

Women's Health and HIV: Age-related Comorbidities

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Disclosures

None

Learning Objectives

1

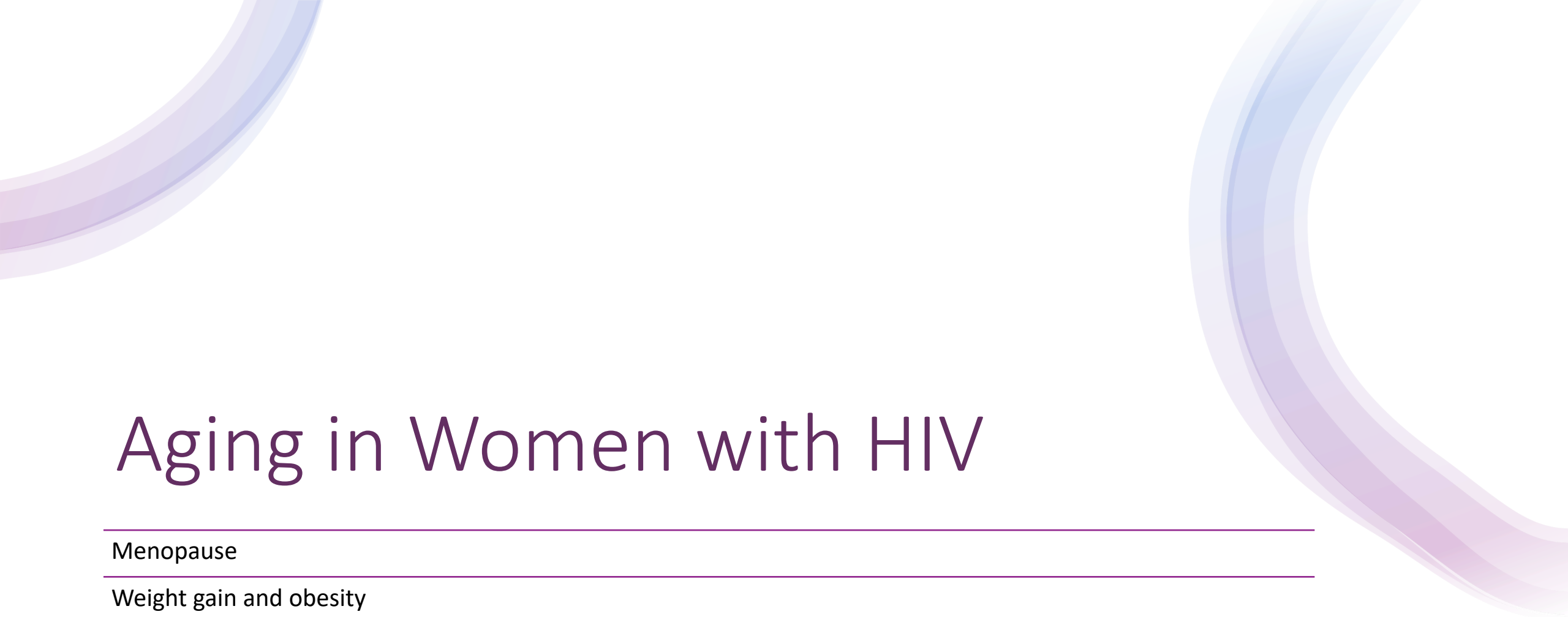
To describe the impact of aging on the health of women living with HIV

2

To understand cardiometabolic risk factors and prevention strategies associated with HIV and aging

3

To discuss the impact of aging on frailty and cognitive decline in women living with HIV



Aging in Women with HIV

Menopause

Weight gain and obesity

Cardiovascular risk

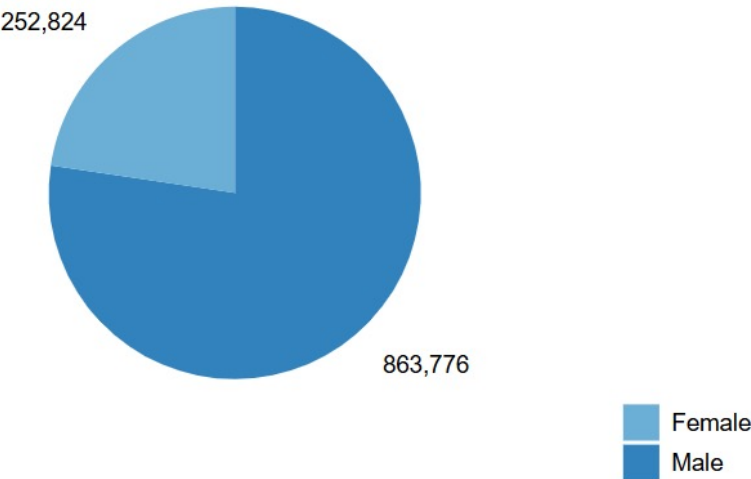
Bone health

Mental health

Frailty and cognitive decline

Women account for 23% of all PLWH in the US and over 50% of all PLWH worldwide

HIV prevalence | 2023 | Ages 13 years and older | All races/ethnicities | Both sexes | All transmission categories | United States



Explore CDC's **Atlas Plus** HIV • Hepatitis • STD • TB • Social Determinants of Health Data

Summary of the global HIV epidemic, 2024

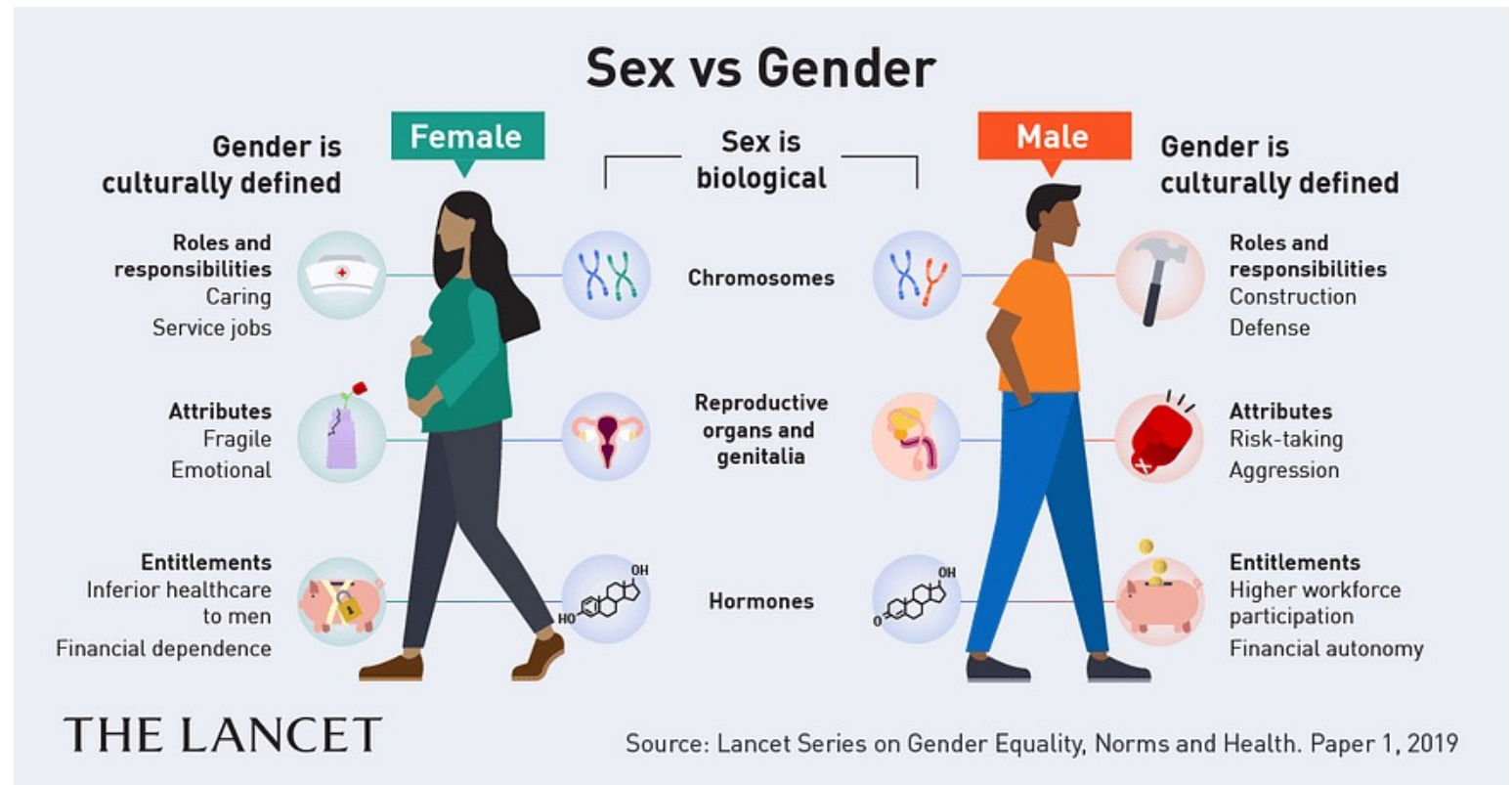
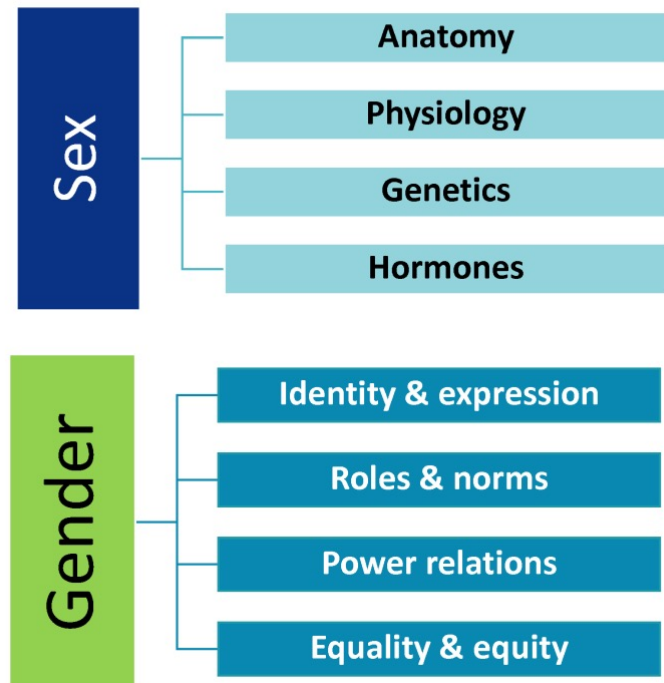
	People living with HIV	People acquiring HIV	People dying from HIV-related causes
Total	40.8 million [37.0–45.6 million]	1.3 million [1.0–1.7 million]	630 000 [490 000–820 000]
Adults (15+ years)	39.4 million [35.7–44.0 million]	1.2 million [950 000–1.5 million]	550 000 [430 000–720 000]
Women (15+ years)	21.0 million [19.0–23.5 million]	530 000 [410 000–710 000]	240 000 [180 000–320 000]
Men (15+ years)	18.5 million [16.5–20.7 million]	650 000 [530 000–830 000]	320 000 [240 000–410 000]
Children (<15 years)	1.4 million [1.1–1.8 million]	120 000 [82 000–170 000]	75 000 [53 000–110 000]

Note: The 2024 estimates were made before the implementation of cuts to foreign aid.

Source: UNAIDS/WHO estimates, 2025.

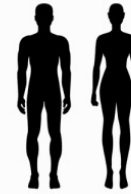
Impact of Sex and Gender on HIV in Women

Domains of Sex and Gender



Impact of Sex on HIV in Women

- HIV acquisition
- Lower viral load set point
- Lower CD4 counts at similar viral loads
- Immune activation and inflammation
- Responses to antiretroviral therapy (ART) and side effects
- Comorbidities
- Impact of menopause



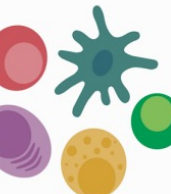
Anatomic Differences:

- Acquisition sites: female genital tract versus rectal mucosa
- Hormonal modulation of risk at the female genital tract
- Drug penetration to mucosal sites



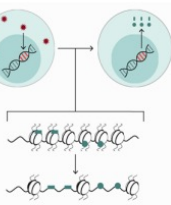
Genetic differences:

- Gene dosage effects of X chromosome encoded genes/incomplete X inactivation
- Regulatory function of X-encoded microRNAs
- Estrogen responsive elements in promoters of multiple immune active genes



Immune cell phenotypes:

- Higher interferon alpha production from plasmacytoid dendritic cells from women
- Sex differences in the efficacy of vaccines
- Hormone modulation of immune cell function



Latency maintenance:

- Estrogen blockade of HIV transcriptional activation
- Sex specific epigenetic modifications in immune cells



Microbiome:

- Female genital tract and rectal mucosa with distinct microbiome compositions that determine local inflammation and acquisition risk
- Direct effects of the vaginal microbiome on local antiretroviral drug levels
- Sex hormone modulation of the gut microbiota that contributes to systemic inflammation

Impact of Gender on HIV in Women

- Gender norms
- HIV risk perception
- Negotiating safer sex
- Gender-based and intimate partner violence
- Stigma and discrimination
- Economic inequality
- Putting others' needs first
- Gender bias in health systems and research
- Intersectionality

<https://www.cominit.com/content/good-practice-guide-gender-transformative-hiv-programming>
<https://frontlineaids.org/resources/gender-transformative-approaches-to-hiv-good-practice-guide/>

Gupta GR et al. *Lancet* 2019;393(10190):2550-2562

Heise L et al. *Lancet* 2019;393(10189):2440-2454



Impact of Sex and Gender on HIV in Women

HIV acquisition

Delayed HIV diagnosis/Illness at diagnosis

Access to healthcare and antiretroviral therapy (ART)

ART side effects and adherence

Healthcare utilization

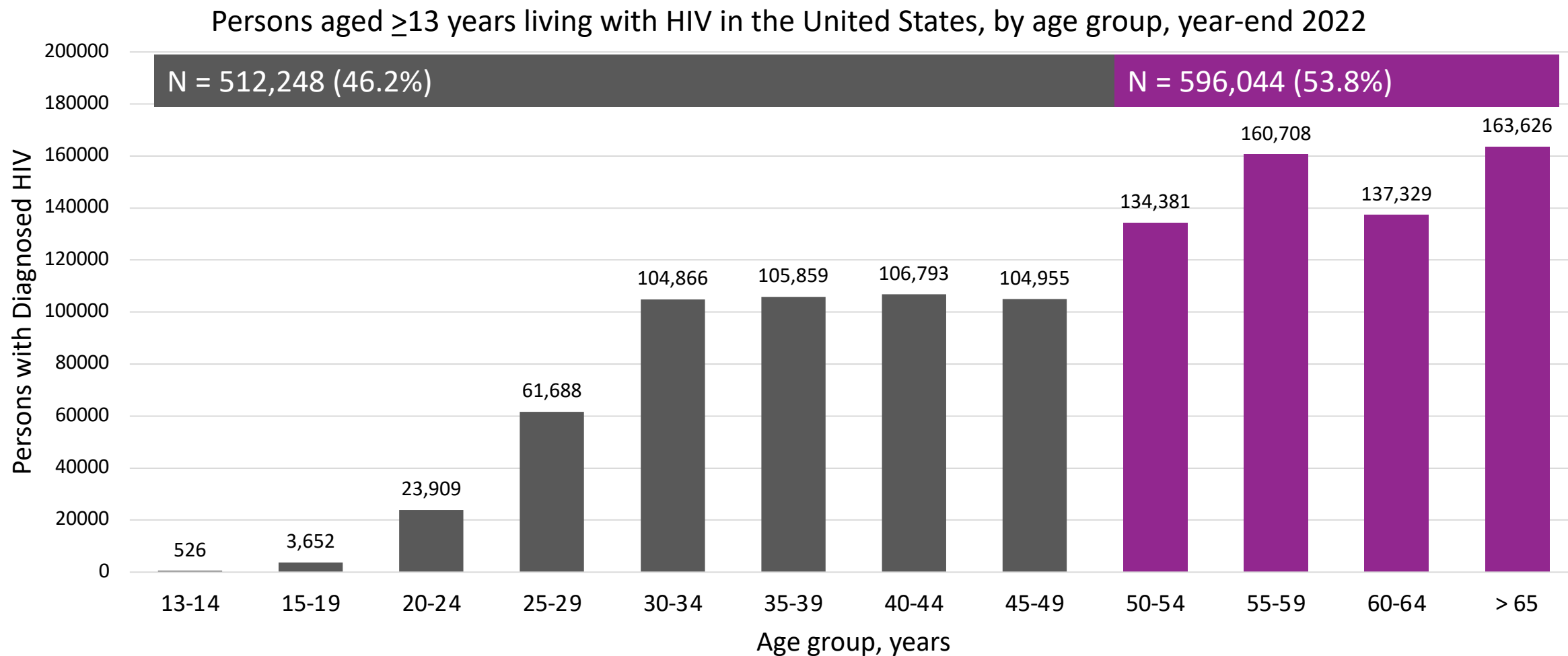
Inclusion of women in biomedical research

Promoting Healthy Aging in Women with HIV

“Being able to do the things we value for as long as possible”



Over 50% of People with HIV in the U.S. are over Age 50



Source: Centers for Disease Control and Prevention. *HIV Surveillance Report*, 2022; <https://stacks.cdc.gov/view/cdc/156509> May 2024. Accessed October 2024.

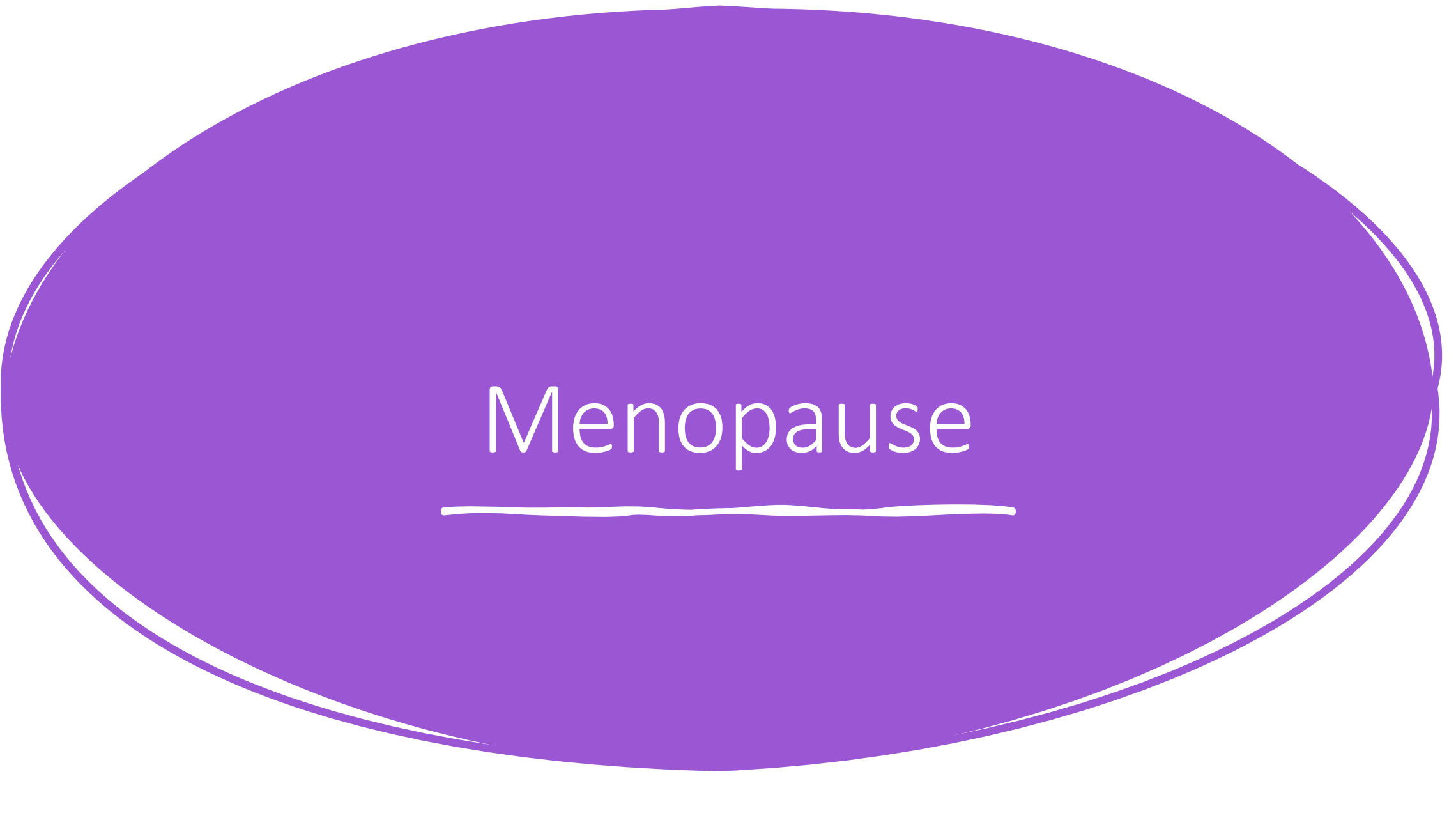
**BY 2030, UP TO
70% OF PEOPLE
WITH HIV WILL BE
OVER THE AGE OF 50.**





“To suggest that in order to age successfully, one must age in the absence of disease is unrealistic if not ageist, ignoring the diversity that exists in the health of older adults.”

Emlet CA et al. *Ageing and Society*. 2017;37(10):2128-2151

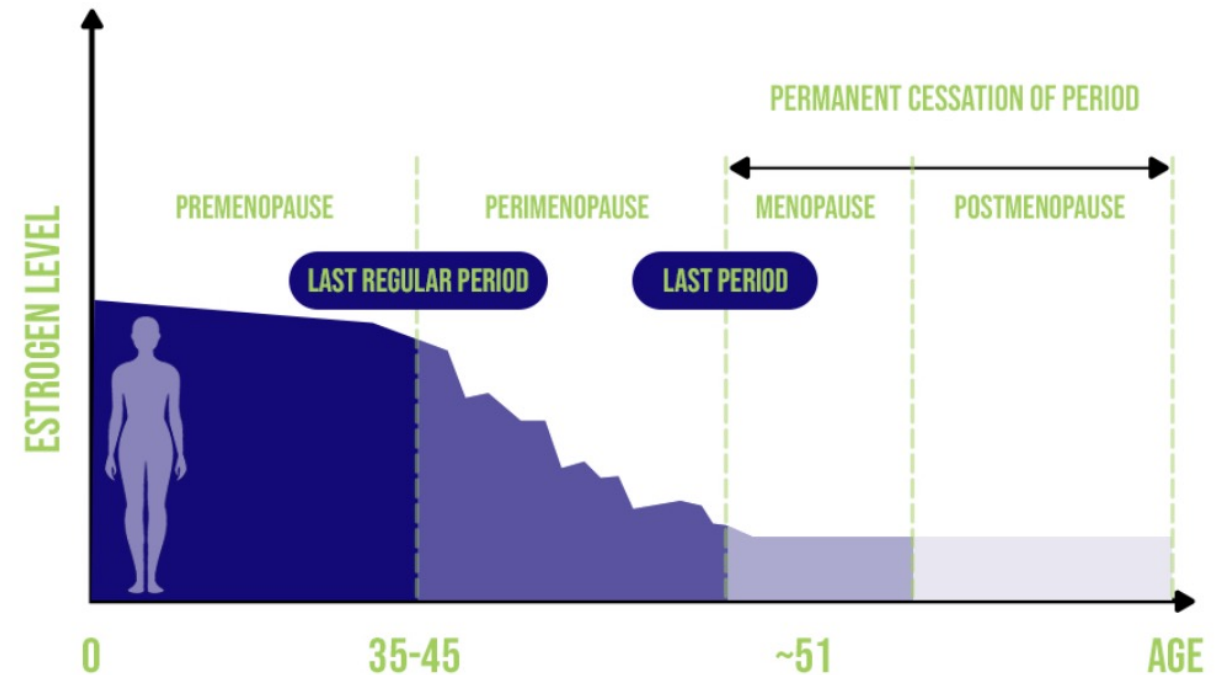


Menopause

Menopause

- 12 months after the final menstrual period
- Average age: 45-55 (possibly younger in women with HIV)
- Ovaries stop producing estrogen
- Results in important health changes
 - Weight gain
 - Cardiovascular risk
 - Bone loss
- Most women with menopausal symptoms do not receive effective, approved, evidence-based therapy

STAGES OF THE MENOPAUSE TRANSITION



Menopause in women with HIV

Biopsychosocial impact

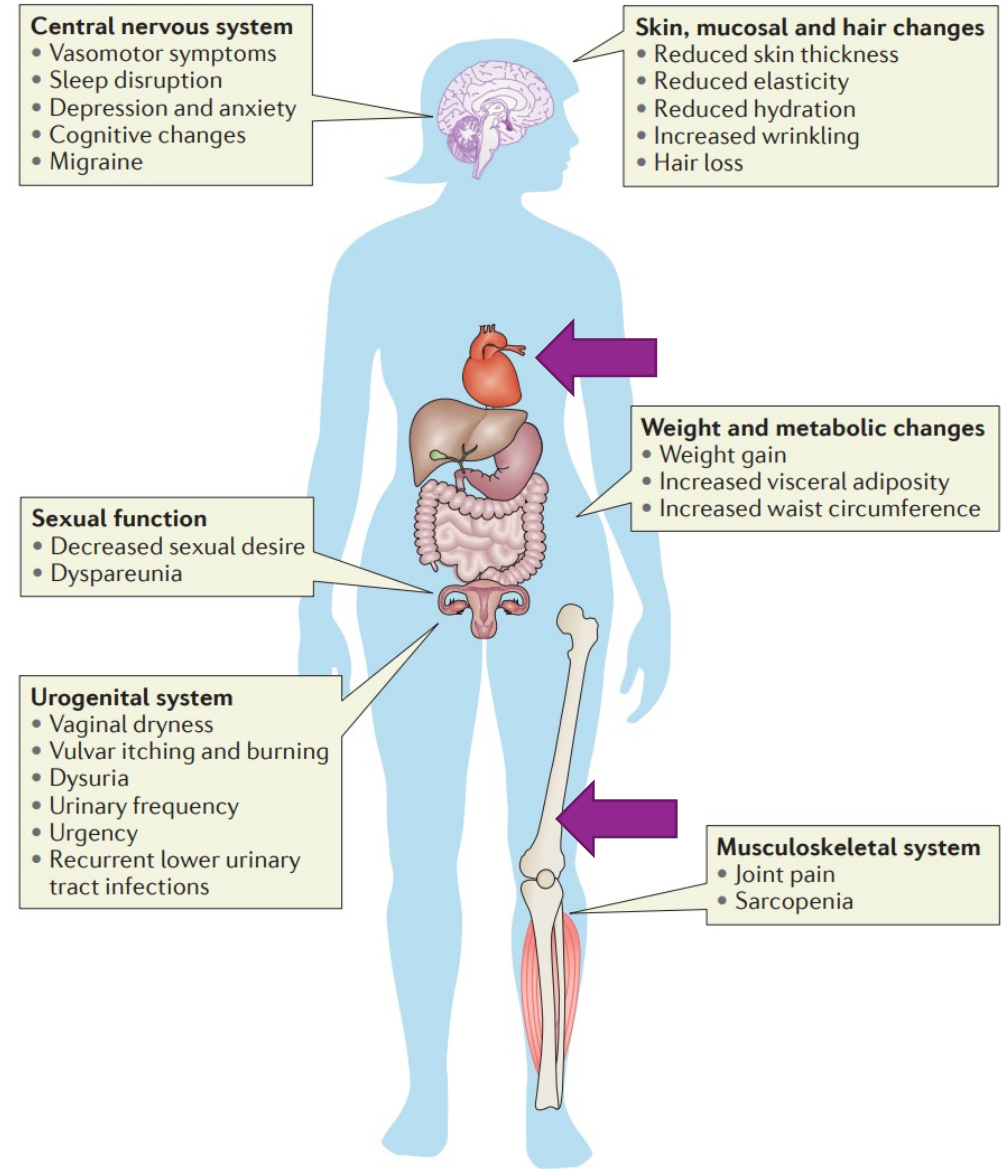
- Comorbidity risk
 - Heart disease
 - Osteoporosis (bone disease)
- Psychological impact
 - Anxiety/depression
 - Irritability
 - Difficulty concentrating

Menopause timing

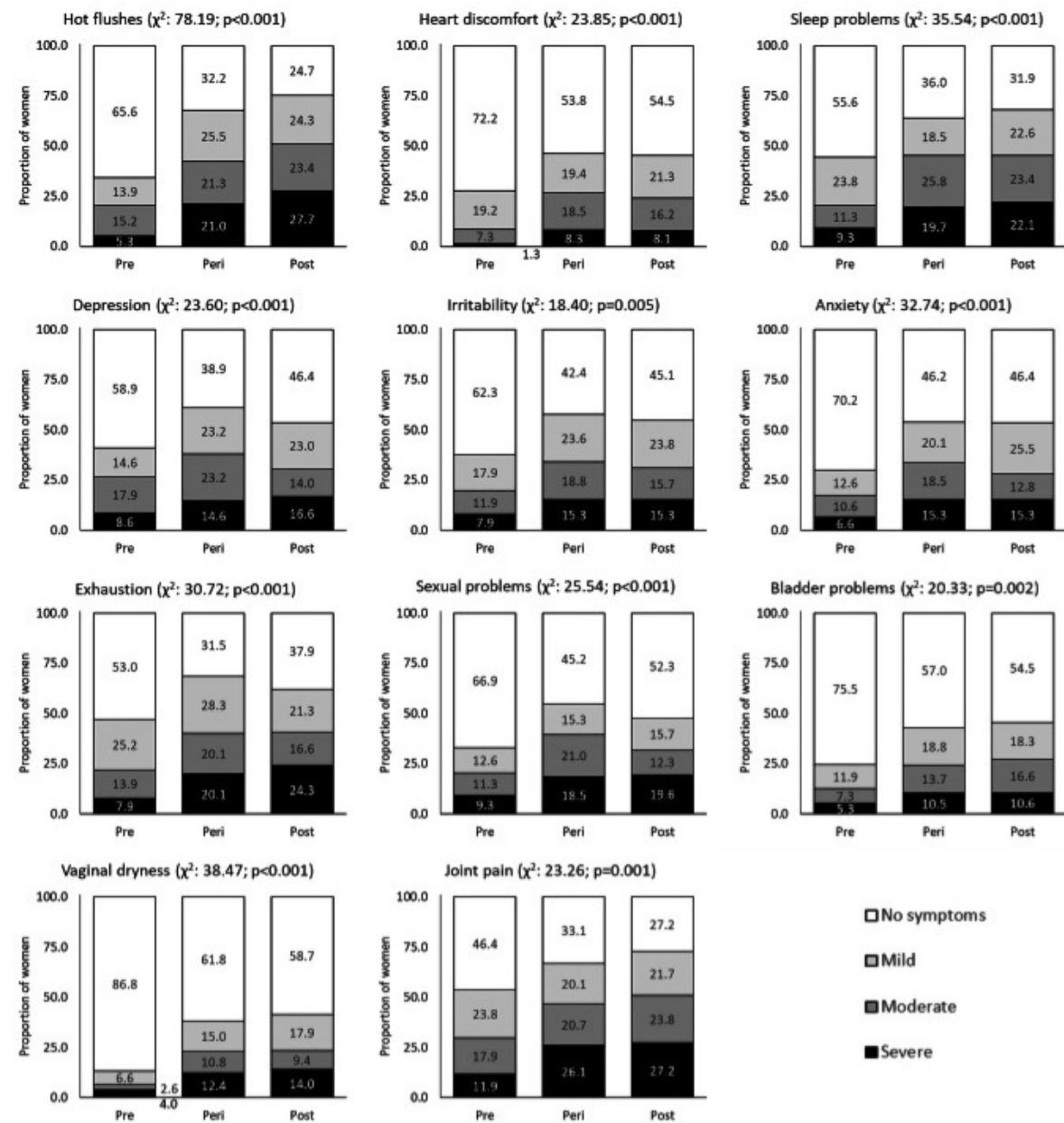
- Smoking
- Detectable HIV viral load
- Hepatitis C virus coinfection

