HIV & Aging: healthcare complexities and challenges

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ATHENA: Comorbidities Increase With Age and With HIV Infection

By 2030

- 81% of HIV+ pts will have ≥ 1 comorbidity
- 28% of HIV+ pts will have ≥ 3 NCDs
- 54% of HIV+ pts will be prescribed meds other than ART
  - Increased from 13% in 2010
- 20% will take ≥ 3 meds besides ART
  - Mostly driven by increase in CVD

Co-Morbidities:

Elderly vs Geriatric (n=16,436; n=572)

“Just one pill a day....”
ATHENA and Swiss HIV Cohort Studies: Polypharmacy Among HIV+ Pts on ART

ATHENA Modeling Study[1]
- 3 or more comediations
- 2 comediations
- 1 comedication
- No comedication

Swiss HIV Cohort Study (N = 8444)[2]
Prospective Observational study

- Predicts that 20% of pts will be taking ≥ 3 meds other than ART in 2030

- 115 (5.2%) of 2233 participants 50-64 yrs of age and 64 (14.2%) of 450 participants ≥ 65 yrs of age received ≥ 4 meds other than ART

The Link Between HIV and Cardiovascular Disease and Age

Rate of acute MI higher in HIV-positive pts\textsuperscript{[1]}

HIV infection is a risk factor for ischemic stroke\textsuperscript{[2]}
HIV-infected men have a greater prevalence of coronary artery plaques\textsuperscript{[1,3]}

MACS: Rates of DM Increased in HIV-Positive Pts on ART

- Rate of incident DM was **4.7 cases**/100 PYs in HIV-positive men vs **1.4 cases**/100 PYs in seronegative men

Traditional Factors Are the Biggest Contributor to CVD in HIV Population
Prevention of CVD

**Principles:** The intensity of efforts to prevent CVD depends on the underlying risk of CVD, which can be estimated. The preventive efforts are diverse in nature and require involvement of a relevant specialist, in particular if the risk of CVD is high and always in persons with a history of CVD.

1. **Assess CVD risk in next 10 years**
   - Advise on diet and lifestyle in all persons
   - Consider ART modification if 10-year CVD risk ≥ 20%

2. **Identify key modifiable risk factors**

3. **Smoking (see page 41)**

4. **Blood pressure**
   - Drug treatment if: SBP ≥ 140 or DBP ≥ 90 mmHg (especially if 10-year CVD risk ≥ 20%)
   - **Target**: SBP < 140 mmHg, DBP < 90 mmHg
   - **Treatment (see page 43-45)**

5. **Coagulation**
   - Drug treatment if: established CVD or age ≥ 50 and 10-year CVD risk ≥ 20%
   - **Target**: N/A
   - **Consider treating with acetylsalicylic acid 75-150 mg**

6. **Glucose**
   - Confirm DM and treat with drugs
   - **Target**: HbA1C 6.5-7.0%
   - **Treatment (see page 47)**

7. **Lipids**
   - Drug treatment if: established CVD or type 2 diabetes or 10-year CVD risk ≥ 10%
   - **Target**: Optimal, Standard
   - TC ≤ 4 (155), ≤ 5 (190)
   - LDL ≤ 2 (80), ≤ 3 (115)
   - **Treatment (see page 48)**
Fracture Prevalence Is Increased in Older HIV-Positive Pts

- 8525 HIV-infected pts compared with 2,208,792 uninfected pts in Partners HealthCare System

Women
- Fracture Prevalence/100 Persons
- Age (Yrs)
- P = .002 (overall comparison)

Men
- Fracture Prevalence/100 Persons
- Age (Yrs)
- P < .0001 (overall comparison)

FRAX® Fracture Risk Assessment Tool

Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

Country: Italy
Name/ID:

Questionnaire:
1. Age (between 40 and 90 years) or Date of Birth
   Age:
   Date of Birth:
2. Sex
   Male   Female
3. Weight (kg)
4. Height (cm)
5. Previous Fracture
   No   Yes
6. Parent Fractured Hip
   No   Yes
7. Obesity
   No   Yes
8. Steroid therapy
   No   Yes
9. Steroid therapy over 3 months
   No   Yes
10. Secondary osteoporosis
    No   Yes
11. Alcohol 3 or more units/day
    No   Yes
12. Femoral neck BMD (g/cm²)

Weight Conversion
Pounds kg

Height Conversion
Inches cm

Select BMD

Clear  Calculate

About the risk factors
Strategies to reduce or prevent bone loss with ART initiation

- Avoid Tenofovir Disoproxil Fumarate (TDF)
- Avoid Protease Inhibitors
- Calcium and Vitamin D
- Biphosphonate Therapy
- Resistance training
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).
### Cancer: Screening Methods

