

16TH INTERNATIONAL WORKSHOP ON
AGING & HIV 2025



ABSTRACT BOOK

16th International Workshop on Aging & HIV 2025
Washington DC, United States | 23-24 October

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ORAL ABSTRACT PRESENTATIONS

Paper # - Paper Title.....Page

1 - Effect of Antiretroviral Therapy on Concentrations of IgG Antibodies to Human Cytomegalovirus among Men Living with HIV in the Multicenter AIDS Cohort Study (MACS)	6
2 - Effects of Psychosocial Support Approaches in Enhancing the Quality of Life among Older Women Living with HIV in Ghana: A Quasi-Experimental Study	7
3 - Integrating Resilience-Based Geriatric HIV Care: Lessons from the Kenya Aging & HIV Implementation Network	8
4 - Validation of Novel ADRD Diagnostic Tools for Use in Uganda and in People Living with HIV.....	9
5 - Bridging the Gap: Primary Care-Led Cognitive Screening and Empowerment for Aging Adults with HIV in Puerto Rico.....	10
6 - Empowering Happy Aging: A Peer-Led Approach to NCD Screening and Health Literacy for Aging People Living with HIV.....	11
7 - AI-Supported Quality Improvement to Optimize Polypharmacy in Aging People with HIV: A Multidisciplinary Approach	12
8 - Effect of Lipatrophy on Changes in Adipose Tissue Characteristics and Insulin Resistance in Aging Men with and without HIV from the Multicenter Aids Cohort Study (MACS).....	13
9 - Implementing an mHealth Intervention for Older People Living with HIV in Ghana: Addressing Perceived Challenges and Lessons Learnt.....	14
10 - Effects of High Intensity Interval Training versus Continuous Moderate Intensity Exercise on Frailty Among Older Adults with HIV: Results from the HEALTH Trial.....	15
11 - Gait Speed Assessment in Routine HIV Clinical Practice	16
12 - Association between Osteoporotic Fracture and Changes in Physical Function in Middle-Aged Men with and without HIV.....	17

LIGHTNING POSTER ABSTRACT PRESENTATIONS

Paper # - Paper Title.....Page

13 - Association Between Processing Speed and Segregation/Integration of Large-Scale Functional Networks in Middle-Aged and Older People Living With HIV.....	19
14 - Strengthening Community Mechanisms to Improve Mental Health Screening Among Elderly Persons Living with HIV: A Collaborative Approach at TASO Entebbe, Uganda	20



15 - Comparing the Effectiveness of High Intensity Interval Training vs. Continuous Moderate Intensity Exercise on Physical Function Among Older Adults with HIV: Results from the HEALTH Trial	21
16 - Age, HIV-Infection, and Co-morbidities Reshape Inflammasome Responses and Transcriptional Programs	22
17 - Physical Performance and Gait are Negatively Impacted by Peripheral Neuropathy in Persons Living with HIV	23
18 - Assessment of Care Needs for People With HIV Over 50 Years Old in the leDEA Consortium in 2023.....	24
19 - "Nobody Knows Where to Send Us": Exploring the Geriatric Healthcare Needs of Older Adults Living with HIV in Ontario, Canada.....	26
20 - Context Matters: Association Between Physical Function and Geolocated Social and Environmental Determinants of Health in Older Adults with HIV.....	27
21 - Social Support and Mental Health in Older Women With HIV: Evidence From CROWN Study	28
22 - "Art is a Form of Survival": Fostering Deeper Connection Through Art-Based Interventions to Address Social Isolation in People Living with HIV.....	29
23 - Telehealth Attitudes and Experiences of Reproductive-Age and Older Ethnic Minority Women with HIV in Southern Florida.....	30
24 - Daily Protein Intake as a Screening Tool for Sarcopenic Obesity in Men Living with HIV	31

POSTER ABSTRACT PRESENTATIONS

Paper # - Paper Title.....	Page #
25 - Modeling State-Level Aging Patterns Among People with HIV in the United States.....	33
26 - Still Left Behind: Stigma, Silence, and Survival Among Older Female Sex Workers Living with HIV in Rural Zimbabwe.....	34
27 - Risk Factors for HIV-Associated Neurocognitive Impairment and Frailty in Aging People With HIV in Latin America: A Systematic Review.....	35
28 - Efficacy, and Safety of Ainaovirine Plus Lamivudine, and Tenofovir DF in Middle-Aged People With HIV-1: Pooled Analyses of RACER, and SPRINT Studies, Two Randomized, Active-Controlled Phase 3 Trials	36
29 - Prevalence and Correlates of Hypertension and Diabetes among Kenyan Women ≥50 Years Living with HIV at Kenyatta National Hospital.....	37
30 - Long-Term HIV Survivorship and Community Advocacy: A Case Study from International Settings	



.....	38
31 - Dual Trajectories of Disability and Physical Activity in Adults Aging with HIV: Insights from a Population-Based Longitudinal Study in Ontario, Canada.....	39
32 - Menopause Syndemic Profiles and Quality of Life Among Older Women with HIV in the All of Us Research Program	40
33 - Five-Year Disability Trajectories and the Associated Contextual Factors Among Adults Aging with HIV in a Prospective Cohort Study	41
34 - Modifiable Protective Factors, Anxiety, and Sleep Disturbance in People living with HIV	42
35 - Living Longer, but Are We Living Better? Quality of Life Among Older Adults Living with HIV	43
36 - Stigma and Resilience in Older Adults Living with HIV: The GOLD Studies	44
37 - PAIRED - Patient Reported Experiences and Perceived Benefit of Treatment With Dolutegravir/Lamivudine: A Sub-Analysis of People Living With HIV Switching From Dolutegravir/Abacavir/Lamivudine in the United States (US)	45
38 - The Effects of High-Intensity Interval Training vs. Continuous Moderate-Intensity Exercise on Body Composition Among Older Adults with HIV: Secondary Results from the HEALTH Trial	46
39 - “Wellness Circles”: A Community-Based Intervention to Improve Mental Health and Daily Functioning Among Older Adults Living with HIV in Uganda.....	47
40 - Mapping Interventions for Older Adults with HIV to the Geriatric 5Ms Framework: A Systematic Review	48
41 - Longitudinal Assessment of Fatigue in Older Adults with HIV: A Comparative Analysis of High-Intensity Interval Training Versus Continuous Moderate-Intensity Exercise within the HEALTH-HIV Study.....	49
42 - Age-Related Effects of Semaglutide on Gut Microbiota in People with HIV: An Exploratory Analysis from the SLIM LIVER Study	50
43 - The Clock Is Ticking: Viral Suppression Timelines in Older Adults with HIV – Insights from the Midway Cohort	51
44 - Non-pharmaceutical Interventions for Management of Chronic Pain in Persons Living with HIV: A Scoping Review	52
45 - Starting Strong at 50+: Real-World ART Effectiveness of DTG/3TC and BIC/F/TAF in Treatment-Naive Older Adults	53
46 - Age as a Heuristic in an HIV Medical Case Manager Facilitated Universal Behavioral Screening and Digital Positive Emotion Skills Intervention	54
47 - Low Peripheral Blood Mitochondrial DNA Copy Number is Associated with T Cell Activation, Senescence, and Immune Aging in Men with and without HIV.....	55



48 - Beta-Galactosidase-Positive Senescent T Cells Associate With Reduced Physical Performance in Older Adults With HIV	56
49 - Altered Naïve and Memory B Cell Phenotypes Associated with High-Dose Influenza Vaccine Responses in Older PWH	57
50 - IgG Antibodies to Human Cytomegalovirus Among Men in the Multicenter AIDS Cohort Study (MACS) at Baseline as a Function of Age and HIV Status	58
51 - Factors Associated with Changes in Antiretroviral Therapy Adherence Among Those Transitioning Between the Community and Long-term Care: A Mixed Methods Approach.....	59
52 - Longitudinal Association Between Prefrility / Frailty and HIV-associated Neurocognitive Disorder (HAND): a Mexican Prospective Study.....	60
53 - Understanding the Drivers of Depression Among Older Women Living with HIV in Ghana: A Cross-Sectional Study.....	61
54 - Simplifying Visceral Fat Assessment in People with HIV: Clinical Utility of Waist Circumference	62
55 - Closing the Viral Suppression Gap among Older Adults through Antiretroviral treatment Outcome Analysis in Nigeria.....	63
56 - Strengthening Capacity of Cooperatives for Accelerating HIV Impact Reduction in Rwanda	64



ORAL ABSTRACT PRESENTATIONS

**16th International Workshop on
Aging & HIV**

Hybrid Meeting

**23 – 24 October 2025
Washington DC, United States**



1

Effect of Antiretroviral Therapy on Concentrations of IgG Antibodies to Human Cytomegalovirus among Men Living with HIV in the Multicenter AIDS Cohort Study (MACS)

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Background: People living with HIV (PLWH) manifest a chronic state of low-level inflammation and immune activation, some of which may be due to the immune response to the highly prevalent chronic cytomegalovirus (CMV) co-infection. Levels of antibody to CMV have been associated with aging-related outcomes, but little is known about the effect of combination antiretroviral therapy (cART) on these levels. Therefore, we measured concentrations of anti-CMV IgG in PLWH before and after they initiated ART.

Materials and Methods: For 262 men living with HIV followed in the MACS with semiannual visits, we measured concentrations of anti-CMV IgG in stored serum from 4 study visits: study entry (baseline) and the last visit up to 2019, and, in between these, a) the last study visit with available stored serum before initiation of cART (pre-cART visit), and b) the first study visit with available stored serum after the plasma HIV RNA concentration (HIV viral load) had been fully suppressed (i.e., undetectable, <20 copies/ml or <50 copies/ml for at least one year (i.e., three consecutive study visits) within 5 years of cART initiation (post-cART visit). Anti-CMV IgG was measured by automated ELISA (EUROIMMUN, Luebeck, Germany), which detects antibodies against CMV AD169 strain lysates. Annualized slopes of anti-CMV IgG concentrations were calculated for 3 study intervals: baseline to pre-cART visit, pre-cART visit to post-cART, and post-

cART visit to last visit. Differences in slopes for these time periods were compared using paired t-tests.

Results: All samples tested had detectable anti-CMV IgG, except for 6 samples from the baseline study visit and all 4 samples from one man. Annual rates of change in anti-CMV IgG concentrations were positive and were similar in the intervals from the baseline visit to the pre-cART visit, and from the pre-cART visit to the post-cART visit (median (IQR)= 2.4 (0.1, 9.0) IU/ml/yr, and 2.7 (-2.9, 16.4), respectively; $p=0.92$). In contrast, the annual rate of change was significantly slower after HIV viral suppression, i.e., in the interval from the post-cART visit to the last visit (median (IQR)= -0.2 (-3.8, 2.6); $p=.047$ compared to the pre-cART to post-cART interval). This rate was in fact indistinguishable from 0, indicating no increase in anti-CMV IgG concentrations in the post-cART interval. This finding was not affected by the presence or absence of a history of an AIDS-defining illness.

Conclusions: Suppression of HIV replication by ART led to stabilization of circulating anti-CMV IgG concentrations, suggesting improved control of CMV infection. This finding is consistent with the known suppression of inflammation by cART and suggests a reduced contribution of CMV to inflammation and to aging-related outcomes. Further studies are needed to test this hypothesis.



2

Effects of Psychosocial Support Approaches in Enhancing the Quality of Life among Older Women Living with HIV in Ghana: A Quasi-Experimental Study.

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Background: The introduction of Antiretroviral Treatment (ART) has improved the life expectancy of PLHIV, including older adult women who encounter unique psychosocial challenges. These challenges often include experienced/perceived stigma, limited mobility, and caregiving responsibilities, all of which can significantly affect their quality of life (QoL). Psychosocial support is traditionally provided in-person during clinical visits, which may pose accessibility issues for the older adult population, particularly those with mobility constraints or those residing in remote areas. Mobile technology has shown promise in improving QoL in younger populations, however, there exists no documented study focusing on its impact among older women in Ghana. This study examines the delivery of innovative psychosocial support using mobile technology to improve the QoL of older women living with HIV (OWLHIV) in Ghana.

Materials and Methods: The study was conducted in three high burden ART facilities in the Greater Accra region of Ghana from January to December 2023. The facilities were purposively designated to deliver a differentiated services face to face (F1), MTech through Short Voice Messages (SVM) (F2), and the standard treatment of care (F3). Eligibility included consenting OWLHIV (>50 years) who were on treatment for at least one year and access to mobile phones for participants in the F2 group. Ethical approval was obtained from the Ghana Health Service, and written informed consent was

provided by all participants. Participants in F1 were received a health worker led OWLHIV psychosocial support package for a period of 6 months, while participants in F2 received the psychosocial support package through SVM thrice a week for the same duration. SVM content was informed by the WHOQoL domains. The primary outcome was QoL, measured by the WHOQoL BREF tool. Data was analysed using ANOVA tests and multiple linear regressions to examine the factors associated with QoL

Results: A total of 289 participants took part in the study (F1, n=113; F2, n=103; F3, n= 73). The overall mean QoL was 88.3 and 94.0 for the baseline and endline respectively. There was no significant difference in mean QoL observed in the three facilities at the baseline. However, we observed a significant difference at the endline; QoL was higher for women who received services at F1 ([F2: b=13.58; 95%CI=9.88-17.29]) and F2 ([F1: b=9.67; 95%CI=6.13-13.20]) compared with the control facility (F3), adjusting for education, household composition, and years living with HIV.

Conclusions: The findings of the study show that innovative psychosocial support interventions are essential in improving the QoL of older adult women living with HIV. It is necessary for policymakers to adopt these interventions, implementing them through mobile technology or traditional face-to-face methods to help improve the QoL of women.



3

Integrating Resilience-Based Geriatric HIV Care: Lessons from the Kenya Aging & HIV Implementation Network

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Background: As HIV-positive populations age, particularly in low-resource settings, health systems face mounting challenges in managing multimorbidity, frailty, and psychosocial vulnerability. Haki, a grassroots organization based in Nairobi, co-founded the Nairobi Aging & HIV Implementation Network (NAHIN) to design and implement a resilience-centered care model for older adults living with HIV (OALHIV). This abstract shares practical insights, outcomes, and lessons learned from this multi-stakeholder initiative.

Materials and Methods: In 2024–2025, NAHIN engaged 7 HIV clinics, community health volunteers, and peer navigators to pilot a differentiated model of care for OALHIV aged ≥50. The intervention integrated WHO's ICOPE screening, resilience assessment (CD-RISC-10), and peer-led support groups within routine ART service delivery. Clinics were trained in geriatric screening, mental health triage, and non-communicable disease (NCD) referral protocols. Data systems were modified to track aging-related indicators.

Results: Over 360 OALHIV enrolled across 7 clinics within 6 months. 78% completed resilience screening; 33% identified with moderate-to-low resilience. Among those flagged for frailty (n=68), 41% were linked to physiotherapy or nutrition services. Depression screening uptake rose from 14% to 65% across sites. Peer-led support group attendance improved ART adherence self-report rates by 19%.

Major challenges included health worker turnover, limited geriatric care literacy, and inconsistent NCD medication supply.

Success factors included community co-design, routine mentorship, and integration of lived-experience champions in planning and evaluation.

Lessons Learned: Implementing aging-responsive HIV care in Kenya is feasible but requires multisectoral collaboration, flexible task shifting, and targeted system adaptations. Embedding resilience and functionality within HIV care enhances acceptability and strengthens engagement, especially among women over 60. Partnerships with local academic institutions improved monitoring and helped integrate aging indicators into existing EMR systems.

Conclusions: NAHIN's model demonstrates that embedding psychosocial resilience and functional aging care into HIV programs is not only necessary but achievable in low-resource settings. Scale-up requires sustainable financing, government buy-in, and integration into national HIV and NCD guidelines.



4

Validation of Novel ADRD Diagnostic Tools for Use in Uganda and in People Living with HIV

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Background: Sub-Saharan Africa (sSA) is projected to have the fastest growth in older adults globally, including those with Alzheimer's disease and related dementias (ADRDs) and people living with HIV (PLWH). This combination of aging, ADRDs, and HIV creates a unique risk for cognitive impairment (CI) in sSA. The influence of chronic, well-treated HIV on CI and ADRDs remains unknown. Additionally, there is a lack of scalable and validated tools to detect CI in sSA, including in older PLWH. The Tablet-based Cognitive Assessment Tool (TabCAT) is a brief, digital tool to detect CI usable by non-specialists across diverse settings. Plasma biomarkers have been validated to assess ADRDs and align with CI in Global North populations. These tools have not been validated in PLWH and culturally-distinct sSA populations. We sought to (A) compare cognition and plasma biomarkers in older PLWH to HIV-uninfected adults in sSA; (B) assess TabCAT and plasma biomarkers as screening tools to detect CI in older PLWH in sSA.

Materials and Methods: The Uganda Aging Cohort Study (UACS) is a prospective cohort of older PLWH on antiretroviral therapy and demographically-similar HIV-uninfected adults in Uganda. Participants underwent cognitive testing with reference-standard cognitive battery. Z-scores were derived using a regression-based normative approach adjusting for age, sex, education, urbanicity, and literacy. Mean composite cognitive scores were generated. CI was defined using Jak/Bondi criteria. T-tests were used to assess differences in cognitive performance by HIV serostatus.

For TabCAT, tests were translated, culturally-adapted, and administered in annual UACS visits. We assessed psychometric validity including content, construct, and concurrent validity. We fit ROC curves to assess performance in discriminating objective CI in the total sample and stratified by HIV serostatus.

For plasma biomarkers, plasma samples were collected and stored at -80°C at semi-urban (n=233) and rural (n=330) sites. P-tau217, Aβ42/40, and p-tau217/Aβ42 were measured on Lumipulse, and GFAP and NfL on Simoa. Rural site Aβ42/40 and p-tau217/Aβ42 did not pass quality control and were excluded from analyses. T-tests were used to compare biomarker levels by HIV serostatus. Multivariable regressions evaluated associations between log-transformed biomarkers and cognitive outcomes.

Results: 563 participants (mean age 60±6.5, 50% female, 51% < primary school, 49% PLWH) were included. There were no significant differences in cognition or biomarker levels by HIV serostatus. For TabCAT, correlations with reference-standard tests were strongest in overlapping cognitive domains (memory, executive function) and weakest in unrelated motor domains. TabCAT composite score identified CI with good performance in total sample (c-statistic 0.77; 95%CI 0.72-0.81) and PLWH (c-statistic 0.81; 95%CI 0.76-0.87). For plasma biomarkers, elevated plasma NfL was associated with worse overall and domain-specific cognitive performance. P-tau217, Aβ42/40, p-tau217/Aβ42, and GFAP had little to no association with cognition.