Symptom burden and severity

- Hot flashes
- Fatigue
- Muscle aches/joint pains
- Insomnia
- Sexual health and well-being

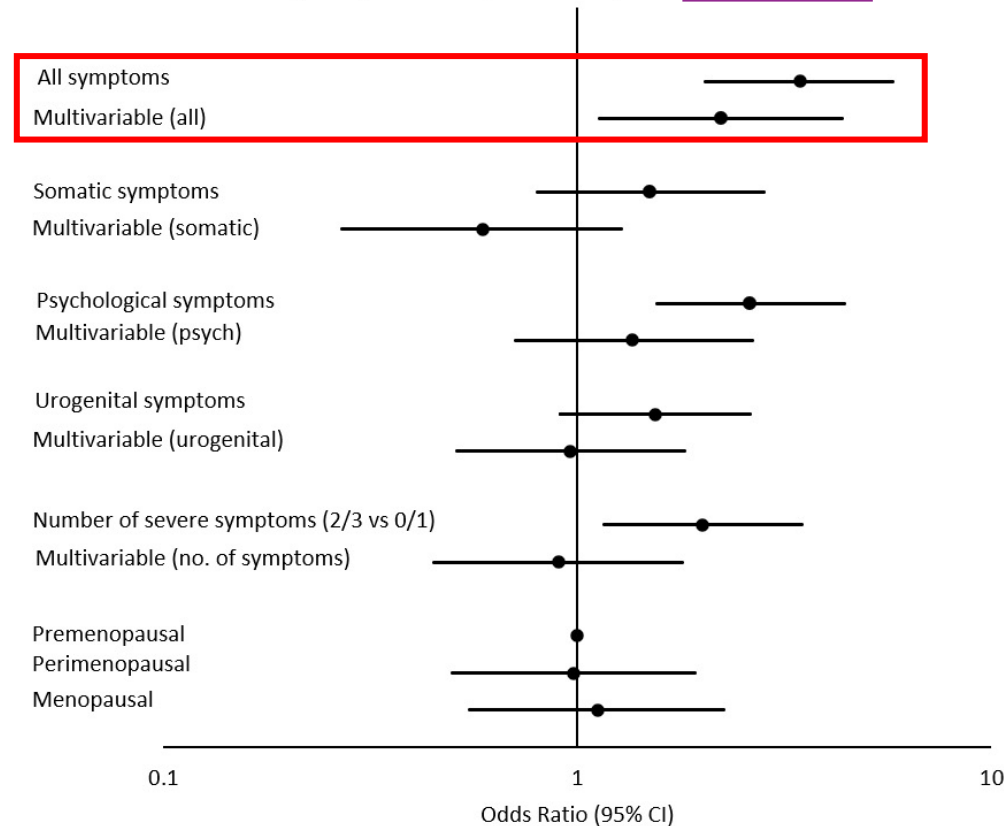


Menopause symptoms are common in women with HIV

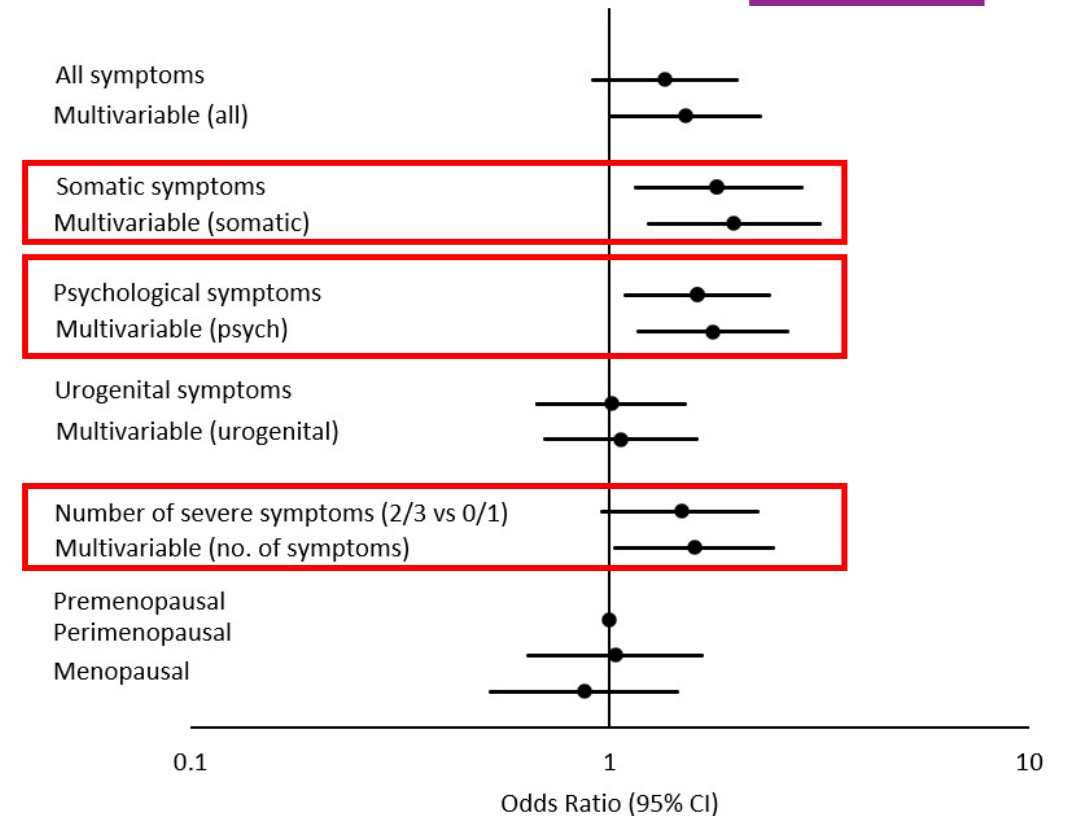


Severe menopause symptoms are associated with reduced quality of life, poorer mental health, and poorer engagement in HIV care

Univariable and multivariable logistic regression analyses of the association between menopausal symptoms (severe vs. none/mild/moderate) and suboptimal ART adherence



Univariable and multivariable logistic regression analyses of the association between menopausal symptoms (severe vs. none/mild/moderate) and suboptimal HIV clinic attendance



Solomon D et al. *AIDS Care*. 2021;33(1):101-108

Haag K et al. *Menopause*. 2022;29(4):421-429

Okhai H et al. *Women's Health (Lond)*. 2022;18:17455065211068722.

Treatment options for menopause symptoms



Systemic menopause hormone therapy

- Estrogen (no uterus)
- Estrogen + progestin (uterus)



Topical hormone therapy

- Low-dose vaginal estrogen
 - For vaginal dryness
 - Prevents recurrent UTIs



Non-hormonal medication

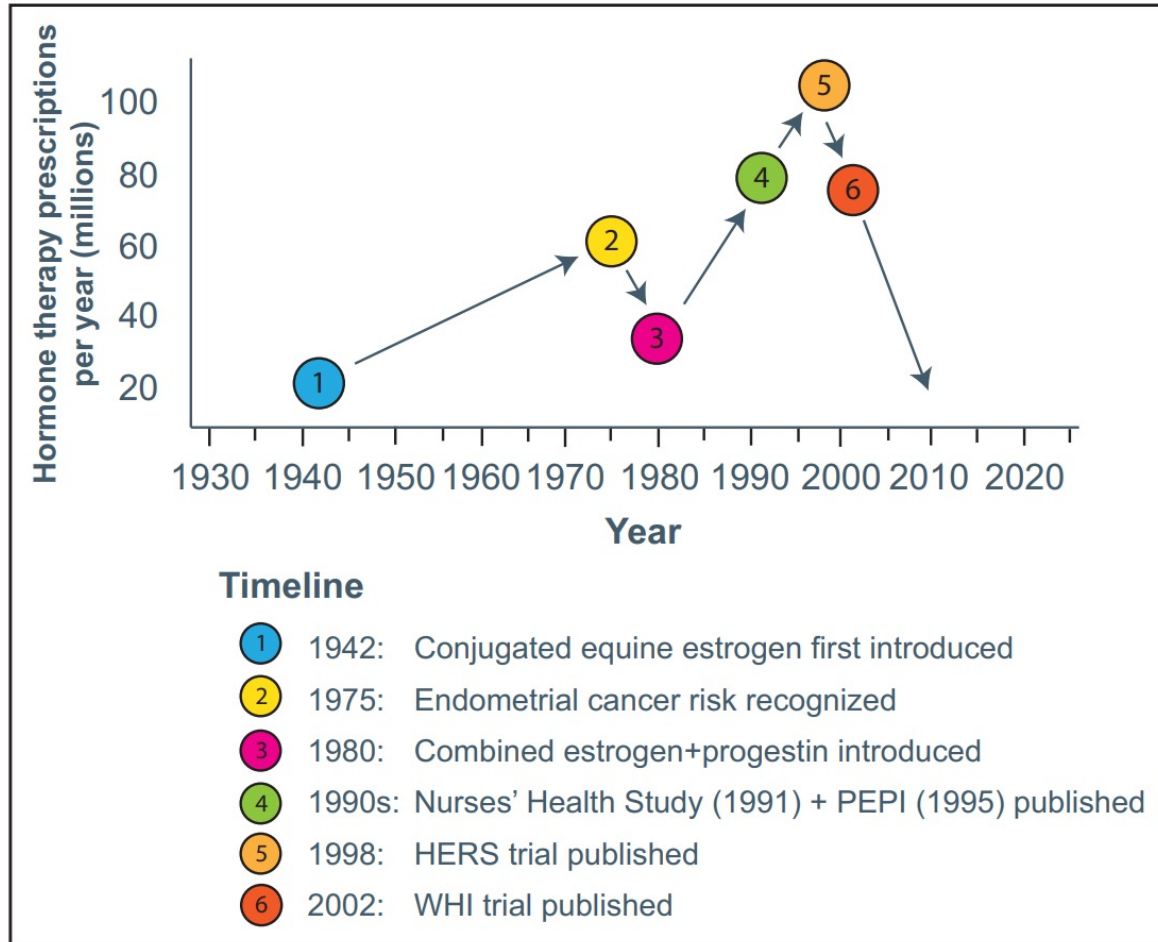
- Sleep aids
- Antidepressants (citalopram, venlafaxine, paroxetine)
- Gabapentin
- Clonidine
- Oxybutynin
- Neurokinin B receptor antagonists



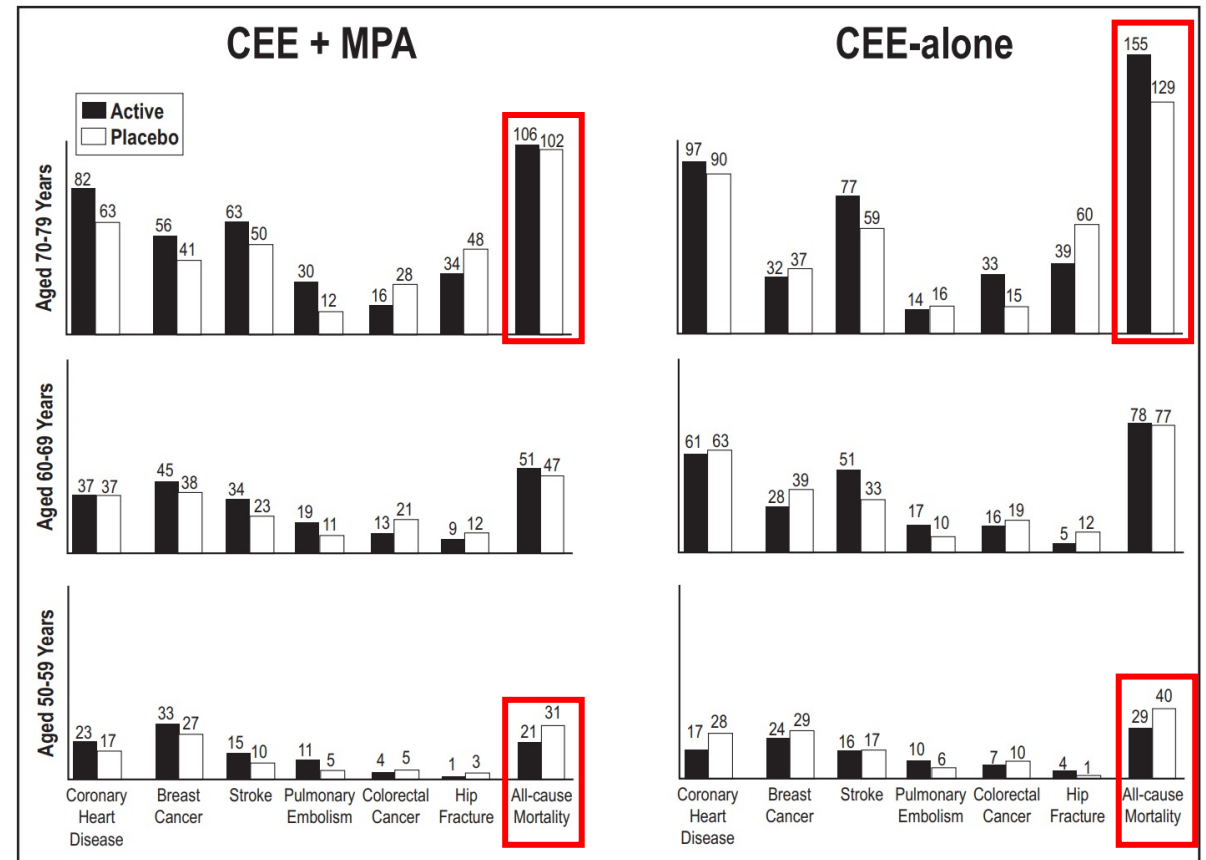
Non-pharmacologic treatments

- Cognitive behavioral therapy
- Hypnotherapy
- Acupuncture

A brief history of menopausal hormone therapy

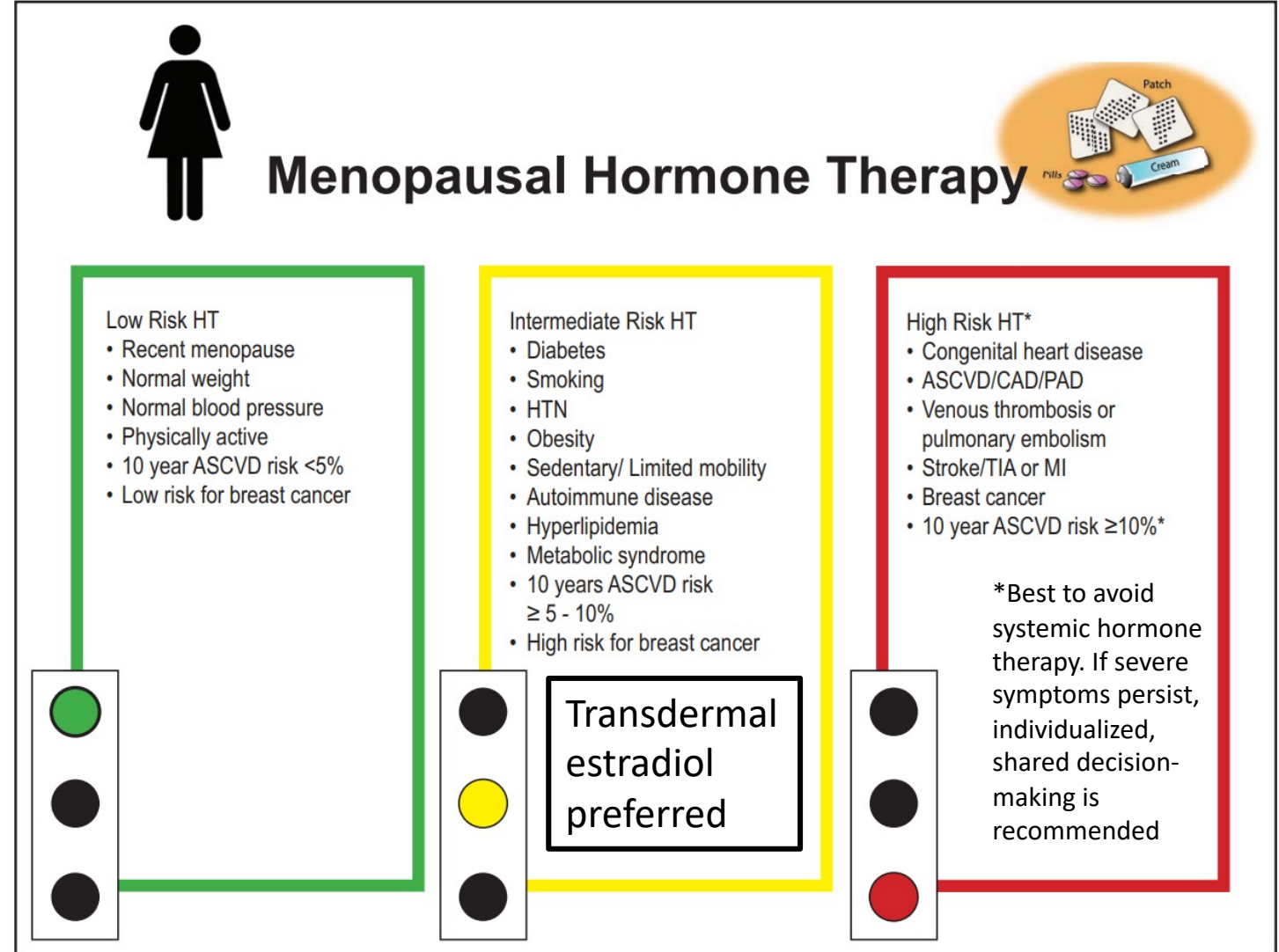


The Timing Hypothesis



Recommendations for menopausal hormone therapy

- Age <60, within 10 years of last menstrual period
- For vasomotor symptoms
- Lowest dose for the shortest time
- Indicated for premature (<40) and early (40-45) menopause



Menopausal hormone therapy is underutilized in women with HIV

Use of MHT

- Vancouver study: 12% offered, 5.5% uptake¹
- WHS study: 23% reported ever use, 8% reported current use²
- Swiss HIV Cohort Study: 11% use³

Reasons for underuse

- Provider knowledge/comfort
- Concern for drug-drug interactions with ART
- Pill burden
- Concerns about side effects

¹Duff PK et al. *Menopause*. 2018;25(5):531-537

²Peters BA et al. *Clin Infect Dis*. 2023;76(3):e661-e670

³Hachfeld A et al. *HIV Med*. 2022;23(4):417-425

King EM et al. *Lancet HIV*. 2021;8(9):e591-e598

Untreated menopause symptoms are linked to a lack of discussion with HIV care providers

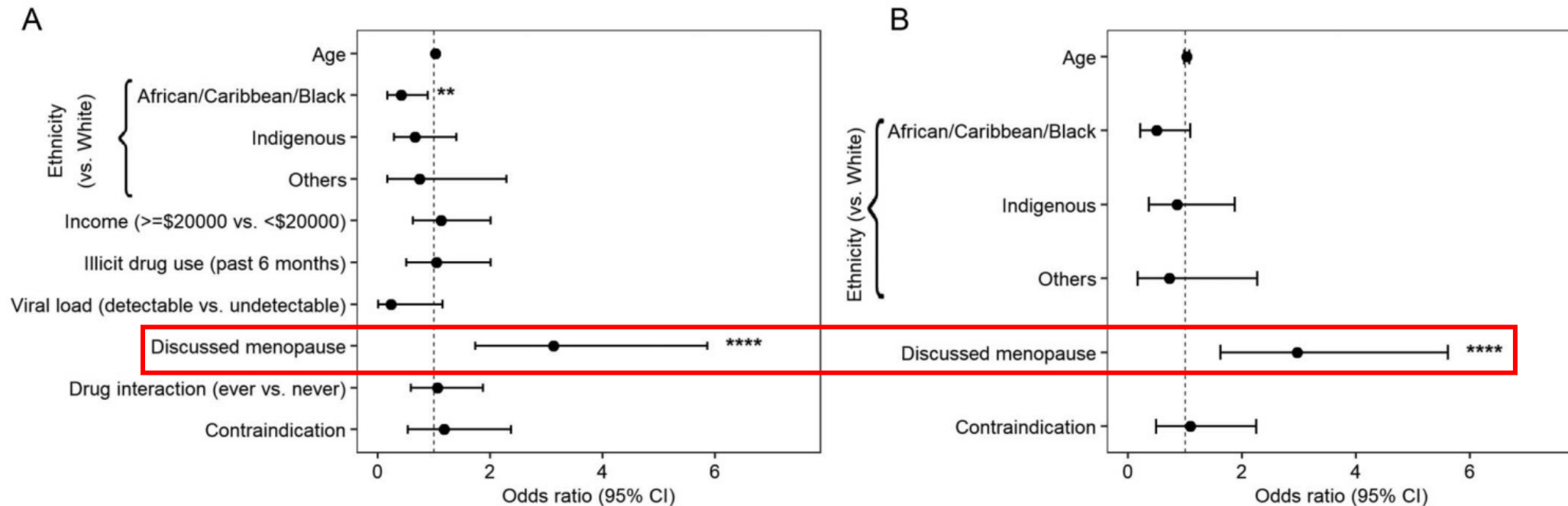
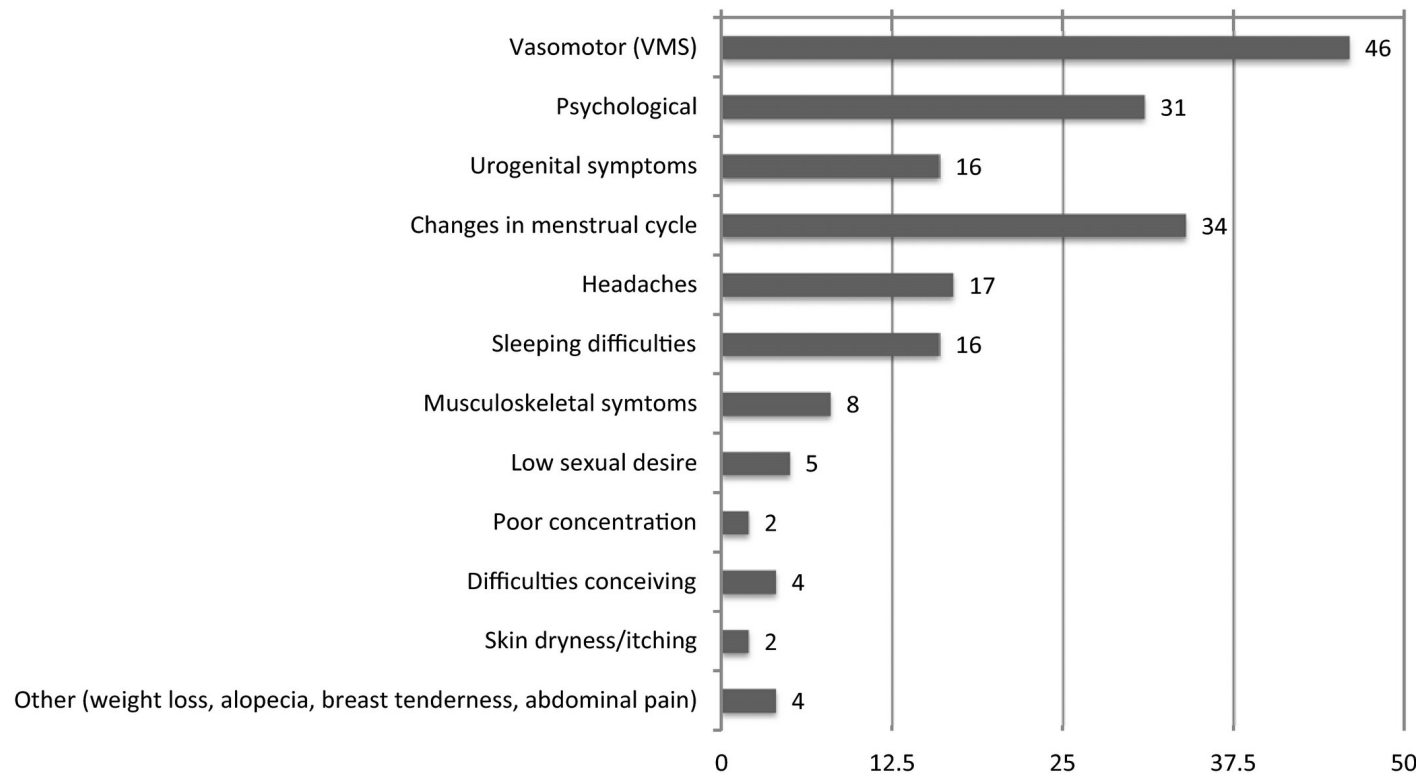


FIGURE 1. Univariable (A) and multivariable (B) analyses of factors associated with ever using menopausal hormone therapy in perimenopausal/menopausal women living with HIV (n = 464). ** $P < 0.05$; **** $P < 0.001$.

97.8% had regular HIV follow-up (71.8% with ID, 17.2% with general practitioner)
44.8% ever discussed menopause (35.9% Black, 37.2% Indigenous vs 50.6% white)
47.8% had a first-line indication for MHT
11.8% ever used MHT (16.5% with early menopause)

Speak up! Women with HIV who are treated with MHT have menopause symptom improvement



Key:

- Vasomotor symptoms: hot flushes, sweats and palpitations
- Psychological symptoms: labile mood, depression, anxiety, irritability and fatigue
- Urogenital symptoms: vaginal dryness, urinary tract symptoms and dyspareunia
- Changes in menstrual cycle: Any change of normal menstrual cycle due to menopause transition
- Musculoskeletal symptoms: joint and/or muscle pains

HIV Menopause Clinic

- 55 women
- Average age: 49 years
- Average symptom duration: 31 months
- 73% prescribed MHT (transdermal patch > oral)
- Median MHT duration: 10 months
- 73% reported symptom improvement

Treatment options for menopause symptoms



Systemic menopause hormone therapy

- Estrogen (no uterus)
- Estrogen + progestin (uterus)



Topical hormone therapy

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Non-hormonal medication

- Sleep aids
- Antidepressants (citalopram, venlafaxine, paroxetine)
- Gabapentin
- Clonidine
- Oxybutynin
- Neurokinin B receptor antagonists

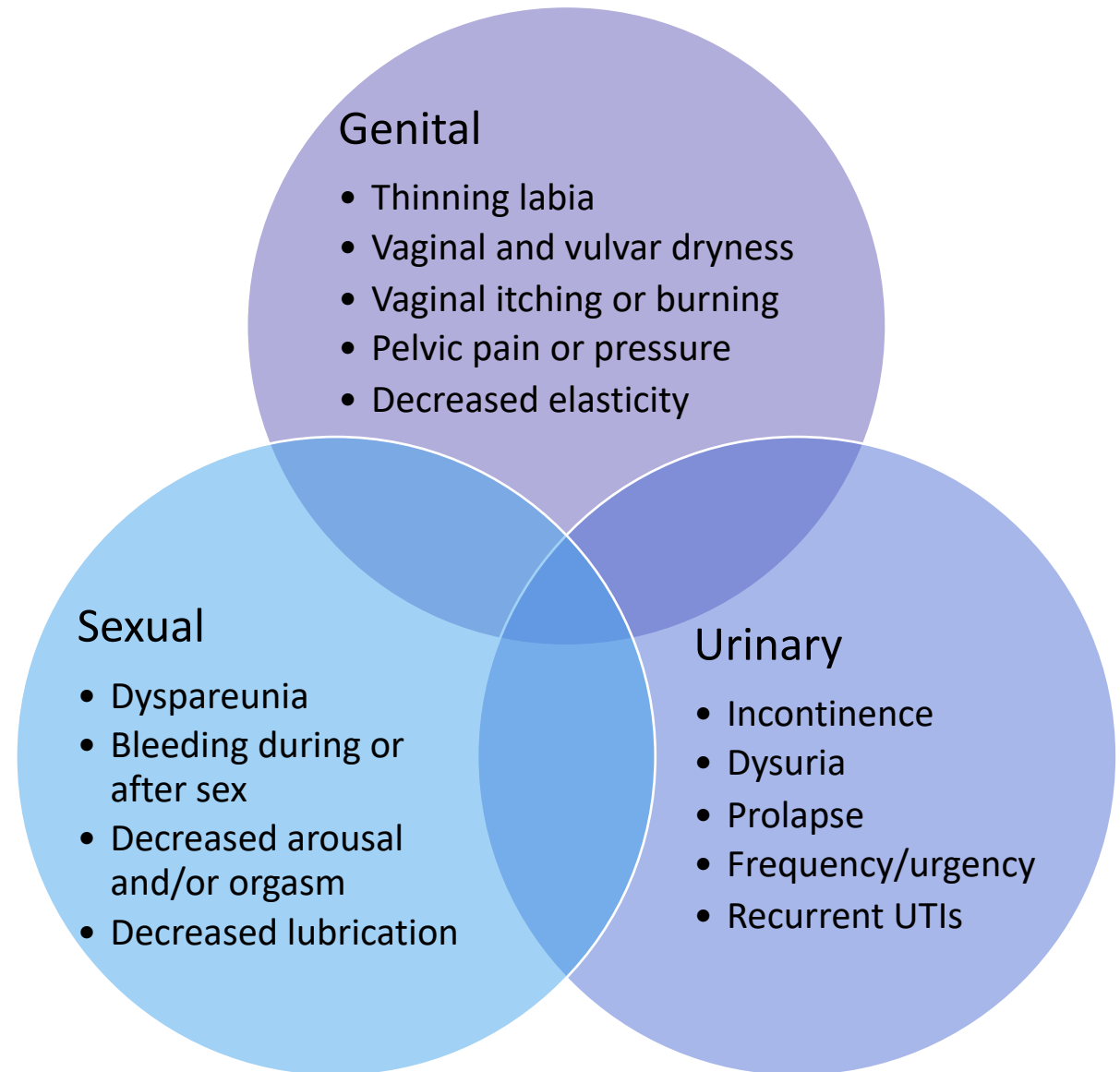


Non-pharmacologic treatments

- Cognitive behavioral therapy
- Hypnotherapy
- Acupuncture

Genitourinary Syndrome of Menopause

- Highly prevalent (up to 84% of women 6 years after menopause)
- Generally progressive (in contrast to vasomotor symptoms)
- Caused by estrogen withdrawal to vagina, vulva, and bladder
- Can be treated with nonhormonal (lubricants) and hormonal (vaginal estrogen) therapies
- Almost all women are candidates for low-dose vaginal estrogen therapy for genitourinary symptoms of menopause regardless of cardiovascular risk



Treatment options for menopause symptoms



Systemic menopause hormone therapy

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Non-pharmacologic treatments

- Cognitive behavioral therapy
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Nonhormone therapy for vasomotor symptoms

