CMEO
BriefCase

Team Approach to Addressing Comorbidities in Aging Populations of People Living with HIV

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CME OUTFITTERS

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Learning Objective

Utilize team-based interdisciplinary care to optimize HIV and comorbidity outcomes in aging patients.

Patient Case: Jeff

- 58-year-old man living with HIV x 30 years.
- PMH: hypertension x 6 years, COPD x 3 years.
- Smoked 1.5 packs cigarettes/day for 20 years, stopped at age 48.
- He fell while getting out of the car yesterday and is complaining of knee pain.

Medications:

EVG/COBI/FTC/TDF daily AC

Aspirin 81 mg daily AC

Losartan 50 mg daily

Pantoprazole 40mg daily AC

Tiotropium 18 mcg/cap INH daily

Albuterol 90 mcg 1 INH prn SOB

OTC pain relievers as needed

Relevant Fasting Labs:

Range:
WNL
Borderline
Out

HIV: HIV-RNA < 40 c/mL, CD4 580 c/uL

DMT2 Screen: BG 90 mg/dL, HbA1c 6%

Vitals: BMI 24, BP 118/78 mmHg, RR 18 bmp, SpO2 93%

Lipids (mg/dL)**:** TC 160, LDL-C 90, HDL-C 52, TG 130

LFTs: ALT 38 u/L, AST 29 u/L, ALB 3.5 g/dL, TB 0.9 mg/dL

Electrolytes: all WNL, anion gap (corrected) 15 mEq/L

Kidney: BUN 22 mg/dL, Creatinine 0.9 mg/dL, eGFR 99 mL/min/1.73m2

AC = before meals; ALB = albumin; ALT = alanine transaminase; AST = aspartate aminotransferase; BG = blood glucose; BMI = body mass index; BP = blood pressure; BUN = blood urea nitrogen; CD4 = clusters of differentiation 4; COBI = cobicistat; COPD = chronic obstructive pulmonary disease; DMT2 = diabetes mellitus type 2; eGFR = estimated glomerular filtration rate; EVG = elvitegravir; FTC = emtricitabine; HbA1c = glycated haemoglobin; HDL-C = high-density lipoprotein cholesterol; INH = inhale; LDL-C = low-density lipoprotein cholesterol; LFTs = liver function tests; OTC = over the counter; PMH = past medical history; prn = as needed; RR = respiratory rate; SOB = shortness of breath; SpO2 = blood oxygen saturation; TB = total bilirubin; TC = total cholesterol; TDF = tenofovir disoproxil fumarate; TG = total triglycerides; WNL = within normal limits

Audience Response

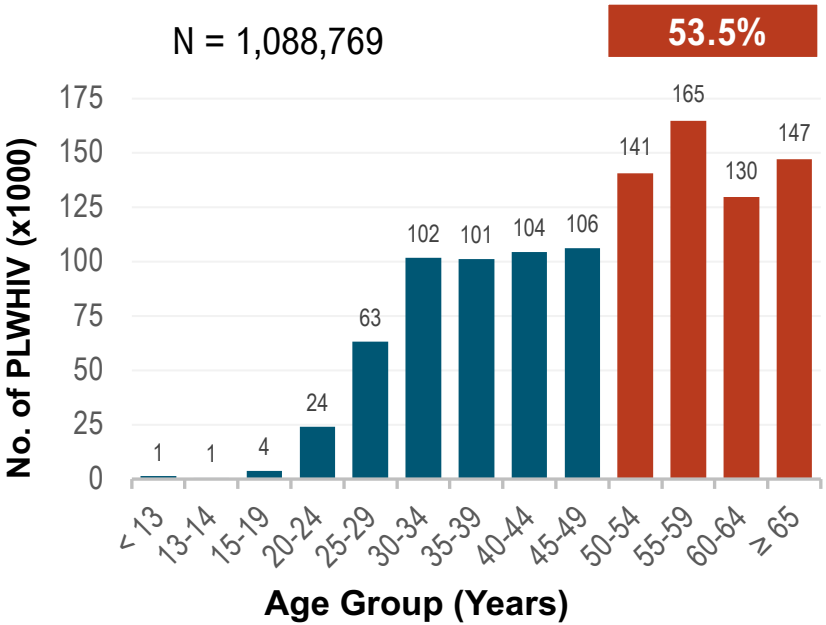
What is Jeff's most likely biological predicted age, according to average results in frailty studies of PAWH?