Conclusions: There did not appear to be lower cognitive performance or differences in plasma ADRD biomarkers in older PLWH well-treated compared to HIV uninfected adults. TabCAT demonstrates validity for identifying CI, and serves as a promising brief assessment tool to identify CI in older PLWH. Plasma NfL is a promising biomarker associated with cognition in this sample, including in PLWH.



5

Bridging the Gap: Primary Care-Led Cognitive Screening and Empowerment for Aging Adults with HIV in Puerto Rico

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Background: By 2022, approximately 54% of individuals with HIV in the United States were aged 50 or older—a group requiring nuanced care due to multiple chronic conditions and increased risk of cognitive decline. In Puerto Rico, this challenge is intensified by a rapidly aging population: nearly one in four residents is aged 65 or older, yet only 33 geriatricians serve the entire island, resulting in a ratio of one provider per 22,400 seniors. Concurrently, over 9,000 adults aged 50+ live with diagnosed HIV, creating a complex intersection of aging and chronic illness that elevates the likelihood of neurocognitive impairment and functional decline. In the absence of specialized geriatric infrastructure, primary care must evolve to meet these needs.

Materials and Methods: Centro Ararat, a community-based HIV clinic in Puerto Rico, developed a tailored intervention to address aging-related cognitive concerns through a primary care framework. The program integrates three components: (1) a dedicated team of Geriatric Health Workers (Physician Assistant, Medical Case Manager, and nurse); (2) an embedded program for psychological evaluation and care; and (3) a Patient-Centered Educational and Empowerment Program (PEEP). These components adapt geriatric tools for use in primary care and equip older adults with HIV to better manage chronic conditions and cognitive health.

Results: As part of the psychological care component, all 72 enrolled participants underwent cognitive screening using the Montreal Cognitive Assessment (MoCA). Those scoring ≤ 23 were referred for comprehensive neuropsychological evaluation, supported by brain MRI, metabolic panels, and structured documentation. Of the 40 participants who screened below threshold, 36 completed full neurocognitive testing, and 33 were

confirmed to have cognitive impairment.

Diagnoses included HIV-Associated Neurocognitive Disorder (HAND, n=7), Vascular Dementia (n=7), Alzheimer's Disease (n=4), and Major Depression. Lower MoCA scores were associated with older age and vascular conditions, while HAND was more prevalent among those with longer HIV duration. These findings highlight the importance of early screening and referral within primary care. The initiative strengthened clinical engagement across multiple service areas. The number of cognitive screening sessions more than doubled, and referrals for further evaluation and specialty consultation expanded significantly. These shifts reflect improved integration of aging-related care into routine primary services and heightened responsiveness to cognitive concerns. Additionally, 79% of participants in the PEEP program demonstrated improved understanding of chronic illness management, and 97% reported high satisfaction with services received.

Conclusions: This initiative demonstrates that in the absence of geriatric specialists, primary care teams can be trained and equipped to identify and manage cognitive disorders in older adults with HIV. Routine screening, interdisciplinary collaboration, and educational support are essential components of a scalable model for aging-related care. Integrating memory assessments and psychological services into primary care workflows enables timely diagnosis and intervention while promoting autonomy and dignity for older adults with HIV in Puerto Rico and similar regions.



6

Empowering Happy Aging: A Peer-Led Approach to NCD Screening and Health Literacy for Aging People Living with HIV

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Background: With the initiation of antiretroviral therapy (ART), life expectancy of people living with HIV (PLHIV) has dramatically improved, shifting the focus of care from acute disease control to long-term, chronic manageable disease to holistic health. Despite these gains, non-communicable diseases (NCDs), whether induced by ART, HIV, or aging, remain a leading cause of morbidity and mortality among PLHIV. In response to this growing challenge, TAAL+ Integrated Health Center (IHC) and Community Pharmacy (CP), a peer-led model by the Network of Maharashtra by People Living with HIV/AIDS (NMP+), launched the initiative “Happy Aging with HIV”, under the health literacy campaign “My Health, My Responsibility.” The initiative was designed to empower PLHIV with knowledge, improve self-care behaviors, promote early diagnostics, and establish robust referral pathways through a trusted and relatable peer-led approach.

Materials and Methods: Between June 2023 and January 2024, TAAL+ organized 28 targeted NCD screening camps, reaching a total of 806 PLHIV age group of 40+ (353 (44%) males, 449 (56%) females, and 4 transgender individuals). Standardized screening protocols focused on early identification of hypertension, diabetes, osteoporosis, mental health needs, and women’s health conditions such as cervical and breast abnormalities. The entire intervention was led and facilitated by trained peers who, through lived experience and deep community connections, created a safe, stigma-free environment that fostered health-seeking behavior and sustained engagement. Mental health referral data was collected until October 2023.

Results: The screenings revealed a substantial burden of age-related comorbidities. Of the 806 participants, 293 (36%) were referred for osteoporosis, possible cause might be use of TDF for more than 5 years, 82 (10%) for diabetes, and 80 (10%) for hypertension. Mental health support was facilitated for 31 individuals, underscoring the essential role of peer counsellors/educator in surfacing hidden needs. For women’s health, 294 females (36%) underwent cervical cancer screening, with 3 positive cases, while 38 (5%) were referred for cervical care and 6 for breast-related conditions. The strong turnout and referral adherence clearly demonstrate the impact of TAAL+’s peer-led model in increasing health literacy, fostering trust, and catalyzing proactive health management.

Conclusions: This initiative illustrates the transformative power of peer-led health systems, with TAAL+ IHC and CP serving as a inspiration for integrated, person-centered care. By embedding health literacy and self-care into the heart of community outreach through the “My Health, My Responsibility” campaign, TAAL+ empowered peers to act as agents of change educating, screening, counselling, and linking PLHIV to appropriate care. The model’s success in surfacing silent NCD burdens while ensuring high engagement rates strongly advocates for scaling peer-led interventions as a standard of care for aging PLHIV into the existing HIV interventions. TAAL+’s work reinforces the critical role of peers, not just as service providers but as catalysts for dignity, agency, and healthier lives.



7

AI-Supported Quality Improvement to Optimize Polypharmacy in Aging People with HIV: A Multidisciplinary Approach

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Background: Often driven by multimorbidity, polypharmacy may cause adverse drug reactions, drug–drug interactions (DDIs), reduced adherence, and functional decline, emphasizing the need for improved medication safety in people with HIV (PWH). This study describes the implementation of a multidisciplinary, AI-supported quality improvement (QI) intervention at the Modena HIV Metabolic Clinic (MHMC) to optimize medication management in aging PWH.

Materials and Methods: We conducted a cross-sectional, single-center QI project involving PWH aged ≥50 years. The intervention included four components:

- (1) AI-driven medication reconciliation: Before visit, PWH received automated messages to submit photos of medications via WhatsApp. AI translated packaging into Anatomical Therapeutic Chemical (ATC) codes, enabling automated medication capture and reconciliation.
- (2) Clinical decision support via NavFarma®: This platform integrates medication data with comorbidities and flags risks (based on STOPP/START and Beers Criteria), DDIs, anticholinergic burden, nephrotoxicity, and QTc prolongation.
- (3) Pharmacist review: Clinical pharmacists interpreted reports and generated therapeutic recommendations in the electronic patient chart (EPC).
- (4) Multidisciplinary decision-making: Clinicians reviewed these recommendations and incorporated them into care plans when appropriate.

Results: Between November 2024 and July 2025, 181 PWH submitted photographs of their medications. Median age was 63 years (IQR: 8); 131 (72%) were male. Median nadir CD4 count was 200 cells/μl (IQR: 208), and current CD4 count was 746.5 cells/μl (IQR: 395). Median time since HIV diagnosis was 31 years (IQR: 13).

Complete agreement between medications in the EPC and those reported by PWH was observed in 111 (61.3%) individuals, while 70 (38.7%) showed discrepancies. Of these, 51 (28.2%) were prescribed medications recorded in the EPC, whereas 119 (34.3%) were taking medications not documented in the EPC. Additionally, 21 (11.6%) initiated new medications, and 19 (10.5%) had medications discontinued during MHMC visit. Among new prescriptions, 13 (61.9%) were lipid-lowering agents, 3 (14.3%) antidepressants, and 7 (33.3%) other classes. Among discontinued medications, 11 (57.9%) were low-intensity lipid-lowering agents, 3 (15.8%) proton-pump inhibitors, and 5 (26.3%) other classes. Overall, daily pill burden was 6 (IQR: 4.8), while total number of pharmacologically active agents was 10 (IQR: 5).

Finally, 98 PWH were also evaluated by NavPharma and a clinical pharmacist. Pharmacist recommendations were recorded and reviewed during visits, and 135 (48.2%) were considered clinically relevant. However, medications were discontinued by the pharmacist in only 3 cases (1.7%).

A total of 69 (70.4%) major DDIs were identified and most frequently involved CNS depressants, antiretrovirals (dolutegravir and cobicistat), and cardiovascular agents (statins, ACE inhibitors). Notably, 44 (44.9%) of PWH showed moderate-to-high risk for QTc prolongation, while 26 (26.9%) had significant ACB scores due to CNS drugs. Renal toxicity risks were flagged in 37 (38.3%) of reports, commonly associated with NSAIDs, ACE inhibitors, and tacrolimus.

Conclusions: This multidisciplinary, AI-supported QI intervention was feasible and effective in optimizing medication management for aging PWH. The approach identified high rates of medication discrepancies, clinically relevant pharmacist recommendations, and substantial risks from polypharmacy, including major DDIs, QTc prolongation, anticholinergic burden, and nephrotoxicity. These findings support the integration of AI and pharmacist-led reviews into routine HIV care to enhance medication safety.



8

Effect of Lipoatrophy on Changes in Adipose Tissue Characteristics and Insulin Resistance in Aging Men with and without HIV from the Multicenter Aids Cohort Study (MACS)

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Background: Subcutaneous lipoatrophy is common in persons with HIV (PWH) exposed to thymidine analogues and has been associated with worse metabolic outcomes, even after discontinuation of these medications. In the general population, aging is associated with an increase in overall adiposity, a redistribution of fat toward the visceral adipose tissue (VAT) depot, an increase in adipose tissue (AT) density, and corresponding metabolic changes. The aims of this study were: 1) to compare aging-related changes in AT quantity and density by HIV serostatus and the amount of subcutaneous AT in those with HIV (as a surrogate of lipoatrophy status) and (2) to investigate insulin resistance trajectories by the amount of SAT at baseline in those with HIV to men without HIV.

Materials and Methods: We included N = 308 men (63.3% PWH) in the MACS Cardiovascular Substudy (baseline 2010-2013) with paired abdominal (SAT, VAT) and thigh (SAT) CT scans at both baseline and follow-up visits (mean ~4.6 years apart). Using the baseline CT scans, we calculated total (abdominal + mid-thigh) SAT area. Among PWH, we created tertiles of total SAT area, with the lowest tertile (T1) considered to have the greatest degree of lipoatrophy. We tested for differences in changes in tissue characteristics (AT area and density) by HIV serostatus and SAT tertile using linear mixed effect models with an age-by-status interaction, with the primary comparison between PWH with T1 SAT tertile vs PWOH. Models adjusted for race and included a random intercept. In a subset of

participants (n=294 individuals) with repeated HOMA-IR measures (3883 visits; median follow-up: 8.3 years), we examined longitudinal associations of baseline SAT tertile with log(HOMA-IR) using linear mixed effect models, adjusting for age at baseline, race, follow-up time, and baseline HOMA, and included random effects for intercept and time slope.

Results: At baseline, PWH were younger (median 52 years vs. 56 years, $p < 0.01$), had lower BMI (25.5 kg/m² vs. 26.3 kg/m², $p = 0.03$), and a higher HOMA-IR (3.0 vs. 2.8, $p=0.05$) compared to PWOH. None of the men with HIV were taking thymidine analogues. In longitudinal body composition analyses, PWH with the lowest total SAT at baseline had similar increases in AT areas (VAT and SAT) with aging compared to PWOH; however, abdominal SAT density decreased in PWH-T1 at a faster rate ($B=-0.71$, $p<0.001$). In insulin resistance analyses, when assessing by total SAT tertiles, the slope for PWH-T1 vs. PWOH was not significantly different.

Conclusions: PWH with the least total SAT at baseline had similar changes in VAT area and insulin resistance compared to PWOH, but greater decreases in SAT density with aging. Our findings suggest that aging-related adipose and metabolic changes among PWH with lipoatrophy are similar to those among men without HIV, and that decreases in SAT density with age among men with lipoatrophy may represent improvement in metabolic health.



9

Implementing an mHealth Intervention for Older People Living with HIV in Ghana: Addressing Perceived Challenges and Lessons Learnt

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Background: Older people living with HIV (OPLHIV) in Ghana face distinct psychosocial and health-related challenges that affect their quality of life (QOL). With the growing aging HIV population, there is an urgent need for age-appropriate and sustainable support interventions. Mobile health (mHealth) solutions hold promise, but there is limited evidence on their feasibility and effectiveness for older populations in low-resource settings. This study aimed to design, implement, and evaluate an mHealth intervention to provide psychosocial support to OPLHIV, while addressing perceived challenges related to technology use.

Material and Methods: A three-phase sequential exploratory mixed-methods study was conducted in two high-burden antiretroviral therapy (ART) facilities in the Greater Accra region between January and December 2023. Participants included consenting OPLHIV who had been on ART for at least one year and owned a mobile phone. Phase one involved qualitative research using two focus group discussions with OPLHIV and eight key informant interviews with HIV service providers and program implementers. This phase sought to identify key barriers and provide actionable recommendations to inform the development of the mHealth intervention. In phase two, a 16-week intervention using non-interactive short voice messages, aligned with WHOQOL domains, was delivered three times weekly to participants in the intervention facility. The control group received standard care. Phase three involved baseline and endline QOL assessments using the WHOQOL-BREF

tool. Data was analyzed using STATA 17.0, employing descriptive statistics, t-tests, ANOVA, and multiple linear regression. A Difference-in-Differences (DID) approach was used to estimate the effect of the intervention, with statistical significance set at $p < 0.05$.

Results: A total of 285 participants were enrolled in the study (Intervention group: $n = 151$; Control group: $n = 134$). Key barriers to implementing an mHealth intervention for OPLWHIV included privacy concerns, low literacy, language preferences, limited phone access, and vision impairments. At baseline, there was no statistically significant difference in mean QOL scores between the two groups [Intervention: 88.7; Control: 89.9; $p = 0.47$]. At endline, the mean QOL score in the control group declined slightly from 89.9 to 87.7 ($p = 0.057$), whereas the intervention group showed a significant increase in mean QOL from 88.7 to 98.9 ($p = 0.001$). A DID analysis revealed that participants in the intervention group experienced a net increase of 12.9 points in their QOL over the 16-week period compared to the control group. Factors significantly associated with improved QOL included adherence to ART, abstinence from alcohol consumption, living alone, and the use of additional medications beyond ART for HIV management.

Conclusions: This study demonstrates that mHealth interventions can effectively improve the QOL among OPLHIV when they are tailored to address context-specific barriers. A key lesson learnt is the value of conducting exploratory assessments to inform the design of interventions that are both age- and condition-specific.



10

Effects of High Intensity Interval Training versus Continuous Moderate Intensity Exercise on Frailty Among Older Adults with HIV: Results from the HEALTH Trial

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Background: People with HIV (PWH) are prone to developing frailty due to the inflammatory nature of HIV and premature aging. Exercise is the best approach to treat frailty, but evidence among older PWH is limited compared to the general older adult population. We aimed to compare the effects of high-intensity interval training (HIIT) versus continuous moderate exercise (CME), both combined with resistance training, on the prevalence of frailty among PWH. Additionally, we explored the association between frailty status and the likelihood of withdrawing from the intervention.

Materials and Methods: We analyzed data from the High Intensity Exercise Study to Attenuate Limitations and Train Habits in Older Adults with HIV (HEALTH), conducted in Seattle/WA and Aurora/CO. HEALTH was a randomized controlled trial that enrolled sedentary PWH who were ≥50 years old and on stable antiretroviral therapy to perform 16 weeks of HIIT or CME combined with resistance exercise, 3x/week. The HIIT arm consisted of five high-intensity (90% of heart rate reserve [HRR] for 4 minutes) and four moderate-intensity (50% of HRR for 3 minutes) bouts; participants in the CME arm walked/jogged at 60% of HRR. Resistance training included 3 sets of 10 repetitions of leg press, chest press, and lat pulldown. Frailty was defined using the Fried criteria: weakness (grip strength), slow walking

speed (4-meter course), unintentional weight loss (self-report), low physical activity (self-report), and exhaustion (self-report). Participants were classified as non-frail (meeting 0 criteria), pre-frail (1-2 criteria), or frail (3 or more). McNemar's test was used to evaluate change in frailty classification between baseline and week 16, and a log-rank test was used to evaluate time-to-withdrawal.

Results: Of the 118 participants randomized, 95 (49 in the HIIT and 46 in the CME arm) completed the study and were included in the analysis. At baseline, participants had a median of 58 [IQR 54;61] years of age, were majority males (n=81, 85.3%) and non-Hispanic white (n=62, 65.3%). For frailty status, 50.5% (n=48) were non-frail, 46.3% (n=44) pre-frail, and 3.2% (n=3) frail. Regarding frailty components, 27.4% (n=26) presented with low activity, 24.2% (n=23) exhaustion, 16.8% (n=16) weakness, 4.2% (n=4) weight loss, and none with slowness. At week 16, the prevalence of non-frail increased to 69.1% (n=65), and those classified as pre-frail and frail decreased to 30.9% (n=29) and 0%, respectively (p<0.01); no difference by study arm was observed. For frailty components, there was a significant reduction in the prevalence of low activity (p<0.01) and exhaustion (p=0.04). The distribution of time to withdrawal differed (p=0.03; n=24 withdrawals) among frail (40%, n=2) and pre-frail (27%, n=16) compared to non-frail (11%, n=6).

