
Riunione fondativa del Gruppo di Studio
della Società Italiana di Neurologia

# Società Italiana di Neurologia e paesi in via di sviluppo

**Milano, 20 marzo 2019**
**Istituto Neurologico Besta, Biblioteca Centrale**

Sin
SOCIETÀ ITALIANA DI NEUROLOGIA

# LA NEUROLOGIA SUB SAHARIANA

- Perchè l‘Africa
- La transizione epidemiologica e sanitiaria
- Nuova demografia, quale neurologia?
- Modelli per gestire le malattie neurologiche

# Africa - dimensioni

## The **True Size** of **Africa**

A small contribution in the fight against rampant *Immappancy*, by **Kai Krause**

Graphic layout for visualization only ( some countries are cut and rotated )
But the conclusions are very accurate: refer to table below for exact data

| COUNTRY | AREA x 1000 km² |
|---|---|
| China | 9.597 |
| USA | 9.629 |
| India | 3.287 |
| Mexico | 1.964 |
| Peru | 1.285 |
| France | 633 |
| Spain | 506 |
| Papua New Guinea | 462 |
| Sweden | 441 |
| Japan | 378 |
| Germany | 357 |
| Norway | 324 |
| Italy | 301 |
| New Zealand | 270 |
| United Kingdom | 243 |
| Nepal | 147 |
| Bangladesh | 144 |
| Greece | 132 |
| **TOTAL** | **30.102** |
| **AFRICA** | **30.221** |


In addition to the well known social issues of *illiteracy* and *innumeracy*, there also should be such a concept as "*immappancy*", meaning *insufficient geographical knowledge.*

A survey with random American schoolkids let them guess the population and land area of their country. Not entirely unexpected, but still rather unsettling, the majority chose *"1-2 billion"* and *"largest in the world"*, respectively.

Even with Asian and European college students, geographical estimates were often off by factors of *2-3*. This is partly due to the highly distorted nature of the predominantly used mapping projections (such as *Mercator*).

A particularly extreme example is the worldwide misjudgement of the true size of *Africa*. This single image tries to embody the massive scale, which is larger than the *USA, China, India, Japan* and *all of Europe..... combined!*



## **Top 100** Countries

Area in square kilometers, Percentage of World Total
Sources: Britannica, Wikipedia, Almanac 2010

| | | AREA km² | % |
|---|---|---|---|
| 1 | Russia | 17.098.242 | 11,50 |
| 2 | Canada | 9.984.670 | 6,70 |
| 3 | China | 9.596.961 | 6,40 |
| 4 | United States | 9.629.091 | 6,40 |
| 5 | Brazil | 8.514.877 | 5,70 |
| 6 | Australia | 7.692.024 | 5,20 |
| 7 | India | 3.287.263 | 2,30 |
| 8 | Argentina | 2.780.400 | 2,00 |
| 9 | Kazakhstan | 2.724.900 | 1,80 |
| 10 | Sudan | 2.505.813 | 1,70 |
| 11 | Algeria | 2.381.741 | 1,60 |
| 12 | Congo | 2.344.858 | 1,60 |
| 13 | Greenland | 2.166.086 | 1,50 |
| 14 | Saudi Arabia | 2.149.690 | 1,40 |
| 15 | Mexico | 1.964.375 | 1,30 |
| 16 | Indonesia | 1.860.360 | 1,30 |
| 17 | Libya | 1.759.540 | 1,20 |
| 18 | Iran | 1.628.750 | 1,10 |
| 19 | Mongolia | 1.564.100 | 1,10 |
| 20 | Peru | 1.285.216 | 0,86 |
| 21 | Chad | 1.284.000 | 0,86 |
| 22 | Niger | 1.267.000 | 0,85 |
| 23 | Angola | 1.246.700 | 0,85 |
| 24 | Mali | 1.240.192 | 0,83 |
| 25 | South Africa | 1.221.037 | 0,82 |
| 26 | Colombia | 1.141.748 | 0,76 |
| 27 | Ethiopia | 1.104.300 | 0,74 |
| 28 | Bolivia | 1.098.581 | 0,74 |
| 29 | Mauritania | 1.025.520 | 0,69 |
| 30 | Egypt | 1.002.000 | 0,67 |
| 31 | Tanzania | 945.087 | 0,63 |
| 32 | Nigeria | 923.768 | 0,62 |
| 33 | Venezuela | 912.050 | 0,61 |
| 34 | Namibia | 824.116 | 0,55 |
| 35 | Mozambique | 801.590 | 0,54 |
| 36 | Pakistan | 796.095 | 0,53 |
| 37 | Turkey | 783.562 | 0,53 |
| 38 | Chile | 756.102 | 0,51 |
| 39 | Zambia | 752.612 | 0,51 |
| 40 | Myanmar | 676.578 | 0,45 |
| 41 | Afghanistan | 652.090 | 0,44 |
| 42 | Somalia | 637.657 | 0,43 |
| 43 | France | 632.834 | 0,43 |
| 44 | C. African Rep | 622.984 | 0,42 |
| 45 | Ukraine | 603.500 | 0,41 |
| 46 | Madagascar | 587.041 | 0,39 |
| 47 | Botswana | 582.000 | 0,39 |
| 48 | Kenya | 580.367 | 0,39 |
| 49 | Yemen | 527.968 | 0,35 |
| 50 | Thailand | 513.120 | 0,34 |
| 51 | Spain | 505.992 | 0,34 |
| 52 | Turkmenistan | 488.100 | 0,33 |
| 53 | Cameroon | 475.442 | 0,32 |
| 54 | Papua New Guinea | 462.840 | 0,31 |
| 55 | Uzbekistan | 447.400 | 0,30 |
| 56 | Morocco | 446.550 | 0,30 |
| 57 | Sweden | 441.370 | 0,30 |
| 58 | Iraq | 438.317 | 0,29 |
| 59 | Paraguay | 406.752 | 0,27 |
| 60 | Zimbabwe | 390.757 | 0,26 |
| 61 | Japan | 377.930 | 0,25 |
| 62 | Germany | 357.114 | 0,24 |
| 63 | Rep d.l. Congo | 342.000 | 0,23 |
| 64 | Finland | 338.419 | 0,23 |
| 65 | Vietnam | 331.212 | 0,22 |
| 66 | Malaysia | 330.803 | 0,22 |
| 67 | Norway | 323.802 | 0,22 |
| 68 | Côte d'Ivoire | 322.463 | 0,22 |
| 69 | Poland | 312.685 | 0,21 |
| 70 | Oman | 309.500 | 0,21 |
| 71 | Italy | 301.336 | 0,20 |
| 72 | Philippines | 300.000 | 0,20 |
| 73 | Burkina Faso | 274.222 | 0,18 |
| 74 | New Zealand | 270.467 | 0,18 |
| 75 | Gabon | 267.668 | 0,18 |
| 76 | Western Sahara | 266.000 | 0,18 |
| 77 | Ecuador | 256.369 | 0,20 |
| 78 | Guinea | 245.857 | 0,17 |
| 79 | United Kingdom | 242.900 | 0,16 |
| 80 | Uganda | 241.038 | 0,16 |
| 81 | Ghana | 238.539 | 0,16 |
| 82 | Romania | 238.391 | 0,16 |
| 83 | Laos | 236.800 | 0,16 |
| 84 | Guyana | 214.969 | 0,14 |
| 85 | Belarus | 207.600 | 0,14 |
| 86 | Kyrgyzstan | 199.951 | 0,13 |
| 87 | Senegal | 196.722 | 0,13 |
| 88 | Syria | 185.180 | 0,12 |
| 89 | Cambodia | 181.035 | 0,12 |
| 90 | Uruguay | 176.215 | 0,12 |
| 91 | Suriname | 163.820 | 0,11 |
| 92 | Tunisia | 163.610 | 0,11 |
| 93 | Nepal | 147.181 | 0,10 |
| 94 | Bangladesh | 143.998 | 0,10 |
| 95 | Tajikistan | 143.100 | 0,10 |
| 96 | Greece | 131.957 | 0,09 |
| 97 | Nicaragua | 130.373 | 0,09 |
| 98 | North Korea | 120.538 | 0,08 |
| 99 | Malawi | 118.484 | 0,08 |
| 100 | Eritrea | 117.600 | 0,08 |
| | TOP 100 TOTAL | 132.632.524 | 89,34 |

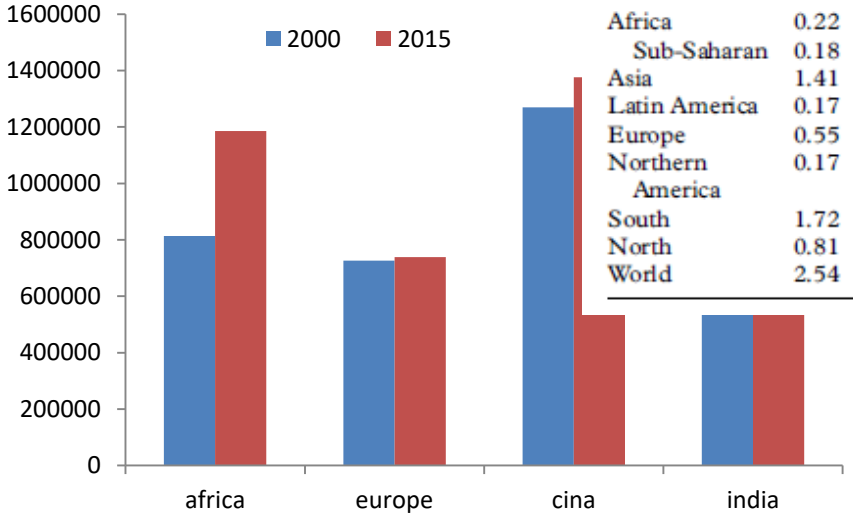
# Epidemiologic and health transition in sub-Saharan Africa



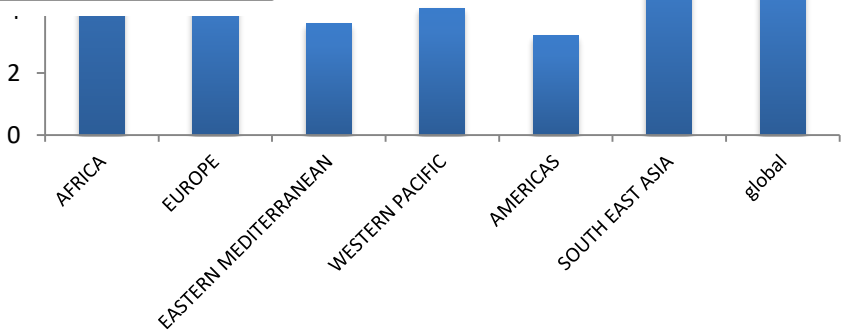
Table 1. Population estimates (1950–2005) and projections (2005–2050), by region. Adapted from United Nations (2007).

| | population (billions) | | | % increase | |
|---|---|---|---|---|---|
| | 1950 | 2005 | 2050 | 1950–2005 | 2005–2050 |
| Africa | 0.22 | 0.92 | 2.00 | 311 | 117 |
| Sub-Saharan | 0.18 | 0.77 | 1.76 | 327 | 129 |
| Asia | 1.41 | 3.94 | 5.27 | 179 | 34 |
| Latin America | 0.17 | 0.56 | 0.77 | 233 | 38 |
| Europe | 0.55 | 0.73 | 0.66 | 33 | −9 |
| Northern America | 0.17 | 0.33 | 0.45 | 94 | 34 |
| South | 1.72 | 5.30 | 7.95 | 208 | 50 |
| North | 0.81 | 1.22 | 1.25 | 49 | 2 |
| World | 2.54 | 6.51 | 9.19 | 157 | 41 |

