CASE KENYA STUDY:-
NCD SITUATION

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Kenya Cardiac Society
Aga Khan University, East Africa
ECONOMIC INDICATORS

• Population of about 42 million people most below 20 years
• 78% live in rural areas. (Urban 22%)
• Life expectancy at birth is 59.5 years.
• The GDP is at US$20.6 billion.
• Average per capita income is about US$780 (Atlas method, World Bank 2011)
• Poverty head count of 47%.
NHA Accounts 2009

• Total Health Expenditure (THE) per capita is US$27
• government health expenditure is 5.2% total
gov’t expenditure
• Public facilities - 44.3% of the providers, private
facilities - 29.2% and others - 26.5%.
• Outpatient functions (39.6%), in-patients - 29.8%,
health administration - 14.5%,
• Preventive and public health programmes 11.8% and
pharmaceuticals 2.6%.
• 1.4 hospital beds, 0.14 physicians and 1.18 nurses
per thousand populations.
INTRODUCTION

Kenya is experiencing increase in diabetes, heart disease, cancer, chronic lung, neurological, psychiatric diseases and injury even before communicable diseases like malaria, HIV and tuberculosis have been brought under control resulting into “double burden of diseases”.
OBJECTIVES OF CASE STUDY

• Research on evidence for the current health burden of chronic NCDs in Kenya.
• Availability and quality of data on NCDs on prevalence, burden, costing and economic data
• Assess the current state of action on NCDs in Kenya
• Barriers to commitment and action on chronic diseases
• National health decision making process and systems
• Baseline for decision making toolkit
METHODS OF CASE STUDY

• Systematic literature search with key words defining the various sections and sub-sections of the case study (PUMED)

• WHO publications, professional society journals and websites, world bank and UN publications, government of Kenya gazette notices and publications, magazines etc.

• Quantitative and qualitative data collected, and reviewed in context of the objectives of the case study. Balance of population studies, hospital-based studies, laboratory studies, size of study, variety of study designs and quality of methodology were all considered. About 192 publications related to this case study objective have been reviewed.
<table>
<thead>
<tr>
<th>Chronic disease Publications</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Epidemiology</th>
<th>Cost/Econ. burden</th>
<th>Interventions costs</th>
<th>Region/national</th>
<th>Total</th>
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<tr>
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<td>3</td>
<td>0</td>
<td>0</td>
<td>30</td>
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<td>0</td>
<td>18</td>
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<td>CVD</td>
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<td>3</td>
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<tr>
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<td>6</td>
<td>5</td>
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<tr>
<td>COPD/Asthma</td>
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<td>2</td>
<td>1</td>
<td>0</td>
<td>10</td>
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<tr>
<td>Other chronic</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>5</td>
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<tr>
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<td>1</td>
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<td>13</td>
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<td>6</td>
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<td>9</td>
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<tr>
<td>Chronic infections</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>
Females

- Cancers: 3.6%
- Diabetes: 1.6%
- Respiratory: 2.0%
- Other NCDs: 5.0%
- Injuries: 4.1%
- Nutritional deficiencies: 0.6%
- Perinatal conditions: 7.9%
- Maternal conditions: 2.9%
- Respiratory infections: 7.6%

Other Causes: 73.7%

Infectious & parasitic: 54.6%

All NCDs: 22.3%

Source: Global Burden of Disease: data sources, methods and results.
# CHRONIC DISEASE MORBIDITY (WHO 2009)

<table>
<thead>
<tr>
<th>CHRONIC DISEASE</th>
<th>DALYs/1000 capita/yr</th>
<th>World range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other unintentional injuries</td>
<td>6.8</td>
<td>0.6 – 30</td>
</tr>
<tr>
<td>Road traffic accident</td>
<td>3.6</td>
<td>0.3 - 15</td>
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<tr>
<td>Cardiovascular</td>
<td>1.9</td>
<td>1.4 - 14</td>
</tr>
<tr>
<td>Cancer</td>
<td>1.9</td>
<td>0.3 – 4.1</td>
</tr>
<tr>
<td>Asthma</td>
<td>1.7</td>
<td>0.3 – 2.8</td>
</tr>
<tr>
<td>Neuropsychiatric</td>
<td>1.7</td>
<td>1.4 – 3.0</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>0.6</td>
<td>0.5 – 1.5</td>
</tr>
<tr>
<td>COPD</td>
<td>0.6</td>
<td>0.0 – 4.6</td>
</tr>
</tbody>
</table>
BURDEN OF DIABETES

