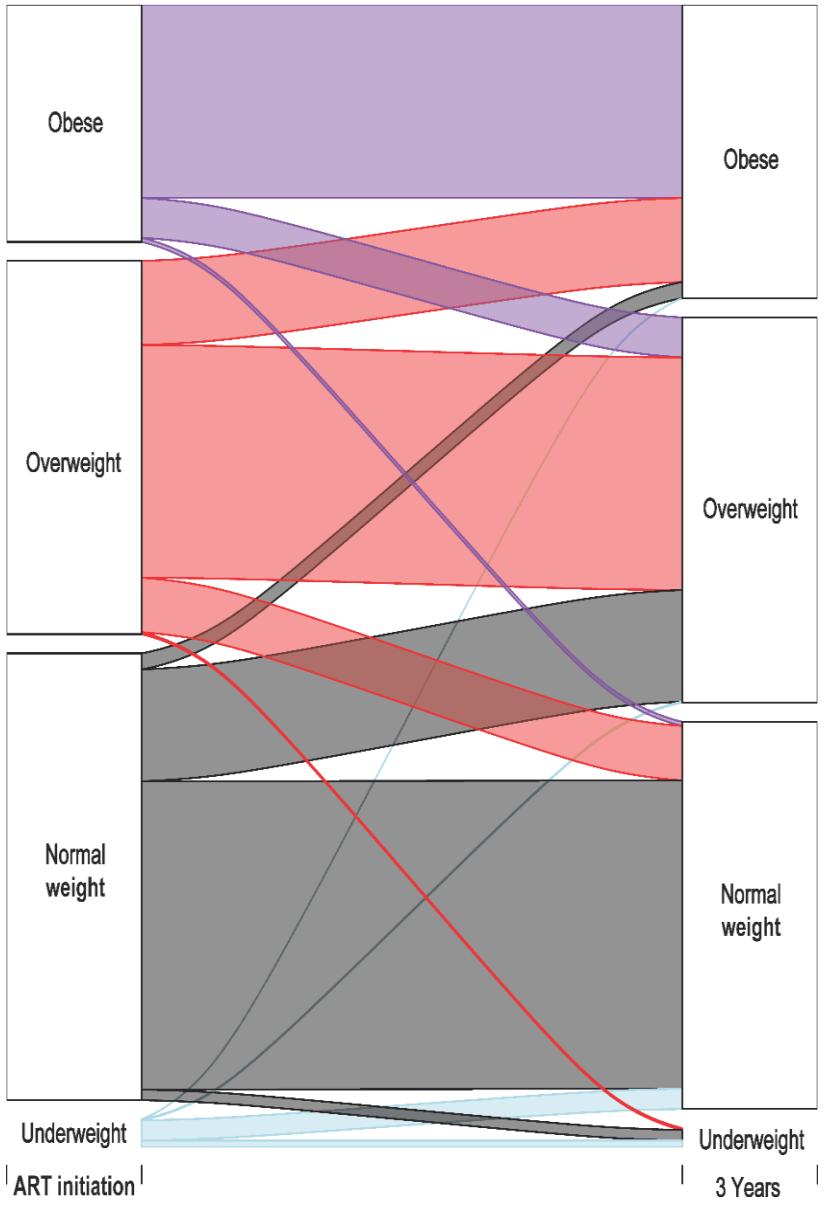


NNRTI

J Antimicrob Chemother 2018; **73**: 2177–2185
doi:10.1093/jac/dky145 Advance Access publication 2 May 2018

Journal of Antimicrobial Chemotherapy

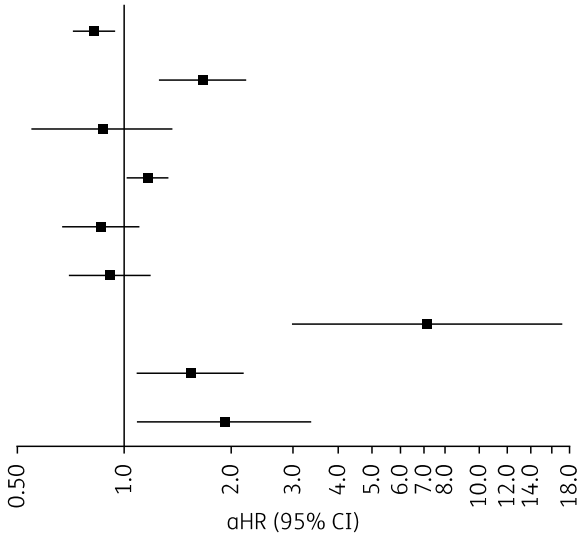
Obesity following ART initiation is common and influenced by both traditional and HIV-/ART-specific risk factors

David R. Bakal [1]*, Lara E. Coelho[2], Paula M. Luz[2], Jesse L. Clark[1], Raquel B. De Boni[2], Sandra W. Cardoso[2], Valdilea G. Veloso[2], Jordan E. Lake[1,3]† and Beatriz Grinsztejn[2]†

[1]Department of Medicine, University of California Los Angeles David Geffen School of Medicine, 10833 Le Conte Ave, Los Angeles, CA 90095, USA; [2]Instituto Nacional de Infectologia Evandro Chagas, Fundação Oswaldo Cruz, Av. Brasil, 4365 Manguinhos, Rio de Janeiro, Brazil; [3]Department of Medicine, The University of Texas Health Science Center at Houston (UTHealth) McGovern Medical School, 6431 Fannin St., Houston, TX 77030, USA

*Corresponding author. E-mail: dbakal89@gmail.com orcid.org/0000-0002-2596-6253
†Co-senior authors.

	aHR	Lower CI	Upper CI
Age at ART Initiation (per 10 year increase)	0.82	0.72	0.94
Sex: Female (reference male)	1.66	1.26	2.20
Sex: TW	0.87	0.55	1.36
Baseline Viral Load (copies/mL) Log_{10}*	1.16	1.02	1.33
NRTI: AZT (reference TDF)	0.86	0.67	1.10
ART Core Drug: PI (reference NNRTI)	0.91	0.70	1.18
ART Core Drug: INSTI	7.12	2.97	17.09
Baseline Diagnosis of Hypertension	1.54	1.09	2.16
Baseline Diagnosis of Diabetes Mellitus	1.92	1.09	3.36



- **1794** study participants, 18.3% developed obesity (37.4 per 1000 person-years)
- In multivariable analysis, the **greatest risk factor for developing obesity was the use of an INSTI** (adjusted **HR 7.12**, P , 0.0001)
- other risk factors included younger age, female sex, higher baseline BMI, lower baseline CD4+ T lymphocyte count, higher baseline HIV-1 RNA, hypertension and diabetes mellitus.

Weight Gain Following ART Initiation in ART-Naïve People Living With HIV in the Current Treatment Era

Stephanie A. Ruderman, MPH,[a] Heidi M. Crane, MD, MPH,[b] Robin M. Nance, MS,[b] Bridget M. Whitney, PhD, MPH,[b] Barbara N. Harding, PhD, MPH,[b] Kenneth H. Mayer, MD,[c] Richard D. Moore, MD,[d] Joseph J. Eron, MD,[e] Elvin Geng, MD,[f] William C Mathews, MD,[g] B Rodriguez,[h] Amanda L. Willig, MD,[i] Greer A. Burkholder, MD, MSPH,[i] Sara Lindström, PhD, MSc,[a] Brian R. Wood, MD,[b] Ann C. Collier, MD,[b] Vani Vannappagari, PhD,[i] Cassidy Henegar, PhD,[i] Jean Van Wyk, MBChB, MFPM,[j] Lloyd Curtis, MA, MRCP,[k] Michael S. Saag, MD,[i] Mari M. Kitahata, MD, MPH,[b] and Joseph A. C. Delaney, PhD[a,l]

- 3232 ART-naïve PLWH initiated 3-drug ART regimens in 8 Centers for AIDS Research in **US**
- Mean follow-up was 1.9 years on initial ART regimen.
- In comparison to EFV/TDF/FTC, initiating BIC/TAF/FTC {3.9 kg [95% confidence interval (CI): 2.2 to 5.5]} and DTG/TAF/FTC [4.4 kg (95% CI: 2.1 to 6.6)] were associated with the greatest weight gain in the immediate period (6 MONTHS), followed by DRV/TDF/FTC [3.7 kg (95% CI: 2.1 to 5.2)] and DTG/TDF/FTC [2.6 kg (95% CI: 1.3 to 3.9)].

J Acquir Immune Defic Syndr 2021;86:339–343)

TABLE 2. Weight Change (Δ kg/6 months) in the Immediate Period (First 6 Months) Among People Living With HIV From CNICS Sites Across the United States Who Initiated Their First ART Regimen Between 2012 and 2019 (n = 3186) in Adjusted* Analyses (Linear Mixed Models)

	Δ kg/6 mo	95% CI	*P*
Time on regimen (EFV reference)	0.71	−0.12 to 1.53	0.09
Reg type × time on regimen			
1: RPV	−0.36	−1.62 to 0.90	0.58
2: ATV	2.15	−0.01 to 4.30	0.051
3: DRV	3.68	2.13 to 5.22	<0.001
4: RAL	2.06	0.11 to 4.01	0.04
5: EVG/TDF	1.81	0.72 to 2.90	<0.01
6: EVG/TAF	1.88	0.61 to 3.16	<0.01
7: DTG/TDF	2.61	1.29 to 3.92	<0.001
8: DTG/TAF†	4.37	2.10 to 6.64	<0.001
9: DTG/ABC	2.28	1.06 to 3.49	<0.001
10: BIC‡	3.86	2.24 to 5.48	<0.001

*Model adjusted for time on regimen, regimen, age, sex, race/ethnicity, Hepatitis C, Hepatitis B, nadir CD4, smoking, diabetes, site, and antipsychotic medication use (time-updated).

