



Person-centred care for older adults living with HIV in sub-Saharan Africa

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Lancet HIV 2024; 11: e552–60

Published Online

July 9, 2024

[https://doi.org/10.1016/S2352-3018\(24\)00123-1](https://doi.org/10.1016/S2352-3018(24)00123-1)

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More than a fifth of people living with HIV in the US President's Emergency Plan for AIDS Relief-supported programmes are older individuals, defined as aged 50 years and older, yet optimal person-centred models of care for older adults with HIV in sub-Saharan Africa, including screening and treatment for geriatric syndromes and common comorbidities associated with ageing, remain undefined. This Position Paper explores the disproportionate burden of comorbidities and geriatric syndromes faced by older adults with HIV, with a special focus on women. We seek to motivate global interest in improving quality of life for older people with HIV by presenting available research and identifying research gaps for common geriatric syndromes, including frailty and cognitive decline, and multimorbidity among older people with HIV in sub-Saharan Africa. We share two successful models of holistic care for older people with HIV that are ongoing in Zimbabwe and Kenya. Lastly, we provide policy, research, and implementation considerations to best serve this growing population.

Introduction

Tremendous progress in reaching people living with HIV with life-saving antiretroviral therapy (ART) has substantially reduced morbidity and prolonged lifespan in this population. Within programmes supported by the US President's Emergency Plan for AIDS Relief (PEPFAR), over 22% of the 19 million beneficiaries are aged 50 years and older and 7% are 60 years and older. However, as life expectancy improves, additional care is needed for older people living with HIV, defined as those aged 50 and older. Although older people living with HIV have better viral load suppression and continuity of treatment compared with their younger counterparts in sub-Saharan Africa, they also have unique health needs that require tailored interventions to reduce morbidity and prevent mortality.¹ A conceptual model of integrated care that includes attention to common morbidities might be helpful, emphasising the most common and debilitating conditions.

Multimorbidity—the presence of two or more chronic medical conditions—is common in low-income and middle-income countries and its prevalence increases with age; it is associated with reduced quality of life and increased health-care costs.² HIV multimorbidity—the presence of HIV with at least one other chronic condition—is associated with a higher risk of death than multimorbidity among people not living with HIV, despite those with HIV multimorbidity often being younger and less frail.³ Common geriatric syndromes including frailty, cognitive impairment, depression, and polypharmacy have disproportionately impacted older people living with HIV.

Women living with HIV aged 50 years and older represent the largest group of individuals supported by PEPFAR with 1.4 times as many women living with HIV aged 50 years and older as men aged 50 years and older (2744326 women aged 50 years and older compared with 1998201 men aged 50 years and older) and are disproportionately affected by multimorbidity. In

four African countries, 37–45% of adults aged between 40 years and 60 years had multimorbidity, with women at higher risk (47.2% of women vs 35.0% of men).⁴ Older women in sub-Saharan Africa have more functional disability, depression, and neurocognitive decline along with lower wellbeing scores compared with men of similar age.⁵ However, for older people living with HIV in sub-Saharan Africa, and especially for older women, little is known about the prevalence, optimal screening, and recommended treatment for HIV multimorbidity.

Person-centred care recognises the evolving physical and mental issues and diverse life circumstances that affect older adults with HIV and the need for different services to improve their health span (ie, the period of life spent in good health, free of HIV multimorbidity and ageing-related disabilities).⁶ Because HIV care serves as the entry point into primary health care for many older people living with HIV, HIV providers should be prepared to screen, diagnose, and treat HIV multimorbidity.³ However, few African countries have national guidelines, established medical protocols, trained providers, or dedicated funding to provide holistic care for older people living with HIV. Additionally, differentiated service-delivery models often do not account for the health-care needs of this population, such as multimorbidity and geriatric syndromes.⁷