A. 48
B. 53
C. 58
D. 68
E. I don't know

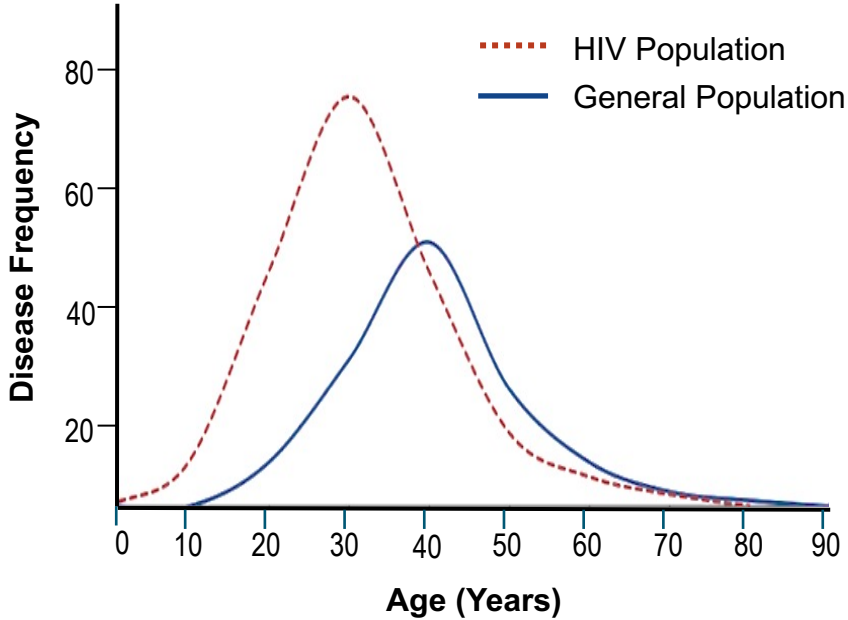
A. PAWH = people aging with HIV

Epidemiology of Aging in HIV

Persons Living with Diagnosed HIV, United States, Year-End 2021



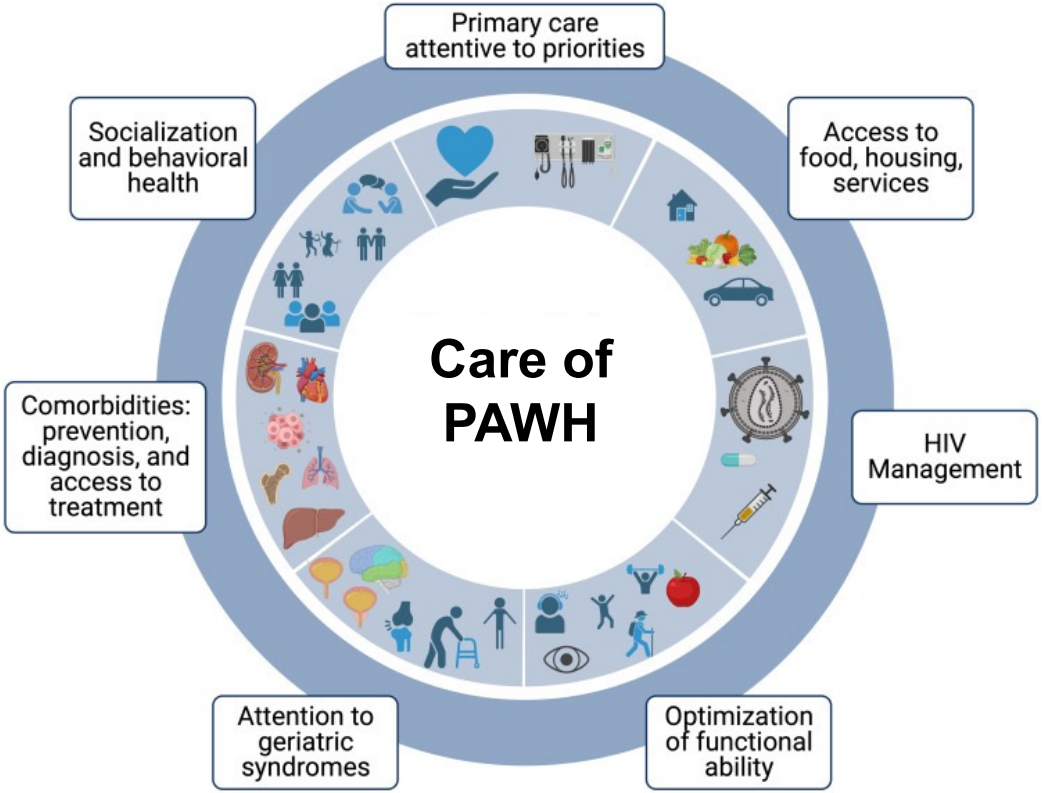
Accelerated and Accentuated Aging in PLWH