Conclusions: there is heterogeneity between regimens in weight gain following ART initiation among ART naive PLWH; a greater weight gain was observed in PLWH taking newer integrase strand transfer inhibitors (DTG, BIC) and DRV-based regimens

J Acquir Immune Defic Syndr 2021;86:339–343

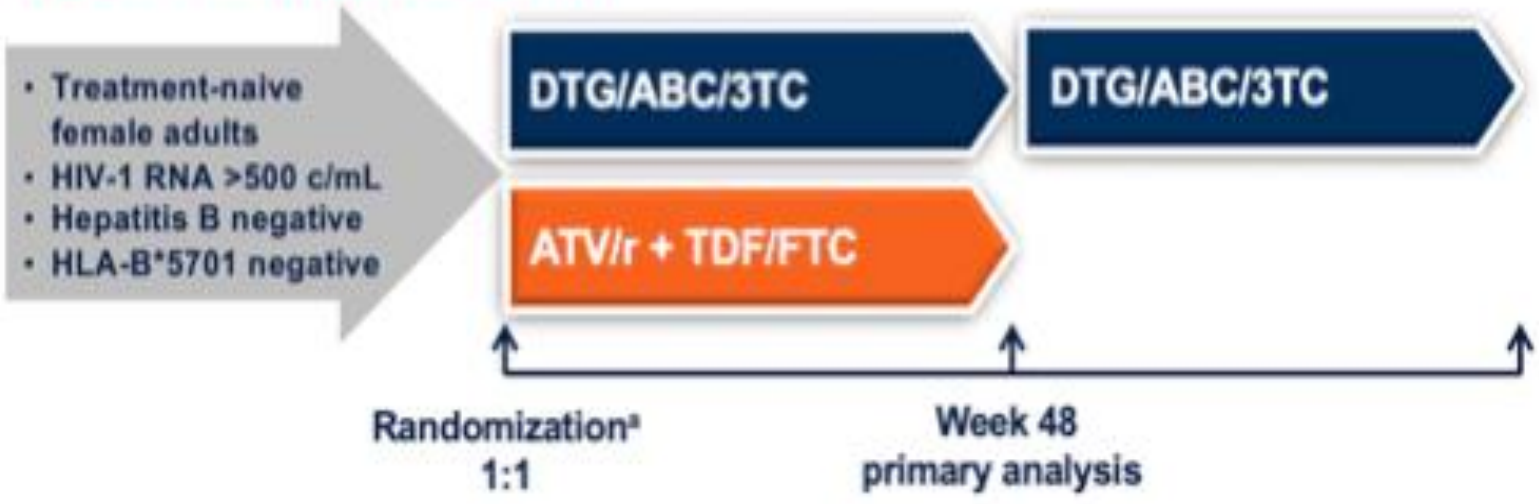
IAC 2020 Virtual July 6-10 SF
Reported by Jules Levin

WEIGHT CHANGE AMONG TREATMENT-NAIVE WOMEN INITIATING DOLUTEGRAVIR IN THE ARIA STUDY

Sharon Walmsley,[1] Catherine Orrell,[2] Maria-Jesus Perez-Elias,[3] Jean-Michel Molina,[4] Bryn Jones,[5] Brian Wynne,[6] Richard Grove,[7] Allan Tenorio,[6] Lloyd Curtis,[7] Jean van Wyk,[5] Ann Buchanan,[6] Choy Man[6]

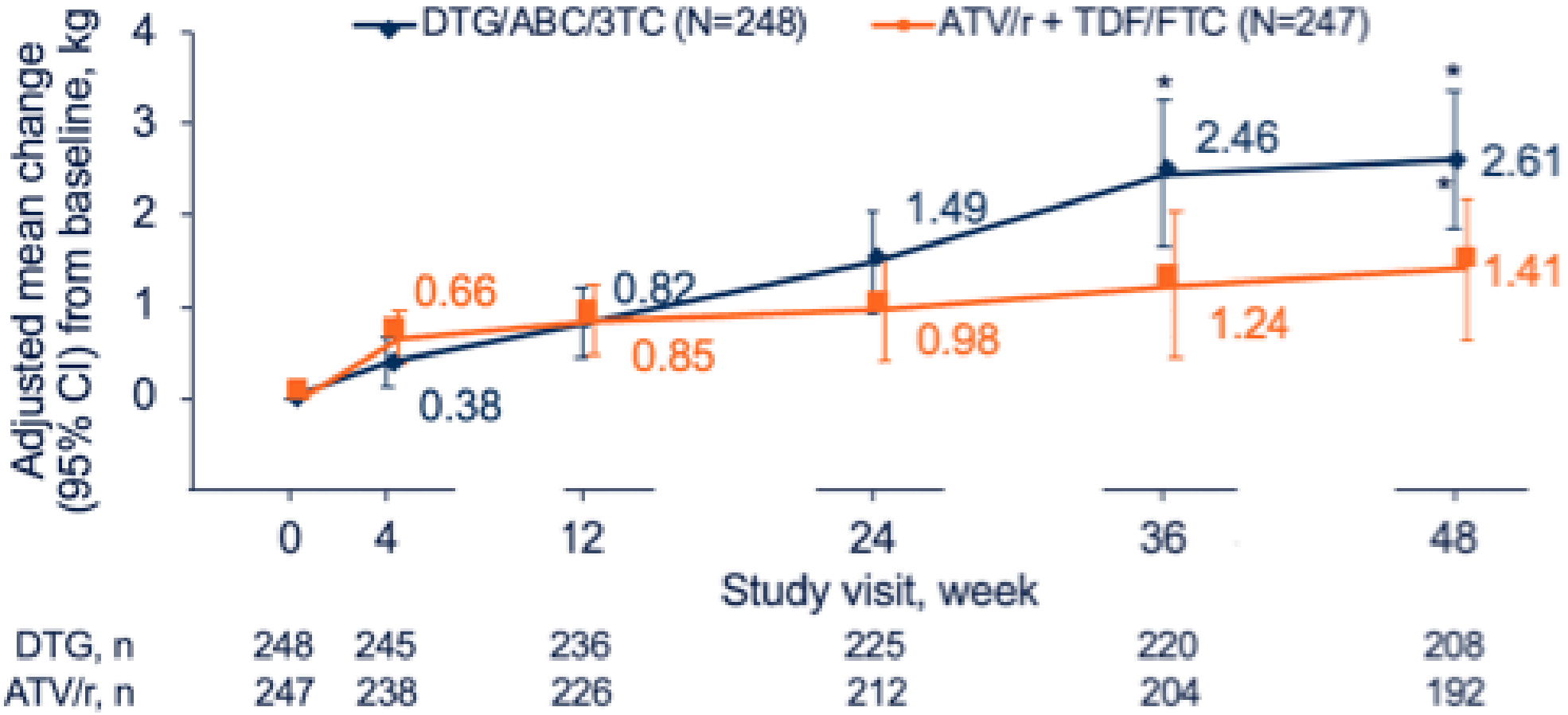
[1]University Health Network, Toronto, ON, Canada; [2]University of Cape Town, Desmond Tutu HIV Foundation, Cape Town, South Africa; [3]Hospital Universitario Ramon y Cajal, Madrid, Spain; [4]Saint-Louis Hospital, Paris, France; [5]ViiV Healthcare, Brentford, UK; [6]ViiV Healthcare, Research Triangle Park, NC, USA; [7]GlaxoSmithKline, Uxbridge, UK

Sharon Walmsley,1 Catherine Orrell,2 Maria-Jesus Perez-Elias,3 Jean-Michel Molina,4 Bryn Jones,5 Brian Wynne,6 Richard Grove,7 Allan Tenorio,6 â€¨Lloyd Curtis,7 Jean van Wyk,5 Ann Buchanan,6 Choy Man6 1University Health Network, Toronto, ON, Canada; 2University of Cape Town, Desmond Tutu HIV Foundation, Cape Town, South Africa; 3Hospital Universitario Ramon y Cajal, Madrid, Spain; â€¨4Saint-Louis Hospital, Paris, France; 5ViiV Healthcare, Brentford, UK; 6ViiV Healthcare, Research Triangle Park, NC, USA; 7GlaxoSmithKline, Uxbridge, UK



Country or territory of origin		
USA*	62 (25%)	69 (28%)
Puerto Rico	0	2 (<1%)
South Africa	33 (13%)	33 (13%)
Spain	23 (9%)	31 (13%)
Russia	28 (11%)	22 (9%)
Argentina	24 (10%)	20 (8%)
Thailand	19 (8%)	21 (9%)
Italy	17 (7%)	11 (4%)
UK	14 (6%)	11 (4%)
Canada	11 (4%)	9 (4%)
France*	7 (3%)	8 (3%)
Mexico	6 (2%)	5 (2%)
Portugal	4 (2%)	5 (2%)

Figure 2. Adjusted Mean Change From Baseline in Weight (kg) by Visit Through Week 48



Martínez-Sanz J et al. *Journal of the International AIDS Society* 2021, **24**:e25732
http://onlinelibrary.wiley.com/doi/10.1002/jia2.25732/full | https://doi.org/10.1002/jia2.25732

