



CLINICAL GUIDELINES PROGRAM

NEW YORK STATE DEPARTMENT OF HEALTH AIDS INSTITUTE | HIV · HCV · SUBSTANCE USE · LGBT HEALTH

Guidance for Addressing the Needs of Older Patients in HIV Care

Lead author: Eugenia L. Siegler, MD, with the Medical Care Criteria Committee, July 2020

Contents

Purpose of This Guidance	2
Recognizing and Addressing Effects of Aging in Older Patients With HIV	3
Effects of Aging	3
Approach to Aging in HIV Care	3
Geriatric Assessment.....	5
<i>Table 1: The “5M” Assessment Domains for Older People With HIV and Selected Tools and Resources</i>	<i>5</i>
Integrating the Needs of Older Patients With HIV Into Medical Settings.....	7
Linking to the Aging Services Network.....	9



Guidance for Addressing the Needs of Older Patients in HIV Care

Purpose of This Guidance

Although the effects of HIV on aging have been studied for years, HIV care has been acknowledged only recently as a domain of geriatrics [Guaraldi and Rockwood 2017]. Geriatric assessment provides a complete view of a patient's function, cognition, and health, and improves prognostication and treatment decisions [Singh, et al. 2017]. As the population with HIV grows older, application of the principles of geriatrics can enhance quality of care.

The purpose of this guidance is to:

- Raise clinicians' awareness of the needs and concerns of patients with HIV who are ≥ 50 years old.
- Inform clinicians about an aging-related approach to older patients with HIV.
- Offer recommendations to help clinicians provide optimal care for this population.
- Provide resources about aging with HIV for healthcare providers and their patients.
- Suggest steps to guide medical settings in implementing geriatric care into HIV clinical practice.

Because published evidence to support clinical recommendations is not currently available, this guidance presents good practices to help clinicians recognize and address the needs of older patients with HIV.

Definition of "older": Published studies differ in their definitions of older patients with HIV (e.g., ≥ 50 years, ≥ 55 years, ≥ 60 years), and the needs of individuals within different age groups may differ markedly. This guidance defines older patients as those ≥ 50 years old, which is the same definition used by the United States Department of Health and Human Services *Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents Living with HIV* [DHHS 2019].

Demographics: At the end of 2017, according to the Centers for Disease Control and Prevention (CDC), more than 49% of people with HIV in the United States were ≥ 50 years old [CDC 2020]. As of the end of 2018 in New York State (NYS), 54.9% of people with HIV were ≥ 50 years old, and nearly 24% were at least 60 years old [NYCDHMH 2018]. That same year, almost 19% of new HIV diagnoses in NYS occurred in people ≥ 50 years old, and one-third of them had progressed to AIDS at the time of diagnosis [NYCDHMH 2018]. In light of these NYS demographics, the AIDS Institute has developed this guidance to help care providers expand services for older people with HIV.

COVID-19: Resources and Guidance

For treatment guidelines on COVID-19 and other information for healthcare providers in New York State, the New York State Department of Health AIDS Institute Clinical Guidelines Program advises clinicians to consult the following resources:

- **New York State Department of Health:** *NYSDOH Information on Novel Coronavirus*
- **AIDSinfo:** *Interim Guidance for COVID-19 and Persons with HIV*
- **U.S. Centers for Disease Control and Prevention (CDC):** *Information for Healthcare Professionals about Coronavirus (COVID-19)*
- **National Institutes of Health (NIH):** *Coronavirus Disease (COVID-19) Treatment Guidelines*

Recognizing and Addressing Effects of Aging in Older Patients With HIV

→ GOOD PRACTICES

- With patients who have HIV and are ≥50 years old, discussing the effects of aging can help identify medical priorities and evaluate physical function. Such conversations may also prompt consideration of advance directives and help patients recognize effects of ageism stigma.
- Use of a framework such as the “Geriatric 5 Ms: Mind, Mobility, Medications, Multimorbidity, and Matters Most,” can help address issues of aging in patients with HIV.
- Becoming familiar with the many available screening tools and local and national services will help meet the needs of older patients with HIV.
- In older patients with HIV who are being treated for multiple comorbidities, prioritization of treatment plans may help reduce the potential for polypharmacy.
- Evaluation of medication lists at every clinical visit to identify and mitigate potentially harmful drug-drug interactions will help minimize the effects of polypharmacy in older patients with HIV.
- Familiarity with the benefits and local sources of palliative care will help clinicians recognize and meet the needs of older patients who have HIV and other serious illnesses.
- Referral to a social worker or care coordinator can help older patients with HIV to transition from commercial insurance or Special Needs Plans (SNPs) to Medicare without experiencing a loss of services or medication coverage.