PLWH = people living with HIV

Centers for Disease Control and Prevention [CDC]. *HIV Surveillance Report*. CDC Website. 2021. https://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Pathai S, et al. *J Gerontol A Biol Sci Med Sci*. 2014;69(7):833-842. Montano M, et al. *Lancet Healthy Longev.* 2022;3(3):e194-e205.

HIV, Aging, and Chronic Comorbidities



Key Comorbidity Risks in PAWH:

- Cardiovascular diseases (CVD)
- Osteoporosis and fracture
- Diabetes and metabolic syndrome
- Kidney disease
- Liver disease
- Lung disease
- Non-AIDS related malignancies
- Neurocognitive impairment
- Geriatric syndromes and frailty

Yang HY, et al. *Sci Rep*. 2019;9(1):18514. Guaraldi G, et al. *PLoS One*. 2015;10(4):e0118531. Webel AR, et al. *J Assoc Nurses AIDS Care*. 2021;32(3):322-346. Brothers TD, et al. *Eur Geriatr Med*. 2019;10(2):219-226.

Key Comorbidity Monitoring in PAWH

Bone health
- FRAX in men 40–49 years and premenopausal women ≥ 40 years; DXA in men ≥ 50 years and postmenopausal women

Cardiovascular health
- Consider statin (pitavastatin 4mg qday preferred) for PLWH > 40 years + LDL > 70 mg/dL

Liver and kidney health
- Routine CBC, chemistry panel, and urinalysis

Mental health
- SUD, depression, and neurocognitive impairment screening at every visit