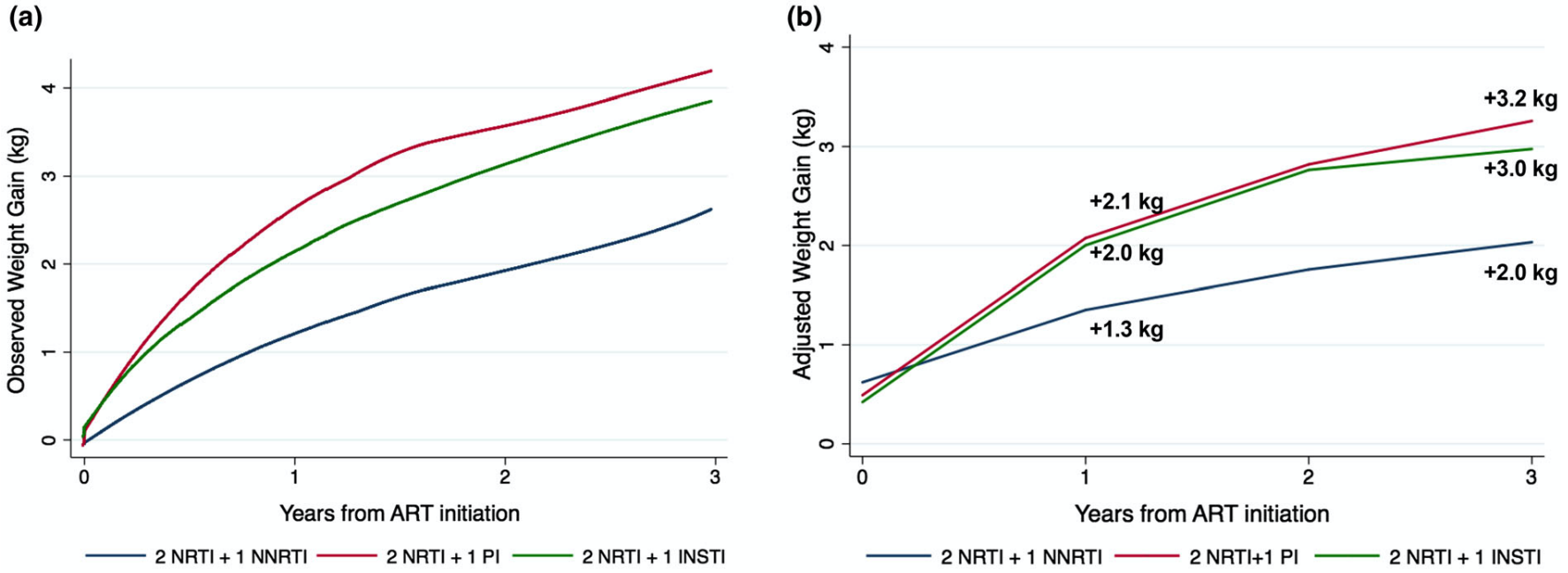
JIAS JOURNAL OF THE INTERNATIONAL AIDS SOCIETY

RESEARCH ARTICLE

Weight changes after antiretroviral therapy initiation in CoRIS (Spain): a prospective multicentre cohort study

Javier Martínez-Sanz[1,§], José-Ramón Blanco[2], Alfonso Muriel[3], María Jesús Pérez-Elías[1], Rafael Rubio-Martín[4], Juan Berenguer[5], Joaquim Peraire[6], Enrique Bernal[7], Onofre Juan Martínez[8], Sergio Serrano-Villar[1*], Santiago Moreno[1*] and on behalf of CoRIS

- Spanish HIV Research Network (CoRIS)
- between 2004 and 2018
- included PLWH who started triple ART and achieved HIV RNA suppression within 48 weeks.
- 1631 individuals resulting in 14,965 persons/years



The NNRTI group was less likely to transition from normal weight to overweight than the PI (aHR 1.48, 95% CI 1.18 to 1.85) and INSTI groups (aHR 1.30, 95% CI 1.03 to 1.64). PIs but not INSTIs were associated with a higher rate of overweight-to-obesity shift (aHR 2.17, 95% CI 1.27 to 3.72).

CISAI FONDAZIONE ASIA

Infection (2020) 48:213–221
https://doi.org/10.1007/s15010-019-01376-5

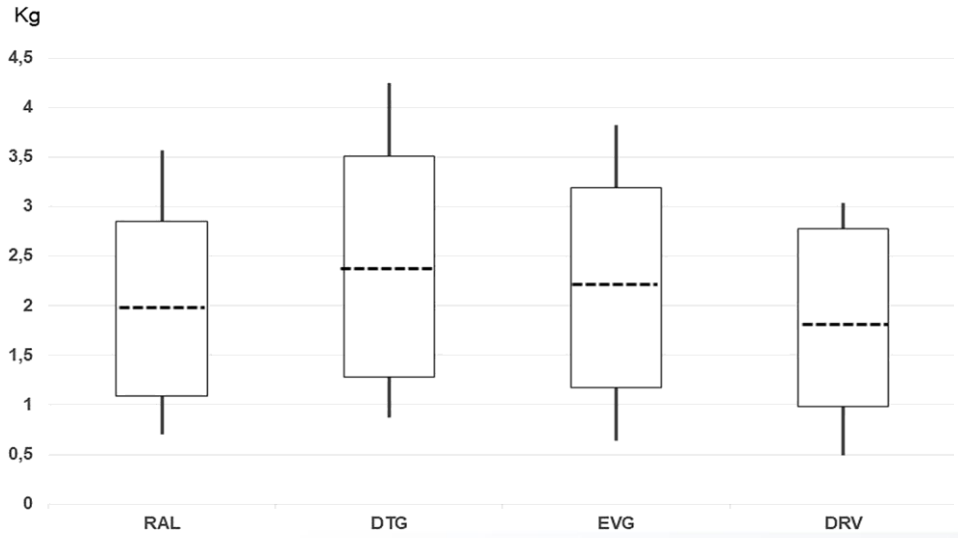
ORIGINAL PAPER

Weight gain in antiretroviral therapy-naive HIV-1-infected patients starting a regimen including an integrase strand transfer inhibitor or darunavir/ritonavir

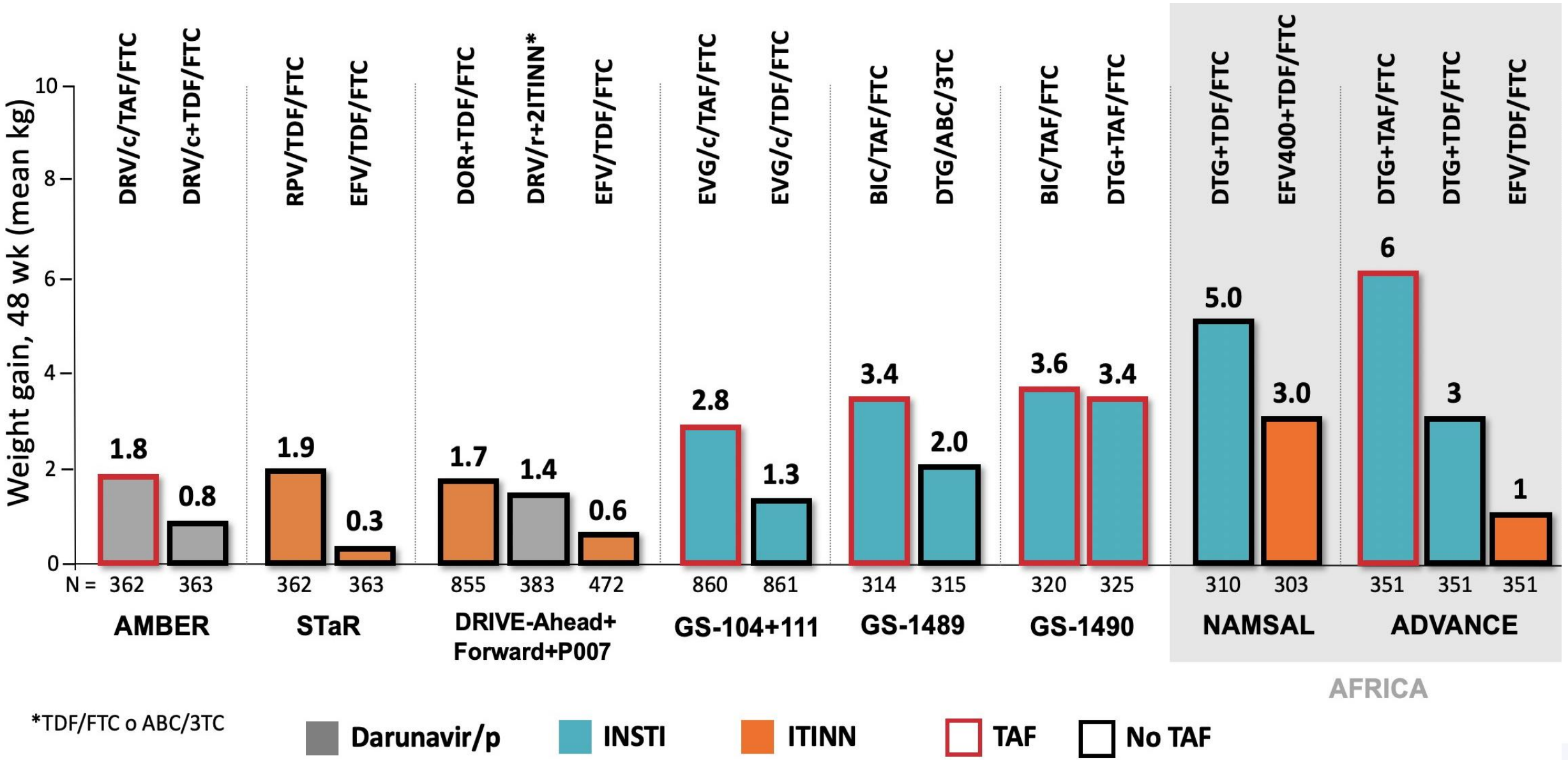
Leonardo Calza[1] · Vincenzo Colangeli[1] · Marco Borderi[1] · Isabella Bon[2] · Aurora Borioni[1] · Francesca Volpato[1] · Maria Carla Re[2] · Pierluigi Viale[1]

Retrospective, observational, cohort study of antiretroviral therapy-naive adult HIV-positive patients

680 patients (470 males, mean age 42.1 years) were enrolled: 196 RAL, 174 DTG, 158 EVG/c, 152 DRV/r.
mean increase in body weight was **1.93** kg in the RAL group, **2.38** kg in the DTG group, **2.14** kg in the EVG group, and **1.85** in the DRV/r group.



naive


Weight gain, 48 wk (mean kg)
10
8
6
4
2
0
DRV/c/TAF/FTC
DRV/c+TDF/FTC
RPV/TDF/FTC
EFV/TDF/FTC
DOR+TDF/FTC
DRV/r+2ITINN*
EFV/TDF/FTC
EVG/c/TAF/FTC
EVG/c/TDF/FTC
BIC/TAF/FTC
DTG/ABC/3TC
BIC/TAF/FTC
DTG+TAF/FTC
DTG+TDF/FTC
EFV400+TDF/FTC
DTG+TAF/FTC
DTG+TDF/FTC
EFV/TDF/FTC
1.8
0.8
1.9
0.3
1.7
1.4
0.6
2.8
1.3
3.4
2.0
3.6
3.4
5.0
3.0
6
3
1
N = 362 363 362 363 855 383 472 860 861 314 315 320 325 310 303 351 351 351
AMBER
STaR
DRIVE-Ahead+ Forward+P007
GS-104+111
GS-1489
GS-1490
NAMSAL
ADVANCE
AFRICA
*TDF/FTC o ABC/3TC
Darunavir/p
INSTI
ITINN
TAF
No TAF