Effects of Aging

Long-term survivors, defined as those who have had HIV for more than 2 decades, and especially those who were diagnosed with HIV before the era of effective antiretroviral therapy, appear to have physiologic changes consistent with advanced aging, even at the level of gene expression and modification [De Francesco, et al. 2019]. When compared with age-matched controls who do not have HIV, older patients with HIV have more comorbidities and polypharmacy [Guaraldi, et al. 2018; Kong, et al. 2019]; poorer bone health [Erlandson, et al. 2016]; and higher rates of cognitive decline [Vance, et al. 2016; Goodkin, et al. 2017], depression [Do, et al. 2014], and aging-related syndromes, such as gait impairment and frailty [Falutz 2020]. Mental health can also be affected in many ways; in one study of individuals with HIV ≥50 years old in San Francisco, the majority of participants reported loneliness, poor social support, and/or depression, and nearly half reported anxiety [John, et al. 2016]. Older individuals may also experience negative effects due to the stigma of ageism, which may be compounded by other kinds of stigma, such as racial, gender, or HIV-related stigma [Johnson Shen, et al. 2019]. In addition, long-term survivors, who may have expected to die at a young age like so many of their peers, may feel survivor’s guilt [Machado 2012].

These age-related concerns are not limited to long-term survivors. Although individuals aged 50 years and older with newly diagnosed HIV are not likely to exhibit the same degree of age advancement as those who have lived a long time with HIV, they may have a delayed diagnosis, lower CD4 counts, and AIDS at the time of diagnosis [Tavoschi, et al. 2017]. And late initiation of antiretroviral therapy increases their long-term risk of complications [Molina, et al. 2018].

Sex differences in the effect of HIV on aging remain an area of controversy. Studies in several countries have found that women with HIV have life expectancies closer to their HIV-negative counterparts than do men with HIV, but this finding has not been supported by studies in North America [Samji, et al. 2013; Wandeler, et al. 2016]. A Canadian study showed shortened life expectancy among women with HIV compared to men with HIV [Hogg, et al. 2017]. Women with HIV in resource-rich countries appear to have a heightened risk of cardiovascular disease [Stone, et al. 2017], cognitive loss [Maki, et al. 2018], and more rapid declines in bone mineral density [Erlandson, et al. 2018].

Approach to Aging in HIV Care

It is essential to discuss aging-related concerns with patients with HIV who are ≥50 years old. Some HIV healthcare providers and their patients have enduring relationships. Such longstanding ties promote high levels of trust, but they can also inhibit exploration of new concerns and promote too tight a focus on keeping viral load undetectable and treating common comorbidities. As a consequence, older individuals with HIV may not recognize concerns as aging-related or may

feel it is inappropriate to discuss aging; HIV care providers may have never addressed aging-related needs with patients or developed facility with geriatric assessment.

Care of older patients with HIV begins with recognizing that aging-related issues are a fundamental part of primary care. Geriatric concerns do not supplant other medical conditions; they reframe them in light of a multiplicity of problems and a finite lifespan. A geriatric approach, even for people in their 50s, can improve quality of care.

Older people with HIV may range from age 50 to age 80 and beyond and are a heterogeneous group. Providing care for older patients requires balance to avoid ageism and neglect of essential care *and* prevent excessive, dangerous, or unnecessary treatments. Determining what is appropriate for patients begins with an assessment of their health and their priorities. At its most basic, the geriatric approach can be described as attention to the “5Ms”: Mind, Mobility, Multimorbidity, Medications, and Matters Most [Tinetti M, et al. 2017]. Although certain aging-related syndromes (e.g., dizziness, incontinence) may not easily fit into one of these categories, the 5Ms have been useful as a way to understand how geriatricians help patients reframe and discuss their problems and their needs.

Mind: This category includes all domains of behavioral health, including cognition, mood, and other disorders. General assessment questions about instrumental activities of daily living (e.g., using transportation, managing medications, and handling finances) can provide information about practical concerns and offer clues about cognitive or emotional barriers to self-care. Healthcare providers can also use specific tools to screen patients for disorders such as cognitive impairment, which may be caused by factors both related to and independent of HIV, [Winston and Spudich 2020]], or depression (see [Table 1: The “5M” Assessment Domains for Older People With HIV and Associated Resources](#)).

Mobility: Healthcare providers can begin to address mobility with a general assessment of activities of daily living to determine if patients have difficulty dressing or bathing. Discussion of a patient’s fall risk can begin with a question such as, “Have you fallen in the past year?” or healthcare providers can use a comprehensive fall-risk screening tool (see [Table 1](#)).

Many aging-related syndromes, such as frailty and gait disorders, fall into the mobility category. Frailty, often defined as an increased vulnerability to stressors [Bloch 2018], is more prevalent in individuals with HIV compared with age-matched controls [Levett, et al. 2016]. There are many ways to measure frailty, and some can be easily adapted to the clinical setting [Morley, et al. 2013]. Physical activity is an important way to prevent age-related mobility syndromes and [evidence-based guidelines for individuals with HIV are available](#) [Montoya, et al. 2019].