- No whole country data available for NCDs
- Regional population samples and hospital data
- Average 4% (2% rural & 12% urban)
- IGT (average 12%)
- 68% of known diabetics found to be on RX
- 30% achieve HbA1C target of <7%
- Most are ketosis prone. 50% of deaths in insulin dependent diabetics due to DKA. DKA accounts for 8% of diabetic admissions (30% mortality in 48hrs.)
CVD BURDEN

• Variable prevalence of HTN reported. 21 – 50% (rural, community, urban, age group).
• Evidence of rural-urban migration, salt and activity on blood pressure
• CVD cause of death from autopsy studies - 13%
  Hospital admissions 25%, (rheumatic heart disease leading cause of HF admissions – 43%)
• Population prevalence of HF in ≥50yrs is 2% and asymptomatic LVD 3.5%.
• RHD prevalence 2/1000 by clinical method & 27/1000 by echocardiography.
# CANCER BURDEN IN KENYA - 1

<table>
<thead>
<tr>
<th>WOMEN</th>
<th>MEN</th>
<th>COMBINED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>Oesophagus</td>
<td>Breast</td>
</tr>
<tr>
<td>Cervix</td>
<td>Prostate</td>
<td>Cervix Uteri</td>
</tr>
<tr>
<td>Oesophagus</td>
<td>Stomach</td>
<td>Prostate</td>
</tr>
<tr>
<td>Ovary</td>
<td>Liver</td>
<td>Oesophagus</td>
</tr>
<tr>
<td>Stomach</td>
<td>Kaposis</td>
<td>Stomach</td>
</tr>
<tr>
<td>Liver</td>
<td>Leukemia</td>
<td>Liver</td>
</tr>
<tr>
<td>Colorectal</td>
<td>Colorectal</td>
<td>Ovary</td>
</tr>
<tr>
<td>Non-Hodgkins lympoma</td>
<td>Non-Hodgkins lymphoma</td>
<td>Kaposis</td>
</tr>
<tr>
<td>Corpus Uteri</td>
<td>Lung</td>
<td>Colorectal</td>
</tr>
<tr>
<td>Kaposi Sarcoma</td>
<td>Pancreas</td>
<td>Non-Hodgkins lymphoma</td>
</tr>
</tbody>
</table>
CANCER BURDEN -2

- Risk factors for cancer in Kenya include:
  - Genetic predisposition,
  - Behavioural risk factors (e.g. smoking, excessive alcohol consumption, physical inactivity and obesity),
  - Environmental carcinogens (e.g. aflatoxin)
  - Infections. (Human papilloma virus (HPV), Hepatitis B virus, Hepatitis C virus and Helicobacter pylori, ?HIV). These infections are largely preventable through vaccinations and measures to avoid transmission, or treatable.
COMMON RISK FACTORS
Tobacco use on the rise in school children

In 2001, More boys than girls used any tobacco product!

In 2007, equal rate of use of any tobacco product for boys and girls
SMOKING

• 32.2% of school children and 53% of college students are ever-smokers.

• Parents’ and teachers’ smoking habits, peer pressure, advertising influence children to smoking.

• Overall smoking rates amongst adults is 26% with males still predominant but females have higher rate of new smokers
Alcohol

• Alcohol consumption has diverse and complex interactions with chronic non-communicable diseases (CVD, cancer, mental illness, injuries etc)

• Survey of patients attending primary care facilities for general problems - 18% had a hazardous level of alcohol intake and 23% had experienced at least one alcohol-related problem in the previous year. (WHO 2003)
Alcohol, Consumer, Kenya, 2004, by Age Group

Source: World Health Organization, World Health Survey, Kenya,

WHO Global Infobase (IREF: 101713c2)
PHYSICAL ACTIVITY

• About 72% of Kenyan children and youth were classified as physically active (Global WHO guidelines for physical activity).
• There are disparities across age, sex, and socioeconomic status.
• Studies show that children from rural Kenya are more physically active than their urban counterparts.
• 70% of urban Kenyan and 34% of rural Kenyan parents reported being more active during childhood than their children.
• Over 50% of Kenyan athletes ran to school each day and covered over 5 km.
Physical Activity Median / Mean, Kenya, 2004, by Age Group

Source: World Health Organization, World Health Survey, Kenya,
Rural vs Urban school children
Kenya's 2011 Report Card on the Physical Activity and Body Weight of Children and Youth
Diet & Obesity

• The 2008–2009 y (KDHS)- 12.3% of women aged 15–49 years are underweight & 25.1% of women are overweight or obese – “nutrition transition”

• Urban women have significantly higher mean BMI (25.6 vs. 24.2 kg/m2), waist (80.8 vs. 78.9 cm) and hip measurements (102.1 vs. 98.6 cm) compared to rural women. (KCBS- 2009).