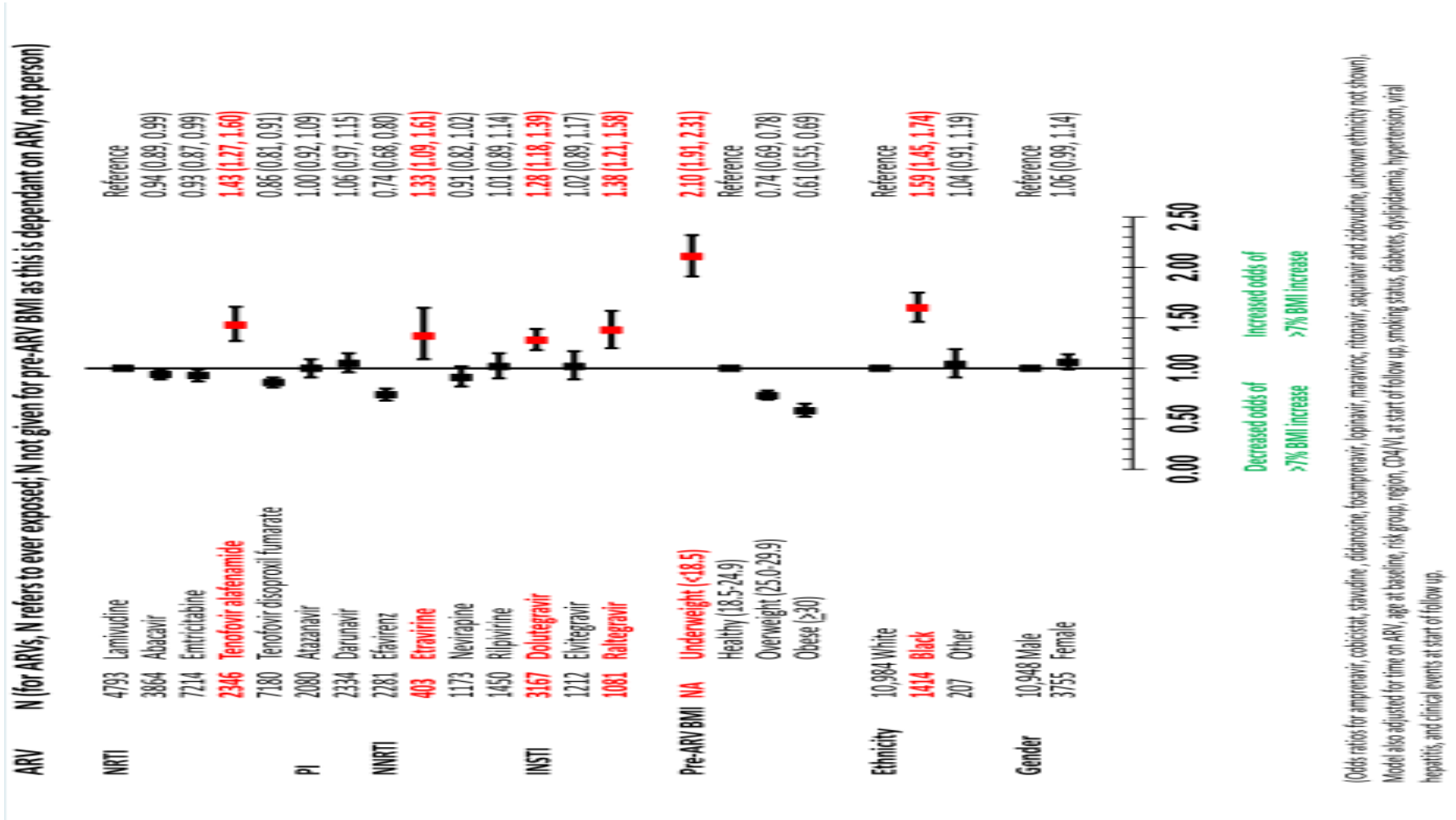
Regimen	Main requirements	Additional guidance (footnotes)
Recommended regimens		
2 NRTIs + INSTI		
ABC/3TC + DTG ABC/3TC/DTG	HLA-B*57:01 negative HBsAg negative	I (ABC: HLA-B*57:01, cardiovascular risk) II (Weight increase (DTG))
TAF/FTC or TDF/FTC or TDF/3TC + DTG		III (Weight increase (DTG, TAF)) IV (TDF: prodrug types. Renal and bone toxicity. TAF dosing)
TAF/FTC/BIC		II (Weight increase (BIC))
TAF/FTC or TDF/FTC or TDF/3TC + RAL qd or bid		IV (TDF: prodrug types. Renal and bone toxicity. TAF dosing) V (RAL: dosing)
1 NRTI + INSTI		
3TC + DTG or 3TC/DTG	HBsAg negative HIV-VL < 500,000 copies/mL	

EACS guidelines, 2020

CISAI FONDAZIONE ASIA

Weight gain

- Weight gain nella popolazione generale
- Weight gain e HIV: Da dove siamo partiti e come cambia la sopravvivenza con l'aumento di peso
- Fattori correlati all'aumento di peso
- Studi nel naive
- **Studi di switch**



14,703 pazienti inclusi nello studio

54% hanno avuto un incremento del BMI >7%

Il 20% della popolazione dello studio era ART-naive

Bansi-Matharu L, Wit F, Law M, et al. Association between newer antiretrovirals and increase in body mass index in RESPOND. Presented at: Conference on Retroviruses and Opportunistic Infections; March 6-10, 2021; Virtual. Science spotlight.

	Univariate analyses		Multivariable analyses	
	OR (95% CI)	p value	OR (95% CI)	p value
(Continued from previous page)				
Region	..	<0·0001	..	<0·0001
Western Europe	1 (ref)	..	1 (ref)	..
Southern Europe	1·43 (1·33–1·54)	..	1·54 (1·43–1·67)	..
Northern Europe and Australia	1·14 (1·06–1·23)	..	1·43 (1·32–1·56)	..
Eastern and east central Europe	1·40 (1·29–1·53)	..	1·47 (1·34–1·62)	..
CD4 count at baseline, per 100-cell increase	0·97 (0·97–0·98)	<0·0001	0·97 (0·96–0·98)	<0·0001
Viral load at baseline, per 1 log higher	1·08 (1·06–1·10)	<0·0001	1·05 (1·03–1·07)	<0·0001
Smoking status at baseline		<0·0001	..	0·071
Never	1 (ref)	..	1 (ref)	..
Current	1·06 (1·00–1·13)	..	1·05 (0·98–1·12)	..
Previous	0·87 (0·80–0·96)	..	0·98 (0·89–1·08)	..
Unknown	1·07 (1·00–1·14)	..	1·09 (1·01–1·17)	..
AIDS-defining malignancies	..	0·59	..	0·044
No	1 (ref)	..	1 (ref)	..
Yes	1·04 (0·91–1·18)	..	1·15 (1·01–1·32)	..
Non-cancer AIDS events	..	0·00010	..	0·00030
No	1 (ref)	..	1 (ref)	..
Yes	1·12 (1·06–1·19)	..	1·13 (1·06–1·21)	..

The 95th percentile of the maximum BMI increase per person was 30%. 166 (22·2%) of 749 people who had a more than 30% BMI increase had a pre-anti- retroviral BMI of less than 18·5 kg/m" (underweight). Of these, the corresponding BMI to the 30% increase was 18·5–24·9 kg/m" (healthy weight) for 84 (50·6%) participants, 25·0–29·9 kg/m" (overweight) for 65 (39·2%) participants, and 30 kg/m" or over (obese) for 16 (9·6%) participants.

CISAI FONDAZIONE ASIA

Association between DTG, TAF (vs. 3TC) and >7% BMI increase by model

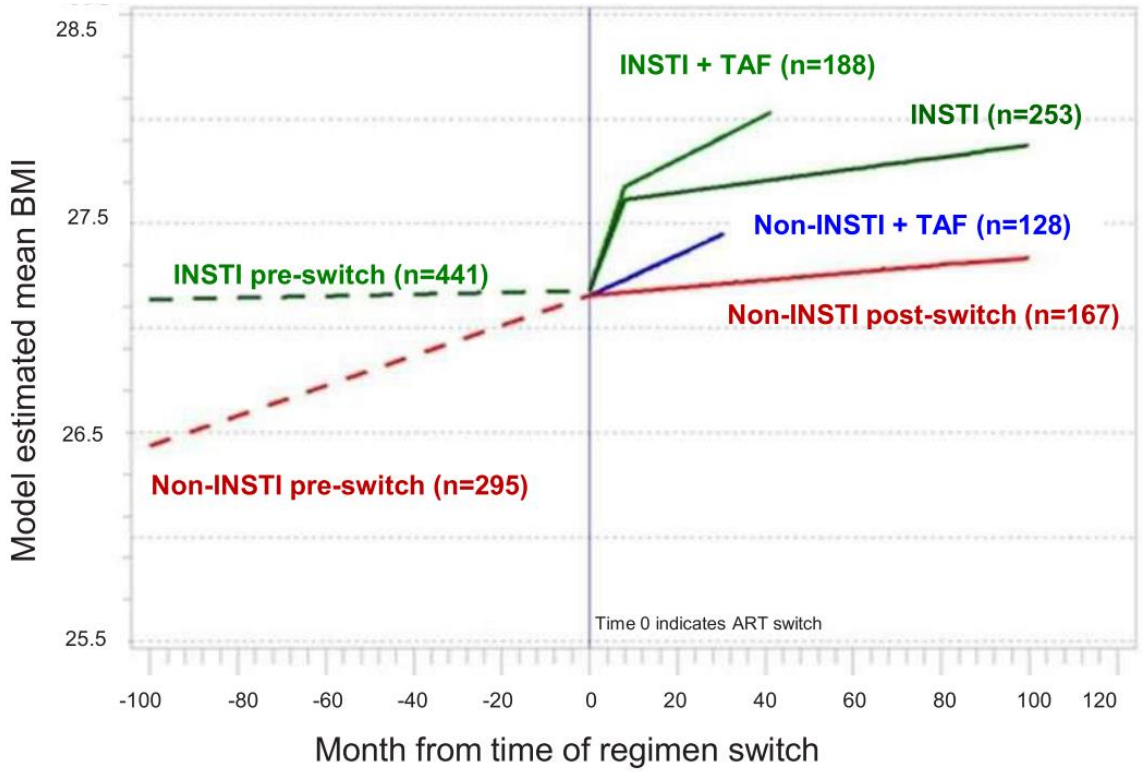
RESPOND International Cohort Consortium of Infectious Diseases

Primary model refers to that seen on the previous slide, adjusted for ARV, pre-ARV BMI, ethnicity, gender, time on ARV, age at baseline, risk group, region, CD4/VL at start of follow up, smoking status and AIDS events at start of follow up.

