Caring for the Person Living & Aging with HIV: it’s complicated & it’s the future

W. David Hardy, MD Whitman Walker Health HVMA
Jeffrey Kwong, DNP Columbia University ANAC

Moderator: Carole Treston
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HIV and Aging: What Do We Know? Where Are We Now? What Can We Do?

W. David Hardy, MD
Senior Director, Evidence-based Practices
Whitman-Walker Health
Adjunct Professor of Medicine
Johns Hopkins University
School of Medicine
Aging With HIV Infection

- **The Numbers:** Epidemiology of aging among those with HIV infection

- **The Reasons:** Drivers of aging and frailty

- **The Response:** Practical approaches to prevent/minimize age-related conditions and avoid frailty
ATHENA: Older Patients Becoming More Common in the HIV-Positive Population

- ATHENA: observational cohort of 10,278 HIV-positive pts in the Netherlands

- Modeling study projections:
  - Proportion of HIV-positive pts ≥ 50 yrs of age to increase from 28% in 2010 to 73% in 2030
  - Median age of HIV-positive pts on combination ART to increase from 43.9 yrs in 2010 to 56.6 yrs in 2030


Slide credit: clinicaloptions.com
Decreased Life Expectancy in Older HIV+ Adults in Modern ART Era


HIV-Negative Controls 1996-2014

HIV-Positive Pts
- 2006-2014
- 2000-2005
- 1996-1999

The Facts About Aging With HIV

- People living with HIV now have life expectancies that are very close to that of people without HIV.
- But people with HIV have a greater risk for conditions that are associated with getting older.
- The reasons why HIV-positive people suffer more from these conditions are debated, but all agree that lifestyle plays a role.
- Although aging with HIV is inevitable, the course of aging can be influenced by actions – eg, healthy diet, exercise.
High Risk Behaviors in Persons With HIV Infection

Prevalence of Alcohol, Cigarette, and Illicit Drug Use Among HIV-Positive Pts vs General Population

- Alcohol Use: 61.0% (HIV-positive pts), 52.0% (General population)
- Cigarette Smoking: 38.2% (HIV-positive pts), 15.2% (General population)
- Illicit Drug Use*: 24.0% (HIV-positive pts), 10.2% (General population)

*24% noninjection, 1.7% injection drug use in HIV-positive pts; illicit drug use for general population included marijuana, cocaine, heroin, hallucinogens, inhalants, and nonmedical use of prescription-type pain relievers, tranquilizers, stimulants, and sedatives.

Aging With HIV: Factor Stacking

HIV-Mediated Inflammation

Untreated HIV
Low CD4

LIFESTYLE

Normal Aging Process

Slide credit: clinicaloptions.com
Inflammation Predicts Disease in Treated HIV Infection

- Mortality\(^{[1-4]}\)
- Cardiovascular disease\(^{[5]}\)
- Cancer\(^{[6,7]}\)
- Venous thromboembolism\(^{[8]}\)
- Type II diabetes\(^{[9]}\)
- Radiographic emphysema\(^{[10]}\)

- Renal disease\(^{[11]}\)
- Bacterial pneumonia\(^{[12]}\)
- Cognitive dysfunction\(^{[13]}\)
- Depression\(^{[14]}\)
- Functional impairment\(^{[15]}\)

AGE_{hIV}: Comorbidity Distribution

- Cross-sectional analysis of comorbidity prevalence in prospective cohort study of HIV-infected pts (n = 540) vs controls (n = 524) ≥ 45 yrs of age

Diabetes Mellitus: African Americans and Hispanics—2014

- 29.1 million Americans (9.3%) have diabetes
  - Death rates in persons with diabetes are 1.5x those in persons without diabetes

- Age-adjusted prevalence ≥ 20 yrs of age
  - 13.2% of all African Americans
  - 12.8% of all Hispanics/Latinos
    - Cubans: 9.3%
    - Mexican Americans: 13.9%
    - Puerto Ricans: 14.8%
  - 7.6% of all non-Hispanic whites

Cardiovascular Disease Risk in the United States

- Cardiovascular disease is the number 1 killer of Americans
  - Nearly 2200 Americans die of cardiovascular disease each day

