Ensuring healthy lives and promoting wellbeing for all at all ages

Presentation by Shawn Bolouki at the Third Eastern African Multidisciplinary Applied Research Conference (EAMARC 3)

Conference theme: Sustainable Development Goals: Role of research innovation and capacity building

Thursday 17th November 2016
United States International University Africa

Outline of presentation

- SDG goals
- Healthcare delivery elements
  - Healthcare financing
  - Human capital
  - Infrastructure
- Population statistics
- Disease statistics
- Challenges
- Solutions
Key elements of an effectively healthcare delivery system:

- Financing
- Human capital
- Infrastructure
UN Sustainable Development Goals consist of 17 goals to transform our world

**Goal 3: Ensure healthy lives and promote well-being for all ages**

- Goal essential to sustainable development.
- Significant strides made in increasing life expectancy and reducing child and maternal mortality. Major progress made on increasing access to clean water and sanitation.

**Facts & Figures – Child Health**

- 17,000 fewer deaths each day than in 1990
- More than six million children still die before their fifth birthday each year since 2000
- Increasing proportion of child deaths are in sub-Saharan Africa and Southern Asia - four out of every five children under age five deaths occur in these regions.
- Poverty plays a role
Facts & Figures – Maternal Health

- Maternal mortality fallen by **almost 50 per cent** since 1990
- Maternal mortality ratio (proportion of mothers who survive childbirth to those who don’t) in developing regions **still 14 times higher** than in developed regions
- In developing regions, antenatal care increased from 65 per cent in 1990 to 83 per cent in 2012
- The need for family planning is slowly being met for more women, but demand is increasing at a rapid pace
- However, more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues
**Targets**

- By 2030, reduce the global maternal mortality ratio to less than **70 per 100,000 live births**.
- By 2030, end preventable deaths of newborns and children under age 5 with all countries aiming to reduce neonatal mortality to at least as low as **12 per 1000 live births** and under-5 mortality to at least as low as **25 per 1000 live births**.

Result in population growth
Healthcare Financing
Healthcare in perspective

- Prior to the 19th century, healthcare financing was out-of-pocket by individuals.
- Patients paid healthcare providers such as doctors, midwives and healers directly.
- Financial innovations - creation of interest groups and pooling to reduce risk.
- Two methods of healthcare financing: 1) public sources, 2) private sources.
- Healthcare expenditure per capita - sum of public and private health expenditures as a ratio of the total population for provision of health services.

Health services are:
- Promotive
- Preventive
- Curative
- Rehabilitative
Healthcare financing framework

Revenue Collection (e.g., general taxation, out-of-pocket, donors, firms)
- Level & reliability of funding & effects on other financing mechanisms

Pooling (e.g., no-pooling, social health insurance, private pre-paid schemes, ministry of health)
- Effectiveness: technical, allocative, scale & administrative efficiency
- Equity (social justice) in distribution of costs & benefits
- Acceptability by customers, politicians, medical & nursing associations, health maintenance organisations, private providers, trade unions & external partners
- Impact on health status (Health related quality & quantity of life)

Revenue pooling

Cross-subsidy from low-risk to high-risk

Cross-subsidy from rich to poor

Cross subsidy from productive to non-productive part of the life cycle
## Development of healthcare financing policies in Kenya