Medications
- Routine review of polypharmacy and fall risk

Lung health
- Screen for COPD in PLWH > 40 years

Cancer
- Anal or Pap, and/or cervical Pap as applicable

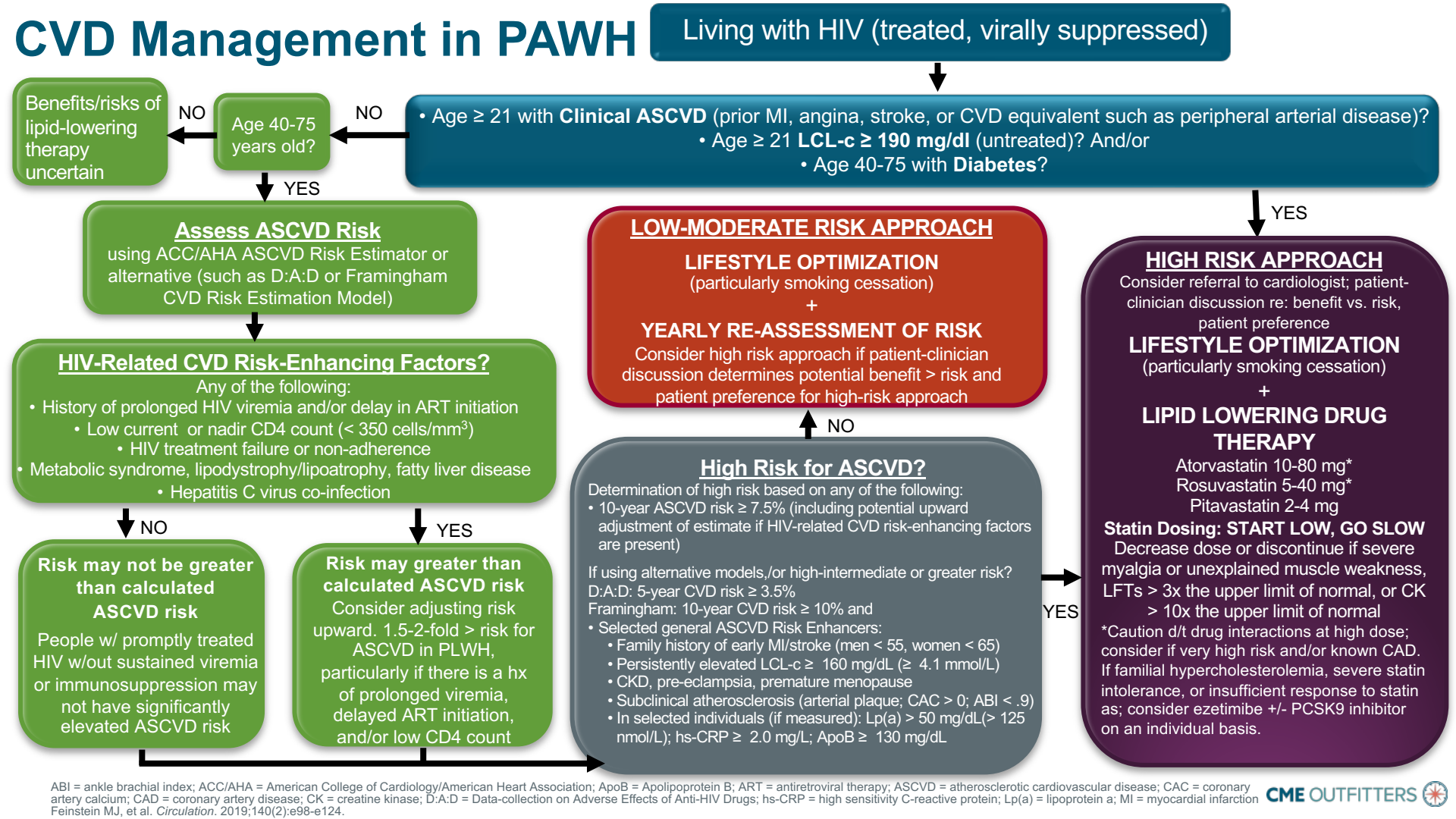
Diabetes
- HbA1c unreliable in PLWH; refer to BG for diagnostic purposes

Vaccinations
- Offer vaccinations for pneumococcal infection, influenza, Tdap, and meningococcus according to CDC Opportunistic Infection and ACIP guidelines; HPV series offered up to 45 yo in PLWH

ACIP = Advisory Committee on Immunization Practices; CBC = complete blood count; CDC = Centers for Disease Control and Prevention; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; HPV = human papillomavirus; SUD = substance use disorder; Tdap = tetanus, diphtheria, and pertussis; yo = year old

Thompson MA, et al. *Clin Infect Dis*. 2021;73(11):e3572-e3605. Feinstein MJ, et al. *Circulation*. 2019;140(2):e98-e124. Grundy SM, et al. *J Am Coll Cardiol*. 2019;73(24):3168-3209. Brown TT, et al. *Clin Infect Dis*. 2015;60(8):1242-1251. Frey E, et al. *HIV AIDS (Auckl)*. 2023;15:191-208. Fitch KV, et al. *Curr Opin HIV AIDS*. 2022;17(5):293-300. Erlandson KM, et al. *Infect Dis Clin North Am*. 2019;33(3):769-786.