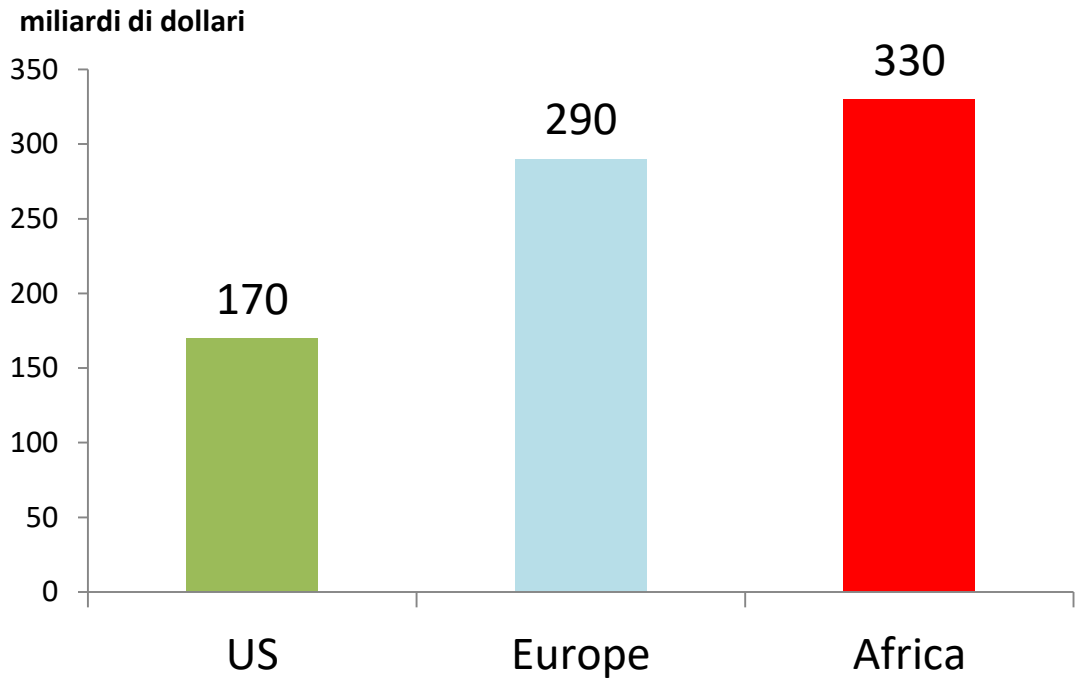
**Population 2000-**




**Life expectancy 2000-2016**



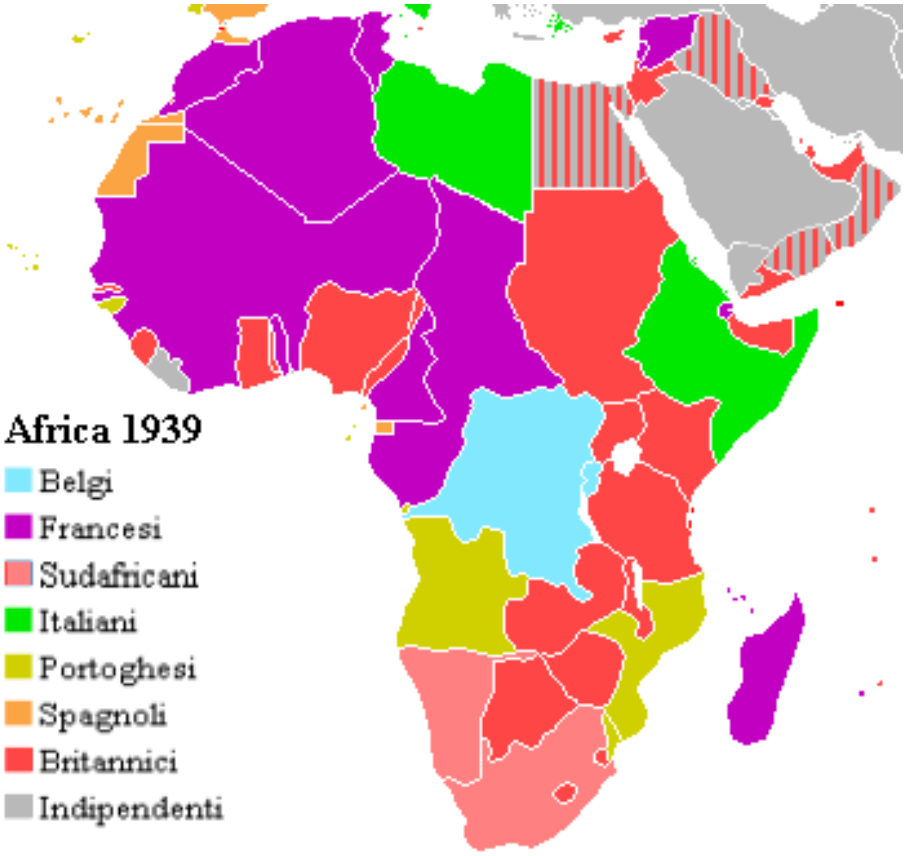
# Investimenti della Cina 2005-2017

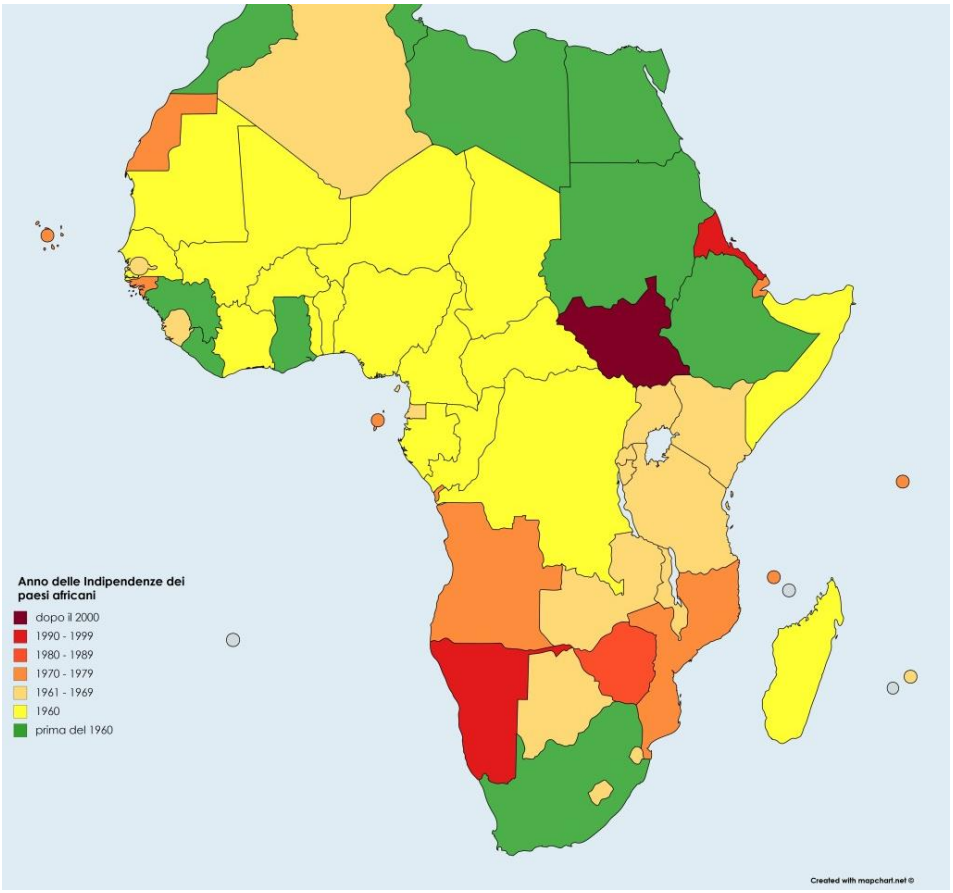



Dati ufficiali del governo cinese

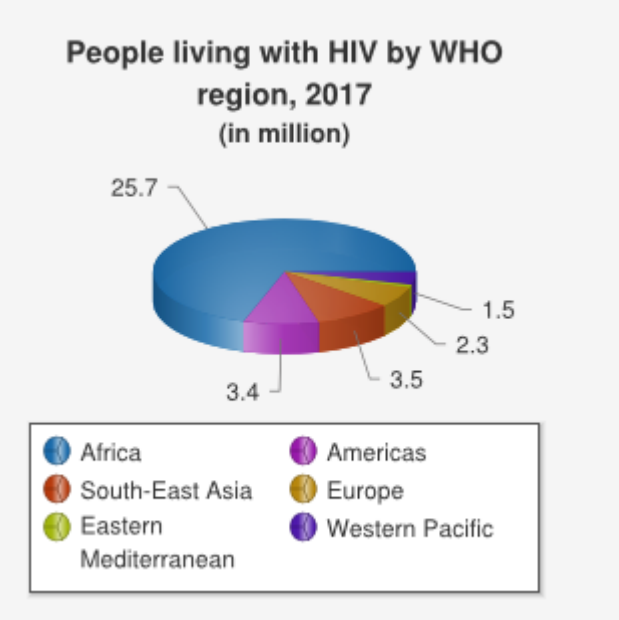
https://www.youtube.com/watch?v=U77P5VwlQ0Y

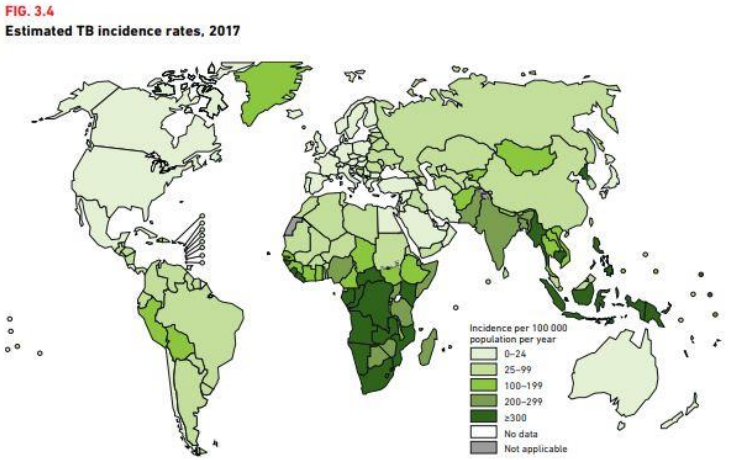
# Stabilità dell'Africa

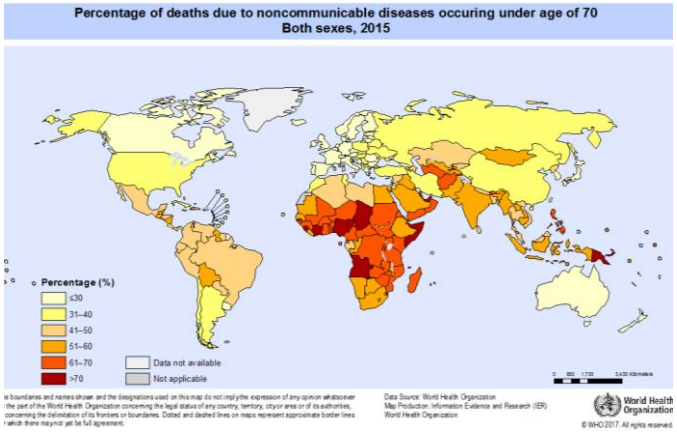


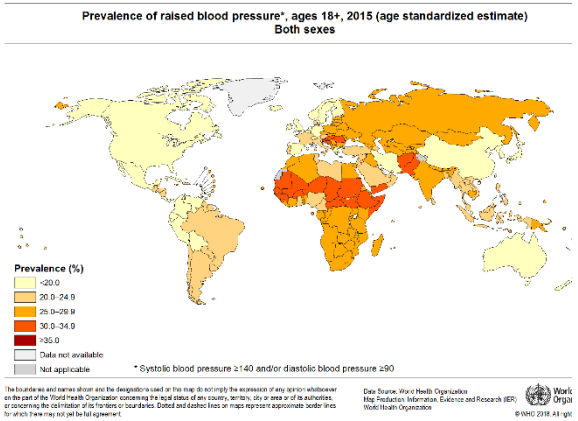



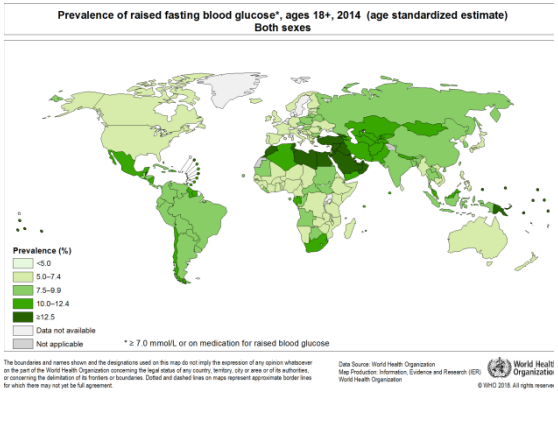
# Sub-Saharan Africa: the double burden of CDs and NCDs