<table>
<thead>
<tr>
<th>Years</th>
<th>Policy</th>
<th>Equity impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonial period</td>
<td>User fees in all public facilities</td>
<td>Discriminative policy against Kenyans, imposed by colonial government</td>
</tr>
<tr>
<td>1953-1963</td>
<td>User fees initially introduced continued to exist for two years after independence</td>
<td>Negative impacts of affordability and utilisation of health care services</td>
</tr>
<tr>
<td>1965</td>
<td>User fees removed at all public health facilities. Health services provided for free and funded predominantly through tax revenue</td>
<td>Potential for equity provided there are mechanism to ensure that the poor benefit from tax funded system</td>
</tr>
<tr>
<td>1989</td>
<td>User fees introduced in all levels of care.</td>
<td>Negative impact on demand for health care especially among the poorest population; decreased utilisation including essential services like immunisation</td>
</tr>
<tr>
<td>1990</td>
<td>User fees suspended in all public health facilities. Waivers and exemption put in place to protect the poor and vulnerable. Failure linked to poor policy design and implementation.</td>
<td>Increase in utilisation patterns, confirming previous reports that user fees are a barrier to access.</td>
</tr>
<tr>
<td>1991-2003</td>
<td>User fees were reintroduced in 1991, through a phased implementation approach starting from hospital level. Children under five, special conditions/services like immunisation and tuberculosis were exempted from payment. User fees continued to exist in Kenya at all levels of care.</td>
<td>User fees major barrier to access, high out-of-pocket payment, catastrophic impacts, and negative implications for equity.</td>
</tr>
<tr>
<td>2004</td>
<td>User fees abolished at dispensaries and health centres (the lowest level of care), and instead a registration fees of Kenya shillings 10 and 20 respectively was introduced. Children under five, the poor, special conditions/services like malaria and tuberculosis were exempted from payment.</td>
<td>Utilisation increased by 70% the large increase was not sustained, although in general utilisations was 30% higher than before user fee removal. Adherence to the policy has been low, due cash shortages.</td>
</tr>
<tr>
<td>2007</td>
<td>All fees for deliveries at public health facilities were abolished</td>
<td>No data on extent to which policy was implemented and no evaluation has taken place.</td>
</tr>
<tr>
<td>2010</td>
<td>A health sector services fund (HSSF) that compensates facilities for lost revenue associated with user fee removal introduced. Dispensaries and health centre receive funds directly into their bank accounts from the treasury.</td>
<td>Possible positive impacts on adherence to fee removal policy and equity.</td>
</tr>
</tbody>
</table>

NHIF established in 1966
Per capita government expenditure on healthcare between 2000 and 2009

Source: Kirigia and Orem (2013)
## East Africa statistics - 2012

<table>
<thead>
<tr>
<th>Africa</th>
<th>Expenditure percentage of GDP</th>
<th>Expenditure per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>4.4%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>7.2%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Uganda</td>
<td>9.2%</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

### Kenya statistics – 2015

- GDP - $63.4 billion
- Contribution to health – 5.7% of GDP ($3.6 billion)
- Health expenditure per capita - $77.7 (73% increase from 2012)
Out-of-pocket expenditure as a percentage of private expenditure on health

Source: Kirigia and Orem (2013)
Human capital
### Kenya statistics

#### No. of registered medical personnel

<table>
<thead>
<tr>
<th>Year</th>
<th>Doctors</th>
<th>Dentists</th>
<th>Pharmacists</th>
<th>Registered Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>7,129</td>
<td>898</td>
<td>2,337</td>
<td>29,678</td>
</tr>
<tr>
<td>2011</td>
<td>7,549</td>
<td>930</td>
<td>2,432</td>
<td>31,719</td>
</tr>
<tr>
<td>2012</td>
<td>8,092</td>
<td>985</td>
<td>2,076</td>
<td>35,148</td>
</tr>
<tr>
<td>2013</td>
<td>8,682</td>
<td>1,045</td>
<td>2,202</td>
<td>37,907</td>
</tr>
</tbody>
</table>

**Growth Trend**
- Doctors: 6.8%
- Dentists: 5.2%
- Pharmacists: -1.5%
- Registered Nurses: 8.5%
# Human capital

## No. of registered medical personnel per 100,000 population, 2010-2013

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Growth Trend</th>
<th>OECD Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>5.3%</td>
<td>320</td>
</tr>
<tr>
<td>Dentists</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>16.7%</td>
<td>65</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>-13.9%</td>
<td>80</td>
</tr>
<tr>
<td>BSc Nursing</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>27.8%</td>
<td>47</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>75</td>
<td>83</td>
<td>86</td>
<td>91</td>
<td>6.7%</td>
<td>880</td>
</tr>
<tr>
<td>Enrolled Nurses</td>
<td>86</td>
<td>87</td>
<td>65</td>
<td>64</td>
<td>-8.6%</td>
<td>-</td>
</tr>
</tbody>
</table>

OECD: Organization for Economic Co-operation and Development
Infrastructure
Kenya statistics

Three Service Unit Classifications

- Community level, Primary Care Facilities, and Hospitals (Primary, Secondary, Tertiary)
## Target Population & Number of Facilities

<table>
<thead>
<tr>
<th>Catchment populations</th>
<th>Hospitals</th>
<th>Primary Care Units</th>
<th>Community Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tertiary (level VI) referral hospital</td>
<td>Secondary (level V) referral hospital</td>
<td>Primary (level IV) hospital</td>
</tr>
<tr>
<td></td>
<td>5,000,000</td>
<td>1,000,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Numbers of Facilities</td>
<td>9</td>
<td>44</td>
<td>440</td>
</tr>
</tbody>
</table>

