Juaben, Ghana

Bernard Osei-Tutu, MD
The West African Health Foundation is a non-profit, non-governmental organization. Formed in New York in February 2001, it was initiated by a group of physicians who were concerned with the health status of individuals in the West African sub-region.
WAHF Board Members

- Dr. Prudence Osei-Tutu
  - Chairperson, Pediatrics
- Dr. Cynthia Boakye
  - Vice Chairperson, Pediatrics and Public Health
- Dr. Kwadwo Boakye
  - Treasurer, Obstetrics and Gynecology
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  - Secretary, Plastic surgery
- Dr. William Boah
  - Pediatrics
- Dr. Margaret Safo
  - Pediatrics
- Dr. Oheneba Boachie Adjei
  - Orthopedic spine surgery
- Wesely Simpson
  - Law
Mission of the West African Health Foundation

Health and Wellness Education

- Maternal and reproductive and child health
- Infectious disease (Malaria, HIV/AIDS, Tuberculosis, Hepatitis)
- Sexually transmitted disease
- Sanitation/ environmental health, personal hygiene
- Injury prevention
- Tobacco/ alcohol/ substance abuse
- Immunization
- Nutrition
- Potable water

Medical Equipment / Surgical Supplies Donation

Malaria Control Program/ Medical Missions
The Foundation’s approach to the control of malaria involves raising awareness, community support, provision of healthcare and preventive tools.
Malaria Burden

- 350-500 million cases/ year globally
- 800,000 deaths/ year in Africa
  - PREGNANT WOMEN AND CHILDREN
  - Every 30 seconds an African child dies
- 3.2 million cases/ year in Ghana
  - 38,000 deaths/ year
    - 16,000 deaths/year in age 0-5 yrs
    - 7,000 deaths/year in pregnant women
- $12 billion in economic loss

WHO Africa: Dr. Sambo
www.afro.who.int/
*Ghana Health Service Report April 2005*
WAHF has distributed over 8,000 mosquito bed-nets in 11 rural villages over the last 6 years, at a cost of $80,000.

WAHF activities also include:
- Donation of sanitation equipment and tools
- Comprehensive public health education
- Periodic indoor and outdoor insecticide spraying

In Ghana, the use of mosquito bed-nets has proven to reduce child mortality by 18% and miscarriages by 33%.
WAHF

Malaria Prevention and Control Program
The health of a nation is dependent on several factors including the state of the economy, the number of people in gainful employment, educational level of its nationals, and the poverty rate of its nationals.
HEATH CARE INDICATORS - GHANA
<table>
<thead>
<tr>
<th>Health Statistics</th>
<th>Ghana</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Life expectancy at birth (yrs), 2012</strong></td>
<td>M: 60.22</td>
<td>M: 76.05</td>
</tr>
<tr>
<td>(<a href="http://www.cia.gov">www.cia.gov</a>)</td>
<td>F: 62.73</td>
<td>F: 81.05</td>
</tr>
<tr>
<td><strong>Adult mortality (per 1000), 2009</strong></td>
<td>332</td>
<td>106</td>
</tr>
<tr>
<td>(WHO Country statistics: <a href="http://www.who.int/whois">www.who.int/whois</a>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Under 5 mortality (per 1000), 2009</strong></td>
<td>69</td>
<td>8</td>
</tr>
<tr>
<td>(WHO Country statistics: <a href="http://www.who.int/whois">www.who.int/whois</a>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maternal mortality (per 100,000 live births), 2008</strong></td>
<td>350</td>
<td>24</td>
</tr>
<tr>
<td>(<a href="http://www.cia.gov">www.cia.gov</a>)</td>
<td></td>
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</tbody>
</table>
Health Care Indicators Continued

GHANA vs USA

Source: The World Bank 2009
## Causes of Death, All Ages 2002

<table>
<thead>
<tr>
<th>Cause</th>
<th>Death</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(0000)</td>
</tr>
<tr>
<td>All Causes</td>
<td>207</td>
</tr>
<tr>
<td>HIV/ AIDS</td>
<td>30</td>
</tr>
<tr>
<td>Malaria</td>
<td>23</td>
</tr>
<tr>
<td>Lower respiratory infections</td>
<td>16</td>
</tr>
<tr>
<td>Perinatal conditions</td>
<td>16</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>11</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>10</td>
</tr>
<tr>
<td>Diarrheal diseases</td>
<td>9</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>8</td>
</tr>
<tr>
<td>Road traffic accidents</td>
<td>5</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: "WHO Ghana: Country Fact Sheet 2002"
Distribution of causes of death among children aged < 5 years (2008) *

- Prematurity: 12%
- Malaria: 26%
- Other: 11%
- Pneumonia: 10%
- Diarrhoea: 9%
- Measles: 2%
- Congenital: 4%
- Injuries: 2%
- HIV/AIDS: 3%
- Neonatal: 9%
- Asphyxia: 11%