- Prevalence
  - Black men and women: 46.0% and 47.7%
  - White men and women: 37.7% and 35.1%
  - Hispanic men and women: 31.3% and 33.3%

HIV/AIDS-Associated Nephropathy (HIVAN) in Black Patients

- HIVAN is the third leading cause of end-stage renal failure for blacks aged 20-64 yrs
- Among those with ESRD secondary to HIV/AIDS
  - 88.4%: black
  - 7.7%: white
- Familial clustering of ESRD among blacks with HIV disease

START: Reduced but Persistently High Risk of AIDS Event With Early ART

- 72% reduced risk of serious AIDS events with immediate ART

START: Serious Non-AIDS Events

- 39% reduced risk of serious non-AIDS events with immediate ART

### Cumulative Percent With an Event

<table>
<thead>
<tr>
<th>Outcome</th>
<th>HR</th>
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<tbody>
<tr>
<td>TB</td>
<td>0.29</td>
</tr>
<tr>
<td>Bacterial infection</td>
<td>0.38</td>
</tr>
<tr>
<td>KS</td>
<td>0.09</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>0.30</td>
</tr>
<tr>
<td>Non-AIDS cancer</td>
<td>0.50</td>
</tr>
</tbody>
</table>

HIV-1 RNA Suppression and Cancer

AIDS Defining

\[ IR \quad P < .0001 \]

Virus-Related NADC

\[ IR \quad P < .0001 \]

Nonvirus NADC

\[ IR \quad P < .0008 \]

- HIV positive, unsuppressed
- HIV positive, early suppressed
- HIV positive, long-term suppressed
- HIV negative
- IRR


Slide credit: clinicaloptions.com
Frailty, Disability, and Functional Impairment in Older HIV+ Patients

**Impairment (body function):**
- Osteoarthritis

**Limitations (activity):**
- Slow chair rise time,
- Slow gait

**Frailty (vulnerability):**
- Slow walking speed,
- Low activity,
- Fatigue

**Disabilities (participation):**
- Requires cane but ramp into home and no stairs in home

**Impairment:**
- History, exam, x-ray

**Limitations:**
- Short Physical Performance Battery Timed walk

**Frailty:**
- Fried’s frailty phenotype

**Disability:**
- Activities of daily living,
- Independent activities of daily living


Slide credit: clinicaloptions.com
Frailty Risk Factors in Aging HIV-Positive Patients

Risk Factors (OR: Frail vs Nonfrail)

- Diabetes: HR: 5.1, P = .007
- Neurologic Disease: HR: 3.9, P < .001
- Psychiatric Disease: HR: 3.9, P = .002
- Cardiovascular Disease: HR: 3.8, P = .067
- Unhealthy Weight: HR: 3.7, P = .004
- Arthritis: HR: 3.6, P = .001
- Osteoporosis: HR: 3.5, P = .022
- Viral Hepatitis: HR: 3.3, P = .004

Slide credit: clinicaloptions.com

Relative Risk of Heart Attack or Stroke Declining for HIV Patients in Recent Years

- Kaiser Permanente cohort in California (N = 282,368)
- Lower MI incidence likely due to CVD risk factor reduction, lipid-friendly ART, reduced immunodeficiency\(^1,2\)
- HIV+ pts with recent CD4+ cell count ≥ 500 c/mm\(^3\) or HIV-1 RNA < 500 c/mL not at significantly greater risk vs HIV-individuals after adjustment for stroke risk factors\(^3,4\)
  - However, recent CD4+ cell count < 200 c/mm\(^3\) associated with increased risk

Activity Preserves Lean Mass and Function

40-yr-old

70-yr-old sarcopenic

66-yr-old runner

76-yr-old farmer

Courtesy of Dr. Todd Brown

Slide credit: clinicaloptions.com
Statins Decrease Immune Activation and Aortic Plaque in Treated HIV Infection

- **REPRIEVE**: double-blind, randomized phase IV trial of pitavastatin (planned N = 6500) now enrolling


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**sCD14 Declines With Rosuvastatin**