Multimorbidity: Care for older patients with HIV usually involves management of multiple comorbidities, each of which may require treatment with multiple medications. Nonpharmacologic management (e.g., smoking cessation, dietary modification, exercise) can also improve symptoms associated with multiple comorbidities [Fitch 2019].

A geriatric perspective recognizes that, in patients with multimorbidities, strict adherence to multiple disease-based treatment guidelines may not be possible or may jeopardize a patient’s health. A recent review promotes a “6th M” to suggest that clinicians and patients should focus on problems that are “modifiable” [Erlandson and Karris 2019]. Simultaneous management of multiple chronic conditions necessitates establishing treatment priorities [Yarnall, et al. 2017], which requires understanding a patient’s priorities [Tinetti ME, et al. 2019].

Medications: Many older individuals with HIV take antiretroviral medications to suppress the virus and take other medications to treat comorbidities, which can make medication management especially challenging. Medication evaluation should include a review of all medications, potential drug-drug interactions [Livio and Marzolini 2019], and short- and long-term toxicities. It may be beneficial to simplify antiretroviral and other medication regimens to ensure that harms from drug-drug interactions and other adverse effects of treatment are avoided [del Carmen 2019]. Caution is required when adjusting or simplifying antiretrovirals if regimen changes involve either initiating or discontinuing a medication with pharmacologic inhibitive or induction actions; these changes may have an impact on levels of co-administered medications.

Consultation with a pharmacist can help clinicians manage the complexities of polypharmacy and medication adjustments in older patients. Online resources to are available as well; see:

- [University of Liverpool HIV Drug Interactions Checker](#)
- [UCSF HIV InSite Database of Antiretroviral Drug Interactions](#)
- [NYSDOH AI: ART Drug-Drug Interactions Resource](#)

Matters Most: This is the broadest category and includes medical and social priorities, sexual health, and advance directives. Asking questions such as, “Have you thought about aging?” or “What would you like to know about aging with

HIV?” creates opportunities to learn about patient’s concerns about the future and to discuss survivorship, guilt, ageism, financial worries, and other concerns [del Carmen 2019].

Many consider sexuality an essential part of health at any age. There is no age limit at which clinicians should stop taking a sexual history or discussing HIV pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) for partners (see NYSDOH AI guidelines *PrEP to Prevent HIV and Promote Sexual Health* and *PEP to Prevent HIV Infection*). Initiating discussions of sexual health, including topics such as erectile dysfunction and loss of libido in men, and menopause and post-menopausal sex in women, and screening for sexually transmitted infections as needed may also provide insights into relationships and the strength of a patient’s social network. For more information, see:

- *Management of Gonorrhea and Chlamydia in Patients with HIV > Screening* (NYSDOH AI)
- *Management of Syphilis in Patients with HIV > Screening* (NYSDOH AI)
- *Sexually Transmitted Infections Treatment Guidelines, 2021 > Screening* (CDC)

Overall, patient health and priorities, rather than age, direct the frequency of cancer screening in individuals with HIV. The literature on adherence to cancer screening guidelines among individuals with HIV is mixed with most [Corrigan, et al. 2019], but not all [Barnes, et al. 2018], studies failing to find that older individuals were screened less frequently. In patients with a good prognosis, clinicians should continue to follow screening guidelines (see *Comprehensive Primary Care for Adults With HIV > Routine Screening and Primary Prevention* section). Screening can be re-evaluated when it conflicts with patient priorities, or patient prognosis is poor.

Addressing aging-related concerns directly can help older patients with HIV discuss financial concerns and prepare for the future when more personal assistance may be needed. Discussion of insurance coverage can provide an opportunity to help patients prepare for the transition from commercial insurance or SNPs to Medicare-based plans. Planning is essential because these often offer far more comprehensive care coordination, medication coverage, and health-maintenance services than Medicare-based plans.

“Matters-most” topics may also include discussion of palliative care and frank discussion of long-term care needs and end-of-life plans. Advance directives should be addressed and, if an advance directive is in place, revisited. It is preferable for the patient to designate a specific agent or agents who can speak for them when they are incapacitated. Those patients who cannot or will not identify a trusted individual to be their agent can complete the *New York State Medical Orders for Life-Sustaining Treatment (MOLST)* to describe their wishes regarding medical treatment.

Geriatric Assessment

The gold standard for geriatric evaluation is the *Comprehensive Geriatric Assessment (CGA)*, which assesses multiple domains of health and function [Singh, et al. 2017]. Because it is comprehensive, the CGA is lengthy, and its use may not be feasible in many clinical settings (administration can take longer than one hour). *Table 1* lists domains of geriatric assessment and relevant available resources for older patients with HIV, organized according to the geriatric 5Ms. Clinicians can perform a global assessment such as the one used in the *Medicare Annual Wellness Visit* [CMS 2018] or choose one or several specific areas for focus.

It may be difficult to implement needed aging-related assessments when access to expertise or funding is limited, but every attempt should be made to assess aging-related issues to the degree possible.