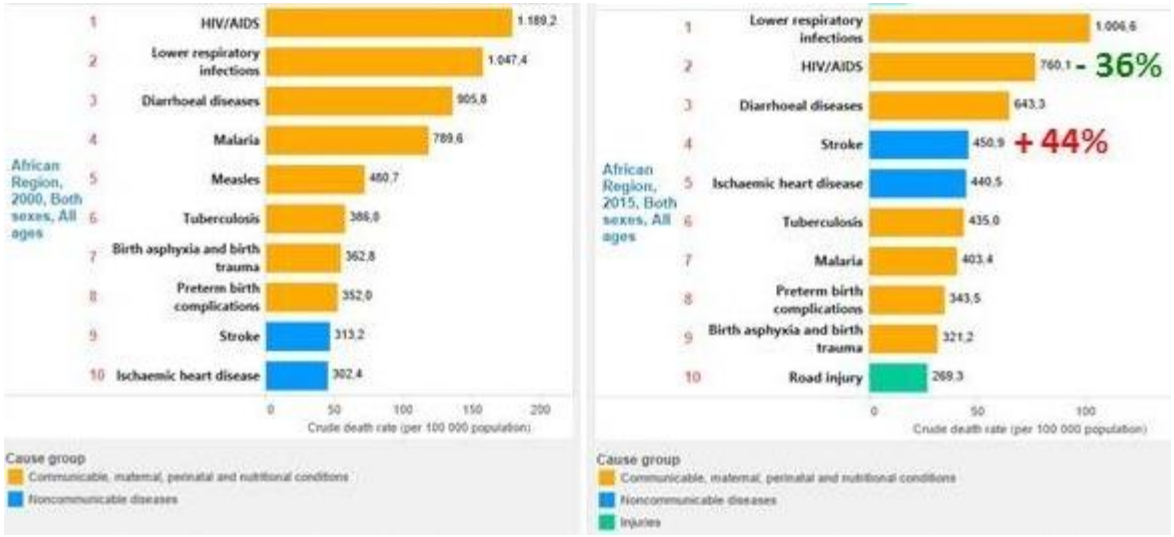



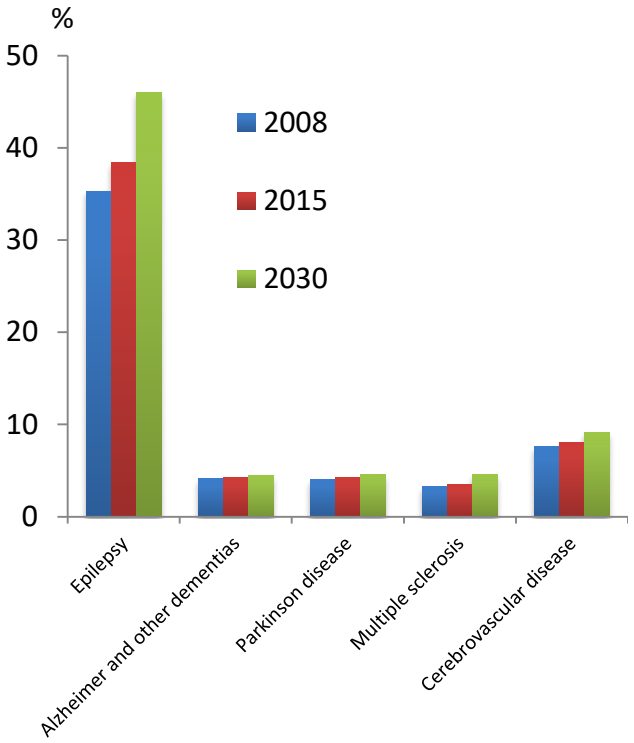



# «Boom» delle malattie neurologiche in Africa

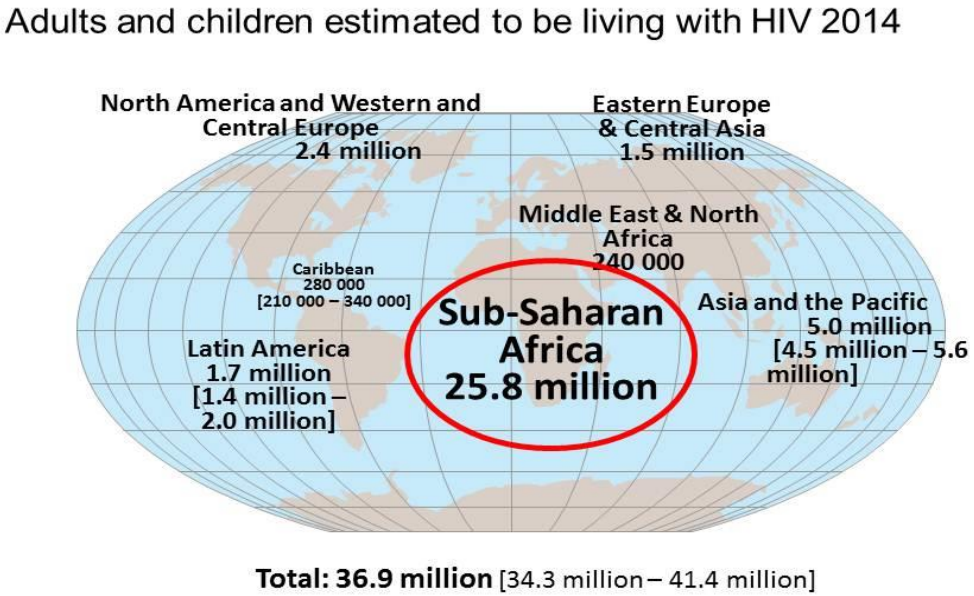


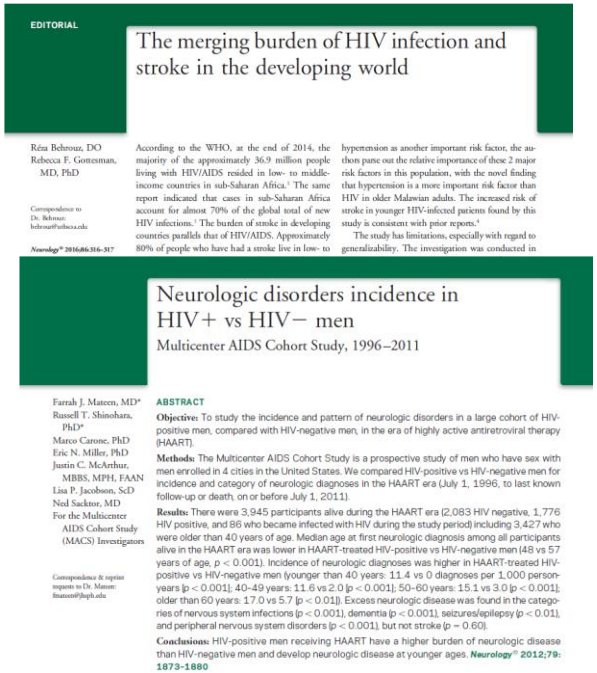




- **In Africa le malattie neurologiche sono divenute la quarta causa di morte**
- **Uccidono più della malaria e della TBC**
- **Fra 10 anni faranno più vittime dell'AIDS (dati WHO)**
- **Quasi un decesso su due per epilessia avviene in Africa**

http://www.who.int/gho/mortality_burden_disease/causes_death/top_10/en/

# HIV
# A risk factor for main neurologic disorders





EDITORIAL

The merging burden of HIV infection and stroke in the developing world

Réza Behrouz, DO
Rebecca F. Gottesman, MD, PhD

Correspondence to Dr. Behrouz: behrouz@uthscsa.edu

Neurology® 2016;86:316–317

According to the WHO, at the end of 2014, the majority of the approximately 36.9 million people living with HIV/AIDS resided in low- to middle-income countries in sub-Saharan Africa.[1] The same report indicated that cases in sub-Saharan Africa account for almost 70% of the global total of new HIV infections.[1] The burden of stroke in developing countries parallels that of HIV/AIDS. Approximately 80% of people who have had a stroke live in low- to

hypertension as another important risk factor, the authors point out the relative importance of these 2 major risk factors in this population, with the novel finding that hypertension is a more important risk factor than HIV in older Malawian adults. The increased risk of stroke in younger HIV-infected patients found by this study is consistent with prior reports.[3]

The study has limitations, especially with regard to generalizability. The investigation was conducted in

Neurologic disorders incidence in HIV+ vs HIV− men

Multicenter AIDS Cohort Study, 1996–2011

Farrah J. Mateen, MD*
Russell T. Shinohara, PhD*
Marco Carone, PhD
Eric N. Miller, PhD
Justin C. McArthur, MBBS, MPH, FAAN
Lisa P. Jacobson, ScD
Ned Sacktor, MD
For the Multicenter AIDS Cohort Study (MACS) Investigators

Correspondence & reprint requests to Dr. Mateen: fmateen@hsph.edu

ABSTRACT

**Objective:** To study the incidence and pattern of neurologic disorders in a large cohort of HIV-positive men, compared with HIV-negative men, in the era of highly active antiretroviral therapy (HAART).

**Methods:** The Multicenter AIDS Cohort Study is a prospective study of men who have sex with men enrolled in 4 cities in the United States. We compared HIV-positive vs HIV-negative men for incidence and category of neurologic diagnoses in the HAART era (July 1, 1996, to last known follow-up or death, on or before July 1, 2011).

**Results:** There were 3,945 participants alive during the HAART era (2,083 HIV negative, 1,776 HIV positive, and 86 who became infected with HIV during the study period) including 3,427 who were older than 40 years of age. Median age at first neurologic diagnosis among all participants alive in the HAART era was lower in HAART-treated HIV-positive vs HIV-negative men (48 vs 57 years of age, $p < 0.001$). Incidence of neurologic diagnoses was higher in HAART-treated HIV-positive vs HIV-negative men (younger than 40 years: 11.4 vs 0 diagnoses per 1,000 person-years [$p < 0.001$]; 40–49 years: 11.6 vs 2.0 [$p < 0.001$]; 50–60 years: 15.1 vs 3.0 [$p < 0.001$]; older than 60 years: 17.0 vs 5.7 [$p < 0.01$]). Excess neurologic disease was found in the categories of nervous system infections ($p < 0.001$), dementia ($p < 0.001$), seizures/epilepsy ($p < 0.01$), and peripheral nervous system disorders ($p < 0.001$), but not stroke ($p = 0.60$).

**Conclusions:** HIV-positive men receiving HAART have a higher burden of neurologic disease than HIV-negative men and develop neurologic disease at younger ages. **Neurology® 2012;79: 1873-1880**

- Epilepsy
- Stroke
- Alzheimer
- Polyneuropathies

- Mateen et al Neurology 2012;79: 1873–1880
- Benjamin et al. Neurology 2016 ; 86(4):324-33.

**I neurologi in Africa subsaariana sono circa uno ogni cinque milioni di abitanti.**
**Chi intercetta la maggior parte dei pazienti neurologici?**

- Il medico di base?
- L'infettivologo?
- I clinical officers?
- Gli infermieri?
- I *local healers* (guaritori locali)?

Bower and Zenebe. Neurology 2005;64:412–415

# Epilepsy, changes in behavior and mental illness

# General Assembly

Distr.: General
24 January 2012

**Sixty-sixth session**
Agenda item 117

## Resolution adopted by the General Assembly

[*without reference to a Main Committee (A/66/L.1)*]

### 66/2. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases

*The General Assembly*

*Adopts* the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases annexed to the present resolution.

*3rd plenary meeting*
*19 September 2011*

**Annex**

**Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases**

27. Note with concern the possible linkages between non-communicable diseases and some communicable diseases, such as HIV/AIDS, call for the integration, as appropriate, of responses to HIV/AIDS and non-communicable diseases, and in this regard call for attention to be given to people living with HIV/AIDS, especially in countries with a high prevalence of HIV/AIDS, in accordance with national priorities;

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**Disease Relief through Excellent and Advanced Means**

- Since 2002
- In 11 nations:
  - **Mozambique**, Malawi, Tanzania, Kenya, Republic of Guinea, Swaziland, Cameroon, Congo RDC, Central African Republic, Angola and Nigeria
- 48 health centres plus 25 laboratories including molecular biology
- ≈500,000 HIV+ pts monitored with regular follow up including clinical monitoring, blood samples, education, prevention, communities involvement

# HIV in 2000
# Western and SSA health systems

**Western countries**

- Triple therapy: yes
- Viral load detection: yes
- ARV during pregnancy : yes
- Test and treat : yes
- Specialized centres: yes
- Drugs free: yes

**Sub-Saharan Africa**

- Triple therapy: no
- Viral load detection: no
- ARV during pregnancy : no
- Test and treat : no
- Specialized centres: no
- Drugs free: no

# HIV in 2000
# Western and SSA health systems

**Western countries**

- Triple therapy: yes
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**DREAM in Sub-Saharan Africa**

- Triple therapy: yes
- Viral load detection: yes
- ARV during pregnancy : yes
- Test and treat : yes
- Specialized centres: yes
- Drugs free: yes

# DREAM is education and training

- More than 10,000 african personnel: doctors, clinical officers, nurses, biologists, lab. technicians, coordinators, managers, health personal – home casre, counselling etc-, technicians for pc, networking, renewable energies. 28 Pan-African courses 2002–2016.

Modifies from Liotta et al. Int J Environ Res Public Health 2015; 12: 1324-39

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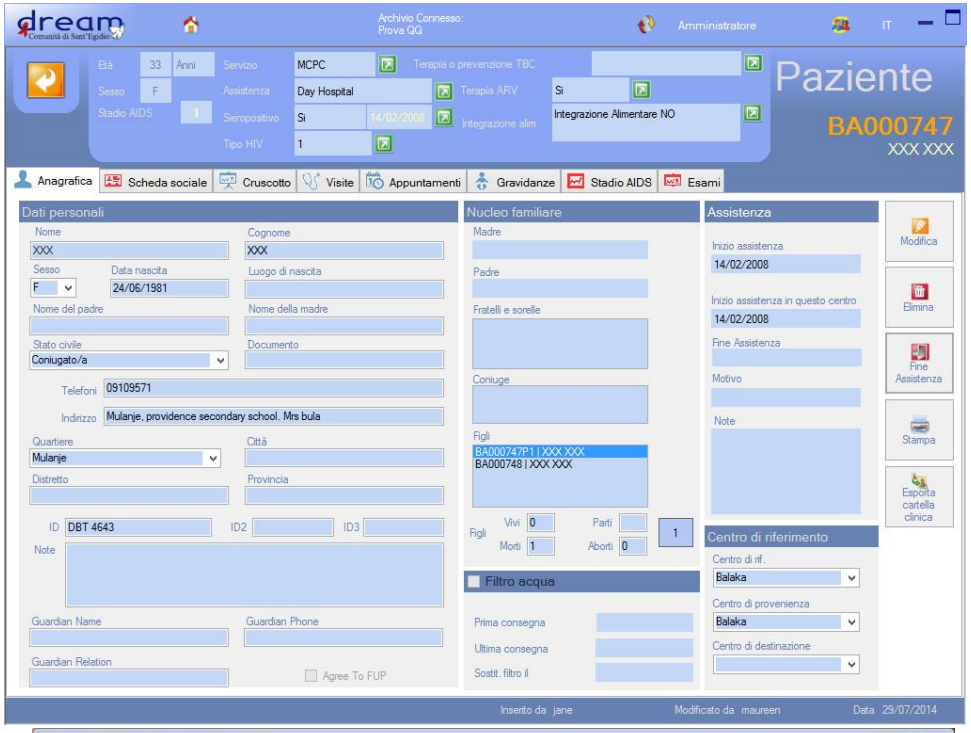
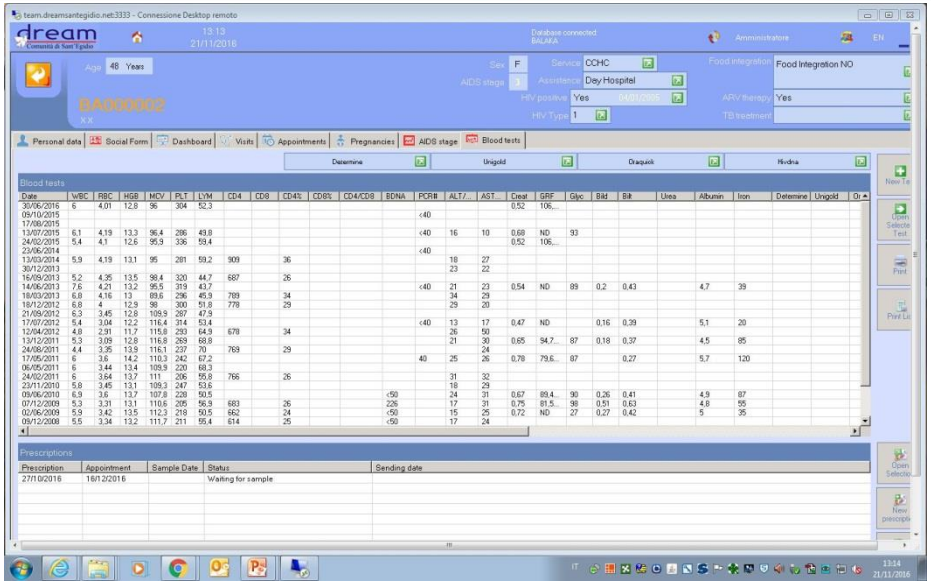
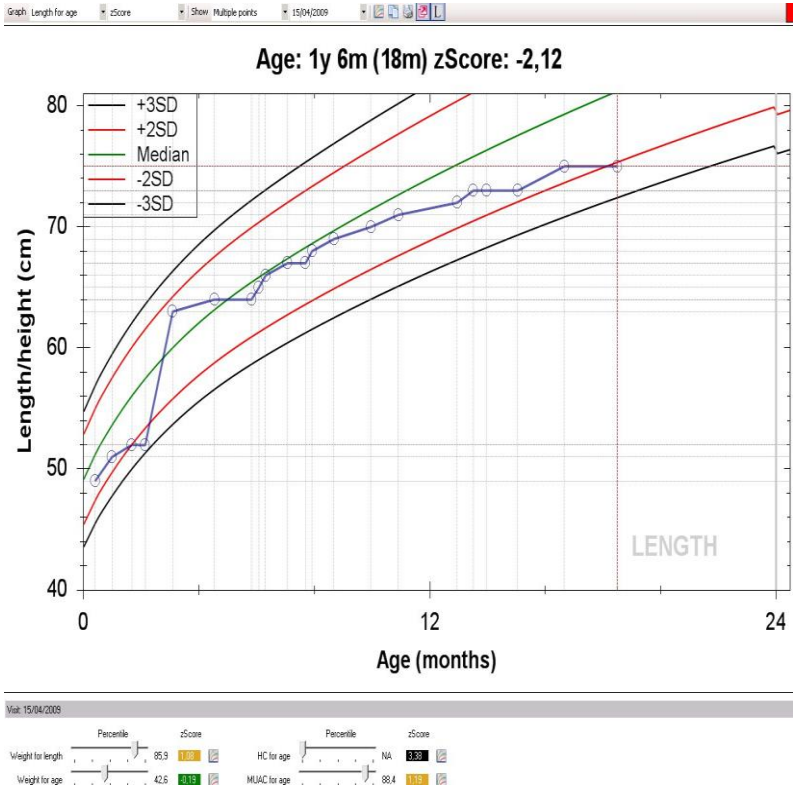
# The DREAM software