Routine evaluation of quarterly PEPFAR data suggested that a growing proportion of individuals living with HIV are ageing. As a result, a writing group of clinicians and public health specialists was informally convened to consider issues that could be important for treating this growing cohort in the future. This writing group began as part of a PEPFAR-interagency workstream, which discussed health issues among older people living with HIV; in an effort to develop an agenda for research and implementation science, we sought out colleagues outside of PEPFAR with expertise in geriatric clinical care and comorbidities in sub-Saharan Africa. To learn more about innovative programmes, successes, and

challenges at the country level, the group was expanded to include clinical and public health experts from Zimbabwe and Kenya. Focusing on comorbidities with the greatest prevalence in and effect on this population, this Position Paper serves to identify best practices for person-centred care for older people living with HIV in sub-Saharan Africa, including specific geriatric syndromes (eg, frailty, cognitive decline, and depression), social determinants of health, and non-communicable diseases (NCDs). We highlight how these conditions affect older women with HIV. We share two successful models of holistic care for older people living with HIV: an integrated clinic focused on older Zimbabweans living with HIV (panel 1) and a broader, programme-level intervention to improve person-centred care for older Kenyans living with HIV by expanding existing HIV programmes (panel 2). Finally, we identify specific areas for future research, policy, and programmatic innovation.

Major factors affecting health and quality of life of older people living with HIV

Frailty

Frailty is a geriatric syndrome characterised by increased vulnerability to acute stressors due to age-associated reduction in physiological reserve, marked by weakness, exhaustion, slow walking speed, weight loss, and low physical activity.¹⁵ Acceleration of normal age-related decline leads to an increased risk of fall fractures, impaired mobility, mood disorders, cognitive decline, admission to hospital, and mortality.¹⁶ HIV infection causes immune activation and chronic inflammation

even in those on ART, resulting in increased risk and earlier onset of frailty among people living with HIV, especially women.¹⁶ Frailty prevalence among community-dwelling South Africans living with HIV aged 50 years and older was 14.7%; frailty prevalence among Tanzanians with and without HIV aged 60 years and older was 38%,^{17,18} compared with 7–12% among HIV-negative adults aged 65 years or older in the USA.¹⁵

Women are more likely than men to be at risk of frailty among people living with HIV in South Africa and Tanzania.^{19,20} Frailty predisposes women with both osteoporosis and HIV to falls and more frequent fractures, admission to hospital, and death.²¹ Postmenopausal women with HIV are disproportionately affected by low bone mineral density and osteoporosis, but there is a knowledge gap on the burden of osteoporosis among older women in sub-Saharan Africa, especially those who have had many years of exposure to tenofovir disoproxil fumarate, which has been associated with decreased bone density.²² Additionally, women with HIV have a higher risk of developing depression than men with HIV and depression increases the risk of frailty.²¹

To our knowledge, there is no consensus on the optimal methods to assess frailty among people living with HIV in low-income and middle-income countries. Frailty is often clinically evaluated using a phenotype model (which incorporates measures of walk speed, grip strength, and activity levels) or a cumulative-deficits model (which incorporates multiple additional tests to assess incremental accumulation of age-related deficits). Both methods were adapted to a low-income

Panel 1: The Newlands clinic HIV-geriatric programme, Zimbabwe

Newlands clinic in Harare, Zimbabwe, operated and funded by the Swiss-based Ruedi Luethy Foundation, is a public-private partnership with the Zimbabwe Ministry of Health and Child Care. Since 2004, the clinic has offered comprehensive HIV treatment and care at no cost to clients⁹ and, currently, 33% of people living with HIV in the clinic are aged 50 years and older. Women comprise 63% of all people living with HIV and 62% of those older than 50 years. In 2022, to respond to the unique needs of older people living with HIV, the Newlands clinic introduced a novel integrated HIV-geriatric clinic based on WHO guidance.⁹

In the integrated HIV-geriatric clinic, older people living with HIV are assessed by a nurse and doctor for cardiovascular risk, visual acuity, quality of life, mental health, cognition, nutritional status, osteoporotic fracture risk, and geriatric syndromes such as frailty, falls, and incontinence. Screening tools include abbreviated cognition testing with the Abbreviated Mental Test, Patient Health Questionnaire-9 and General Anxiety Disorder-7 scoring, the Snellen test for visual acuity, a hearing test including otoscope examination, the Short Physical Performance Battery for frailty assessment, Fracture Risk Assessment Tool scoring, and quality-of-life

scoring. Clients might be referred to an onsite primary-care counsellor, psychologist, social worker, audiologist, optician, or physiotherapist.