Recommended

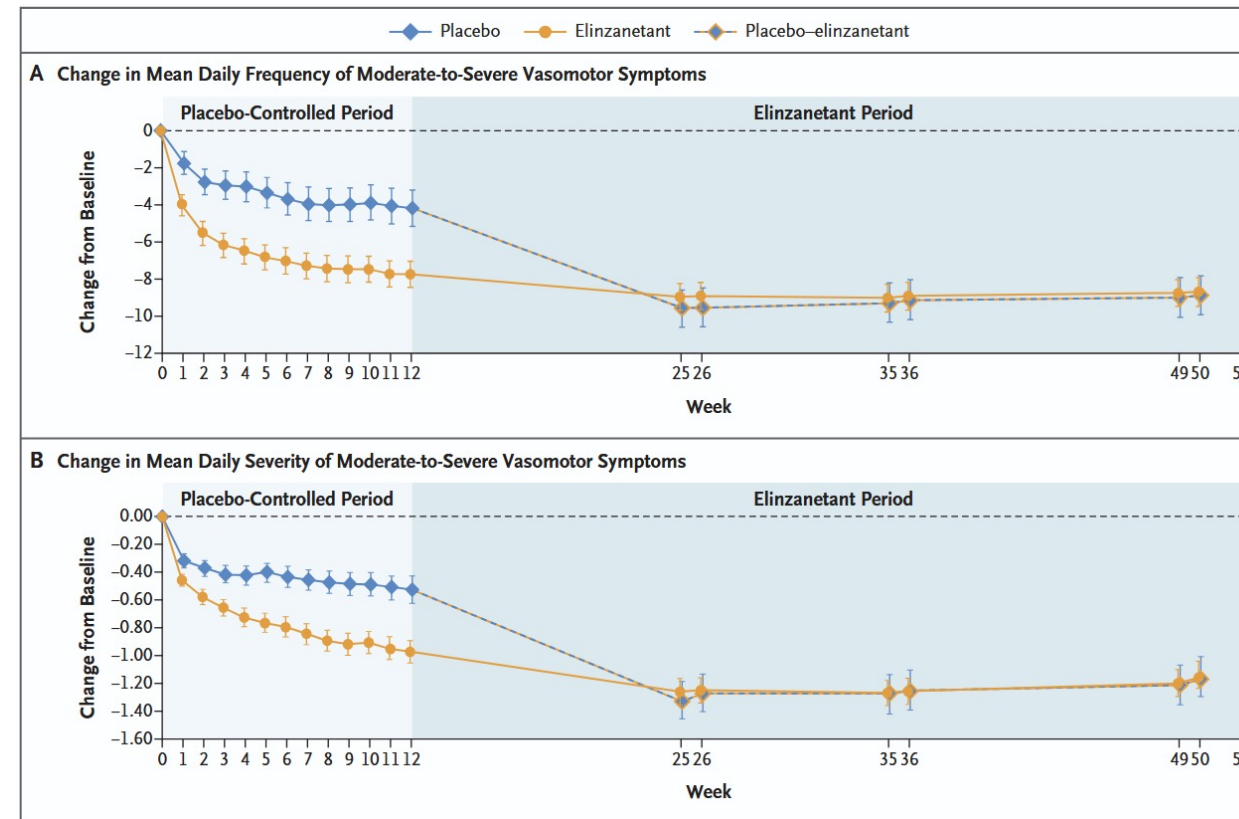
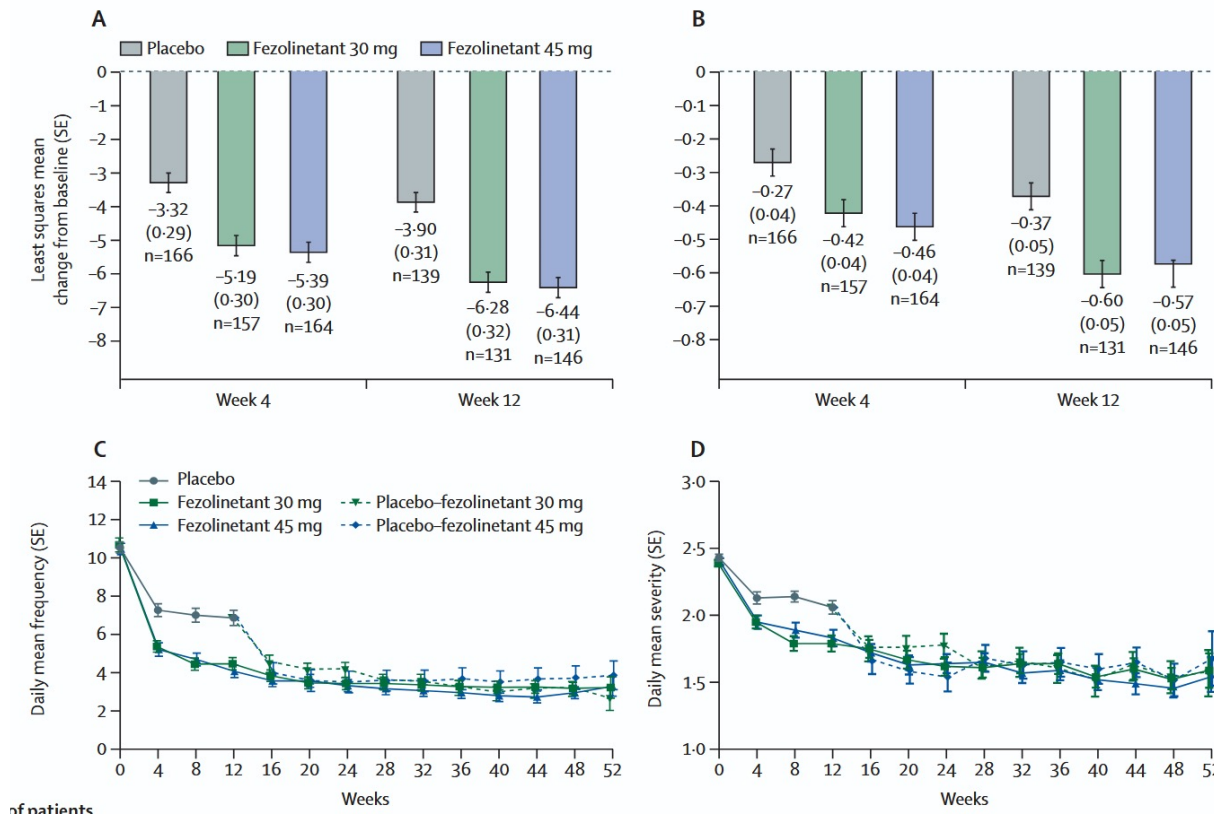
- Cognitive-behavioral therapy
- Clinical hypnosis
- Weight loss
- SSRIs/SNRIs
 - Paroxetine*, escitalopram, citalopram, venlafaxine, desvenlafaxine (large RCTs)
 - Duloxetine (smaller studies)
- Gabapentin
- Oxybutynin
- Fezolinetant* (neurokinin B antagonist)
- Stellate ganglion block

*FDA approved indication for VMS

Not recommended

- Cooling techniques
- Avoiding triggers (e.g., alcohol, caffeine, spicy foods, hot beverages)
- Exercise and yoga
- Dietary modifications (e.g., soy, plant-based)
- Mindfulness-based interventions, paced respiration, relaxation
- Pregabalin
- Clonidine
- Suvorexant
- Dietary supplements
- Cannabinoids
- Acupuncture

Neurokinin B antagonists are effective non-hormone therapies for vasomotor symptoms



Lederman S et al. *Lancet*. 2023 Apr 1;401(10382):1091-1102.
 Cardoso F et al. *N Engl J Med*. 2025 Aug 21;393(8):753-763.

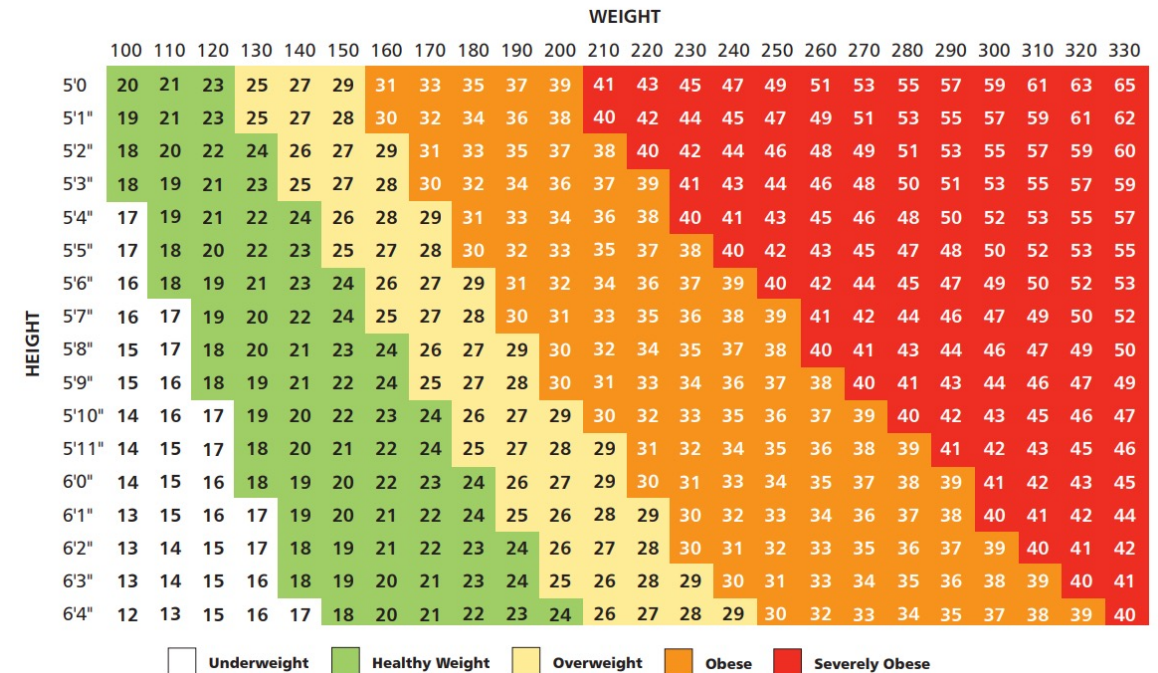
Weight Gain and Obesity in Women with HIV

Effects of antiretroviral therapy

Obesity management options

What is obesity?

- Obesity is:
 - Weight that is higher than what is considered healthy for a given height (BMI ≥ 30 kg/m²)
 - A chronic medical condition
 - Very common (41% of U.S. adults have obesity)
 - Associated with stigma and difficulty accessing medical care
- Obesity is NOT:
 - A sign of laziness, disregard for health, or lack of self-control
- Not all obesity is the same:
 - Sarcopenic obesity (lack of muscle)
 - Abdominal obesity



Source: <https://www.cdc.gov/obesity/index.html>
<https://www.eatsmartmovemorenc.com/resource/bmi-chart/>

Many Americans lack healthy, affordable foods and places to be active.



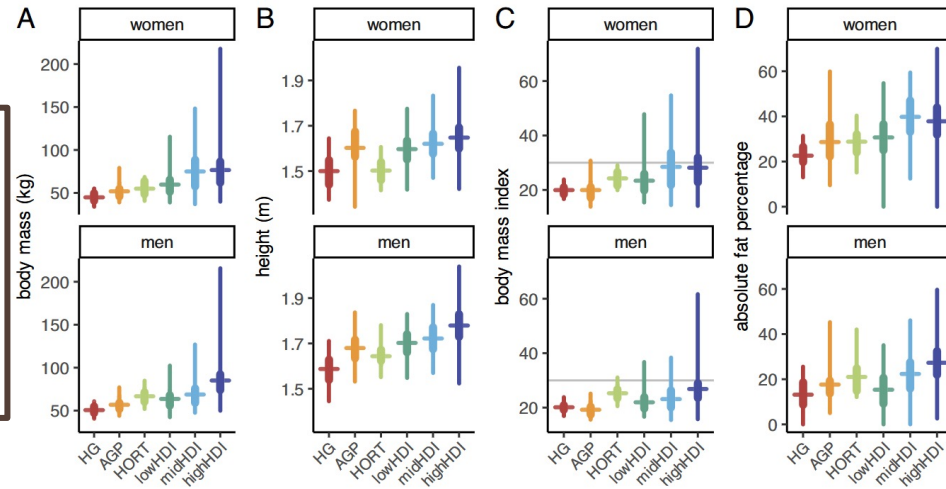
More than **half of Americans** don't live within half a mile of a park.



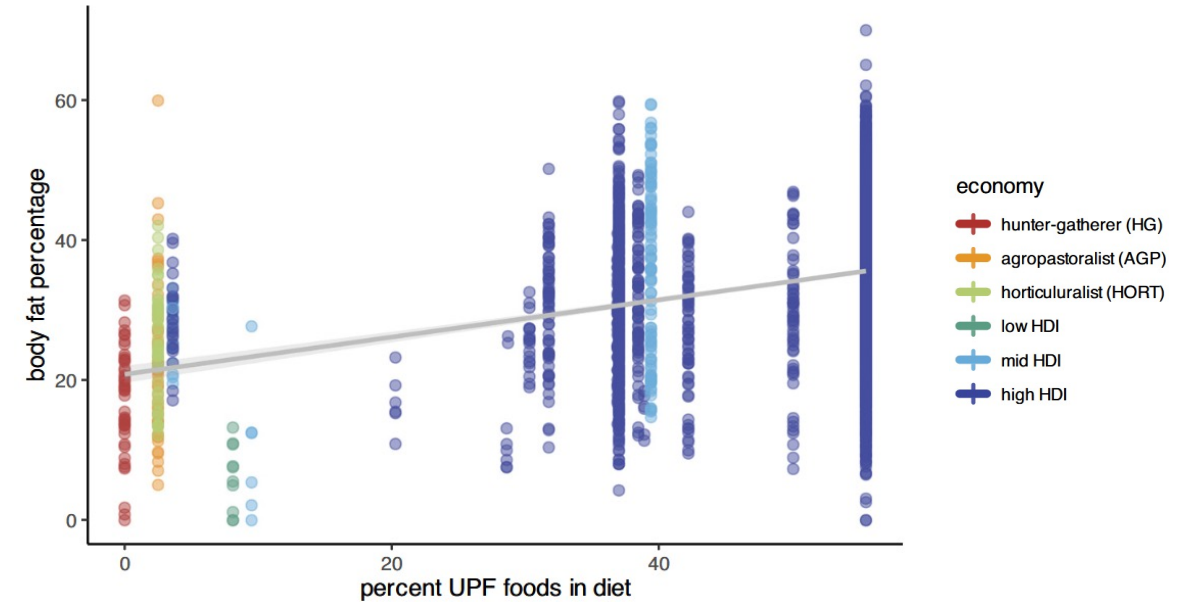
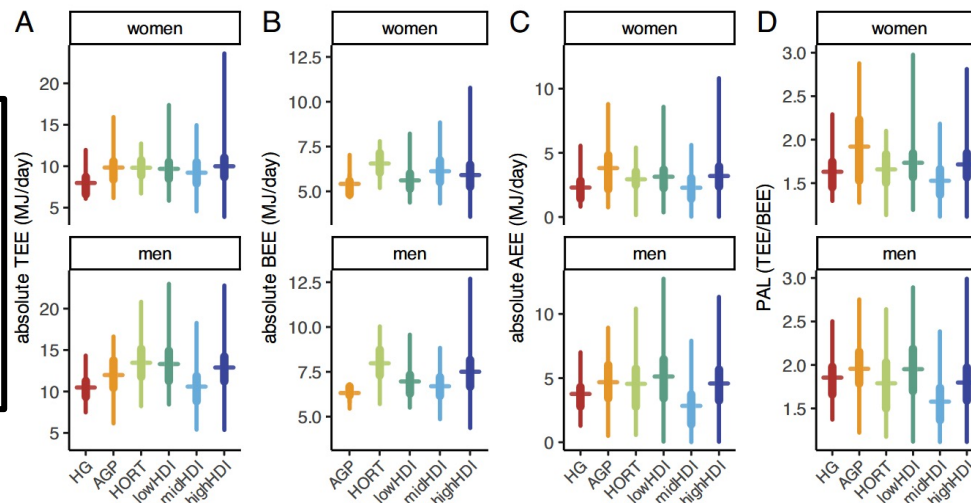
40% of all US households do not live within 1 mile of healthier food retailers.

Dietary intake plays a larger role than exercise in driving obesity across societies

Body size is higher in more developed countries



Energy use is similar across global economies

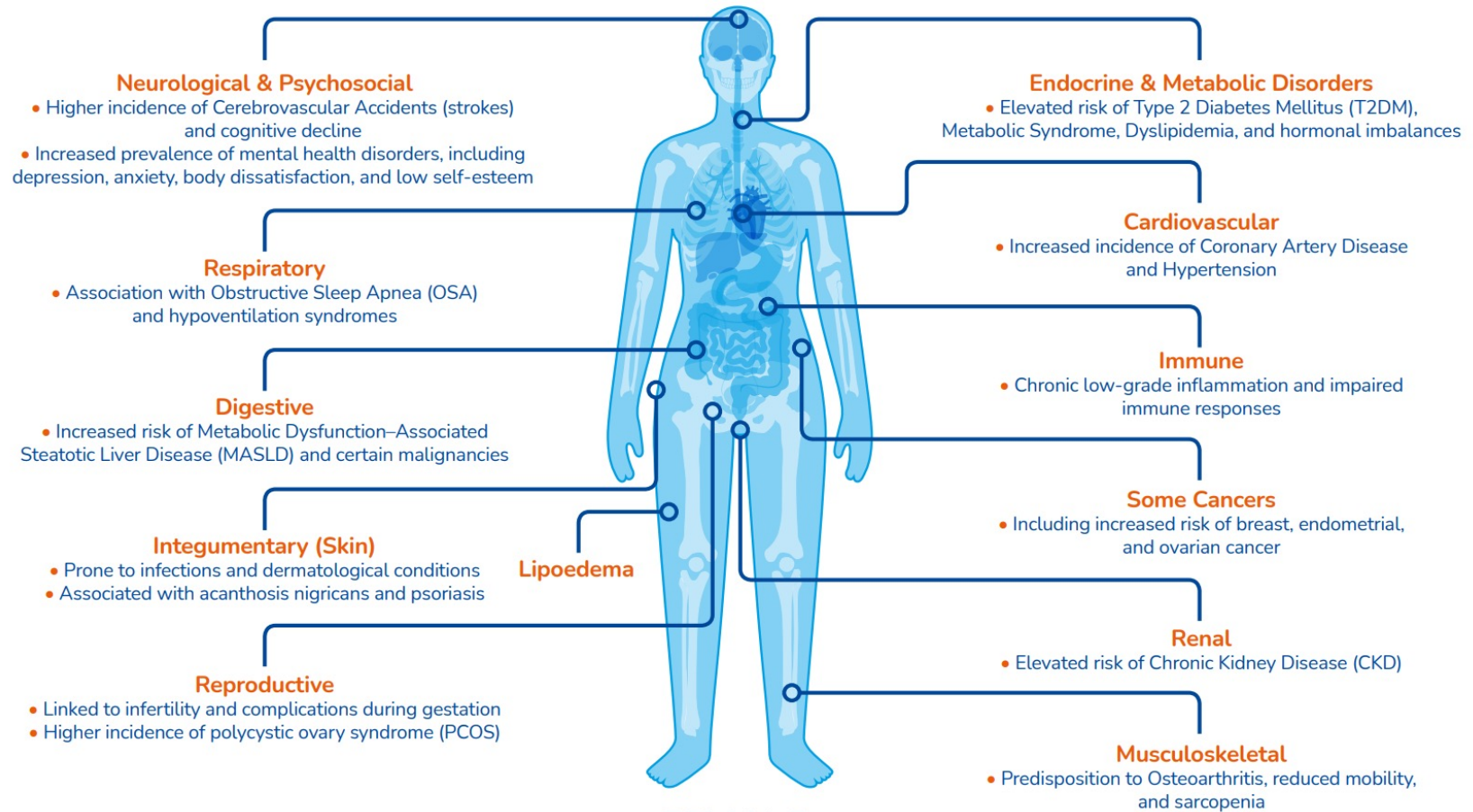


Ultra-processed foods are associated with higher body fat percentage

Conclusions:

- Calorie intake is about 10x more important than exercise in driving obesity
- Ultra-processed foods may be more likely to be associated with obesity

Obesity affects most organ systems



FEMALE

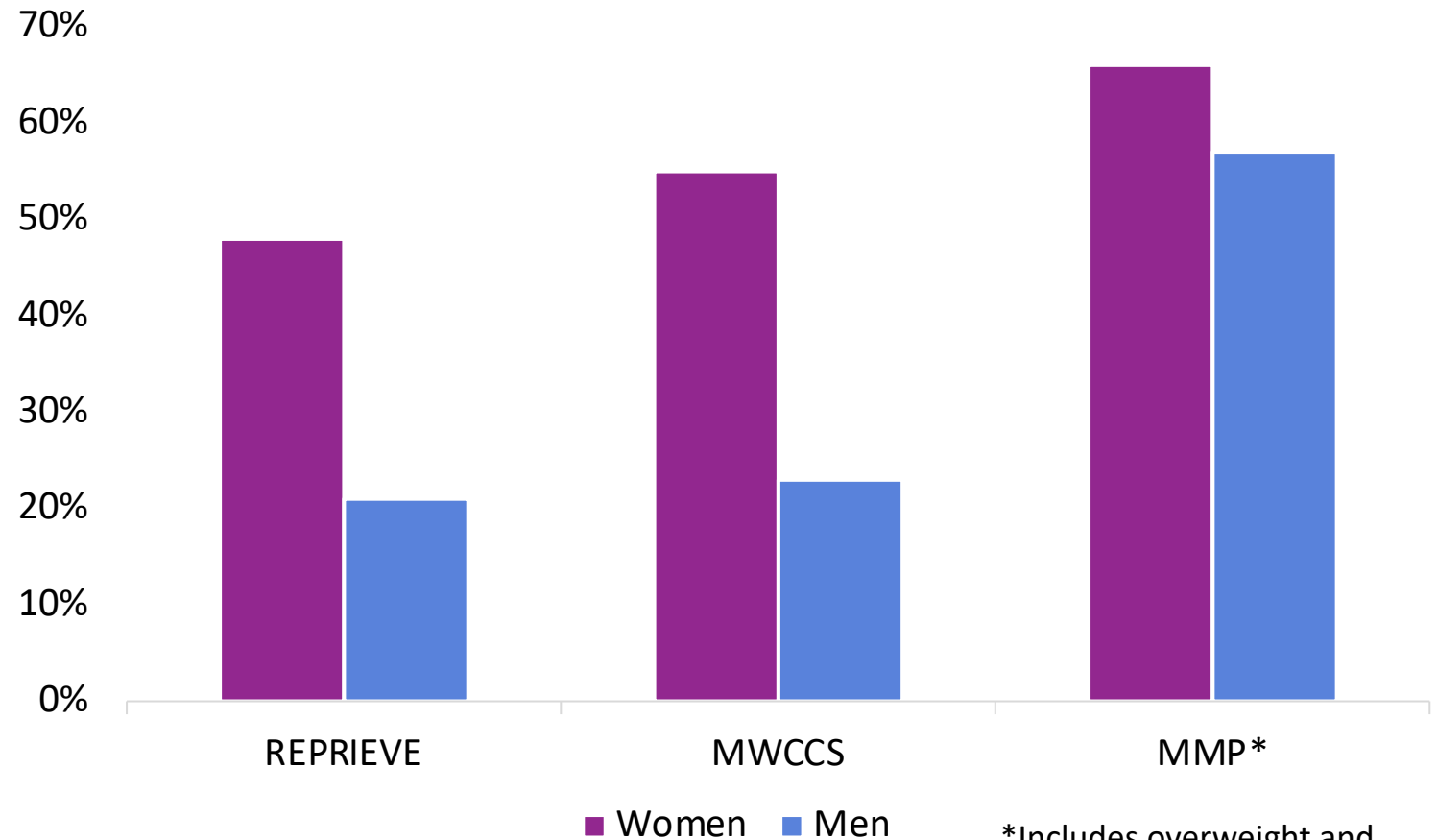
BMI ≥ 30 kg/m² or BMI ≥ 25 kg/m² and Waist to Height Ratio ≥ 0.5 with medical, functional or psychological impairments or complications

Developed by the European Association for the Study of Obesity enquiries@easo.org | www.easo.org
Read the full publication in *Nature Medicine*: <https://doi.org/10.1038/s41591-024-03095-3>



Obesity is more common in women than men with HIV in the US

Prevalence of Obesity among People with HIV in Three U.S.-based Cohort Studies, Stratified by Sex

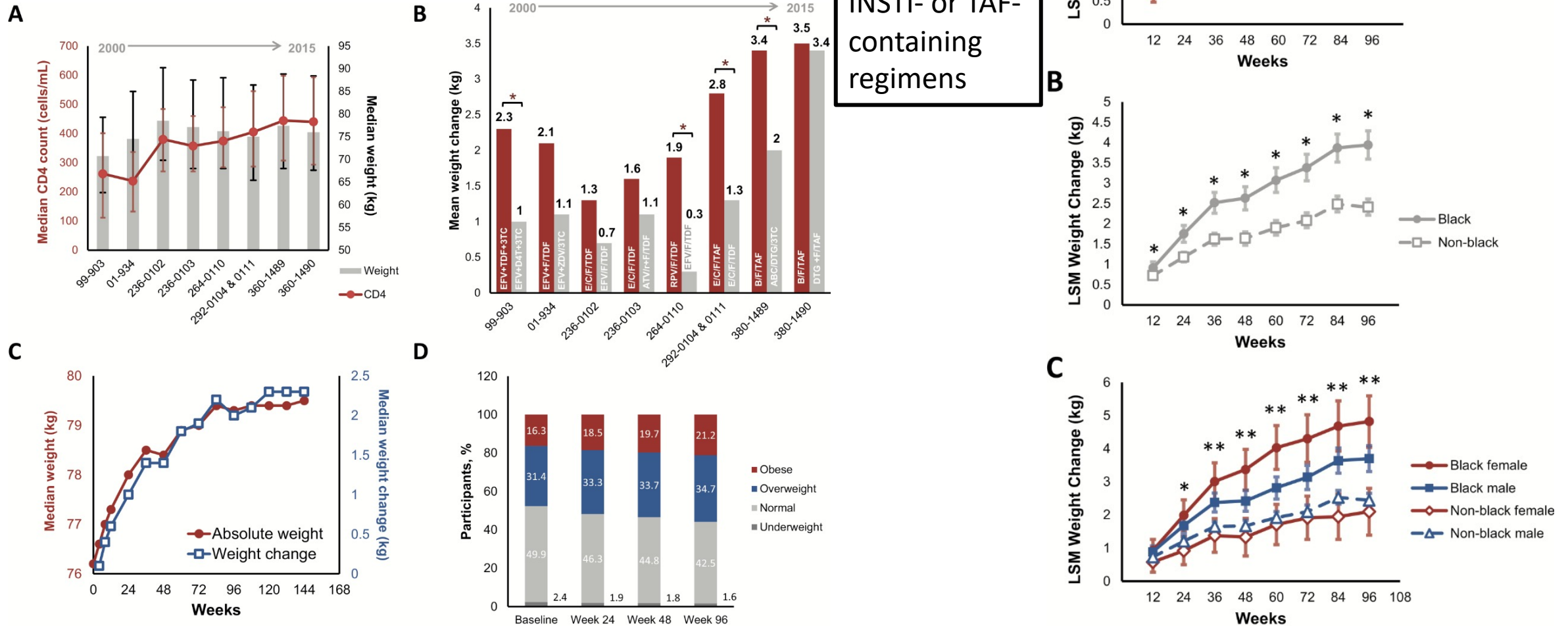


*Includes overweight and obesity

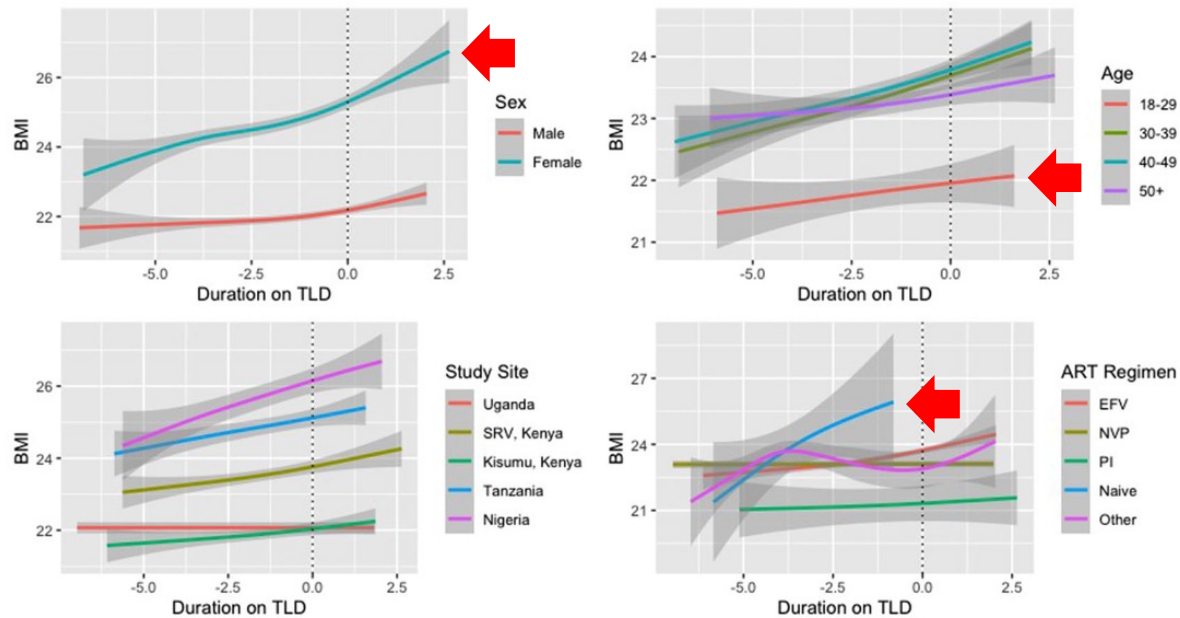
1. Zanni ZM et al. *Clin Infect Dis*, 2023;76(2):323-334
2. D'Souza G et al. *Am J Epi*, 2021;190(8):1457-1475
3. Frazier EL et al. *Clin Infect Dis*, 2019;69(12):2091-2100

Weight gain is common after starting ART

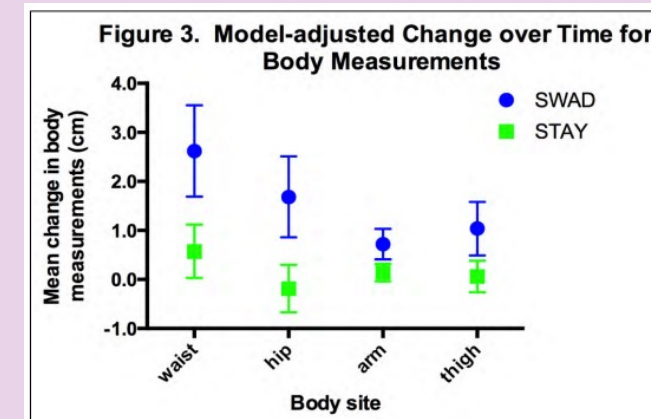
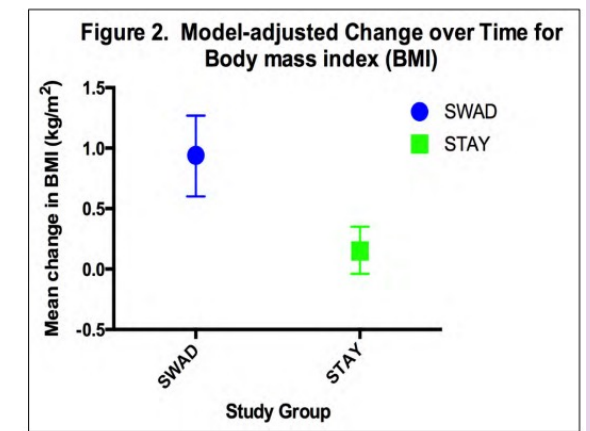
Most weight gain with INSTI- or TAF-containing regimens



Weight gain is associated with switching to INSTIs in virally-suppressed people with HIV