- Placebo
- Rosuvastatin

<table>
<thead>
<tr>
<th>Wks From Randomization</th>
<th>Placebo</th>
<th>Rosuvastatin</th>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>-10</td>
</tr>
<tr>
<td>24</td>
<td>-10</td>
<td>-20</td>
</tr>
<tr>
<td>48</td>
<td>-20</td>
<td>-30</td>
</tr>
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</table>

- $P = .002$
- $P = .0056$

**Plaque Regression With Atorvastatin**

- Placebo
- Atorvastatin

- $P = .03$

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Slide credit: [clinicaloptions.com](http://clinicaloptions.com)
ART Considerations in Older Patients

- Comorbidities
- Polypharmacy
  - Drug–drug interaction, dosing, adherence challenges
- Renal or hepatic impairment
  - Alterations in pharmacokinetics, potential for drug toxicity
- Challenges with single-tablet regimens
  - Inability to alter single component dosing
  - Difficulty swallowing large tablets
DHHS: Key Considerations When Caring for Older HIV-Infected Pts

- DHHS has included older adult pts as a separate special population with the following recommendations:
  - ART is recommended in all pts, regardless of CD4+ T cell count, but is especially important in older pts
  - ART-associated adverse effects may occur: must monitor bone, kidney, metabolic, cardiovascular, and liver health
  - Increased risk of drug–drug interactions between ARV drugs and other medications
  - HIV experts and primary care providers should work together to manage complex comorbidities
  - Counseling to prevent secondary transmission of HIV

July 2016 Updates on Recommended Regimens for First-line ART

DHHS[1]
- Recommended regimens include 3 INSTIs and 1 boosted PI
- Primary change since Jan 2016 update is addition of TAF/FTC

IAS-USA[2]
- All recommended regimens include INSTI + TAF/FTC or ABC/3TC
- Major changes since 2014 update include removal of NNRTIs, boosted PIs, and TDF

<table>
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<tbody>
<tr>
<td>DTG/ABC/3TC</td>
<td>Preferred/recommended</td>
<td>Preferred/recommended</td>
</tr>
<tr>
<td>DTG + TAF/FTC</td>
<td>Preferred/recommended</td>
<td>Preferred/recommended</td>
</tr>
<tr>
<td>DTG + TDF/FTC</td>
<td>Preferred/recommended</td>
<td>Alternative</td>
</tr>
<tr>
<td>EVG/COBI/TAF/FTC</td>
<td>Preferred/recommended</td>
<td>Preferred/recommended</td>
</tr>
<tr>
<td>EVG/COBI/TDF/FTC</td>
<td>Preferred/recommended</td>
<td>Alternative</td>
</tr>
<tr>
<td>RAL + TAF/FTC</td>
<td>Preferred/recommended</td>
<td>Preferred/recommended</td>
</tr>
<tr>
<td>RAL + TDF/FTC</td>
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<td>Alternative</td>
</tr>
<tr>
<td>DRV + RTV + TAF/FTC</td>
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<td>Preferred/recommended</td>
</tr>
<tr>
<td>DRV + RTV + TDF/FTC</td>
<td>Preferred/recommended</td>
<td>Preferred/recommended</td>
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# DHHS Considerations for Initial ART Based on Age-Related Comorbidity

<table>
<thead>
<tr>
<th>Scenario</th>
<th>ART-Specific Consideration</th>
</tr>
</thead>
</table>
| **Chronic Kidney Disease (CKD)** (eGFR < 60 mL/min) | - TDF, especially in RTV-containing regimens  
  - TAF (if eGFR > 30 mL/min)  
  - ABC/3TC (if HLA-B*5701 negative; if HIV-1 RNA > 100,000 c/mL, do not use with EFV or ATV/RTV; 3TC dose adjustment if CrCl < 50 mL/min)  
  - DRV/RTV + RAL (if HIV-1 RNA < 100,000 c/mL and CD4+ cell count > 200 cells/mm³)  
  - LPV/RTV + 3TC (3TC dose adjustment if CrCl < 50 mL/min)                                                                 |
| **Osteoporosis**                | - TDF  
  - TAF  
  - ABC/3TC (if HLA-B*5701 negative; if HIV-1 RNA > 100,000 c/mL, do not use with EFV or ATV/RTV)                                                                 |
| **Cardiovascular Disease (CVD)** | - ABC  
  - LPV/RTV                                                                                                                                               |
| **Hyperlipidemia**              | - PI/RTV or PI/COBI  
  - EFV  
  - EVG/COBI  
  - DTG  
  - RAL  
  - Consider TDF over ABC or TAF                                                                                  |
### Drugs for Common Conditions in the Aging That May Interact With ART