To date, 91 people living with HIV aged 65 years and older have been assessed. These clients had a median of two comorbidities (IQR 1–3) per client and three comedications (IQR 2–4) per client, and 91% were virally suppressed (<50 copies per mL). 78% of clients were hypertensive and 18% had diabetes. Frailty was diagnosed in 60% of clients and physiotherapy was recommended. 44% of clients were found to have an elevated 10-year risk of a cardiovascular event, and were offered statin therapy. 8% of clients were found to have at least mild depression, and 20% to have at least mild anxiety; these clients were referred to psychology. 51% of clients were found to be deficient in vitamin B12 and were given B12 supplements. 10-year probability of hip fracture greater than 3% was found in 7% of clients and bisphosphonate therapy was recommended. Other interventions included managing polypharmacy and sexual dysfunction. Future work includes evaluation of screening tools and interventions to improve quality of life and to inform best care practice in Zimbabwe.

Panel 2: The Academic Model Providing Access to Health Care (AMPATH) programme, Kenya

AMPATH, a partnership between Moi University, Moi Teaching and Referral Hospital, and a consortium of North American universities led by Indiana University, with funding support from the US Agency for International Development and the US President's Emergency Plan for AIDS Relief, was established in 2001 to fight the HIV pandemic in western Kenya. Older people living with HIV comprise 30% of the 150 000 people living with HIV in AMPATH's care with viral load suppression of 97%. The median age of people living with HIV older than 50 years is 57 years (IQR 53–72) and among people living with HIV older than 50 years, 62% are women and 38% are men.

Typically, older people living with HIV with comorbid chronic diseases, who are referred to separate non-communicable disease (NCD) clinics, find it challenging to navigate the health-care system outside the HIV clinic, and some clients might not disclose their HIV status in NCD clinics due to HIV stigma.¹⁰ Due to an absence of integration in specialised facilities, clients are issued different identification numbers, making provider tracking of clients across clinics difficult. High rates of poverty and low employment rates among this population lead to an inability to afford medications and laboratory tests for comorbid chronic diseases. In addition, providers increasingly see older adults returning to their families in rural areas in need of care, after receiving inadequate HIV care in the private sector while working in large cities.

AMPATH embraces a person-centred care model to provide innovative programming for older people living with HIV. AMPATH supports the performance of community-based NCD screening, screening for hypertension during routine clinic visits, the use of an electronic medical system module to flag clients with elevated blood pressure, and training of HIV clinical officers on hypertension care.¹¹ Leveraging its existing peer navigation programme, AMPATH is now engaging peers older than 60 years to help older people living with HIV navigate referrals to NCD clinics outside the HIV care clinic.

AMPATH's integrated community-based microfinance groups for people living with HIV integrate NCD and HIV care and encourage members to invest their earnings in the national hospital insurance fund to provide coverage for NCD medications and tests.¹² This intervention is effective in improving social determinants of health among people with and without HIV by offering livelihood opportunities and increasing access to capital and nutrition support.¹³ AMPATH has also created revolving fund pharmacies in various facilities to provide sustainable access to affordable NCD medications.¹⁴ Additionally, AMPATH's psychosocial support groups were created by and for adults living with HIV and provide opportunities for people living with HIV to share challenges and identify solutions to managing HIV.