*Source: The Kenya Essential Package for Health, 2013*

**Current bed to patient ratio** - 1.4:1000  
**WHO recommendation** - 5:1000  
5.1 – 1.4 = 3.7

**Gap**  
151200 additional beds needed equivalent to 604 hospitals at an average of 250 bed/per hospital
Disease statistics
Disease statistics

Kenya: Projections of disease burden 2011 - 2030
Disease statistics

Kenya

Total population: 43,178,000
Income Group: Low

Age-standardized death rates*

- Males
- Females

Percentage of population living in urban areas: 24.0%
Population proportion between ages 30 and 70 years: 27.3%

Proportional mortality (% of total deaths, all ages, both sexes)*

- Injuries: 10%
- Cardiovascular diseases: 8%
- Cancers: 7%
- Chronic respiratory diseases: 1%
- Diabetes: 1%
- Other NCDs: 9%

Total deaths: 360,000
NCDs are estimated to account for 27% of total deaths.

Premature mortality due to NCDs*

The probability of dying between ages 30 and 70 years from the 4 main NCDs is 18%.
The INTERHEART Study found that: Smoking, diabetes, cholesterol, physical activity, alcohol & psychosocial factors determine 90% of CVD-risk
### Disease statistics

<table>
<thead>
<tr>
<th>Cause</th>
<th>Deaths (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS</td>
<td>1,088</td>
</tr>
<tr>
<td>Respiratory infections</td>
<td>1,039</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>603</td>
</tr>
<tr>
<td>Malaria</td>
<td>554</td>
</tr>
<tr>
<td>Preterm birth complications</td>
<td>437</td>
</tr>
<tr>
<td>Birth asphyxia and trauma</td>
<td>372</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>336</td>
</tr>
<tr>
<td>Stroke</td>
<td>312</td>
</tr>
<tr>
<td>Injuries and violence</td>
<td>284</td>
</tr>
<tr>
<td>Meningitis</td>
<td>246</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>218</td>
</tr>
<tr>
<td>Drowning</td>
<td>201</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>183</td>
</tr>
<tr>
<td>Neonatal sepsis and infections</td>
<td>174</td>
</tr>
<tr>
<td>Maternal conditions</td>
<td>171</td>
</tr>
<tr>
<td>Congenital anomalies</td>
<td>149</td>
</tr>
<tr>
<td>Cirrhosis of the liver</td>
<td>136</td>
</tr>
<tr>
<td>Interpersonal violence</td>
<td>127</td>
</tr>
<tr>
<td>Fire, heat, and hot substances</td>
<td>122</td>
</tr>
<tr>
<td>Endocrine, blood, immune disorders</td>
<td>115</td>
</tr>
<tr>
<td>Ebola</td>
<td>8</td>
</tr>
</tbody>
</table>

*Source: WHO 2012 (Ebola 2014)*
Disease statistics

Obesity Of Other Nations (%)

Not to scale

USA 33
UK 26.9
Australia 26.8
Russia 26.5
Germany 25.1
Spain 26.6
Mexico 32.1
Argentina 29.7
Saudi Arabia 33
South Africa 31.3
Proportion of deaths due to diabetes in people under 60 years of age, 2013
Challenges
Challenges

Access

- Unaffordable services
- Culture limitations and illiteracy levels
- Limited number of facilities
- Limited technology
- Limited capacity (shortage of doctors, nurses and allied health professionals)
- Infrastructure limitations hindering access to population in interior locations
Solutions
Research and development

Patient-centric care

- Patient as key in product service development
- Involve patients more effectively in their care create patient’s education for health literacy and empowerment
- Multi-stakeholder engagement to answer the needs of patients
- Incremental innovation to improve existing products
Innovation

- Delivering on the promise of innovation in healthcare requires **public support**, **patient engagement** and flexibility.
- Ensuring that innovation is directed towards objectives that are valued by society by making patients part of the conversation.
- Patients' needs at the very core of healthcare innovation.

\[ \text{Value} = \frac{\text{Quality}}{\text{Cost}} \]
Partnerships

Health system institutions partnerships with:

- Government
- County jurisdictions
- Non-governmental organizations
- Multi-national corporations (M&As)
Modernization and transformation