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Comorbidity Drugs</th>
<th>Interacting ARVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric Reflux</td>
<td>Antacid, Proton Pump Inhibitor (PPI)</td>
<td>All^[1-8]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATV/RTV + FTC/TDF or FTC/TAF,[3,4,9] DRV/RTV + FTC/TDF or FTC/TAF^[3,4,10] RPV + FTC/TDF or FTC/TAF^[11,12]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATV/RTV + FTC/TDF or FTC/TAF,[9,3,4] DTG/3TC/ABC^[1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATV/RTV + FTC/TDF or FTC/TAF,[2,3,9] DRV/RTV + FTC/TDF or FTC/TAF^[3,4,10]</td>
</tr>
</tbody>
</table>


Slide credit: clinicaloptions.com
4 Fundamental Components of Geriatric Primary Care

- Comprehensive assessment
- Creation, implementation, and monitoring of plan of care
- Communication among and coordination with care providers
- Promotion of active engagement in care (pt and family caregiver)

Conclusions

- Aging is a natural and expected process
- For many reasons, people living with HIV have a higher risk for many age-related health problems
- However, many of these comorbid conditions can be prevented or reversed by actions taken by the patient and the provider
- HIV care must start to incorporate principles of geriatric medicine to meet needs of older patients
- Recognition of drivers of frailty (physical, mental, chemical) is essential to applying appropriate interventions
- ART selection should take into account the pt’s comorbidities and potential for drug interactions and adverse events
Helping Our Patients Age Well:

Considerations for HIV Providers

Jeffrey Kwong, DNP
Associate Professor of Nursing - Columbia University
President-Elect, ANAC

USCA 2017 Conference
Washington, DC
“There are some things they don’t teach you in medical school. I think you’ve got one of those things.”
Aging, Depression, and Mental Health
The Aging of the HIV Epidemic in the US
CDC Surveillance Data

Number of People Living with HIV

Age 50 and Older In 2011
37%

Age 50 and Older In 2015
50%

Age 50 and Older In 2020
70%

Source: ACRIA
Depression in Older Adults

- 1-5% of community dwelling older adults with major depression.
- 13.5% in those who require home healthcare.
- 11.5% in older hospitalized patients.

Rates of Depression significantly higher in older persons living with HIV

CDC, 2017
Etiology

- Biological factors
- Social factors
- Psychological factors
Biological factors

- Genetic
- Medical Illness
- Vascular changes in the brain
- Chronic or severe pain
- Previous history of depression
- Substance abuse
Social factors

- Double stigma and invisibility
- Loneliness, isolation
- Recent bereavement
- Lack of a supportive social network
- Decreased mobility
- Financial barriers
Psychological factors

- Traumatic experiences
- Damage to body image
- Fear of death
- Frustration with memory loss
- Role transitions
Depression in Older Adults

- Often under-diagnosed.
- 50% of those with major depression receive treatment.

**NOT a normal part of aging.**
Depression in Older Adults: Why is it missed?

- Symptoms not the same as younger adults.
- Erroneously perceived as a normal part of aging process by clinicians.
- Co-morbid with other medical conditions.
- Can be result of multiple medications.
Depression Co-morbidity

- Alcohol/Drug Abuse
- Infections
- Cancer
- Nutritional Deficiencies
- Vision/Hearing Loss
- Chronic Pain & Inflammatory diseases

- Cerebrovascular Disease
- Endocrine Diseases
- Neurological Diseases: (MS&Parkinson's Disease)
- Neurocognitive Disorders (Alzheimer's Disease, Vascular etc.)
Suicide and Older Adults

- People age 65 and older accounted for 18% of suicide deaths.

- Men over 75 had the highest rates of suicide among all age and gender groups (38.8 per 100,000).