Conclusions: The HEALTH intervention decreased the prevalence of frailty among older PWH, driven by improvements in exhaustion and low activity, with no statistically significant differences by study arm. Participants who were frail or pre-frail at baseline were more likely to withdraw from the study, underscoring the need for tailored retention strategies and early support to sustain engagement. Future interventions could incorporate adaptive designs to better accommodate vulnerable subgroups among aging PWH.



11

Gait Speed Assessment in Routine HIV Clinical Practice

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Background: Older adults living with HIV experience higher rates of frailty and physical disability than same-age peers. Measuring gait speed as a “vital sign” is a pragmatic proxy for overall physical function and is strongly predictive of morbidity and mortality. Like other vital signs, repeated measurement of gait speed can detect health changes or assess response to medical interventions. Despite the ease and low cost of gait speed assessment, it is not part of routine HIV clinical care. In this pilot study, we evaluated the implementation of routine gait speed measurement within an HIV clinic with attention to the intervention’s feasibility and acceptability in this setting.

Materials and Methods: The study was conducted at the University of Colorado Infectious Disease Clinic. Gait speed assessments targeted adults living with HIV ≥50 years old who presented for care during the study period. Gait speeds were measured using a 4-meter walk test, performed by medical assistants during the visit check-in process. Gait speeds were initially measured using a stopwatch and a marked 4-meter course. Following its installation, measurements were collected using the GaitRate Wall-Mount System, a wall-mounted laser device designed to capture gait speed. Medical assistants received one-on-one training on how to measure gait speed using a stopwatch and the GaitRate device. Results were recorded in the medical record alongside other vital signs where they would be visible within provider notes. Providers received brief training on gait speed measurement and a list of suggested resources for patients with low gait speeds. Medical assistants, providers, and clinic leadership were surveyed at 1, 3, and 6 months to assess their impressions of gait speed assessment. Individual semi-structured interviews covering feasibility and acceptability of the intervention were conducted with a subset of staff at 1, 3, and 6 months for rapid qualitative analysis. Patients who underwent gait speed measurement received

a brief survey on the acceptability of the intervention.

Results: Medical assistants recorded 730 gait speed measurements for 519 unique patients from September 2024 to July 2025. Gait speed was recorded for 41% of eligible patients during the most recent month of assessment. The average gait speed was 1.09 m/s (SD 0.25m/s, range 0.12m/s -1.9m/s). The research team identified staff turnover as a barrier to consistent gait speed measurement that required ongoing training. Eleven clinic staff completed surveys and semi-structured interviews. Staff rated the intervention as acceptable (Acceptability of Intervention Measure, mean 3.96) and feasible (Feasibility of Intervention Measure, mean 4.41). Twenty-five interviews were conducted with staff for rapid qualitative analysis.

Fifty patients completed acceptability surveys. Patients responded positively to measuring walking speed in clinic (78% “Like” or “Strongly like”) and reported that it helped them know more about their physical function (74% “Agree” or “Strongly agree”) while looking forward to continued gait speed monitoring (88% “Agree” or “Strongly agree”).

Conclusions: Implementation of gait speed measurement into routine HIV clinical practice is both feasible and acceptable for clinic staff and patients. Staff turnover was identified as a barrier to consistent gait speed measurement.



12

Association between Osteoporotic Fracture and Changes in Physical Function in Middle-Aged Men with and without HIV

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People with HIV (PWH) have an increased risk of osteoporotic fracture, which may impact multiple health outcomes. In the general population, osteoporotic fractures can lead to subsequent physical function impairment. We assessed trajectories in grip strength and gait speed in men with and without HIV before and after a osteoporotic fracture and explored whether additional differences were evident by HIV serostatus.

We identified men in the Multicenter AIDS Cohort Study who self-reported an osteoporotic fracture (spine, hip, upper arm, wrist) at any semi-annual visit after 2006, the index visit for the study. We matched men with fracture (cases) to those without (controls) by age, HIV status, and index visit. We used multilevel mixed effects linear regression models with a restricted maximum-likelihood estimation to compare changes in grip strength and gait speed in men with and without fracture in three periods: 5 years before the index visit, 2 years after the index visit, and 2-5 years after the index visit, with adjustment for age, race, BMI, education, smoking, binge drinking, and comorbidity score (presence/absence of 3 or more common comorbidities out of seven). We matched 115 cases (57 MWH and 58 MWOH) and 113 controls (56 MWH and 57 MWOH) without a fracture.

Compared to controls, men who experienced a fracture had a lower mean grip strength at the index visit (-2 kg: 95% confidence interval (CI) -4.3, 0.33) which was non-significant, and significantly

faster decline in the first 2 years post-fracture (-0.865 kg /y, 95% CI -1.68, -0.05), with similar but small increases in grip strength in the 2-5 years post-fracture (1.05 kg/y, 95% CI 0.21, 1.9). Grip strength declined similarly in the 5 years before the index visit in fracture cases compared to controls. Gait speed tended to be lower at the index visit (-0.037 m/s, 95% CI: -0.08, 0.009) and to decline faster in the 5 years before the index visit in fracture cases compared to controls (-0.007 m/s per year, 95% -0.16, 0.002), but post-fracture trajectories were similar for both groups. In a stratified analysis by HIV status, MWH showed greater difference between cases and controls in grip strength decline in the 0-2 years post-fracture (-1.3 kg/y) compared to MWOH (-0.53 kg/y).

Changes in gait speed in cases and controls were similar by HIV status. Osteoporotic fractures were associated with a decline in grip strength in the first two years after fracture, followed by upward trajectory in the subsequent period 2-5 years after fracture. These effects appeared to be greater in magnitude among men with MWH.



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13

Association Between Processing Speed and Segregation/Integration of Large-Scale Functional Networks in Middle-Aged and Older People Living With HIV

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Background: Neurocognitive impairment (NCI) is a common comorbidity among aging people with HIV (PWH), despite effective antiretroviral therapy (ART). Processing speed is often the earliest affected cognitive domain and may be linked to disrupted functional brain network organization. This study investigated whether the balance of segregation and integration in large-scale functional networks is associated with processing speed in middle-aged and older PWH.

Materials and Methods: In a prospective, cross-sectional study, 26 virologically suppressed PWH aged ≥50 years underwent neuropsychological testing and resting-state functional MRI (rs-fMRI). Functional brain networks were constructed using a 300-node cortico-subcortical parcellation. System segregation index and node-level participation coefficient (PC) were calculated to quantify the global and local balance between integration and segregation, respectively. Associations with age-adjusted Wechsler Adult Intelligence Scale (WAIS-III) Symbol Search (WAISsys) T-scores were assessed using regression and correlational analyses.

Results: Higher system segregation within associative networks was significantly associated with better WAISsys T-scores ($\beta = 0.544$, $p = 0.004$), whereas segregation in sensorimotor networks was not. The majority of nodal PC values were negatively correlated with WAISsys T-scores, indicating that lower processing speed was associated with less segregated and more integrated connectivity. Nodes showing the strongest negative associations with WAISsys T-

scores were disproportionately located in the default mode and frontoparietal networks.

Conclusions: In middle-aged and older PWH, greater segregation within associative networks is linked to better processing speed. Disruptions in network segregation and modularity, especially in cognitive control systems, may be associated with processing speed deficits despite viral suppression. These findings highlight the importance of functional brain network topology and organization as a potential biomarker for cognitive aging in HIV.



14

Strengthening Community Mechanisms to Improve Mental Health Screening Among Elderly Persons Living with HIV: A Collaborative Approach at TASO Entebbe, Uganda

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Background: Despite the integration of mental health services into routine HIV care, mental health screening among older adults (aged 50 and above) living with HIV remains significantly low, particularly in low and middle-income countries such as Uganda. This population faces intersecting vulnerabilities to mental health, including the physiological challenges of aging with HIV, poverty, social stigma, isolation, unresolved trauma, and limited access to age-appropriate psychosocial support. In Uganda's Wakiso District, particularly within the rural and island sub-counties served by TASO Entebbe, which supports approximately 2,204 older clients, these challenges are further intensified by digital illiteracy, weak community referral systems, and geographic isolation. As of June 2024, only 17% (78 out of 462) of elderly clients attending the TASO Entebbe clinic had received mental health screening, leaving an 83% gap that has contributed to the underdiagnosis of common conditions such as depression and anxiety. These untreated mental health conditions negatively impact adherence to antiretroviral therapy (ART), reduce retention in care, and undermine overall quality of life. In response, TASO Entebbe initiated a Continuous Quality Improvement (CQI) project (June 2024–June 2025) aimed at closing this gap through the design and implementation of integrated, community-based interventions tailored to the unique mental health needs of older adults living with HIV.

Materials and Methods: To address the mental health screening gap among older adults living with HIV, TASO Entebbe implemented a six-month Continuous Quality Improvement (CQI) initiative

from June 2024 to June 2025, guided by the Plan-Do-Study-Act (PDSA) framework. The intervention adapted the Peer-Led Mental Health Integration Model (PMHIM), redefining trained expert clients including older adults themselves as peer supporters integrated into the multidisciplinary HIV care team. Twelve peer supporters and eight health workers were trained on validated screening tools such as the PHQ-9 and GAD-7, with a focus on geriatric mental health and age-sensitive communication. Peer supporters conducted initial screenings, provided basic psychosocial support, and facilitated timely referrals for high-risk clients. To enhance family and community engagement, the initiative targeted caregivers, particularly adult children and spouses through culturally tailored mental health education materials in English and Luganda. Additional outreach strategies included community-based mental health kiosks, a peer-counselling hotline, and moderated WhatsApp support groups, all aimed at reducing stigma and promoting social inclusion among elderly clients.

Results: Between June 2024 and June 2025, mental health screening coverage among elderly clients (aged 50+) increased substantially from 17% to 95% (494 out of 521 clients). Of those screened, 15% were identified with symptoms indicative of mild to moderate depression or anxiety. Qualitative data from client and caregiver interviews revealed enhanced satisfaction with services.

Conclusions: This initiative underscores the value of community-led, age-responsive strategies in closing mental health screening gaps among older adults living with HIV. Integrating peer supporters and family caregivers into routine HIV care improved screening uptake, early identification, and timely linkage to services. The model presents a scalable, context-adaptable approach for enhancing geriatric mental health within HIV care systems in resource-limited settings.



15

Comparing the Effectiveness of High Intensity Interval Training vs. Continuous Moderate Intensity Exercise on Physical Function Among Older Adults with HIV: Results from the HEALTH Trial

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Background: People with HIV (PWH) are predisposed to earlier declines in physical function due to factors including chronic inflammation and treatment with antiretroviral therapy (ART). Exercise is the most effective method to preserve and maintain physical function with aging, but PWH may require higher intensities to elicit greater physical function improvements. The purpose of the High Intensity Exercise to Attenuate Limitations and Train Habits (HEALTH) trial was to compare the effects of 16 weeks of high intensity interval training (HIIT) vs. continuous moderate intensity exercise (CME) on physical function and muscle strength of older PWH.

Materials and Methods: HEALTH is a randomized controlled trial that enrolled sedentary PWH who were ≥50 years old on a stable antiretroviral therapy to perform 16 weeks of HIIT or CME combined with resistance exercise. The HIIT arm consisted of five high-intensity (90% of heart rate reserve [HRR] for 4 minutes) and four moderate-intensity (50% of HRR for 3 minutes) bouts; participants in the CME arm walked/jogged continuously at 60% of HRR. Resistance training included 3 sets of 10 repetitions of leg press, chest press, and lateral pulldown. The primary outcome was the percent change from baseline to week 16 in time to complete the 400-meter walk test (400-MWT). Secondary outcomes included percent change in 10x chair rise (10xSTS) time and 1-repetition maximum (1-RM) for each resistance exercise. The 400-MWT, 10xSTS, and 1-RM

assessments were completed at Week 0, 4, 8, 12, and 16. Linear mixed effect models with random intercept (participant) and slope (participant/time), and fixed effects for time (categorical), randomized intensity group, and time by group interaction were used to estimate percent change from week 0. Unadjusted models and models adjusted for randomization stratifying variables of age, sex, and study site were performed.

Results: Of the 111 participants included in the primary analysis, the median (interquartile range [IQR]) age was 57 (IQR: 54-61) years, 14% of participants were female, 8% were Black, and 15% were Hispanic. Time to complete 400-MWT improved from baseline to week 16 within both the HIIT (5.9% [95% confidence interval [95%CI]: -7.7, -4.1%]; 15.2 seconds absolute change) and CME arms (4.6% [95%CI: -6.4, -2.8]; 11.9 seconds absolute change). Between-group differences were not statistically significant, with a 1.2%-point [95%CI: -1.3, 3.8] greater improvement in HIIT compared to CME. For secondary outcomes, the 10xSTS improved by an average of 19.5% (95%CI: -24.2, -14.9%) in HIIT and 14.9% (95%CI: -19.7, -10.1%) in CME. Participants improved in 1-RM leg press (26.4% HIIT; 20.1% CME), 1-RM bench press (30.0% HIIT; 27.5% CME), and 1-RM lateral pull-down (25.5% HIIT; 24.1% CME) (all p<0.05 for within-group comparisons). There were no statistical differences between arms for secondary outcomes. Adjusted models for all outcomes yielded similar results.

Conclusions: Both HIIT and CME, combined with resistance exercise, significantly improved physical function among older PWH. Given that both modes of aerobic exercise improved physical function, with no statistically significant difference between arms, PWH should be encouraged to select the aerobic exercise type according to individual preference.



16

Age, HIV-Infection, and Co-morbidities Reshape Inflammasome Responses and Transcriptional Programs

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With long-term survival of people living with HIV (PLH) increased rates of age-related diseases have been observed. Persistent immune activation in PLH and age-related chronic inflammation are hypothesized to be drivers for the development of such diseases. Dysregulated NLRP3 inflammasome activation and aberrant IL-1 β production have been implicated in aging-related pathologies, but the combined impact of HIV and aging on inflammasome regulation remains poorly defined.

To investigate this interplay, we enrolled a total of 100 subjects stratified by HIV status (positive/negative) and age (young: 21–40 years; older: >60 years). Peripheral blood mononuclear cells (PBMCs), including monocytes, were isolated for functional analysis. At baseline, monocytes from the HIV-negative older group (Older), the HIV-positive older group (HIV-Older), and HIV-negative older group with more comorbidities (Older*) exhibited heightened inflammasome activation, with elevated levels of activated caspase-1, cleaved IL-1 β , and IL-18 as seen by flow cytometry. Paradoxically, upon LPS stimulation (Signal 1), these groups showed reduced IL-1 β cleavage compared to young adults.

Notably, different subsets of monocytes from HIV-negative young adults exhibited greater intracellular retention of cleaved IL-1 β than other cohorts as shown by flow cytometry. Western blot analysis of PBMCs highlighted a particularly blunted response in HIV-Older adults, whereas HIV-negative older adults showed increased total IL-1 β production. Overall, these findings suggest age- and HIV-related differences in caspase-1 activation, IL-1 β production and trafficking.

Following full inflammasome activation (Signal 2), HIV-positive older adults again displayed

diminished IL-1 β production compared to HIV-negative young adults. RNA-seq of purified CD14⁺ monocytes revealed cohort-specific transcriptional programs associated with aging, HIV infection, and comorbidities. Among these, a WGCNA-identified gene module enriched for neuronal signaling and extracellular matrix remodeling exhibited a stepwise increase in expression from young adults to those with HIV, aging, and greater comorbidity burden. HIV-positive older adults showed downregulation of TLR4 signaling.

Collectively, our findings reveal that HIV, Aging and co-morbid conditions all reshape inflammasome dynamics—marked by (1) baseline hyperactivation and (2) blunted responsiveness to pathogenic stimuli. This paradox driven by dysregulation of the inflammasome, and inflammasome exhaustion likely contributes to the immune dysfunction and accelerated development of age-related diseases seen in aging PLH.



17

Physical Performance and Gait are Negatively Impacted by Peripheral Neuropathy in Persons Living with HIV

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Background: This study compared physical performance of persons living with HIV (PLHIV) to normative values and explored the impact of peripheral neuropathy on physical performance and gait.

Materials and Methods: PLHIV on antiretroviral therapy were enrolled. The 4-Meter Walk Test (4mWT), 5 Times Sit-to-Stand Test (5XSTS), 6-minute Walk Test (6MWT), and Isometric Mid-thigh Pull Test (IMTP) were used to measure gait speed, walking endurance, lower limb strength, and whole-body strength. The 6MWT was conducted on an instrumented ZENO walkway in order to capture data for spatial and temporal characteristics of gait. The enhanced gait variability index (eGVI) was used to quantify fluctuation magnitude of 5 spatiotemporal gait measures. Physical performance and gait data was analyzed from 70 PLHIV (age 56.2 ± 12.1 years; 35 with neuropathy; 25 women). Z-scores were used to compare physical performance of PLHIV to age and sex-matched normative data. Average z-scores were compared to the expected score of 0 using a one-sample t-test. We compared performance and gait between participants with and without painful peripheral neuropathy in the feet using independent t-tests and Cohen's d effect sizes.

Results: On average, PLHIV walked 1.00 m/s (95% CI: 0.94, 1.06 m/s), which was 0.63 z-score below normative data ($p < 0.0005$). PLHIV walked 352 meters (95% CI: 331, 372 meters) on average, which was 3.17 z-scores less than expected ($p < 0.0005$). PLHIV performed the 5XSTS in 12.1 seconds (95% CI: 10.5, 13.7 seconds; 1.04 z-scores worse than expected, $p < 0.0005$). PLHIV produced an average of 10.5 N/kg of bodyweight with IMTP,

which was 4.1 N/kg less than expected (mean z-score = -1.02; $p < 0.0005$). Comparing those with and without neuropathy, there was a significant difference in gait speed (0.14 m/sec faster in those without neuropathy; $p = 0.015$, $d = 0.60$), walking endurance (60 meters further in those without neuropathy; $p = 0.003$, $d = 0.75$), and 5XSTS (4.2 seconds faster in those without neuropathy; $p = 0.007$, $d = 0.67$). There was a moderate effect size for IMTP (0.86 z-score lower in those with PN, $p = 0.001$; $d = 0.8$) suggesting that whole-body strength in PLHIV with painful peripheral neuropathy may be impaired compared to those without neuropathy. There were significant differences in gait velocity ($p < 0.0005$), step length ($p < 0.0005$), and eGVI ($p = 0.005$) over a 6-minute walk, indicative of impaired gait and higher gait variability in the participants with neuropathy. There were no differences in cadence or stride width between those with or without neuropathy.