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# DREAM laboratories


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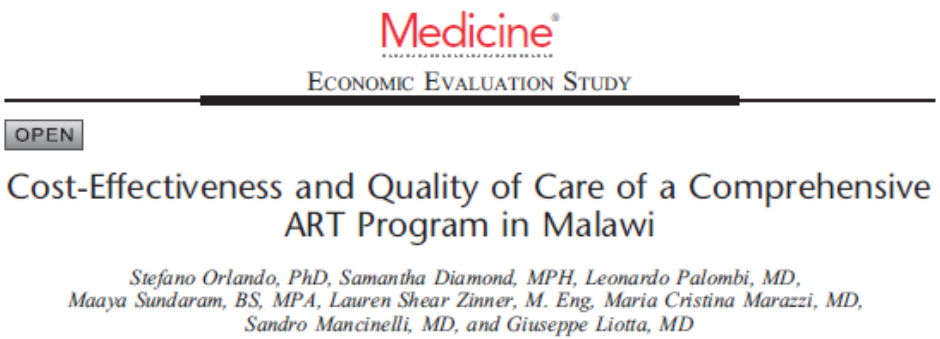
# DREAM, a cost-effective model?



Medicine

ECONOMIC EVALUATION STUDY

OPEN

Cost-Effectiveness and Quality of Care of a Comprehensive ART Program in Malawi

*Stefano Orlando, PhD, Samantha Diamond, MPH, Leonardo Palombi, MD, Maaya Sundaram, BS, MPA, Lauren Shear Zinner, M. Eng, Maria Cristina Marazzi, MD, Sandro Mancinelli, MD, and Giuseppe Liotta, MD*

- DREAM vs Malawi Ministry Health Program
- After 5 years
  - Costs per patient per year: 223,1 vs 136 USD
  - Living patients 79,8% vs 60%
  - DREAM
    - Income per patient/year : 1° year 64,65 – 5°year 606,89USD

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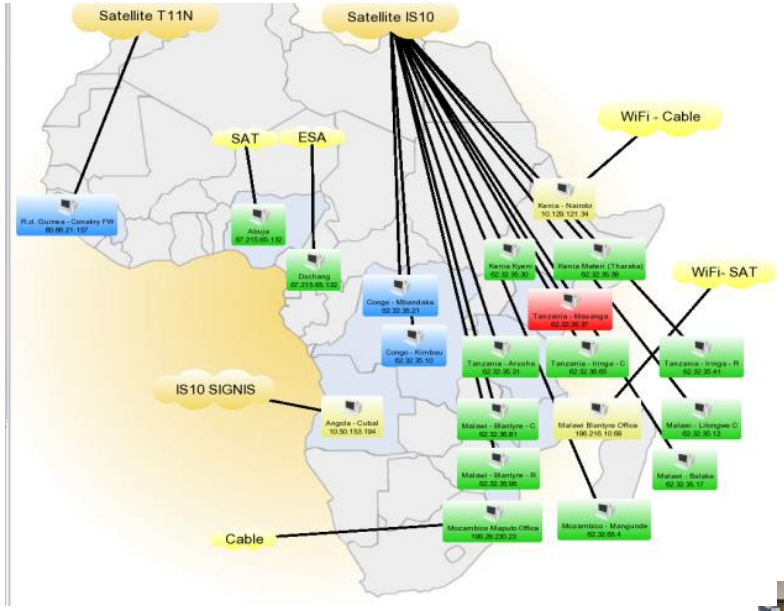
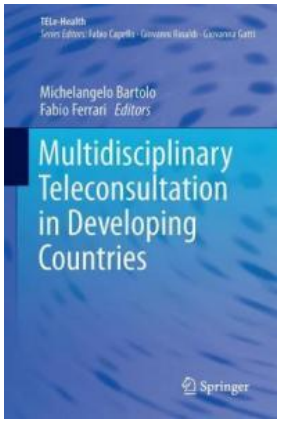
# DREAM and telemedicine




a)

b)

Journal of the Neurological Sciences 391 (2018) 109–111

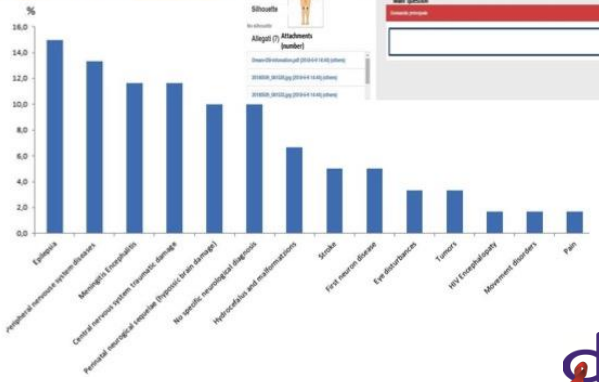
Contents lists available at ScienceDirect

Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Letter to the Editor

**Teleneurology in sub-Saharan Africa: Experience from a long lasting HIV/AIDS health program (DREAM)**



c)

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# DREAM and sustainability

## Plant for Africa and Renewable Energy 14

Energy for Life: Electrical Wiring and Renewable Energy
Plant Design for Small-Scale Health Facilities in Africa

Giorgio Barbaglia



**Fig. 14.3** AROS SPS hybrid solar inverters powering DREAM center and laboratory. Balaka, Malawi



**Fig. 14.15** Installing a hybrid solar power system at the DREAM center and laboratory. Mthengo wa Ntenga (Lilongwe) Malawi



**Fig. 14.2** Solar plant on DREAM center. Balaka, Malawi



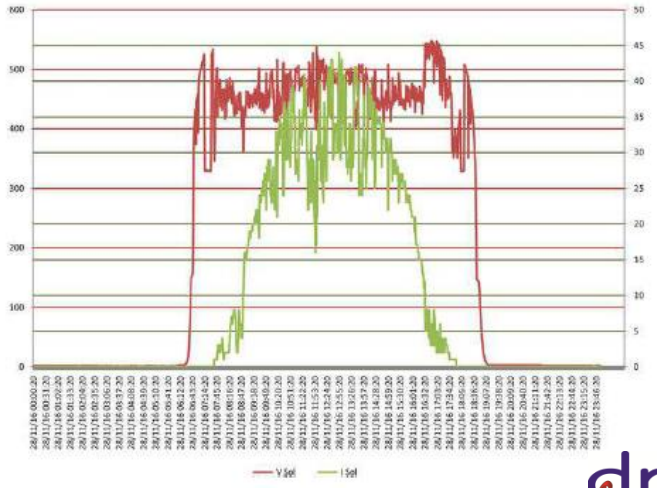

**Fig. 14.13** Photovoltaic voltage (V) and current (A) on a 24-h basis

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**Disease Relief through Excellent and Advanced Means**

- Piattaforma per la gestione delle principali malattie non comunicabili e neurologiche

Pope Francis visited a DREAM Sant'Egidio centre in Kenya 2015


President Bush visited Sant'Egidio also to ask of DREAM, Rome 2007


Ban-ki Moon visited Sant'Egidio, Rome 2015

Merkel met Sant'Egidio several times (with Andrea Riccardi and Marco Impagliazzo, Founder and President respectively)

Ivanka Trump visited Sant'Egidio, 2017


Sant'Egidio was invited to present The DREAM program at the UN, 2016


**Developing countries have to deal with two problems simultaneously**.

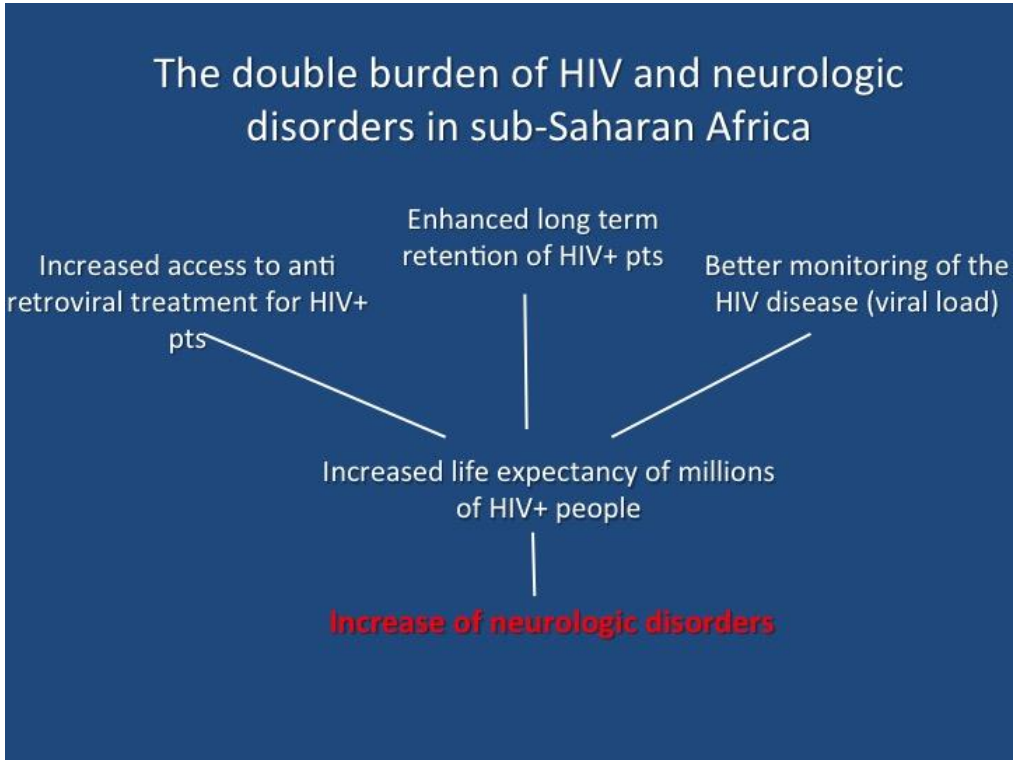
The first: the absolute numbers of people with infectious diseases remains high.

