The way from empiricism to rationality and from dogma to curiosity
Ibn Khaldun'  
1406  

Kitab al-Ibar wa-Diwan al-mubtada wa'l-khabar  

Mort du Sultan Mari Djata II (Soudan)  

Edition Bulaq (Cairo), AH 1284/AD 1867, 7 vols;
"The Africans are very subject to a species of lethargy, which they are much afraid of, as it proves fatal in every instance. The Timmanees call it marree, or 'nluoi, and the Bullems nagonlîe, or kadura; it is called by the Soosos, Kee Kollee Kondee, or sleepy sickness, and by the Mandingoes seenoyuncaree, a word of similar import. This disease is very frequent in the Foo-la country, and it is, said to be much more common in the interior parts of the country than upon the sea coast. Children are very rarely, or never, affected by this complaint, nor is it more common among slaves than among free people, though it is asserted that the slaves from Bennin are very subject to it. At the commencement of the disease, the patient has commonly a ravenous appetite, eating twice the quantity of food he was accustomed to take when in health, and becoming very fat. When the disease has continued some time, the appetite declines, and the patient gradually wastes away. Squinting occurs sometimes, though very seldom, in this disease, and in some rare instances the patient is carried off in convulsions. Small glandular tumours are sometimes observed in the neck a little before the commencement of this complaint, though probably, depending rather upon accidental circumstances, than upon the disease itself. Slave traders, however, appear to consider these tumours as a symptom, indicating a disposition to lethargy, and they either never buy such slaves, or get quit of them as soon as they observe any such appearances. The repeated application of a whip, a remedy which has been frequently used, is hardly sufficient to keep the poor wretch awake. The repeated application of blisters and of setons has been employed by European surgeons without avail, as the disease, under every mode of treatment, usually proves fatal within three or four months. The natives are totally at a loss to what cause this complaint ought to be attributed. Sweating is the only means they make use of, or from which they hope for any success; this is never tried but in incipient cases, for when the disease has been of any continuance they think it in vain to make the attempt. The root of grass, called by the Soosos, kallkee, and the dried leaves of a plant called in Soosoo, fingka, are boiled for some time in water, in an iron pot; when this is removed from the fire the patient is seated over it, and is covered over with cotton clothes, a process which never fails to excite a copious perspiration. This mode of cure is repeated two or three times a day, and is persisted in for a considerable length of time, as given in the complaint."
De l'action de la chaleur sur l'arsénylate d'aniline et de la formation d'un anilide de l'acide arsénique
Premiers laboratoires

P.A. Guérin: De la maladie du sommeil

Applying of 10 leeches on the anus...

H.W. Thomas: Use of the Béchamp’s anilide to cure sleeping sickness

«magic bullets»

...treatment of trypanosomiasis and other protozoal diseases and produced trypan red, which was, as his Japanese assistant Shiga showed, effective against trypanosomes.

He also established, with A. Bertheim, the correct structural formula of atoxyl
First patients treated in London - 1903
The disease is eliminated as a public health problem
networks

The WHO SS treatment and drug resistance network

A coherent approach of the concept of access to treatment

Drug development
Clinical trials
Drug delivery
Safe administration
Treatment centers rehabilitated
surveillance of TT and resistance
Early diagnosis
field activities
Training
Where is the hospital?
HUMAN AFRICAN TRYPANOSOMIASIS

No electricity, no water, no technician, no drugs... Closed.....
HUMAN AFRICAN TRYPANOSOMIASIS
CLINICAL SIGNS

- Fever
- Pruritus
- Headaches
- Muscular pains
- Cervical Adenopathies
- Low predictivity
HUMAN AFRICAN TRYPANOSOMIASIS

Screening
HUMAN AFRICAN TRYPANOSOMIASIS

Screening tests

CATT
Card Agglutination Trypanosomiasis Test

Not enough specific

1977: N. Van Meirvenne & E. Magnus
HUMAN AFRICAN TRYPANOSOMIASIS

DIAGNOSTIC
HUMAN AFRICAN TRYPANOSOMIASIS

Gland Juice examination

DIAGNOSTIC

Low sensitivity
Déjà décrit par Dutton en 1905
Access to diagnosis

- Access to early diagnosis
- Access to diagnosis centre
- Access to systematic screening
- Access to efficient tests
HUMAN AFRICAN TRYPANOSOMIASIS

STAGING

CSF examination

Criteria > 5 cells/mm³
HUMAN AFRICAN TRYPANOSOMIASIS
HUMAN AFRICAN TRYPANOSOMIASIS

- **T. b. gambiense**
  - Pentamidine
  - Melarsoprol
  - Eflornithine

- **T. b. rhodesiense**
  - Suramin
T.b gambiense

**Pentamidine**

200 mg/vial
daily or every other day intramuscular injection, 7 injections, 4mg/Kg/day

adverse reactions (hypotension, diabetis, hypersalivation, nephrotoxicity)

Development 1938-1944
HUMAN AFRICAN TRYPANOSOMIASIS

T. b. rhodesiense

**Suramin** (1920)

vials, 1g

single weekly intra-muscular injection, for 6 weeks, 20mg/Kg

some adverse reactions (nausea, vomiting, urticaria - rarely, renal damage and exfoliative dermatitis)
**HUMAN AFRICAN TRYPANOSOMIASIS**

**Melarsoprol**

**strictly intra-venous injection**

- 3 series of 3 injections with one week rest between series,
- 3.6mg/kg/day
- 2.2mg/kg/day, 10 days

**adverse reactions**

- exfoliative dermatitis
- myocardial damage,
- hypertension,
- reactive encephalopathy in 5-10% of treated patients
HUMAN AFRICAN TRYPANOSOMIASIS
HUMAN AFRICAN TRYPANOSOMIASIS

Miracle drug curing sleeping sickness

London Observer Service

Dramatic success is being achieved in the battle against one of Africa’s oldest scourges, sleeping sickness.