Esber AL et al. *J Int AIDS Soc.* 2022;25:e25899

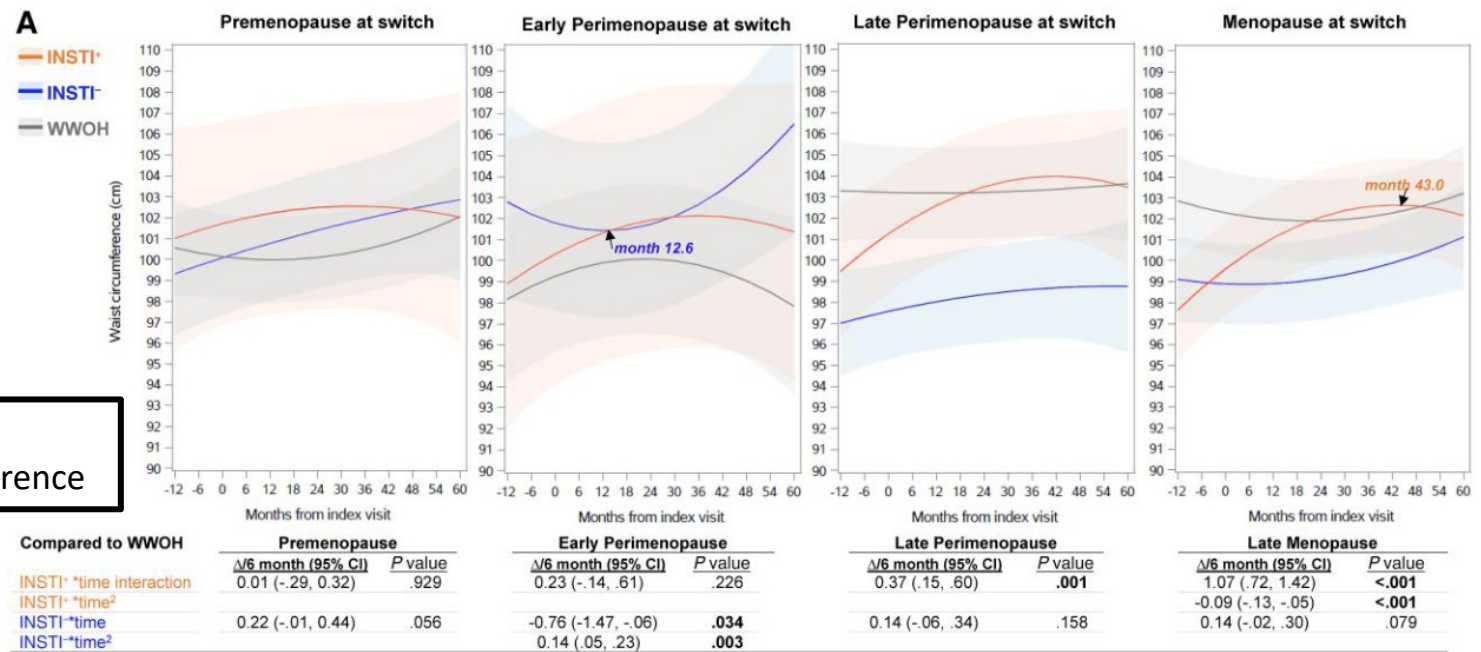


Kerchberger AM et al. *Clin Infect Dis.* 2020;71(3):593-600
 Kerchberger AM et al. CROI 2019. Seattle, WA. Abstract 672

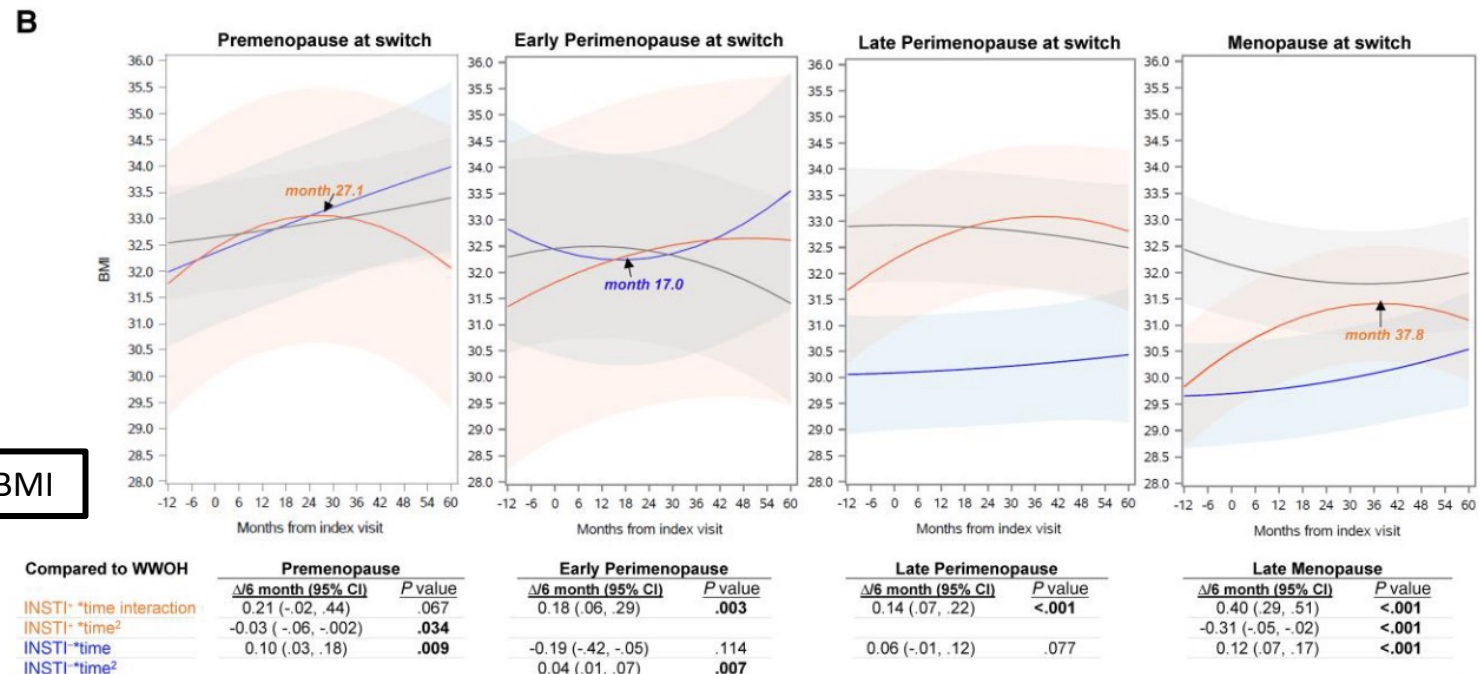


Switching to INSTIs during the menopausal transition is associated with accelerated body composition changes

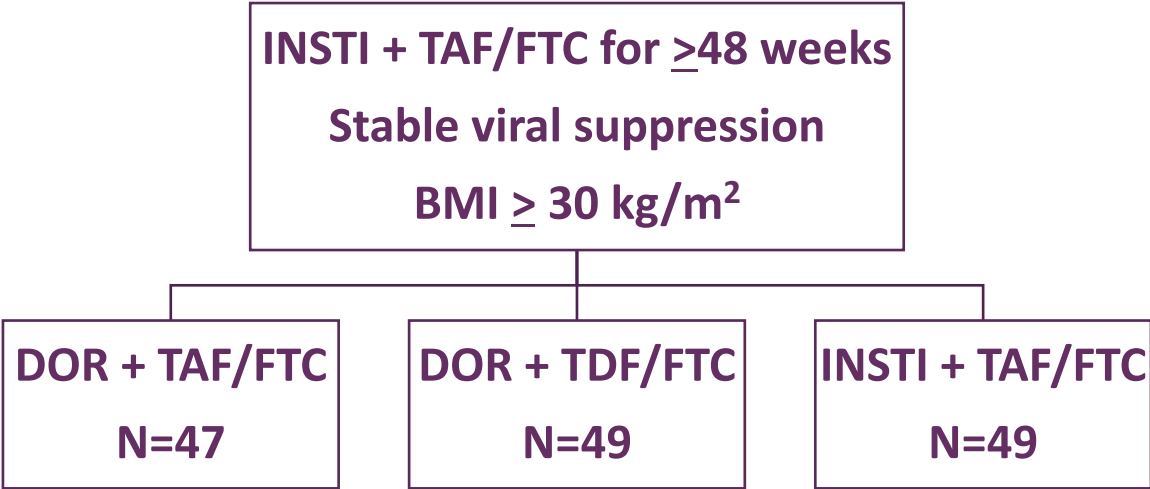
Waist circumference



BMI



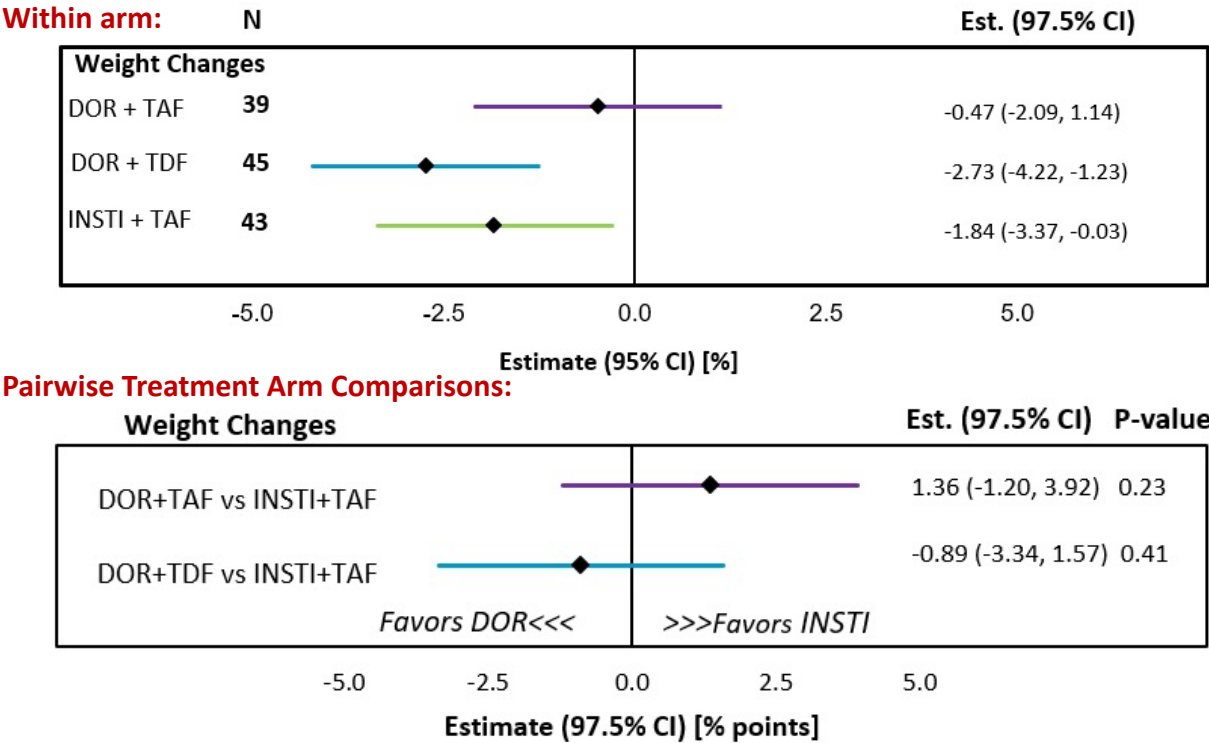
A5391: Doravirine for Obese Persons on Integrase Inhibitors and Tenofovir Alafenamide



Primary endpoint: $\geq 5\%$ point between-group difference in body weight change

Baseline characteristics:

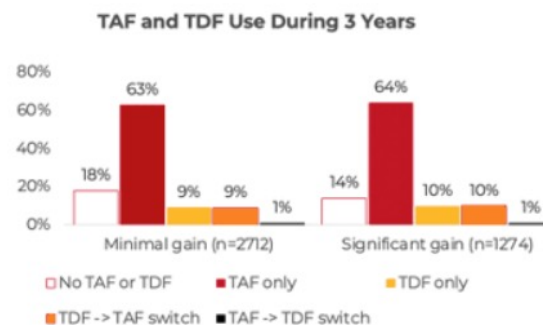
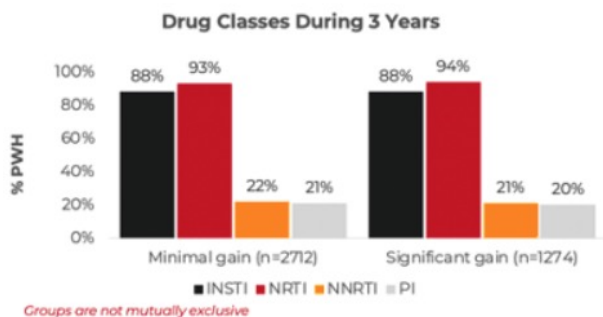
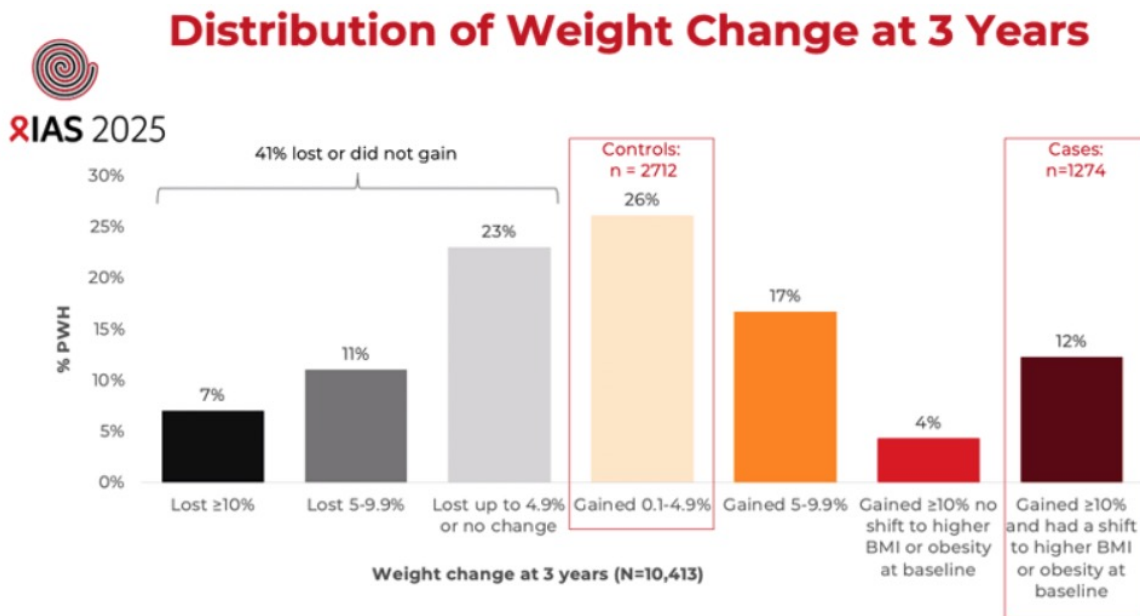
- 49% women
- 53% Black race
- Median age: 49 years
- Median BMI: 34.5
- >10% weight gain in 1-3 years: 65%
- Median duration on INSTI: 3.4 years
- 86% BIC-based ART



Switching to DOR with or without switching TAF to TDF did not result in more weight loss than maintaining TAF/INSTI-based ART

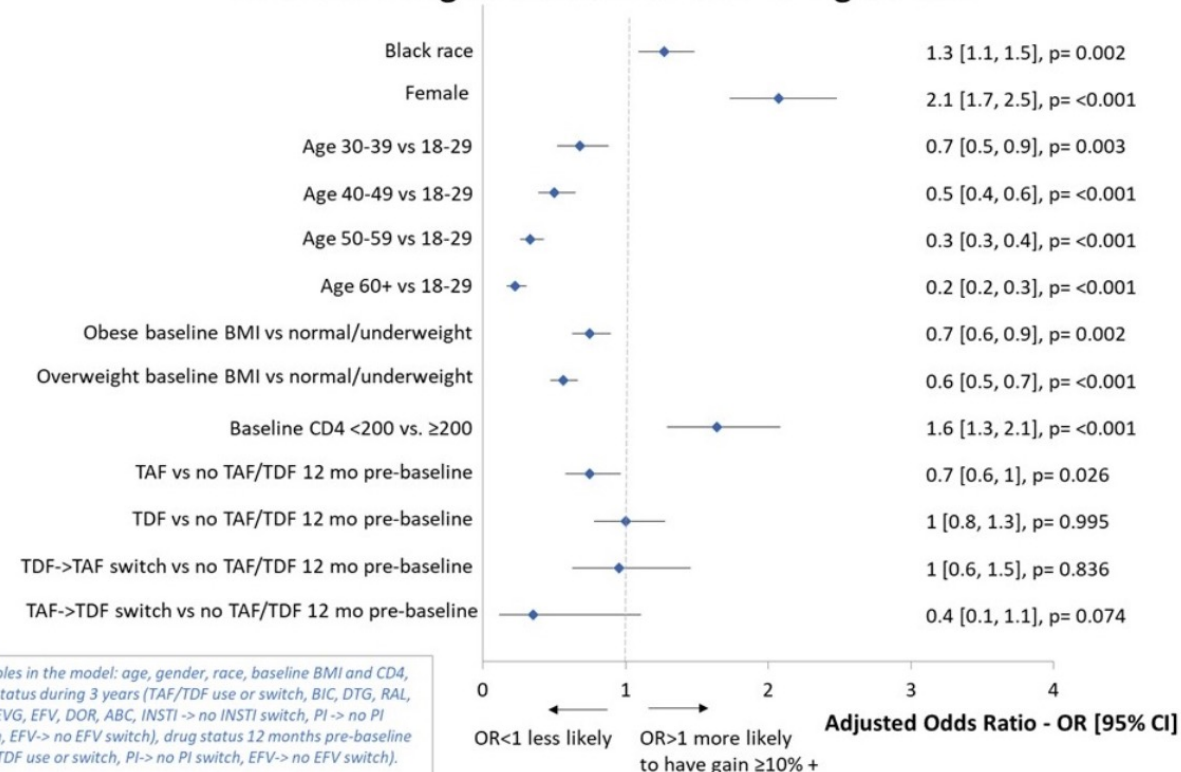
Subgroups: no significant benefit in women, Black race, or people with >10% weight gain in first 3 years on INSTI

Demographic and clinical characteristics are more important predictors of significant weight gain than INSTI exposure



Variables in the model: age, gender, race, baseline BMI and CD4, drug status during 3 years (TAF/TDF use or switch, BIC, DTG, RAL, CAB, EVG, EFV, DOR, ABC, INSTI-> no INSTI switch, PI-> no PI switch, EFV-> no EFV switch), drug status 12 months pre-baseline (TAF/TDF use or switch, PI-> no PI switch, EFV-> no EFV switch).

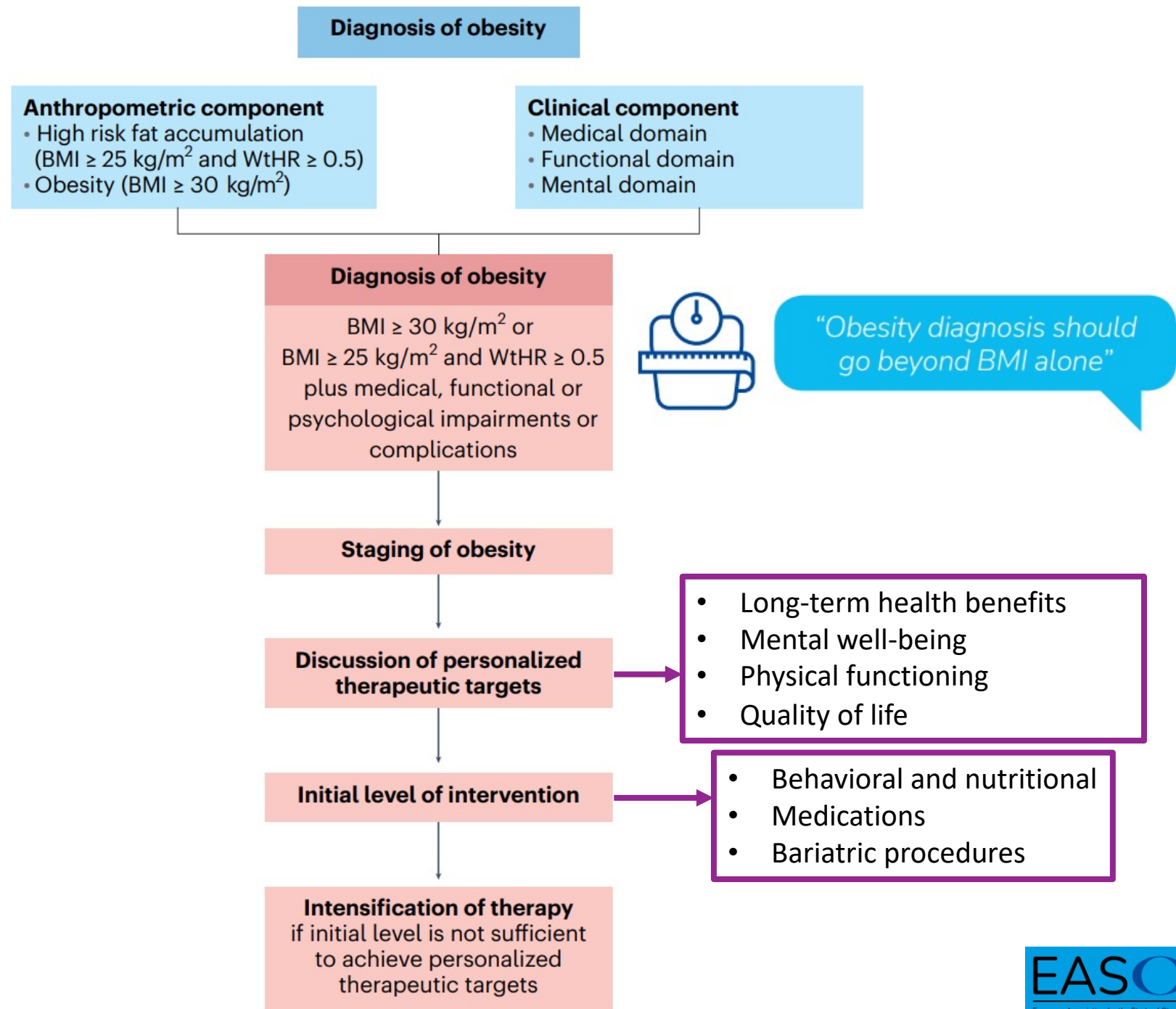
Predictors of gain $\geq 10\%$ with shift to higher BMI



Key predictors of significant weight gain: Black race, female gender, younger age (18-29), normal BMI, CD4 <200

Non-significant predictors: NRTI use, INSTI, PI, NNRTI use

A new framework for obesity as a chronic disease with holistic management goals



Treatments for obesity includes lifestyle, medical, and surgical interventions



Goal: to prevent, treat, or reverse complications of obesity and improve quality of life



Lifestyle measures:
everyone

Low calorie diet, 150 minutes
of exercise/week
5-7% weight loss



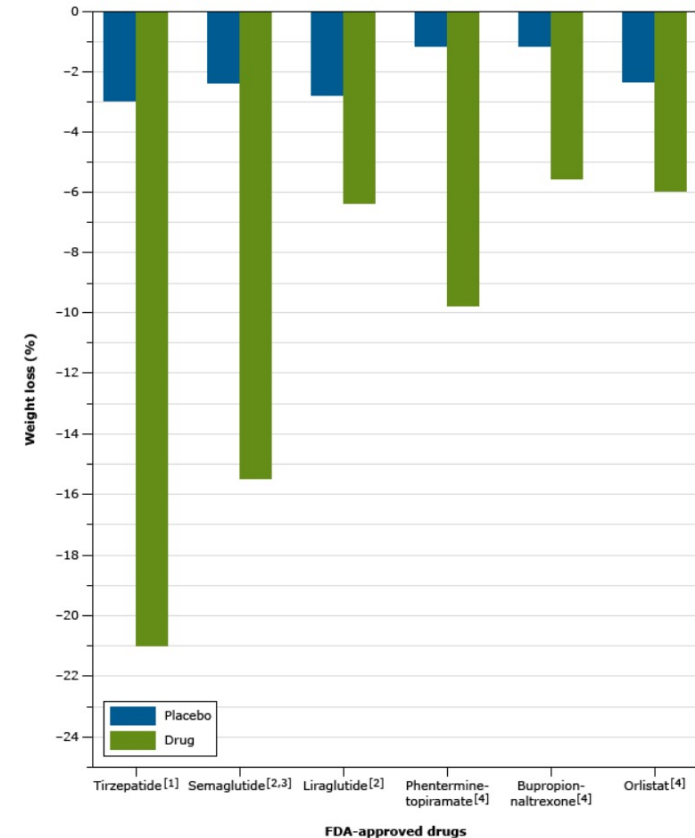
Medical: BMI ≥ 30 or 27-29
with certain medical
conditions

GLP-1 Receptor Agonists
(semaglutide, liraglutide)
5-15% weight loss
Side effects, availability



Surgical: BMI ≥ 40 or 35-39
with certain medical
conditions

Gastric banding, gastric
bypass
Up to 40% weight loss



Weight loss reflects results at 72 weeks (tirzepatide), 68 weeks (semaglutide, liraglutide), or 52 weeks (other medications).

Perreault L. *UpToDate*. 2025

McCarty TR et al. *Bariatr Surg Pract Patient Care*. 2020;15(3):116-123



In summary

Obesity is a chronic medical condition that affects multiple organ systems

ART-associated weight gain is complex and is not reversed by switching off of INSTIs

Management of obesity should focus on a holistic approach to health and well-being

Managing Cardiovascular Disease Risk

Cardiovascular risk factors

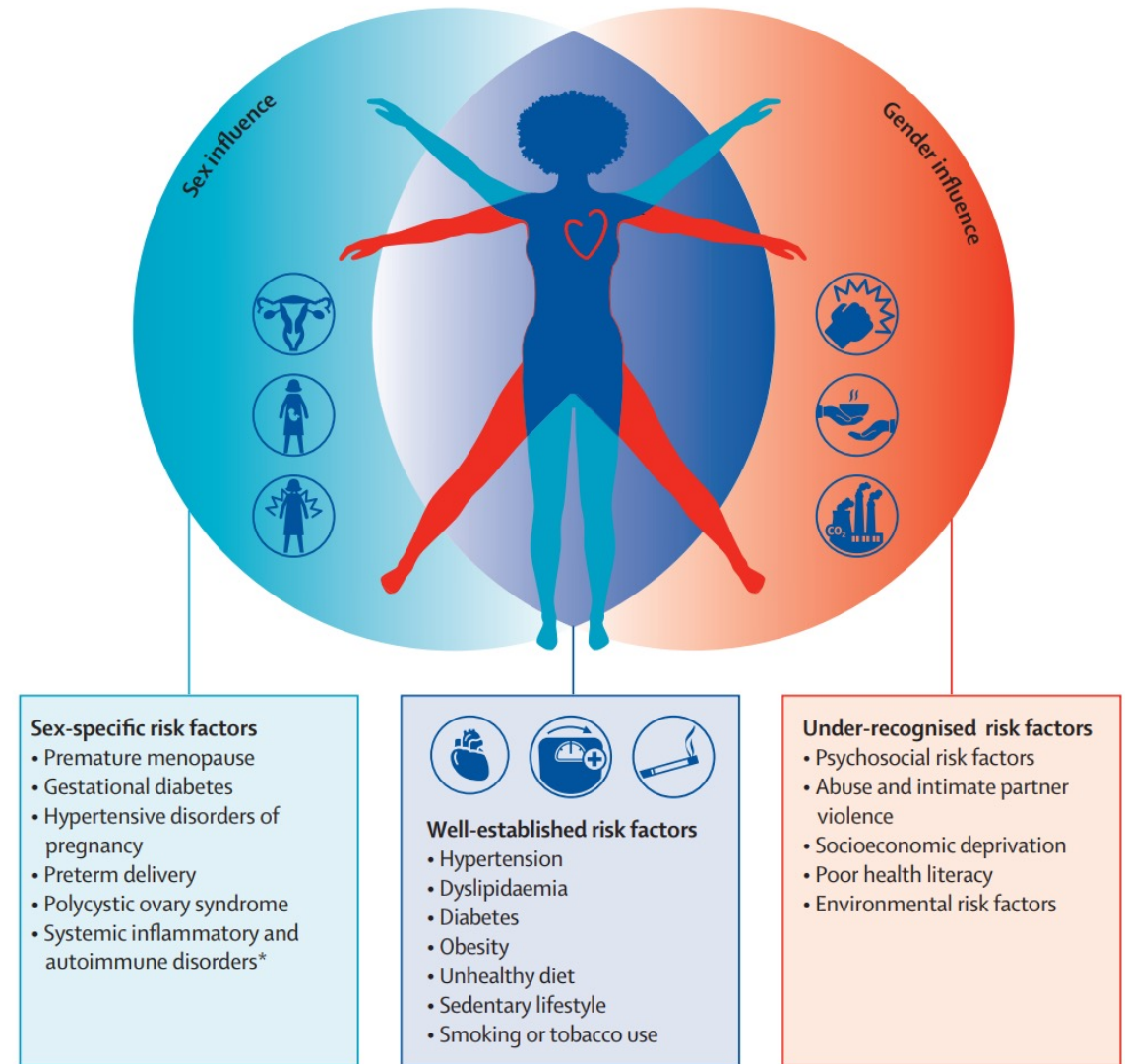
Lifestyle interventions

Medications

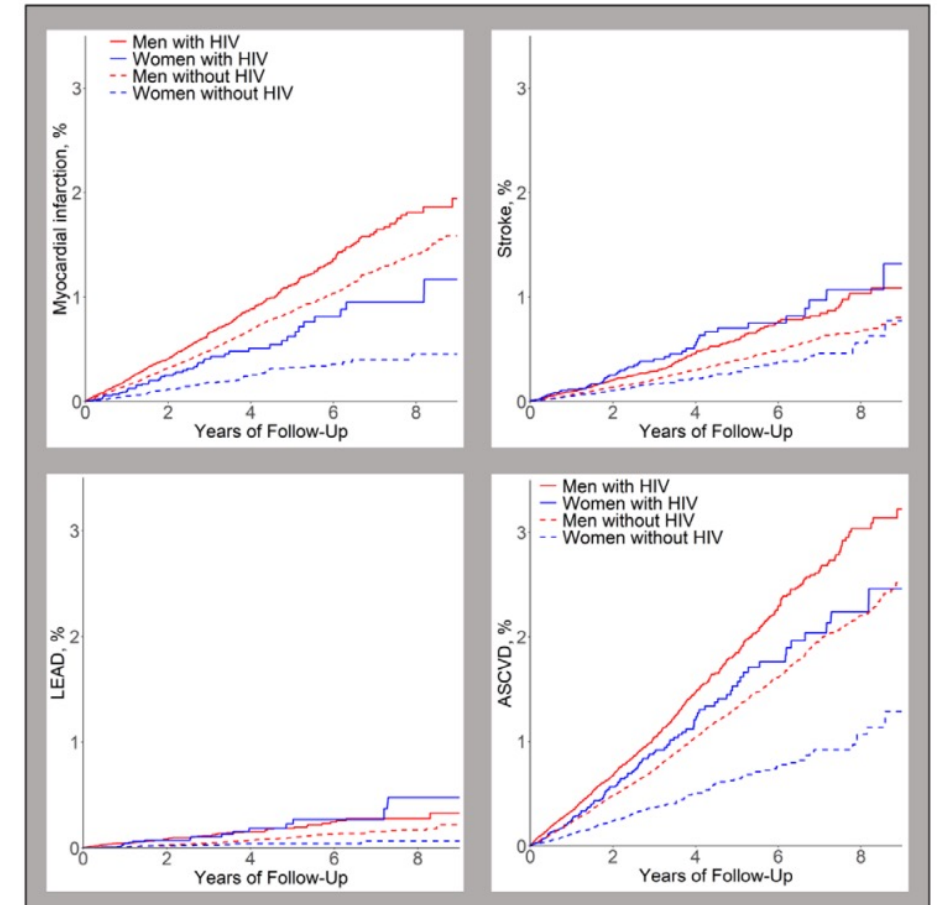
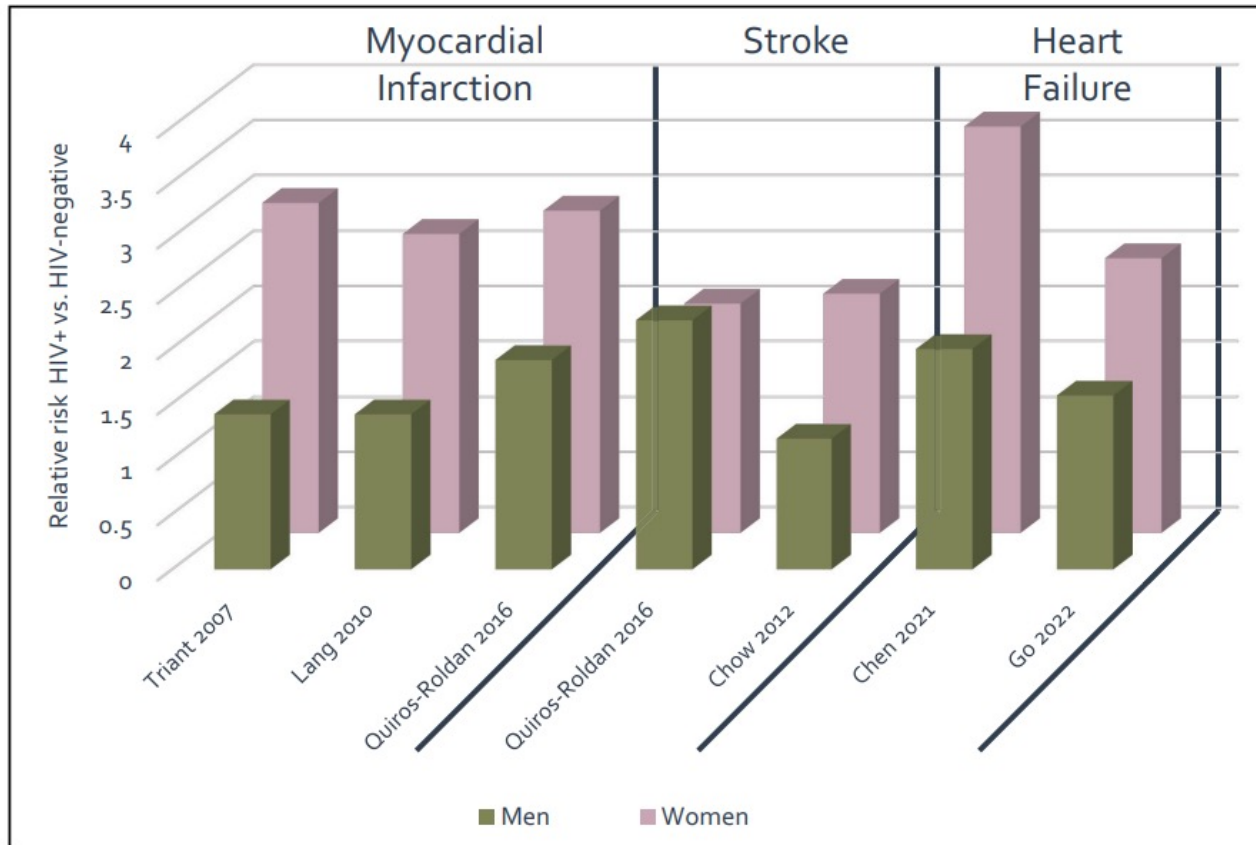
Heart disease in women