The second: **<u>people are living longer, but not necessarily in a healthy state</u>**

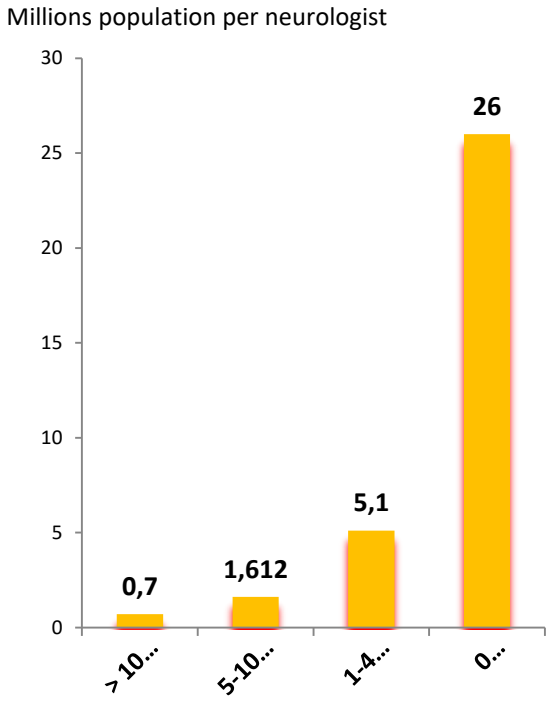
# La *transizione sanitaria* in Africa

- Popolazione Africa 1950-2017: **225milioni -1miliardo e 250milioni**
- In Africa aumento NCD/croniche.
- *Transizione sanitaria*:
  - dalle malattie «one shot», le malattie infettive, alle malattie croniche:
- Presa in carico: novità assoluta per i sistemi sanitari africani

# A risk factor for main neurologic disorders

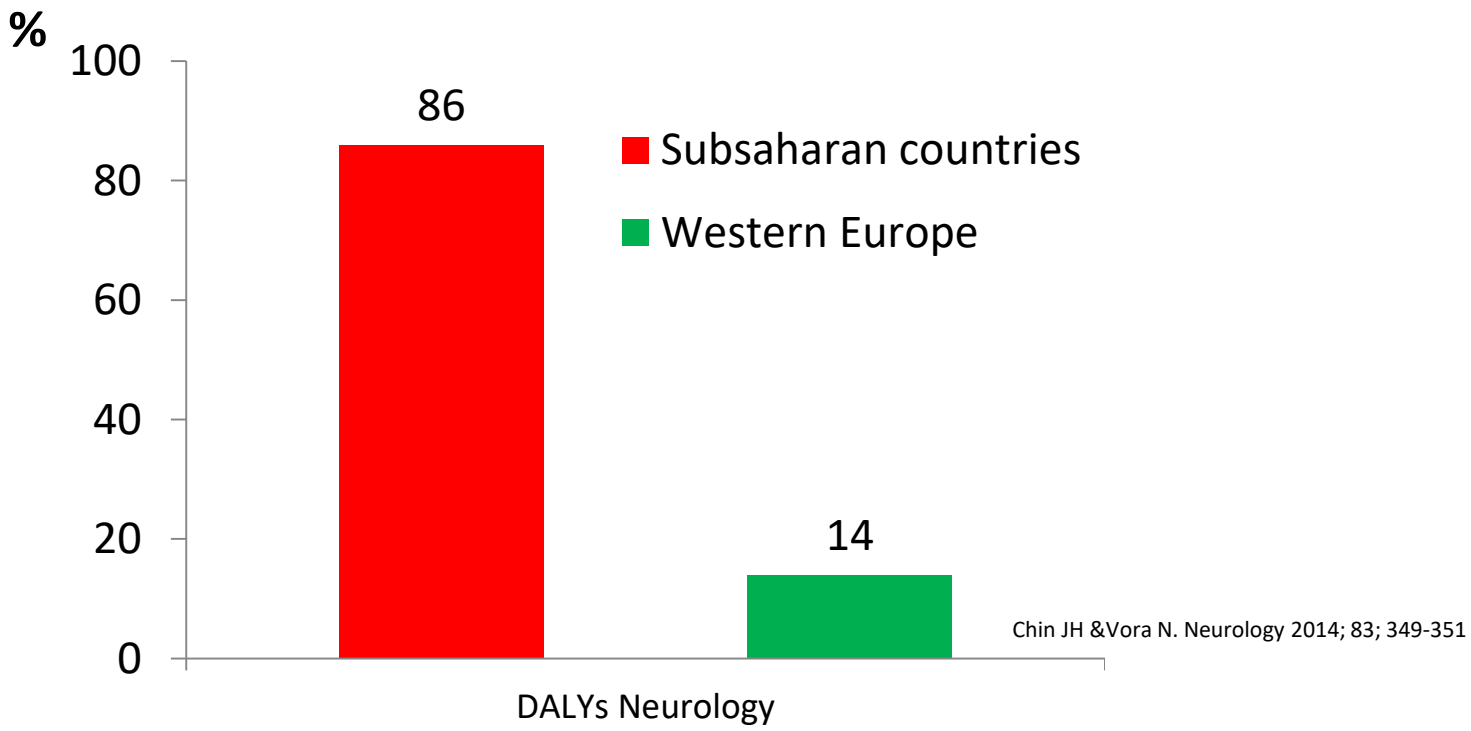



**Neurologists in Africa - 51 nations**




Bower and Zenebe. Neurology 2005;64:412–415

# The Global Burden of Neurologic Diseases




Chin JH &Vora N. Neurology 2014; 83; 349-351

- The African Region suffers more than 24% of the global burden of disease but has access to only 3% of health workers:

  Doctors

  Malawi 0.018/1,000 inhabitants

  Mozambique 0.055/1,000 inhabitants

  Italy 4/1,000 inhabitants

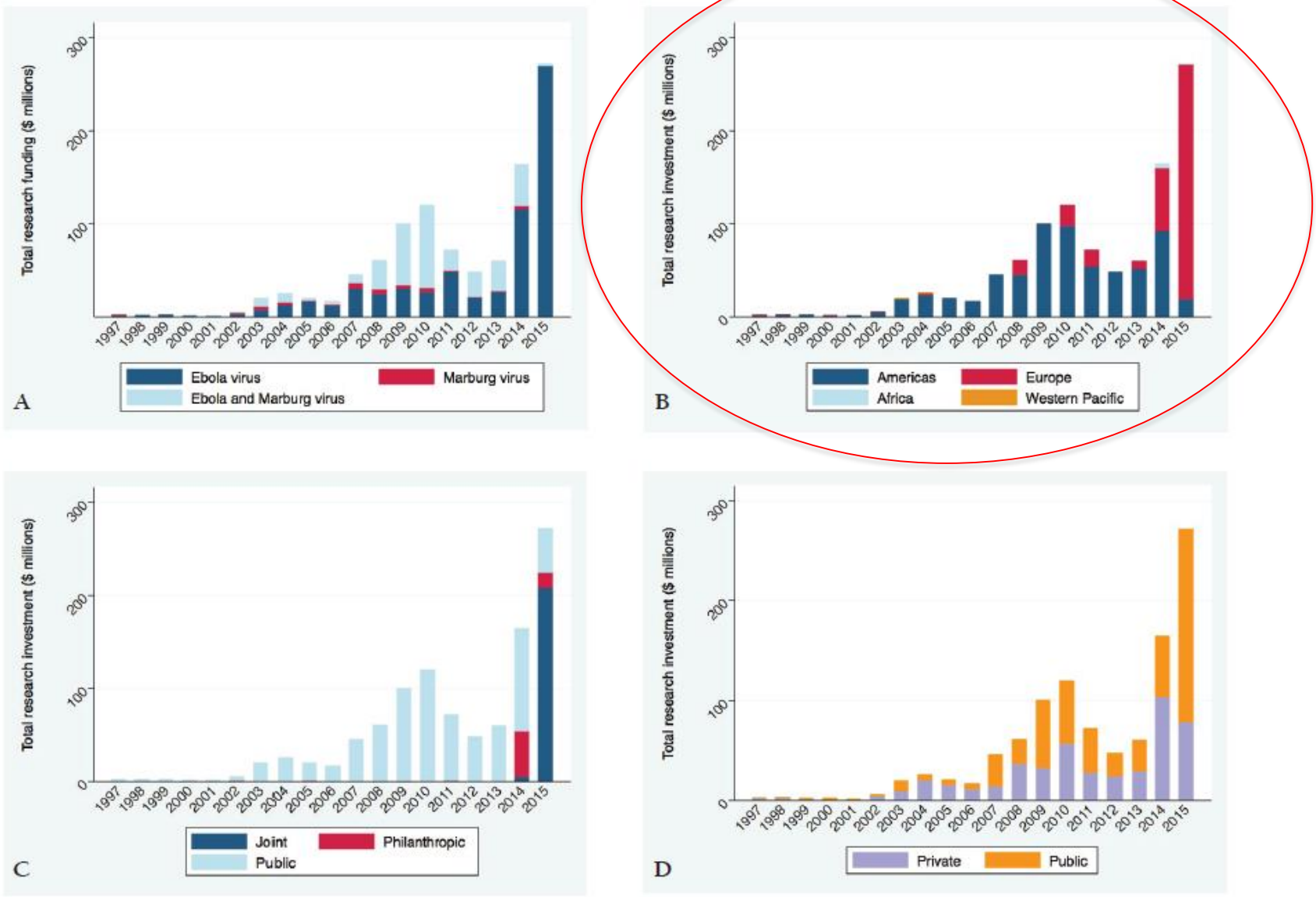
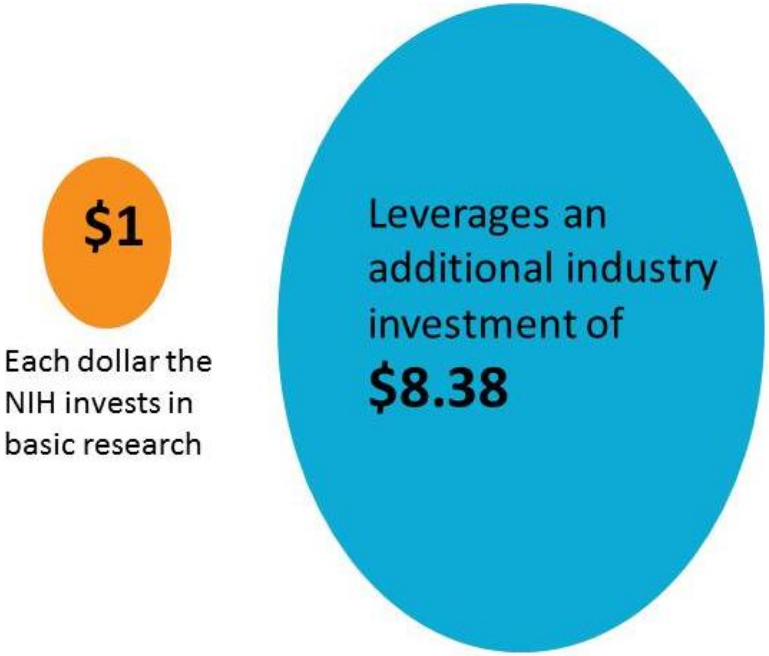



**Figure 1.** Total and proportionate investment in research funding by filovirus (A), by geographical location of lead research institution (B), by source of funding (C), and by recipient of funding (D), in 2015 US$, 1997–2015.

Fitchett JRA et al. J Global Health 2016; 6 (2): 1-10

# US investments in global health R&D leverage private sector funding




GHTC

#innovate4health

http://www.ghtcoalition.org/pdf/Return-on-innovation-Why-global-health-R-D-is-a-smart-investment-for-the-United-States.pdf

The Economist | Topics | Current edition | More

SPECIAL REPORT

→ A shifting burden: The epidemiological transition is now spreading to the emerging world

An affordable necessity

**Both in rich and poor countries, universal health care brings huge benefits**

*The argument for universal health care is clear. But getting there is difficult, says John McDermott*

Print edition | Special report ›

Apr 28th 2018

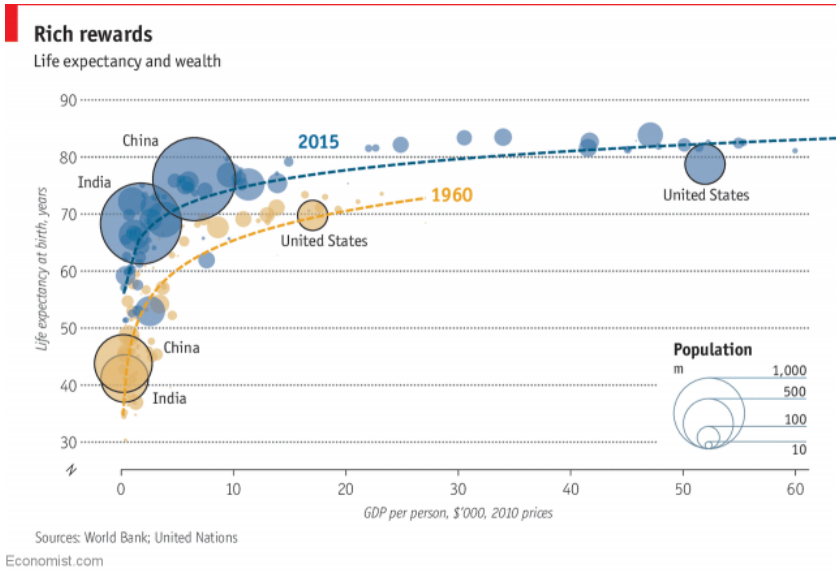
- Ebola: "No surveillance; no public health; no health system." … so few people trusted them when they became ill.
- Ebola: **rethink the approach to global health**:
  - **shifting the emphasis from trying to eradicate single diseases to building health systems that are resilient to diverse threats and less reliant on aid.**

- December 2017 World Bank and WHO report:
  - at least half the world's population does not have access to "essential" health services, such as treatment for HIV, tuberculosis, and checks for high blood pressure.
  - A 2017 survey on pts at a government hospital in Uganda discovered that
    - 53% of their households had to borrow money to pay for treatment
    - 21% sold possessions.
    - About 17% lost their job.
- **Universal health care**: the idea that **everyone should be able to get the care they need without facing financial ruin**.

# Life expectancy: income is not the only factor

**The Economist - April 2018**

"There is clear evidence that income is not the only factor; **the application of knowledge** also matters. "There are ways of ensuring good health at low incomes, and ways of spending large sums of money to no purpose," he says. America is a case in point"




For both governments and international organisations, the hard part is to find ways to make the best use of limited resources and then get on with reform.

https://www.economist.com/special-report/2018/04/28/both-in-rich-and-poor-countries-universal-health-care-brings-huge-benefits

# Who does deliver and where are delivered services for patients carrying chronic and neurological disorders in sub-Saharan Africa?

→ A crazy system: Nobody spends enough on mental health

First things first

# The importance of primary care

*Good primary care is an essential precondition for a decent health-care system*


Print edition | Special report ›
Apr 26th 2018

# The importance of primary care - First things first

**The Economist - April 2018**

- In sub-Saharan Africa people get their health care mostly from informal private providers such as drug shops or unqualified practitioners (drugsellers, local healers etc):
  - Nigeria: 36-49%
  - Kenya: 33%
    - (November 2017, Disease Control Priorities report (DCP3)
- Urban hospitals in poor countries:
  - Full of people with simple problems: primary care largely insufficient
  - At the ward entrance in many cases a list of prices
    - $1.30 for catheterisation
    - $3.90 for a transfer to a bed
    - Once admitted: extras for food and supplies.
    - Consultation can turn into negotiation.
- Access to drugs
  - In the WHO African Region, access to treatment for:
    - HIV/AIDS 2017: 60% [45–73%]
    - **Epilepsy: 10-40%**
  - In rural areas 66% of the population does not have access to preventive medicines, and 33% must travel more than 30km to get treatment.

https://www.economist.com/special-report/2018/04/26/the-importance-of-primary-care
http://www.who.int/gho/hiv/epidemic_response/ART_text/en/
http://www.who.int/mental_health/management/epilepsy_in_African-region.pdf

Open Access Research

BMJ Open

# International variations in primary care physician consultation time: a systematic review of 67 countries

Greg Irving,[1] Ana Luisa Neves,[2,3] Hajira Dambha-Miller,[1,4] Ai Oishi,[5] Hiroko Tagashira,[6] Anistasiya Verho,[7,8] John Holden[9]

- The epidemiological transition is increasing the demand for primary healthcare worldwide
- The length of the consultation is also increasingly under pressure and there are concerns about the impact of less time with the physician.
- The largest international review of consultation length includes six languages, 67 countries and 111 publications, which represent 28 million primary care consultations worldwide.

