Challenges of Funding Cardiac Surgery & Factors Militating against Cardiac Surgery in Africa

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Sources of Militating Factors

- Continental
- Sub-regional
- National
- Hospital based
- Individual(s) in Heart Centre

Continental (Africa)

- 2nd largest and 2nd most populous continent.
- Covers 6% of the Earth's total surface (area: 30.2 million km²)
- Covers 20.4 percent of the total land area.
- Population: 1.0 billion people (5% of the world's human population)
- According to the United Nations' Human Development report the bottom 25 poor nations nations (151st to 175th) are all in Africa.

Continental (Africa)

- Contribution to World Trade: 1%
- Expenditure on 100,000 Foreign Experts: US$4 billion.
- Number of African Experts leaving the continent: 250,000
- Development projects: 100% financing from abroad
- 80% of inputs into agriculture, education and health are foreign sources.
- Little or no manufacturing power

Africa’s mineral wealth

- 90% of the world's cobalt
- 90% of world’s platinum
- 50% of its gold
- 98% of its chromium
- 70% of its tantalite,
- 64% of its manganese
- 30% of uranium
- The DRC has 70% of the world's coltan & 30% of the world's diamond reserves.
- Guinea: world's largest exporter of bauxite.

Basic Continental Challenges

- Struggle for survival.
- Food, shelter, clothing, health & security.
- Present economic realities cannot sustain modern cardiovascular medicine.
- Production of drugs & non- drug consumables.
- Importation of high-tech inputs.
- Attitudinal changes.

Part of the Problem

- Poor Leadership
  - Tax evasion by Multinationals amount to US$850 billion
- Corruption
- Lack of Indigenous Technology

What African Leaders fail to Realize

- The real difference between the developed world and the underdeveloped countries of Africa lies in their technological capability.
- This capability is defined as the extent to which countries, access, utilize, and create science and technology for the solution of socio – economic problems.

What African Leaders Fail to Realize

- The need to change the structure of the economy.
- Minimize the export of natural resources such cocoa, gold, timber, bauxite, diamond, manganese and oil the raw form.
- Value addition.
- Adam and Eve Economy does not help.
- Noah did better than Africa is doing now; he manufactured a ship.

The leading Killers

- Malaria
- HIV/AIDS
- Tuberculosis
- Cancers
  - Most cancer deaths are occurring in developing countries
  - 17.8% of cases of cancer are attributable to viruses, bacteria, and parasites (WHO)

Malaria

- 300–500 million Africans infected
- 1.5 to 2.7 million deaths (90% children < 5yrs)
- A child dies every 45 seconds
- Annual direct & indirect cost US$1.8 billion in 1995

Tuberculosis

- 2.4 million new cases annually
- 540,000 deaths annually
- 30% in Sub-Saharan Africa latently infected
- Leading cause of death in HIV/AIDS patients

HIV/AIDS

- 22.4 million people infected
- 1.4 million deaths in 2008
- 1.9 million new infections in 2008
- 14 million children have lost parents
- Only 30% of 7 million urgently needing treatment receive it

Future Challenges in Cardiac Surgery (summary)

- Prevention of heart disease
  - Diet, smoking, obesity
  - Endocrine disruptors
- Diagnosis of heart disease
- Surgical management of heart disease
  - Modern methods
  - Skills
  - Equipment
- Rehabilitation after surgery

Questions that need Answers

- Can we catch up?
- Can we afford to continue to watch unconcerned?
- Are we going to be irrelevant with outmoded knowledge and skills?
- Is there an alternate way Africa can develop its version of cardiothoracic surgery?

Institutional Resources

- Inpatient diagnostic facilities:
  - Hematological, biochemical and microbiological labs.
  - Respiratory physiology laboratory.
  - Endoscopic examination by bronchoscopy & oesophagoscopy.
  - Radiology: Plain x-ray, contrast studies, ultrasound, CT-scan (MRI).
  - Echocardiography (trans-thoracic & trans-oesophageal).
  - Cardiac Catheterization & coronary angiography.