- Leading cause of death in women worldwide
- Improvements in prevalence and mortality have slowed over the past decade
- Rates are increasing among younger women
- Risk in women is often underestimated by both patients and healthcare providers



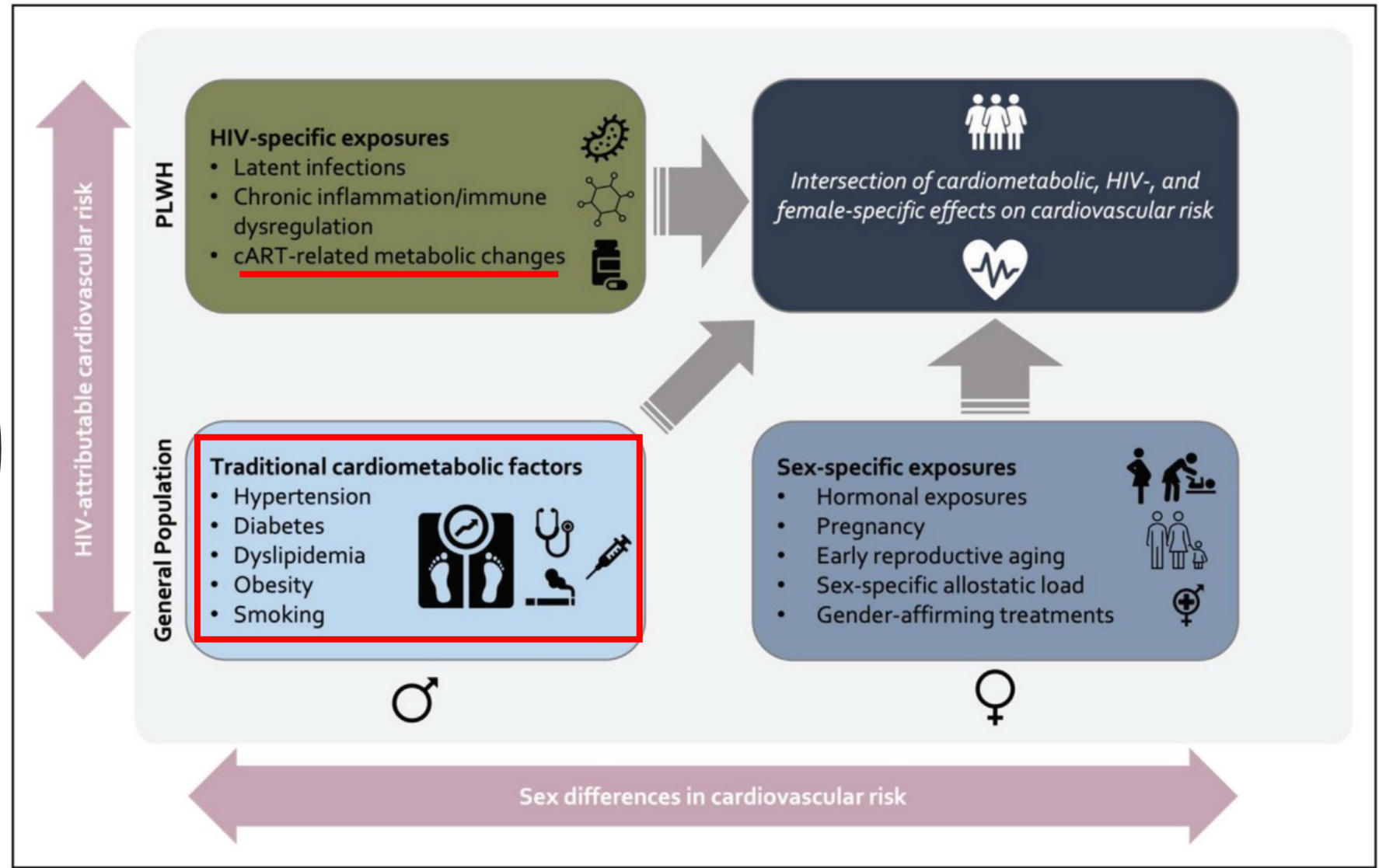
The relative risk of CVD in people with HIV is greater in women than in men



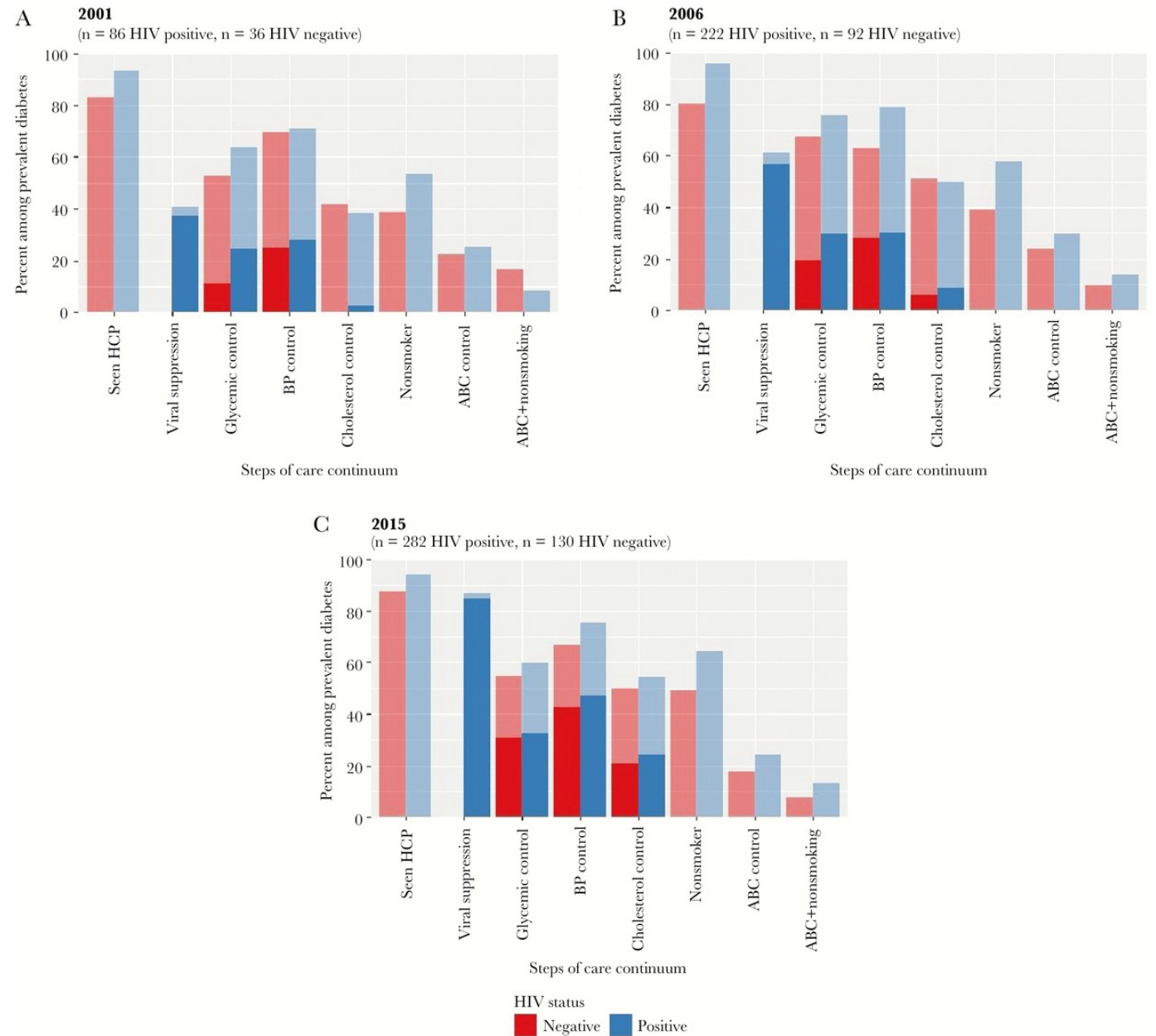
Kentoffio K et al. *Curr Opin HIV AIDS* 2022;17(5):270-278

Wise J et al. *AIDS* 2023;May.[Epub ahead of print]

Mechanisms of CVD in Women with HIV



There is room
for
improvement in
blood pressure,
cholesterol, and
diabetes control
for women with
and without HIV

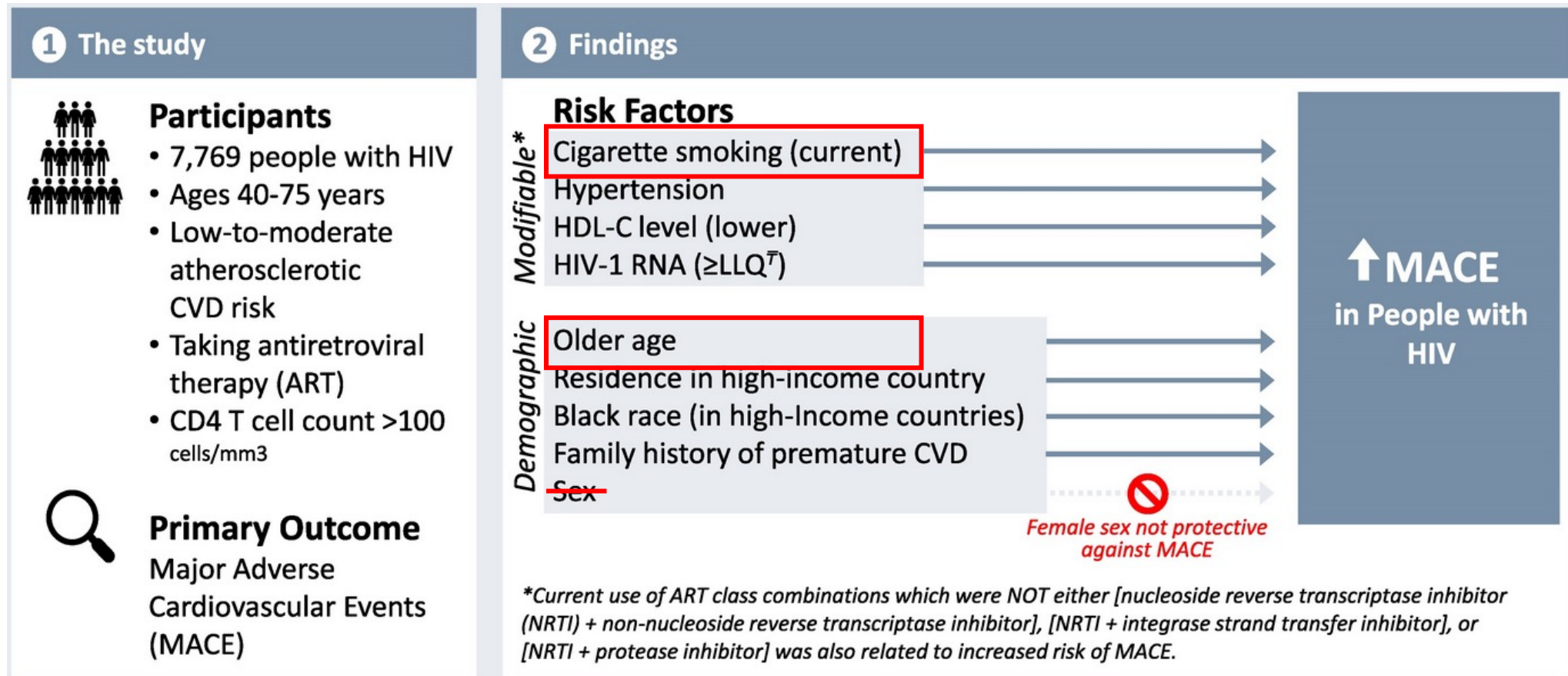


Cardiovascular Risk Factors

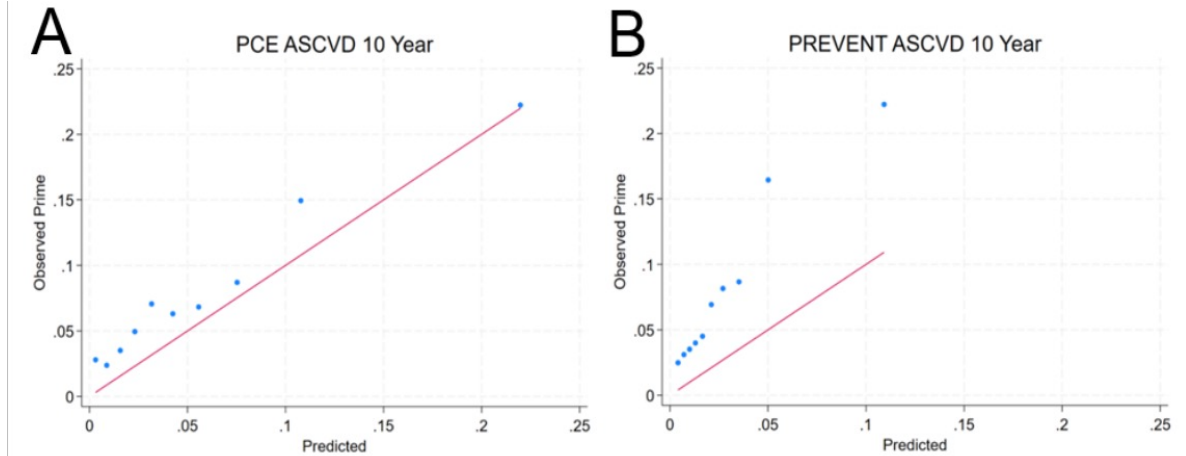
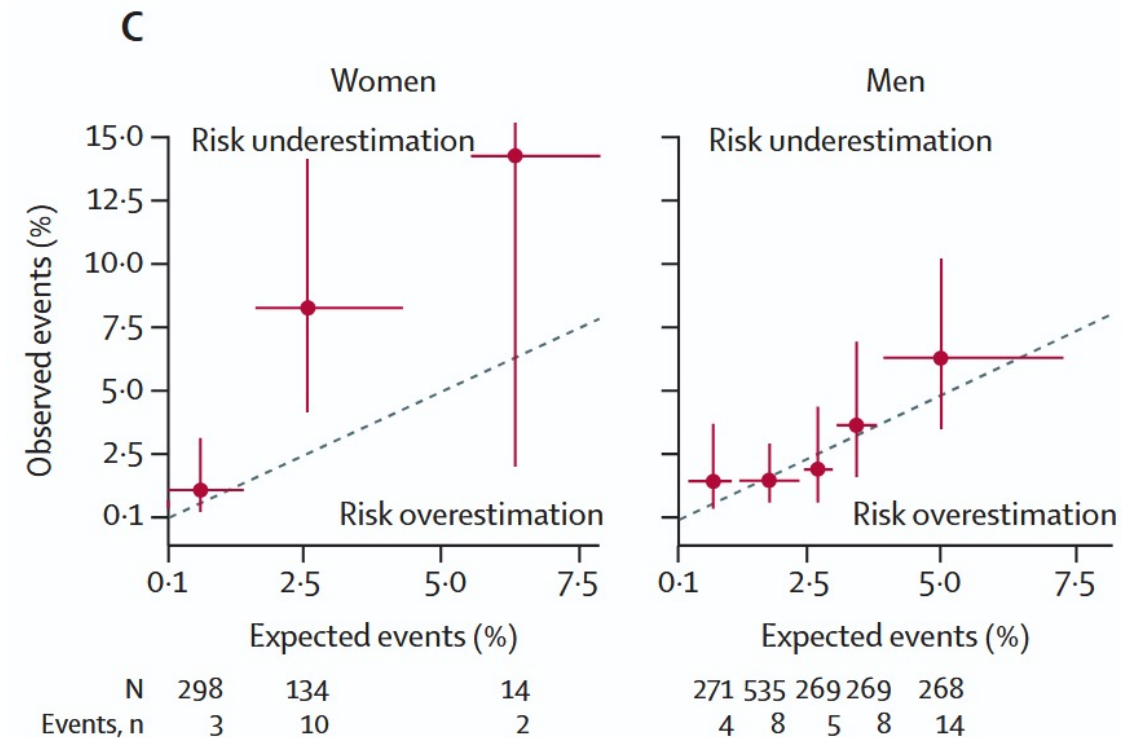


- Age
 - Sex
 - Cholesterol
 - Blood Pressure
 - Diabetes
 - Kidney disease
 - BMI
 - Smoking
 - Sedentary lifestyle
 - Social determinants of health
- Among people with HIV
- Detectable HIV viral load

Smoking is the most impactful modifiable CVD risk factor in PWH



Commonly-used CVD risk equations underestimate risk in people with HIV, particularly women





Cardiovascular disease prevention strategies

Lifestyle modifications (diet,
physical activity, quitting smoking)

Medications (statins)



The DASH diet lowers blood pressure, and the Mediterranean diet lowers CVD and diabetes risk

DASH Eating Plan

The Benefits: Lowers blood pressure & LDL "bad" cholesterol.

 **Eat This**

 **Limit This**

 Vegetables	 Fatty meats
 Fruits	
 Whole grains	 Full-fat dairy
 Fat-free or low-fat dairy	
 Fish	 Sugar sweetened beverages
 Poultry	
 Beans	 Sweets
 Nuts & seeds	
 Vegetable oils	 Sodium intake

www.nhlbi.nih.gov/DASH



NIH National Heart, Lung, and Blood Institute



Mediterranean diet

Foods to include or limit

EAT AT EVERY MEAL.



Fruits, veggies, whole grains, extra virgin olive oil

EAT AT LEAST 3 SERVINGS A WEEK.



Fish/seafood, nuts, legumes

LIMIT TO 1 SERVING A DAY.



Poultry, low-fat dairy, eggs

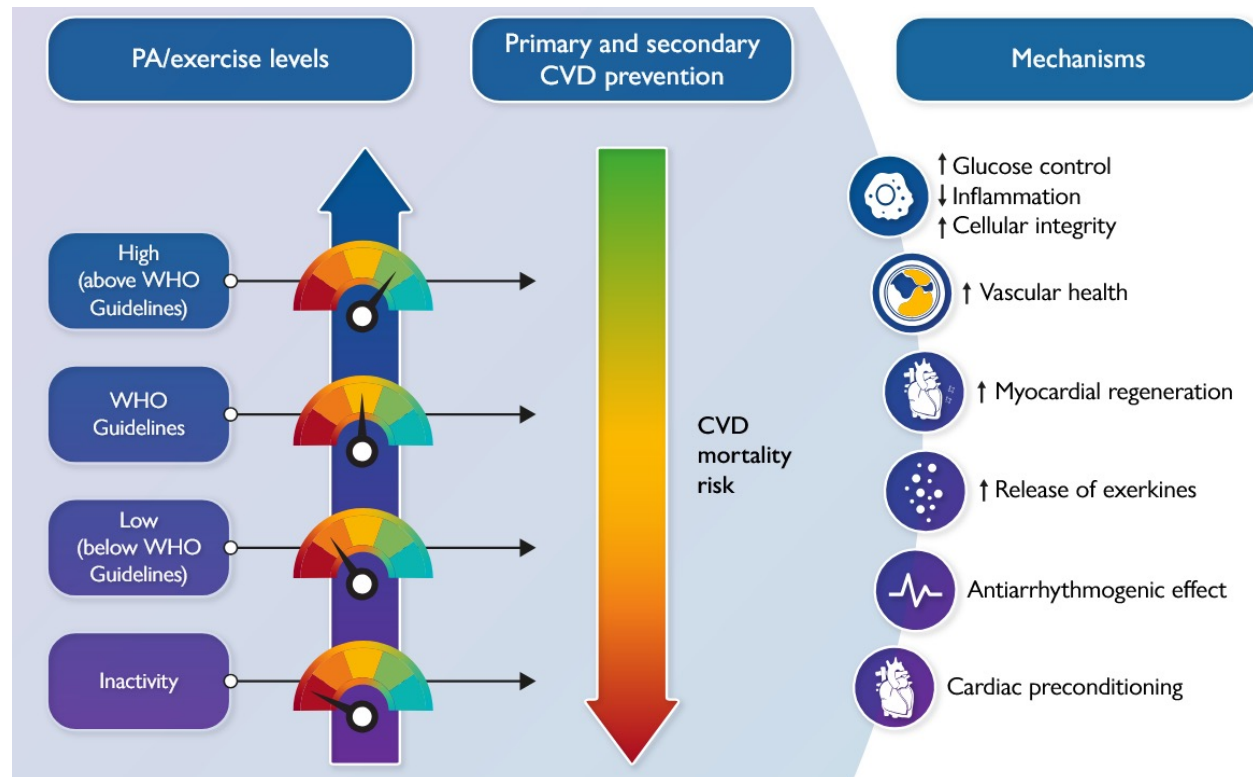
LIMIT TO 1 SERVING PER WEEK.



Red meat, sweets

 Cleveland Clinic

Physical activity is associated with primary and secondary prevention of cardiovascular disease

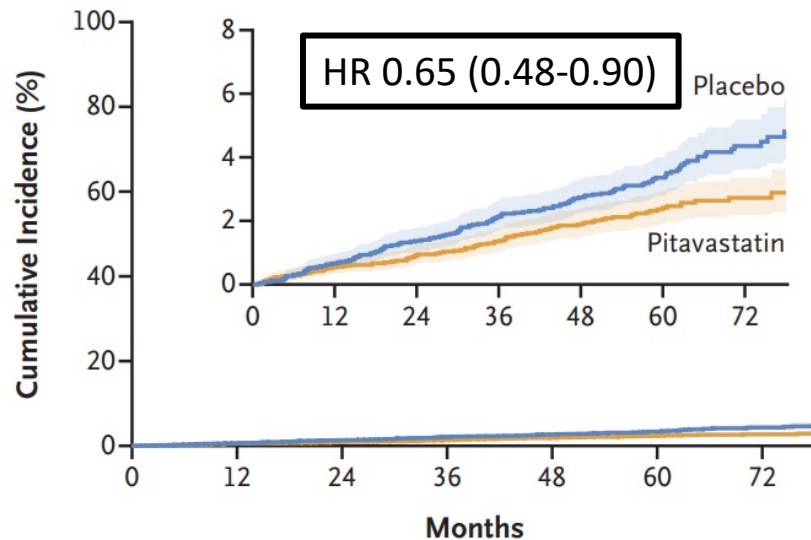


Weekly aerobic physical activity goals

- 150-300 minutes of moderate physical activity
 - Walking
 - Dancing
 - Riding a bike on level ground
 - Water aerobics
 - Pushing a lawn mower
- 75-150 minutes of vigorous physical activity
 - Jogging/running
 - Riding a bike fast or on hills
 - Swimming laps
 - Playing basketball

The REPRIEVE trial: Statins reduce risk of cardiovascular disease in people living with HIV

B First MACE



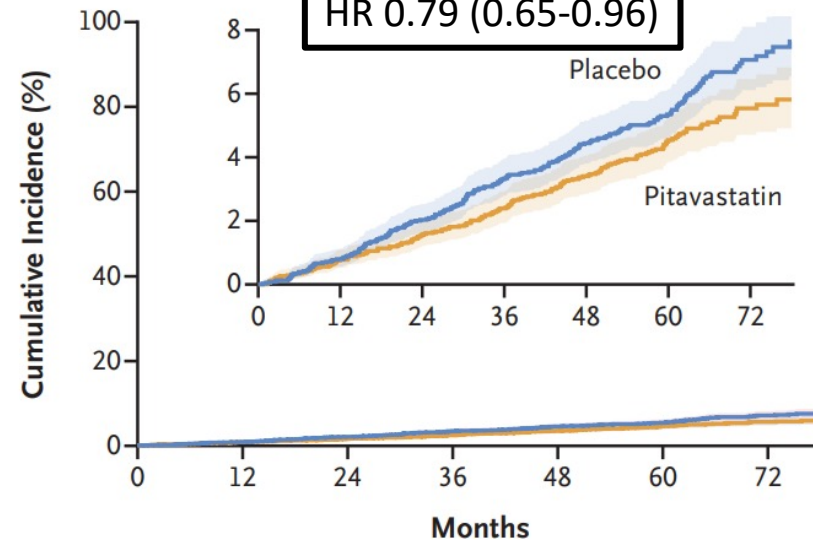
Cumulative Incidence of Event (%)

Placebo	0.00	0.66	1.38	2.14	2.74	3.36	4.36
Pitavastatin	0.00	0.56	0.95	1.35	1.89	2.41	2.73

No. at Risk

Placebo	3881	3693	3506	3356	2997	2182	959
Pitavastatin	3888	3647	3475	3364	2997	1947	1052

C First MACE or Death



Cumulative Incidence of Event (%)

Placebo	0.00	0.80	2.03	3.34	4.44	5.35	7.06
Pitavastatin	0.00	0.77	1.58	2.39	3.40	4.54	5.54

No. at Risk

Placebo	3881	3693	3506	3356	2997	1975	919
Pitavastatin	3888	3647	3475	3364	2998	1948	1027

Standard Recommendations for Statin Therapy in the General Population (including PWH)

Key Recommendations for the General Population (Including People with HIV) Based on AHA/ACC/Multisociety Guidelines

For people age 40-75 years who have **high ($\geq 20\%$) 10-year ASCVD risk** estimates

- Initiate high-intensity statin therapy

For people age 20-75 years who have low-density lipoprotein cholesterol (**LDL-C**) ≥ 190 mg/dL

- Initiate high-intensity statin therapy at maximum tolerated dose

For people age 40-75 years with **diabetes mellitus**

- Initiate at least moderate-intensity statin therapy. Perform further risk assessment to consider using a high-intensity statin

New Statin Recommendations for People Living with HIV

Recommendations for the Use of Statin Therapy as Primary Prevention of Atherosclerotic Cardiovascular Disease (ASCVD) in People with HIV

For people with HIV who have **low-to-intermediate (<20%) 10-year ASCVD risk** estimates

- Age 40-75 years
 - When 10-year ASCVD risk estimates are **5% to <20%**, initiate at least moderate-intensity statin therapy (A1)
 - When 10-year ASCVD risk estimates are **<5%**, initiate at least moderate-intensity statin therapy (C1). The absolute benefit from statin therapy is modest in this population; therefore, the decision to initiate a statin should take into account the presence or absence of HIV-related factors that can increase ASCVD risk.
- Age <40 years
 - Data are insufficient to recommend for or against statin therapy

Tips for Lowering your CVD Risk



- QUIT SMOKING!!
- Diet and physical activity
- Know your numbers (and goals)
 - Blood Pressure (120/80 mm Hg)
 - Cholesterol
 - Hemoglobin A1c (7.0%)
- Take your meds (many come in combo pills)
 - ART
 - Statins
 - Antihypertensives
 - Anti-diabetes medications



In summary

CVD risk is often underestimated in women living with HIV

Smoking is the most impactful modifiable CVD risk factor in PWH

Statins reduce the risk of CVD by 35% in PWH with low-moderate CVD risk

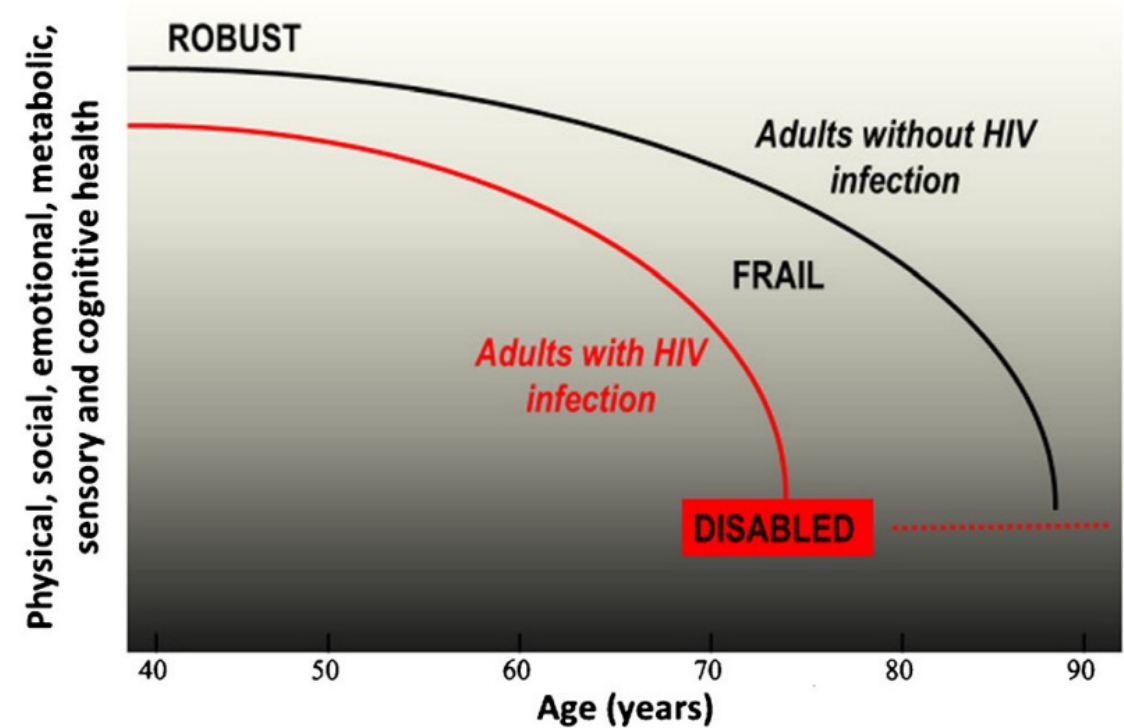
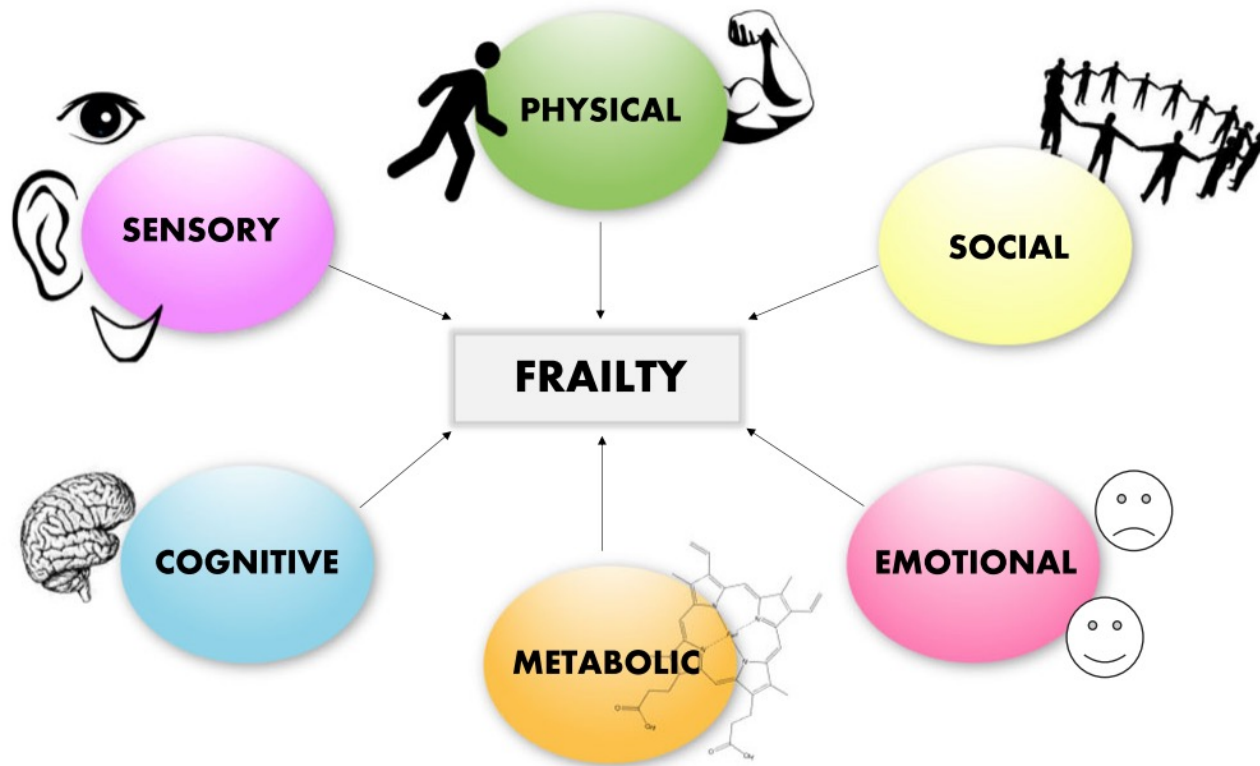
Aging in Women with HIV

Frailty
Bone and joint health
Mental health
Cognitive decline

A young woman with brown hair tied back, wearing a grey long-sleeved shirt and tan pants, is smiling and assisting an elderly woman with a squat exercise. The elderly woman has short white hair, is wearing a light blue t-shirt and black leggings, and is in a low squat position with her hands on the floor. The young woman is crouching behind her, with her hands extended forward to provide support. In the background, there is a large blue exercise ball, a white shelving unit with various items, and a window with a view of trees. The text "Frailty and bone health" is overlaid in white, centered on the image.