Irving G, et al. BMJ Open 2017;7:e017902. doi:10.1136/bmjopen-2017-017902

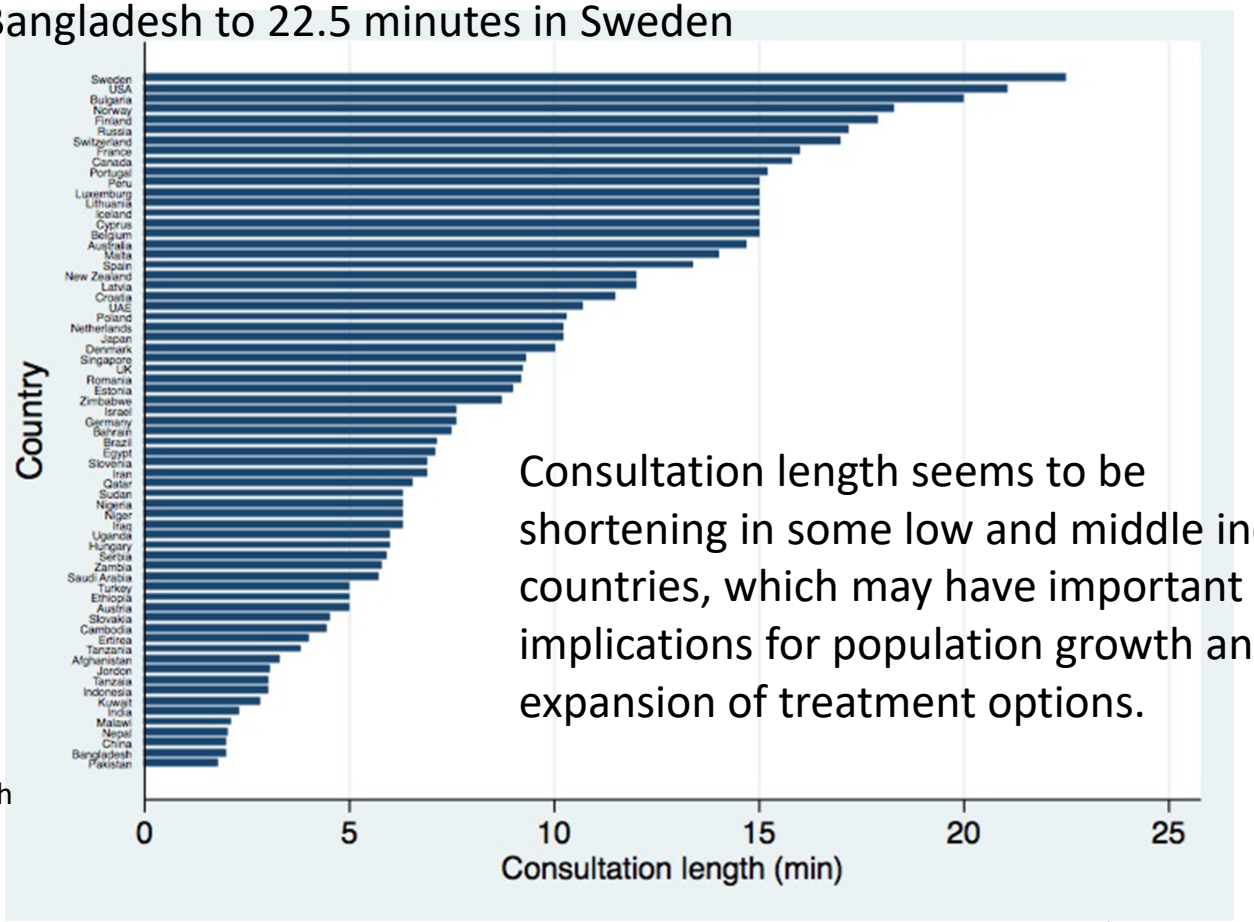
Open Access Research

BMJ Open

# International variations in primary care physician consultation time: a systematic review of 67 countries

Greg Irving,[1] Ana Luisa Neves,[2,3] Hajira Dambha-Miller,[1,4] Ai Oishi,[5] Hiroko Tagashira,[6] Anistasiya Verho,[7,8] John Holden[9]

Primary care consultations last less than 5 minutes for half the world's population, ranging from 48 seconds in Bangladesh to 22.5 minutes in Sweden




Consultation length seems to be shortening in some low and middle income countries, which may have important implications for population growth and the expansion of treatment options.

Fig. 2 Average consultation length in each country based on most recent data.

Irving G, et al. BMJ Open 2017;7:e017902. doi:10.1136/bmjopen-2017-017902

Open Access Research

BMJ Open

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- Shorter consultation length has been associated with:
  - Multiple drugs prescribed to a patient (polypharmacy)
  - Overuse of antibiotics
  - Doctor burnout and 'depersonalisation'
  - Poor communication with patients **ADHERENCE/RETENTION**

Irving G, et al. BMJ Open 2017;7:e017902. doi:10.1136/bmjopen-2017-017902

Open Access Research

BMJ Open

# International variations in primary care physician consultation time: a systematic review of 67 countries

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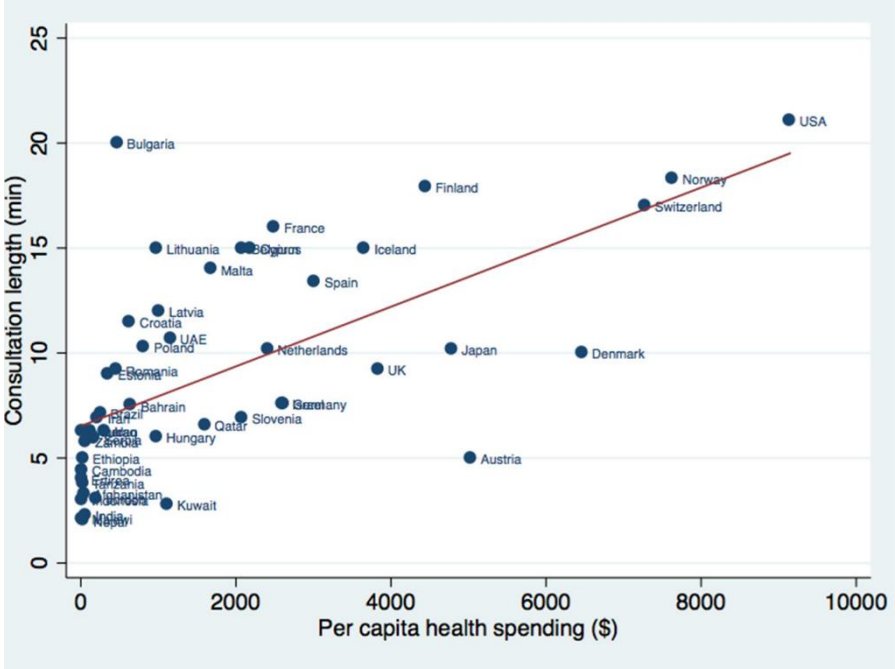



Fig. 4 Consultation length versus per capita health spending ($).

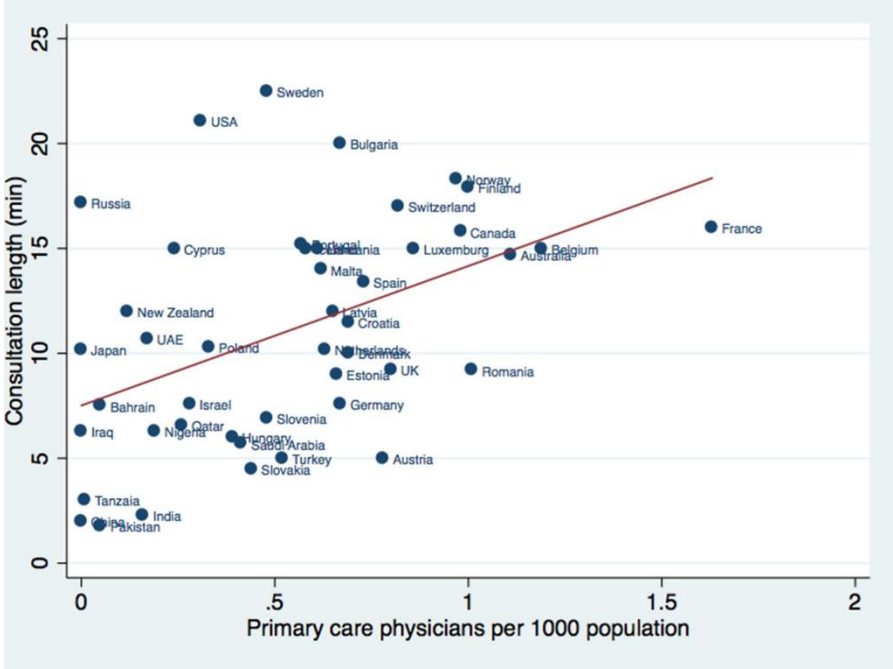



Fig. 5 Average consultation length versus primary care physician density per 1000 population.

Irving G, et al. BMJ Open 2017;7:e017902. doi:10.1136/bmjopen-2017-017902

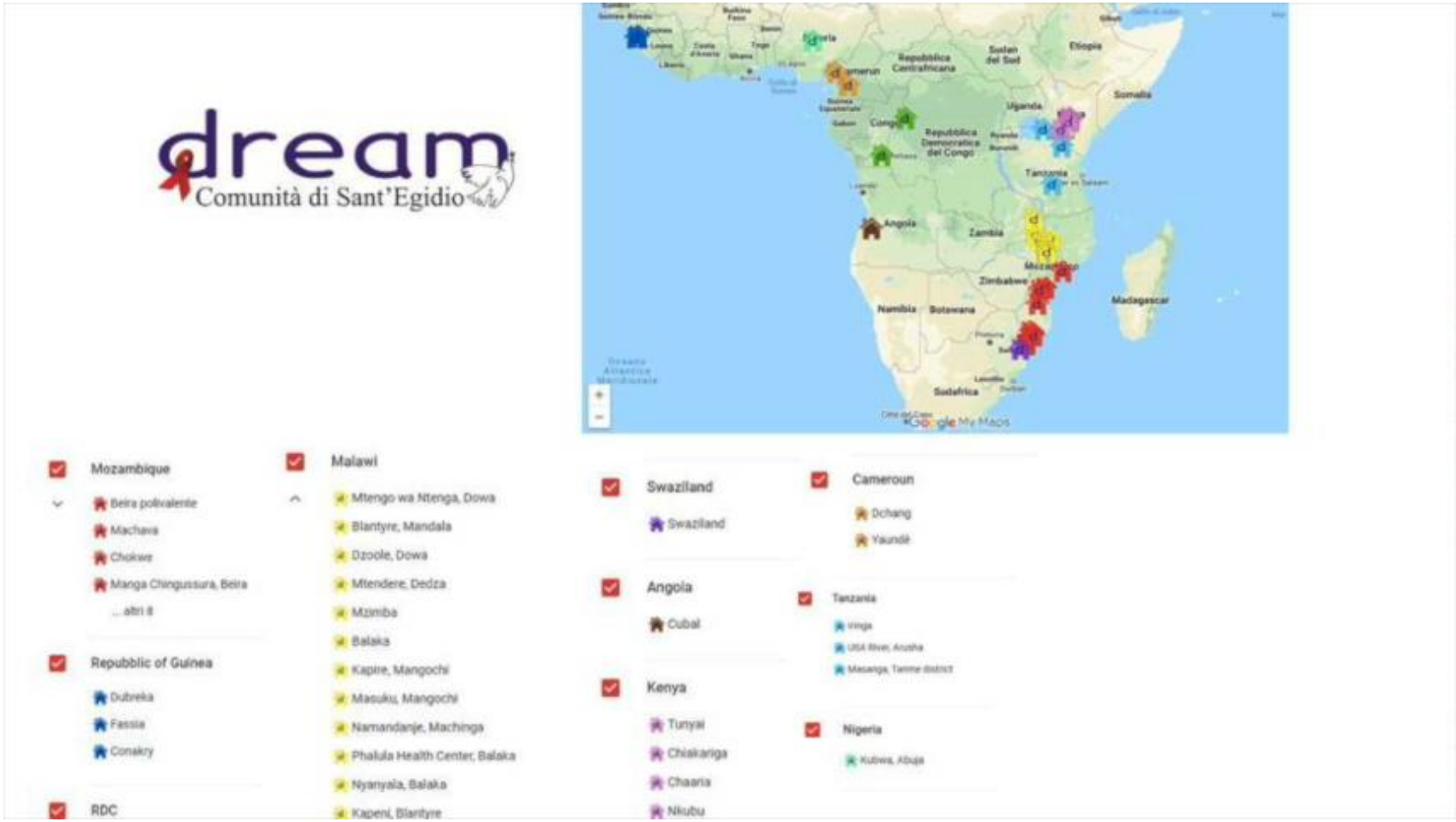
# The "know-do gap"

- **Training**
  - Consequences of short consultation time
    - In a study in Delhi only 25% of providers asked parents whether there was blood or mucus in the child's stool.
    - In India about half a million children die of diarrhoeal diseases every year.
    - Health workers who had undergone **MORE TRAINING** **provided more accurate diagnoses**.
  - But that alone is not enough.