- It is an evolutionary process that can involve changes in culture, structure, governance, workforce, and training.
- It is a sweeping, fundamental, and challenging change for any healthcare system.
- For any health system to continue to provide an acceptable level of healthcare at an affordable cost it must modernize and transform.
Private sector involvement

Role of AKDN in promoting wellbeing for all at all ages and its approaches

- AKDN’s community-based network of facilities and health workers. Growing number of nurse-midwives serves some two-and-a-half million people in 15 countries.
- 180 health centres both in urban and rural areas, embracing some of the world’s poorest and most remote populations.
- Approaches are long term: in order to create sustainable systems.
- Approaches are community-oriented with local “ownership.” Approaches support a broad spectrum of health care – improved primary, secondary and tertiary care is also absolutely essential.
- New financial models – underscore potential of local “savings groups” and micro-insurance programs.
- Approaches focus on those hardest to reach. Telecommunications can make enormous impact: e-medicine facilitates consultations among doctors, patients, specialists at various centers.
- Creative collaboration. Growing importance of public-private partnerships. Work across broad spectrum of social development. Problems have multiple causes; challenges are multi-sectoral, therefore solutions require effective coordination of multiple inputs.
## Role of AKDN, AKUHN in capacity building

### AKU Residency & Specialized Nurses’ Program

<table>
<thead>
<tr>
<th>Kenya Alumni</th>
<th>No. trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Medicine</td>
<td>121</td>
</tr>
<tr>
<td>Fellowship</td>
<td>15</td>
</tr>
<tr>
<td>EN to RN Diploma Conversion</td>
<td>483</td>
</tr>
<tr>
<td>Post RN BScN</td>
<td>410</td>
</tr>
<tr>
<td>Specialist Diploma AE&amp;M</td>
<td>36</td>
</tr>
<tr>
<td>Specialist Diploma CCN</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,075</strong></td>
</tr>
</tbody>
</table>

**Abbreviations:**
- EN – Enrolled Nurse
- RN – Registered Nurse
- CCN – Critical Care Nurse
## Role of AKDN and AKUHN in improving access

### AKUHN Free medical camps

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>Location</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Camps</td>
<td>20</td>
<td>25</td>
<td>Kenya - 22</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Uganda – 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tanzania - 1</td>
<td></td>
</tr>
<tr>
<td>Cancer Camps</td>
<td>50</td>
<td>85</td>
<td>Kenya - 76</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Uganda - 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tanzania - 4</td>
<td></td>
</tr>
<tr>
<td>Lifestyle &amp; Wellness Camps</td>
<td>108</td>
<td>158</td>
<td>Kenya – 143</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Uganda - 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tanzania - 6</td>
<td></td>
</tr>
<tr>
<td>Total No. of Patients</td>
<td>60,013</td>
<td>76,059</td>
<td>East Africa</td>
<td>27%</td>
</tr>
<tr>
<td>Patient Welfare (No. of patients)</td>
<td>2,495</td>
<td>3,702</td>
<td>Kenya</td>
<td>48%</td>
</tr>
<tr>
<td>Welfare Cost (Kshs)</td>
<td>120M</td>
<td>132M</td>
<td>Kenya – 1,983</td>
<td>95%</td>
</tr>
<tr>
<td>CME (No. of doctors)</td>
<td>1,134</td>
<td>2,212</td>
<td>Uganda – 61</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tanzania - 168</td>
<td></td>
</tr>
</tbody>
</table>
Patient welfare fund

- Welfare fund provides access to those who cannot afford high quality specialised care at the hospital.

- Funds are raised through generous donations from well-wishers, organizations and hospital revenues.

- Over 40% of Heart and Cancer patients have been treated through this programme.
AKUHN Mobile Clinic for Community screening, treatment and education
Partnership with First Lady’s Office
AKUHN Partnerships with Government Hospitals:

**KNH**
- Has relieved KNH of the backlog of patients awaiting Radiotherapy.
- AKUHN has offered treatment to children and youth from needy families.
- So far, 650 treatments have been administered, with the last patients set to complete treatment by end 2016/early 2017.
- 450 pediatric, 200 youths.
- Ensures speedy treatment, and also increases access to other patients at KNH by providing discount.

**Uganda Cancer Institute Mulago Hospital Kampala**
- Free radiation therapy treatments for 400 needy cancer patients
Providing access and quality care is a collective responsibility, therefore
Public-Private Partnerships

Thank you