Frailty and bone health

Frailty is a vulnerability state characterized by impairments and limitations that might lead to disability



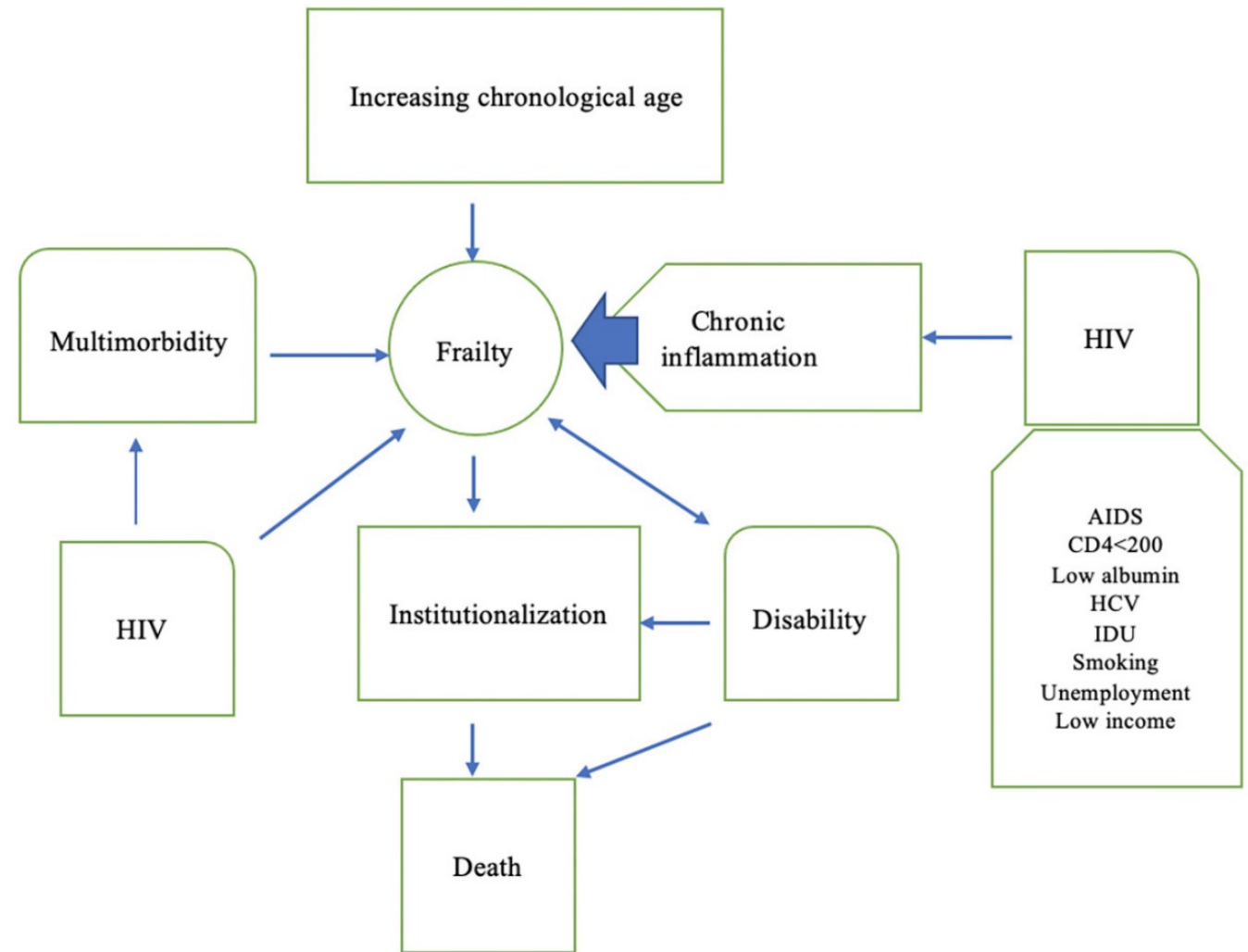
Fried Frailty Phenotype (at least 3):

- Unintentional weight loss (at least 4.5 kg or $\geq 5\%$ of body weight in 1 year)
 - Self-reported exhaustion (effort required for activity)
 - Weakness (grip strength)
 - Slow walking speed (distance covered over 4 minutes)
 - Low physical activity
-
- Prefrailty: 1 or 2

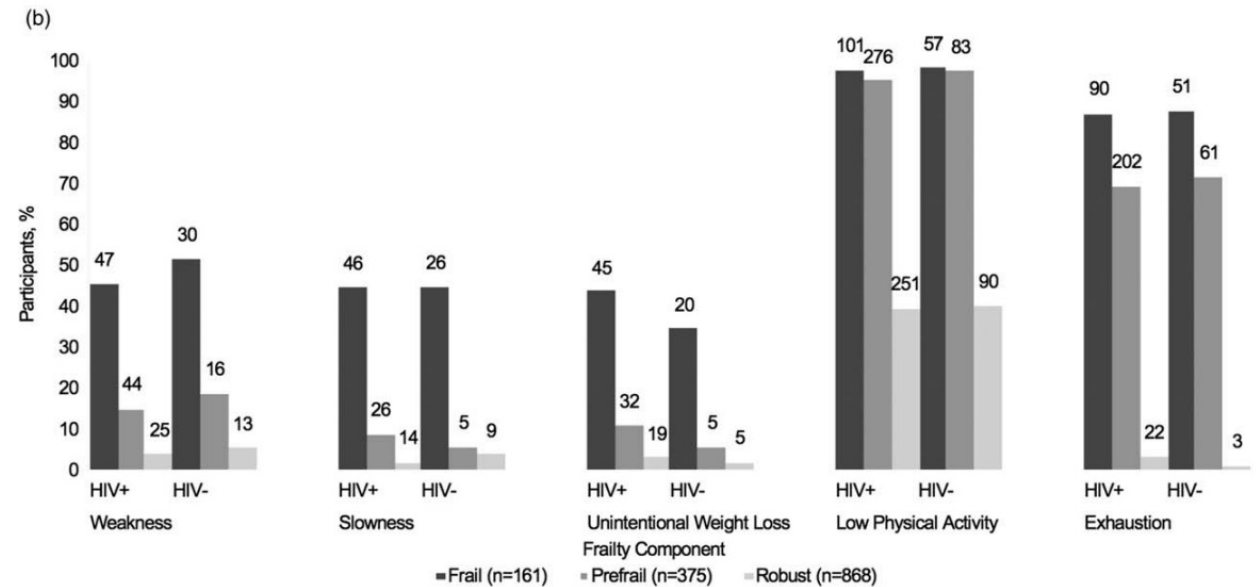
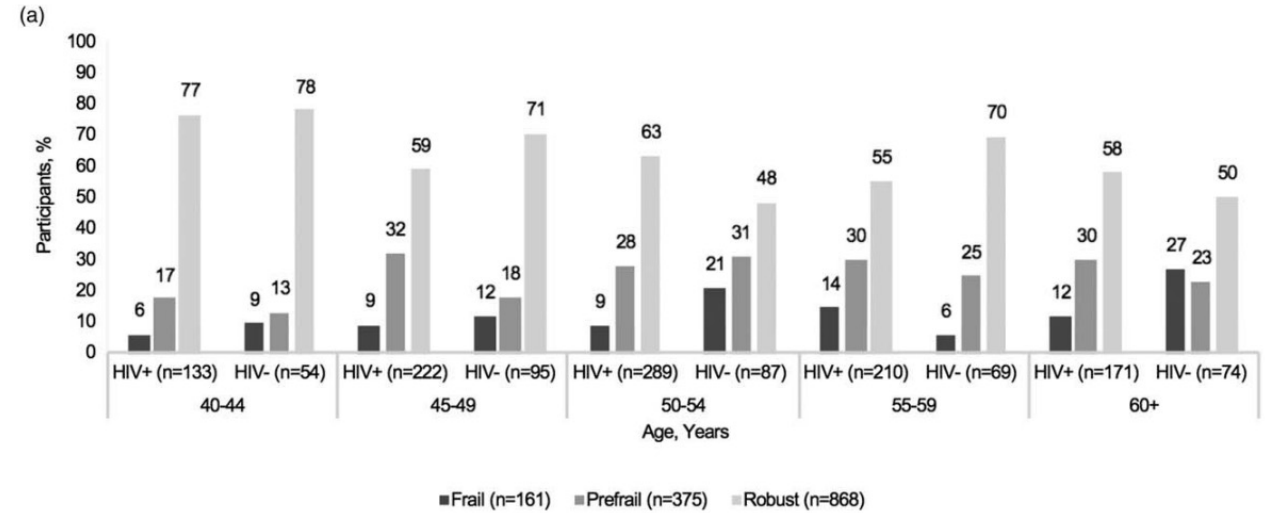
Frailty in people with HIV is multifactorial

Risk factors:

- Comorbidities
 - Cardiovascular disease
 - Diabetes
 - Depression
 - Obesity
- Polypharmacy
- Detectable HIV viral load
- ART side effects (bone mineral density loss)

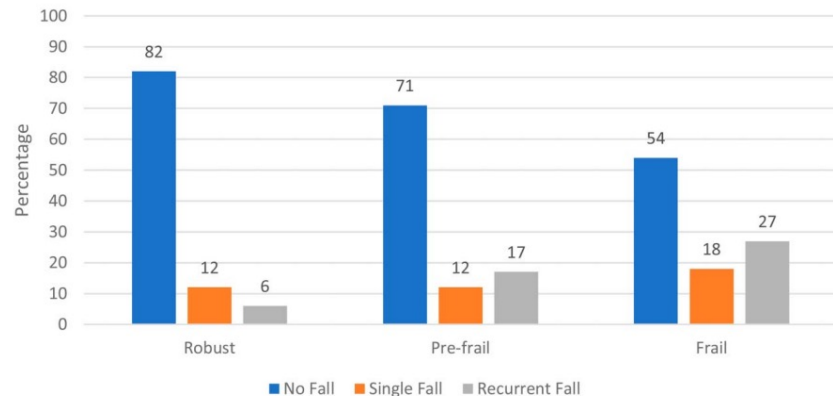


Frailty is common in middle-aged women with and without HIV in the WIHS

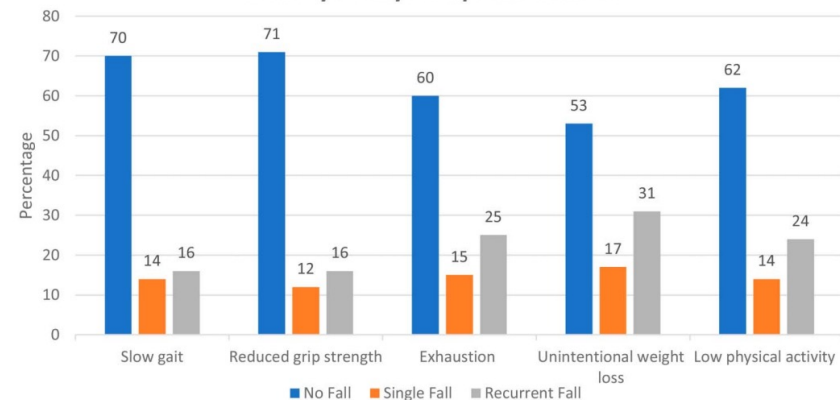


Frailty is associated with frequent falls and mortality

Proportion of WIHS Participants with Single and Recurrent Falls by Frailty Status

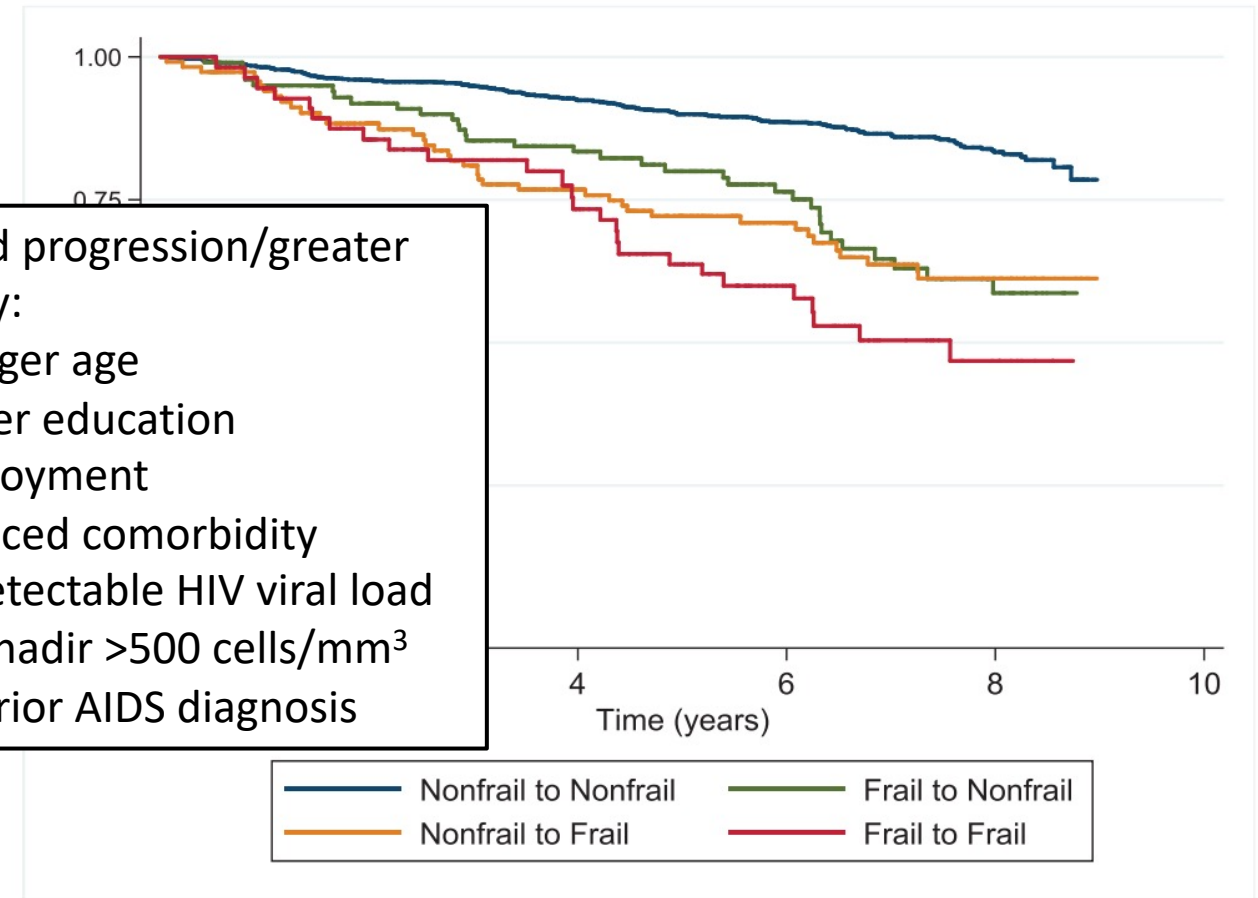


Proportion of WIHS Participants with Single and Recurrent Falls by Frailty Component Status



Reduced progression/greater recovery:

- Younger age
- Higher education
- Employment
- Reduced comorbidity
- Undetectable HIV viral load
- CD4 nadir >500 cells/mm³
- No prior AIDS diagnosis

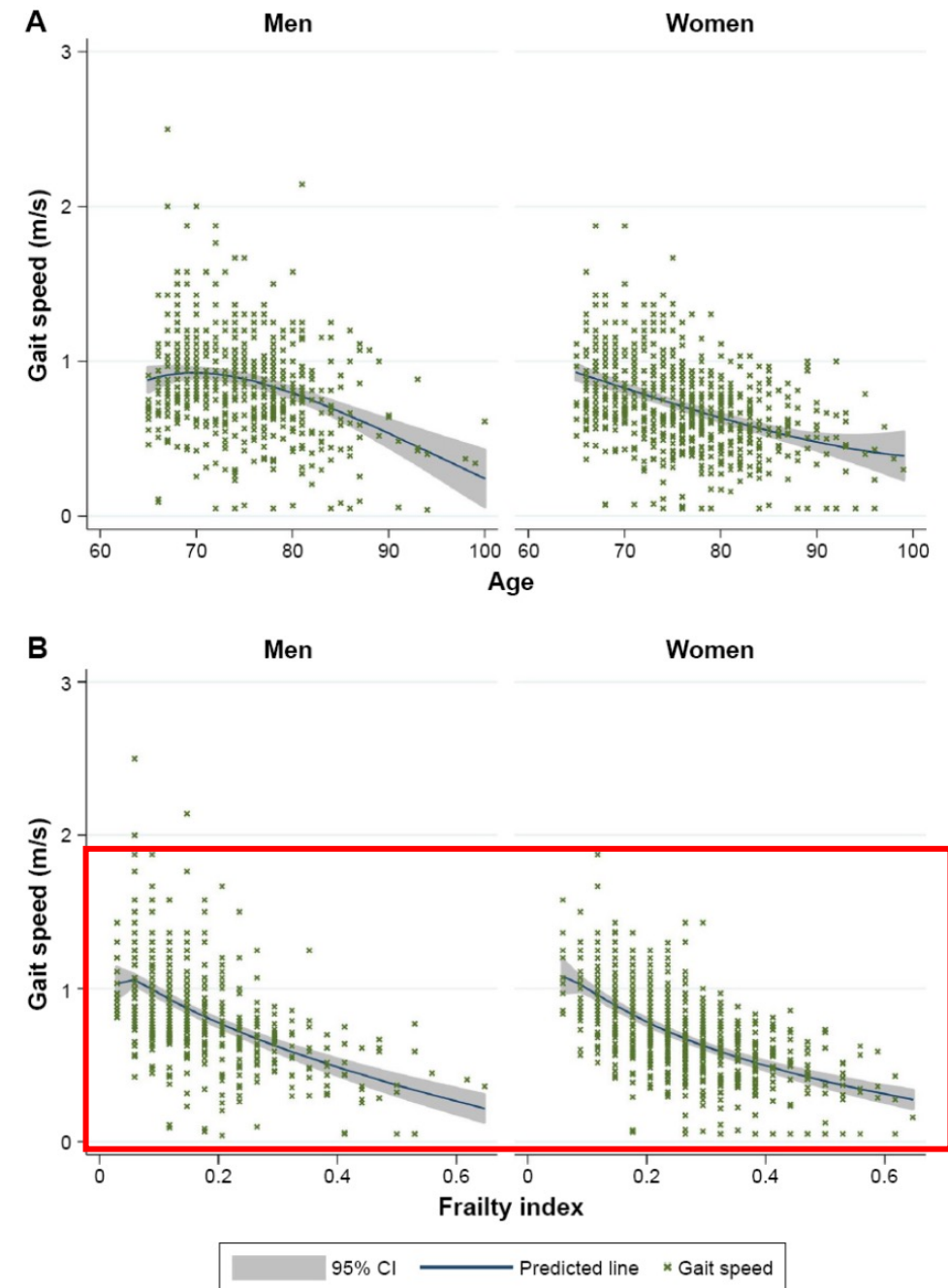


Assessing for frailty is recommended at age ≥ 50 by EACS

- FRAIL Scale
- Clinical Frailty Scale
- Gait Speed

FRAIL Scale
F atigue
R esistance (ability to climb one flight of stairs)
A mbulation (ability to walk one block)
I llnesses (Greater than 5)
L oss of Weight ($\geq 5\%$ over 1 year)
≥ 3 = frail / 1 - 2 = pre-frail / 0 = robust

Reference: Woo, Jean, Jason Leung, and John E. Morley. "Comparison of frailty indicators based on clinical phenotype and the multiple deficit approach in predicting mortality and physical limitation." *Journal of the American Geriatrics Society* 60.8 (2012): 1478-1486.

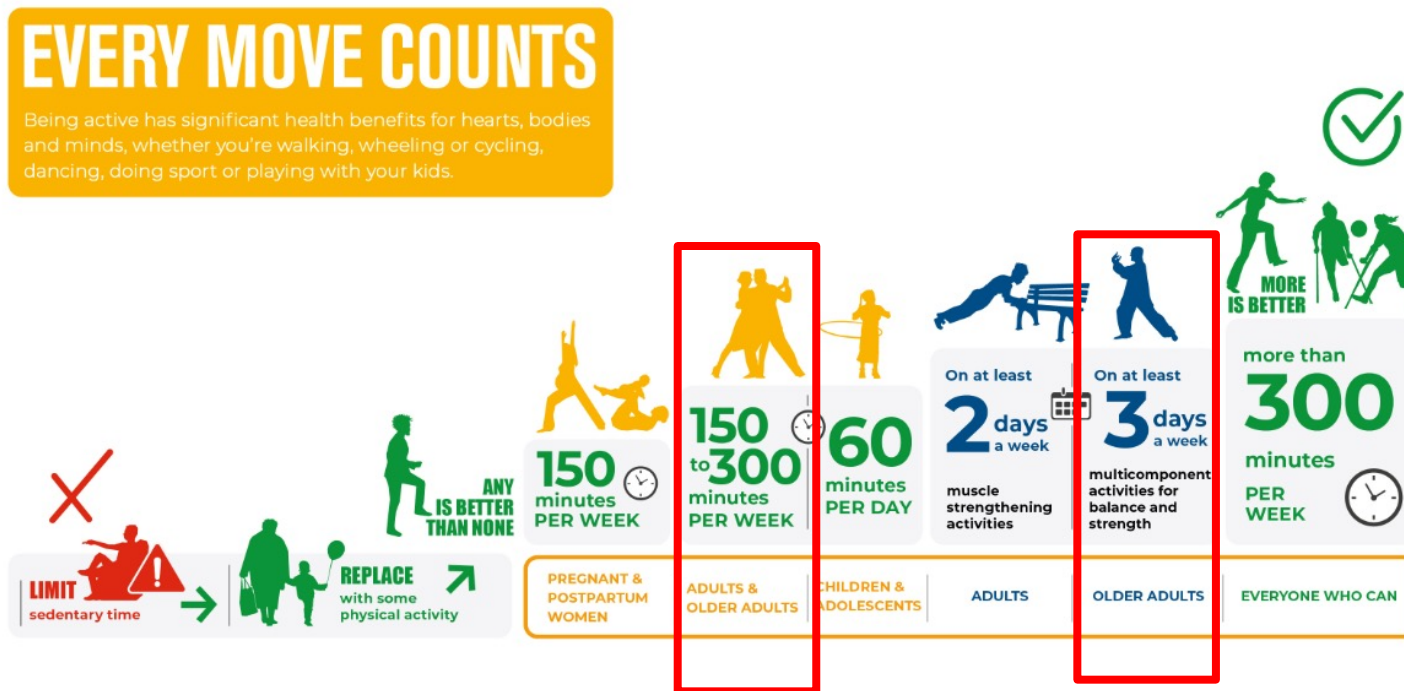




Tips for preventing/limiting frailty

- Physical exercise
- Good nutrition
- Social engagement
- Keep your mind active
- ART and management of co-infections
- Management of comorbidities
- Management of polypharmacy

A mix of aerobic, balance, and strengthening activities in older adults is associated with a reduced risk of falls, more independent years, and improved brain health



Examples of strengthening exercises:

- Lift weights
- Dig in a garden
- Body resistance exercises (push ups, sit ups, etc.)

Examples of balance exercises:

- Walk heel-to-toe
- Stand from a seated position
- Stand on one leg

Multicomponent exercises:

- Tai chi
- Yoga
- Gardening
- Many sports

WHO Guidelines on Physical Activity and Sedentary Behavior. 2020. World Health Organization. Available at <https://www.who.int/health-topics/physical-activity> Accessed 7 September 2025

What Counts as Physical Activity for Older Adults. 2023. Centers for Disease Control and Prevention. Available at <https://www.cdc.gov/physical-activity-basics/adding-older-adults/what-counts.html> Accessed 8 September 2025

Bone disease is common in people with HIV, especially postmenopausal women

Types of bone disease

- Osteoarthritis/avascular necrosis – younger age for joint replacements
- Osteoporosis/fracture (2-4x risk)

Risk factors for osteoporosis

- ART
 - loss of 2-6% bone mineral density with ART start
 - Ongoing loss with TDF, some PIs
- BMI
- Vitamin D deficiency
- Female sex
- Alcohol use

Screening for osteoporosis

- FRAX
 - Women: all premenopausal ≥ 40
 - Men: age 40-49
- DEXA
 - Women: all postmenopausal women
 - Men: all men ≥ 50 years

General osteoporosis risk factors

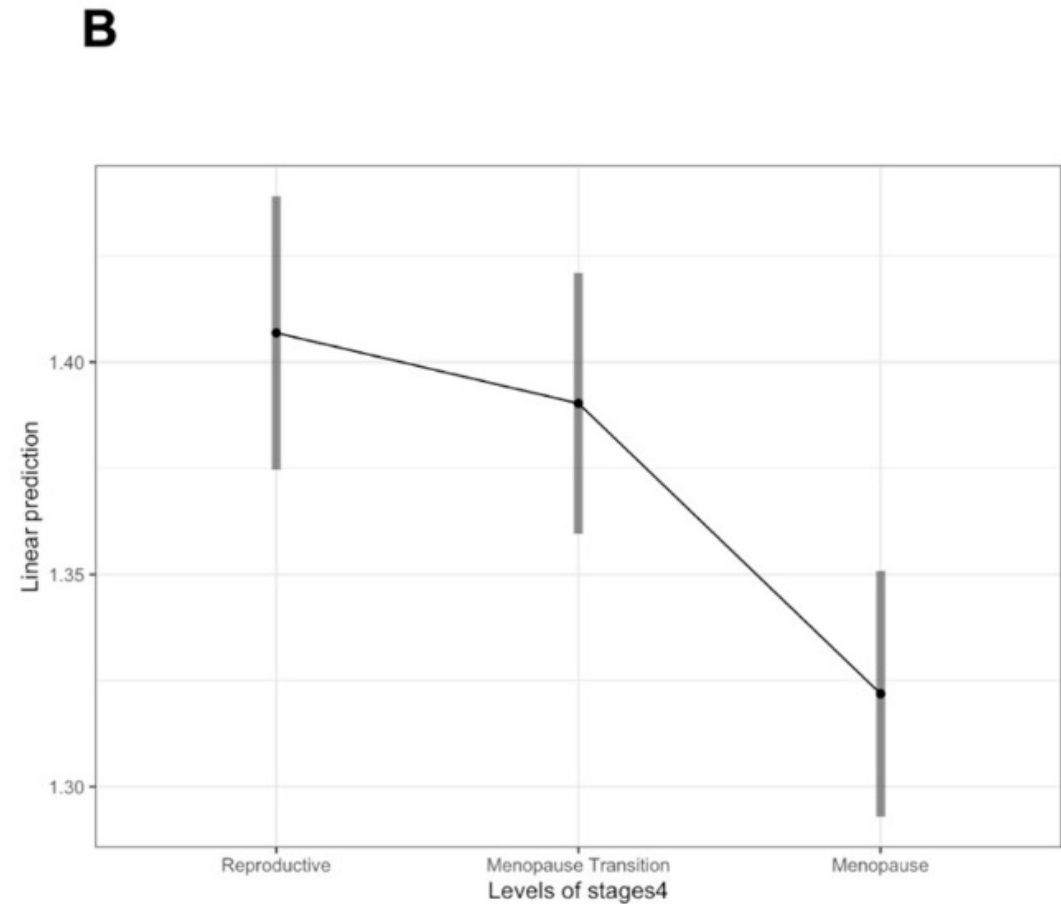
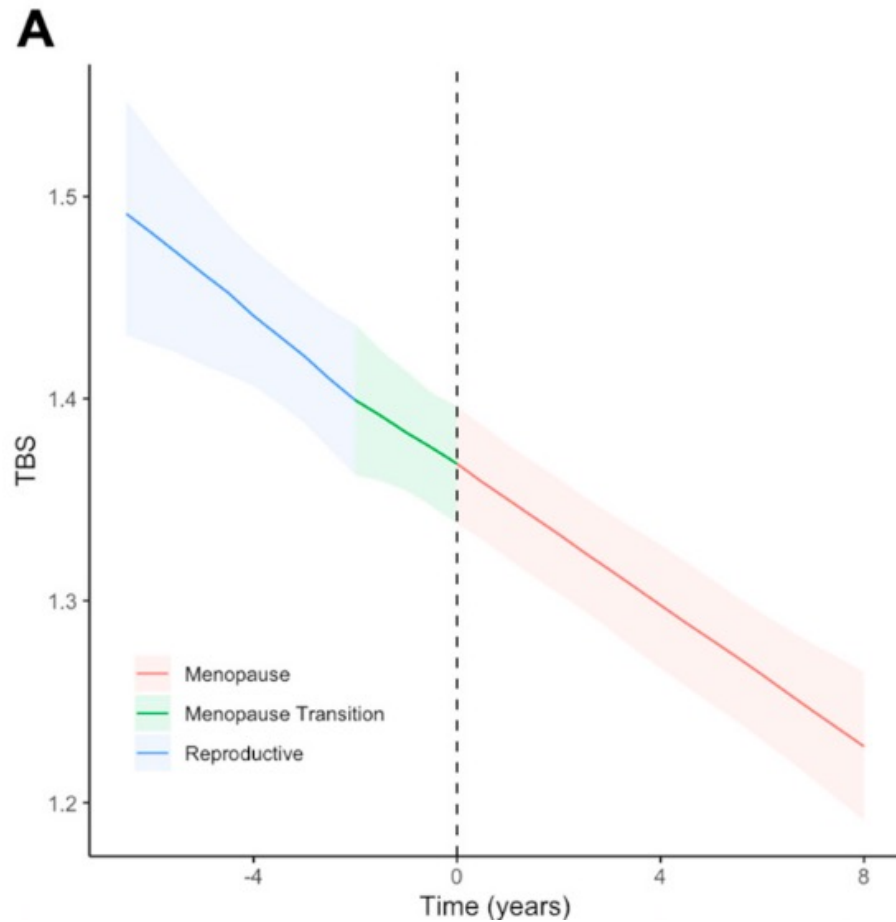
Non-modifiable