Reasons for poor performance

- Under funding.
- Competing needs of society (nutrition, sanitation, education, housing, clean water, etc,).
- Political instability.
- Introduction of SAP with elimination of support.
- In-fighting among health personnel.
- Lack of appropriate structures for training and practice of cardiothoracic surgery.
- Corruption in the society as a whole.
- Lack of commitment.

Characteristics of Heart Centres

- Employ the newest technologies and innovations to provide care.
- Should be in constant state of renovation in order to remain competitive and provide the best technology and equipment.

Funding Health Care

- Private Funding: "out-of-pocket" payment--patients pay health care providers directly for specific services received.
- Private health insurance is financed by premiums
- Banks (loans, letters of Credit, etc.)
- Government funding, direct & indirect taxes
  - Military personnel, Veterans
  - The aged, Children
  - Special programmes (HIV/AIDS, TB)

Banking Ranking in Africa (total assets)

- 1. Standard Bank Group S.A 184.518 (US$bil)
- 2. Absa Group S.A 97.241 US$ billion
- 3. FirstRand S.A 94.144 (US$ billion)
- 4. Nedbank Group S.A 80.110 (US$ billion)
- 5. National Bank of Egypt 50.665 (US$ billion)
- 6. Attijariwafa Bank Morocco 40.026 (billion)
- 7. Banque Exterieur d'Algerie (BEA) Algeria 34.373 US$
- 16. First Bank of Nigeria 17.393
- 17. Ecobank Group (Transnational Inc.) Togo 17.162
- 20. Zenith Bank Nigeria 14.147

Banking Ranking in Africa (total assets)

- 23. United Bank for Africa Nigeria 11.901
- 93. Citi Bank Gabon 2.300 US$ b
- 121. Ghana Commercial Bank 1.502 US$ b
- 129. Soc. Gen. de Banques en CI: 1,350 US$b
- 132. CBAO Groupe Attijariwafa bank, Senegal: 1.235 US$ billion
- 133. Barclays Bank of Ghana 1.163 US$ b

- **11 Nigerian Banks Make Top 1000 Global Bank Ranking**

Institutional Resources (Human Capital)

- Surgeons:
  - One surgeon per 150 major procedures per year.
- Operating theatres:
  - One per 300–400 major procedures per year.
- Dedicated ICU:
  - 2–4 beds per 300 major procedures per year.
- Ward Care: Dedicated ward
- OPD: sufficient facilities with access to radiology.

International Status

- Personnel
  - Well trained
  - Motivated
  - Right attitudes
- Diagnostics
- Therapeutic
  - Surgery
- Rehabilitation
- Prevention
- Promotive

WHO Recommendation

- 400 Operations per million of population/year
- Projections for Ghana: 400 x 24 = 9600/year
  - (*Assumption: population estimate of 24 million*)

Requirements to meet average of 9600 surgeries/year

- 16 Cardiothoracic Centres
- 32 operating theatres
- 96 ICU beds
  - 6 beds per Centre
- Key Staff
  - 57 cardiothoracic surgeons
  - 30 anaesthetists
  - 20 cardiologists
  - 200 ICU nurses, 128 theatre nurses

Responsibility of Institutions

- Productivity determined by maximum utilization of all departments & Units
- Optimal use of facilities
  - OPD consultations
  - Diagnostic services
  - Operating rooms
  - ICU & Intermediate care
- Provision of 24/7 service
- Friendly & disciplined service personnel

Responsibility of Institutions

- How to gain trust & confidence of the target population in facility
- What % of population who can afford treatment abroad will opt for local services?

