Aging with HIV in the US / Proposed Research Implementation Study:
clinical & community care & services needs, unmet needs

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Epidemiology – (1) 70% over 45; (2) 150,000 over 60; (3) 70,000 over 65
People Living With Diagnosed HIV by Age, 2015, United States

Medicare Comorbidities HV+ vs HIV-
Comorbidities Prevalence Medicare
HIV+ vs HIV-

Supplemental Figure 2A-B. Standardized prevalence of non-HIV conditions and AIDS-defining cancers per 100 people with 95% confidence intervals and prevalence ratios for PLWH versus HIV-negative individuals for (A) men and (b) women.
HIV+ women vs HIV- women
HIV+ men vs HIV- men
Aging Concerns

- CDC Report in 2015: 150,000 over 60 years old.
- by 2030 **75% > 50 years age**: 85% will have CVD; 30% malignancy; 25% diabetes
- Mean age of HIV+ increase from 45 to 55
- Average **cost of NCD care will double** or more for some for older PLWH due to comorbidities & be 50% of healthcare costs for >50
• only study finding **increasing death rates** due to comorbidities. ATHENA Cohort Glasgow 2018

• Despite recommended ART immediately 50 – 60% NOT virally suppressed.

• **immune activation** persists despite long term viral suppression & CD4 poor response persists despite viral suppression.
Multimorbidity Increases Death Rates

**Multimorbidity and mortality**

- 30% >70 have 3-4+ comorbidities.
- HIV+ Women have higher multi-comorbidity rates at younger ages than men. Death rates higher in women. Menopause?

### Crude mortality rates

<table>
<thead>
<tr>
<th>Multimorbidity</th>
<th>PYFU</th>
<th>Deaths</th>
<th>Rate /1000 PYFU</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>152,088</td>
<td>899</td>
<td>5.9 (5.5-6.3)</td>
</tr>
<tr>
<td>1</td>
<td>38,361</td>
<td>805</td>
<td>21.0 (19.6-22.5)</td>
</tr>
<tr>
<td>2</td>
<td>11,476</td>
<td>404</td>
<td>35.2 (31.9-38.8)</td>
</tr>
<tr>
<td>3</td>
<td>2,025</td>
<td>164</td>
<td>81.0 (69.1-94.4)</td>
</tr>
<tr>
<td>4+</td>
<td>306</td>
<td>53</td>
<td>173 (130-226)</td>
</tr>
</tbody>
</table>
Adjusted Death Rates Increase

Poisson regression

<table>
<thead>
<tr>
<th>Number of comorbidities</th>
<th>Unadjusted</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>3.4 (3.1-3.7)</td>
<td>3.6 (3.2-4.0)</td>
</tr>
<tr>
<td>2</td>
<td>6.3 (5.6-7.1)</td>
<td>6.1 (5.3-7.0)</td>
</tr>
<tr>
<td>3</td>
<td>14.9 (12.6-17.6)</td>
<td>13.9 (11.6-16.7)</td>
</tr>
<tr>
<td>4</td>
<td>32.9 (25.0-43.4)</td>
<td>23.8 (17.7-32.0)</td>
</tr>
</tbody>
</table>
Women

• Women fare worse
Multimorbidity and mortality: women relative to men

<table>
<thead>
<tr>
<th>Number of comorbidities</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.55 (0.43-0.70)</td>
</tr>
<tr>
<td>1</td>
<td>0.94 (0.76-1.18)</td>
</tr>
<tr>
<td>2</td>
<td>1.00 (0.73-1.36)</td>
</tr>
<tr>
<td>3</td>
<td>1.69 (1.09-2.61)</td>
</tr>
<tr>
<td>4</td>
<td>2.21 (1.02-4.77)</td>
</tr>
</tbody>
</table>
Older Patient Concerns & Needs in Clinic Now

Care & Services

• **Mental Disability Health Services & Substance Abuse:** In NYC/Mt Sinai “most older HIV+ have some degree of cognitive impairment” Yet Mental Health Services provision/insurance is spotty.