- **Accountability**
  - In one study: 74% of Indian clinicians were able to report on how to deal with patients suffering from angina, asthma or diarrhoea
  - But: when visited by mystery "patients" presenting with exactly these symptoms, just 31% treated them correctly.
  - One explanation for the "**know-do gap**":
    - Clinicians can get away with under- or over-treatment when they are not held accountable for their work. **NETWORK, COMMUNICATION, RELATIONSHIP**

https://www.economist.com/special-report/2018/04/26/the-importance-of-primary-care

# Malawi: > 80% vive in aree rurali




NU
7162
VANETTE

# Epilepsy: mobile clinic


LIKUDZI UNDER FIVE CLINIC
SECOM
World Vision


LIKUDZI UNDER FIVE CLINIC
World Vision

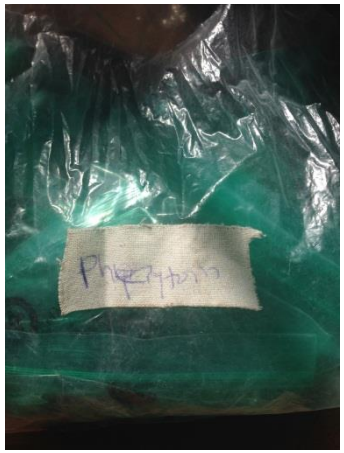

BALAKA DISTRICT HOSPITAL
P. O. BOX 138 BALAKA
VISITING HOURS
MONDAY**SUNDAY
6.00AM – 7.30AM
12.00 – 1.00PM
5.00PM – 7.30PM

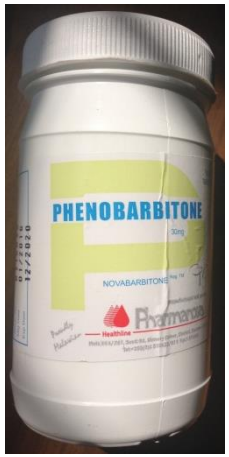

INFECTION PREVENTION
OSATAYA ZINYALALA PA
LI PONSE KOMA MU BINI
Malungo Zii
4
RED
ALTH SERVICES.
PHARMACY
V C T
PSYCHIATRIC CLINIC
UNDER FIVE CLINIC :
YOUTH FRIENDLY HEALH SERVICES

# Epilepsy: OPD

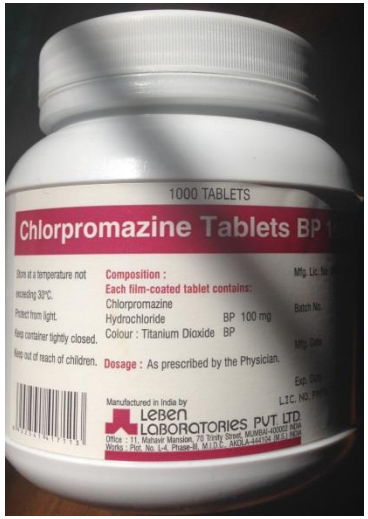
# Epilepsy: OPD

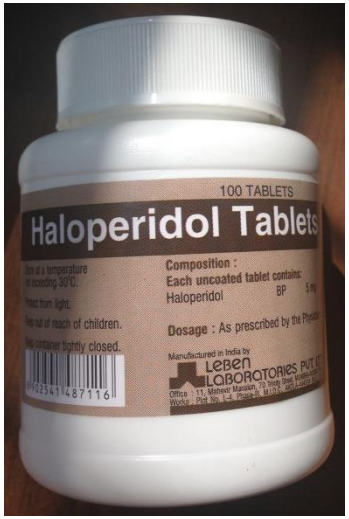
# I farmaci presso il centro epilessia
# Balaka Hospital, Malawi

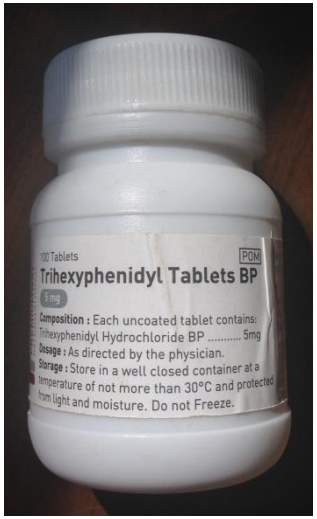




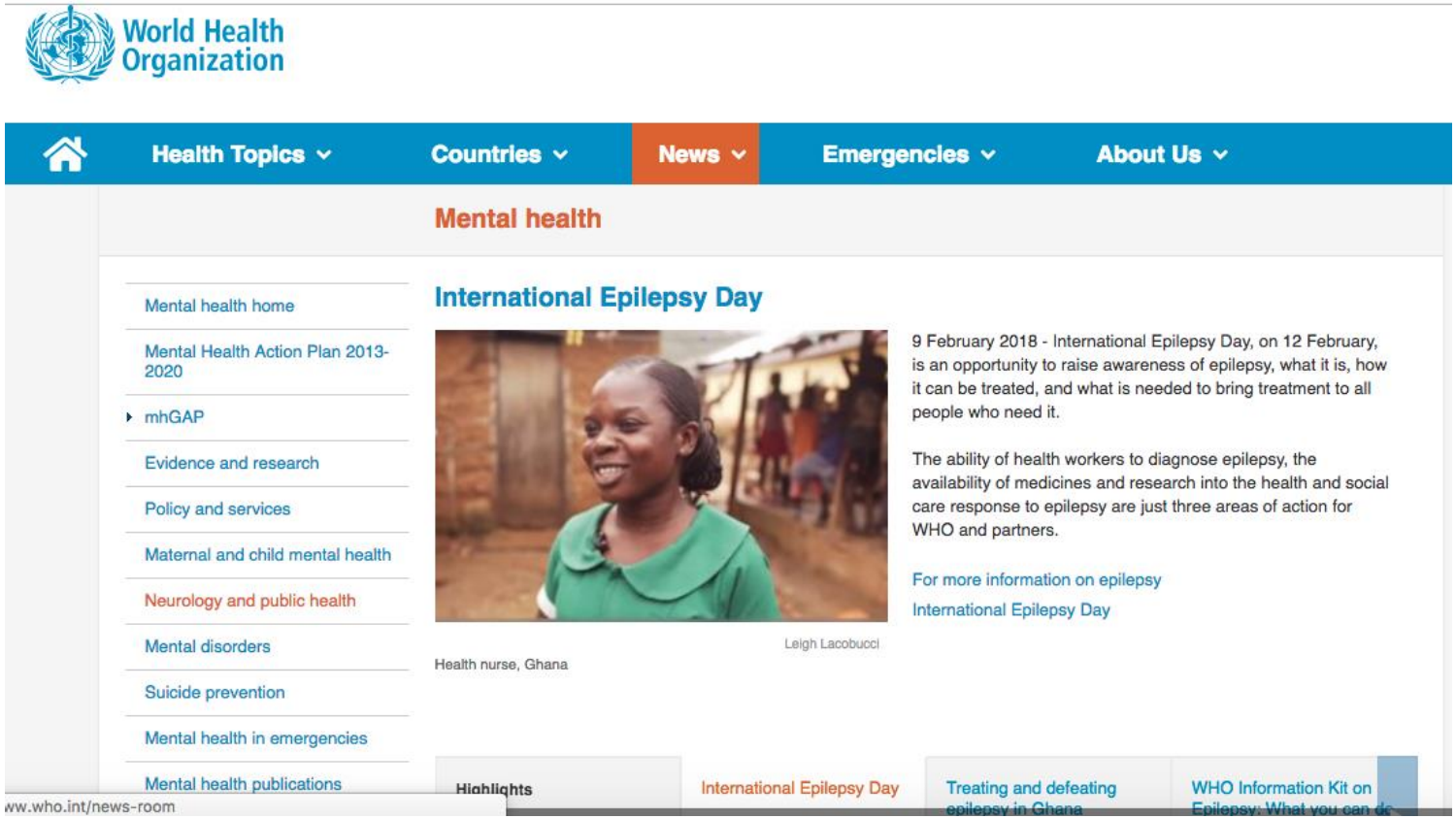


# Improving epilepsy in sub-Saharan countries
# The need to improve culture



# Costo/anno/paziente con epilessia in Africa sub-Sahariana

*BMJ* 2012;344:e609 doi: 10.1136/bmj.e609 (Published 2 March 2012)

Table 2 (continued)

| Intervention | WHO African sub-region AfrE | | | |
|---|---|---|---|---|
| | Annual cost per capita ($Int) | Annual DALYs saved per million population | Cost effectiveness ratio | |
| | | | Average* | Incremental† |
| **Epilepsy** | | | | |
| EPI-1: Older antiepileptic drug in primary care at 50% coverage | 0.36 | 1360 | 265 | 265 |
| EPI-2: Older antiepileptic in primary care at 80% coverage | 0.63 | 2176 | 288 | 325 |
| EPI-3: Newer antiepileptic in primary care at 50% coverage | 0.63 | 1360 | 465 | Dominated‡ |
| EPI-4: Newer antiepileptic in primary care at 80% coverage | 1.06 | 2176 | 488 | Dominated‡ |

Chisholm D & Saxena S. BMJ 2012;344:e609 doi: 10.1136/bmj.e609

- Gestito da infermieri
- 70% therapeutic gap in sub-Saharan Africa
- Isolamento degli operatori sanitari e malati
- Grave carenza formativa
- Insufficiente e discontinua disponibilità dei farmaci antiepilettici
- Gestito in centri per malattie psichiatriche: doppio stigma
- **Quale futuro per un paziente epilettico in quelle regioni?**

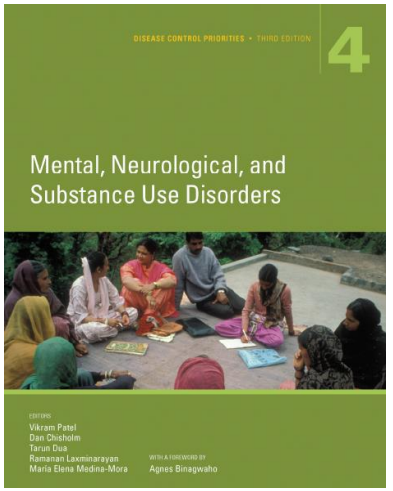
- Costo/paziente/anno USA:

**2,051-11,354$**

# Epilepsy: main causes of death

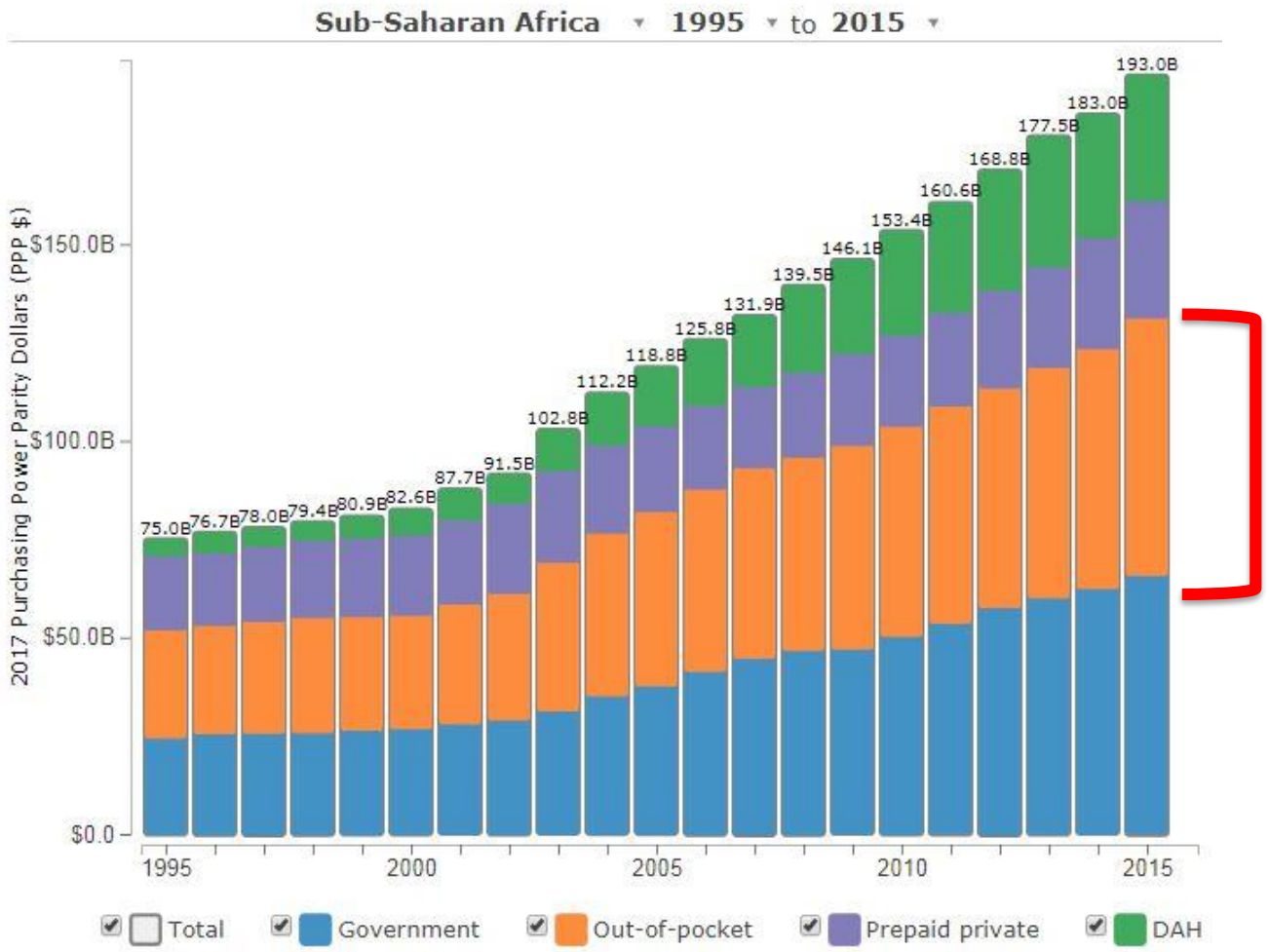
**Table 1.1** Cause-Specific and Excess Deaths Associated with Mental, Neurological, and Substance Use Disorders, Global Burden of Disease Study, 2010

| Disorder | Cause-specific deaths (uncertainty range) | Excess deaths (uncertainty range) | Contributors to excess deaths |
|---|---|---|---|
| Alzheimer's disease and other dementias | 486,000 (308,000–590,000) | 2,114,000 (1,304,000–2,882,000) | Lifestyle factors including smoking, hypercholesterolemia, high blood pressure, low forced vital capacity; comorbid physical conditions including cardiovascular disease; infectious disease including pneumonia. |
| Epilepsy | 178,000 (20,000–222,000) | 296,000 (261,000–331,000) | Underlying conditions including neoplasms, cerebrovascular diseases, and cardiac disease; accident or injury resultant from status epilepticus including drowning and burns. |




Mt 17, 15 "Signore abbi pietà di mio figlio. Egli è epilettico e soffre molto; cade spesso nel fuoco e spesso anche nell'acqua"

# Total Expenditure for Health




**1,80US poverty threshold**

**10% income is spent for health in SSA**

# General Assembly

Distr.: General
24 January 2012

**Sixty-sixth session**
Agenda item 117

## Resolution adopted by the General Assembly

[*without reference to a Main Committee (A/66/L.1)*]

### 66/2. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases

*The General Assembly*

*Adopts* the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases annexed to the present resolution.

