THE DOUBLE BURDEN OF NON-COMMUNICABLE DISEASES IN DEVELOPING NATIONS

UT SOUTHWESTERN
GLOBAL HEALTH GRAND ROUNDS
OCTOBER 2, 2013
BRENT ARMSTRONG, MD
I. INTRODUCTION
MATAMOROS, MEXICO 1991
A Neglected Priority

Global Health Care Crises

Cardiovascular Disease and Global Health:
“A Major Neglected Disease”

Chronic Non-communicable Cardiovascular and Pulmonary Disease in Sub-Saharan Africa: The Epidemic

Facing the Double Disease Burden in Sub-Saharan Africa:
Your Culture

Impact & Accountability

Your Worldview
II. DEFINITIONS
DEFINITION: COMMUNICABLE DISEASES

**Characteristics**
- Infectious, Contagious
- Caused by Microorganisms
- Transmitted
  - Person to Person
  - Animal to Person
- Treatment
  - Antimicrobials
  - Short term

**Examples**
- HIV/AIDS
- Tuberculosis
- Malaria
**DEFINITION:**
**NON-COMMUNICABLE DISEASES**

<table>
<thead>
<tr>
<th><strong>Characteristics</strong></th>
<th><strong>Examples</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not caused by an acute infection</td>
<td>Cardiovascular Disease</td>
</tr>
<tr>
<td>Not Contagious</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Cause long-term harm</td>
<td>Chronic Respiratory Diseases</td>
</tr>
<tr>
<td>Slow Progression</td>
<td>Cancer</td>
</tr>
<tr>
<td>Require Chronic treatment</td>
<td>Trauma</td>
</tr>
<tr>
<td>Acute Exacerbations</td>
<td></td>
</tr>
</tbody>
</table>
DEFINITION: DEVELOPING NATION

- **Third World Nation**
  - Not US/West, Not USSR.

- **Developing Nation**
  - Less Developed
  - Underdeveloped
  - Low Income

- **Low/Middle Income Nation (LIC/LMIC)**
  - Low < $1,035 per year
  - Middle $1,036 to $12,615 per year

- Poor
Definition: Double Burden

Communicable

Non-Communicable
Definition: Double Burden

- Premature Mortality and Disability
- Delay Mortality
- Fulfill your purpose
III. MY UGANDA STORY
Get children in your care tested for HIV

Be a tower of strength, become their key to life

For further information, visit the nearest health centre where you see this sign

Produced by Joint Clinical Research Centre (JCRC)

"These empty streets are all we have because of the sexual network."

Daily, mummy, get off the sexual network so we can live a good life
Would you let this man be with your teenage daughter?

So why are you with his?

Cross Generational Sex stops with you.
Everybody has a role to play. Cross Generational Sex stops with you.

Say no to Sugar Daddies.
don't get HIV
don't pass it
MENGO HOSPITAL HOME CARE AND COUNSELLING CLINIC
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THE MENGO HOSPITAL HOME CARE AND COUNSELLING CLINIC
IS DEDICATED
IN HONOR AND REMEMBRANCE OF
KONNIE LYNETTE LANDIS, M.D.
(1968-2005)
KONNIE WAS CARING, COMPASSIONATE AND HAD A
SINCERE CONCERN FOR THE PEOPLE AROUND THE WORLD
19th OCTOBER, 2007

[Image of George W. Bush]
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MENGO HOSPITAL
2008

Kampala, Uganda
RESUSCITATION 2012

Join the volunteer medical team from First Baptist Church of McKinney, Texas, USA for a series focusing on caring for critical patients in the Recovery Room for all physicians, doctors, nurses and staff at Mengo Hospital.