and middle-income countries context in a South African cohort of older people with and without HIV, but require development of population-specific thresholds for scoring.²³ The Brief Frailty Instrument for Tanzania, the first frailty screen developed specifically for non-specialists in sub-Saharan Africa, screens for cognition and physical function, depression, social support, nutrition, and sensory impairments and has been validated in Tanzania among those aged 60 years and older, although HIV status was not reported.^{18,24} A frailty phenotype was successfully operationalised in rural populations in Tanzania, but specialised hand dynamometers were required, which are unlikely to be available in low-income and middle-income countries.^{15,25} The Short Physical Performance Battery protocol uses a task-sharing model to measure balance, strength, and gait using only a stopwatch, measuring tape, and chair. This model is feasible among people living with HIV aged 60 years and older in Uganda, but has not been validated in sub-Saharan Africa.²⁶

WHO's Integrated Care for Older People framework proposes routine measurement of a person's intrinsic functional capacity by measuring cognition, mobility, energy balance, psychosocial health, and sensory domains.⁹ Measurement of intrinsic capacity among Malaysians living with HIV on ART with a median age of 50 years showed good ability to characterise frailty, suggesting that intrinsic capacity measurement has potential for broader use at the community level.²⁷

Evidence-based management strategies are also absent for frail older people living with HIV in low-income and middle-income countries. These services should be identified and integrated into routine management and lifestyle counselling of older people living with HIV to prevent and manage frailty.

Cognitive impairment

Cognitive impairment has been a well recognised complication of HIV infection since the start of the epidemic, but its classification is complex and evolving. The AIDS dementia complex with prominent neurological signs seen in advanced, untreated HIV is less frequently seen in virologically suppressed people living with HIV, who more commonly present with a milder, more prevalent spectrum of impairments termed HIV-associated neurocognitive disorder (HAND).²⁸ Within HAND, most cases are classified as asymptomatic or mild neurocognitive disorder. The cause of cognitive impairment in the era of ART is complex, encompassing both direct neurotoxic effects and indirect, chronic CNS inflammatory effects of HIV alongside psychiatric and medical comorbidities (eg, cardiovascular disease and depression), alcohol or substance misuse, and comorbid infections, including hepatitis C.²⁹

Accelerated Alzheimer's disease changes, interaction with proinflammatory conditions such as frailty, and vascular disease are hypothesised to affect older people

living with HIV.³⁰ Data on the causes specific to older people living with HIV in sub-Saharan Africa are scarce, but suggest that cognitive impairment in those receiving ART is related more to demographic factors, such as older age, lower education, and social isolation, than HIV factors.^{31,32} Nevertheless, the most consistent worldwide risk factor remains the HIV legacy effect, with nadir CD4 used as a surrogate measure of previous HIV-related brain injury.³³

Cognitive impairment occurs in an estimated 43% of adults aged 18 and older living with HIV in sub-Saharan Africa, which is home to an estimated 72% of the worldwide burden of cognitive impairment (over 11 million people).³³ Prevalence estimates of cognitive impairment in older people living with HIV in sub-Saharan Africa by any screening measure range from 4% to 61%.³⁴ Women are disproportionately affected by cognitive impairment. Female sex was associated with an increased risk of cognitive impairment in two worldwide meta-analyses and the small amount of existing sub-Saharan African prevalence data related to older people living with HIV describe cohorts that are majority female.^{33,35} Longitudinal data also suggest reduced odds of cognitive improvement in females starting ART.^{31,32}

The evolving clinical presentation of cognitive impairment and classification complexities have resulted in a small number of diagnostic screening tools for older people living with HIV in sub-Saharan Africa. Previously, validated screening measures such as the International HIV Dementia Scale have performed poorly in sub-Saharan African studies in the past decade (despite being developed in Uganda), with low diagnostic accuracy and low specificity in east African adults living with HIV and Tanzanians living with HIV aged 50 years and older.^{36,37}

Screening measures for neurodegenerative dementias have also been found to have restricted use in people living with HIV, who now typically present with milder cognitive impairment.^{37,38} The HAND consensus criteria require administration of a neuropsychological battery that is tested in populations with similar characteristics and exclusion of non-HIV causes of cognitive impairment. The criteria are used in epidemiological studies but are impractical in routine clinical practice, particularly in low-resource settings. New measures appropriate to the currently observed clinical presentation are now needed.