Table 1: The “5M” Assessment Domains for Older People With HIV and Selected Tools and Resources		
Assessment	Source	Tools and Resources
MIND		
Cognition	Hartford Institute for Geriatric Nursing	The Lawton Instrumental Activities of Daily Living (IADL) Scale
	Montreal Cognitive Assessment (MoCA)	MoCA® Test (Note: As of September 2020, registration and training will be required)
	Alzheimer’s Association	Alzheimer’s Disease Pocketcard app: Available for download through the Apple App Store or Google Play
	Mini-Cog®	Mini-Cog® Screening for Cognitive Impairment in Older Adults

Table 1: The “5M” Assessment Domains for Older People With HIV and Selected Tools and Resources		
Assessment	Source	Tools and Resources
Social isolation, loneliness	Campaign to End Loneliness	<ul style="list-style-type: none"> • Report: The Psychology of Loneliness • Information and Research on Loneliness • Resources
	University of California San Francisco (UCSF) Stress Measurement Network	Stress Measurement Toolbox
Mental health	Calculate by QxMD	Patient Health Questionnaire (PHQ-4): Ultra-Brief Screening for Anxiety and Depression
	Substance Abuse and Mental Health Services Administration (SAMHSA)	Growing Older: Providing Integrated Care for an Aging Population
	CDC > HIV Basics	Facts about HIV Stigma
MOBILITY		
Gait, balance, activity level, fall risk, exercise	Alzheimer’s Association	Katz Index of Independence in Activities of Daily Living (ADL)
	CDC > STEADI: Stopping Elderly Accidents, Deaths, and Injuries	<ul style="list-style-type: none"> • Algorithm for Fall Risk Screening, Assessment, and Intervention • Preventing Falls in Older Patients: Provider Pocket Guide • Functional Assessments
	Article [Phelan, et al. 2015]	Assessment and Management of Fall Risk in Primary Care Settings
	American College of Sports Medicine	Exercise is Medicine® Health Care Providers’ Action Guide
	Article [Montoya, et al. 2019]	Evidence-Informed Practical Recommendations for Increasing Physical Activity Among Persons Living With HIV
Frailty	Comprehensive Geriatric Assessment	Tool Kit, including Frailty Assessment
MULTIMORBIDITY		
Management of multiple chronic conditions	Article [Boyd, et al. 2019]	Decision Making for Older Adults With Multiple Chronic Conditions: Executive Summary for the American Geriatrics Society Guiding Principles on the Care of Older Adults With Multimorbidity
Bone health	Article [Brown, et al. 2015]	Recommendations for Evaluation and Management of Bone Disease In HIV
	Article [Biver, et al. 2019]	Diagnosis, Prevention, and Treatment of Bone Fragility in People Living With HIV: A Position Statement From The Swiss Association Against Osteoporosis
	Systematic review and meta-analysis [Starup-Linde, et al. 2020]	Management of Osteoporosis in Patients Living With HIV—A Systematic Review and Meta-Analysis
Continenence	National Association for Continenence	Resources for Healthcare Providers
Food insecurity	United States Department of Agriculture (USDA) > Food Insecurity in the U.S.	Survey Tools
Obesity and lipohypertrophy	Article [Lake, et al. 2017]	Practical Review of Recognition and Management of Obesity and Lipohypertrophy in Human Immunodeficiency Virus Infection

Table 1: The “5M” Assessment Domains for Older People With HIV and Selected Tools and Resources		
Assessment	Source	Tools and Resources
MEDICATIONS		
Polypharmacy and drug-drug interactions	Article [O’Mahony, et al. 2015]	STOPP/START criteria for potentially inappropriate prescribing in older people: version 2
	University of Liverpool > HIV Drug Interactions	HIV Drug Interactions Checker
	NYSDOH AI Clinical Guidelines Program	<ul style="list-style-type: none"> ART Drug-Drug Interactions ARV Dose Adjustments for Hepatic and Renal Impairment
	Article [AGS 2019]	American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults
MATTERS MOST		
Sexual health	NYSDOH AI Clinical Guidelines Program	GOALS Framework for Sexual History Taking in Primary Care
Advance directives	NYSDOH	<ul style="list-style-type: none"> Appointing Your Health Care Agent in New York State (with fillable Health Care Proxy form) Medical Orders for Life-Sustaining Treatment (MOLST)
Working with family caregivers	United Hospital Fund > Next Step in Care	Toolkits, Guides, and More for Health Care Providers
Elder abuse	New York State Coalition on Elder Abuse	<ul style="list-style-type: none"> Understanding Elder Abuse Research & Education
	National Center on Elder Abuse	<ul style="list-style-type: none"> Suspect Abuse > Get Help Reporting Abuse
Quality of life	CDC: Health-Related Quality of Life	CDC HRQOL-14 “Healthy Days Measure
Pain management	Article [Bruce, et al. 2017]	2017 HIVMA of IDSA Clinical Practice Guideline for the Management of Chronic Pain in Patients Living With HIV
Palliative care	Article [Harding 2018]	Palliative Care as an Essential Component of the HIV Care Continuum
Prognosis	Yale School of Medicine > Veterans Aging Cohort Study (VACS)	VACS Index Calculator
	UCSF	ePrognosis Calculator

Integrating the Needs of Older Patients With HIV Into Medical Settings

This guidance is designed to foster a shift in the practitioner’s perspective when caring for older patients with HIV. However, the clinician cannot provide optimal care in the absence of support. Clinical practices can also begin to address HIV-related aging issues by taking the steps outlined below.