Bansi-Matharu L, Wit F, Law M, et al. Association between newer antiretrovirals and increase in body mass index in RESPOND. Presented at: Conference on Retroviruses and Opportunistic Infections; March 6-10, 2021; Virtual. Science spotlight.

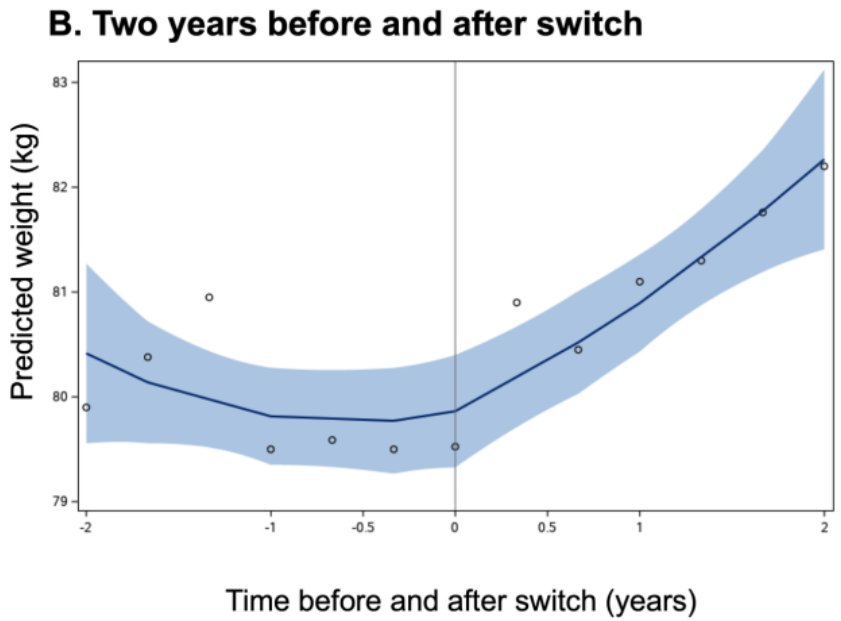
CISAI FONDAZIONE ASIA

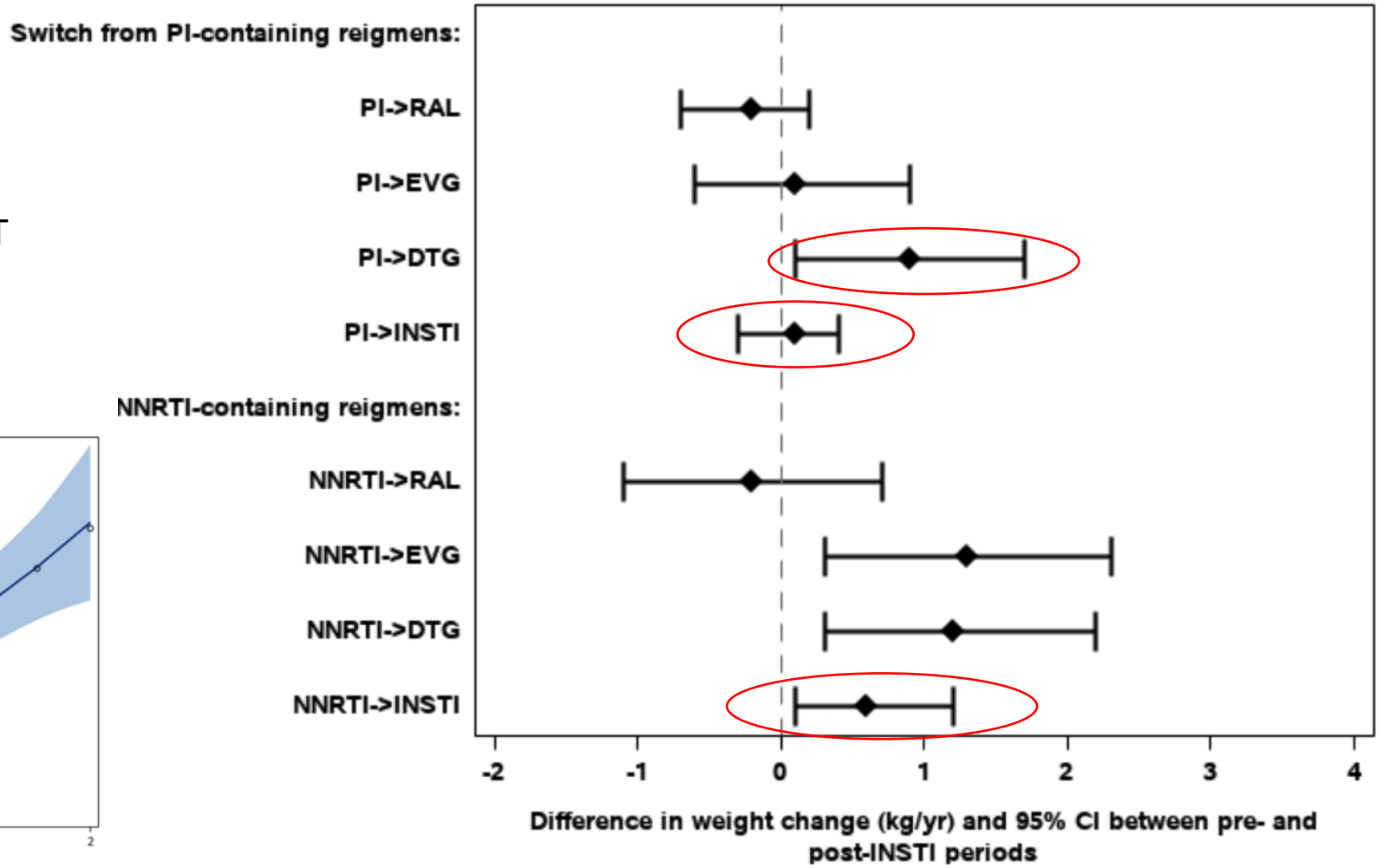
- **Study population:** INSTI-naive PLWH in the HIV Outpatient Study from 2007 to 2018 who were virologically suppressed for ≥1 year on non-INSTIs and switched to INSTI- (n=441) or non–INSTI-based (n=295) ART for ≥6 months
- Switching to INSTIs was associated with more rapid weight gain (BMI slope) during the 8 months after switch
  - After 8 months, weight change trajectory was similar to non-INSTIs
- In PLWH who switched to INSTI + TAF, weight change was more attributable to INSTIs during the first 8 months (87% vs 13%) and to TAF after 8 months (27% vs 73%)
- PLWH who switched to non-INSTI + TAF had a linear trend in weight gain before and after 8 months, 84% of which was attributable to TAF
- No significant differences in weight gain were apparent by INSTI type



- Palella F, Hou Q, Li J, et al. Weight gain among PWH who switch to ART-containing INSTIs or TAF. Presented at: Conference on Retroviruses and Opportunistic Infections; March 6-10, 2021; Virtual. Science spotlight.

The 972 who switched to INSTI were 81% male and 50% non-white with a median age at switch 50 years, CD4+ T cell count 512 cells/□L and BMI 26.4 kg/m2.





Lake et al., CID 2020; 71(9):e471-e477

Weight Gain Associated With Integrase Stand Transfer Inhibitor Use in Women

- 1118 women
- 234 SWAD
- 884 STAY

for a mean of 2.0 years

mean age 48.8 years,

61% were Black.

the SWAD group experienced mean greater increases of 2.1 kg in body weight, 0.8 kg/m2 in BMI, 1.4% in PBF, and 2.0, 1.9, 0.6, and 1.0 cm in waist, hip, arm, and thigh circumference, (all *P* values < .05).