• Dietary differences are also significant between urban and rural population although this is changing very fast.
Fruit and Vegetable, Kenya, 2004, by Age Group

Source: World Health Organization, World Health Survey, Kenya,
The cost of NCD can be divided into two types: Direct and Indirect.

Direct costs are those costs related to the treatment and management of the diseases (e.g. running of clinics and hospitals, salaries for healthcare personnel, medications, rehabilitation where available, and medical supplies and testing, the patient’s time used to seek care.)
• Indirect costs include:

• loss of income resulting from lost productivity or employment due to major disabilities, such as stroke or heart failure.

• the loss of future earnings from assets that are sold off for chronic and/or catastrophic care, loss of income from other family members who must provide care, and

• the future loss of income from children who drop out of school to provide care for adult members with CVD.

• productive work years lost.
COST EFFECTIVENESS OF INTERVENTIONS

- The interventions are divided into population-based and person-based strategies.
- Population-based interventions can be further divided into two categories:
  - those that do not require interaction between individuals and healthcare providers.
  - screening-based interventions, which require some interaction with individuals and the healthcare system
COST-EFFECTIVENESS OF CONTROL PROGRAMMES – 1

- Very little data available
- WHO-CHOICE - combination of legislation, voluntary industry participation, & mass media to reduce salt consumption - cost-effectiveness ratio of about $48–60 per disability-adjusted life year (DALY) averted.
- The INTERSALT study - intervention could be cost-saving (reducing morbidity & mortality and reducing healthcare costs), or it could cost up to $600 per DALY averted, assuming a small reduction in blood pressure with a relatively large cost to achieve the intervention
- Mass penicillin RX for sore throat in RHD at risk population
- Screening & secondary prevention with benzathine penicillin injections
COST-EFFECTIVENESS OF CONTROL PROGRAMMES – 2

• There have been few published guidelines on the management of HTN in sub-Saharan Africa.
• First Sub-Saharan regional guidelines were published in 2003 (share many similarities WHO-ISH guidelines).
• The implementation not been effected in most countries including Kenya (cost/feasibility)
• Need for cost effectiveness of non-lab based risk modeling for CV risk
• Need to study cost effectiveness of Cancer screening programmes (cervix, breast, prostate)
BARRIERS TO ACTION & GAPS

“Living in urban areas means we are much less active than before...”

“A woman needs big arms to cook a big pot of food...”

“Xhosa women are not allowed to wear sports outfits and exercise in public...”

“There are no facilities, time or money enough to exercise...”

“If a fat person loses weight, they are considered “thin, even if still overweight by Western standards...”

“Being thin is associated with being unhappy or ill”

“I was meant to be big...”

FRAMEWORK OF SOCIO-ECONOMIC DETERMINANTS OF HEALTH

- Broad social, economic, cultural, health, and environmental conditions and policies
- Living and working conditions
- Social, family, and community networks
- Individual behavior
  - Innate individual traits; age, sex, race, and biological factors
  - The biology of disease

Living and working conditions may include:
- Psychosocial factors
- Employment status and occupational factors
- Socioeconomic status (income, education, occupation)
- The natural and built environments
- Public health services
- Health care services

Over the life span
MAIN DATA GAPS

• National data on prevalence and incidence of NCDs and risk factors
• Data on economic burden of disease and costs of NCDs at community/household level
• Evidence for cost-effectiveness of intervention programmes
• Health information system and disease/risk factors surveillance surveillance
• Feasible/cost-effective risk model and screening methods for CVD and other NCDs
• Unpublished data (NGO projects, University thesis)
• Disconnect between evidence needs/priorities and research activities
Suggestions on way forward

• Strengthen existing regular data systems to capture NCDs and/or risk factors (e.g. KDHES, NHA, )
• Implement WHO STEP survey
• Integrate NCD screening and intervention programmes into existing healthcare systems (HIV programmes, MCH/FP)
• Introduce costing & economic analysis into screening and intervention programmes
• Integrate NCD surveillance into the implementation of national health information system, and e-health programme.
Asante sana!