• **Physical disability**

• **STIGMA, self-stigma** - all these rise to New Levels in older 65+. is MUCH greater in 60+: self-stigma, blame, abandonment by all including healthcare, advocates, govt officials

• **Navigating healthcare system.** unable to get to medical visit- wait months for appointments

• **Healthcare literacy, access, understanding lacking in all despite education level**

• **Cognitive impairment**
  – Frailty
  – Gait/walking Impairments
  – Osteoporosis, falls, fractures Increase – disability & mortality increased
  – homebound
  – mentally & physically challenged, impaired, disabled
  – unable to perform normal daily activities
  – socially isolated, lonely
Older/Aged Patient Concerns

PHYSICAL DISABILITY / Unable to Perform Normal Daily Activities:

- Fatigue, low energy (mitochondria damage?)
- Neuropathy, pain, opioid use
- Fatty liver ignored
- Unable to pay bills (evicted),
- shop for food
- Anxiety ridden, scared
  - feel abandoned
  - depressed
- Deprescribing POLYPHARMACY, ADHERENCE: what is adherence level in older HIV+ >65 with multicomorbidities?
New Care Model Needed

- Despite RWCA services many are NOT getting needs met.
- We need to structure Care in the clinic and community in the USA to meet the changing needs of the HIV patient population in care who are aging
Implementation Study Proposed

- Study would provide added components of care & services and evaluate if there is improvement over time in QOL:

- Evaluate **New Care Model**

- Does IT, telemedicine & other care/service components provided through this study improve outcomes QOL, compliance, adherence

**New Care Model**

- *Longer visit time* with doctor: NY from 20 to 40 minutes;
- *reimbursement* capacity needed for doctor/clinic
- *Geriatric* care in clinic
- **IT/telemedicine** visits to patients; aging IT social networking
- **Home monitoring: viits, telemedicine**
- **Insufficient care coordination** - Better communications between PCP, specialist & PLWH
- **Dedicated aging nurses**, staff with low case load
- **Education for older PLWH regarding their conditions**: prevention, care, treatment
- **Include CAB with PLWH >60** who represent this group “suffering” with needs, unmet needs
- Monitor, collect data & evaluate impact of **substance abuse**
Research Questions / Needs

Real-Time Data Collection & reporting, Answers in 1 year:

Research Question Examples:
1. **Bone.** Fosamax follow-up; how many have fractures; what are Vit D levels-associations with ART; post fracture data; how many are homebound, unable to function; what services are needed; difficulty making doctor visits & understanding health & comorbidities

2. **daily living activities:** how are they impacted by frailty, disability, mental health impairment. Identify & quantify on large cohort scale precise activities HIV+ are unable to perform (e.g. food shopping, preparation, home maintenance, pay bills, social isolation)


4. **Brain function.** Identify & quantify brain & cognitive function over time to assess if accelerated/progressed in sub-populations.

5. Substance Abuse: quantify/monitor, interventions, outcomes, adherence, death/suicide

6. **Social isolation.** Implement & evaluate programs like online group, nurse IT monitoring, home visit evaluations.

7. **Home Maintenance.** Can we provide service that improves home maintenance.
National Implementation Study Cohort

- Cohort, could be fostered within MACS & WIHS, and perhaps joining all together with other cohorts.

- Real Time Collection & Reporting: we cannot wait 5 years for results. We need to design collection & reporting methods for 1 year.

- Update case reports with required new information on depression, social isolation, etc

- CAB representative of this population.
Scientific Research Questions:
What is Causing Comorbidity Onset

- Premature, accentuated, accelerated
- We are getting morbidities sooner, at earlier age, in greater numbers
- **WHY** – what is underlying cause - for each organ: kidney, CVD, brain, bones, cancers
- Immunosenesence
- Studies show immunosenescence onset soon after Infection
- Inflammation
- HIV contribution, lifestyle, behavior
- 2 GREATEST Research QUESTIONS: **brain & cognitive impairment**
  WHY? – **frailty-muscle/sarcopenia, gait/mitochondria** disabilites?