Table 3. Model-Adjusted Changes Over Time in Weight, Stratified by Clinical Characteristics

Clinical Characteristic[a]	Mean (95% CI) Change in Weight in SWAD,[b] kg	Mean (95% CI) Change in Weight in STAY,[b] kg	Difference Between Means, SWAD-STAY (95% CI)[b]
Baseline age, years			
Age <50, n = 595	2.4 (1.1–3.7)	0.7 (–.2 to 1.5)	1.7 (.3–3.1)*
Age ≥50, n = 523	2.3 (1.0–3.5)	–0.3 (–1.1 to .6)	2.5(1.3–3.8)***
Race/ethnicity			
White/other, non-Hispanic, n = 172	1.8 (–.1 to 3.7)	0.2 (–1.1 to 1.5)	1.6 (–.6 to 3.7)
Black, non-Hispanic, n = 680	3.0 (1.8–4.2)	0.6 (–.7 to 1.3)	2.4 (1.1–3.7)***
Hispanic, n = 266	1.8 (.1–3.5)	–0.6 (–2.0 to .7)	2.4 (.7–4.1)**
Baseline BMI,[b] kg/m^2			
BMI <30, n = 584	2.7 (1.8–3.7)	0.4 (–.2 to 1.1)	2.3 (1.3–3.3)****
BMI ≥30, n = 507	2.1 (.5–3.8)	0.4 (–.7 to 1.5)	1.7 (.1–3.4)*
Baseline viral load,[c] copies/ml			
Detectable, n = 208	1.0 (–1.1 to 3.0)	0.3 (–1.3 to 2.0)	0.6 (–1.5 to 2.7)
Undetectable, n = 910	2.7 (1.7–3.8)	0.1 (–.5 to .8)	2.6 (1.5–3.6)****
Baseline CD4, cells/mm^3			
CD4 <350, n = 153	1.6 (–1.1 to 4.4)	–0.1 (–1.7 to 1.5)	1.7 (–1.1 to 4.6)
CD4 ≥350, n = 957	2.4 (1.5–3.4)	0.3 (–.3 to .9)	2.1 (1.1–3.1)****
Baseline ART regimen[d]			
NNRTI, n = 526	3.1 (1.4–4.8)	0.5 (–.4 to 1.3)	2.7 (1.0–4.3)**
PI, n = 543	2.1 (1.0–3.2)	0.04 (–.8 to .9)	2.1 (.9–3.3)***
INSTI type, SWAD group only			
Dolutegravir, n = 97	1.7 (–.3 to 3.7)	…	…
Raltegravir, n = 85	1.3 (–2.0 to 4.5)	…	…
Elvitegravir, n = 52	2.7 (–.7 to 6.1)	…	…

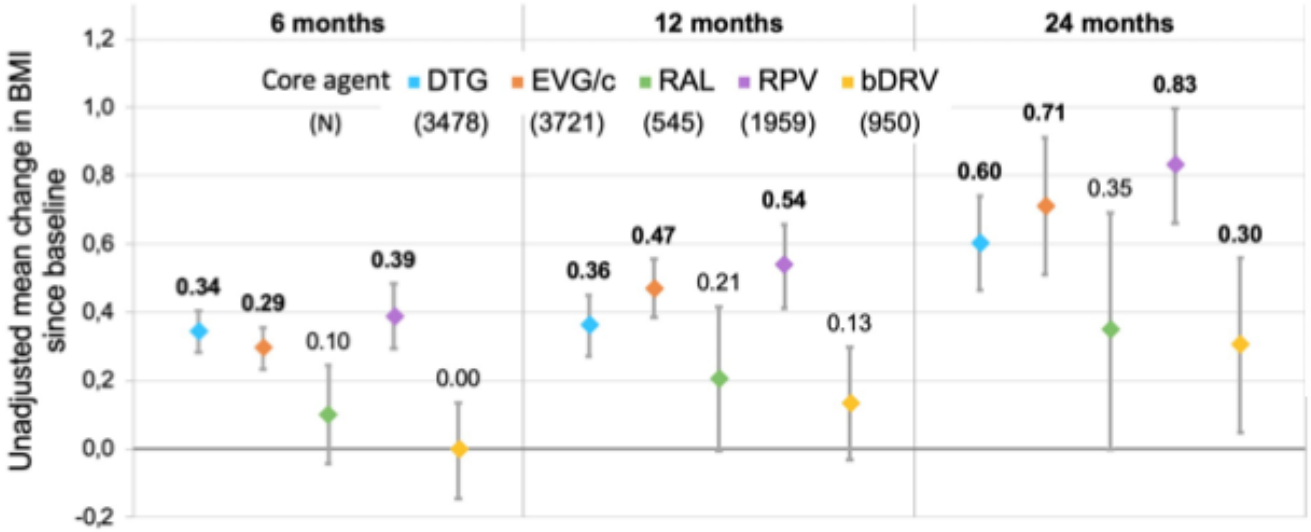
*P < .05, **P < .01, ***P < .001, ****P < .0001.

Kerchberger et al., CID 2020; 71(3):593-600

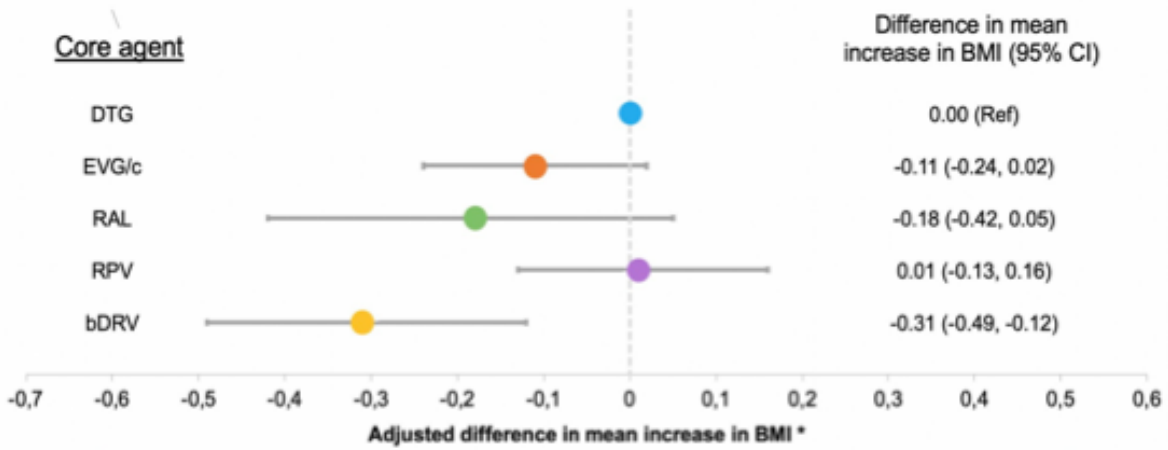
CISAI FONDAZIONE ASIA

OPERA: Changes in BMI with ART regimens in Suppressed Individuals

- OPERA USA Cohort: Prospectively captured, routine clinical data
- ART-experienced virologically suppressed N=10.653
- Switch between 1/8/2013 and 31/2/2017



12-Month Adjusted Difference in Mean Increase in BMI From Baseline



* Adjusted for baseline age, sex, race/ethnicity, BMI, lipodystrophy, endocrine disorders, hypertension, substance abuse, CD4 cell count, viral load, and TAF use.

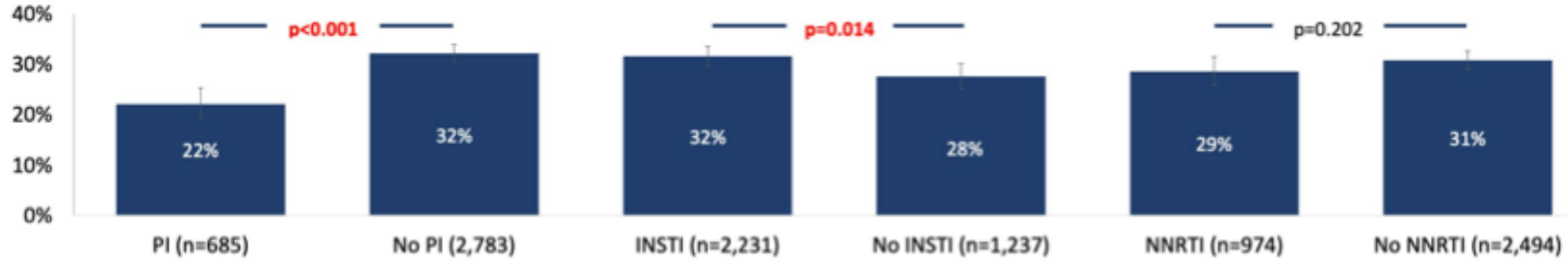
- Increases in BMI persist in treatment-experienced, suppressed patients.
  - **Return to health does not fully explain weight gain associated with ART**
- Small absolute increases in BMI with all core agents (Lower increase with bDRV vs. DTG).
- Although both weight gain and weight loss were observed across all groups, the trend remains an increase in BMI over time.

Mounzer K, et al. IDWeek 2019; Washington, DC. # 978.

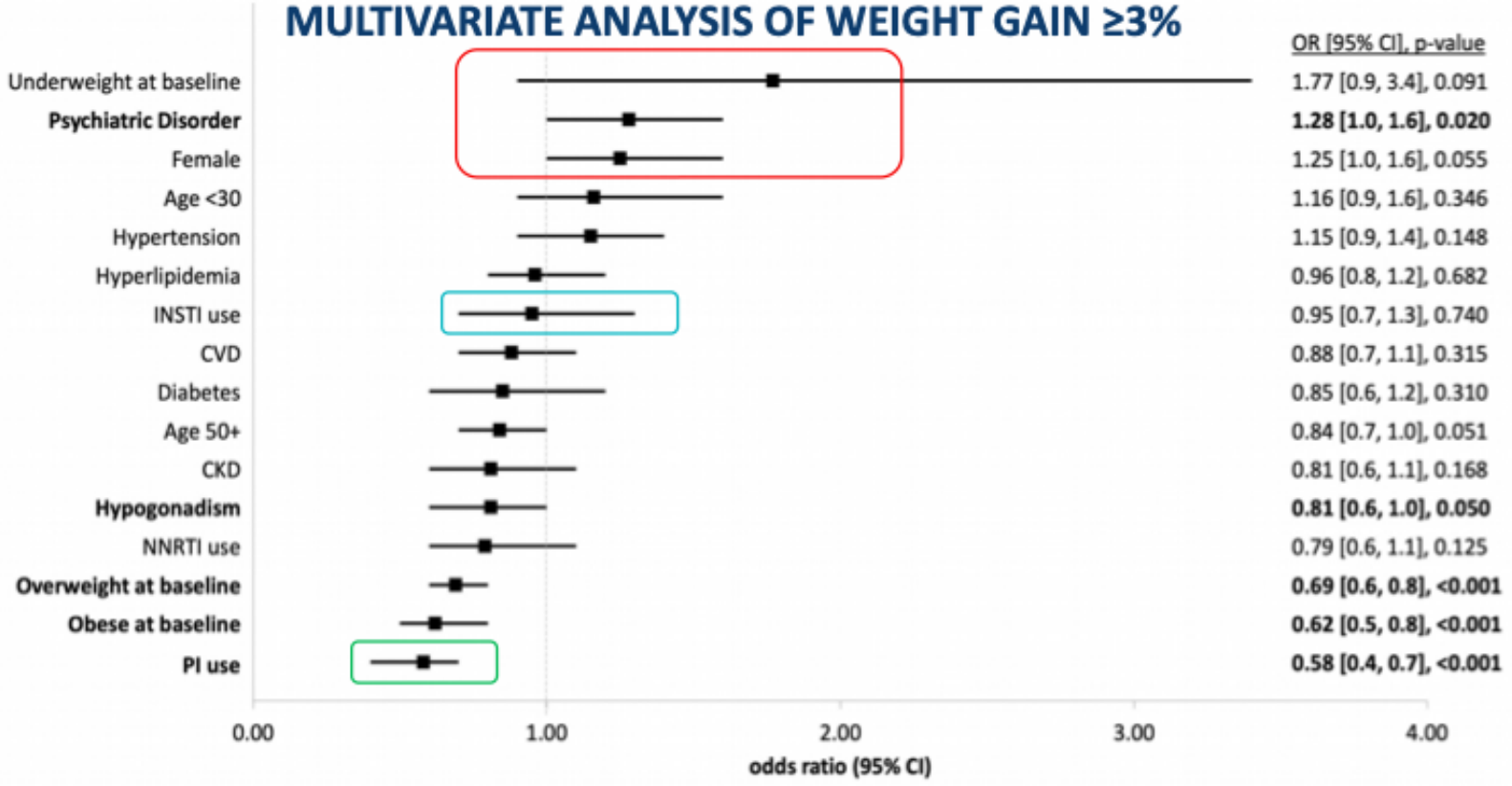
Weight gain among Tx-experienced adults with HIV (USA)