Conclusions: PLHIV in this study had impairments in physical performance compared to normative data. The causes of the impairments are likely multifactorial but may be related to accelerated and/or accentuated aging. Painful peripheral neuropathy has a compounding negative impact on physical performance and certain spatial and temporal characteristics of gait. Clinicians should be aware that in PLHIV and in PLHIV with concurrent peripheral neuropathy, the presence of deficits in physical performance and/or gait may suggest a need for rehabilitation strategies to improve function and reduce the risk of falls, particularly in older adults.



18

Assessment of Care Needs for People With HIV Over 50 Years Old in the leDEA Consortium in 2023

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Background: Worldwide, the number of older people with HIV (PWH) is increasing. PWH aged ≥50 years are at higher risk for worse HIV outcomes, comorbidities, and polypharmacy, most of these not routinely evaluated in HIV care. We describe the proportion of PWH aged ≥50 years in the International epidemiology Databases to Evaluate AIDS (leDEA) consortium and assessed the capacity of HIV clinics to identify and address their needs.

Materials and Methods: From HIV clinics participating in leDEA's 2023 consortium-wide general site assessment survey, we obtained individual-level data from PWH receiving care within the last 12 months prior to each site's leDEA database closure. We calculated the proportion (median, Interquartile range [IQR]) of PWH aged ≥50 years in care by sex and site in each leDEA region (Asia-Pacific (AP), Central-Africa (CA), Latin-America and the Caribbean (CCASAnet), East-Africa (EA), North-America (NA), Southern-Africa (SA), and West-Africa (WA)). By region, we estimated the number and percentage of sites reporting routine screening (using any tool) for geriatric syndromes (e.g., mobility loss, cognitive impairment, hearing and visual impairment, frailty, urinary incontinence, risk of falls, polypharmacy). We also assessed on-site availability (daily or intermittent) of specialists (e.g., geriatrician, ophthalmologist, psychiatrist).

Results: A total of 503,697 PWH received care from 2021-2024 within the 167 clinical sites participating. Among these, 34% of PWH were ≥ 50 years. The proportion varied widely across regions: 58% of all PWH were ≥50 years in NA, 43% in AP, 41% in WA, 37% in CA, 34% in CCASAnet, 25% in EA, and 24% in SA. The proportion of women aged ≥ 50 at participating sites ranged from 21% [IQR:15-29] in SA and 21% [IQR:17-33] in EA, to 58% [IQR:54-66] in NA; with 32% [IQR:25-39] in CA, 39% [IQR:35-41] in WA, 39% [IQR:36-45] in CCASAnet, and 44% [IQR:28-57] in AP. Availability of screening for geriatric syndromes was low and varied by region. Frailty screening ranged from 0% (WA and EA) to 25% (AP and NA sites); falls risk: 0% (WA and CCASAnet) to 60% (NA); urinary incontinence: 0% (CCASAnet and WA) to 30% (SA and NA); cognitive impairment: 14% (WA) to 45% (NA). Visual impairment screening was performed commonly (50% AP-78% SA sites), while hearing impairment was assessed in 0% (WA) to 35% (NA) of sites. Polypharmacy was assessed in 28% (WA) to 95% (NA) of sites. The availability of nutritionists ranged from 28% (WA) to 75% (NA) of sites, followed by psychologists



(18% in EA to 86% in WA), psychiatrists (14% in WA to 70% in NA), occupational therapists (13% in CCASAnet to 41% in AP), ophthalmologists (9% in EA to 33% in CCASAnet), audiologists (0% in WA to 33% in CCASAnet) and geriatricians (0% in CA to 35% in NA).

Conclusions: While the proportion of PWH aged ≥ 50 years at HIV sites in leDEA ranged between 24% and 58%, we found limited access to care from specialists and screening tools for evaluating HIV aging needs in most regions. Polypharmacy assessment was the most implemented, while falls risk and frailty screening were the lowest.



19

"Nobody Knows Where to Send Us": Exploring the Geriatric Healthcare Needs of Older Adults Living with HIV in Ontario, Canada

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Background: Advancements in antiretroviral therapy have significantly increased the life expectancy of people living with HIV (PLWH), resulting in a growing population of older adults living with HIV. This demographic shift introduces new challenges that sit at the intersection of HIV care and geriatrics, including multimorbidity, polypharmacy, and psychosocial complexity. Despite these emerging needs, little is known about how older adults living with HIV perceive their geriatric healthcare needs or whether current healthcare systems are equipped to meet them. **Objectives:** This study explored the perspectives and lived experiences of older adults living with HIV in Ontario regarding their access to geriatric healthcare. The goal was to identify service gaps, understand barriers to care, and highlight opportunities for more inclusive, age-appropriate models of care.

Materials and Methods: A community-based qualitative study was conducted in Ontario, Canada. Participants were adults aged 50 years and older living with HIV, recruited through purposive and quota sampling to reflect a range of ages, gender identities, and ethno-racial backgrounds. A total of 26 individuals participated in either one-on-one semi-structured interviews (n = 14) or one of two focus groups (n = 12). The interviews and focus groups explored participants' understanding of geriatric care, experiences with the healthcare system, and recommendations for improving services. Data were audio-recorded, transcribed verbatim, and analyzed thematically using the Qualitative Analysis Guide of Leuven (QUAGOL).

Results: Participants described significant confusion and uncertainty regarding access to geriatric services. Many had limited awareness of what geriatric care involved or where it could be accessed, and some reported being told they were "not old enough" despite experiencing age-related challenges. This lack of clarity extended to healthcare providers, who were often perceived as unfamiliar with geriatric referral pathways or the unique needs of aging adults living with HIV. Concerns around HIV-related stigma and ageism in healthcare settings were prevalent. Participants described discomfort in that they are living with HIV and felt that providers either overlooked HIV entirely or allowed it to define their care. This led to mistrust and avoidance of healthcare in some cases.

Social support networks—including chosen family, friends, peer advocates, and HIV community organizations—played a crucial role in helping participants manage their care and emotional well-being. However, while these supports were described as essential, they could not replace formal, coordinated medical care. Participants strongly advocated for provider education on aging and living HIV and called for more culturally safe and inclusive care environments. Specific suggestions included expanded access to virtual care, mobile outreach, and interdisciplinary teams that integrate geriatric, mental health, and HIV expertise.

Conclusions: Older adults living with HIV in Ontario face persistent barriers to accessing appropriate geriatric care, shaped by systemic gaps, stigma, and a lack of provider preparedness. Addressing these challenges requires investment in inclusive, integrated models of care, provider education, and system-level changes to ensure older adults living with HIV receive the care they need to age with dignity and support.



20

Context Matters: Association Between Physical Function and Geolocated Social and Environmental Determinants of Health in Older Adults with HIV

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Background: Older adults living with HIV (PWH) are at increased risk for physical decline and frailty compared to their HIV-negative peers. This study aims to examine the association between neighborhood-level social and environmental factors, identified through geolocation data, and physical function among two demographically and geographically distinct groups of sedentary older PWH.

Materials and Methods: We conducted a cross-sectional analysis using baseline data from the HEALTH Study, a randomized exercise trial involving 120 sedentary PWH aged 50 years and older from two U.S. cities: Aurora/Denver, Colorado (CO) and Seattle, Washington (WA). Using participants' residential addresses, we linked a range of geospatial indicators (e.g., neighborhood socioeconomic status, mobility infrastructure, environmental amenities, environmental hazards, and access to healthcare) with measures of physical function, including frailty status, 400-meter walk time, chair rise time, daily step counts, and PROMIS scores. Spearman correlation coefficients were used to assess associations.

Results: Participants in CO had slower gait speed, more daily steps, and lived in neighborhoods with higher deprivation and lower walkability and transit scores compared to those in WA. In CO, higher neighborhood deprivation (measured with the Area Deprivation Index) was linked with slower chair rise time. In WA, greater social vulnerability

(measured with the Social Vulnerability Index) correlated with slower gait speed, and living farther from parks was observed among pre-frail/frail participants. When combining both sites, pre-frail and frail participants were more likely to live in socially vulnerable areas (higher SVI scores).

Conclusions: Neighborhood social and environmental conditions, captured through geolocation data, were modestly associated with physical function in older PWH, with regional differences observed. These results emphasize the influence of place on functional health and support the development of context-specific, neighborhood-level strategies to support healthy aging in this population.



21

Social Support and Mental Health in Older Women With HIV: Evidence From CROWN Study

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Background: Older women living with HIV occupy space at the intersection of multiple identities, which can manifest in a range of stigma experiences (e.g., fear of HIV disclosure, social rejection, social isolation, inadequate social support) that ultimately affect their aging. Social support is a protective factor against many negative consequences of HIV, including buffering against HIV stigma (Emlet, 2006). Social relations are multidimensional. There are many different types of support and individuals' desired levels of support vary widely. Guided by the convoy model of social relations (Kahn and Antonucci, 1980), this study leverages the complexity of social relations to examine the implications of different dimensions of support networks on mental health, specifically depressive symptoms and loneliness.

Materials and Methods: Data came from the Care Resources in Older Women's Networks (CROWN) Study, which is a mixed methods study of Black and Latina cis-gender women aged 50 and above living with HIV in the New York City area. Participants completed a psychosocial survey which included measures of perceptions of emotional and instrumental support (i.e., having someone to count on), adequacy of emotional and instrumental support (i.e., how much more support needed), depressive symptoms (CES-D; Andreson et al., 1994), and loneliness (de Jong Gierveld and Van Tilburg, 2006).

Results: Preliminary results are based on 45 participants. They ranged from age 53 to 76 (M age = 67); 26 participants identified as non-Hispanic Black, and 18 identified as Hispanic. All participants were engaged in care; 43 were virally suppressed. Almost one-third of participants (n = 14) met classification for depression, based on CES-D cutoff scores. Linear regression models were estimated to determine associations between perceptions of support, support adequacy,

depressive symptoms and loneliness. As expected, perceived emotional support was associated with fewer depressive symptoms ($b = -2.0$, $p < .05$) and lower loneliness ($b = -0.56$, $p < .05$). Inadequate instrumental support was associated with greater depressive symptoms ($b = 1.6$, $p < .05$), whereas inadequate emotional support was not significantly associated with either depressive symptoms or loneliness.

Conclusions: These findings highlight the nuances of social support and helps to dispel the notion that social support is monolithic. Social support varies in form, function, and effectiveness. Systematically measuring different facets of social relations and their unique associations with mental health provide a more comprehensive view of what precise aspects of social relations could be targeted for intervention for older women with HIV. Future work to identify sources and types of support will help older women leverage or activate existing social ties or encourage the formation of new ones to promote mental health in the face of intersectional stigmas.



22

“Art is a Form of Survival”: Fostering Deeper Connection Through Art-Based Interventions to Address Social Isolation in People Living with HIV

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Background: Social isolation and loneliness significantly impact physical, mental, and emotional well-being of people living with HIV (PWH), significantly impacting health outcomes, care retention, and quality of life. In response, the AIDS Institute launched the Social Connection Collaborative, an initiative to enhance social connection in healthcare settings through data-driven quality improvement (QI) strategies, toolkit development, and arts-based exploration to promote meaningful social connections in clinical settings.

Materials and Methods: The initiative used three main strategies: (1) development of a toolkit, (2) implementation of site-based QI projects, and (3) exploration of the impact of arts-based interventions on social connection and health outcomes. The Toolkit was co-developed with HIV clinical teams and PWH, incorporating validated loneliness assessments (UCLA Loneliness Scale), trauma-informed care practices, and consumer-informed recommendations. Additionally, implementation sites like Sun River Health designed QI projects targeting care retention through peer support groups and community-building activities, with rigorous tracking of visit adherence metrics. Lastly, the collaborative conducted research on how arts-based intervention such as music, art, and movement can positively influence health outcomes and foster deeper social connection, emotional expression, and adherence among PWH. The collaborative also established partnerships with arts organizations such as Concerts in Motion, which brings live musical performances to isolated individuals virtually and in-person to foster joy and connection.

Results: Implementation of the Toolkit enabled clinical teams to identify and address isolation more effectively, with 92.3% retention achieved in Sun River Health's QI project - surpassing their original 40% target. Arts-based interventions, including music and storytelling, showed promise in reducing loneliness and improving emotional well-being. Research conducted by the collaborative supports the growing evidence linking creative engagement to reduced loneliness, improved mental health, and medication adherence among PWH.

Conclusions: The Social Connection Collaborative has created a dynamic model for addressing social isolation among PWH through creative pathways. Lessons learned include discovering the promising potential of arts engagement and the proven power of social connection as a tool for care retention and improved care outcomes. By centering both evidence and empathy, this initiative strengthens the ability to reimagine care environments where connection, dignity, and healing can thrive.



23

Telehealth Attitudes and Experiences of Reproductive-Age and Older Ethnic Minority Women with HIV in Southern Florida

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Background: Increasingly, the literature supports the use of technology in resource-limited settings to bridge the gap in the availability of resources, while improving health outcomes and reducing HIV-related co-morbidities. However, the "digital divide" may further exacerbate health disparities for certain population sub-groups. Owing to structural and personal barriers, including access and affordability, ethnic minorities (e.g. African-American and Hispanic), older adults, and women are less likely to use technology for their healthcare needs.

Materials and Methods: As part of a larger initiative assessing the feasibility of a technology-based pilot study to support ethnic minorities with HIV, a convenience sample of 77 women, attending a public HIV clinic in Southern Florida, were surveyed. Women completed a brief survey, facilitated by clinic support staff, regarding their attitudes and experiences using telehealth services for their HIV care. The Telehealth Questionnaire is a 12-item survey, designed for persons with HIV, which assesses willingness, experience, and concerns regarding the use of telehealth, and perceived benefits of telehealth. Women were surveyed in their preferred language; incentives were not provided. HIV-related and laboratory data were retrieved from the patients' clinical records. Baseline, cross-sectional data were retrieved from the survey database and analyzed (SPSS). Descriptive statistics (proportions, Chi-Square / Fisher's Exact Test) compared patients by age group (≤ 45 years old vs. > 45 years old). Significance was determined at the 0.05 level.

Results: Women self-identified predominantly as African-American (45%), Caribbean-American (30%), and Hispanic-American (21%), and were virologically stable, with 83% being HIV suppressed (< 200 copies/mL) at the time of the survey. Approximately 30% had HIV for more than 10 years. There was a higher proportion of older women (> 45 years-old) amongst the Caribbean-Americans (36% > 45 y.o. vs 27% ≤ 45 y.o.) and Hispanic-Americans (29% > 45 y.o. vs 17% ≤ 45 y.o.). The majority were not employed or were employed at less than full time (77%), which did not differ by age group (76%: > 45 y.o.; 73%: ≤ 45). Complete survey data was available for $n = 70$ patients. Stratified by age group, older women (> 45 y.o.) were more willing to use video (67% vs. 52%) for their healthcare, compared to younger women (≤ 45 y.o.); the older women had, however, used video less often than the younger women. The older women endorsed telehealth services to avoid being seen in the HIV clinic (67% vs 58%). Older women were slightly more concerned they would not be able to express themselves to their providers (62% vs 50%) and would not be examined by their medical provider (92% vs. 85%), compared to younger women. Finally, a higher proportion of older women were concerned their data was not safe while engaged in telehealth (65% vs. 44%) and were concerned telehealth services would consume too much data (40% vs. 30%), compared to younger women. Differences were not statistically significant.

Conclusions: Among this cohort of ethnic minority women with HIV, differences were found regarding attitudes, experiences and concerns with Telehealth for HIV care, when we compared older women to younger women. Larger studies are needed to further test these relationships.



24

Daily Protein Intake as a Screening Tool for Sarcopenic Obesity in Men Living with HIV

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Background: Sarcopenic obesity (SO), a clinical condition characterized by concurrent increased adiposity and reduced muscle mass and strength, is increasingly recognized among men living with HIV (MLWH). Identifying SO typically requires complex and time-consuming procedures such as DXA and dynamometry. This study aimed to evaluate the association between macronutrient intake and SO in MLWH and to explore whether protein intake could serve as a simple, clinically useful screening marker for SO.

Materials and Methods: This cross-sectional study included 216 MLWH aged ≥ 20 years from the Modena HIV Metabolic Clinic. Participants underwent body composition assessment via DXA, handgrip strength measurement, and 24-hour dietary recall. SO was defined according to ESPEN/EASO criteria: low handgrip strength (adjusted for BMI), low appendicular lean mass (ALM/weight $< 28.27\%$), and excess body fat (age-specific BF%). Participants were categorized as SO (n=45), non-sarcopenic/obesity (NS/O, n=33), and non-sarcopenic non-obesity (NS/NO, n=138). Logistic regression models adjusted for age and caloric intake were used to identify independent associations. ROC analysis was used to determine the optimal protein intake threshold to screen for SO.

Results: Participants with SO were significantly older and had higher BMI and body fat percentage than NS/O and NS/NO groups ($p < 0.001$). MLWH

with SO had the lowest median protein intake (0.87 g/kg/day) compared to NS/O (1.08 g/kg/day) and NS/NO (1.17 g/kg/day) ($p < 0.05$). In multivariable logistic regression, only protein intake (OR=0.017; 95%CI: 0.003–0.094; $p < 0.0001$) and age (OR=1.051; 95%CI: 1.011–1.093; $p < 0.05$) remained significantly associated with SO. ROC curve analysis identified 0.98 g/kg/day as the optimal cut-off for protein intake, achieving 71% sensitivity and 70% specificity (AUC=0.81, $p < 0.0001$).

Conclusions: Lower daily protein intake is strongly and independently associated with sarcopenic obesity in MLWH. A threshold of 0.98 g/kg/day may serve as a simple, non-invasive nutritional marker to screen for SO. This easy-to-implement tool could facilitate earlier identification and targeted intervention in HIV care settings, especially where access to advanced diagnostics is limited.



POSTER ABSTRACT PRESENTATIONS

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25

Modeling State-Level Aging Patterns Among People with HIV in the United States

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Background: As people living with HIV continue to age in the United States (US), local healthcare systems should prepare to manage the increasing burden of age-related comorbidities. It remains unclear how these demographic trends - and their corresponding impacts on healthcare systems - will continue into the future and how they differ across US states.