CVD Management in PAWH



ABI = ankle brachial index; ACC/AHA = American College of Cardiology/American Heart Association; ApoB = Apolipoprotein B; ART = antiretroviral therapy; ASCVD = atherosclerotic cardiovascular disease; CAC = coronary artery calcium; CAD = coronary artery disease; CK = creatine kinase; D:A:D = Data-collection on Adverse Effects of Anti-HIV Drugs; hs-CRP = high sensitivity C-reactive protein; Lp(a) = lipoprotein a; MI = myocardial infarction

Feinstein MJ, et al. *Circulation*. 2019;140(2):e98-e124.

CME OUTFITTERS

ART Considerations in PAWH

Class	INSTI	NRTI	NNRTI	PI	Entry/capsid inhibitors
ARVs	BIC, CAB, DTG, EVG, RAL	ABC, FTC, 3TC, TAF, TDF, ZDV	DOR, EFV, NVP, RPV	ATV, DRV, LPV	Enfuvirtide, fostemsavir, ibalizumab, lenacapavir, maraviroc
Class Notes	Generally well tolerated. Some reports of CNS and/or GI effects. BIC has lowest side effect profile.	Most renally metabolized. Although unaffected by liver dysfunction, but adequate renal function required.	CYP450 DDIs with rifampin, azoles, anti-epileptic medications, statins, midazolam, ergotamines, antiplatelet agents, among others.	Usually “boosted” with PK enhancers (RTV or COBI), leading to DDIs due to potent inhibition of CYP450.	Less common newer agents Ibalizumab, fostemsavir, and lenacapavir approved for treatment-experienced people with MDR
Age Notes	Oral absorption reduced when co-administered with calcium, aluminum, or magnesium antacids or calcium or iron supplements.	TAF > TDF if renal or bone disease. TAF associated potential weight implications. Tenofovir, FTC, 3TC also treat HBV. ABC requires HLAB*5701 screen and increases cardiac risk.	EFV has CNS effects, including suicidality. RPV taken AC and cannot be initiated with high viral load.	GI upset and HLD common. May decrease INR. Caution with directly acting oral anticoagulants.	MVC is oral and initiation requires viral tropism assay. IBA is infusion or SC. Other agents are injections. Little data with minimal gluteal tissue at injection site.

AVRs = Antiretrovirals; CNS = central nervous system; DDI = drug-drug interaction; GI = gastrointestinal; HBV = hepatitis B virus; HLD = hyperlipidemia; INSTI = integrase strand transfer inhibitor; INR = international normalized ratio; MDR = multidrug resistance; NNRTI = non-nucleotide reverse transcriptase inhibitor; NRTI = nucleo(s/t)ide reverse transcriptase inhibitor; PI = protease inhibitor; SC = subcutaneous

Department of Health and Human Services [DHHS]. *Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV*. ClinicalInfo HIV.gov Website. 2019. https://clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/adult-adolescent-arv/guidelines-adult-adolescent-arv.pdf. Frey E, et al. *HIV AIDS (Auckl)*. 2023;15:191-208.

Audience Response

Which of the following ART strategies is the best choice for Jeff based on ARV guidelines and his personal characteristics and history?

A. Stay on EVG/COBI/FTC/TDF as is
B. Switch to a non-boosted PI regimen
C. Switch to DRV/COBI/FTC/TAF
D. Switch to BIC/FTC/TAF

Polypharmacy Concerns in PAWH

Polypharmacy has no universal definition: usually ≥ 5 medications

- High prevalence in PAWH:
  - Polypharmacy-associated hospitalizations
  - Taking inappropriate drugs
  - Elevated anticholinergic risk score
  - Pill burden affecting adherence
- Negative outcomes:
  - DDIs increase side effects or contribute to therapy failure and resistance
  - Anticholinergic burden increases fall risk and contributes to cognitive impairment
  - Side effects mislabeled as comorbidities
- Prescribing inertia and cascade:
  - Continued prescribing of med with unclear origin/need, then new meds added to combat side effects
  - Medstopper provides stopping priorities and suggested tapering approach