The evidence base remains scarce for interventions for HAND in older people living with HIV in sub-Saharan Africa, and to our knowledge no African studies of multidisciplinary approaches to cognitive rehabilitation are being conducted. A 2022 scoping review identified 22 intervention studies of cognitive training and physical exercise from high-income countries, with a mean participant age of 47 years.³⁹ A Nigerian study reported an association between aerobic exercise and positive quality of life among people living with HIV aged 64 years and older with HAND.⁴⁰ Data on non-ART pharmacotherapy

for HAND remain limited by small sample sizes and data are limited to high-income countries.³⁹ Evidence from low-income and middle-income countries might provide a way forward; lower-cost psychosocial interventions for neurodegenerative dementias, including cognitive stimulation therapy, have been successfully adapted from high-income countries and found to be acceptable and effective in sub-Saharan Africa.⁴¹

Depression

An estimated 3·6 million people living with HIV in sub-Saharan Africa have major depression.⁴² Depression is an important component of multimorbidity for older people living with HIV as it increases the risk of ART non-adherence and virological non-suppression, substantially contributes to cognitive impairment, and might contribute to dementia.^{43,44} There is also a major gap between diagnosis and treatment of depression in sub-Saharan Africa. In a study carried out in rural populations of South Africa, 39% of older people living with HIV reported symptoms of a previous major episode or a brief episode of depression, but only a small proportion of participants reported being diagnosed with depression, and few of those were on treatment for depression. Additionally, among participants both living with HIV and affected by HIV, women were three times more likely than men to have had a depressive episode (adjusted odds ratio [OR] 3·04, 95% CI 1·73–5·36).⁴⁵

Women living with HIV have a significantly higher prevalence of both major depression and depressive symptoms compared with both men with HIV in sub-Saharan Africa and women without HIV in South Africa.^{42,46} HIV is a strong predictor of severe menopausal symptoms among women on ART in Nigeria, with women living with HIV experiencing more severe symptoms compared with their HIV-negative counterparts.⁴⁷ Swiss cohort data suggest that although menopausal women with HIV have increased rates of depression, they do not have decreased ART adherence or viral suppression; data from sub-Saharan Africa are scarce.⁴⁸

There are few efficacy studies focusing on the treatment of depression in people living with HIV in sub-Saharan Africa and no data specific to older people living with HIV. A meta-analysis of 30 mental health interventions among people living with HIV in low-income and middle-income countries found that depression is responsive to first-line psychological treatments, including group therapy and cognitive behavioural therapy, but antidepressants did not perform better than placebo treatments, perhaps due to medicine shortages and low adherence.⁴⁹ Integrating mental health services into HIV care in Africa improves the diagnosis and treatment of depression in people living with HIV and the integration of cognitive behavioural therapy at health facilities serving people living with HIV might have the greatest potential to reduce

symptoms of depression.⁵⁰ Given the limited number of mental health specialists in low-income and middle-income countries, task shifting to nurses and community health workers to detect, screen, and manage psychological conditions will be necessary.⁵¹ Additional research is needed on interventions specifically targeted to older people living with HIV in sub-Saharan Africa, including evidence-based psychosocial interventions.