Materials and Methods: The Johns Hopkins Epidemiologic and Economic Model (JHEEM) is a dynamic transmission model of HIV in the US. The model is calibrated to population demographics (by age, race/ethnicity, sex) and key HIV epidemiological targets - including new diagnoses and diagnosed prevalence by age group - in 11 states comprising 63% of diagnosed prevalence in the US (Alabama, California, Florida, Georgia, Illinois, Louisiana, Mississippi, Missouri, New York, Texas, and Wisconsin). We project HIV epidemics from 2025 to 2040, estimating the proportion of people with diagnosed HIV (PWDH) over the ages of 55 as well as the median age of PWDH. We report 95% credible intervals across 1,000 independent simulations per state.

Results: The model projected the number of PWDH across all 11 states to rise from 665,000 (95% credible interval: 658,000 to 671,000) in 2025 to 702,000 (673,000 to 726,000) in 2040, with the number age 55+ growing from 308,000 (302,000 to 315,000) in 2025 to 402,000 (379,000 to 326,000) in 2040. This reflects an increase in the proportion of PWDH age 55+ from 46% (45 to 47%) in 2025 to 57% (54 to 60%) in 2040 and a shift in median age of PWDH from 51 years (51 to 52) to 61 years (58 to 63). State-level analysis suggested substantial variations in local outcomes. For example, the proportion of PWDH age 55+ in California was projected to rise from 50% (47 to 53%) to 67% (59 to 75%), with the median age rising from 54 years

(52 to 56) to 67 years (63 to 70). By contrast, simulations in Wisconsin projected a stable proportion of PWDH age 55+, 44% (41 to 47%) versus 43% (37 to 53%), accompanied by reductions in projected median age from 49 years (47 to 51) to 41 years (38 to 60) between 2025 and 2040. Projected state-level changes in the proportion of PWDH age 55+ were most strongly correlated with urbanicity (Pearson correlation coefficient = +0.72; p=0.01).

Conclusions: The population of persons living with HIV in the US is projected to age significantly by 2040. Aging patterns will vary across states, with more rapid aging projected to occur in urban states. It will be important to allocate resources to help healthcare systems adapt to changing demographic patterns of PWDH in a manner that reflects state-level needs.



26

Abstract 26 was withdrawn.



27

Risk Factors for HIV-Associated Neurocognitive Impairment and Frailty in Aging People With HIV in Latin America: A Systematic Review

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Background: As people living with HIV (PWH) in Latin America and the Caribbean (LAC) increasingly have longer life expectancy due to improved access to antiretroviral therapy (ART), comorbid conditions such as HIV-associated neurocognitive disorder (HAND) and frailty are becoming more prevalent. This systematic review aimed to synthesize existing evidence on the prevalence and risk factors for HAND and frailty among aging PWH in LAC.

Materials and Methods: We conducted a systematic review following PRISMA guidelines. We searched five databases for studies published from 2000 onward that reported on HAND, frailty or sarcopenia in PWH in LAC in English, Spanish or Portuguese. Eligible studies included observational studies, clinical trials or systematic reviews. Covidence was used for screening with four independent reviewers conducting title/abstract and full-text screening. Data were extracted on study characteristics, diagnostic tools, prevalence estimates and associated risk factors of each condition.

Results: A total of 83 studies met inclusion criteria: 71 focused on HAND and 14 on frailty. HAND prevalence ranged from 11% to 89%, with most studies using brief cognitive screening tools, such as the International HIV Dementia Scale or Mini Mental State Exam. Reported risk factors included older age, lower education, female sex, low CD4 counts and psychosocial factors. ART use did not consistently protect against HAND. Only a small subset of studies employed complete neuropsychological test batteries, imaging or biomarker analysis. Frailty studies, primarily from

Brazil, reported prevalence ranging from 8% to 50%. Risk factors included older age, female sex, depression, low CD4 counts, malnutrition, and unemployment. Some studies reported no or inconsistent associations with traditional HIV characteristics.

Conclusions: HAND and frailty are common and under-recognized conditions affecting aging PWH in LAC. Risk factors are multifactorial and include biological, psychological and social determinants. The reliance on brief screening tools, lack of biomarker validation, and limited longitudinal data highlight critical gaps in research. Region-specific diagnostic approaches and targeted interventions are urgently needed to improve cognitive and functional health outcomes in this population.



28

Efficacy, and Safety of AINUOVIRINE Plus Lamivudine, and Tenofovir DF in Middle-Aged People With HIV-1: Pooled Analyses of RACER, and SPRINT Studies, Two Randomized, Active-Controlled Phase 3 Trials

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Background: Middle-aged people with HIV-1 (MPWH, 50-65 years) are particularly vulnerable to cardiometabolic comorbidities, especially atherosclerotic cardiovascular disease. This pooled analysis evaluated the efficacy and safety of ainuovirine (ANV)-based regimens compared to standard therapies in this high-risk population, drawing data from the RACER (treatment-naïve, TN) and SPRINT (virologically suppressed, VS) phase 3 trials.

Materials and Methods: The analysis included 87 MPWH (TN, N=39; VS, N=48) randomized to receive either ANV/3TC/TDF or comparator regimens (EFV/3TC/TDF for TN; E/C/F/TAF for VS) for 48 weeks. The primary efficacy endpoint was the proportion achieving HIV-1 RNA <50 copies/mL at week 48 (FDA snapshot). Comprehensive safety assessments focused on metabolic parameters (body weight change, and fasting serum lipids) and renal function (eGFR with CKD-EPI).

Results: Viral suppression was comparable between treatment arms in both subpopulations (TN, 78% vs 100%, $p>0.05$; VS, 100% vs 100%). While CD4+ T-cell recovery showed no significant differences, ANV demonstrated better metabolic outcomes. Most notably, ANV arms showed significantly greater improvement in the lipid profile: TN MPWH experienced significantly greater LDL-C (-0.40 vs +0.43 mmol/L, $p<0.001$) and TC reductions (-0.25 vs +0.86 mmol/L, $p<0.001$) compared to increases in EFV arm. These benefits were maintained in VS MPWH, with ANV/3TC/TDF showing LDL-C (-0.23 vs +0.39

mmol/L, $p=0.001$) and TC (-0.54 vs +0.39 mmol/L, $p<0.001$) advantages over E/C/F/TAF. Weight changes and renal function parameters remained comparable between all treatment groups (Table 1 and Table 2).

Conclusions: ANV-based regimens demonstrated comparable virologic efficacy to standard therapies while offering lipid metabolism benefits in MPWH. These findings suggest that ANV/3TC/TDF may be particularly advantageous for this subpopulation in whom cardiovascular risk management is crucial. The regimen's favorable lipid profile positions it as a valuable therapeutic option for the aging HIV population with heightened cardiometabolic risk.

Key words: AINUOVIRINE; People with HIV-1, middle-aged; Viral suppression; Cardio-renal-metabolic safety; Randomized controlled trials



29

Prevalence and Correlates of Hypertension and Diabetes among Kenyan Women ≥ 50 Years Living with HIV at Kenyatta National Hospital

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Background: Globally, people living with HIV (PLHIV) are living longer due to highly effective antiretroviral therapies (ART). As they age, PLHIV are experiencing conditions such as cardiovascular disease and metabolic disorders at higher rates and at younger ages. This study examined the prevalence of hypertension and diabetes within a population of women aging with HIV (WAH) in Kenya and the factors associated with hypertension and diabetes.

Materials and Methods: This was a cross-sectional study among women aged at least 50 years old, living with HIV, on follow up at Kenyatta National Hospital HIV clinic, and willing and able to consent. We calculated prevalence of hypertension and diabetes, stratifying by age group. Hypertensive grades, prediabetes, and diabetes were defined according to Kenya national guidelines. Blood pressure readings were taken twice on each arm and averaged. Grade one hypertension is a systolic blood pressure (SBP) of 140-159 mmHg and/or a diastolic blood pressure (DBP) of 90-99 mmHg, grade two hypertension is a SBP of 160-179 mmHg and/or a DBP of 100-109 mmHg, and grade three hypertension is a SBP ≥ 180 mmHg and/or a DBP ≥ 110 mmHg. Prediabetes is a hemoglobin A1c (HbA1c) score of 5.7-6.4% and diabetes is a HbA1c score of $\geq 6.5\%$. We fitted univariate and multivariate logistic regression models to determine factors associated with hypertension and diabetes, evaluating age, level of education, marital status, employment, housing stability, household income, medical insurance, HIV viral load, ART duration, use of a protease-inhibitor (PI) based ART regiment, and BMI.

Results: We enrolled 200 women living with HIV with a median age of 58.5 years old (Interquartile range [IQR] 53, 62), with at least high school education (77.5%), and employed (50%). Majority of participants had an undetectable viral load of ≤ 50 copies/mL (92.9%) with a median duration of ART therapy of 12.3 years (IQR 9.6, 12.4). Limiting to 199 participants with complete data, 144 (72.4%) had hypertension (any grade), and 83 (57.6%) had previously been diagnosed. Among those previously diagnosed, 68 (81.9%) had a prescription for hypertension medication, of which 24 (35.3%) had controlled hypertension. In univariate and multivariate analyses, older age, less education, and being on a non-PI-based ART regimen were significantly associated with hypertension. Out of 200 participants, 22 (11%) had prediabetes, 26 (13%) had diabetes at the time of the study, and 19 (73.1%) had previously been diagnosed with diabetes. Of those, 15 (78.9%) had a prescription for oral diabetes medication and 6 (31.6%) had a prescription for insulin. Among those with prescriptions, only 7 (29.4%) had a normal HbA1c. In the multivariate model, older age and taking a non-PI-based ART regimen were significantly associated with increased diabetes.

Conclusions: Nearly 5 in 10 and 2 in 10 women living with HIV have hypertension and diabetes or prediabetes, respectively. While majority of participants had previously been diagnosed with hypertension and diabetes, only a third of those being treated had their hypertension or diabetes under control. Further investigation may be indicated to identify barriers to effective treatment and follow-up for this population.



30

Long-Term HIV Survivorship and Community Advocacy: A Case Study from International Settings

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These case studies provide an overview of the real-life experiences of individuals who have lived long-term with HIV in different international settings, with a particular focus on how community advocacy plays a significant role in enhancing health outcomes, social inclusion, and respect for human rights. These cases demonstrate that survivor-centered initiatives and grassroots movements foster resilience, reduce stigma, and influence policy changes, as illustrated through qualitative analysis. The cases cover regions such as Sub-Saharan Africa, Southeast Asia, and Eastern Europe, reflecting common issues like discrimination, limited access to healthcare, and social exclusion, as well as region-specific challenges shaped by cultural, economic, and political contexts.

This report emphasizes the power of community-based, culturally competent practices that enable individuals living with HIV to take greater ownership of their health and advocacy efforts. The integration of local health systems into long-term care emerges as a critical component supporting survivor networks. The cases also illustrate how advocates who have lived experience can mobilize policy changes, resources, and promote the protection of human rights. This compilation aims to inform healthcare providers, policymakers, and community organizations about effective, contextually appropriate strategies that leverage the resilience of individuals living with HIV and grassroots movements to promote positive health outcomes and uphold dignity.

Finally, the reflections underscore the importance of empowering people living with HIV and incorporating their testimonies into healthcare and policy frameworks to advance sustainable development goals related to HIV/AIDS response.



31

Dual Trajectories of Disability and Physical Activity in Adults Aging with HIV: Insights from a Population-Based Longitudinal Study in Ontario, Canada

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Background: Adults aging with HIV may experience various health-related challenges that can be conceptualized as disability. Physical activity is a promising strategy to mitigate disability. However, both disability and physical activity are dynamic, interconnected processes that may evolve over the life course. This study aimed to characterize the interrelationships between disability and physical activity trajectories among adults aging with HIV who were involved in a population-based longitudinal study in Ontario, Canada.

Materials and Methods: We analyzed longitudinal data from adults enrolled in the Ontario HIV Treatment Network Cohort Study (OCS) who had between one to four annual disability and physical activity assessments from 2020–2023. Disability was measured using the short-form World Health Organization Disability Assessment Schedule (WHODAS 2.0; range = 0–48, higher scores indicating greater disability severity). Physical activity was assessed as the number of days engaged in 30 or more minutes of moderate or vigorous physical activity in the last week (range = 0–7 days). We performed group-based dual-trajectory modeling to estimate disability and physical activity trajectories simultaneously. We examined the linkage between trajectories using conditional and joint probabilities.

Results: In 2020, 76% of 1,709 participants were men and 59% were White; the mean age was 52.2 years (standard deviation: ± 12.1). We identified four disability trajectories— no disability (36.2%),

low disability (39.3%), medium disability (18.0%), and high disability (6.6%). Similarly, four distinct physical activity trajectories emerged— barely active (17.2%), decreasing activity (16.3%), increasing activity (21.2%), and highly active (45.3%). We observed within- and between-person variability across all trajectories. Sixty-three percent of participants in the no disability trajectory were in the highly active trajectory, whereas 64.5% of the high disability trajectory were in the barely active or decreasing physical activity trajectories. The most frequent combinations were no disability plus highly active (22.1%) and low disability plus highly active (17.1%).

Conclusions: Disability and physical activity were each characterized by four distinct trajectories over four years among adults aging with HIV. Our findings underscore the complex and intertwined nature of disability and physical activity over time. Further work is needed to identify common factors or mechanisms underlying these trajectories to support healthy aging in this population.



32

Menopause Syndemic Profiles and Quality of Life Among Older Women with HIV in the All of Us Research Program

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Background: Menopause can intensify existing health challenges among women living with HIV, including mental health symptoms, cardiometabolic diseases, and susceptibility to sexually transmitted infections (STIs), all of which negatively impact quality of life (QoL). Understanding how these conditions interact during menopause is critical to the development of tailored interventions to improve care for older women with HIV (OWWH). This study used latent class analysis (LCA) to examine how menopause syndemics (i.e., co-occurring patterns of mental health issues, chronic diseases, sexually transmitted infections) affect the quality of life (QoL) among OWWH.

Materials and Methods: Using data from the All of Us Research Program, collected from 2017 to 2023, we analyzed electronic health records and survey responses from 1347 female participants (aged 45 and older) with a confirmed HIV diagnosis. LCA included menopause, anxiety, depression, hypertension, type 2 diabetes, and sexually transmitted infections (chlamydia, gonorrhea, syphilis, herpes) variables. Multilinear regression analysis was conducted to determine the effects of menopause syndemics on QoL, while controlling for demographic factors.

Results: The majority of participants were 55 years and older (50.3%, 55-64; 38.3%, 65+); non-Hispanic Black (58.1%); single (30.2%) or separated/divorced (30.7%), and had less than a

college degree (59.0%). Three latent classes emerged: “High Psychosocial Distress, Multimorbidity, and Menopausal Burden” (n=612): menopause (61%), anxiety (77%), depression (92%), type 2 diabetes (56%), hypertension (97%), and STIs (49%). “Low Psychosocial Distress, Emerging Cardiometabolic Risk, Minimal Menopausal and Sexual Health Burden” (n=569): menopause (22%), anxiety (10%), depression (20%), type 2 diabetes (33%), hypertension (74%), and STIs (22%). “High Psychosocial and Sexual Health Burden, Low Cardiometabolic and Menopausal Burden” (n=166): menopause (37%), anxiety (63%), depression (97%), type 2 diabetes (9%), hypertension (15%), and STIs (42%). Individuals in the “Low Psychosocial Distress, Emerging Cardiometabolic Risk, Minimal Menopausal and Sexual Health Burden” group had significantly higher odds of reporting good QoL compared to the “High Psychosocial Distress, Multimorbidity, and Menopausal Burden” group ($p < .001$), while the “High Psychosocial and Sexual Health Burden, Low Cardiometabolic and Menopausal Burden” group showed no significant difference. Across all groups, higher education was marginally protective against poor QoL ($p = .052$). Older individuals and those who were unemployed were significantly more likely to report poor QoL ($p < .001$).

Conclusions: Findings highlight that OWWH have distinct health profiles, suggesting variability in their healthcare needs. The results indicate a complex interplay of menopausal burden, psychosocial distress, and multimorbidity. Therefore, future research should examine the synergistic adverse interactions among these syndemic conditions on quality of life, while also exploring the social determinants of health that contribute to menopause syndemics in this population to inform the design of culturally tailored interventions. Consistent with syndemic theory, addressing these determinants is essential to improving the health outcomes of OWWH.



33

Five-Year Disability Trajectories and the Associated Contextual Factors Among Adults Aging with HIV in a Prospective Cohort Study

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Background: Disability among adults aging with HIV may be episodic in nature and vary over time. Guided by the Episodic Disability Framework, the objective of this study was to investigate trajectories of disability and associated contextual factors among a prospective cohort of adults aging with HIV in Ontario, Canada.

Material and Methods: We analyzed longitudinal data from adults aging with HIV enrolled in the Ontario HIV Treatment Network Cohort Study (OCS) who had between one to five annual self-reported disability assessments from 2019–2023. Disability was measured using summary scores from the short-form World Health Organization Disability Assessment Schedule (WHODAS 2.0; range 0 to 48, with higher scores indicating greater disability). We assessed intrinsic (age, gender, race, education, household income, number of comorbidities, smoking, alcohol consumption) and extrinsic (stigma, social support) contextual factors at baseline. We used growth mixture modeling to identify subgroups with similar patterns of disability over time, while accounting for individual variations in these trajectories. Multinomial logistic regression was applied to examine associations between contextual factors and disability trajectories.

Results: In 2019, the mean age of 1,896 OCS participants was 51.8 (standard deviation $\pm$ 12.1) and 77% were men. Three disability trajectories were identified: low ($n = 534$; 28%), moderate ($n = 1,004$; 53%), and high disability ($n = 358$; 19%). Variability in disability within and between participants was observed in the moderate and

high trajectory groups. Factors associated with the high disability trajectory were: identifying as women (marginal mean probability $b = 0.10$, 95% CI: 0.04, 0.15), lower household income ($b = 0.09$, 95% CI: 0.04, 0.14), greater comorbidities ($b = 0.05$, 95% CI: 0.04, 0.05), and higher HIV stigma ($b = 0.06$, 95% CI: 0.04, 0.07). Conversely, older participants ($b = 0.03$, 95% CI: 0.01, 0.05), identifying as Black or African ($b = 0.19$, 95% CI: 0.12, 0.25), and reporting greater social support ($b = 0.09$, 95% CI: 0.06, 0.11) were more likely to follow the low disability trajectory.