Medstopper Deprescribing Tool

Stopping Priority RED = highest GREEN = Lowest	Medication/ Category/ Condition	May improve symptoms?	May reduce risk of future illness?	May cause harm?	Suggested taper approach	Possible symptoms when stopping or tapering	Beers/ STOPP criteria
	oxybutynin (Ditropan)/ incontinence/ **incontinence**				If used daily for more than 3-4 weeks. Reduce dose by 50% every 1-2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur go back to approx. 75% of the previously tolerated dose.	return of symptoms	None
	omeprazole (Prilosec, Losec)/ Proton pump inhibitor/ **heartburn/GERD**				If used daily for more than 3-4 weeks. Reduce dose by 50% every 1-2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur go back to approx. 75% of the previously tolerated dose.	return of symptoms	Check addt. details

Murray MM, et al. *HIV Med*. 2021;22(8):742-749. Cattaneo D, et al. *Drugs Aging*. 2023;40(7):665-674. Medstopper. Medstopper.com Website. 2014. https://medstopper.com/.

Audience Response

Which combination of Jeff's medications is most likely to have contributed to his fall?

A. Losartan and an OTC sleep aid
B. Aspirin and losartan
C. Pantoprazole and tiotropium
D. EVG/COBI/FTC/TDF and OTC pain reliever

Patient Case: Jeff

- **58-year-old** man living with **HIV x 30 years**.
- PMH: **hypertension** x 6 years, **COPD** x 3 years.
- **Smoked** 1.5 packs cigarettes/day for 20 years, stopped at age 48.
- He **fell** while getting out of the car yesterday and is **complaining of knee pain.**

Medications:	Relevant Fasting Labs:
EVG/COBI/FTC/TDF daily AC **Aspirin 81 mg** daily AC **Losartan 50 mg** daily **Pantoprazole 40mg** daily AC **Tiotropium 18 mcg/cap** INH daily **Albuterol 90 mcg** 1 INH prn SOB **OTC pain relievers** as needed **OTC sleep aid** prn sleep	**HIV:** HIV-RNA < 40 c/mL, **CD4 580 c/uL** **DMT2 Screen:** BG 90 mg/dL, **HbA1c 6%** **Vitals:** BMI 24, BP 118/78 mmHg, RR 18 bmp, SpO2 93% **Lipids** (mg/dL)**:** TC 160, **LDL-C 90**, HDL-C 52, TG 130 **LFTs: ALT 38 u/L, AST 29 u/L, ALB 3.5 g/dL,** TB 0.9 mg/dL **Electrolytes:** all WNL, anion gap (corrected) 15 mEq/L **Kidney: BUN 22 mg/dL, Creatinine 0.9 mg/dL, eGFR 99 mL/min/1.73m2**

Range:
WNL
Borderline
Out

Multidisciplinary Approaches to PAWH

SMART Goals

Specific, Measurable, Attainable, Relevant, Timely

- Include assessment of frailty and accelerated aging in age-related risk assessments for every patient aging with HIV.
- Use clinical guideline recommendations and best available evidence to implement best practices in the monitoring and management of chronic comorbidities in PAWH.
- Think “beyond undetectable” by reviewing both HIV-related and unrelated medications for polypharmacy concerns ART optimization strategies at every visit.
- Coordinate with multidisciplinary care team members to maximize whole health outcomes of PAWH.

CMEO BriefCase 1

HIV & SUD: Addressing Barriers to Viral Suppression

CMEO BriefCase 2

Switching ART Due to Treatment Resistance

CMEO BriefCase 3

ART for PLWH Who Are Pregnant or of Childbearing Potential

www.CMEOutfitters.com/infectious-disease-hub/

Infectious Disease Hub

A robust hub of education and resources to learn more about HIV

https://www.cmeoutfitters.com/infectious-disease-hub/

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Participants will be able to download and print their certificate immediately upon completion.