NCDs

NCDs are a major cause of death and disability among older people living with HIV in low-income and middle-income countries. Sub-Saharan Africans living with HIV on ART aged 40–59 years are more likely to be overweight and obese and have a higher prevalence of diabetes than those without HIV.⁵² A longitudinal cohort from four African countries reported that older people living with HIV have a 27·5% prevalence of hypertension and a 13·4% prevalence of dysglycaemia.⁵³ An African review and meta-analysis found that people living with HIV have a 5% prevalence of diabetes, similar to the age-adjusted prevalence of the general population; the prevalence of prediabetes was 15·2% among people living with HIV and is higher in those aged 39 years and older compared with those younger than 39 years (22·5% *vs* 9·7%) and in women compared with men (10·0% *vs* 6·2%).⁵⁴ There are little data on chronic kidney disease among older people living with HIV and the impact of prolonged use of tenofovir medication coupled with hypertension and diabetes is unknown. Appropriate timing and use of tenofovir alafenamide, lamivudine, and dolutegravir combination among older people living with HIV to reduce renal and bone toxicity is insufficiently researched.

Older women with HIV are particularly at risk of NCDs. A 2024 US study showed that although switching to an integrase inhibitor-based regimen before menopause does not accelerate weight gain for women living with HIV, switching during late perimenopause and postmenopause is associated with early accelerated increases in waist circumference and BMI compared with women with HIV who did not switch to this treatment.⁵⁵ This finding suggests that menopausal status should be considered before switching menopausal women to an integrase inhibitor. Secondary analyses of the global REPRIEVE study showed that women have the same rate of cardiovascular events as men⁵⁶ and the pooled cohort equation used to predict cardiovascular events in all participants with HIV underpredicted events in women.⁵⁷ These findings point to the need for improved risk prediction tools for older women with HIV.

Ischaemic heart disease is more common globally in men than women, but the contribution of inflammation and smoking to the pathogenesis of coronary artery disease for women might be important. Inflammation might also be a factor in type 2 myocardial infarctions,

which have been observed to be more common in people living with HIV.^{58,59} In a prospective study of older Ugandans with and without HIV and with at least one major cardiovascular risk factor, the overall prevalence of subclinical coronary artery disease was 17%. However, there was a stronger association between inflammatory markers of cardiovascular disease and subsequent coronary artery disease in women compared with men.⁶⁰

Successful implementation studies on controlling NCD among older people living with HIV are absent in sub-Saharan Africa. Care is frequently fragmented among providers and different clinics. Given the prevalence of comorbidities and inappropriate polypharmacy, an integrated approach to patient care that facilitates treatment of multiple conditions during the same visit and provides coordinated multimonth drug prescription delivery for HIV and NCD medications might improve treatment adherence and overall outcomes among older people living with HIV.

Social determinants of health

Social determinants of health, including economic stability, health-care access, food security, and housing availability, can have a major effect on older people living with HIV in sub-Saharan Africa. In a rural South African cohort of adults aged 40 years and older, with and without HIV, low socioeconomic status was associated with poor cognitive function, suggesting that reducing wealth inequalities might mitigate subsequent cognitive decline.⁶¹ A meta-analysis of the impact of food security on diet-sensitive NCDs (eg, hypertension, dyslipidaemia, or overweight) found a high pooled prevalence estimate of key metabolic risk factors among food-insecure participants (41·8%) and a negative association between food security and development of NCDs across the lifespan.⁶² In turn, multimorbidity was associated with financial strain among a general population of rural Tanzanian subsistence farmers with a median age of 74 years; self-reported multimorbidity increased the odds of being financially dependent on others three-fold (OR 3·3, 95% CI 1·4–7·8) and of a household member reducing their paid employment nearly four-fold (OR 3·8, 95% CI 1·5–9·2) to spend time caring for an older relative.²

Globally, older women are more vulnerable to poverty than older men due to having less savings, fewer labour opportunities, and restrictive property inheritance laws.⁶³ A systematic review and meta-analysis found that women living with HIV were 53% more likely to experience food insecurity compared with men living with HIV.⁶⁴ In South Africa and Uganda, women aged 60 years and older with HIV are more likely than men with HIV to have caregiving responsibilities; grandparent caregivers, 68% of whom were female, were more likely to have depression compared with non-caregivers and this relationship was mediated by more comorbidities and greater financial needs.⁶⁵