- Important for clinicians to assess for suicide risk in older patients.
Pain

- Pain increases with age.
- Persistent pain associated with:
  - Depression
  - Impaired cognitive function
  - Impaired physical function
  - Sleep disturbance
  - Agitation
  - Decreased socialization.
Alcohol Use

Increased risk of:

- Stroke
- Impaired motor skills (e.g., driving) at low level use
- Injury (falls, accidents)
- Sleep disorders
- Suicide
- Interaction with dementia symptoms
Drinking Guidelines for Older Adults

- No more than 1 standard drink per day
- No more than 2-3 drinks on any drinking day

- Limits for older women should be somewhat less than for older men

(NIAAA, 2017)
HIV, Aging, and the Brain

- More than half will have some impairment
  - Asymptomatic neurocognitive impairment
  - HIV-associated neurocognitive disorder (HAND)

- HAND accelerates in aging

- Chronic inflammation and cerebral flow
Screening Tools for Depression and Cognition

- Geriatric Depression Scale
- PHQ-9
- MoCA
- Mini-Mental, Mini-Cog
Keeping Patients Healthy: LIVING with HIV
"The most common chronic condition experienced by adults is multimorbidity, the coexistence of multiple chronic diseases or conditions."
Multimorbidity

- More than 50% of older adults will have 3 or more chronic conditions
- Higher Rates of Death & Disability
- Institutionalization
- Poorer quality of life
- Adverse effects of treatment or interventions

American Geriatrics Society, 2012
DOI: 10.1111/j.1532-5415.2012.04188.x
Medicare data
Comorbidity Prevalence among HIV infected Persons Is Increasing

Trends in Comorbid Conditions: Medicare HIV Patients

- CV Event: 9.6% (2003) vs. 16.0% (2013)
- Renal impairment: 9.2% (2003) vs. 20.1% (2013)
- Fracture/osteoporosis: 6.7% (2003) vs. 11.2% (2013)
- Hypertension: 34.2% (2003) vs. 65.1% (2013)*
- Diabetes: 20.4% (2003) vs. 31.1% (2013)*
- Obesity: 0.0% (2003) vs. 6.3% (2013)*
- Hyperlipidemia: 12.1% (2003) vs. 47.5% (2013)*

*Significant at p<.05 for 2003 vs. 2013

Meyer, ICAAC, 2015
Co-Morbidities:
Elderly (50-75 yrs) vs Geriatric (75+yrs) (n=16,233; n=654)

Allavena, et al. 2016, CROI Abstract# 709
# Recommended Screenings

<table>
<thead>
<tr>
<th>Component</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Blood Pressure Check</td>
<td>Annually</td>
</tr>
<tr>
<td>Digital Prostate Exam</td>
<td>Annually</td>
</tr>
<tr>
<td>Ophthalmologic Exam</td>
<td>Every 6-12 months in CD4 &lt; 50 cells/mm³</td>
</tr>
<tr>
<td>Depression Screening</td>
<td>Annually</td>
</tr>
<tr>
<td>Fasting glucose</td>
<td>Every 6-12 months</td>
</tr>
<tr>
<td>Fasting Lipids</td>
<td>Every 6-12 months</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>Age 50 and every 10 years, earlier or more frequent in persons at risk</td>
</tr>
<tr>
<td>Mammography</td>
<td>Age 50</td>
</tr>
<tr>
<td>Cervical Cancer</td>
<td>After 2 normal Paps 6 months apart may perform annually</td>
</tr>
<tr>
<td>Bone Densitometry</td>
<td>Post-menopausal women 65 years or older and in persons &gt; 50 with &gt;1 risk factor for premature bone loss</td>
</tr>
<tr>
<td>Abdominal Aortic Aneurysm</td>
<td>Men 65-75 who have ever smoked</td>
</tr>
</tbody>
</table>

Cancer

- Cancer risk elevated in older persons living with HIV vs non-HIV-infected.
- Lung, prostate, colorectal, breast cancer most common.
- Tobacco cessation and early detection are critical.

