Understanding and managing stroke
From the neuron to the community:
Panoramic approach of the patient

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no commercial relationships or off-label content to disclose
Pain
- Epilepsy
- Isch/Hem Stroke
- Meningo-Encephalitis
- Peripheral Neuropathies
- Malnutrition Neuro-Myelopathies
- Post Medullar & Cranial Traumatisms
- Parkinson, Alzheimer and other Dementias
- Consanguineous Neuro-Degenerative Disorders
<table>
<thead>
<tr>
<th>Year</th>
<th>Topics</th>
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| 2008 | - Peripheral neuropathies  
|      | - Neurodegenerative disorders |
| 2009 | - Stroke  
|      | - Epilepsy |
| 2010 | - Infectious diseases  
|      | - Dementias |
| 2011 | - Spinal cord pathologies  
|      | - Stroke |
| 2012 | - Communicable and metabolic neurological disorders during childhood  
|      | - Neuro-epidemiology and SSA |
| 2013 | - Stroke  
|      | - Movement disorders |
| 2014 | - Peripheral nerve and muscle  
|      | - CNS infections |
| 2015 | - Stroke  
|      | - Ischemic stroke in children |
| 2016 | - Stroke  
|      | - Epilepsy  
|      | - Neuro-HIV |
| 2017 | - Stroke  
|      | - Movement disorders  
|      | - Dementia  
|      | - Spine  
|      | - Neuro-Muscular |
| 2018 | - Stroke  
|      | - Epilepsy  
|      | - Movement disorders  
|      | - Neurodegeneration  
|      | - Infection / Inflammation |
| 2019 | - Peripheral  
|      | - Myopathies  
|      | - Neuro-Infections  
|      | - Neurophysio  
|      | - Headache |

Partners: Universities; EAN; WFN; IBRO; PAUNS; PAANS; AAN; WSO; MDS; LAE; IHS
In AFRICA
✓ Incidence: 15 – 148 per 100,000
✓ Prevalence: 15 – 468 per 100,000
✓ Mortality: 82 – 165 per 100,000

Feigin et al, Lancet 2014
expected incidences of Stroke in 2050
Why incidence of NCD is increasing in developing countries, especially in Africa?

✓ Increased Life-expectancy?

✓ Transmitted-diseases are decreasing and/or better Diagnosis of NCDs?

✓ Increasing vascular risk factors? and neglected?

✓ What about the management?
From RURAL to …”RURBAN” life style
Rural Population

• Bad & fast food
• Salty
• Tobacco
• Poor Economy
• Less physical activities

Urban Population

• HTA
• Obesity
• Cardiopathy
• Diabetes
• Kidney failures
• Hypercholesterolemia
• + HIV & other inf°
• Obesity
• Diabetes
• Cardiovascular Diseases
• Kidney impacts
• Cancers

+ Cultures
+ Education
+ Industries
INCREASED RISK FACTORS

➢ HTA
➢ Diabetes
➢ Hypercholestérolemia
➢ Tobacco
➢ Alcohol
➢ Obesity
➢ Post-Infections
➢ Sickle-Cell disease
➢ Art-Ven. Malformations
PATHOPHYSIOLOGY

Anatomy of the Cerebral Arterial Circulation

- Anterior communicating
- Basilar
- Internal carotid
- Vertebral
- Common carotid
- Subclavian

AORTA

6-17 Territoires artériaux. Coupe axiale passant par les deux bras de la capsule interne

- A. cérébrale antérieure
- A. cérébrale moyenne
- A. choroidienne antérieure
- A. communicante postérieure
- A. choroidienne postérieure
- A. cérébrale postérieure
Whatever the cause, when a group of neurons is, directly or indirectly stressed

- **Necrosis**
- **Apoptosis**
- **Disturbance**

- **Death**
  - irreversible
  - \(\rightarrow\) Loss / Reduction of function(s)

- **Hyperexcitability.**
  - \(\rightarrow\) exaggeration;
  - if synchronized \(\rightarrow\) Seizure
Neuron & its environment

Direct attack of the neuron and consecutive reactions

Indirect attack of the neuron via microcytes and astrocytes and consecutive neuronal reactions
EVOLUTION OF ISCHEMIC PROCESS

1 min

15 min

30 min

1 h.

CORE

2 h.

PENUMBRA

3 h.
HEMATOME CEREBRAL

Cerebral Hemorrhage
Long term high blood pressure can weaken blood vessels in the brain and eventually cause a hemorrhagic stroke (cerebral hemorrhage).
NEUROIMAGING SEMIOLOGY
Our main challenges in Africa

THE FACTS
✓ Increasing incidence and prevalence, in generally poor-setting
✓ Weak Management of stroke emergencies
✓ Heavy burden of post-stroke

THE NEEDED ACTS
➤ Education about risk factors; youth, women
➤ Mobile and fixed Emergency & Stroke Units
➤ Neurosciences facilities and trained Staff
How can we improve the situation in Sub-Saharan Africa?

- Communication
- Training
- Care
- Equipment
- Cooperation
- Research
When general situation improves...

"Neuro-Condition" improves...

Pr A. Gallo DIOP. May 2014

Courtesy from Pr. E. Perucca
Modern medicine

Traditional Medicine

We must not oppose them; How to deal with it & "capture" people with the disease so that they can benefit from modern medicine? Need to open to socio-cultural stakeholders.
COMMUNICATION +++

- TV
- Radio
- Documentary
- Testimonials: patient, parent,
- Primary school teachers
- Slogans by V.I.P / Celebrities
- Radio/TV announcements
VERY EARLY EDUCATION
Place, role and responsibilities of WOMEN?
6 Families of nutrients

✓ Fruits & legumes
✓ Cereals
✓ Fish, Meats, Egg, Poultry
✓ Moderate lipid
✓ Milk and derived pdts
✓ Water

From Dr Binetou C. Seck
Drive engagement of civil society:
- Volunteers
- Clubs
- Parents
- Media
Public Health Intervention
“Neuro-Caravans for Epilepsy & Stroke”.