Qualitative data from Tanzania and Uganda show that financial stability, food security, affordable and accessible medical care, NCDs, and social support are common concerns for ageing people with and without HIV.^{66,67} Increasing social support, providing skills to cope with stigma, improving quality of care, reducing discrimination and stigma in medical settings, and reducing the impact of structural barriers present potential targets for interventions aiming to improve the wellbeing of older people living with HIV from rural areas.⁶⁸ An example of civil society engagement is Kenya's Network of Elderly People living with HIV, formed in 2020 to complement the government's HIV response, which focuses on reducing new infections, comorbidities, AIDS-related mortality, and HIV-related stigma and discrimination among older people living with HIV through increased access to integrated and affordable HIV and NCD services.

We have identified two successful models of holistic care for older people living with HIV that specifically address some of the major factors discussed herein that impact health and quality of life of older people with HIV in sub-Saharan Africa. The first is an integrated clinic in Zimbabwe with dedicated screening for comorbidities of ageing, management of hypertension and osteoporosis, and extensive onsite referrals (panel 1). The second is a Kenyan programme that offers community-based NCD screening, older peer mentors to facilitate referrals to offsite NCD clinics, and innovative finance models to ease costs associated with NCD management (panel 2).

Future research, policies, and programmatic innovations

The changing demographics of people living with HIV require increased attention to person-centred care for older people living with HIV (panel 3). Integral components of high-quality and sustainable person-centred care include closing research gaps, addressing policy and training needs, applying an equity lens to the health of older women, integrating care for comorbidities, and extending differentiated service delivery models to older people.

To develop an optimal clinical care package for HIV multimorbidity, culturally sensitive and context-specific validated screening tools are needed that identify and quantify the burden of disease, including mental health disorders and frailty. Particularly when there are few validated diagnostic tools available, validated risk scores are crucial to prevent morbidities related to osteoporosis, cardiac disease, and cognitive impairment and should be able to be easily scaled and administered through task shifting. More research is needed to quantify the burden of multimorbidity on the health of older people living with HIV in sub-Saharan Africa, including the role of rural versus urban settings. Another challenge is identifying and validating outcome measures, particularly for cognitive decline, that capture improvements in quality of life and independent living.

Panel 3: Future directions to promote person-centred care for older people living with HIV in sub-Saharan Africa

- Research to develop and validate context-specific screening tools for mental health disorders and frailty and risk scores for osteoporosis, cardiac disease, and cognitive impairment
- Research to identify effective interventions to delay onset of and treat existing frailty, cognitive impairment, depression, and non-communicable diseases
- Research on the prevalence and impact of comorbidities on older women living with HIV, including the effect of menopause, and interventions to improve economic stability and social support among older women
- Development of global and national guidance for geriatric care including older people living with HIV
- Investment in subspecialty geriatric training for clinicians
- Leverage the US President's Emergency Plan for AIDS Relief's robust platform including supply chain, laboratory services, and health information systems to facilitate integration of care for older people living with HIV into existing national primary health-care systems
- Optimise differentiated service delivery models to meet the evolving health needs of older people living with HIV

Research is needed to identify optimal interventions for older adults with HIV multimorbidity and to delay its onset, considering effectiveness by age and gender. For example, using preventive statin therapy in people at low risk of cardiovascular diseases living with HIV is a promising strategy that might be cost-effective for sub-Saharan Africa.⁶⁹

Additional research is needed on the prevalence and clinical impact of comorbidities on older women living with HIV, including the nexus between osteoporosis, fracture, decreased mobility, frailty, depression, and cognitive impairment. There is a growing body of information suggesting that metformin, a drug used for diabetes, might have an anti-inflammatory and geroprotective effect, with large benefits for women, highlighting the importance of understanding gender-specific effects.⁷⁰ How excess immune activation affects African women, particularly in the setting of high burdens of infectious diseases and especially at the menopause transition, is understudied globally. Additionally, little is known about the effect of depression during menopause on older women with HIV in sub-Saharan Africa, the effect of caregiving on women's ongoing or subsequent depression, or the response to depression treatment among older women with HIV. There is a particular need to develop sustainable methods to increase social support and improve economic stability among older women with HIV.