Yanik et al. 2016. AIDS, 30(10).
Lung Cancer Screening

Annual screening with low-dose computed tomography (LDCT) in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. (GRADE B)
Falls

2.5 million are treated in the Emergency Department for Falls
Frailty

- Unintentional weight loss
- Exhaustion
- Muscle weakness
- Slowness while walking
- Low levels of activity

Frail Patients Have Higher Risk of:
- Falls
- Worsening mobility
- Worsening ADL disability
- Death

Fried et al. (2001)
Vision, Hearing, & Oral Health

- Vision screening every 1-2 years after age 65
  - American Academy of Ophthalmology

- Screen for hearing loss every 2 years

- Older adults at risk for poor oral hygiene, tooth decay, and xerostomia
Improving Cognitive Health

- ART
- Engaging in exercise
- Good sleep hygiene
- Stress Reduction
- Diet
- Avoiding substances, including tobacco
- Treating Mood Disorders
Exercise!

- Progressive resistive exercise +/- aerobic exercise 3x/week can lead to improvement in cardiovascular health, body composition and weight in older adults with HIV

O’Brien et al. 2017, BMC Infectious Diseases
Specific Recommendations for Exercise in Older Adults

Aerobic exercise
  30 minutes moderate intensity 5 times per week
  20 minutes vigorous intensity 3 times per week

Muscle strengthening
  2 days per week

Flexibility
  2 days per week

Balance
  Tai Chi, balance exercises
Nutrition

- 15% of older outpatients and 50%+ of hospitalized older adults are malnourished
- Serial weight measures, assessment of appetite, nutritional screening tool
Vaccines

- Influenza
- Tetanus/Pertussis
- Zoster
- Pneumococcal Disease
Financial & Social Support
OK, you can have another spin—but only ’cause it’s your birthday.
Sexual Activity in Older Americans

Sexual Health & Aging

HIV infection is underdiagnosed in the elderly include lack of:

- Provider recognition
- Insight and information about HIV prevention and transmission
- HIV-prevention education targeting the elderly
- Disclosure because of the social stigma of HIV infection.
Diagnoses of HIV Infection among Adults and Adolescents by Age at Diagnosis, 2015—United States

N = 39,393

Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Data for the year 2015 are preliminary and based on 6 months reporting delay.
Prevention

- 38% of men and 22% of women discussed sex with their provider

- Age-related vaginal thinning and dryness
The HIV and Aging Consensus Project

Recommended Treatment Strategies for Clinicians Managing Older Patients with HIV

Sponsored by
American Academy of HIV Medicine
AIDS Community Research Initiative of America
Supporting Partner:
American Geriatrics Society

Christine K Abrass MD¹,³ University of Washington School of Medicine, Division of Gerontology and Geriatric Medicine Seattle WA
Jonathan S Appelbaum MD, AAHIVS ¹,³ (Co-Principal Investigator) Director, Internal Medicine Education, Florida State University College of Medicine Tallahassee FL
Cynthia M Boyd MD¹,³ Johns Hopkins University School of Medicine, Division of Geriatric Medicine and Gerontology Department of Medicine, Baltimore MD
R Scott Braithwaite MD² Associate Professor, New York University School of Medicine NY NY
Virginia C Broudy MD² Chief of Medicine, Harborview Medical Center, University of Washington School of Medicine, Seattle WA
Kenneth Covinsky MD MPH², Professor, Department of Medicine, Division of Geriatrics, University of California San Francisco, CA
Kristina Anne Crothers MD²,³ Associate Professor, University of Washington School of Medicine Seattle WA
Robert Harrington MD² Professor, Madison Clinic Director, University of Washington School of Medicine Seattle WA
Marianna Drootin⁴ American Geriatrics Society, Assoc. Duirector ADGAP & Geriatrics for Specialists Initiative, NY NY
References & Resources

HIV-Age.org
www.hiv-age.org

HIV and Aging: HIV –NYS Guidelines
http://www.hivguidelines.org/clinical-guidelines/hiv-and-aging/

Adults 50 and Over
http://www.cdc.gov/hiv/group/age/olderamericans/index.html
Take Home Points

- Providers should become familiar with the unique aspects of aging and HIV.
- Modification of risk factors may improve or reduce the risk for certain co-morbidities.
- Sexual health and risk reduction remain important components of comprehensive care.
Thank You

Contact Information:
Jeffrey Kwong, DNP, MPH, ANP-BC, FAANP
jjk2204@cumc.columbia.edu
212-342-3765