<table>
<thead>
<tr>
<th>Problem</th>
<th>Persons</th>
<th>Procedure</th>
<th>Evidence of benefit</th>
<th>Screening interval</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anal cancer</td>
<td>MSM and persons with HPV-associated dysplasia[^6]</td>
<td>Digital rectal exam ± anal cytology</td>
<td>Unknown; advocated by some experts</td>
<td>1-3 years</td>
<td>If anal cytology abnormal, anoscopy</td>
</tr>
<tr>
<td>Breast cancer</td>
<td>Women 50-70 years</td>
<td>Mammography</td>
<td>↓ Breast cancer mortality</td>
<td>1-3 years</td>
<td></td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>HIV-positive women &gt; 21 years or within 1 year after sexual debut</td>
<td>Liquid based cervical cytology test</td>
<td>↓ Cervical cancer mortality</td>
<td>1-3 years</td>
<td>HPV testing may aid screening</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>Persons 50-80 years with a life expectancy &gt; 10 years</td>
<td>Faecal occult blood test annually or sigmoidoscopy every 5 years or colonoscopy every 10 years</td>
<td>↓ Colorectal cancer mortality</td>
<td>1-3 years</td>
<td></td>
</tr>
<tr>
<td>HepatoCellular Carcinoma (HCC)</td>
<td>Persons with cirrhosis, persons with HBV co-infection at high risk of HCC or those who ever had chronic hepatitis[^6]</td>
<td>Ultrasound (and alphafoetoprotein)</td>
<td>Earlier diagnosis allowing for improved ability for surgical eradication</td>
<td>Every 6 months</td>
<td>See pages 58 and 81</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>Men &gt; 50 years with a life expectancy &gt;10 years</td>
<td>PSA[^6]</td>
<td>Use of PSA is controversial</td>
<td>2-4 years</td>
<td>Pros: ↑ early diagnosis and modest ↓ prostate cancer specific mortality. Cons: overtreatment, adverse effects of treatment on quality of life</td>
</tr>
</tbody>
</table>

Source: EACS, 2018
Algorithm for Diagnosis and Management of HIV-Associated Neurocognitive Impairment (NCI) in Persons without Obvious Confounding Conditions

Abbreviations
- CSF: cerebrospinal fluid
- GDR: genotypic drug resistance test
- HAD: HIV-associated dementia
- MND: mild neurocognitive disorder
- MRI: brain magnetic resonance imaging
- NP: neuropsychological
- OIs: opportunistic infections

HIV-positive person or their relatives complaining of, or care giver noting cognitive problems without obvious confounding conditions

1. Initial assessments
   - Problems suspected
   - Evaluation for depression and possible treatment
   - Problems persisting but depression excluded or optimally managed
   - NP examination
   - NCI

2. Neurological examination, brain MRI and CSF examination are required to exclude other pathologies and to further characterise HIV-associated NCI by including assessment of CSF HIV-VL level and, where appropriate, evidence for genotypic drug resistance (GDR) in a paired CSF and plasma sample.

3. CSF escape definition: either CSF HIV-VL detectable and plasma HIV-VL undetectable; or both CSF HIV-VL and plasma HIV-VL detectable, with CSF HIV-VL higher than plasma HIV-VL.

4. Including all situations that do not fulfill the CSF escape definition

5. Triple ART regimen

6. ART drugs with potential beneficial or detrimental effects on the CNS

Definition of potentially CNS-active drug

- ARV drugs with either: 1. demonstrated clear CSF penetration when studied in healthy

Obvious confounding conditions:
- 1. Severe psychiatric conditions
- 2. Abuse of psychotropic drugs
- 3. Alcohol abuse
- 4. Sequelae from previous CNS-OIs or other neurological diseases
- 5. Current CNS-OIs or other neurological diseases

The following questions may be used to guide doctor assessment:
1. Do you experience frequent memory loss (e.g. do you forget the occurrence of special events even the more recent ones, appointments, etc.)?
2. Do you feel that you are slower when reasoning, planning activities, or solving problems?
3. Do you have difficulties paying attention (e.g. to a conversation, book or movie)? Answering “yes” to one or more of these questions may suggest the presence of cognitive disorders, although not necessarily linked to HIV.

See Depression: Screening and Diagnosis

The following cognitive domains: fluency, executive functions, speed of information processing, attention/working memory, verbal and visual learning, verbal and visual memory, motor skills plus assessment of daily functioning.

NCI is defined by impairment in cognitive function on the above neuropsychological test where performance is compared to age- and education-matched appropriate controls and is considered clinically significant.

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OK, you can have another spin—but only 'cause it's your birthday.
Sex and Condom Use Among ROAH SF 2.0 Participants Reporting Past-Year Sex

- **Oral sex**
  - Engaged in: 114 (10 engaged in)
  - Uses condoms: 10 (10 always, 13 sometimes, 91 never)

- **Anal sex**
  - Engaged in: 81 (21 engaged in)
  - Uses condoms: 45 (21 always, 13 sometimes, 45 never)

- **Vaginal sex**
  - Engaged in: 47 (21 engaged in)
  - Uses condoms: 8 (4 always, 4 sometimes, 8 never)

**Among our Participants:**
- 65% Had Sex in the Past Year
- 32% Had Sex in the Past Month

Acria, 2018
Prevention

▪ 38% of men and 22% of women discussed sex with their provider
45% INCREASE in demand for geriatricians, 2013-2025

Geriatrics Workforce Supply & Demand

Full-Time Geriatricians in Clinical Practice

Source: American Geriatrics Society
Take Home Points

• **Co-morbid chronic disease** plays a role in patients with long-standing disease and those who are aging.

• **Modification of risk factors** (smoking cessation, exercise, lipid management) may improve or reduce risk of CVD, CKD, osteopenia.

• **Early diagnosis and treatment** can improve outcomes in this population.

• Clinicians, policy makers, and educational institutions need to work collaborative to address **healthcare workforce issues**.