1. Assess the clinic’s ability to meet the needs of older patients with HIV:

- Review the demographics of the patient population to identify the number of patients in need of aging-related services at present and in the near- and long-term.
- Track patient requests for aging-related services and identify options for responding to those requests.
- Identify resources needed to address any aging-related priorities identified by a community or clinic advisory board.
- Identify clinic care providers who are experienced in geriatrics or the care of older patients.
- If the clinic is not able to provide multidisciplinary, comprehensive services, identify how the clinic can assist patients in accessing needed services.

- Anticipate problems with finances and insurance coverage for those approaching 65 (earlier, for those on disability) who are transitioning to Medicare.

2. Engage older patients with HIV in program planning:

- Provide ample opportunities for patients and clinical care providers and staff to identify needs to be addressed. This is an essential step for programs of any size. The University of California San Francisco (UCSF) used extensive patient input to develop its *Golden Compass program* for older individuals with HIV [Greene, et al. 2015].
- Provide opportunities for discussion of ageism and stigma, so patients and clinical care providers and staff can understand and identify its effects and how to address them.
- Develop a wish list of services and be realistic about what is possible. Set goals and a timeline for program development.

3. Consider options and develop protocols for identifying patients in need of aging-related care and services. For example, patients may be identified based on:

- Age, such that all patients with HIV who are ≥50 years old should be assessed.
- Prognosis, such that a prognostic threshold for referral is established based on measures such as the *Veterans Aging Cohort Study (VACS) Index Calculator*.
- Clinical criteria, such as a recent history of falls, deteriorating memory, polypharmacy, or frailty.
- Patient request.

4. Develop an assessment strategy:

- Identify who will perform assessments and how results will be communicated to patients and other care providers involved with the patient.
- Determine the scope of assessment: Will it focus on one particular problem (e.g., gait disorders, cognition), or will assessment address a broad array of problems? Examples of assessment types include the following:
 - *Global geriatric screening tools:* Global geriatric screening tools are available for administration by clinical staff or patient self-administration, at home or in the clinic. Dedicated time for assessment may be scheduled as part of primary care, following a model such as the *Medicare Annual Wellness Visit* [CMS 2018]. Some clinics may collaborate with aging specialists, such as geriatricians or nurse practitioners who specialize in gerontology and can perform a comprehensive geriatric assessment.
 - *Specific screening tools:* If a clinic has decided to focus on one or several specific assessments, these can be built into the workflow. For example, a clinic could determine that all patients ≥50 years old will be screened for fall risk and cognitive impairment. In this case, patients could be asked to complete a fall-risk evaluation, such as the *Stopping Elderly Accidents, Deaths, and Injuries (STADI)*, before the visit, or a nurse could administer a timed walk test while the patient is walking from the waiting room to the exam room.
 - Any of the domains listed in *Table 1: The “5M” Assessment Domains for Older People With HIV and Selected Tools and Resources* would be appropriate for inclusion in a program to enhance care of older individuals with HIV.

5. Develop protocols for referral:

- Identify aging-related care and services that can be provided on-site and care and services that require referral to an external source. Referral protocols can be problem-specific. For example, if a patient is assessed as being at high risk for falls, the clinic should take a standard approach to address that risk, which could include referral to physical therapy, podiatry, or neurology; medication review by a pharmacist; home safety assessment; and/or an exercise program.
- Identify local specialty care providers to whom patients can be referred.

Online Clinical Resources for Aging and Geriatric Care	
AIDS Education and Training Center National Coordinating Resource Center	Care of People Aging with HIV: Northeast/ Caribbean Toolkit
American Academy of HIV Medicine > HIV & Aging	Recommended Treatment Strategies for Clinicians Managing Older Patients with HIV

Online Clinical Resources for Aging and Geriatric Care	
American Geriatrics Society > Geriatrics Healthcare Professionals	Geriatrics Workforce Enhancement Program Coordinating Center: <ul style="list-style-type: none"> National Coordinating Center Finger Lakes Geriatric Education Center: Rochester, Ithaca New York City: Hartford Institute for Geriatric Nursing Johns Hopkins School of Medicine
World Health Organization > Ageing and Life Course	Integrated care for older people (ICOPE): guidance for person-centered assessment and pathways in primary care

Linking to the Aging Services Network

An essential part of care for individuals with HIV who are ≥60 years old is connecting to the aging services network, which was initiated through the *Older Americans Act of 1965* [O'Shaughnessy 2012]. Social work and care coordination staff should become familiar with the services that are offered locally and should assist clients in preparing for the transition to Medicare when medication benefits and care coordination change.