Patients in the last stages of the disease and facing certain death have been saved by a new drug known as DFMO, now under trial in several African countries.

The cures achieved have been so rapid and spectacular that DFMO is being called “the resurrection drug”: Two years after treatment, patients for whom there seemed no hope are leading normal lives and show no further symptoms of the disease.

DFMOL has also proved successful in treating one of the most common causes of death among AIDS patients, Pneumocystis carinii pneumonia. The drug does not cure AIDS but has been shown to be effective in prolonging life for patients whose pneumonia infection had defeated other drug treatments.

The latest results of the trials of DFMO were reported at a recent meeting at the World Health Organization’s headquarters in Geneva by the Special Program for Research and Training in Tropical Diseases, which has financed much of the research. The program is funded by the WHO, the World Bank, the U.N. Development Program and a number of donor countries, including the U.S. and Britain.

Sleeping sickness is a parasitic disease carried by the tsetse fly and is endemic in 36 countries across the center of Africa. Fifty million people are at risk, and increasing numbers are contracting the disease. About new cases are reported every year, although this is certainly a conservative estimate.

Trypanosomes are quick-change artists, escaping destruction by the human immune system through their remarkable ability to alter their surface covering, or “coat.” No sooner has the immune system identified a trypanosome’s coat and mobilized antibodies to deal with it than the parasite changes to a new coat and escapes.

For the same reason, vaccines against trypanosomes do not offer much hope. Protection against a parasite with such a bewildering range of disguises — more than 100 coats, all different — cannot be provided by any imaginable vaccine in present medical knowledge.

Existing drugs can kill the parasites, but may also kill the patients.

Administration:

400mg/Kg/day

1 perfusion each 6 hours, during 14 days
1 perfusion each 6 hours, during 7 days
Nifurtimox (Lampit ®) Tablets 120mg (has been used in T.b.gambiense)

- per os, 5 to 7 mg/Kg/day, 3 time/day, 14 to 21 days

adverse reactions (toxic effects involving central and peripheral nervous system)

but not registered for sleeping sickness
Fighting ostracism....
Access to treatment facilities

• Distance and transportation

• Equipment

• Trained medical staff

• Follow-up
Access to a safe and efficient treatment

• Drug delivery
• Treatment failure and resistance
• Adverse effects management
• Administration schedule
• Safer drugs
Drug supply

WHO → MSF → Countries

Patients

Management of drugs
Reporting
Drugs forecast
Act on strategies and policy

Act on the disease neglect

Implement systems to:
Enable populations to meet health capacities
Enable existing health capacities to absorb new tasks
Ensure health care delivery closer to the populations
reaching populations
Strengthening programmes towards sustainability

From fragmented epidemiological knowledge to a complete vision
Revival of weak programmes

Creating conditions for involvement of donors
From effective drug delivery to effective access to treatment

Administer the drug as quickly as possible after diagnosis
Synergizing links between Control, Surveillance and Research

- Research activities carried out or supported through the WHO SS treatment and drug resistance network
- Initiate new research initiatives
- Offer the best conditions to research teams in the field
- DNDi and African DNDi established
Opening ways for new initiatives - the example of diagnostic tools

A new initiative to develop new diagnostic tools is being prepared.

A working group has been established with CPE, TDR, IMT, a manufacturer and others. A PDT will be established.

3 actions are identified:

- short term: Latex IgM
- Medium term: Dipstick
- Long term: Development of synthetic peptides antigens
Looking at socio-economic aspects

Refining and Extending DALY Calculations for *T. b. rhodesiense* and *T. b. gambiense*

<table>
<thead>
<tr>
<th>Disease</th>
<th>Millions of DALYS</th>
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<tbody>
<tr>
<td>HIV</td>
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<tr>
<td>Trypanosomiasis</td>
<td>10-16</td>
</tr>
</tbody>
</table>
Strengthening credibility

Developing more actions with more partners

The example of Bayer

- Suramin donation
- Nifurtimox for compassionate use
- Nifurtimox label extension

Nifurtimox for Chagas disease
Bringing in more partners

The example of the ITFDE

DiaMed Diagnostic

The example of the ITFDE

Civil society involvement
KIDS FOR WORLD HEALTH, INC.
P. O. BOX 557
LARCHMONT, NY 10538

Pay to the Order of
WHO

One-thousand

and 00/100

“LIFE IS IMPORTANT FOR ALL PEOPLE”

Haye Kane,

www.kfwh.com/org
Despair

Hope

The joy of living

Please help them