WEIGHT GAIN WITHIN REGIMEN GROUPS

Weight gain ≥ 3%



MULTIVARIATE ANALYSIS OF WEIGHT GAIN ≥3%



- N=4368. Switch to a new ART 2013-17.
- ↓ Peso > 3%: **16%** (mean -5.4 ± 3.3 kg)
- No gain >3%: **54%** (mean 0.2 ± 1.4 kg)
- ↑ Peso > 3%: **30%** (mean 5.2 ±3.1 kg)

- The association **INSTI** and weight gain reached significance in bivariate analyses, but NS in multivariable logistic regression model, suggesting that in this population, **weight changes are primarily driven by other factors**.

- Absence of weight gain associated with hypogonadism, overweight or obese at baseline, and PI use

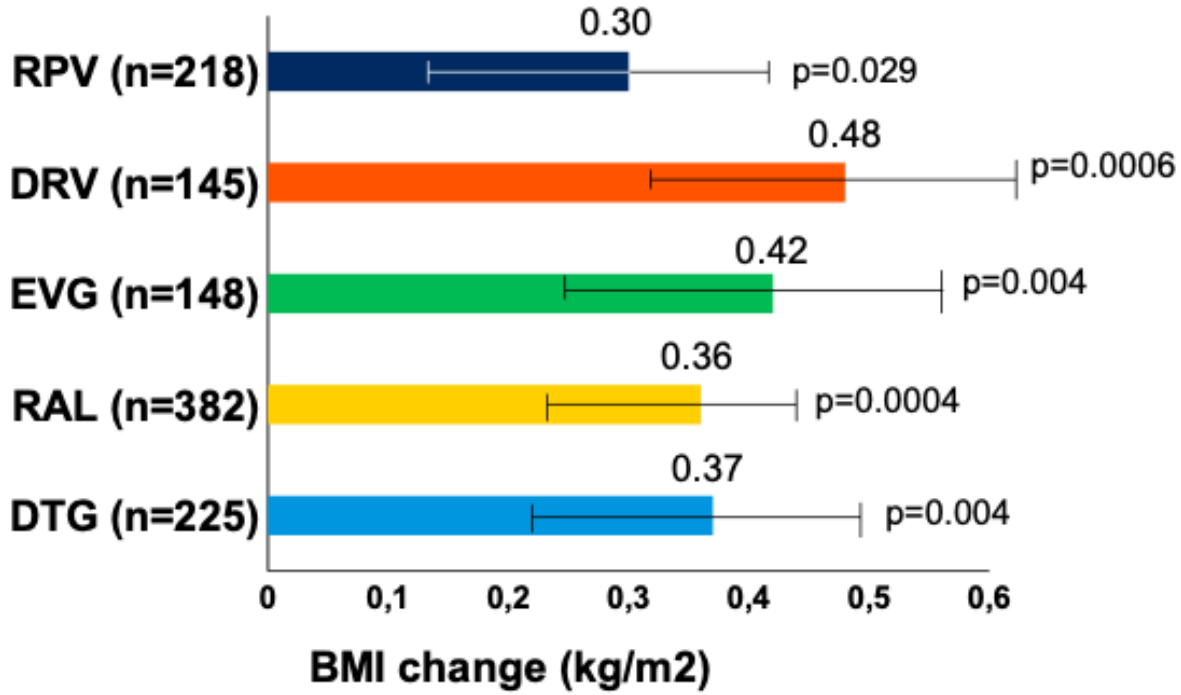
McComsey GA, et al. CROI 2019 # 671

SCOLTA (Italia): Weight Gain, a possible side effect of all ARV

SCOLTA observational analysis (N=1,118)

- N = 1.118 on treatment
- Median Age 46 yrs.
- Male 71%
- CD4<200: 38%
- VL < 50 c/mL: 60%
- Median time on previous ART: 10.8 yrs.
- BMI at baseline:
  - Underweight 6%
  - Normal weight 60%
  - Overweight 27%
  - Obese 7%

One-Year adjusted mean (± SE) BMI increase*



*Adjusted for sex, age, CD4+, detectable viral load, CDC stage, duration of ART, lipodystrophy, and BMI at study entry.

- Switching to RAL-, DTG-, EVG-, DRV- or RPV-based regimens were associated with increases in BMI.
- **No INSTI** was significantly different from DRV or RPV in the adjusted analysis.
- Age, low BMI, and CD4 <200 cells/mL at study entry were significantly associated to BMI increase.

Taramasso L, et al. Open Forum Infect Dis 2017;4:ofx239

Long-Term Follow-Up After a Switch to Bictegravir, Emtricitabine, Tenofovir Alafenamide (B/F/TAF) from a Boosted Protease Inhibitor-Based Regimen

Jurgen K. Rockstroh,[1] Jean-Michel Molina,[2] Frank Post,[3] Julie Fox,[4] Ellen Koenig,[5] Eric S. Daar,[6] Edwin DeJesus,[7] Peter Ruane,[8] Gordon Crofoot,[9] Godson Oguchi,[10] Catherine Creticos,[11] Angela SY Liu,[12] Kristen Andreatta,[12] Hiba Graham,[12] Diana M. Brainard,[12] Hal Martin[12]

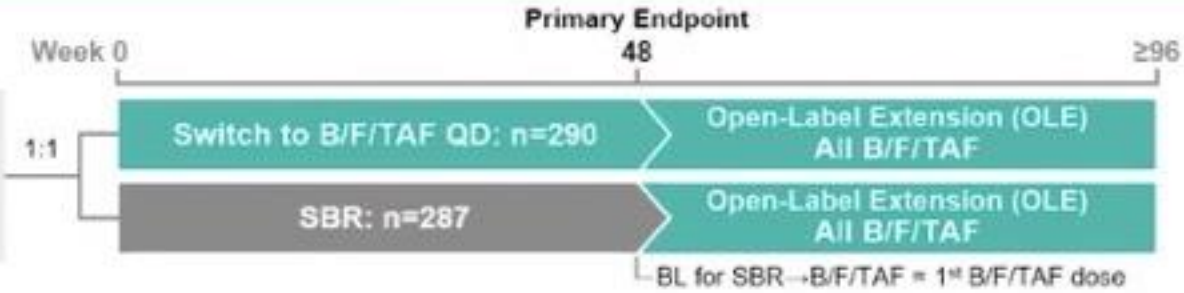
[1]Bonn University Hospital, Venusburg, Germany; [2]Saint-Louis Hospital, Paris, France; [3]King's College Hospital NHS Foundation Trust, Kings College London, UK; [4]Guy's and St. Thomas' NHS Foundation Trust, [5]Inst. Domin Estudio Virologicos, Santo Domingo, Dominican Republic; [6]Lundquist Institute at Harbor-UCLA Medical Center, Torrance, CA; [7]Orlando Immunology Center, Orlando, FL, USA; [8]Ruane Clinical Research Group, Inc., Los Angeles, CA, USA; [9]The Crofoot Research Center, Houston, TX, USA; [10]Midland Florida Clinical Research Center, LLC, Deland, FL, USA; [11]Howard Brown Health Center, Chicago, IL, USA; [12]Gilead Sciences, Foster City, CA, USA

