Chronic diseases in HIV

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Which are the common chronic diseases in South Africa?
Chronic illness...

• SA mortality data
• AIDS kills 50% (TB, pneumonia, gastro - #1-3)

• #4: Hypertension
• #6: Diabetes
Why would life expectancy be higher in HIV?
Changing Life-Expectancy

Infectious diseases eradicated

Chronic diseases
The Perfect Life: Vitality & Brief Infirmitiy

![Diagram showing age at death with peaks for vitality and infirmitiy]
Why are South Africans so fat?
BMJ 1990

- “Type 2 DM will be the commonest cause of death in South Africa”
- Lancet 2013: same?
2 Overlapping Epidemics
Over the past decade, it has become widely accepted that inflammation is a driving force behind chronic diseases that will kill nearly all of us (Cancer. Diabetes and obesity. Alzheimer’s disease. Atherosclerosis.). Mediating inflammation in chronic diseases is a new frontier, its success still uncertain...
Traditional risk factors (age, gender, DM, HTN) are major predictors for MI (D:A:D)

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted Model 1</th>
<th>Adjusted Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relative Rate</td>
<td>P Value</td>
</tr>
<tr>
<td><strong>Exposure to PIs (per year)</strong></td>
<td>1.16 (1.10-1.23)</td>
<td>&lt;0.001</td>
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<tr>
<td><strong>Age (per 5 yr)</strong></td>
<td>1.39 (1.31-1.46)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Male sex</strong></td>
<td>1.91 (1.28-2.86)</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>BMI &gt;30 kg/m²</strong></td>
<td>1.70 (1.08-2.69)</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Family history of CHD</strong></td>
<td>1.56 (1.10-2.23)</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Smoking status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>2.83 (2.04-3.93)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Former</td>
<td>1.65 (1.12-2.42)</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Previous cardiovascular event</strong></td>
<td>4.30 (3.06-6.03)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Diabetes mellitus</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total cholesterol (per mmol/liter increase)</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>HDL cholesterol (per mmol/liter increase)</strong></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Fatter may be better...

Clinical Infectious Diseases Advance Access published September 26, 2011

MAJOR ARTICLE HIV/AIDS

An Optimal Body Mass Index Range Associated With Improved Immune Reconstitution Among HIV-Infected Adults Initiating Antiretroviral Therapy

John R. Koeble,† Cathy A. Jenkins,‡ Bryan E. Shepherd,§ Samuel E. Shimette,× and Timothy R. Sterling†∗†
†Department of Medicine, Division of Infectious Diseases and Departments of,‡Biostatistics and \×Medicine, Center for Health Services Research.

Conclusions. 12-month immune reconstitution on ART was highest among patients commonly classified as overweight, suggesting there may be an optimal BMI range for immune recovery on ART.
The 11 Keys to Healthy Aging in HIV

1. Viral suppression after early diagnosis

2. 

3. 

4. 

5. 

6. 

7. 

8. 

9. 

10. 

11.
What can you tell your patients BEFORE starting ART?
Population survival curves

- Increase in average life expectancy but not life span
- Disease vs. aging effects
Therapy for Early HIV Infection

**Clinical Symptoms**

Symptomatic (Stages 3 & 4)

Asymptomatic (Stages 1 & 2)

**CD4 Count (cell/mm³)**

- < 200
- 200
- 350
- 500
Effects of HIV, Host and ART (Currier, WHEAX0102)

HIV Replication

- Immune Activation
- Inflammation
- Endothelial Function

Macrophage recruitment

Insulin Resistance

ART Effects

- Altered Lipid Effects

HIV

Smoking

Hypertension

Diabetes

Genetics
Vision... chronic care

Diagnosis and staging, good primary care that suits patients

CD$_4$

8 to 10 years

40 years

Good ARV access

Minimal hospitalisation

prevention
The Health System Appears to Be Weak Across a Multitude of Dimensions

Failing Healthcare System*

- **Healthcare Worker Issues**
  - Substandard management
  - Problem with recognition / diagnosis
  - Delay in referring patient
  - Initial assessment
  - Managed at inappropriate level
  - Infrequently monitored
  - Incorrect management
  - Prolonged abnormal monitoring without action

- **Administrative Issues**
  - Lack of appropriately trained staff
  - Lack of specific health care facilities
  - Transport between institutions
  - Lack of blood for transfusion
  - Communication problems
  - Transport home to institution
  - Lack of accessibility
  - Barriers to entry

- **Patient Issues**
  - Delay in seeking medical help
  - Unsafe abortion
  - No antenatal care
  - Infrequent antenatal care

*Modifiable Factors contributing to Maternal death used as a barometer of state of healthcare system. Approximately 3000 Maternal Deaths were assessed and 9000 errors were noted.

Source: Saving Mothers, Medical Research Council
Treatment as prevention

• Can reducing the viral load earlier have a public health impact?

• Convenient convergence!
The 10 Keys to Healthy Aging

1. Control blood pressure
2. Regulate blood glucose
3. Lipids
4. Stop smoking
5. Be active
6. Participate in cancer screenings
7. Get regular immunizations
8. Prevent bone loss and muscle weakness
9. Combat depression
10. Maintain social contact