Conclusions: Disability experiences among OCS participants followed three distinct trajectories over a 5-year period. Results highlight the heterogeneous nature of disability over time, and underscore the potential role of modifiable contextual factors, such as HIV stigma and social support, to reduce disability among adults aging with HIV.



34

Modifiable Protective Factors, Anxiety, and Sleep Disturbance in People living with HIV

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Background: Of the adult PLWH in the U.S. 45% are over the age of 50. Middle-aged and older populations are projected to make up the majority of PLWH by 2045. On average, compared to age-matched adults who are HIV-, PLWH take more medications and have interrelated comorbid conditions including depression, chronic pain, and sleep disturbance. These clustering conditions can have consequences for healthcare engagement, and quality of life. There is a critical need for non-pharmaceutical protective modifiable factors to improve sleep outcomes and comorbidities among PLWH.

Materials and Methods: Analyses include a cross-sectional, baseline sample of MSM living with HIV from Philadelphia, Pennsylvania and Honolulu, Hawaii (n=263). Descriptive, bivariate, linear, and logistic regression analyses examine sleep outcomes (days with inadequate sleep in the past month and sleep disorder diagnosis) relative to correlates (social support, resilience, discrimination, anxiety, pain, age, and demographics). Moderation analyses were conducted.

Results: The sample had a mean age of 53 years. Age was associated with decreased anxiety symptoms, decreased days with inadequate sleep ($\beta=-0.14$, $p<0.01$), and higher odds of a sleep disorder diagnosis (Odds Ratio [OR]=1.02, 95% Confidence Interval [CI]=1.00, 1.04). Discrimination ($\beta=-0.21$, $p<0.01$), days with pain ($\beta=0.33$, $p<0.01$), anxiety symptoms ($\beta=0.99$, $p<0.01$) were associated with increased days with inadequate sleep. Social support was associated

with decreased days of inadequate sleep ($\beta=-0.11$, $p<0.05$). Discrimination (OR=1.05, 95% CI=1.02, 1.09), days with pain (OR=1.04, 95% CI=1.01, 1.08), anxiety symptoms (OR=1.14, 95% CI=1.08, 1.21), were associated with an increased odds of a sleep disorder diagnosis. While social support and resilience were associated with decreased anxiety, they did not moderate the relationship between anxiety and sleep outcomes. Age did not moderate the relationship between anxiety and sleep outcomes.

Conclusions: This analysis suggests that social support may be a modifiable protective factor for sleep-related outcomes among PLWH; however, in this sample it does not appear to buffer against the effects of anxiety on sleep. While resilience appears to be a protective factor for anxiety, it does not appear to impact sleep outcomes in the sample. Future research should examine social support and social support interventions as well as other protective modifiable factors for sleep outcomes.



35

Abstract 35 was withdrawn.



36

Stigma and Resilience in Older Adults Living with HIV: The GOLD Studies

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Background: Individuals aged 50+ comprise the largest age group of people with HIV (PWH) in the US. This population navigates multilevel physical, mental, and psychosocial challenges due to their HIV status, the natural aging process, and long-term antiretroviral therapy (ART). Additionally, older PWH experience stigma related to their HIV status, age, and sometimes the circumstances through which they contracted HIV, creating barriers to healthcare access and social support. However, resilience is a key characteristic of adapting, with many PWH establishing effective coping mechanisms and support networks, thus redefining aging with HIV in the era of ART.

Materials and Methods: Between March and June 2019, 40 older PWH from the Newark, NJ area participated in semi-structured interviews lasting 45–90 minutes, conducted by three trained research assistants. Interviews focused on participants' experiences with HIV-related stigma and resilience. All interviews were transcribed and reviewed by research staff for accuracy. Transcripts underwent a rigorous process of coding and thematic analysis, employing a systematic approach to identify, analyze, and interpret patterns of meaning within the qualitative data.

Results: Participants ranged in age from 51–69 years, n=18 identified as women, and n=37 identified as Black, non-Hispanic. Participants shared a spectrum of experiences with HIV-related stigma, noting both individual and community impacts. While some described reduced stigma over time due to self-acceptance and boundary-setting, others highlighted consistent encounters with judgment and exclusion, especially in familiar social spaces such as family gatherings and healthcare settings. Discrimination often led to isolation and reluctance to disclose their status.

Conversely, examples of resilience emerged as a multi-layered approach to living with HIV, driven by self-acceptance, future-focused goal setting, and a rejection of negativity. Relying on accepting interpersonal relationships and selectively disclosing HIV status facilitated resilience.

Conclusions: Overall, resilience among older PWH reflects a commitment to personal growth, self-preservation, and navigating the complexities of life with HIV. This study illustrates that although stigma persists, resilience offers a pathway for older PWH to manage adversity and adapt positively, underscoring the adaptive capacities of this aging population in coping with HIV, one of which could be through social support.



37

PAIRED - Patient Reported Experiences and Perceived Benefit of Treatment With Dolutegravir/Lamivudine: A Sub-Analysis of People Living With HIV Switching From Dolutegravir/Abacavir/Lamivudine in the United States (US)

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Background: People living with HIV have continuous exposure to antiretrovirals and need individualized treatment regimens that accommodate concomitant treatments and personal preferences as they age, while ensuring long-term treatment success. PAIRED was a cross-sectional survey and qualitative study of people living with HIV who switched to dolutegravir/lamivudine (DTG/3TC) in the US. This sub-analysis focused on people who switched from dolutegravir/abacavir/lamivudine (DTG/ABC/3TC) to DTG/3TC to explore their treatment experiences and outcomes.

Materials and Methods: PAIRED is a mixed-methods study comprising a quantitative cross-sectional survey with in-depth qualitative interviews. Validated instruments including Adelphi Adherence Questionnaire™ (ADAQ; scores range from 0-4 with lower scores indicating better adherence) and 10-item HIV-Treatment Satisfaction Questionnaire (HIV-TSQs; scores range from 0-60 with higher scores indicating higher satisfaction) were used. Adults in the US who switched to DTG/3TC while virologically suppressed and had been using DTG/3TC for ≥3 months were eligible. All participants were surveyed and a sub-set (n=20) participated in in-depth interviews. Here we focus on quantitative results for participants switching from DTG/ABC/3TC, using descriptive statistics.

Results: Of the 474 participants included in PAIRED, 131 (28%) switched from DTG/ABC/3TC to DTG/3TC. Median age was 46 years and 25% were ≥58 years old; 28% were assigned female sex at birth; 63% identified as non-White; and 29% were of Hispanic, Latinx, or Spanish origin. Aligned with overall results, the majority of respondents (63%) had at least one concomitant condition diagnosed, and 22% had 3 or more. The most commonly diagnosed were hypertension (34%), depression (31%), and neuropathy (14%), with 27% of participants taking 5 or more non-HIV medications. The majority of participants (89%) had been taking DTG/ABC/3TC for >12 months before switching to DTG/3TC, 66% of participants had been taking it for more than 24 months, and DTG/ABC/3TC was not the first regimen for 69% of participants. After switch, 69% (90/131) of participants had been taking DTG/3TC for more than 12 months at the time of survey completion. The most common factors influencing switch to DTG/3TC were avoiding side effects (64%), minimizing long-term impact (59%), and reducing the number of medicines (41%). Participants switching from DTG/ABC/3TC reported high satisfaction with DTG/3TC using the HIV-TSQs [median total score 58.0 (IQR: 52.0-60.0) out of 60]. Participants also reported improved treatment satisfaction with DTG/3TC compared with DTG/ABC/3TC, with 82% indicating that DTG/3TC was somewhat to significantly better than DTG/ABC/3TC; 37% reported being very satisfied (scoring 6/6) before switching and 66% reported being very satisfied after switching to DTG/3TC. Good adherence was observed using the ADAQ [median score 0.4 (IQR: 0.2-0.5)], with 89% of participants reporting never or rarely missing a DTG/3TC dose.

Conclusions: DTG/3TC resulted in high treatment satisfaction and good adherence after switching from DTG/ABC/3TC. In a population with high prevalence of concomitant conditions and multiple non-HIV co-medications, avoiding side effects, minimizing long-term impact, and reducing the number of medicines were key factors influencing people's decision to switch. These findings suggest that DTG/3TC can offer a valuable treatment option for people seeking a simplified regimen with lifetime exposure to fewer drugs.



38

The Effects of High-Intensity Interval Training vs. Continuous Moderate-Intensity Exercise on Body Composition Among Older Adults with HIV: Secondary Results from the HEALTH Trial

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Background: Body composition, the overall proportion of fat mass and muscle mass, is a key component of one's overall health. Poor body composition, characterized by low muscle mass and excessive fat mass, is associated with a greater risk for frailty, development of comorbidities, and all-cause mortality. People with HIV (PWH) are at a greater risk for decreased muscle mass and increased fat accumulation. Interventions that maintain or improve muscle mass, while reducing excessive fat mass, are essential to preserve physical function, reduce comorbid burden, and promote healthy aging. This secondary analysis of the High Intensity Exercise to Attenuate Limitations and Train Habits (HEALTH) study compared the effects of high-intensity interval exercise (HIIT) and continuous moderate-intensity exercise (CME), combined with resistance training, on changes in body composition among older adults with HIV.

Materials and Methods: HEALTH was a randomized controlled trial that enrolled sedentary PWH who were ≥50 years old and on stable antiretroviral therapy to perform 16 weeks of HIIT or CME combined with resistance exercise. The HIIT arm consisted of five high-intensity (90% of heart rate reserve [HRR] for 4 minutes) and four moderate-intensity (50% of HRR for 3 minutes) bouts; CME participants walked/jogged continuously at 60% of HRR. Resistance training included 3 sets of 10 repetitions of leg press, chest press, and lateral pulldown. Body composition

parameters were measured using dual-energy x-ray absorptiometry (DXA) at baseline and week 16. The primary outcome was percent change in body fat percentage from baseline. Secondary outcomes included change in lean mass (kg), fat mass (kg), and appendicular lean mass (ALM) (kg). All outcome measures were log-transformed. Adjusted and unadjusted linear regression models examined between- and within-group changes from baseline to week 16. Adjustment variables included randomization stratifying variables age, sex, and study site.

Results: Of 95 participants with pre- and post-DXA scans, the median (interquartile range [IQR]) age was 58 (IQR: 54-61) years, 15% female, 15% Black, and 15% Hispanic. Baseline body composition parameters were similar between arms (all $p>0.33$). Body fat percentage decreased by -3.4% (95% confidence interval [CI]: -5.1, -1.7) in HIIT and -3.6% (95% CI: -5.3, -1.8) in CME. Fat mass decreased by -3.7% (95% CI: -6.0, -1.4) in HIIT and -4.1% (95% CI: -6.5, -1.7) in CME. Participants in the HIIT arm increased lean mass by 1.6% (95% CI: 0.6, 2.6) and ALM by 3.2% (95% CI: 1.4, 5.1); those in CME increased lean mass by 1.1% (95% CI: 0.1, 2.1) and ALM by 2.0 (95% CI: 0.1, 3.9). There were no statistically significant differences between HIIT and CME for any body composition outcome. Adjusted models yielded similar results.

Conclusions: Body composition is a key component of healthy aging. Supervised HIIT or CME combined with resistance training for 16 weeks is an effective strategy for reducing fat mass while also preserving or improving muscle mass in previously sedentary older adults with HIV.



39

“Wellness Circles”: A Community-Based Intervention to Improve Mental Health and Daily Functioning Among Older Adults Living with HIV in Uganda

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Background: As people living with HIV (PLWH) grow older, many face mental health challenges like depression, loneliness, and stress often worsened by poverty and stigma. These struggles can affect how they take their medicine, connect with others, or carry out daily activities. In 2024, we designed and tested a simple, low-cost community program called “Wellness Circles” to help older PLWH feel better emotionally and socially.

Materials and Methods: This study took place in Wakiso District, Uganda, from June 2024 to January 2025. A total of 120 older PLWH (aged 50+) were recruited from local HIV clinics and split into two groups: 60 joined the “Wellness Circles” program (intervention group), and 60 continued regular care (control group). The intervention group met in small circles (8–10 people) twice a month for six months. Sessions were led by trained peer facilitators and included group counseling, guided exercise, nutrition talks, memory games, and storytelling. We used the WHO Disability Assessment Schedule (WHODAS 2.0) and the Geriatric Depression Scale (GDS-15) to measure changes in wellbeing. Data was analyzed using basic statistics to compare both groups before and after the program.

Results: By the end of six months, the intervention group showed notable improvement. Depression scores dropped by 35% on average, while the control group showed no major change. Those in the Wellness Circles reported better sleep, more social interaction, and improved ability to manage daily tasks like walking to the market or cleaning at home. Participants also said they felt more hopeful

and connected. Attendance was high (over 85%), and 92% of participants said they would recommend the program to others. Interestingly, people who joined the circles were more likely to stick to their HIV medication schedule and attend clinic appointments on time.

Conclusions: “Wellness Circles” proved to be a powerful, low-cost tool to support mental health and daily wellbeing for older adults living with HIV. The program helped reduce feelings of depression, improved physical functioning, and brought people together in supportive, stigma-free spaces. As more people with HIV age, we must expand community-led interventions like this that go beyond medication and focus on dignity, connection, and joy in old age. Scaling up Wellness Circles in other regions could greatly improve the quality of life for older PLWH in Africa and beyond.



40

Mapping Interventions for Older Adults with HIV to the Geriatric 5Ms Framework: A Systematic Review

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Background: The “5Ms” geriatrics framework -- including Mentation, Mobility, Multi-Complexity, Medications, and What Matters Most -- is well suited to guide care for adults with HIV over 50 years experiencing multiple comorbidities and geriatric syndromes. To date we do not know what aspects of the “5Ms” recent HIV and aging specific interventions are addressing and how well, and what areas are less-addressed but may need attention to improve physical, psychosocial, and quality of life outcomes.

Materials and Methods: We conducted a literature search (PubMed, CINAHL, etc) for articles published from January 1, 2015 to December 20, 2024. Keywords, subject headings, and indexed terms related to intervention, health outcomes, HIV/AIDS, and older adults were searched. Studies were experimental and quasi-experimental focused on interventions (behavioral, psychosocial, care models) published in peer-reviewed journals in English. We included studies comprised of participants with a mean/median age of >50 years or where the intervention was designed as aging sensitive. Outcomes of interest were physical (e.g., chronic condition management), mental (mood, affect), geriatric (quality of life, cognitive function, frailty, functional status), and HIV-related (retention, ART adherence, and viral suppression). Studies were categorized by the primary geriatric ‘M’ the intervention addressed and reviewed by category to develop summary themes. The Joanna Briggs Institute’s (JBI) critical appraisal tool was used to rate scientific rigor of individual studies.

Results: The search yielded 2,106 unique titles, screened using inclusion/exclusion criteria. Of these, 118 publications underwent full-text review, leading to 31 studies meeting final inclusion criteria. Study samples ranged from 7-216. Of the total studies, 20 were randomized controlled trials (RCTs), 8 single group pre/post designs, 1 a cluster RCT, and 2 used a waitlist control design. Most studies (n=24) were based in the United States. Fifteen studies addressed Mentation, with interventions targeting either cognitive performance or mental health/mood disorders. Nine studies addressed Mobility, with interventions of varying physical intensity. Several interventions targeted physical improvements alongside mood, pain, or substance use disorders. Six studies fell into Multi-complexity, with interventions being multimodal and focusing on more than one aspect of the 5Ms, and outcomes of quality of life, depressive symptoms, and physical function. Only one study addressed Medications by implementing a structured medication review to reduce polypharmacy. Acceptability for interventions was high, though some mobility interventions had moderate adherence. Improvements in select outcomes were observed but not typically long-term. While each study aligned with a primary M, secondary outcomes and study descriptions suggest a substantial overlap between multiple domains of 5Ms, particularly mobility and mentation.

Conclusions: Current interventions for older adults with HIV prioritize mentation and mobility, with far less attention to multi-complexity, medications, and no attention to What Matters Most. Elevating the latter may require interventions prioritizing quality of life concerns. Mentation and Mobility may also have a significant inter-relationship, suggesting that Ms may be powerfully framed as a set rather than as discrete domains. While studies are advancing efforts to support this population, challenges related to novel interventions, scaling and sustaining improvement remain.



41

Longitudinal Assessment of Fatigue in Older Adults with HIV: A Comparative Analysis of High-Intensity Interval Training Versus Continuous Moderate-Intensity Exercise within the HEALTH-HIV Study

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Background: Fatigue is a common symptom among people with HIV (PWH), with a prevalence ranging from 33% to 88%. In addition to adversely affecting health status, fatigue significantly interferes with adherence to antiretroviral therapy and work productivity. Nonpharmacological approaches, such as increasing physical activity, can play a critical role in fatigue management, with a decrease in physical fatigue. The purpose of this study was to examine change in morning and evening fatigue and energy with an exercise intervention among older PWH.

Materials and Methods: The High-Intensity Exercise to Attenuate Limitations and Train Habits in Older Adults With HIV (HEALTH) study is a parallel arm, 16 week randomized control trial at the University of Colorado and University of Washington that randomly assigned participants (1:1) to either high-intensity interval training (HIIT) or continuous moderate-intensity exercise (CME) as well as resistance exercise (NCT04550676). Inclusion criteria included PWH, aged ≥ 50 years, virally suppressed, reported a sedentary lifestyle (< 3 days/week of physical activity in the prior 3 months), and self-reported fatigue (a score on either of the first two screening items on the HIV-Related Fatigue Scale of ≥ 2). The Lee Fatigue Survey was used to assess variation in morning and evening fatigue and energy levels for 7 days. The PROMIS Fatigue 6a – ShortForm Adult v1.0 scale was used to assess fatigue. Linear mixed-effects models were employed to estimate absolute changes from baseline across outcome variables (fatigue and energy). These models included random intercepts and slopes for participants to

account for individual variability over time, with fixed effects for categorical time points, exercise intensity arm (HIIT vs. CME), and their interaction. Adjusted estimates accounted for stratification variables used during randomization (age, birth sex, and site), as well as baseline survey scores.