Many sub-Saharan African countries do not have national guidelines for geriatric care, including for older people living with HIV. An exception are the specific

recommendations for older adults in Zimbabwe's 2022 national HIV guidelines, which include ART initiation, drug–drug interactions, inappropriate polypharmacy, and mental health and NCD screening.⁷¹ WHO's Integrated Care for Older People guidelines for community-based approaches provide evidence-based guidance on detecting and managing declines in physical and mental capacities and encourage inclusion of older people's health care within primary-care systems, but do not specifically include recommendations for older people living with HIV.⁹ Subsequent WHO guideline updates could incorporate clinical approaches for older people living with HIV, which can then serve as a basis for national and local HIV programme guidance, including specific guidance for the incorporation of functional assessments into routine HIV care; civil society organisations, such as Kenya's Network of Elderly People living with HIV, should advocate for the inclusion of clinical guidelines for older people with HIV within national and global HIV guidance.

Additional investment in subspecialty geriatric training for clinicians in sub-Saharan Africa would be useful to create a localised research agenda and to provide technical experts to guide primary-care physicians who provide the bulk of geriatric care. In 2013, the most recent sub-Saharan African data available found that 25 countries had no geriatricians and that formal geriatric training programmes did not exist.⁷² Ghana launched a geriatrics training programme in 2019, the first in the west African subregion.⁷³

Integrating HIV and NCD services can reduce barriers to care such as HIV stigma and costly transportation fees while improving coordination among providers and reducing inappropriate polypharmacy.⁷⁴ High NCD medication out-of-pocket costs remain a barrier to care and, in lieu of national insurance plans, necessitate innovative financing models. Much wraparound care for older people living with HIV can be delivered at the primary health-care level, avoiding costly referrals but requiring investments in ongoing training for health-care providers. Where possible, leveraging PEPFAR's robust platform to integrate supply chain, laboratory services, and health information systems will facilitate integration of care for older people living with HIV into existing national primary health-care systems. For example, depression screening and treatment is an essential component of multimorbidity care for older people living with HIV, either through integration of mental health programmes with vertical HIV programming or via integration of HIV and mental health programming into primary-care services.

Several innovative efforts are underway to offer differentiated service delivery models for older people living with HIV. To increase access to and affordability of NCD medications, Eswatini and South Africa provide integrated, decentralised drug distribution with convenient, coordinated multimonth dispensing of ART

along with chronic NCD medications.⁷⁵ Uganda offers home ART delivery for older people and allows relatives to retrieve ART from community distribution points for older family members (Ddumba I, US Agency for International Development [USAID] Uganda, personal communication), whereas the Research on Improving Systems of Education programme in Nigeria prepares pill boxes and offers home ART delivery for older and disabled people living with HIV (Olatunbosun K, USAID Nigeria, personal communication). Client preference data and clinical outcomes will help determine whether these practices receive widespread adoption. Implementation science research will help define the role of older peer mentors, geriatric case managers, and support groups for older people in improving clinical outcomes for older people living with HIV.

Contributors

All authors conceptualised and wrote the original draft of the manuscript. All authors contributed to additional drafts and revisions of the manuscript.

Declaration of interests

We declare no competing interests.

Acknowledgments

We thank I Ddumba and K Olatunbosun for sharing programmatic data with the authors. This Position Paper was made possible by the support of the American people through USAID and the US Centers for Disease Control and Prevention (CDC) under PEPFAR. The content of this paper is the sole responsibility of the authors, and does not necessarily reflect the views of USAID, CDC, PEPFAR, or the US Government.

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