Tropical Diseases in Africa

Four Phases

• Devastation
• Discovery
• Development
• Deployment
Pre-colonial & early colonial era
### Deaths of Europeans in West Africa

<table>
<thead>
<tr>
<th>Expedition</th>
<th>Year</th>
<th>Europeans</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mungo Park</td>
<td>1805</td>
<td>44</td>
<td>39</td>
</tr>
<tr>
<td>Tuckey</td>
<td>1816</td>
<td>44</td>
<td>21</td>
</tr>
<tr>
<td>Clapperton</td>
<td>1825-7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>MacGregor-Laird</td>
<td>1832-4</td>
<td>41</td>
<td>32</td>
</tr>
<tr>
<td>Trotter</td>
<td>1841</td>
<td>145</td>
<td>42</td>
</tr>
</tbody>
</table>
Take care and beware of the Bight of Benin
For few come out, though many go in
Thank you!!

Thank you!
Meningitis in Africa

Meningitis Belt

Countries
>15 cases per 100,000 population
Seasonal Epidemics in Meningitis Belt
Discovery

• Trypanosomiasis
• Yellow Fever
• Malaria
• Kwashiokor
Trypanosomiasis Milestones

• 1902 Ford and Dutton, identified *Trypanosoma brucei gambiense*.
• 1903 Castellani in Uganda parasite in CSF
• 1903 David Bruce – tsetse fly as the vector
• 1906 Ayres Kopke - arsenic drug, Atoxyl.
• 1924 Tryparsamide less toxic than Atoxyl,
• 1932 Atoxyl blinded 700 patients became Friedheim developed melarsoprol
Tsetse Fly
Numerous Tsetse Flies
Yellow Fever

**Americas**
- Finlay – mosquito transmission
- Walter Reed – viral agent, extrinsic incubation period in *Aedes Aegypti*

**Africa**
- Noguchi - Accra
- Stokes - Lagos

Live vaccine developed
Few remedies until mid-20th century

- Salvarsan - syphilis
- Antrypol - trypanosomiasis, onchocerciasis,
- Pamaquine, chloroquine, primaquine, and pyrimethamine - malaria
- Penicillin - yaws
- Dapsone - leprosy
Colonial Health Research

- Expeditions
- Colonial Medical Services
- Research Institutes
- Schools of Tropical Medicine in Europe
- International Research Institutes
European Scientists in Africa

Outstanding world class scientists

• Robert Koch
• Aldo Castellani
• George MacDonald
Dr. Cecily Williams
Jamaican, 1893-1992
1923 Graduated in Medicine, Oxford University
1929-36 Served in Gold Coast
Learnt Twi
Identified Kwashiokhor
1936- Worked in 58 countries
1941-45 Prisoner of war

“Health Education is listening to the people”
A MALARIA PREVENTION BY SEGREGATION OF TROOPS

WHITE TROOPS  BLACK TROOPS  NATIVE HUTS ETC.

DISTANCE TWO TO FIVE MILES  MALARIA RISK SMALL OR ABSENT

Major C. R. Ribbands
Journ. Royal Army Medical Corps, 1941
MALARIA REDUCTION BY HUMAN DEVIATION. LARGE COMMUNITIES

DO NOT PUT THE CAMP ON THE EDGE OF A LARGE COMMUNITY. PUT IT IN THE CENTRE SO THAT THE COMMUNITY PROTECTS IT. THE LARGER THE COMMUNITY THE MORE EFFECTIVE THE PROTECTION.
Camps containing both white and black troops

Place the black troops as a screen between the white troops and the source of anophelines.
Role of African Scientists

Colonial Era

• Little training until close to independence
• Mainly menial tasks
  – Bottle washers
  – Fly catchers
• Little interest in building capacity of African scientists and institutions
Nigerian Scientists: Colonial Era

• Sir Samuel Manuwa
  - Splenomegaly - MD thesis 1934
  - Ulcer scalpel

• Dr. Sanya Onabamiro
  - Copepods - biology/ ecology
  - Guineaworm transmission
Copepods Identified & Characterised By Dr. Sanya Onabamiro

- *Tropocyclops onabamiroi* Lindberg, 1950
- *Halicyclops korodiensis* Onabamiro, 1952
- *Tropocyclops mellanbyi* Onabamiro, 1952
- *Tropocyclops wellanbyi* Onabamiro, 1952
- *Tropocyclops confinis awiensis* Onabamiro 1957
- *Tropocyclops prasinus shagamiensis* Onabamiro 1957
- *Thermocyclops iwoyensis* Onabamiro, 1952
Recent Publications Citing Onabamiro


Eliminating Guinea worm from Nigeria

Onabamiro started it!