Results: Of the 118 participants randomized to either HIIT or CME, 83 participants completed Lee Fatigue Survey assessments at both timepoints, baseline and 16-week follow-up. Their median age was 57 (interquartile range=54-61) years, 17% were African American ($n=20$), and 14% ($n=16$) were female. Evening fatigue increased significantly in both groups at 16 weeks (HIIT: 6.7 [0.9, 12.5], $p=0.023$; CME: 9.1 [3.1, 15.1], $p=0.003$), after adjustment for covariates. After adjusting for covariates and baseline scores, both the HIIT (mean change: 6.2 [95% CI: 1.4, 11.1], $p=0.012$) and CME (mean change: 6.3 [95% CI: 1.3, 11.3], $p=0.013$) groups demonstrated significant improvements in morning energy at week 16. Both exercise interventions led to statistically significant reductions in PROMIS fatigue scores (HIIT: -3.7 [-6, -1.4], $p=0.002$; CME: -3.0 [-5.4, -0.6], $p=0.015$) from baseline to post-intervention (week 16). At week 16, changes in morning fatigue and evening energy did not reach statistical significance ($p>0.2$). Differences between intensity arms at week 16 did not reach statistical significance in any outcome ($p>0.5$).

Conclusions: HIIT and CME were both associated with increased morning energy and evening fatigue among PWH. Although the differences between the HIIT and CME groups were modest, the overall trend suggests that engaging in regular exercise, regardless of intensity, may be beneficial for fatigue and energy in PWH.



42

Age-Related Effects of Semaglutide on Gut Microbiota in People with HIV: An Exploratory Analysis from the SLIM LIVER Study.

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Background: Aging is associated with changes in the gut microbiome including loss of diversity and abundance of microbes that promote gut health. Semaglutide has been proposed as a gerotherapeutic but the impact on the gut and age-associated alterations is not well established. Here, we investigated the effects of semaglutide on the gut microbiome within the SLIM LIVER Study of people with HIV (PWH) with metabolic dysfunction-associated steatotic liver disease (MASLD). We also explored potential age-semaglutide interactions.

Materials and Methods: SLIM LIVER, a single-arm, pilot study, enrolled PWH ≥18 years old on suppressive antiretroviral therapy (ART) with MASLD. Participants received semaglutide 1 mg/week subcutaneously for 24 weeks. Bacterial 16S rRNA and shotgun metagenomic sequencing to identify bacterial and non-bacterial species, were performed on stool collected at Weeks (W) 0 and 24. The treatment effects on microbiota were analyzed using generalized linear mixed modeling accounting for age, race/ethnicity, and gender identity (other demographic/clinical variables were not associated with microbiota at W0). Age by treatment-time interactions were modeled similarly.

Results: 51 people were enrolled; paired W0 and 24 stool samples were available from 42 participants (mean age 49 years [SD 11]; range 23-68 years); BMI 35.4 [5.9] kg/m²; 35% cis and 7% trans female; 31% Black; 38% Hispanic/Latino; 79%

on INSTI-based ART). Overall microbiota composition (β -diversity; GLMM-MiRKAT) differed between W0 and 24 at genus ($P=0.002$) and species levels ($P=0.011$). α -diversity increased (Shannon H, $P=0.0075$) over 24 weeks. Relative abundances of bacterial genera *Clostridium* and *Enterococcus* increased significantly ($FDR<0.05$). *Anaerostipes*, *Ruminococcus-torques-group*, and *Lachnoclostridium* significantly decreased. Metagenomic analysis identified an increase in *Methanobrevibacter* sp. (domain Archaea) with semaglutide treatment (nominal $p<0.05$). *Ligilactobacillus* and the bacteriophage *Toutatisvirus toutatis* had significant (nominal $p<0.05$) negative age by treatment-time interactions.

Conclusions: We provide first-in-human evidence that the use of semaglutide alters gut microbiota profiles in PWH with MASLD. Semaglutide increased overall diversity with mixed effects on generally beneficial and potentially detrimental bacteria. Exploratory analyses suggested age was associated with differential impacts of semaglutide on microbial abundance with older age linked to greater decreases of bacteria associated with appetite suppression (*Ligilactobacillus*), but also to greater decreases in phages that may target beneficial bacteria (i.e. *Faecalibacterium prausnitzii*) which have previously been reported to be lower in people with MASLD, and in PWH. Thus, semaglutide treatment in PWH with MASLD had a range of impact on microbiota abundance, and responses may be influenced by age.



43

The Clock Is Ticking: Viral Suppression Timelines in Older Adults with HIV – Insights from the Midway Cohort

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Background: Advances in antiretroviral therapy (ART) have transformed HIV from a fatal disease into a manageable chronic condition. As life expectancy in people with HIV (PWH) approaches that of the general population, PWH are living longer and healthier lives. This demographic shift highlights the need to better understand treatment outcomes in older adults, particularly those initiating ART for the first time. Clinical trial and large cohort data indicate that most individuals starting ART achieve viral suppression (<200 copies/mL) within 60–180 days, with a median time of ~90 days. However, real-world data on time to viral suppression in PWH aged ≥50 remain limited. Older adults may face additional challenges, including age-associated comorbidities and polypharmacy, which could influence treatment response. This study describes real-world time to viral suppression among treatment-naïve PWH aged ≥50 in the current ART era and evaluates whether suppression times differ between individuals aged ≤45 and those aged ≥50.

Materials and Methods: This is a retrospective cohort study of individuals who initiated ART between January 2021 and December 2024 across 16 infectious disease clinics in Florida (n=211). The primary outcome was time to viral suppression, defined as the number of days from ART initiation to the first HIV-1 RNA level <200 copies/mL.

To evaluate differences in viral suppression by age category, we conducted a comparative analysis including 211 participants: 164 individuals aged ≤45 and 48 aged ≥50. Due to the positively skewed distribution of days to viral suppression, we used the MannWhitney U Test to assess whether time to suppression differed between the two age groups.

Results: Among participants aged ≥50 (n=48), the mean age was 60 years (range: 50–81), with 27% aged ≥65. Most identified as cisgender male (71%) and male at birth (71%). Racial/ethnic distribution included 42% Black, 40% White, and 25% Hispanic/Latinx. At baseline, the mean HIV-1 RNA was 166,831 copies/mL (range: 544–1,030,000); 50% had >100,000 copies/mL, and 6% had >500,000 copies/mL. ART initiation occurred more than 30 days post-diagnosis for 44%, while 13% began therapy on the same day. Most (83%) received integrase strand transfer inhibitor (INSTI)-based regimens. In the ≥50 cohort, the median time to viral suppression was 60 days (range: 11–546). Those aged ≥65 had a median of 64.5 days. Participants with baseline HIV-1 RNA >100,000 copies/mL suppressed in a median of 67 days, while those >500,000 copies/mL required a median of 77 days.

In the expanded age group analysis (n=211), time to viral suppression did not differ significantly between groups, U = 3883.00, p = .938. Patients aged ≤45 had a mean suppression time of 83.90 days (SD = 6.15), while those aged ≥50 averaged 89.54 days (SD = 14.15).

Conclusions: In this real-world cohort of treatment-naïve PWH aged ≥50, viral suppression occurred rapidly, reflecting the high potency of contemporary ART regimens. Comparative analysis revealed no significant delay in suppression relative to younger adults. These findings affirm the effectiveness of modern therapy in aging populations and highlight the importance of continued research to optimize HIV care as life expectancy increases.



44

Non-pharmaceutical Interventions for Management of Chronic Pain in Persons Living with HIV: A Scoping Review

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Background: Chronic pain is common in persons living with HIV (PLHIV). While pharmaceuticals are often used in pain management, their efficacy in this population is uncertain, highlighting the need for alternatives. Our aim was to map existing literature on non-pharmaceutical interventions for managing chronic pain in PLHIV to inform clinical practice, identify gaps in knowledge, and prioritize research questions.

Materials and Methods: We conducted a scoping review using the JBI framework. We conducted searches for articles published in English from 1984 to June 2024 from six databases, grey literature, and a hand search of citations by expert authors and in key journals. Articles were included if they described or investigated non-pharmaceutical intervention(s) for management of chronic pain in PLHIV. We included primary research articles, secondary research (review) articles, and other types of reports. Study protocols or published abstracts that were followed by a full study publication were not included. Citations were screened and data extraction was performed using a customized template in the AHRQ Systematic Review Data Repository (SRDR+) by two blinded reviewers, with discrepancies resolved by a third reviewer. Data on interventions, outcomes, and study design characteristics were extracted. Results are presented using descriptive statistics and figures.

Results: Of the 156 articles included, 53 were clinical trials exploring mind-body therapies (n=17), behavioral approaches (n=17), patient education (n=9), exercise (n=6), and other interventions (n=21). Of the clinical trials that were randomized controlled trials (RCTs), favorable results for reduction in pain were reported with exercise (n=4), patient education (n=4), and cannabis (n=2). RCTs using behavioral approaches (n=4) reported mixed results. Other interventions investigated in single or pilot RCTs included massage, ice massage, yoga, vibration, art therapy, palliative care, topical capsaicin, lower extremity night splints, acupuncture, acupuncture with moxibustion, and Reiki with music. The most frequently used tool to measure pain was the Brief Pain Inventory. Other outcomes assessed in clinical trials on non-pharmaceutical interventions in PLHIV included quality of life, mental health, and physical function.

Conclusions: A range of non-pharmaceutical interventions for chronic pain in PLHIV has been described, and results of clinical trials continue to emerge. The findings of this scoping review suggest that several different non-pharmacologic approaches may be helpful in managing chronic pain in this population. Addition studies are needed to clarify the efficacy of behavioral approaches, exercise, patient education, mind/body interventions, cannabis, and other less studied interventions. Systematic reviews of RCTs should be conducted on the effectiveness of exercise, patient education, cannabis, and behavioral approaches.



45

Starting Strong at 50+: Real-World ART Effectiveness of DTG/3TC and BIC/F/TAF in Treatment-Naïve Older Adults

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Background: Two-drug regimens (2DR) such as dolutegravir/lamivudine (DTG/3TC) are increasingly utilized as simplified alternatives to traditional three-drug regimens (3DR), such as bictegravir/emtricitabine/tenofovir alafenamide (BIC/F/TAF) for people with HIV (PWH). While both regimens have demonstrated strong efficacy in clinical trials, limited real-world evidence exists for older, treatment-naïve adults initiating therapy. We report the effectiveness and tolerability of DTG/3TC and BIC/F/TAF in HIV treatment-naïve PWH aged 50 and older across a multi-clinic infectious disease network.

Materials and Methods: We conducted a retrospective cohort study of individuals who switched or initiated DTG/3TC or BIC/F/TAF between May 1, 2019, and January 28, 2023, across 12 infectious disease clinics in the Southeastern United States. In this abstract, we report the results from the cohort >50 years who initiated HIV-1 therapy on either DTG/3TC (n=21) or BIC/F/TAF (n=23). All participants had ≥48 weeks of clinical follow-up and documented HIV-1 RNA at baseline, week 24 (±4 weeks), and week 48 (±8 weeks). Descriptive analyses were performed in using Stata 18.0 (StataCorp, 2023. College Station, TX: StataCorp LLC). The primary outcome was the proportion of participants with HIV-1 RNA <50 copies/mL at week 48. Secondary outcomes included changes in CD4+ T-cell count, weight changes and rates of regimen discontinuation.

Results: Participants had a median age of 57.5 years and were predominantly cisgender male (70.5 %). Median (interquartile range, IQR) baseline BMI was 26.3 (23.-30.6) and % of individuals who were overweight or obese was 60.5%. Common baseline comorbidities included

metabolic and nutritional disorders (63.6%), cardiac disease (61.4%), and gastrointestinal conditions (34.1%). Social determinants of health challenges, such as housing instability (9.3%) and lack of health insurance (14.0%) were present.

At baseline, median (IQR) HIV -1 RNA was 4.7 (3.1-5.1) log₁₀ copies/mL, and the median CD4 count was 373 (128-657) cells/mm³. Virological suppression (<50 copies/mL) was achieved by 81.8% overall at week 24 (DTG/3TC: 95.2%, BIC/F/TAF: 69.5%) and 95.5% overall at week 48 (DTG/3TC: 95.2%, BIC/F/TAF: 95.7%). The mean CD4 count increased by +159.2 cells/mm³ by week 48 (DTG/3TC: +186.2, BIC/F/TAF: +130.9). At week 48, BMI increased modestly (+1.3 kg/m² overall), with numerically higher gains in the DTG/3TC group (+1.4 vs. +1.2). Overall, 45.5% of participants experienced ≥5% weight gain (DTG/3TC: 53.3 % [8/15], BIC/F/TAF: 38.9 % [7/18]). Safety profiles were favorable. No treatment discontinuations due to adverse reactions were reported.

Conclusions: In this descriptive analysis of a real-world cohort of 44 ARV-naïve individuals aged 50 years and older, both DTG/3TC and BIC/F/TAF were associated with high rates of virological suppression and improvements in immunological recovery over 48 weeks. Safety and tolerability appeared favorable across regimens. These findings, consistent with existing evidence, suggest these regimens are appropriate and well-tolerated options for older adults initiating ART in routine clinical practice.



46

Age as a Heuristic in an HIV Medical Case Manager Facilitated Universal Behavioral Screening and Digital Positive Emotion Skills Intervention

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Background: Universal behavioral screening in HIV care has the potential to increase the identification of people living with HIV (PLWH) with conditions such as anxiety or depression and increase their connection to interventions and care. At the same time, there are documented shortages and resulting wait times for certain forms of care, such as talk therapy. Digital interventions, including digital positive emotions skills interventions have the potential to provide benefits to PLWH while waiting for or actively engaging in other behavioral or mental health services. With the rapidly aging population of PLWH, the majority of which will soon be over the age of 50, it is critically important that universal behavioral screening is feasible and acceptable and if digital mental health interventions are perceived as appropriate for these populations. In 3-waves of qualitative data from a Hybrid Type II stepped wedge effectiveness/implementation trial we analyzed medical case manager (MCM) perceptions of age-appropriateness of a universal behavioral screening and digital positive emotion skills intervention.

Materials and Methods: Three waves of qualitative interviews were collected from the effectiveness/implementation trial. Data were collected approximately 9 months after the

implementation in each wave. Thirty-five MCMs and supervisors from 16 participating clinics in the Chicago area were interviewed. Interview guides were influenced by the Consolidated Framework for Implementation Research and had a set of core questions which were asked across waves. Transcripts were recorded and transcribed verbatim then analyzed through Rapid Qualitative Analysis. This analysis presents themes related to the perception of age in the context of the universal screening and positive emotions intervention.

Results: Across three waves, 84% of eligible clients were screened. Of these, 24% were eligible for ORCHID and 5% of those eligible were referred. A prominent theme across waves was MCM using discretion when deciding who to screen or who to refer. A major sub-theme was the perception that “older” clients living with HIV would be less willing to disclose mental health challenges that might be uncovered in the screening. Furthermore, some MCMs indicated that they expected older clients to be less interested in or, if they were referred, capable of engaging with a digital intervention. MCMs cited this perception as a reason not to screen or refer older PLWH, though they did not describe cases where older PLWH refused due to their age or low levels of technological literacy.

Conclusions: Independent of the self-perceptions of middle-aged or older PLWH, MCMs seem to rely on perceptions of the incompatibility of universal screening and digital interventions based on age when deciding to screen and refer clients. MCMs seem to use age as a heuristic favoring younger clients in these interventions. Though universal screening and digital interventions have the potential to increase access to behavioral and mental health care, further efforts may be necessary to ensure that these interventions are perceived as appropriate by the implementers (in this case, MCMs) for middle aged and older PLWH.



47

Low Peripheral Blood Mitochondrial DNA Copy Number is Associated with T Cell Activation, Senescence, and Immune Aging in Men with and without HIV

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Background: Mitochondrial DNA copy number (mtDNA-CN) is a marker of mitochondrial biogenesis and a proxy for mitochondrial function. Low mtDNA-CN has been linked to adverse aging outcomes and higher mortality in the general population. Previous studies suggest that people with HIV (PWH) have lower mtDNA-CN in blood than people without HIV (PWoH), which may contribute to this higher incidence of aging-related comorbidities in PWH. We sought to evaluate the association between mtDNA-CN and markers of immune activation and senescence in men with and without HIV.

Materials and Methods: We studied participants from the BOSS study, a subcohort of the Multicenter AIDS Cohort Study (MACS) focused on aging among individuals aged 50–69. mtDNA-CN was quantified from frozen PBMCs using digital PCR to calculate the ratio of mitochondrial to nuclear DNA and was standardized for batch effects, white blood cell count, and platelet count at the time of measurement. Immune phenotyping of T cells (markers: CD3, CD4, CD8, CD28, CD38, CD57, HLA-DR, CD45RA) was performed via multiparameter flow cytometry. Associations between mtDNA-CN and T-cell subsets (naïve, activated, and senescent phenotypes) were analyzed cross-sectionally using multivariable linear regression, adjusting for sociodemographic characteristics, BMI, smoking, alcohol and injection drug use, as well as HBV and HCV serostatus. Additional models were conducted stratified by

HIV status while controlling for the same covariates.

Results: The analysis included 99 men (43 PWH and 56 PWoH) with a median age of 61 years (IQR: 56–64). Most participants (87%) were White, 43% had completed college, and the median BMI was 26. 24% of participants were current smokers, and 65% consumed alcohol. Among PWH, 98% were virally suppressed, with a median CD4 count of 748 cells/μL (interquartile range [IQR]: 575–929). Higher mtDNA-CN was significantly associated with a higher percentage of CD28+CD57- CD4+ T cells and a lower percentage of CD28-CD57+ CD4+ T cells in both PWH and PWoH (all p<0.01). Among CD8+ T cells, higher mtDNA-CN was significantly associated with a higher percentage of HLA-DR-CD57- subsets in both groups. Associations were stronger in PWH compared to PWoH. In PWH, higher mtDNA-CN was also associated with lower percentages of CD38+HLA-DR-CD57- CD4+ T cells and senescent (CD28-CD57+ and CD38+CD57+) CD8+ T cells, and higher percentages of activated (CD38+HLA-DR+CD57-) and CD28+CD57- CD8+ T cells.

Conclusions: Higher mtDNA-CN was associated with a less senescent and more activated and resilient T-cell profile, particularly among PWH. The stronger associations observed in PWH suggest that mitochondrial function may play a more pronounced role in shaping immune profiles and immune aging in PWH. While these results suggest a link between mitochondrial health and immune cell phenotypes, further studies are needed to better understand the underlying mechanisms and to determine whether interventions targeting mitochondrial function could influence immune aging and comorbidities among PWH.