Glasgow 2020, October 5–8; P036

Phase 3, randomized, open-label, active controlled study

HIV Suppressed Adults on Boosted DRV or ATV + 2 NRTIs*

- HIV-1 RNA <50 copies/mL
- $eGFR_{CG}$ ≥50 mL/min

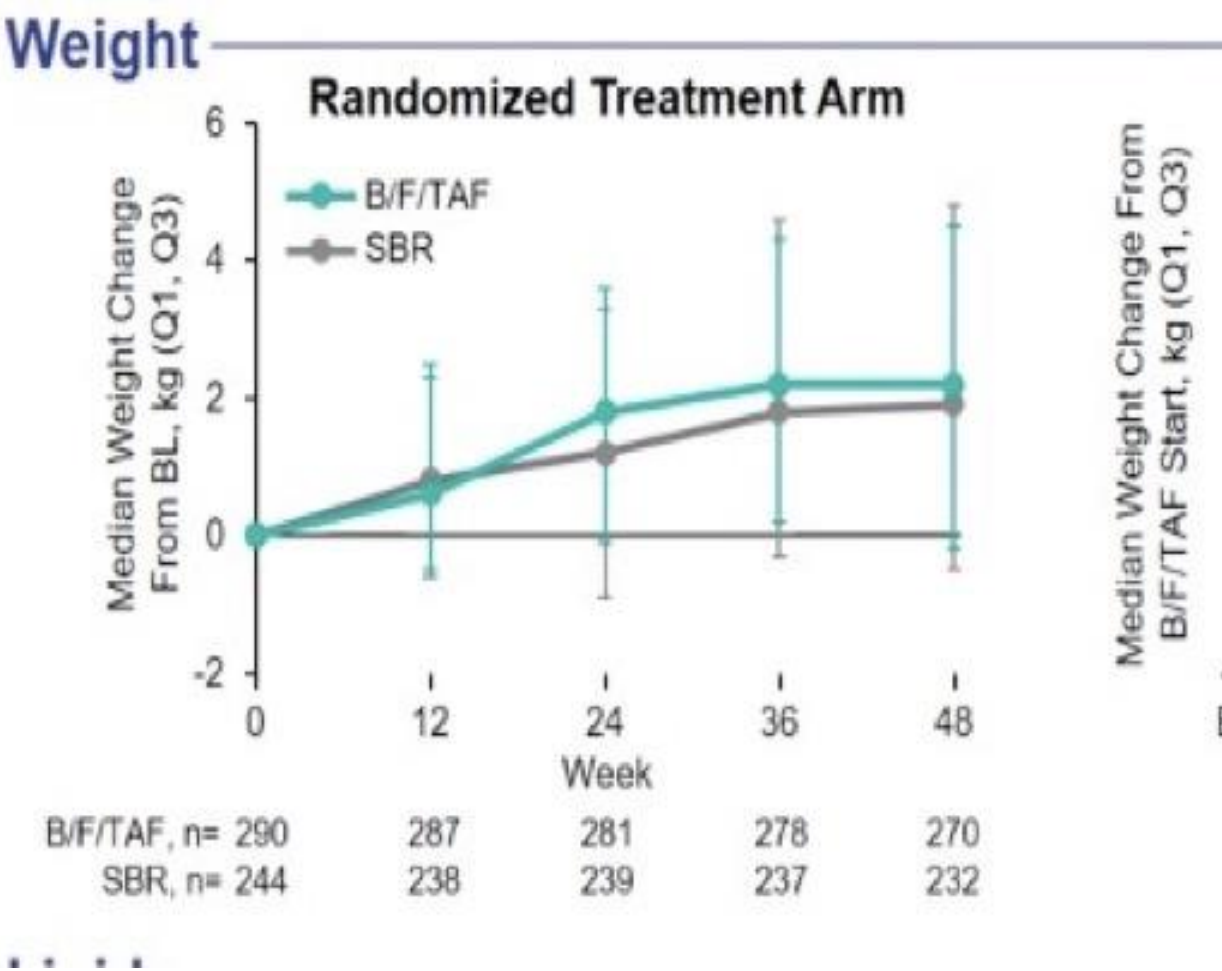


- Primary endpoint: Proportion of participants with HIV-1 RNA ≥50 copies/mL at Week 48 based on FDA Snapshot algorithm with a noninferiority margin of 4%
- Efficacy endpoints included in this final analysis are the proportion of participants with HIV-1 RNA <50 copies/mL by Missing = Excluded (M = E) approach, change from baseline in CD4 cell count and CD4%
- Duration of exposure, median (Q1, Q3): 119.7 (108.0, 132.0) wk for the B/F/TAF group, 72.0 (60.8, 84.8) wk for the SBR to B/F/TAF group, and 101.0 (71.7, 120.1) wk for the All B/F/TAF group
- All B/F/TAF group includes all participants with ≥1 dose of B/F/TAF; baseline for SBR to B/F/TAF group is measured from start of B/F/TAF in the OLE

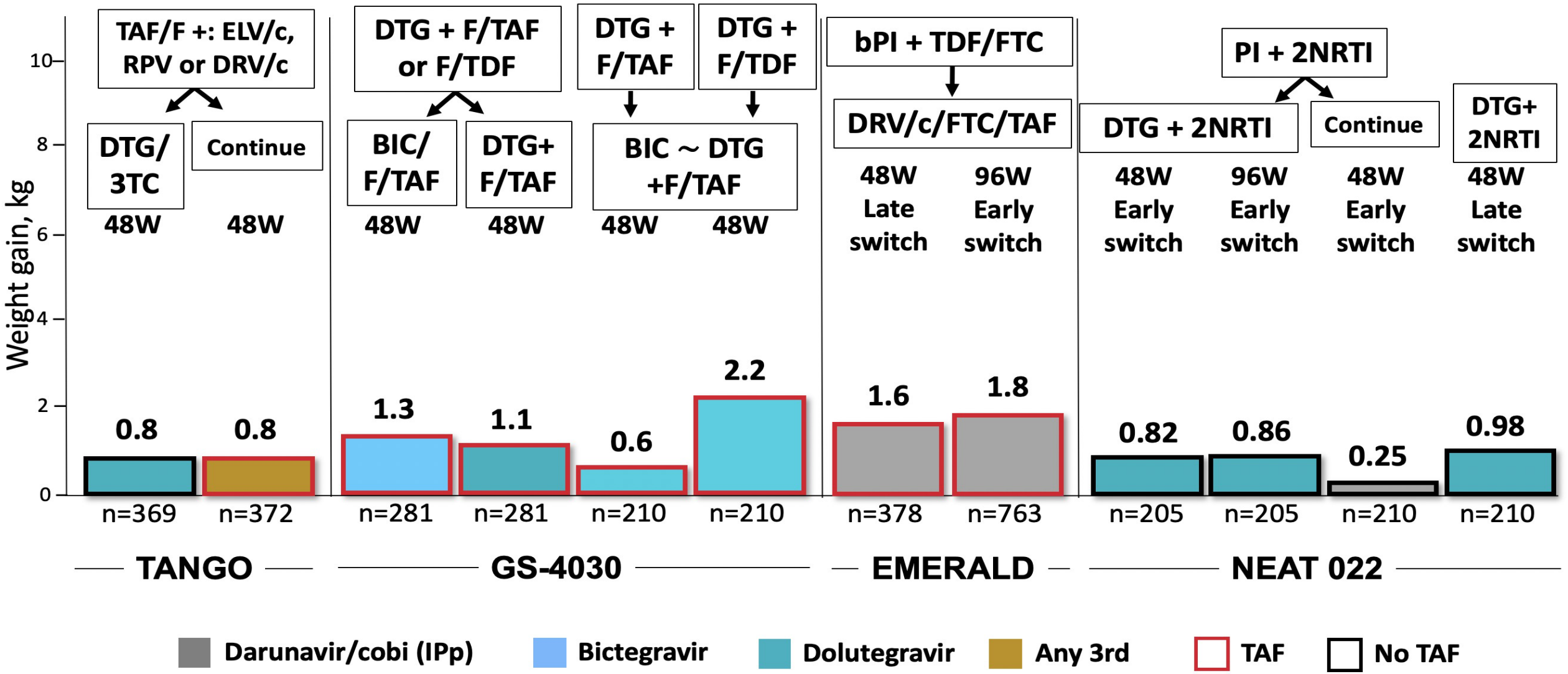
Rockstroh Glasgow 2020, P036, available at https://vimeo.com/464490138

Baseline Characteristics

	B/F/TAF n=290	SBR n=244	All B/F/TAF N=534
Median age, y	48	48	48
Male, %	84	81	82
Race/ethnicity, %			
Black or African descent	27	25	26
Hispanic/Latino	21	18	20
Median CD4 count, cells/μL	617	630	624
Co-infection, n			
Hepatitis B	8	6	14
Hepatitis C	5	3	8
Median $eGFR_{CG}$, mL/min	106	106	106
Baseline ARV regimen, %			
FTC/TDF, ABC/3TC	85, 16	86, 14	85, 15
DRV, ATV	57, 43	52, 48	54, 46



Rockstroh Glasgow 2020, P036, available at https://vimeo.com/464490138



Lipoatrophy and Obesity: Prevention and Management

Lipoatrophy	
Prevention • Avoid d4T and ZDV or pre-emptively switch. No evidence of benefit by switching other antiretrovirals • Avoid excessive weight loss due to diet and exercise • In ART-naïve persons, limb fat usually increases with initiation of ART not containing d4T or ZDV, reflecting "return-to-health" type of response	**Management** • Modification of ART: Switch away from d4T or ZDV – Increase in total limb fat ~400-500 g/year (in the first two years) – Risk of toxicity from new drug, see Adverse Effects of ARVs & Drug Classes • Surgical intervention – Offered for cosmetic relief of (facial) lipoatrophy only

-lifestyle intervention for at least 6-12 months that includes a reduction in calorie intake, an increase in physical activity and measures to support behavioral change

-Structured exercise focused on activities of daily living. 30 minutes of moderate intensity endurance exercise five or more days a week

-Dietary intervention that produces a daily energy deficit of 500-750 kcal based on personal and cultural preferences

- Consider behavioral intervention (motivational interviewing, stimulus control or cognitive re-structuring) along with self-monitoring; intensify behavioral inter- vention if a 2.5% weight loss is not achieved during the first month.

- **No data on ART switch**

- Treat underlying or associated conditions

- Bariatric surgery may be considered in persons with a BMI ≥ 40 kg/m2 or ≥ 35 kg/m2 with obesity-related comorbidities refractory to serious attempts at lifestyle changes

- **A Study of Darunavir/Cobicistat/Emtricitabine/Tenofovir Alafenamide (D/C/F/TAF) Evaluated as a Fixed Dose Combination Regimen in Participants Switching From an Integrase Inhibitor Who Have Experienced Rapid Weight Gain (DEFINE)**

- **Can INSTI-associated Weight Gain be Halted or Reversed With a Switch to Doravirine/Lamivudine/Tenofovir DF?**

- **Doravirine for Persons With Excessive Weight Gain on Integrase Inhibitors and Tenofovir Alafenamide**

Conclusioni

Aumento di peso nella popolazione generale , non solo in relazione ad infezione da HIV in trattamento

Data gap sul ruolo di alcuni fattori non-HIV correlati nell'aumento di peso (attività fisica, perdita di peso nei mesi precedenti l'osservazione, depressione, disordini del comportamento alimentare…)

Aumento di peso maggiore nel paziente naive, problema meno evidente nello switch

Entità dell'aumento di peso molto variabile, anche in relazione al contesto geografico e culturale ove vengono condotti gli studi

Implicazioni a lungo termine ancora da definire

- **Outcome clinico?**
- **Aderenza?**