Kale is finishing it

Thousands
Immediate Post-Independence

• Colonial research institutes floundered
• Breakdown of sub-regional networks
• Growth of research capacity in universities
• Recovery of some research institutes
<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Togo</td>
<td>561</td>
</tr>
<tr>
<td>Benin</td>
<td>882</td>
</tr>
<tr>
<td>Cameroon</td>
<td>2040</td>
</tr>
<tr>
<td>Ghana</td>
<td>2393</td>
</tr>
<tr>
<td>Kenya</td>
<td>6670</td>
</tr>
<tr>
<td>Nigeria</td>
<td>12248</td>
</tr>
<tr>
<td>South Africa</td>
<td>18450</td>
</tr>
</tbody>
</table>
Number of Publications
Medline Search “Nigeria”

Rise
Fall

Democracy
## Key Contributions
### Nigerian Scientists

<table>
<thead>
<tr>
<th>Disease</th>
<th>Contributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaucoma</td>
<td>Olurin (OO)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Akinkugbe</td>
</tr>
<tr>
<td>Tropical neuropathy</td>
<td>Osuntokun</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>Osuntokun, Ogunniyi, et al</td>
</tr>
<tr>
<td>Schistosomiasis</td>
<td>Lucas, Oyediran</td>
</tr>
<tr>
<td>Goitre surgery</td>
<td>Olurin (EO)</td>
</tr>
<tr>
<td>Maternal Mortality</td>
<td>Kelsey Harrison</td>
</tr>
</tbody>
</table>
# Professor B.O. Osuntokun Publications

## Subject Distribution

<table>
<thead>
<tr>
<th>Subject</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neurology</strong></td>
<td>243</td>
</tr>
<tr>
<td>• Tropical Neuropathy</td>
<td>51</td>
</tr>
<tr>
<td>• Dementias</td>
<td>22</td>
</tr>
<tr>
<td>• Diabetes</td>
<td>13</td>
</tr>
<tr>
<td>• Other Neurological</td>
<td>157</td>
</tr>
<tr>
<td><strong>Research Policy</strong></td>
<td>26</td>
</tr>
<tr>
<td><strong>Health Policy</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Medical Education</strong></td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>319</td>
</tr>
</tbody>
</table>

1 in 40 of Nigerian Publications
## Establishing Norms

<table>
<thead>
<tr>
<th>Growth &amp; development</th>
<th>Longitudinal studies</th>
<th>Janes et al</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twinning rate</td>
<td>Community studies</td>
<td>Nylander</td>
</tr>
<tr>
<td>Biochemical norms</td>
<td>Serum electrolytes, proteins, etc.</td>
<td>Edozien</td>
</tr>
<tr>
<td>Bone structure</td>
<td>Anatomical variants</td>
<td>Cockshott</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>Distribution - age, rural/ urban</td>
<td>Akinkugbe</td>
</tr>
<tr>
<td>Electrocardiogram</td>
<td>Normal variants</td>
<td>Oyediran</td>
</tr>
</tbody>
</table>
## Epidemiological Studies

<table>
<thead>
<tr>
<th>School age children</th>
<th>Epidemiological survey</th>
<th>Oduntan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic diseases</td>
<td>Hypertension, diabetes, etc.</td>
<td>Akinkugbe</td>
</tr>
<tr>
<td>Goitre</td>
<td>Field Surveys</td>
<td>Olurin, Ekpechi, Oluwasanmi</td>
</tr>
<tr>
<td>Hospital data</td>
<td>• Admissions&lt;br&gt;• Autopsy</td>
<td>Ogunlesi, Brown</td>
</tr>
<tr>
<td>Sexual networking</td>
<td>Community based studies</td>
<td>Orubuloye</td>
</tr>
</tbody>
</table>
Diseases of Local Interest