Online Resources for Aging Services and Entitlements
<ul style="list-style-type: none"> Aging and Disability Resource Centers Eldercare Locator Medicare Rights Center National Association of Area Agencies on Aging National Council on Aging: BenefitsCheckUp New York State Office for the Aging, provides links to local agencies on aging and other resources like the state Aging and Disability Resource Center. SAGE: Advocacy for LGBT Elders

References

- AGS. American Geriatrics Society. 2019 Updated AGS Beers Criteria(R) for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2019;67(4):674-694. [PMID: 30693946] <https://pubmed.ncbi.nlm.nih.gov/30693946>
- Barnes A, Betts AC, Borton EK, et al. Cervical cancer screening among HIV-infected women in an urban, United States safety-net healthcare system. *AIDS* 2018;32(13):1861-1870. [PMID: 29762164] <https://pubmed.ncbi.nlm.nih.gov/29762164>
- Biver E, Calmy A, Aubry-Rozier B, et al. Diagnosis, prevention, and treatment of bone fragility in people living with HIV: a position statement from the Swiss Association against Osteoporosis. *Osteoporos Int* 2019;30(5):1125-1135. [PMID: 30603840] <https://pubmed.ncbi.nlm.nih.gov/30603840>
- Bloch M. Frailty in people living with HIV. *AIDS Res Ther* 2018;15(1):19. [PMID: 30445966] <https://pubmed.ncbi.nlm.nih.gov/30445966>
- Brown TT, Hoy J, Borderi M, et al. Recommendations for evaluation and management of bone disease in HIV. *Clin Infect Dis* 2015;60(8):1242-1251. [PMID: 25609682] <https://pubmed.ncbi.nlm.nih.gov/25609682>
- Bruce RD, Merlin J, Lum PJ, et al. 2017 HIVMA of IDSA Clinical Practice Guideline for the Management of Chronic Pain in Patients Living With HIV. *Clin Infect Dis* 2017;65(10):e1-e37. [PMID: 29020263] <https://pubmed.ncbi.nlm.nih.gov/29020263>
- CDC. Centers for Disease Control and Prevention. HIV Surveillance Report 2018. 2020 May. <https://www.cdc.gov/hiv/library/reports/hiv-surveillance.html> [accessed 2020 Jun 29]
- CMS. Centers for Medicare and Medicaid Services. Annual Wellness Visit. 2018 Aug. <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/MLN-Publications-Items/CMS1246474> [accessed 2020 Jun 29]