- Age (peak bone mass at age 30, decline starts ~age 40)
- Female sex
- Ethnicity (Asian, Northern European)
- Genetics
- Body frame
- Early menopause (age <45)*
 - Removal of both ovaries
 - Chemotherapy

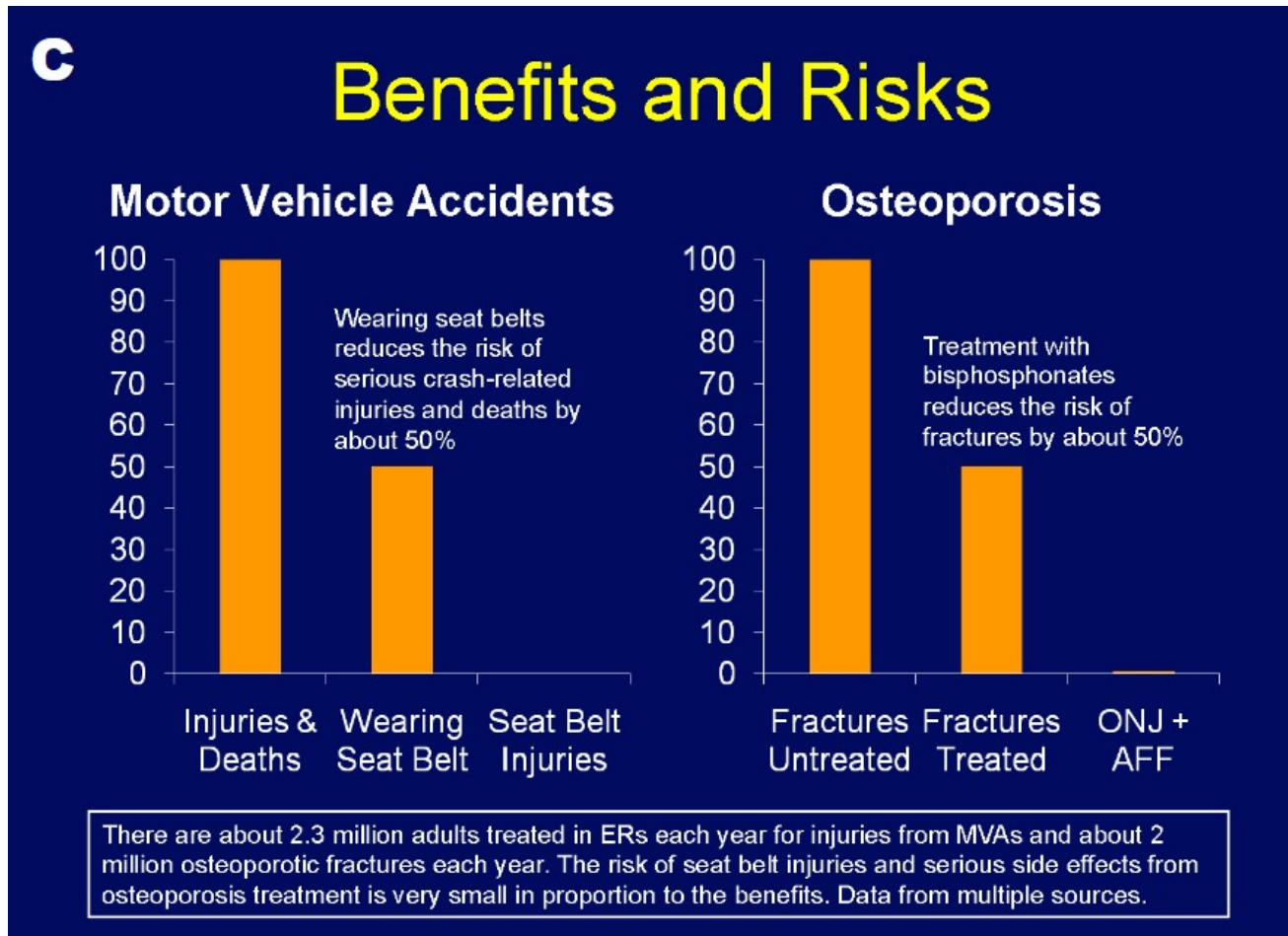
Modifiable

- Underweight
- Diet (low calcium and/or vitamin D intake)
- Low sun exposure
- Smoking
- Heavy alcohol use
- No weight-bearing exercises
- Emotional stress
- Medications (glucocorticoids, PPIs, some ART (TDF))

Bone loss accelerates at the time of the menopausal transition in women with HIV: an important time for screening



Osteoporosis treatment benefits far outweigh the risks



Treatment options:

- Antiresorptives (high risk/no prior fracture)
 - Bisphosphonates (first line)
 - Denosumab
 - Raloxifene
- Anabolics (very high risk/prior fracture)
 - PTH analogues (teriparatide, abaloparatide)
 - Romosozumab

Early cancer screening improves survival outcomes in people living with HIV

Age-appropriate cancer screening recommendations:

Breast

- Mammogram starting at age 40
- Every 1-2 years at least until age 75

Cervical

- Pap smear every 3 years starting at age 21
- Pap smear with HPV co-testing every 3 years starting at age 30

Anal

- Every 2 years with HPV co-testing starting at age 45

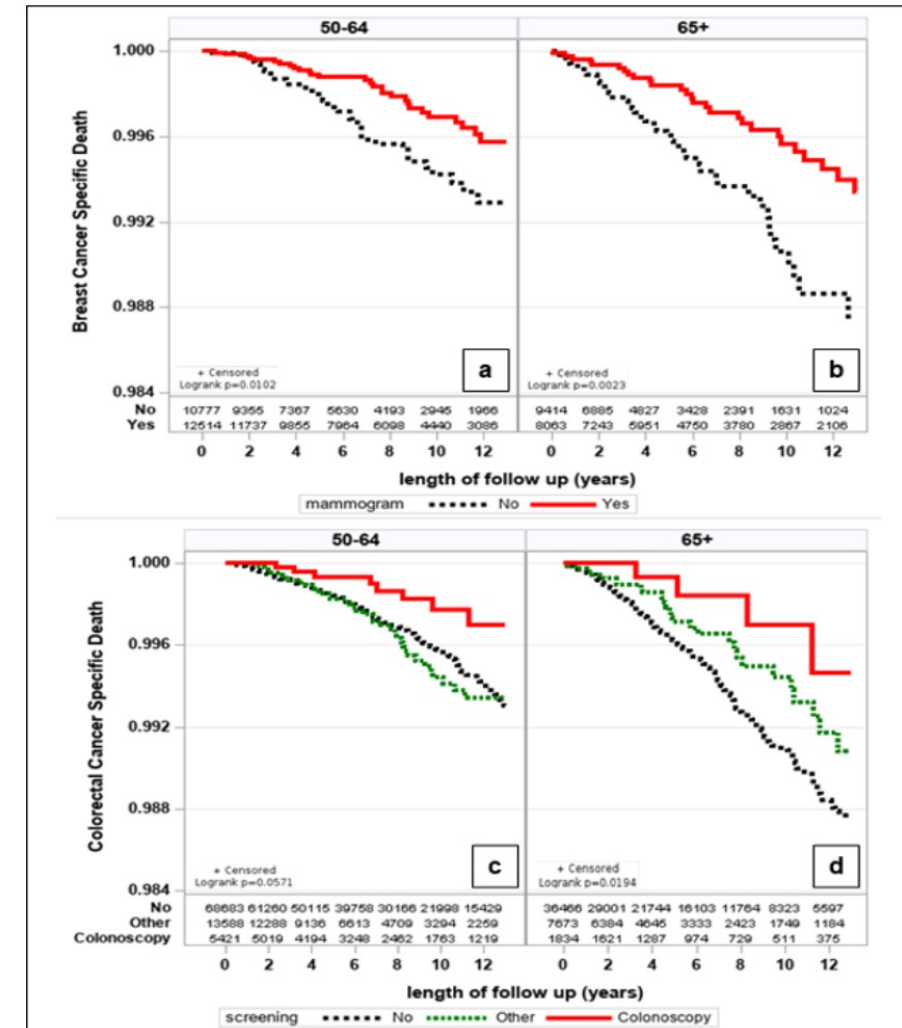
Colon

- Colonoscopy or stool-based test starting at **age 45**

Lung (20-pack years or more smoking history, quit within 15 years)

- Yearly low-dose chest CT ages 50-80

Yu X et al. *AIDS*. 2025 Aug 19. doi: 10.1097/QAD.0000000000004325.



A chalk drawing of a human brain on asphalt, with several pieces of colored chalk scattered around it. The brain is drawn with pink chalk for the outline and internal structures, yellow for the cerebral cortex, green for the cerebellum, and purple for the brainstem. The text "Mental Health" is written in white, with a green chalk piece placed over the letter 'H'. Below the title, the words "Depression", "Trauma", and "HIV Stigma" are listed in white.

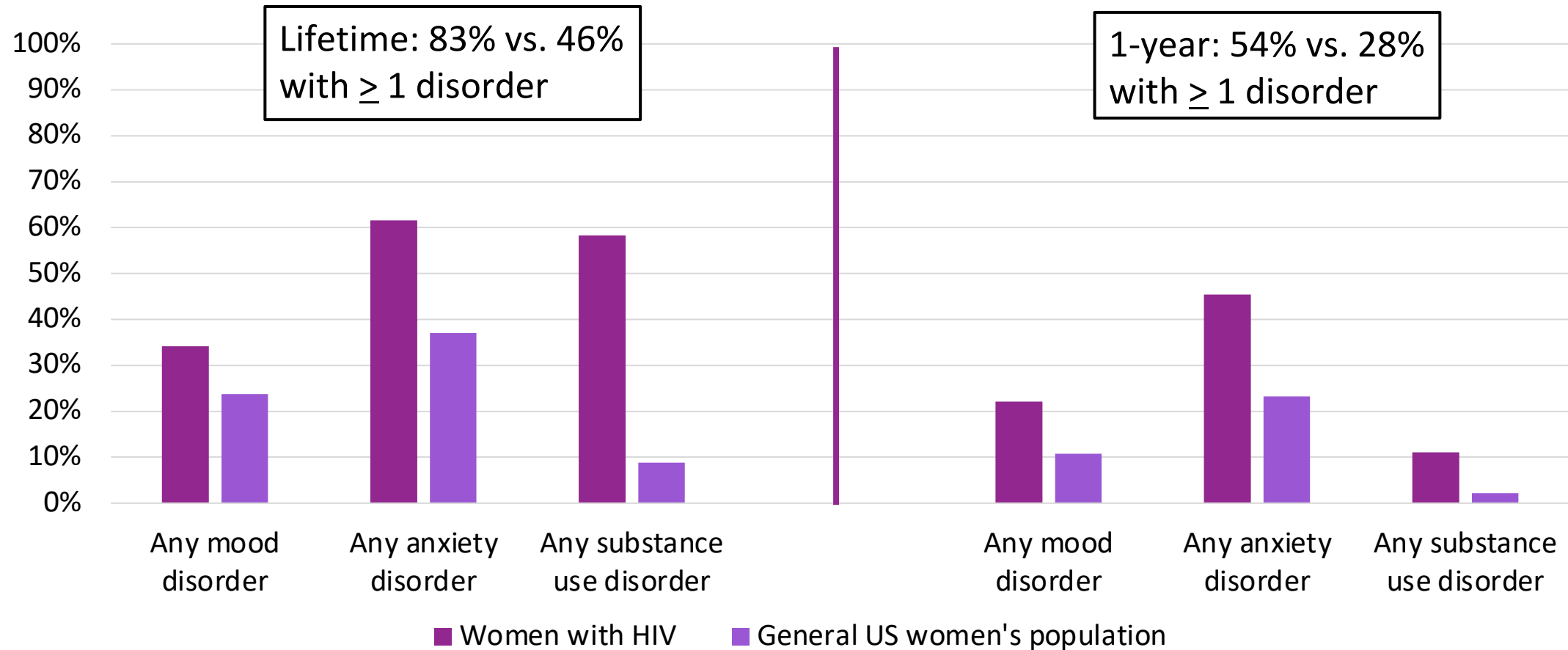
Mental Health

Depression

Trauma

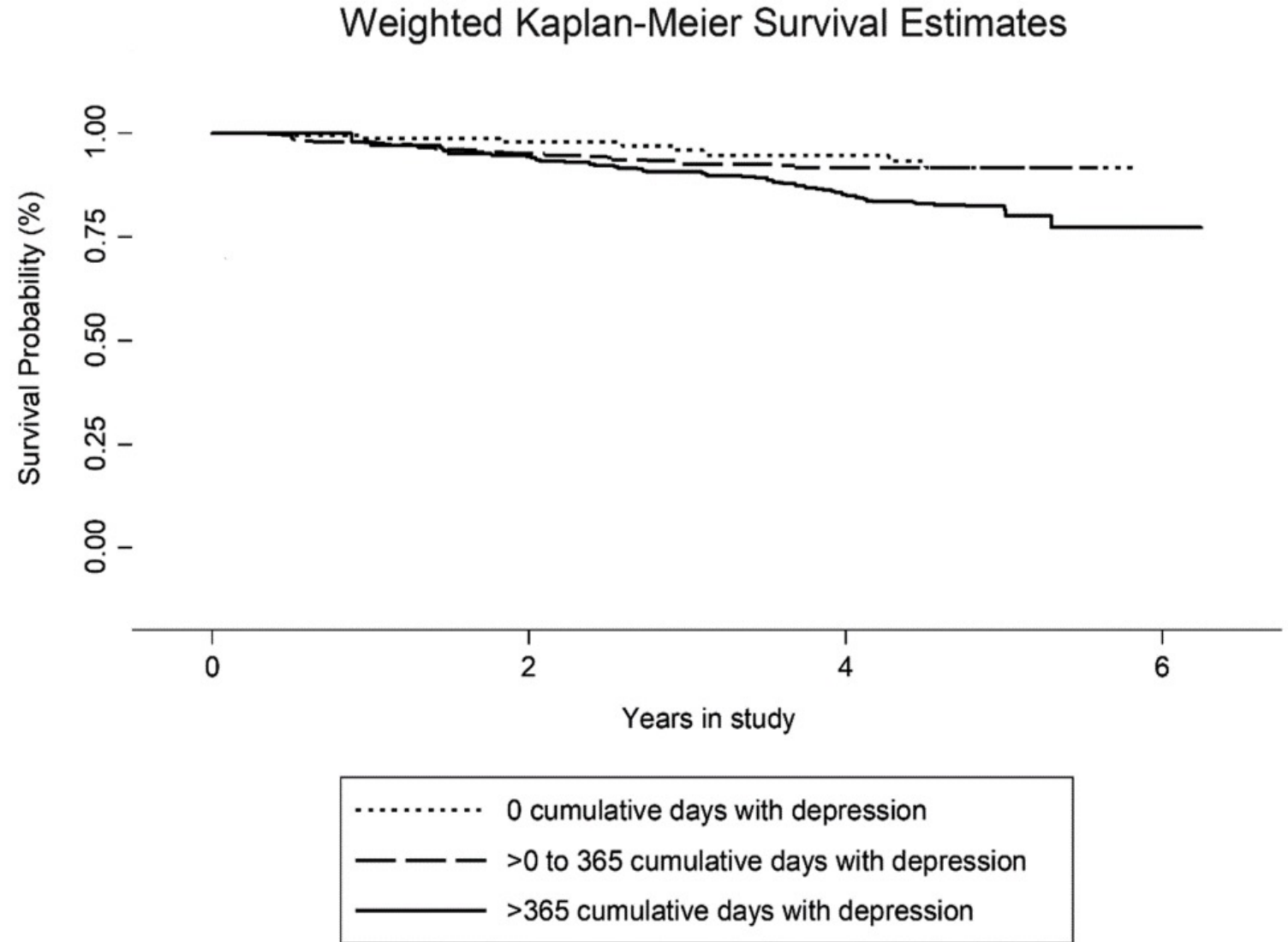
HIV Stigma

Lifetime and 1-year prevalence of mental health disorders in women with HIV compared to the general U.S. women's population, 2010-2013

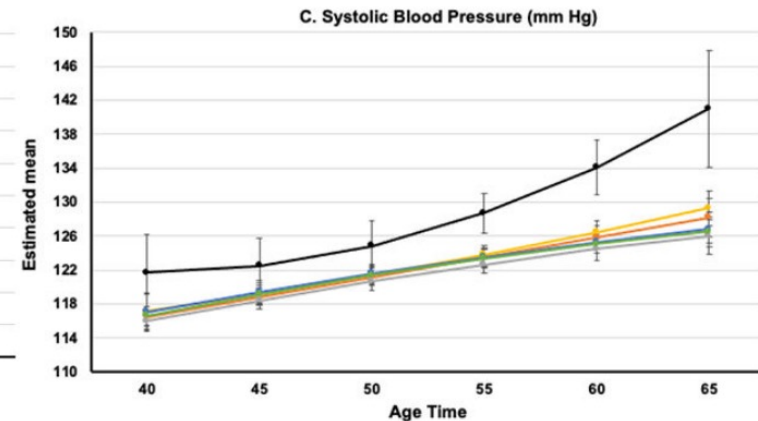
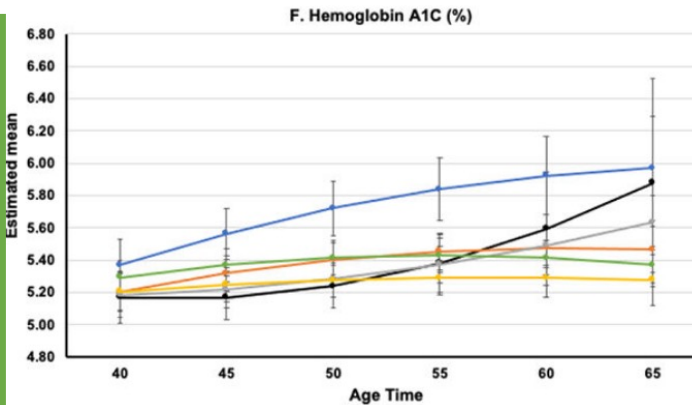
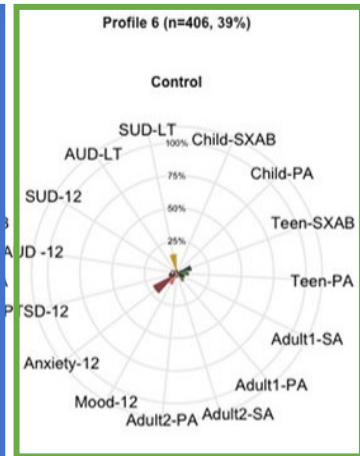
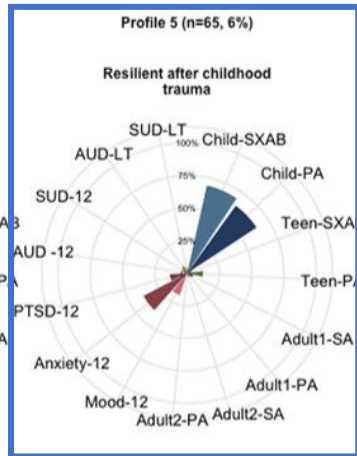
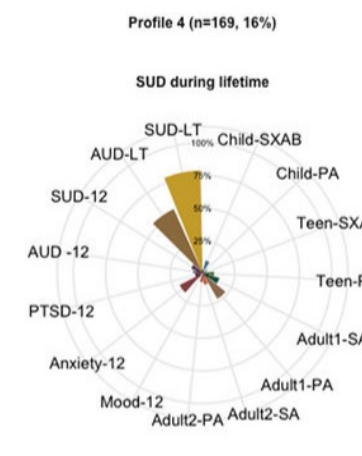
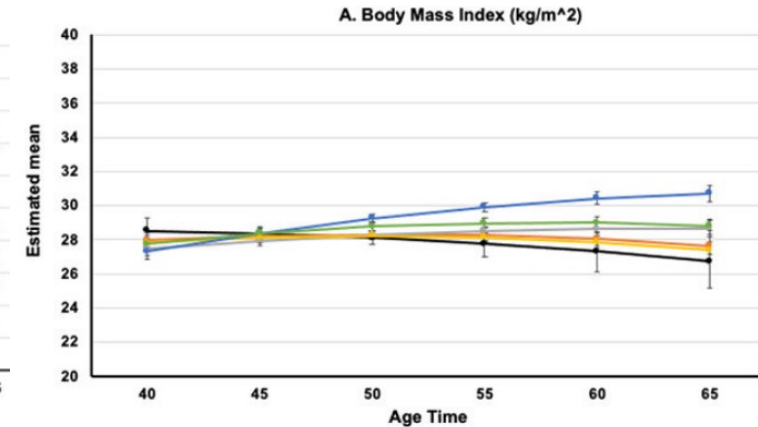
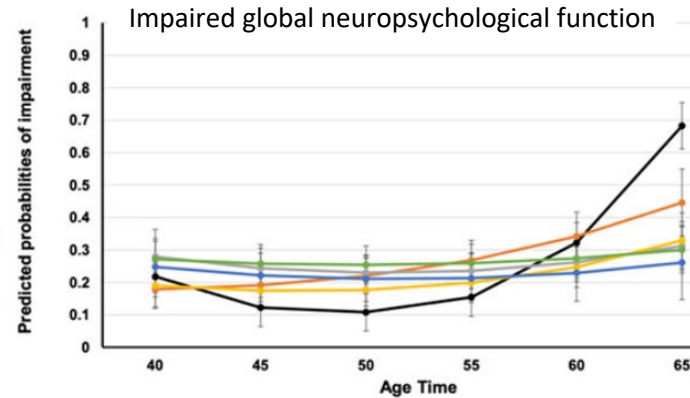
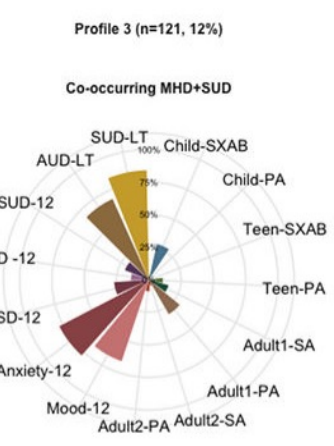
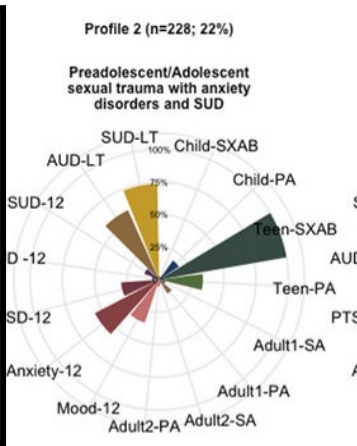
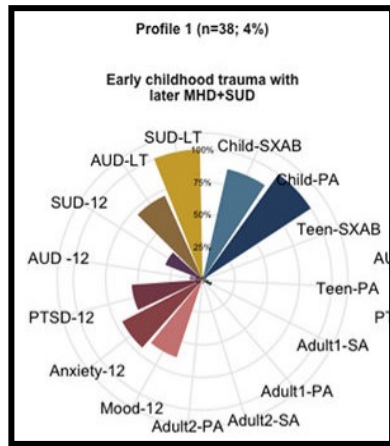


Depression is very common and associated with mortality in women with HIV

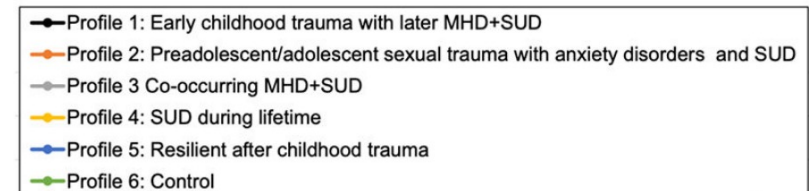
- 52% of women reported depressive symptoms at study entry
- Each additional 365 days of depressive symptoms was associated with a 72% increase in mortality



Trauma is common in women living with HIV and is associated with cognitive impairment and multimorbidity

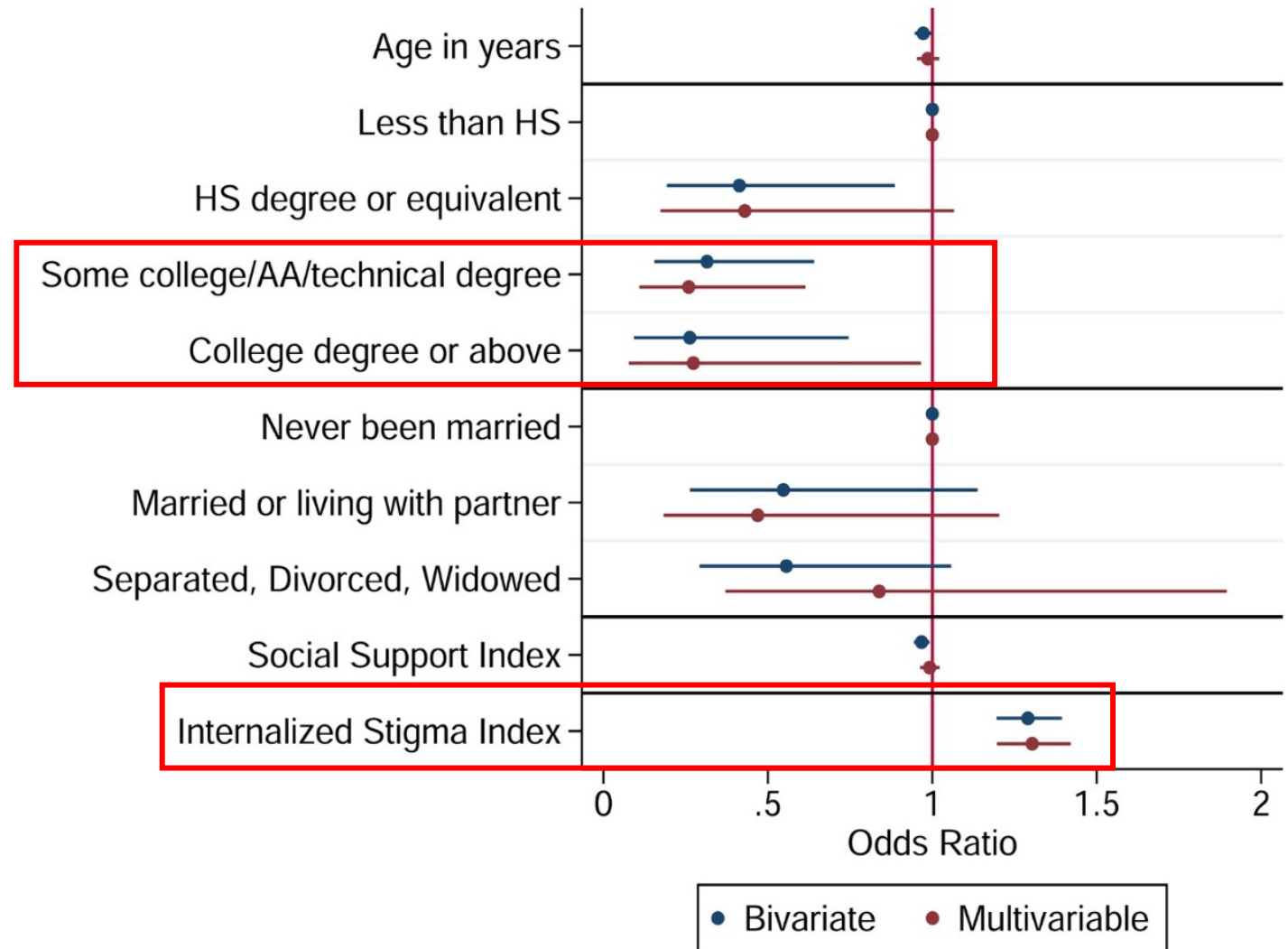


51% sexual abuse (14% ages 0-7, 26% ages 8-17, 11% ages 18-60)
44% physical abuse (10% ages 0-7, 15% ages 8-17, 19% ages 18-60)



Factors associated with PTSD in Black women with HIV

- 239 women from Chicago, IL and Birmingham, AL
- 54% age ≥ 46 years
- 67% with PTSD symptoms
- Gendered racial microaggressions²

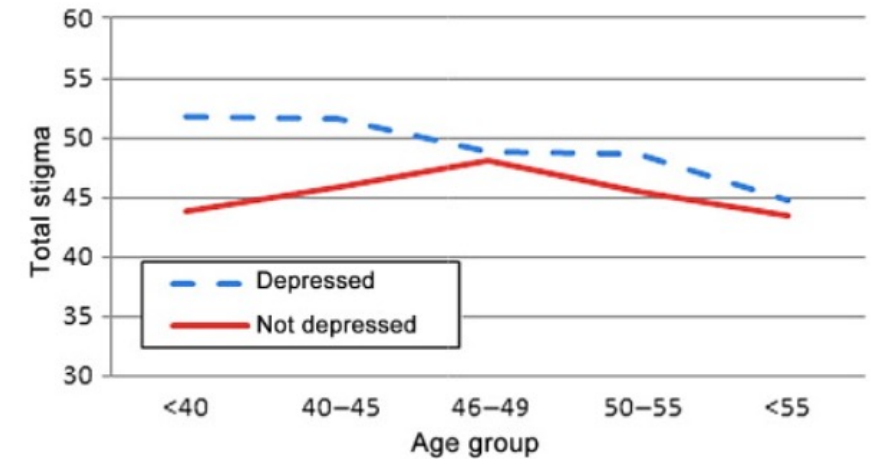
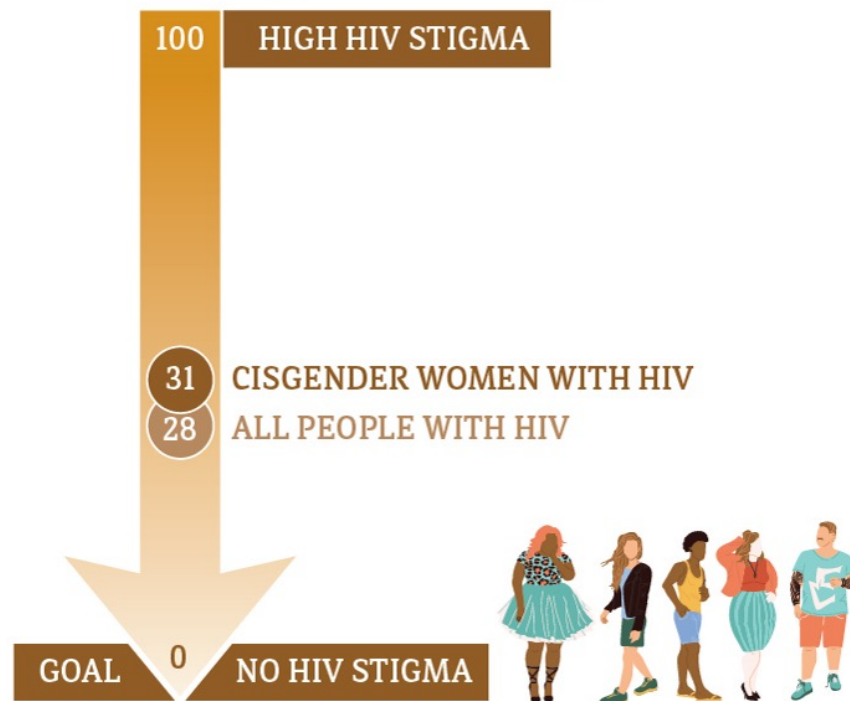