• Tropical Ataxic Neuropathy
• “Ijesha Shakes”
• Rhino-entomophthoromycosis
• Histoplasmosis duboisii
African women's control over their sexuality in an era of AIDS. A study of the Yoruba of Nigeria.
Orubuloye IO, Caldwell JC, Caldwell P.
Health Transition Series, 1991

Sexual abstinence patterns in rural Western Nigeria: evidence from a survey of Yoruba women.
Orubuloye IO.
Cross-National Studies

- Atheroma - coronary, cerebral
- Senile dementias
- Diabetes
- Parkinson’s Disease
Grading Atherosclerosis

CODING GUIDE

1+  2+  3+  4+

A  B  A  B  A  B
Comparative Study of Dementias

- **Dementias**
  - Ibadan: 1.5
  - Indianapolis: 3.5

- **Alzheimer's**
  - Ibadan: 2.2
  - Indianapolis: 4.8

Per Cent

Legend:
- Ibadan
- Indianapolis
## Delivery of Health Care

<table>
<thead>
<tr>
<th>Service</th>
<th>Implementing Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Mental Health</td>
<td>Lambo, Aro</td>
</tr>
<tr>
<td>Growth Monitoring</td>
<td>Morley, Imesi-Ile</td>
</tr>
<tr>
<td>Prevention of Maternal Mortality</td>
<td>International Network</td>
</tr>
<tr>
<td>Financing Health Care</td>
<td>International Health Policy Programme</td>
</tr>
<tr>
<td>Social Marketing of Family Planning</td>
<td>Ladipo</td>
</tr>
</tbody>
</table>
Growth Chart -- Developed at Imesi-Ile
Preventive and Curative Services

Iodine in Salt Prevents Goitre

Kind Courtesy of Professor E.O. Olurin
TRENDS IN IODIZED SALT CONSUMPTION
AFRICA

Percent

1995 1998
Ghana

1993 1997
Chad

1995 1997
Madagascar

1996 1998
Togo

1994 1998

1995 1999
Nigeria
Major Conclusions

• Tremendous potential for health research
• Urgent health challenges in Africa
• Regional as well as global impact
• Inadequate support from governments
• Missed opportunities
• Neglect by regional bodies like African Union, West African Health Organization
Trends in life expectancy by region, 1950-1990

- Established Market Economies
- Formerly Socialist Economies of Europe
- Latin America and the Caribbean
- China
- Middle Eastern Crescent
- India
- Sub-Saharan Africa

World Development Report, 1993
Immunization 1980-1999
DPT3 coverage

Revised global coverage estimates based on joint UNICEF/WHO review


- Sub-Saharan Africa
- South Asia
- Latin America and Caribbean
<table>
<thead>
<tr>
<th>Region</th>
<th>Maternal Deaths</th>
<th>Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>235,000</td>
<td>870</td>
</tr>
<tr>
<td>Asia</td>
<td>323,000</td>
<td>390</td>
</tr>
<tr>
<td>Europe</td>
<td>3,200</td>
<td>36</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>23,000</td>
<td>90</td>
</tr>
<tr>
<td>N. America</td>
<td>500</td>
<td>11</td>
</tr>
<tr>
<td>Oceania</td>
<td>1,400</td>
<td>690</td>
</tr>
<tr>
<td>World Total</td>
<td>585,000</td>
<td>430</td>
</tr>
</tbody>
</table>
# Lifetime Risk Of Dying From Pregnancy And Childbirth

<table>
<thead>
<tr>
<th>Region</th>
<th>Risk of Dying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1 in 16</td>
</tr>
<tr>
<td>Asia</td>
<td>1 in 65</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>1 in 130</td>
</tr>
<tr>
<td>Europe</td>
<td>1 in 1,400</td>
</tr>
<tr>
<td>North America</td>
<td>1 in 3,700</td>
</tr>
</tbody>
</table>
We are not winning!