- Training of physicians and other healthcare professionals
- Women, Primary School Teachers, Traditional Healers
- Media
- Consultations + portable EEG portable
Reach out to the populations. Collaborating with the key health and community stakeholder.
Trainings in Neurology in Africa

Since 60 to 25 years:
- Cote d’Ivoire
- Egypt
- Morocco
- Senegal
- South Africa
- Tunisia
+ much more,
recently
The African Academy of Neurology (AFAN) was created on 30 August 2015 in Dakar, Senegal. It is the sole regional representative in the WFN of the interests of Neurology in Africa.

AFAN Brings New Era in African Neurology

By Raad Shakir

It was a momentous day in the history of African neurology. For more than 40 years, the continental neuroscience organization was an amalgamation of neurologists and neurosurgeons. The Pan African Association of Neurological Sciences (PAANS) served its purpose, and it’s time now for the establishment of an organization dedicated to neurology. Neurosurgeons already have established the Continental Association of African Neurosurgical Societies and held an inaugural meeting in Algiers.

The World Federation of Neurology (WFN) fully supported the views of professors from 27 countries to participate in the inaugural meeting of the African Academy of Neurology. It was held in Dakar, Senegal, in August.

Representatives from 27 countries participate in the inaugural meeting of the African Academy of Neurology in Dakar, Senegal, in August.

Dementia: A New Perspective

As the global burden of neurodegenerative diseases increases, research and understanding of these conditions is crucial. This article explores the advances in the treatment of dementia, including the role of omega-3 fatty acids in preventing and managing the disease.

Raad Shakir
AFRICAN ACADEMY OF NEUROLOGY (AFAN)

MEMBER COUNTRIES (National Neurologic societies, with WFN)
• Algeria
• Burkina Faso
• Cameroon
• Congo, Democratic Republic of
• Cote d’Ivoire
• Egypt
• Ethiopia
• Gabon
• Guinea, Republic of
• Kenya
• Libya
• Morocco
• Nigeria
• Senegal
• South Africa
• Sudan
• Tanzania
• Tunisia
• Uganda
• Zambia

MEMBER COUNTRIES (w/o National Neurologic societies – in process of registration)
• Angola
• Benin
• Congo Brazzaville
• Ghana
• Guinee
• Madagascar
• Mali
• Mauritanie
• Niger
• Rwanda
• Togo
WFN Department Visit Programmes give the opportunity to young neurologists from Africa or Central and South America to visit the Neurological Departments of another institution outside of their home country for 4 to 6 weeks.

WFN Department Visits

COMING SOON > France and Mexico department visits

In partnership with the Austrian Neurological Society, Austria 2015, 2017
- Hanna Demissie Belay, Ethiopia Medical University of Vienna, 2015
- Kalpesh Deraji Jivan, South Africa Innsbruck Medical University, 2015
- Ahmed Elkady, Egypt Medical University of Vienna, 2017
- Mohammed Rabie, Egypt Medical University of Graz, 2017
- Binjiyam Ayele, Ethiopia Innsbruck Medical University, 2017

In partnership with Norwegian Society of Neurology in November 2016
- Izanne Roos, South Africa University of Bergen, 2016
- Yared Zenebe, Ethiopia University of Bergen, 2016
- Marieme Sado Diop-Sène, Senegal University of Oslo, 2016
- Yohannes Debebe, Ethiopia University of Oslo, 2016

In partnership with Turkish Neurological Society in 2012, 2013, 2016 and 2017
- Philip Babatunde Adebayo, Nigeria Istanbul University Cerrahpasa Turkey, 2012
- Dr. Mehila Zebenigus, Ethiopia Hacettepe University Turkey, 2012
- Dr. Obiabio Yahaya Olugbo, Nigeria Istanbul University Cerrahpasa Turkey, 2013
- Abdullahi Ibrahim, Nigeria Gazi University of Ankara
- Maouly Fall, Senegal Gazi University of Ankara Turkey, 2016
- Atokè Mendumatou Achetou, Houessou, Benin Istanbul University Cerrahpasa Turkey, 2016
- Leonard Ngarka, Cameroon Selcuk University Turkey, 2017

In partnership with the Canadian Neurological Society, Canada 2017
- Giordani Passos, Brazil Montreal Neurological Institute
- Vanessa Benjumea-Cuartas, Argentina Montreal Neurological Institute

In partnership with the Italian Neurological Society, Italy 2017
- Adeemi A Daniel, Nigeria

WFN Teaching Centers in Africa:
- Rabat (Morocco) - 1 year fellowship electrophysiology
  Completed by: Alassane Drave, Burkina Faso, Boubacar Maiga, Mali
- Cairo (Egypt) - 1 year fellowship
- Dakar (Senegal) - full training and 1 year fellowship epilepsy

WFN Teaching Centers in America:
- Mexico - 1 year fellowship

In partnership with German Society of Neurology in October 2016, 2017
- Samy Mohamed Lemine Daddah, Mauritania University Hospital of Ulm Germany, 2016
- Ahmed Abualhasan, Egypt University of Bochum, 2016
- Aminou Tassiou Nana Rahamatou, Niger Neurological Department of the University Hospital in Cologne, 2017
- Martin Kaddumukasa, Uganda St. Joseph Hospital in Bochum (University Clinic of the Ruhr University) 2017

Special thanks to all the WFN members and trusted partners

Promoting global neurological education and training