Source “WHO Ghana: Health Statistics Profile 2010”
Vision of the West African Health Foundation

- PROVIDE support, education and faculty to clinics and rural communities
- CONDUCT epidemiological and disease prevention research
- ESTABLISH a Specialty Hospital for the West African region
West African Health Foundation

Future Directions

Establishing a Tertiary Medical Center of Excellence
A need for private healthcare in Ghana

- Exponential population growth
- Limited government resources
- Increased demand for modern private healthcare facilities
WAHF envisions a Specialty Hospital that will provide:

- Tertiary care for the entire sub-region
- Post-graduate training for the healthcare providers of the sub-region
- Teleconference and Distance Learning Center Facilities to conduct forums, workshops, conferences and other educational programs
- Research facilities for epidemiology, disease prevention, medicinal plants and food/nutrition.
Phasing of Hospital

**Phase 1**
- 50 Bed Hospital
- Multispecialty
- Ancillary services
- Ambulatory
- ICU
- Telemedicine

**Phase 2**
- 100 Bed Hospital
- Expansion of services in phase 1
- Research

**Phase 3**
- 250 Bed Hospital
- Tertiary Care Center of Excellence with expansion of phase 1 and 2
- Plant and herbal medicine center
- Patient guest facility
- Helipad
- Fitness center
In 2007, WAHF acquired a 10 acre plot of land from Nana Otuo Siriboe II for a specialty hospital project in Juaben.
Columbia University’s Urban Design students and faculty visit to Juaben, 2013.

The Urban Design students of Columbia University were asked to design the WAHF specialty hospital in rural Juaben, 30 minutes from Kumasi.
The UD Global Studio conceived a design strategy which questions the very definition of hospitals in the 21st century.

Richard Plunz, Director Urban Design Lab
Competitive Advantages of Kumasi

Knowledge
- KNUST
- Generational Transfer of Knowledge
- Skilled Human Capital
- Co-composting Pilot Project

Geography
- Native Herbal Plants
- Pharmaceutical Distribution
- Environmental Amenities

Crisis
- Brain Drain (Educated Diaspora)
- Disease Epidemics
- Urban Waste Disposal
- Environmental Degradation

Politics
- Traditional Authority Land Tenure
- Ghanaian Laws and Policies
- Federally-Protected Lands
Advanced practices, WAHF Hospital

- R&D of herbal medicine
- Cultivation and sustainable harvesting
- Production and distribution of pharmaceuticals
The hospital will subsidize its low-income patients and provide funding for the upgrading of Juaben's health infrastructure.
Hospital's relationship to Juaben

Upgrading Juaben Hospital

Maternal & Child Care

Skilled Doctors

Specialised Training / R&D

Sustainable Harvesting of Medicinal Plants

Providing Jobs for Local Women and Men

Usage and Dosage Codes/ Herbal Clinic
Holistic and passive design

Preservation of existing canopy on site

Regeneration of diverse ecological canopy
View of private corridor
Site Area ᾶ 10 Acres (4.03 ha)
Total build-out area of the hospital ᾶ 9,000 square meters
Total number of beds ᾶ 250
Phase 1 ᾶ 4000 sq.m ᾶ 50 beds ᾶ Estimated $6-10 million
View of hospital rooms
Main entrance of the hospital
Medicinal plant cultivation
### Hospital Project Capital Cost Per Bed

$120-200,000 per bed*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (50 bed)</td>
<td>$6-10 million</td>
</tr>
<tr>
<td>2 (100 bed)</td>
<td>$12-20 million</td>
</tr>
<tr>
<td>3 (250 bed)</td>
<td>$30-50 million</td>
</tr>
</tbody>
</table>

*These are estimated costs based on FOCOS Hospital*
## Hospital Project Cost Components

<table>
<thead>
<tr>
<th>Component</th>
<th>% of Capital Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>5-10%</td>
</tr>
<tr>
<td>Building</td>
<td>30-40%</td>
</tr>
<tr>
<td>Medical equipment</td>
<td>30-40%</td>
</tr>
<tr>
<td>Preoperative and preliminary expenses</td>
<td>10-15%</td>
</tr>
<tr>
<td>Margin money (start up expenses, cash, losses,</td>
<td>10%</td>
</tr>
<tr>
<td>Contingency</td>
<td>5-10%</td>
</tr>
</tbody>
</table>
WEST AFRICAN HEALTH FOUNDATION

THANK YOU
Acknowledgements

WAHF members and supporters

Juaben hospital, staff, and community

Columbia University Urban Design Lab, The Earth Institute

Columbia University Urban Design Program, GSAPP

Millennium Cities Initiative, The Earth Institute

Nana from Nana Otuo Siriboe II