Under 5 Mortality Rates/1000 Live Births

<table>
<thead>
<tr>
<th>Country</th>
<th>1990</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>South Africa</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>70</td>
<td>130</td>
</tr>
<tr>
<td>Kenya</td>
<td>80</td>
<td>140</td>
</tr>
<tr>
<td>Swaziland</td>
<td>90</td>
<td>150</td>
</tr>
<tr>
<td>Cameroon</td>
<td>100</td>
<td>160</td>
</tr>
<tr>
<td>Cote d'Ivoire</td>
<td>110</td>
<td>170</td>
</tr>
<tr>
<td>Tanzania</td>
<td>120</td>
<td>180</td>
</tr>
<tr>
<td>Rwanda</td>
<td>130</td>
<td>190</td>
</tr>
<tr>
<td>Zambia</td>
<td>140</td>
<td>200</td>
</tr>
</tbody>
</table>
DISEASE!! DISEASE!! DISEASE!!
AFRICAN TRADITIONAL MEDICINE
(The Disease Cure Experts)

Have you tried without success in the Treatment of the following Disease:

GONORRHEA, GONOCOCCUAL, SYPHILIS, STAPHYLOCOCCUS, STREPTOCOCUS, HERPES, VAGINAL DISCHARGES, BLACK & PAINFUL MENSTRUATION, BURNING SENSATION, MOVEMENT ALL OVER THE BODY, TESTES, SMALL PENIS, BREAST, OFF & ON BOILS, DEAD SPERM, WATERY SPERM, LOW SPERM COUNT, QUICK EJACULATION, WEAKNESS OF PENIS, INFERTILITY / IMPOTENCY, DIABETES, STERILITY, CANDIDIASIS, PILE, HERNIA, HYPERTENSION, ASTHMA, ALL RESPIRATORY TRACK INFECTIONS, E.COLI, CUT AT THE GENITAL AREA ETC. & FIBROID. (WITHOUT OPERATION)

WE CURE ALL VENERAL/WOMEN DISEASE.
1. HIV 1&2/AIDS - 6 weeks (maximum)
2. Appendicitis - 48 hours cure, no operation
3. Typhoid fever - 4 weeks total cure
4. Toothache - 48 hours, no operation
5. All S.T.D's or U.T.I - 28 days
6. Chicken pox epidemic - 4 days cure
7. Hepatitis B virus or jaundice - 7 days
8. Malaria fever or its parasite - 14 days
9. Constipation - 24 hours total cure
10. Snake bite, all bites - 24 hours
11. Measles, pimples - 3 days cure
12. Cholera/diarrhoea/worms - 24 hours
13. Hiccoughs - 24 hours cure
14. All types of eye problems...
Chosen Church Records Healing Of 4,000 HIV/AIDS Patients

Among other diseases and afflictions, Pastor Muoka revealed that the hand of God has given healing to more than 4,000 cases of HIV/AIDS, a disease that has become a plague to the world over, in the fellowship meetings of the church.

Fake!
Myasthenia Gravis

Dr. Mary Broadfoot Walker

- St. Alfege's Hospital, Greenwich, UK
- 1934 Physostigmine injection
- Temporary reversal of paralysis
Esere Beans - trial by ordeal

1865 Eserine (Physostigmine) identified

Phyostigma venenosum
Health Research in Africa
Major Constraints

• Funding
• Translation of knowledge to practice
University College Hospital, Ibadan, Nigeria
Complementary & Alternative Medicine

Frontier Medicine
- therapeutic prayer
- spiritual healing
- bioelectromagnetic therapy
- biofield and energy healing
- homeopathy

Collect systematic, scientifically structured information on widely practised, intangible therapeutic approaches for which we have essentially no mechanistic understanding.
TWO-DIMENSIONAL HEALING

MEDICAL → HEALING

DIVINITY

SPIRITUAL → HEALING
Reconciling religion & health
Mutual accommodation

Health Care Units
• Promote concept of ‘WORK & PRAY’
• Provide facilities for religious support
• Negotiate safe compromises

Religious Groups
• Promote healthy interventions
• Provide facilities for medical care
• Establish indications for referrals

Work & Pray