- Corrigan KL, Wall KC, Bartlett JA, et al. Cancer disparities in people with HIV: A systematic review of screening for non-AIDS-defining malignancies. *Cancer* 2019;125(6):843-853. [PMID: 30645766] <https://pubmed.ncbi.nlm.nih.gov/30645766>
- De Francesco D, Wit FW, Burkle A, et al. Do people living with HIV experience greater age advancement than their HIV-negative counterparts? *AIDS* 2019;33(2):259-268. [PMID: 30325781] <https://pubmed.ncbi.nlm.nih.gov/30325781>
- del Carmen T, Johnston, C., Burchett, C. et al. Special topics in the care of older people with HIV. *Curr Treat Options Infect Dis* 2019;11:388. <https://doi.org/10.1007/s40506-019-00204-6>
- DHHS. Department of Health and Human Services, Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents Living with HIV. 2019 Dec 18. <http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf> [accessed 2020 Jun 29]
- Do AN, Rosenberg ES, Sullivan PS, et al. Excess burden of depression among HIV-infected persons receiving medical care in the united states: data from the medical monitoring project and the behavioral risk factor surveillance system. *PLoS One* 2014;9(3):e92842. [PMID: 24663122] <https://pubmed.ncbi.nlm.nih.gov/24663122>
- Erlandson KM, Guaraldi G, Falutz J. More than osteoporosis: age-specific issues in bone health. *Curr Opin HIV AIDS* 2016;11(3):343-350. [PMID: 26882460] <https://pubmed.ncbi.nlm.nih.gov/26882460>
- Erlandson KM, Karris MY. HIV and aging: Reconsidering the approach to management of comorbidities. *Infect Dis Clin North Am* 2019;33(3):769-786. [PMID: 31395144] <https://pubmed.ncbi.nlm.nih.gov/31395144>
- Erlandson KM, Lake JE, Sim M, et al. Bone mineral density declines twice as quickly among HIV-infected women compared with men. *J Acquir Immune Defic Syndr* 2018;77(3):288-294. [PMID: 29140875] <https://pubmed.ncbi.nlm.nih.gov/29140875>
- Falutz J. Frailty in people living with HIV. *Curr HIV/AIDS Rep* 2020;17(3):226-236. [PMID: 32394155] <https://pubmed.ncbi.nlm.nih.gov/32394155>
- Fitch KV. Contemporary lifestyle modification interventions to improve metabolic comorbidities in HIV. *Curr HIV/AIDS Rep* 2019;16(6):482-491. [PMID: 31776973] <https://pubmed.ncbi.nlm.nih.gov/31776973>
- Goodkin K, Miller EN, Cox C, et al. Effect of ageing on neurocognitive function by stage of HIV infection: evidence from the Multicenter AIDS Cohort Study. *Lancet HIV* 2017;4(9):e411-e422. [PMID: 28716545] <https://pubmed.ncbi.nlm.nih.gov/28716545>
- Greene M, Covinsky KE, Valcour V, et al. Geriatric syndromes in older HIV-infected adults. *J Acquir Immune Defic Syndr* 2015;69(2):161-167. [PMID: 26009828] <https://pubmed.ncbi.nlm.nih.gov/26009828>
- Guaraldi G, Malagoli A, Calcagno A, et al. The increasing burden and complexity of multi-morbidity and polypharmacy in geriatric HIV patients: a cross sectional study of people aged 65 - 74 years and more than 75 years. *BMC Geriatr* 2018;18(1):99. [PMID: 29678160] <https://pubmed.ncbi.nlm.nih.gov/29678160>
- Guaraldi G, Rockwood K. Geriatric-HIV Medicine Is Born. *Clin Infect Dis* 2017;65(3):507-509. [PMID: 28387817] <https://pubmed.ncbi.nlm.nih.gov/28387817>
- Harding R. Palliative care as an essential component of the HIV care continuum. *Lancet HIV* 2018;5(9):e524-e530. [PMID: 30025682] <https://pubmed.ncbi.nlm.nih.gov/30025682>
- Hogg RS, Eyawo O, Collins AB, et al. Health-adjusted life expectancy in HIV-positive and HIV-negative men and women in British Columbia, Canada: a population-based observational cohort study. *Lancet HIV* 2017;4(6):e270-e276. [PMID: 28262574] <https://pubmed.ncbi.nlm.nih.gov/28262574>
- John MD, Greene M, Hessel NA, et al. Geriatric assessments and association with VACS index among HIV-infected older adults in San Francisco. *J Acquir Immune Defic Syndr* 2016;72(5):534-541. [PMID: 27028497] <https://pubmed.ncbi.nlm.nih.gov/27028497>
- Johnson Shen M, Freeman R, Karpiak S, et al. The intersectionality of stigmas among key populations of older adults affected by HIV: a thematic analysis. *Clin Gerontol* 2019;42(2):137-149. [PMID: 29617194] <https://pubmed.ncbi.nlm.nih.gov/29617194>
- Kong AM, Pozen A, Anastos K, et al. Non-HIV comorbid conditions and polypharmacy among people living with HIV age 65 or older compared with HIV-negative individuals age 65 or older in the United States: A retrospective claims-based analysis. *AIDS Patient Care STDS* 2019;33(3):93-103. [PMID: 30844304] <https://pubmed.ncbi.nlm.nih.gov/30844304>