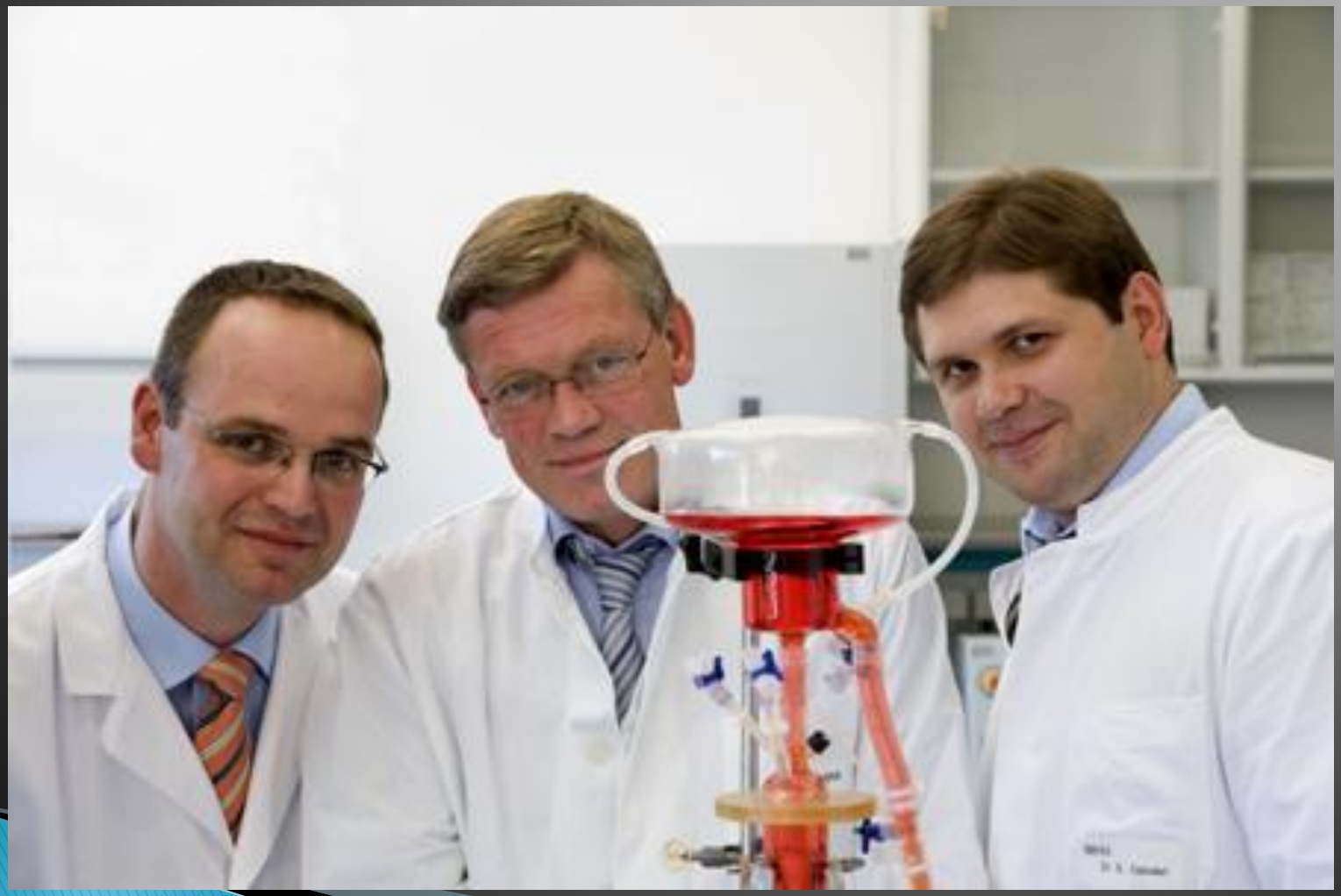
Research (Constraints)

- Personnel
- Facilities
- Support
- Motivation
- Attitudes
- Low expectation of country & University
  - No linkage with funding

Growing a Human Heart

- The donor heart is removed from the body; pig hearts may also be suitable.
- Detergents are then used to strip the cells from the heart leaving behind the protein skeleton or 'ghost heart'.
- Stem cells grown from cells taken from a patient are then added to the ghost heart.
- The stem cells then multiply and generate new heart cells. now all that is left is the hope that these will start beating.