Monday, June 11, 8:30am: Aiding Critical Patient Flow at Mengo Hospital
Tuesday, June 12, 8:30am: Aiding Patient Monitoring in the Recovery Room
Wednesday, June 13, 8:30am: Aiding the Assessment of Critical Post Operative and Post Partum Patients
Thursday, June 14, 8:30am: Aiding ECG and Cardiac Rhythm Interpretation
EQUIPMENT DONATIONS
HIGH DEPENDENCY UNIT
IV. COMMUNICABLE DISEASES
COMMUNICABLE DISEASES

- 1978: The Alma-Ata Declaration
- "The Big Three"
- Traditionally "Acute" Treatment
- Millennium Development Goals (No NCD's)

HIV/AIDS  Malaria  Tuberculosis
COMMUNICABLE DISEASES

HIV/AIDS
33 Million living with this disease

Malaria
1 million die each year
#1 Cause of Pediatric Death

Tuberculosis
8.8 million living with TB
PEPFAR
PRESIDENTS EMERGENCY PLAN FOR AIDS RELIEF

• 2003: Launched to combat world AIDS
• Training, Treatment, Research
• By 2008: $18.8 Billion given
• In 2008 $48 Billion re-committed to AIDS/Malaria/Tuberculosis
• Priority on Children: Children’s share from 3% to 8% in 2008
• 1 Million children born HIV Free
• Abstinence, Condoms and male circumcision.
PEPFAR SUCCESSES

ARV Treatment

 Millions

2003 2013
Fig. 1. Percentage of patients at least 50 years of age enrolled in HIV care at ICAP-supported health facilities in Rwanda, Tanzania, Mozambique and Kenya. Data from ICAP Columbia (www.columbia-icap.org).
V. NON-COMMUNICABLE DISEASES
NON-COMMUNICABLE DISEASES

Cardiovascular Disease

Cancer

Chronic Respiratory Diseases

Diabetes
MORTALITY RATES BY AGE

- **Age 15-59**
  - AIDS: 40%
  - CVD: 2%

- **Over 60**
  - AIDS: 3%
  - CVD: 13%
AN EPIDEMIOLOGICAL TRANSITION

Declining infant mortality

Declining communicable diseases

Increasing hypertension, diabetes, and tobacco use.
NCD DEATHS: WORLDWIDE

Non-Communicable Disease Deaths

Deaths in Millions

- Cardiovascular Diseases: 18
- Cancer: 6
- Respiratory Disease: 4
- Diabetes: 1
NCD WORLDWIDE MORTALITY

Deaths

- 37% NCD
- 63% Total

Premature Deaths

- 39% Premature
- 61% Total
NCD WORLDWIDE MORTALITY

Deaths

Premature Deaths

LMIC 80%

LMIC 90%

20%

10%
MODIFIABLE NCD RISKS

NCD’s

Diet

Inactivity

Alcohol

Tobacco

Age
METABOLIC NCD RISKS

- Hypertension
- Hyperglycemia
- Obesity
- Hyperlipidemia

NCD’s
**NCD RISKS**

**Modifiable**
- Diet
- Alcohol
- Inactivity
- Tobacco #2

**Metabolic**
- Hypertension #1
- Hyperglycemia #3
- Obesity
- Hyperlipidemia

**NCD’s**

**Age**
Poverty at household level

Globalization
Urbanization
Population ageing

Populations in low- and middle-income countries

Increased exposure to common modifiable risk factors:
- Unhealthy diets
- Physical inactivity
- Tobacco use
- Harmful use of alcohol

Noncommunicable diseases:
- Cardiovascular diseases
- Cancers
- Diabetes
- Chronic respiratory diseases

Limited access to effective and equitable health-care services which respond to the needs of people with noncommunicable diseases

Loss of household income from unhealthy behaviours

Loss of household income from poor physical status and premature death

Loss of household income from high cost of health care
AIDS TREATMENT AFFECTING NCD’S

Protease Inhibitors

Hyperglycemia

Dyslipidemia
DIABETES IN SUB-SAHARAN AFRICA

WORLDWIDE

Adults with Diabetes

<table>
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<tr>
<th>Millions</th>
<th>2010</th>
<th>2030</th>
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<tr>
<td></td>
<td>250</td>
<td>365</td>
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54% Increase

SUB-SAHARAN AFRICA

Adults with Diabetes

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<th>2010</th>
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<tr>
<td></td>
<td>10</td>
<td>29</td>
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98% Increase
HEART DISEASE IN SUB-SAHARAN AFRICA

• 1912 Osler “Angina Pectoris is a rare disease. A case a year is about average.”

• 1997 “As long as Africa remains impoverished, a major rise in Coronary Heart Disease is unlikely.”