- Lake JE, Stanley TL, Apovian CM, et al. Practical review of recognition and management of obesity and lipohypertrophy in human immunodeficiency virus infection. *Clin Infect Dis* 2017;64(10):1422-1429. [PMID: 28329372] <https://pubmed.ncbi.nlm.nih.gov/28329372>
- Levett TJ, Cresswell FV, Malik MA, et al. Systematic review of prevalence and predictors of frailty in individuals with human immunodeficiency virus. *J Am Geriatr Soc* 2016;64(5):1006-1014. [PMID: 27225356] <https://pubmed.ncbi.nlm.nih.gov/27225356>
- Livio F, Marzolini C. Prescribing issues in older adults living with HIV: thinking beyond drug-drug interactions with antiretroviral drugs. *Ther Adv Drug Saf* 2019;10:2042098619880122. [PMID: 31620274] <https://pubmed.ncbi.nlm.nih.gov/31620274>
- Machado S. Existential dimensions of surviving HIV: The experience of gay long-term survivors. *J Hum Psychol* 2012;52:6-29. <https://doi.org/10.1177/0022167810389049>
- Maki PM, Rubin LH, Springer G, et al. Differences in cognitive function between women and men With HIV. *J Acquir Immune Defic Syndr* 2018;79(1):101-107. [PMID: 29847476] <https://pubmed.ncbi.nlm.nih.gov/29847476>
- Molina JM, Grund B, Gordin F, et al. Which HIV-infected adults with high CD4 T-cell counts benefit most from immediate initiation of antiretroviral therapy? A post-hoc subgroup analysis of the START trial. *Lancet HIV* 2018;5(4):e172-e180. [PMID: 29352723] <https://pubmed.ncbi.nlm.nih.gov/29352723>
- Montoya JL, Jankowski CM, O'Brien KK, et al. Evidence-informed practical recommendations for increasing physical activity among persons living with HIV. *AIDS* 2019;33(6):931-939. [PMID: 30946147] <https://pubmed.ncbi.nlm.nih.gov/30946147>
- Morley JE, Vellas B, van Kan GA, et al. Frailty consensus: a call to action. *J Am Med Dir Assoc* 2013;14(6):392-397. [PMID: 23764209] <https://pubmed.ncbi.nlm.nih.gov/23764209>
- NYCDHMH. New York City Department of Mental Health and Hygiene. HIV Epidemiology and Field Services Program. 2017 HIV Surveillance Annual Report. 2018 Nov. <https://www1.nyc.gov/assets/doh/downloads/pdf/dires/hiv-surveillance-annualreport-2017.pdf> [accessed 2020 Jun 29]
- O'Mahony D, O'Sullivan D, Byrne S, et al. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. *Age Ageing* 2015;44(2):213-218. [PMID: 25324330] <https://pubmed.ncbi.nlm.nih.gov/25324330>
- O'Shaughnessy C. Older Americans Act of 1965: Programs and funding. 2012 Feb 23. <http://www.nhpf.org/library/details.cfm/2626> [accessed 2020 Jun 29]
- Phelan EA, Mahoney JE, Voit JC, et al. Assessment and management of fall risk in primary care settings. *Med Clin North Am* 2015;99(2):281-293. [PMID: 25700584] <https://pubmed.ncbi.nlm.nih.gov/25700584>
- Samji H, Cescon A, Hogg RS, et al. Closing the gap: increases in life expectancy among treated HIV-positive individuals in the United States and Canada. *PLoS One* 2013;8(12):e81355. [PMID: 24367482] <https://pubmed.ncbi.nlm.nih.gov/24367482>
- Singh HK, Del Carmen T, Freeman R, et al. From one syndrome to many: incorporating geriatric consultation into HIV care. *Clin Infect Dis* 2017;65(3):501-506. [PMID: 28387803] <https://pubmed.ncbi.nlm.nih.gov/28387803>
- Starup-Linde J, Rosendahl SB, Storgaard M, et al. Management of osteoporosis in patients living with HIV-A systematic review and meta-analysis. *J Acquir Immune Defic Syndr* 2020;83(1):1-8. [PMID: 31809356] <https://pubmed.ncbi.nlm.nih.gov/31809356>
- Stone L, Looby SE, Zanni MV. Cardiovascular disease risk among women living with HIV in North America and Europe. *Curr Opin HIV AIDS* 2017;12(6):585-593. [PMID: 28832367] <https://pubmed.ncbi.nlm.nih.gov/28832367>
- Tavoschi L, Gomes Dias J, Pharris A. New HIV diagnoses among adults aged 50 years or older in 31 European countries, 2004-15: an analysis of surveillance data. *Lancet HIV* 2017;4(11):e514-e521. [PMID: 28967582] <https://pubmed.ncbi.nlm.nih.gov/28967582>
- Tinetti M, Huang A, Molnar F. The geriatrics 5M's: A new way of communicating what we do. *J Am Geriatr Soc* 2017;65(9):2115. [PMID: 28586122] <https://pubmed.ncbi.nlm.nih.gov/28586122>
- Tinetti ME, Naik AD, Dindo L, et al. Association of patient priorities-aligned decision-making with patient outcomes and ambulatory health care burden among older adults with multiple chronic conditions: A nonrandomized clinical trial. *JAMA Intern Med* 2019. [PMID: 31589281] <https://pubmed.ncbi.nlm.nih.gov/31589281>

-
- Vance DE, Rubin LH, Valcour V, et al. Aging and neurocognitive functioning in HIV-infected women: a review of the literature involving the Women's Interagency HIV Study. *Curr HIV/AIDS Rep* 2016;13(6):399-411. [PMID: 27730446] <https://pubmed.ncbi.nlm.nih.gov/27730446>
- Wandeler G, Johnson LF, Egger M. Trends in life expectancy of HIV-positive adults on antiretroviral therapy across the globe: comparisons with general population. *Curr Opin HIV AIDS* 2016;11(5):492-500. [PMID: 27254748] <https://pubmed.ncbi.nlm.nih.gov/27254748>
- Winston A, Spudich S. Cognitive disorders in people living with HIV. *Lancet HIV* 2020;7(7):e504-e513. [PMID: 32621876] <https://pubmed.ncbi.nlm.nih.gov/32621876>
- Yarnall AJ, Sayer AA, Clegg A, et al. New horizons in multimorbidity in older adults. *Age Ageing* 2017;46(6):882-888. [PMID: 28985248] <https://pubmed.ncbi.nlm.nih.gov/28985248>