Heart Valves That Grow With Patients (*Prof. Axel Haverich et al.*)



CLONING

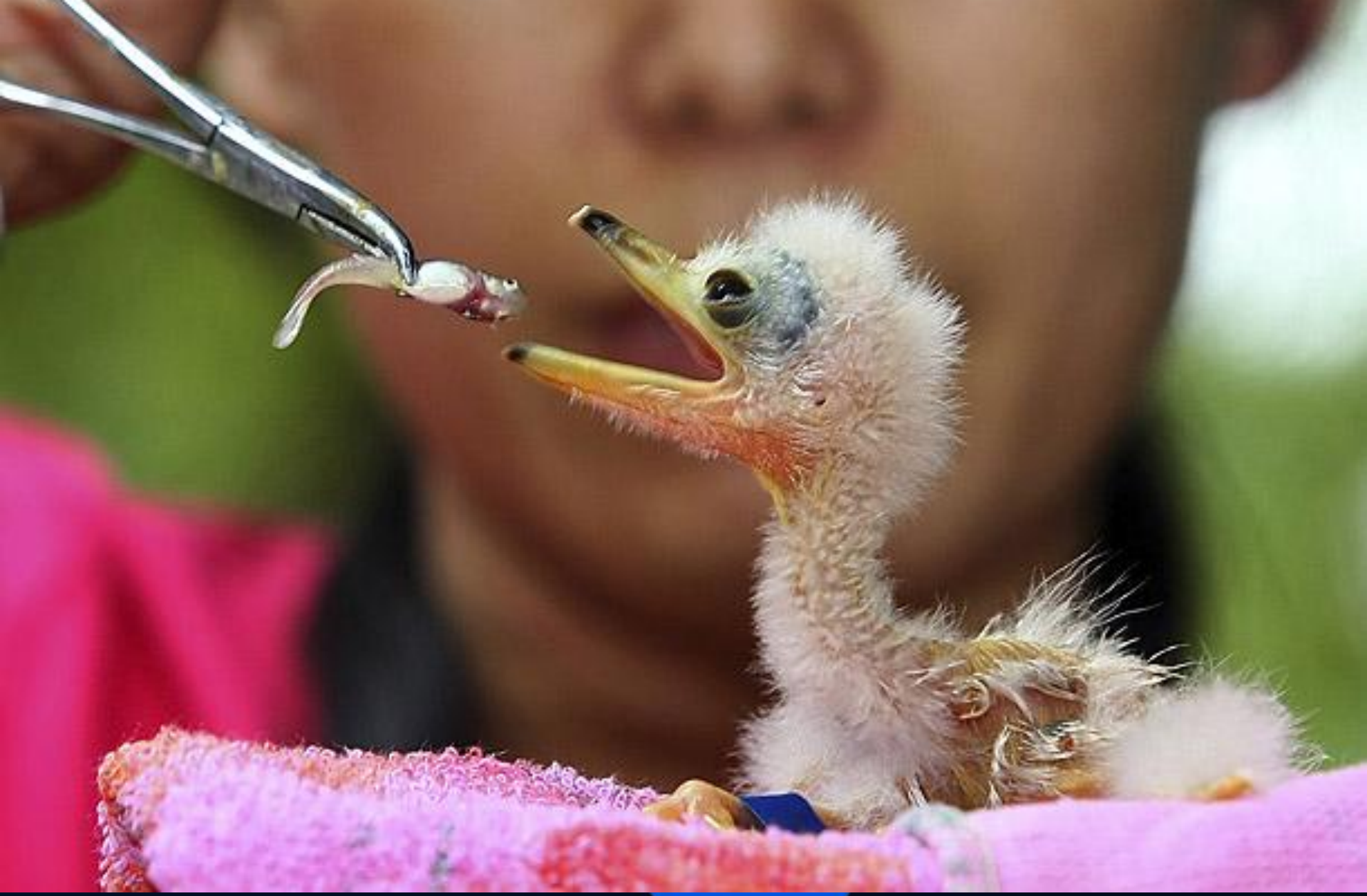
- Gene cloning, which creates copies of genes or segments of DNA
- Reproductive cloning, which creates copies of whole animals
- Therapeutic cloning, which creates embryonic stem cells

Heart Transplantation

- National definition of death
- Cultural acceptance
  - No living donors
- Lack of initiative & support from MOH
- Lack of nationwide facilities e.g. intensive care
  - Organ harvesting, **Organ Care Systems**
- Lack of sub-regional coordination
- Necessity for AFROTRANSPLANT with HQ in Ghana

The Task Ahead

- The task ahead is great but I strongly believe that we have more than enough resources to be victorious. We only have to change our attitude and develop the uncompromising determination to succeed.


Thank you