• 2013 Global Action Plan for NCD’s
NCD TREATMENT EMERGENCIES

- **Insulin**
  - Hypoglycemia
  - Decreased LOC
  - Death

- **Antihypertensives**
  - Weakness
  - Dizziness
  - Syncope
  - Arrhythmias

- **Diuretics**
  - Hypokalemia
  - Weakness

- **Potassium**
  - Hyperkalemia
  - Arrhythmias

- **Anticoagulants**
  - Epistaxis
  - GI Bleed
  - Intracranial Hemorrhage
## NCD Emergencies

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<th>Myocardial Infarction</th>
<th>Stroke</th>
<th>Acute Pulmonary Edema</th>
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<tr>
<td>“911”</td>
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</tr>
<tr>
<td>ECG Machine</td>
<td>CT Head</td>
<td>ECG Machine</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Thrombolytics</td>
<td>Pulse Oximetry</td>
</tr>
<tr>
<td>Beta-Blocker</td>
<td>Aspirin</td>
<td>Oxygen</td>
</tr>
<tr>
<td>Thrombolytics</td>
<td>Rehabilitation</td>
<td>Lasix/Nitroglycerin</td>
</tr>
<tr>
<td>PCI</td>
<td></td>
<td>Ventilator</td>
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NCD EMERGENCIES

Myocardial Infarction

Stroke

Acute Pulmonary Edema
VI. THE DOUBLE BURDEN
THE DOUBLE BURDEN

CD’s
- HIV/AIDS
- Tuberculosis
- Malaria

NCD’s
- Cardiovascular Disease
- Diabetes
- COPD
FROM GLOBAL TO PERSONAL

Global  National  Hospital  Personal
IMPACT OF GLOBALIZATION

Global Food Industry Agriculture Production Tobacco/Alcohol
STRATEGIES FOR AIDS SUCCESS

- Resources
- Political Will
- Civil Society Engagement
- Human Rights Framework
GLOBAL ACTION

COMMUNICABLE DISEASE
• UN Millennium Development Goals
• PEPFAR

NON-COMMUNICABLE DISEASE
• Global Alliance for Chronic Disease
  • International Diabetes Federation
  • World Heart Federation
  • International Union Against Tuberculosis and Lung Disease
  • International Union Against Cancer
GLOBAL ACTION PLAN
PREVENTION AND CONTROL OF NCD’S 2013-2020

• **25 Indicators of Progress**
• **9 Voluntary Global Targets**
• **25% Reduction in premature mortality from NCD’s by 2025**
• **Stop the rise of Diabetes, Hypertension, and Obesity**
• **Encourage access to medicines and technologies**
AIDS  Versus  Diabetes

- Acquired
- Initial Symptoms Non-Specific
- Diagnosed by a blood test
- Long term treatment
- Monitored by a blood test
- Predictable complications
- Controlled leads to Relative Health
- Treatable, Not Curable

- Develops
- Initial Symptoms Non-Specific
- Diagnosed by a blood test
- Long term treatment
- Monitored by a blood test
- Predictable complications
- Controlled leads to Relative Health
- Treatable, Not Curable
THE DOUBLE BURDEN
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THE DOUBLE BURDEN

AIDS
THE DOUBLE BURDEN

30 hospitals or health centers in Karamoja where AIDS patients can receive ART.
THE DOUBLE BURDEN
THE DOUBLE BURDEN
THE DOUBLE BURDEN

- 70 YEAR OLD MALE NAMED SAM
- HIV NEGATIVE
- HISTORY OF MALARIA
- IDDM SINCE AGE 50
- TAKES INSULIN AND GLUCOPHAGE
- HISTORY OF HYPERTENSION (240/140)
THE DOUBLE BURDEN

- Attends Mengo’s Wednesday Diabetes Clinic
- Lives in Kanuzu
  - 420 km away, 8 hour bus ride
  - 50,000 Ush ($20)
- Glucose about 500 mg/dL
- Insulin and strips only in Kampala
- 400 Ush (20¢) buys 2 months of Insulin.
PARALLEL SERVICES

HIV Services

NCD Services
COORDINATED SERVICES

HIV Services  NCD Services
INTEGRATED SERVICES

Chronic Disease Services
THE FUTURE?

• Remodel the silo

• Leverage HIV Programs

• Promote Accountability

• Locally relevant solutions
THANK YOU!

QUESTIONS?

FBCMCKINNEYTOUGANDA.COM