48

Beta-Galactosidase-Positive Senescent T Cells Associate With Reduced Physical Performance in Older Adults With HIV

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Background: T cell senescence is a state of stable cell cycle arrest induced by telomere shortening, DNA damage, and cellular stress. The accumulation of senescent T cells is thought to contribute to age-related immune dysfunction and physical decline. People with HIV (PWH) experience an earlier onset and higher prevalence of age-associated comorbidities and frailty compared to people without HIV (PWoH), potentially due to premature T cell senescence driven by chronic immune activation, inflammation and/or antiretroviral therapy (ART). Prior studies linking T cell senescence to frailty have primarily relied on non-specific surface markers such as CD28 loss. In contrast, more specific biochemical markers of senescence, such as senescence-associated β -Galactosidase (SA β -Gal), have not been studied in T cells in relation to physical decline in aging PWH and PWoH. Our prior observations demonstrated a correlation between SA β -Gal expression and telomere attrition in T cells. The present study, which is ongoing, is intended to elucidate the relationship between T cell senescence and functional decline during aging with HIV.

Materials and Methods: The Short Physical Performance Battery (SPPB) and Jamar dynamometer grip strength testing were used to assess physical function in 11 older PWH (OPWH; median age: 62 years, range: 60-71), all of whom were virally suppressed on ART. The SPPB total score (0-12 points) was based on balance, gait speed, and chair stand tests, with higher scores indicating better physical performance. Peripheral blood was collected from each participant and analyzed using a multicolor spectral flow cytometry assay to quantify T cell subsets co-

stained with a fluorescent SA β -Gal reporter (Cellular Senescence Live Cell Analysis Assay, Enzo Life Sciences). Cellular data and SPPB scores were correlated using Pearson correlation testing as SA β -Gal and SPPB data were observed to follow a normal distribution. As this is a continuing study, data from the first 11 participants are presented here.

Results: The frequency of SA β -Gal+ CD8+ T cells showed a strong inverse correlation with SPPB scores (Pearson $r = -0.71$, $p = 0.01$). A similar, though non-significant, trend was observed for SA β -Gal+ CD4+ T cells (Pearson $r = -0.58$, $p = 0.06$). In contrast, grip strength was not significantly associated with either SA β -Gal+ CD8+ (Pearson $r = -0.51$, $p = 0.11$) or SA β -Gal+ CD4+ (Pearson $r = -0.42$, $p = 0.19$) within the study cohort.

Conclusions: In older PWH, elevated frequencies of SA β -Gal+ senescent T cells are associated with reduced physical performance. These findings support the potential use of T cell senescence as a functional biomarker of aging in PWH. Future studies in larger cohorts of older PWH and PWoH are needed to further elucidate the mechanistic links between T cell senescence and functional decline with aging.



49

Altered Naïve and Memory B Cell Phenotypes Associated with High-Dose Influenza Vaccine Responses in Older PWH

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Background: Seasonal influenza vaccine efficacy declines with age, prompting CDC recommendations for the high-dose (HD) vaccine in older adults (≥65 years) and immunocompromised individuals, including people with HIV (PWH). Although PWH on ART may achieve virologic suppression, they often exhibit chronic inflammation and premature immunosenescence, which can impair B cell function and vaccine responsiveness. Previous work from our group has shown that PWH have diminished antibody responses to influenza vaccination. In a recent study, we found that neither the magnitude nor durability of vaccine-induced antibody responses in older PWH were improved by HD vaccination. In this study, we investigate how HD vaccination influences B cell subset dynamics and their relationship to vaccine responses, particularly in the context of aging and HIV infection.

Materials and Methods: In this study, we evaluated HD-vaccine-induced B cell responses in virologically suppressed young (≤40 years) and older (≥65 years) PWH (YPWH, n=9; OPWH, n=17) and age matched people without HIV (YPWoH, n=7; OPWoH, n=18). Using high-dimensional flow cytometry and unsupervised clustering of cryopreserved PBMCs collected at baseline (day 0) and post-vaccination (day 14), we characterized B cell phenotypes and correlated them with hemagglutination inhibition (HAI) titers and hemagglutinin (HA)-specific IgG levels at day 28.

Results: At both baseline and day 14, PWH showed higher frequencies of transitional and naïve B cells compared to PWOH. Additionally, OPWH showed reduced frequencies of IgG⁺ resting memory B cells (RM: CD21hi), which displayed an exhausted,

terminally differentiated, and inflammatory phenotype characterized by increased expressions of T-BET and PD-L1, decreased CD40 expression at baseline, and elevated CXCR3 expression on day 14 compared to PWOH. In PWOH, baseline CD40 expression on IgG⁺ RM B cells positively correlated with A/H1N1 fold-change titers, whereas in PWH day 14 T-BET and PD-L1 expression on IgG⁺ RM B cells negatively correlated with HA-specific IgG response to H3N2 and B/Yamagata. At day 14, frequencies of activated IgG⁺ memory B cells (AM: CD21lo) increased in young participants (YPWOH and YPWH) but not in older groups. Additionally, naïve B cells from OPWH exhibited decreased expression of CXCR5 and CD80 indicating impaired activation and follicular homing.

Conclusions: These findings suggest that aging in PWH is associated with B cell dysregulation, including expansion of immature transitional B cells and naïve B cells along with loss of functional IgG⁺ memory B cells that are characterized by an exhausted, inflammatory phenotype. These alterations likely contribute to impaired influenza vaccine responses in older PWH by limiting effective B cell maturation and functionality.



50

IgG Antibodies to Human Cytomegalovirus Among Men in the Multicenter AIDS Cohort Study (MACS) at Baseline as a Function of Age and HIV Status

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Background: Chronic cytomegalovirus (CMV) infection has been linked to chronic inflammation as well as immune activation and exhaustion in both geriatrics and HIV-infected populations. Given that chronic CMV infection is an important viral co-infection, we conducted a comprehensive evaluation of CMV seroprevalence and anti-CMV IgG antibody concentrations in the Multicenter AIDS Cohort Study (MACS), both at the baseline visit and longitudinally. Here we report the data on baseline anti-CMV IgG antibody concentrations and their relationships with age and HIV status.

Materials and Methods: The MACS, a study of the natural and treated history of HIV infection in men who have sex with men, was initiated in 1984 with three subsequent enrollment waves at four U.S. sites (Baltimore-Washington DC, Chicago, Pittsburgh, and Los Angeles). The serum used in this study was collected at baseline and stored at -80°C until use. Anti-CMV IgG was measured using EUROIMMUN ELISA kits (EUROIMMUN, Luebeck, Germany) according to the manufacturer's protocol. To enable quantitative comparison of our results with those from other studies, we employed a commonly used WHO international standard (Paul-Ehrlich-Institut, Langen, Germany). Summary statistics were employed to evaluate baseline demographic data, HIV status, and anti-CMV antibody concentrations. Kruskal-Wallis tests were performed to evaluate significance of differences of anti-CMV IgG antibody concentrations stratified by HIV status. Anti-CMV IgG antibody concentrations were log₁₀ transformed to obtain a normal distribution, and Wald Chi-Square test was employed to determine

the relationships of anti-CMV IgG antibody concentrations with age and HIV status.

Results: This study included baseline serum samples from 4616 participants, of whom 1683 (36.5%) were people living with HIV (PLWH) and 2933 (63.5%) were people living without HIV (PWoH). Median age at baseline was 34.6 yr, IQR (29.5, 40.4). CMV seroprevalence was 91.4% overall, 98.6% among PLWH and 87.3% in PWoH. Among CMV-seropositive men (n=4219), the overall median anti-CMV IgG antibody concentration was 31.5 IU/ml, IQR (12.0, 82.9). Compared to PWoH, PLWH had significantly higher anti-CMV IgG antibody concentrations, 43.2 (16.2, 107.1) IU/ml vs 24.7 (10.1, 68.4), $p < .0001$. Quantitatively, a one-year increase in age was associated with a 2.4% higher concentration of anti-CMV IgG antibody ($p < .0001$) for both PLWH and PWoH. The association between age and anti-CMV IgG concentrations among PLWH remained essentially the same after excluding the 313 PLWH (18.6% of PLWH) who were receiving antiretroviral therapy at their baseline visit.

Conclusions: In the MACS, chronic CMV infection was highly prevalent at the baseline visit, and for men who were CMV-seropositive antibody concentrations were significantly correlated with having HIV and with age. These qualitative and quantitative data may provide a basis for further investigation into contributions of ongoing CMV infection to aging-related outcomes over time in men with and without HIV.



51

Factors Associated with Changes in Antiretroviral Therapy Adherence Among Those Transitioning Between the Community and Long-term Care: A Mixed Methods Approach

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Background: With the success of antiretroviral therapy (ART) more older adults with HIV (OAWH) are aging and may need long-term care (LTC), where use of life-critical ART is inconsistent. This mixed-methods study identifies facilitators and barriers for ART use in the nursing home (NH) setting to better understand why we see inconsistencies in ART use in NHs.

Materials and Methods: A convergent mixed-methods design jointly analyzed existing quantitative and qualitative data for convergent, complementary, and contradicting factors related to ART adherence in the NH setting. The quantitative data was from a retrospective observational study of the change in ART adherence as OAWH—identified by diagnosis codes or medication use—transition to long-NH-stays using 2014-2019 5% Medicare fee-for-service claims. Independent variables included person-level demographics and facility-level characteristics (e.g., star rating). The outcome was defined as change in the proportion of days covered by 3+ antiretrovirals. Qualitative in-depth interview data from a HIV-specialized LTC facility included current or former residents with a stay of 100+ days, aged 50+ (n=11) and providers (n=6). Interviews focused on barriers and facilitators to ART adherence at the individual and facility level.

Results: Demographic characteristics of OAWH were similar across both studies with mean age 60-61 years old, <=50% were non-Hispanic White.

Convergent: Dual eligibility for Medicare and Medicaid was associated with more days covered. For-profit status was associated with not being on ART in both studies. Most residents interviewed were people of color and all were ART adherent, similar to the quantitative finding that non-Hispanic Blacks were more likely to always have ART before and after transitioning to a NH. **Complementary:** Interviews revealed that the financial infrastructure of the HIV-specialized LTC facility facilitated frequent patient-provider interactions. This includes two factors: 1) medical doctors, physician assistant, and nurse practitioners were salaried employees of the facility, which mitigates the pressures in the fee-for-service model of care, and 2) government grants pay for additional supports such as substance use treatment and care coordinators. Moreover, the facility has specific routines that facilitate ART adherence such as a regular HIV screening at admission, subsequent viral monitoring, and a collaborative approach that engages providers not normally included in care planning meetings (e.g., pharmacists). **Contradictory:** Polypharmacy - 5+ concurrent non-HIV therapeutic classes - was associated with a decrease in days covered by ART after transitioning to a long NH stay. However, interviews in the HIV-specialized LTC facility identified specific strategies to mitigate polypharmacy and optimize ART adherence, including medication reconciliation that was physician-led and intentionally collaborative with pharmacists and nurses.

Conclusions: Quantitative findings found more person-level than facility-level facilitators, while qualitative findings identified several facility-level environmental factors, not found in claims data, that impacted ART adherence.



52

Longitudinal Association Between Prefrailty / Frailty and HIV-associated Neurocognitive Disorder (HAND): a Mexican Prospective Study

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Background: Geriatric syndromes such as prefrailty and frailty may be more prevalent and present earlier in people aging with HIV, which in turn may negatively impact on other relevant outcomes such as cognition. Which has been already explored in corss-sectional studies. Therefore, we aimed to investigate the longitudinal association between frailty and the risk of incident worsening of HIV-associated neurocognitive disorder (HAND). As a secondary objective, we described the longitudinal trajectories of HAND in a clinical cohort.

Materials and Methods: Longitudinal analysis of 194 participants followed in a cohort of people living with HIV aged ≥ 50 years at a referral center in Mexico City. Participants underwent two standardized geriatric assessments at least one year apart. The Antinori criteria were used to determine HAND, and the Fried phenotype was used to assess frailty. Inverse probability weighted Cox models adjusted for confounders extracted from a directed acyclic graph (i.e., age, educational level, detectable viral load, diabetes, stroke and ischemic heart disease) were used to determine the association between prefrailty/frailty and progressing within HAND categories. To describe HAND trajectories we established the proportion of participants that changed between the assessments and represented it in a Sankey plot.

Results: Participants' median age was 55 (53 - 61) years, 167 (86%) were men, and with a median follow-up of 2.3 (1.6-3.1) years. 129 (66.4%) participants were robust, 62 (31.9%), pre- frail and 3 (1.5%) frail. For the main outcome, the adjusted

model did'nt found an independent association between frailty and maintaining or progressing within HAND categories (HR = 0.79, IC 95% 0.35 – 1.79; p = 0.58). For the secondary outcome, 151 (78%) participants remained cognitively stable (in the same HAND category), whereas 32 (16%) experienced a worsening of HAND category, and 11 (5.7%) improved.

Conclusions: This study suggests that pre-frailty/frailty were not prospectively associated with HIV-associated neurocognitive disorder (HAND) progression in a cohort of older adults with HIV treated at a tertiary care hospital. Similarly, most participants remained stable in terms of HAND category. Our findings complement those in the existing literature. While other studies have documented an association between pre-frailty/frailty and cognitive progression (not necessarily HAND), our results reinforce the idea of a complex, non-linear interaction between these issues, which is likely influenced by other biological or contextual factors



53

Understanding the Drivers of Depression Among Older Women Living with HIV in Ghana: A Cross-Sectional Study

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Background: Depression is a common mental health condition affecting approximately 40% of older women living with HIV, impacting their overall well-being. In Ghana, this population faces several challenges, including social isolation and the dual burden of aging and chronic illness. Identifying factors associated with depression is essential for targeted interventions. This cross-sectional study examined the socio-demographic, clinical, and psychosocial factors contributing to depression among older women in Ghana.

Materials and Methods: This cross-sectional study was conducted from September to December 2023 in three high-burden antiretroviral therapy (ART) facilities in the Greater Accra region of Ghana. Older women living with HIV, aged 50 years and above, and receiving ART for at least six months, were recruited using a multi-stage sampling technique. Data were collected via a structured questionnaire covering socio-demographic characteristics, clinical history, and psychosocial factors. Depression was assessed using the Patient Health Questionnaire-9. The dependent variable was depression, and independent variables included socio-demographic, clinical, and psychosocial factors. Data analysis was conducted using STATA version 17.0 and included descriptive statistics and multivariable logistic regression to identify predictors of depression. All variables were considered statistically significant at the 95% confidence interval ($p < 0.005$).

Results: There was a total of 289 women enrolled. The prevalence of depression among older women

living with HIV was 57.4%. Older women living with HIV who were widowed [aOR =2.51; 95% CI=1.17-5.37], had primary education [aOR =4.07; 95% CI=1.70-9.75], had secondary education [aOR =2.31; 95% CI=1.09-4.90] and currently living with someone [aOR =2.24; 95% CI=1.21-4.18] were more likely to be depressed.

Conclusions: The study revealed that personal factors of health, and lifestyle activities influence the level of depression among older women living with HIV in Ghana. Policymakers should prioritize designing interventions to reduce depression among women who are widowed and those with only primary and secondary school education.



54

Simplifying Visceral Fat Assessment in People with HIV: Clinical Utility of Waist Circumference

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People with HIV (PWH) are at increased risk of cardiovascular disease (CVD), even after accounting for traditional risk factors. Recent evidence points to excess visceral abdominal fat (EVAF) as a driver of CVD risk in PWH; however, the gold-standard modalities for quantifying EVAF – such as computed tomography (CT) scans – are impractical for daily clinical practice. Metrics like the visceral adiposity index (VAI) and the body roundness index (BRI) have garnered increased interest for assessing body fat distribution and metabolic risk, compared to traditional measures like BMI. Here, we investigated which anthropometric measure most accurately distinguishes EVAF in PWH in routine clinical settings, and whether these metrics offer additional value in predicting cardio-metabolic risk.

The Visceral Adiposity Measurement and Observations Study (VAMOS) is a multi-center observational study in PWH with long-term viral suppression and BMI 20-40 kg/m². Participants underwent a single-slice abdominal CT scan at the L4-L5 level to quantify visceral and subcutaneous fat, and fasting laboratory tests. EVAF was defined as a visceral adipose tissue (VAT) surface area ≥ 130 cm². Umbilical Waist Circumference (WC) was measured, and Waist-to-Hip ratio, BMI, VAI, and BRI were calculated for all participants. CV risk was evaluated by 10-year ASCVD risk scores. Receiver operator curves were calculated to evaluate the performance of each metric for identifying EVAF. Relationships between 10-year ASCVD risk scores and VAI and BRI were assessed by Spearman correlations. Kruskal-Wallis and Dunn's tests were performed to determine how coronary artery calcium (CAC) scores differed by VAI and BRI. CAC

scoring was performed using a visual estimation method (CAC-Data Reporting System guidelines).

Among the 170 participants, the median (IQR) VAT area was 148 cm² (94, 218), with an EVAF prevalence of 58%. In distinguishing EVAF, WC performed the best, with an AUC of 0.799, outperforming those with fair discrimination (BRI, AUC = 0.774; Waist-to-Height ratio, AUC=0.774; Waist-to-Hip ratio, AUC=0.767), and those with poor discrimination (BMI, AUC=0.668; VAI, AUC=0.651). Using sex-stratified linear regression to model which WC values best reflect the threshold for EVAF (VAT ≥ 130 cm²), WC thresholds of 89.7 cm for men and 102.5 cm for women were found to correspond to EVAF. Although VAI and BRI had lower performance in predicting EVAF than WC, we evaluated their relationships with measures of CVD. There was a positive correlation between VAI and 10-year ASCVD risk scores ($r=0.327$, $p=0.0001$) that were weaker with BRI ($r=0.195$, $p=0.0254$). Additionally, there was a statistically significant correlation between CAC and VAI, but not CAC and BRI. Individuals with moderate/severe CAC have significantly higher VAI than those with absent or mild plaque ($p \leq 0.0001$).

These data demonstrate that WC is a highly effective and practical tool for identifying EVAF in PWH, outperforming BMI and other indices such as VAI and BRI. Although VAI was less accurate in distinguishing EVAF, it demonstrated meaningful correlations with 10-year ASCVD risk scores and CAC, indicating its potential utility in cardio-metabolic risk assessment. Collectively, these findings support the routine use of WC as a reliable clinical tool for identifying central adiposity in PWH.



55

Abstract 55 was withdrawn.



56

Abstract 56 was withdrawn.