¹Andu E et al. *AIDS Care*. 2018;30(11):1393-1399

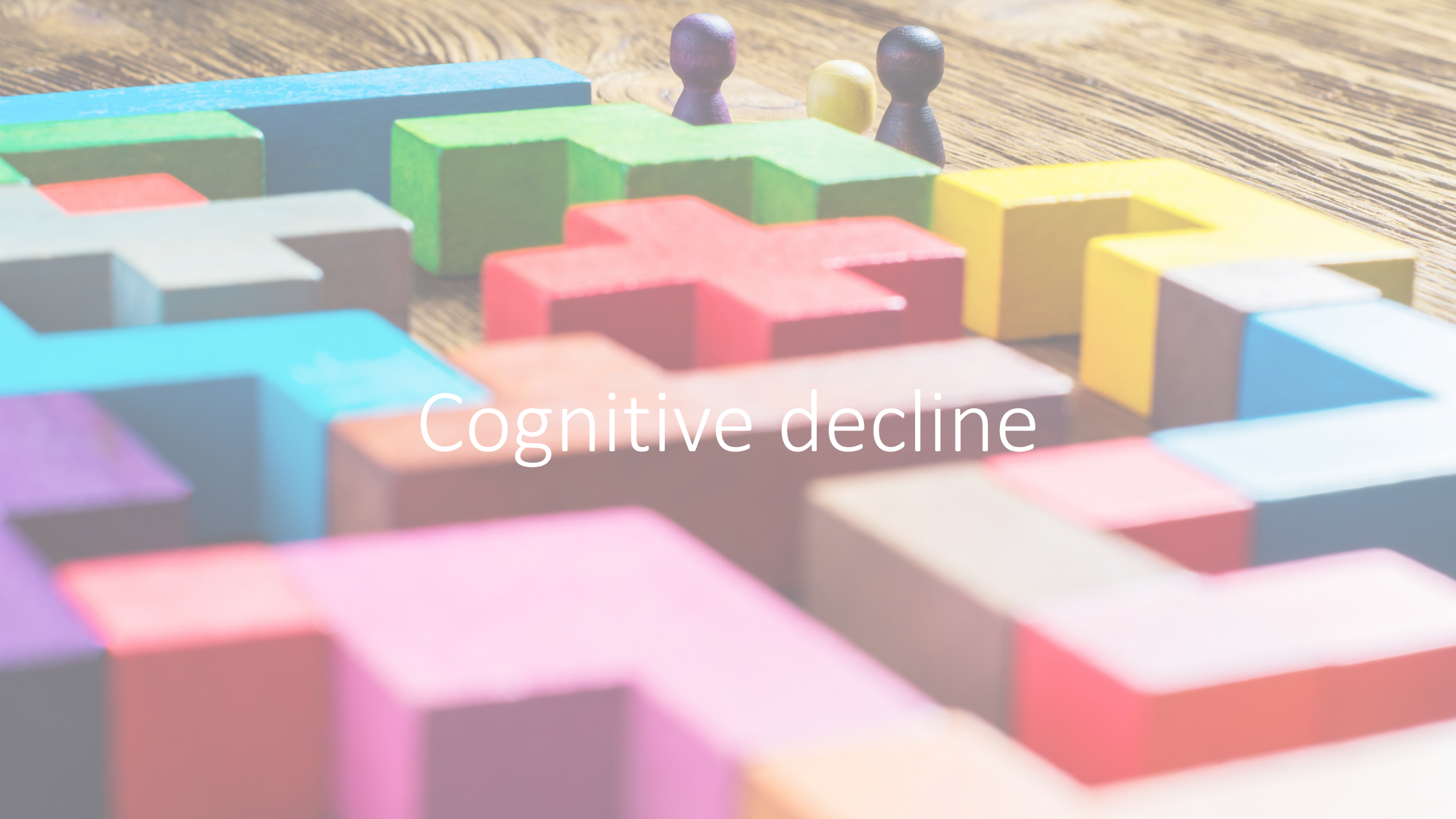
²Sharma R, Dale SK. *AIDS Behav*. 2023;27(2):400-415

HIV-related stigma is common in women but may decrease with age

Cisgender women with diagnosed HIV experienced HIV stigma.



- Risk factors
 - Female sex
 - Heterosexual orientation
 - Maladaptive coping
 - Poor self-rated health
- Protective factors
 - Greater mastery
 - Increased social support
 - Time since HIV diagnosis

A close-up photograph of a wooden surface, likely a table, covered with various colorful geometric blocks. The blocks are in shades of blue, green, red, yellow, cyan, purple, pink, and orange. Some blocks are simple rectangles, while others are more complex, like L-shaped or T-shaped. Three small wooden pegs are visible: two dark brown ones and one light yellow one. The text "Cognitive decline" is overlaid in the center in a white, sans-serif font.

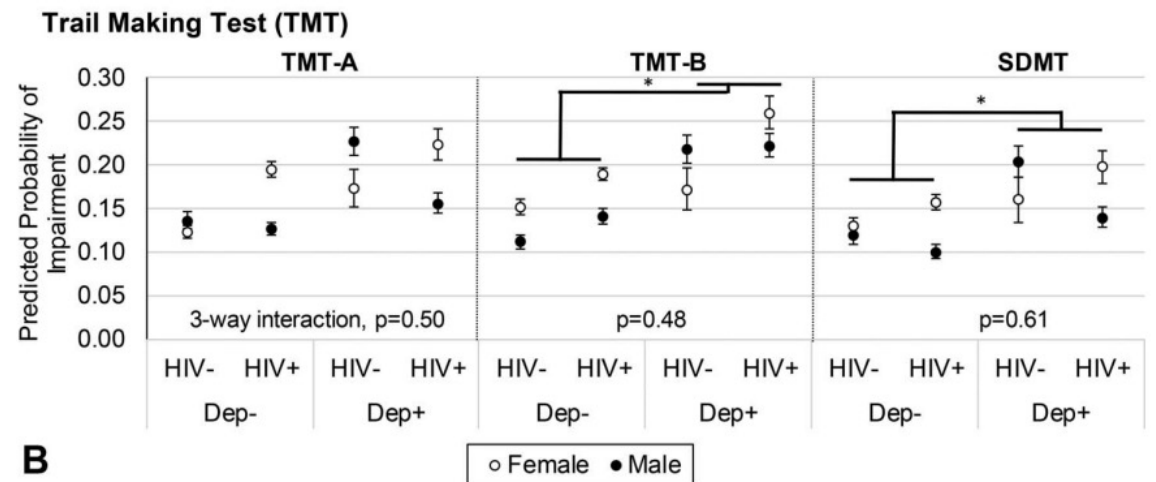
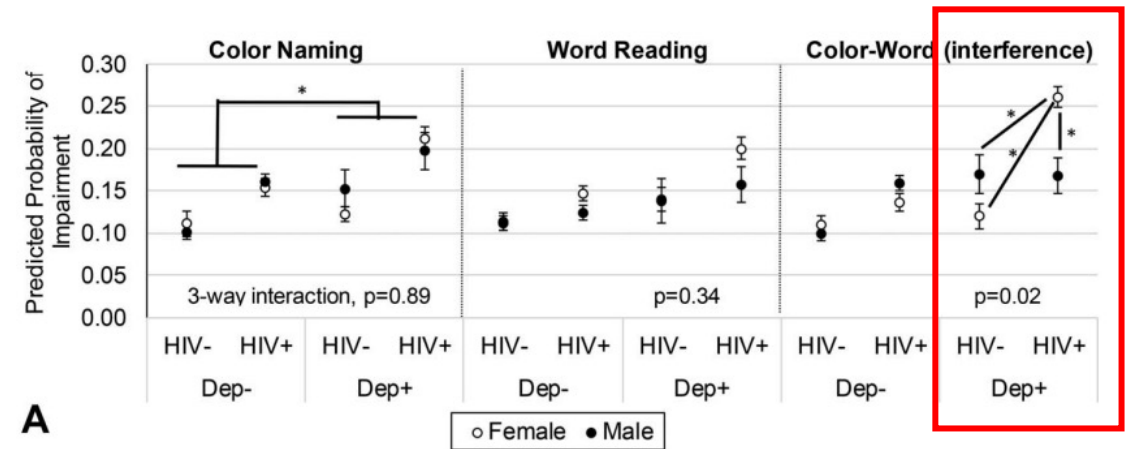
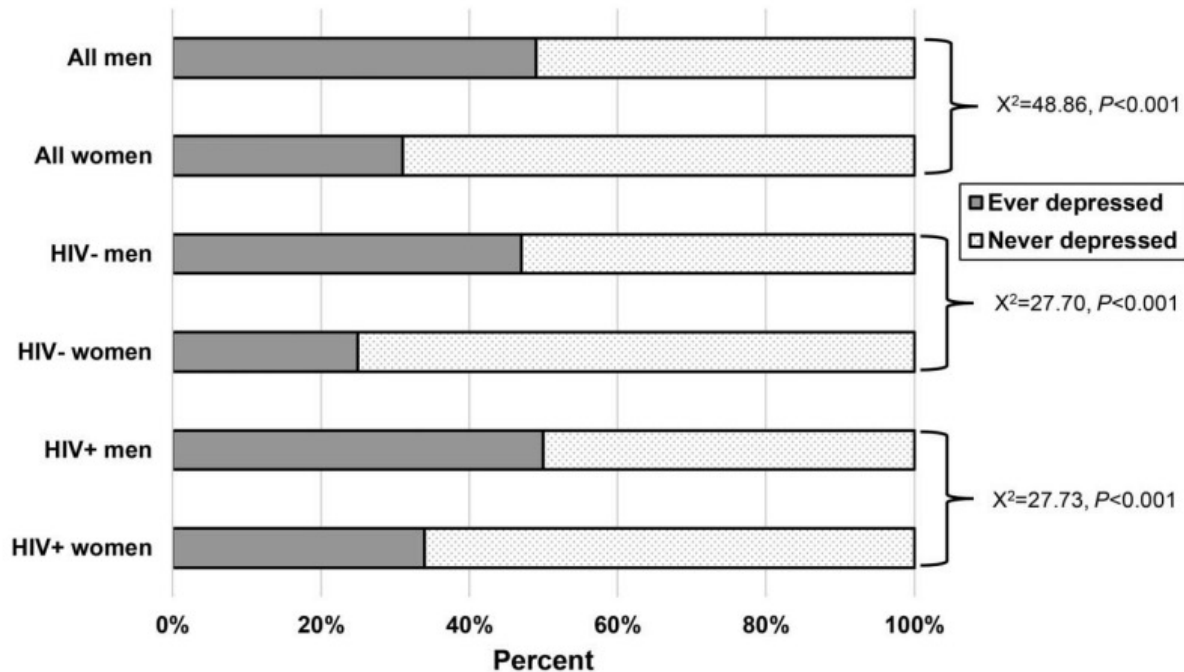
Cognitive decline



Cognitive impairment is common in older people with HIV

- HIV-associated neurocognitive disorders (HAND)
 - More common in prior eras, ~45% prevalence
 - More stable, less degenerative than AD
- Alzheimer's Disease (AD)
 - Will likely become more common as the population ages
 - Little research in AD in people with HIV- cohorts may be too young
 - May be misdiagnosed as HAND
 - Risk factors: older age, vascular disorders, depression, genetics
- Vascular dementia
 - Cardiometabolic risk factors

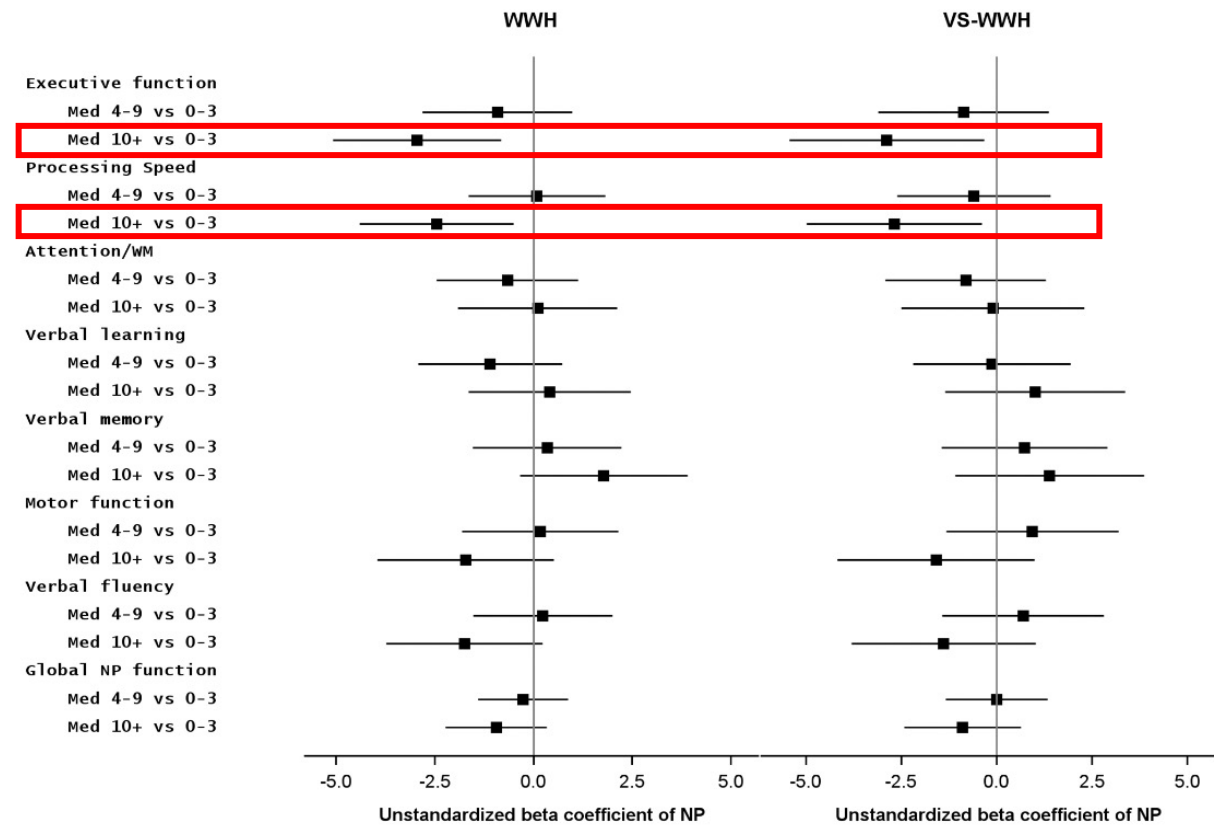
Depressive symptoms are associated with executive dysfunction in women with HIV more than in men with HIV



Medication use may impact neurocognitive impairment in women with HIV

- Women with HIV are on almost twice as many medications than age-matched women without HIV (7.5-8 vs. 3.5)
- Common non-antiretroviral medication classes can impact the central nervous system
 - Anticonvulsant
 - Antianxiety*
 - Anticholinergic
 - Antipsychotic
 - Amphetamine
 - Opioid*
 - Beta-blocker
 - Gastrointestinal*
 - Antihistamine*
 - Muscle relaxant
 - Antidepressant*

*More common in women with HIV



34.5% with moderate (5-9 meds) polypharmacy
24% with severe (≥ 10 meds) polypharmacy

Spence AB et al. *AIDS Res Hum Retroviruses*. 2022;38(7):561-570.
Radtke KK et al. *J Acquir Immune Defic Syndr*. 2018;78(2):202-208
Rubin LH et al. *AIDS Res Hum Retrovirus*. 2022;38(7):571-5790

Many dementia risk factors are modifiable

- Less education/cognitive stimulation
- Vision loss
- Hearing loss
- Head injury
- Smoking
- Excessive alcohol consumption
- Physical inactivity
- Infrequent social contact
- Air pollution
- High LDL cholesterol
- Hypertension
- Obesity
- Diabetes
- Depression

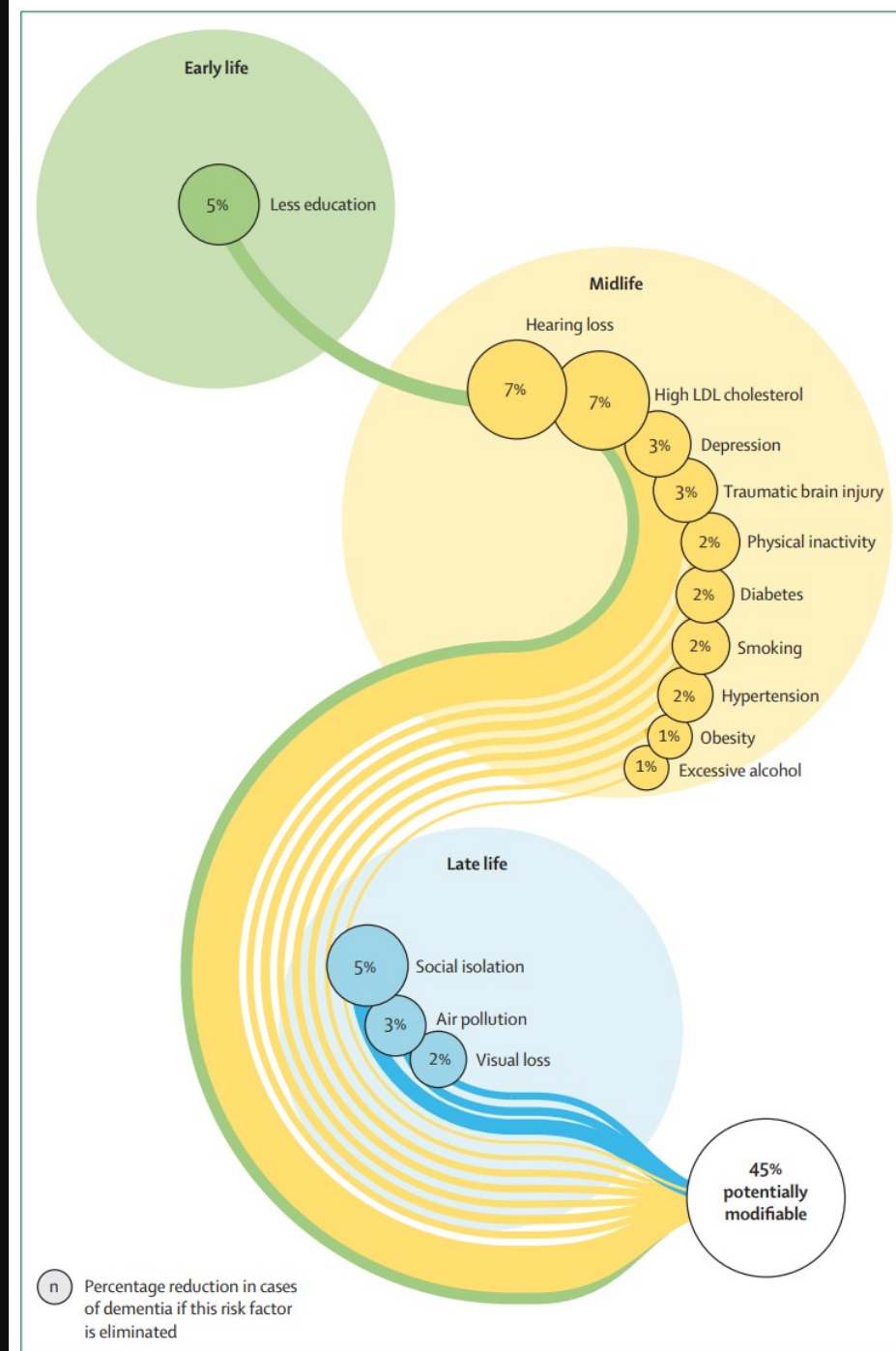
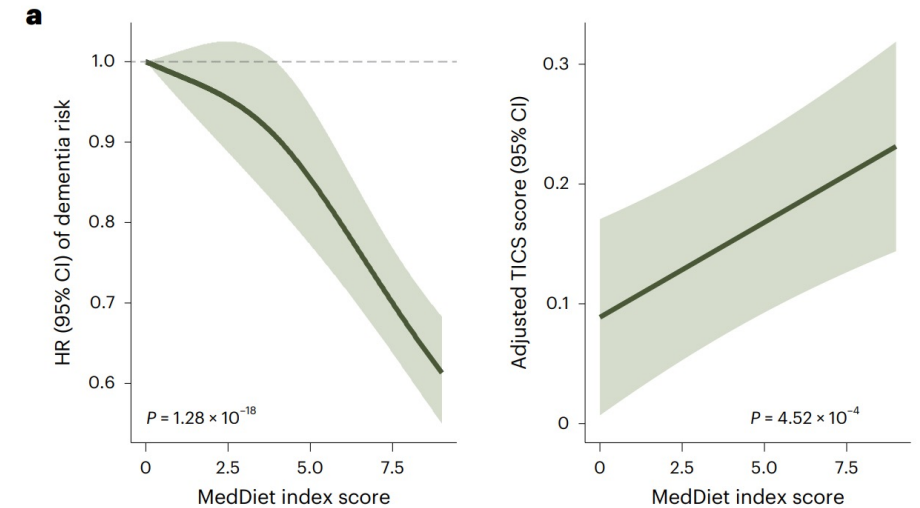
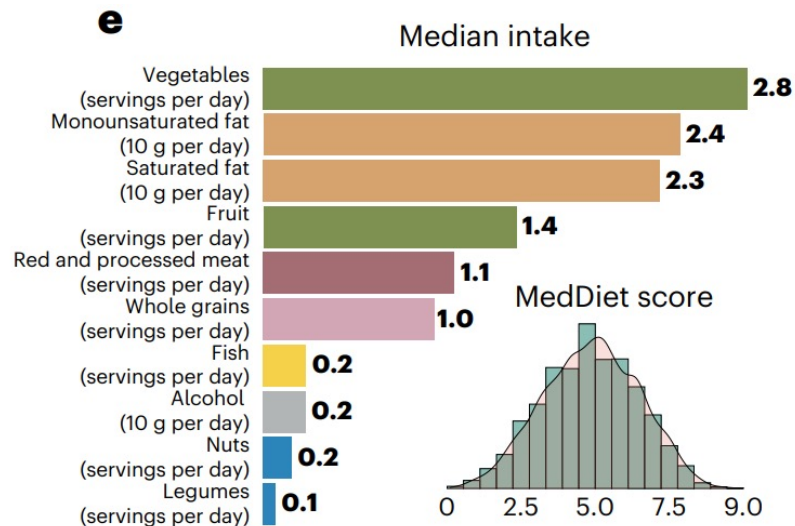
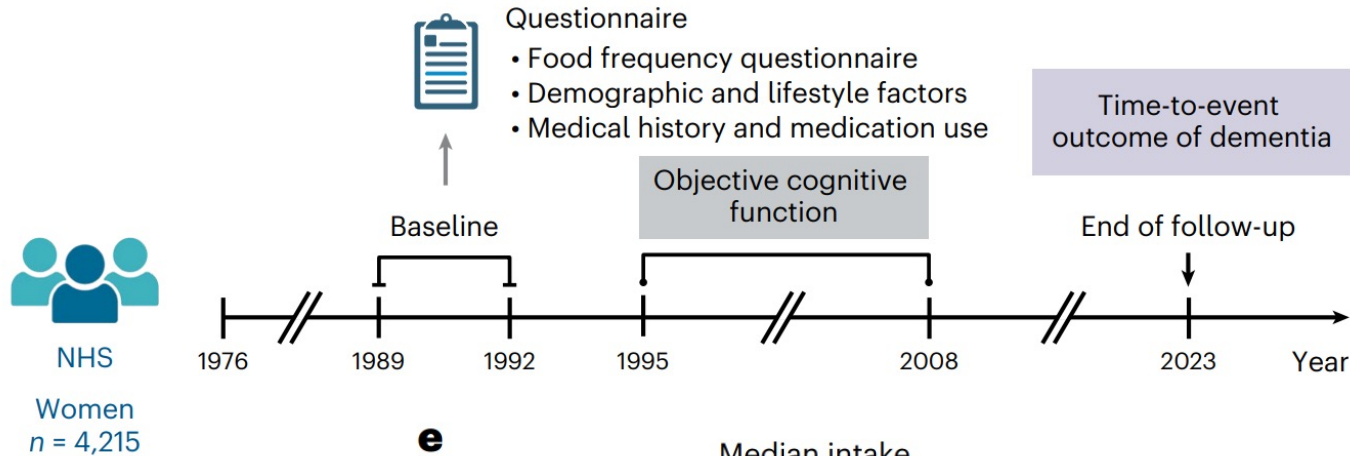
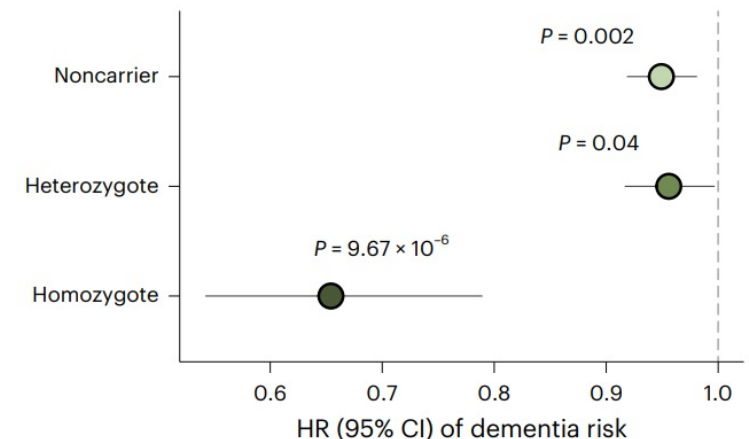


Figure 9: Population attributable fraction of potentially modifiable risk factors for dementia

Adherence to a Mediterranean Diet is associated with a lower risk of dementia in people with a high genetic risk for Alzheimer's Disease



MedDiet score and dementia risk by APOE4





Approach to cognitive decline in women with HIV

- In-office assessments: MMSE, MOCA
- Screen and treat for depression, substance use, or other underlying health conditions
- Assess for polypharmacy, eliminate (or reduce) any CNS-active medication if possible
- Rule-out other causes of cognitive decline (syphilis, thyroid disease, nutritional deficiency)
- Consider CNS imaging
- Consider formal neuropsychiatric evaluation if available



In summary

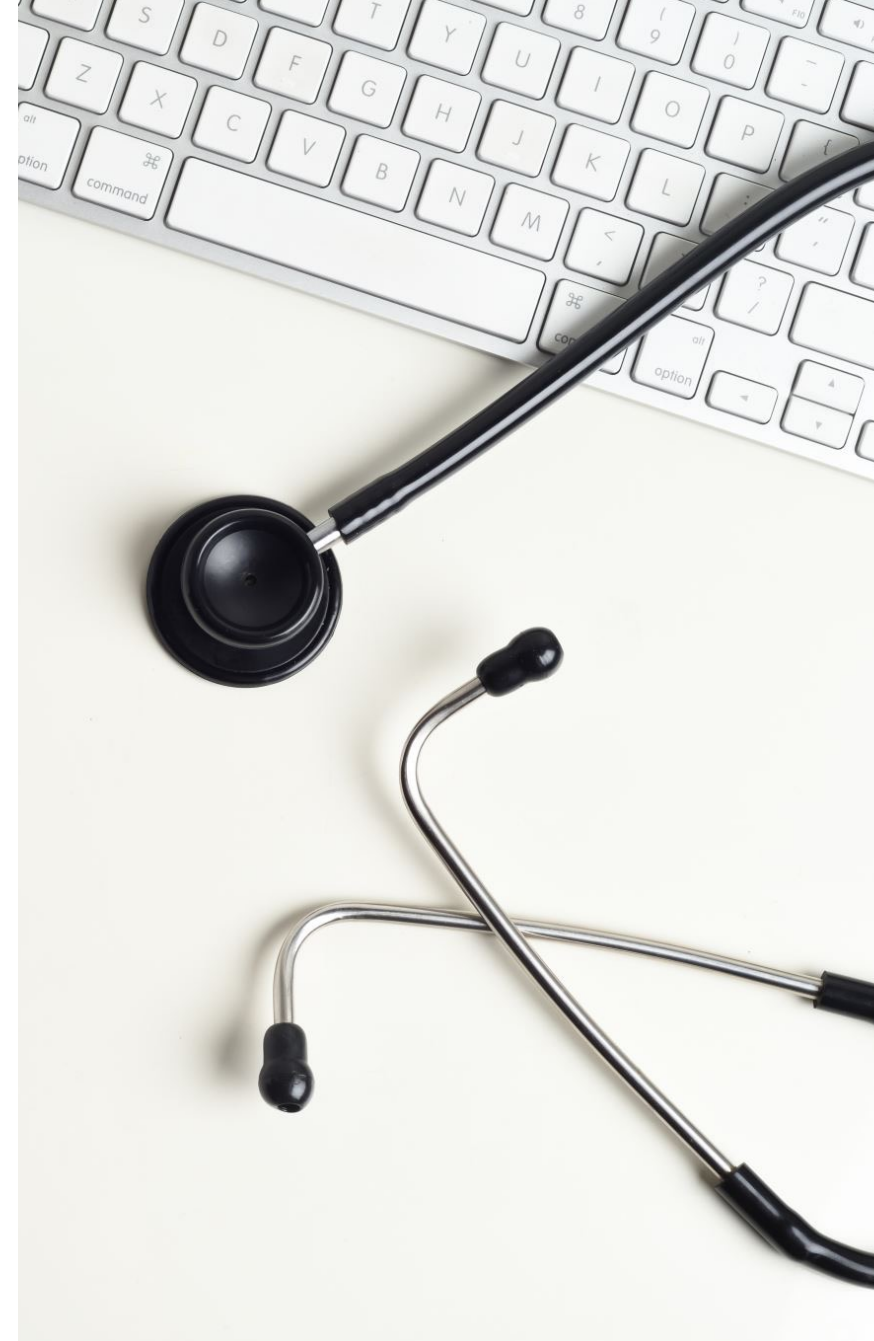
Frailty and prefrailty
are common in people
living with HIV

Physical activity that
includes aerobic and
strengthening
exercises is important
to preserve health

Many risk factors for
cognitive decline are
modifiable

How to Make the Most Out of Your Visit with your Healthcare Provider

- Bring a list of questions/topics with you
 - Not all topics may be covered in every visit: may need to plan a follow-up visit
- Bring your numbers
 - Blood pressure
 - Blood sugar
- Bring your medications
 - Hot tip: most providers don't know what the medications they prescribe actually look like!
 - Ask if some meds can be combined. Combo pills exist outside of HIV meds.
 - Ask if any medications can be stopped.
- Bring a friend/family member
- Ask Questions!!



Thank you!!

- Study participants
- Funding sources
- Colleagues and mentors



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Questions?

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