*3rd plenary meeting*
*19 September 2011*

**Annex**

**Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases**

27. Note with concern the possible linkages between non-communicable diseases and some communicable diseases, such as HIV/AIDS, call for the integration, as appropriate, of responses to HIV/AIDS and non-communicable diseases, and in this regard call for attention to be given to people living with HIV/AIDS, especially in countries with a high prevalence of HIV/AIDS, in accordance with national priorities;

# Retention on antiretroviral therapy in sub-Saharan Africa

## 505,634 patients

Haas AD et al. *Journal of the International AIDS Society* 2018, **21**:e25084
http://onlinelibrary.wiley.com/doi/10.1002/jia2.25084/full | https://doi.org/10.1002/jia2.25084

**Table 2. Cumulative incidence of antiretroviral therapy outcomes**

| | Cumulative incidence of antiretroviral therapy outcomes (95% CI) | | | |
|---|---|---|---|---|
| | Recorded in clinic databases[a] | Adjusted with point estimate[b] | Adjusted with lower limits of CI[b] | Adjusted with upper limits of CI[b] |
| 1 year | | | | |
| Retained on ART | 76.8 (76.7 to 77.0) | 83.1 (83.0 to 83.2) | 79.7 (79.6 to 79.8) | 87.5 (87.4 to 87.6) |
| Lost to follow-up/stopped ART[c] | 19.6 (19.5 to 19.7) | 8.5 (8.5 to 8.6) | 14.2 (14.1 to 14.2) | 0.8 (0.8 to 0.8) |
| Died | 3.5 (3.5 to 3.6) | 8.4 (8.3 to 8.4) | 6.2 (6.1 to 6.2) | 11.7 (11.6 to 11.8) |
| 2 years | | | | |
| Retained on ART | 68.8 (68.7 to 69.0) | 77.3 (77.6 to 77.8) | 72.9 (72.8 to 73.0) | 84.1 (83.9 to 84.2) |
| Lost to follow-up/stopped ART[c] | 26.7 (26.6 to 26.9) | 11.7 (11.6 to 11.8) | 19.3 (19.2 to 19.5) | 1.1 (1.1 to 1.1) |
| Died | 4.4 (4.4 to 4.5) | 10.6 (10.5 to 10.7) | 7.8 (7.7 to 7.8) | 14.9 (14.8 to 15.0) |
| 3 years | | | | |
| Retained on ART | 62.8 (62.7 to 63.0) | 73.8 (73.7 to 73.9) | 67.9 (67.7 to 68.0) | 81.6 (81.5 to 81.8) |
| Lost to follow-up/stopped ART[c] | 32.1 (32.0 to 32.3) | 14.2 (14.1 to 14.3) | 23.3 (23.2 to 23.4) | 1.3 (1.3 to 1.4) |
| Died | 5.0 (5.0 to 5.1) | 12.1 (12.0 to 12.2) | 8.8 (8.7 to 8.9) | 17.0 (16.9 to 17.2) |
| 4 years | | | | |
| Retained on ART | 57.5 (57.4 to 57.7) | 70.2 (70.1 to 70.3) | 63.3 (63.2 to 63.5) | 79.5 (79.3 to 79.6) |
| Lost to follow-up/stopped ART[c] | 36.9 (36.8 to 37.1) | 16.4 (16.3 to 16.5) | 26.9 (26.8 to 27.0) | 1.5 (1.5 to 1.6) |
| Died | 5.6 (5.5 to 5.6) | 13.4 (13.3 to 13.5) | 9.8 (9.7 to 9.9) | 19.0 (18.8 to 19.1) |
| 5 years | | | | |
| Retained on ART | 52.1 (51.9 to 52.3) | 66.6 (66.4 to 68.8) | 58.7 (58.5 to 58.9) | 77.4 (77.2 to 77.5) |
| Lost to follow-up/stopped ART[c] | 41.8 (41.6 to 42.0) | 18.8 (18.6 to 18.9) | 30.6 (30.4 to 30.8) | 1.8 (1.7 to 1.8) |
| Died | 6.0 (6.0 to 6.1) | 14.7 (14.5 to 14.8) | 10.6 (10.5 to 10.7) | 20.8 (20.7 to 21.0) |

Data are cumulative incidences of antiretroviral therapy outcomes (in %) and 95% confidence intervals for patients starting antiretroviral therapy. Time is measured in years from start of antiretroviral therapy.

[a]Crude estimates show cumulative incidence of death, loss to follow-up and retention on ART as recorded in the clinic database.

[b]Adjusted estimates correct for underreporting of mortality and transfer out based on the point estimates and 95% confidence intervals (CIs) for mortality (20.8%, 95% CI: 11.3 to 35.1%) and self-transfer (35.9%, 95% CI: 16.8 to 60.9%) among patients lost to follow-up. Adjustment parameters are derived from a meta-analysis of tracing studies [11].

[c]In the adjusted analyses patients alive but not retained on ART are assumed to have stopped ART.

Haas AD et al. J Int AIDS Soc 2018, 21:e25084

# Epilepsy, changes in behavior and mental illness

# Retention in DREAM

DOI: 10.1111/hiv.12492

*HIV Medicine* (2017), 18, 573–579

ORIGINAL RESEARCH

## Who will be lost? Identifying patients at risk of loss to follow-up in Malawi. The DREAM Program Experience

S Mancinelli,[1] K Nielsen-Saines,[2] P Germano,[3] G Guidotti,[3] E Buonomo,[1] P Scarcella,[1] R Lunghi,[4] H Sangare,[4] S Orlando,[3] G Liotta,[1] MC Marazzi[5] and L Palombi[1]

[1]*Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy,* [2]*Department of Pediatrics–Infectious Disease, University of California Los Angeles, Los Angeles, CA, USA,* [3]*DREAM Programme, Rome, Italy,* [4]*DREAM Programme, Blantyre, Malawi and* [5]*LUMSA University, Rome, Italy*

**Objectives**

Retention of subjects in HIV treatment programmes is crucial for the success of treatment. We evaluated retention/loss to follow-up (LTFU) in subjects receiving established care in Malawi.

**Methods**

Data for HIV-positive patients registered in Drug Resource Enhancement Against AIDS and Malnutrition centres in Malawi prior to 2014 were reviewed. Visits entailing HIV testing/counselling, laboratory evaluations, nutritional evaluation/supplementation, community support, peer education, and antiretroviral (ART) monitoring/pharmacy were noted. LTFU was defined as > 90 days without an encounter. Parameters potentially associated with LTFU were explored, with univariate/multivariate logistic regression analyses being performed.

**Results**

Fifteen thousand and ninety-nine patients registered before 2014; 202 (1.3%) were lost to follow-up (LTFU) (1.3%). Nine (0.5%) of 1744 paediatric patients were LTFU *vs.* 1.4% ($n$ = 193) of 13 355 adults ($P < 0.001$). Subjects who were LTFU had fewer days in care than retained subjects (1338 *vs.* 1544, respectively; $P < 0.001$) and a longer duration of ART (1530 *vs.* 1300 days, respectively; $P < 0.001$). Subjects who were LTFU had higher baseline HIV viral loads ($P = 0.016$) and higher body mass indexes ($P < 0.001$), were more likely to live in urban settings (88% of patients who were LTFU lived in urban settings) with better housing [relative risk (RR) 2.3; 95% confidence interval (CI) 1.67–3.09; $P < 0.001$], and were more likely to be educated (RR 1.88; 95% CI 1.42–2.50; $P < 0.001$). Distance to the centre and cost of transportation were associated with LTFU (RR 3.4; 95% CI 2.84–5.37; $P < 0.001$), as was absence of a maternal figure (RR 1.57; 95% CI 1.17–2.09; $P < 0.001$). Viral load, distance index, education and a maternal figure were predictive of LTFU.

**Conclusions**

Educated, urbanized HIV-infected adults living far from programme centres are at high risk of LTFU, particularly if there is no maternal figure in the household. These variables must be taken into consideration when developing retention strategies.

**Keywords:** HIV, loss to follow-up, Malawi, predictors, retention

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# DREAM and the 2020 UNAIDS 90-90-90 goal

AIDS RESEARCH AND HUMAN RETROVIRUSES
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## Virological Response and Drug Resistance 1 and 2 Years Post-Partum in HIV-Infected Women Initiated on Life-Long Antiretroviral Therapy in Malawi

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**Abstract**

The objective of this study was to determine the virological response and the possible emergence of drug resistance at 1 and 2 years postpartum in HIV-positive pregnant women enrolled under the Option B approach and meeting the criteria for treatment. In the study, women with baseline $CD4^+$ <350/$mm^3$ received a combination of stavudine, lamivudine, and nevirapine during pregnancy (from week 25 of gestation) and continued it indefinitely after delivery. HIV-RNA was measured at 12 and 24 months postpartum. Drug resistance mutations were assessed in those with HIV-RNA >50 copies/ml. Baseline resistance mutations were assessed in the entire cohort. A total of 107 women were studied. At baseline, resistance mutations were seen in 6.6% of the women. At 12 months, 26.7% of the women had >50 copies/ml and among them 12.9% had virological failure (HIV-RNA >1,000 copies/ml). At 24 months, detectable HIV-RNA was seen in 28.3% of the women and virological failure in 10.1% of the women. Resistance mutations (mainly non-nucleoside reverse transcriptase inhibitors mutations) were seen in 40% of the women with detectable HIV-RNA. Baseline mutations did not correlate with virological failure or the emergence of resistance at later time points. Virological failure 2 years postpartum and emergence of resistance were rare in this cohort of HIV-infected women. These findings are reassuring in the light of the new strategies for the prevention of mother-to-child HIV transmission, recommending life-long antiretroviral therapy administration.

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# DREAM and chronic diseases: TB

*Clinical Infectious Diseases*

MAJOR ARTICLE

## Tuberculosis Case Finding With Combined Rapid Point-of-Care Assays (Xpert MTB/RIF and Determine TB LAM) in HIV-Positive Individuals Starting Antiretroviral Therapy in Mozambique

**Marco Floridia,[1] Fausto Ciccacci,[2] Mauro Andreotti,[1] Archa Hassane,[3] Zita Sidumo,[3] Nurja A. Magid,[3] Horacio Sotomane,[4] Muhlavasse David,[4] Elsa Mutemba,[5] Junia Cebola,[5] Remigio José Mugunhe,[5] Fabio Riccardi,[6] Maria Cristina Marazzi,[7] Marina Giuliano,[1] Leonardo Palombi,[6] and Sandro Mancinelli[6]**

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***Background.*** Tuberculosis is a major health concern in several countries, and effective diagnostic algorithms for use in human immunodeficiency virus (HIV)–positive patients are urgently needed.

***Methods.*** At prescription of antiretroviral therapy, all patients in 3 Mozambican health centers were screened for tuberculosis, with a combined approach: World Health Organization (WHO) 4-symptom screening (fever, cough, night sweats, and weight loss), a rapid test detecting mycobacterial lipoarabinomannan in urine (Determine TB LAM), and a molecular assay performed on a sputum sample (Xpert MTB/RIF; repeated if first result was negative). Patients with positive LAM or Xpert MTB/RIF results were referred for tuberculosis treatment.

***Results.*** Among 972 patients with a complete diagnostic algorithm (58.5% female; median CD4 cell count, 278/μL; WHO HIV stage I, 66.8%), 98 (10.1%) tested positive with Xpert (90, 9.3%) or LAM (34, 3.5%) assays. Compared with a single-test Xpert strategy, dual Xpert tests improved case finding by 21.6%, LAM testing alone improved it by 13.5%, and dual Xpert tests plus LAM testing improved it by 32.4%. Rifampicin resistance in Xpert-positive patients was infrequent (2.5%). Among patients with positive results, 22 of 98 (22.4%) had no symptoms at WHO 4-symptom screening. Patients with tuberculosis diagnosed had significantly lower CD4 cell counts and hemoglobin levels, more advanced WHO stage, and higher HIV RNA levels. Fifteen (15.3%) did not start tuberculosis treatment, mostly owing to rapidly deteriorating clinical conditions or logistical constraints. The median interval between start of the diagnostic algorithm and start of tuberculosis treatment was 7 days.

***Conclusions.*** The prevalence of tuberculosis among Mozambican HIV-positive patients starting antiretroviral therapy was 10%, with limited rifampicin resistance. Use of combined point-of-care tests increased case finding, with a short time to treatment. Interventions are needed to remove logistical barriers and prevent presentation in very advanced HIV/tuberculosis disease.

**Keywords.** Tuberculosis; HIV; Xpert MTB/RIF; LAM; Africa.

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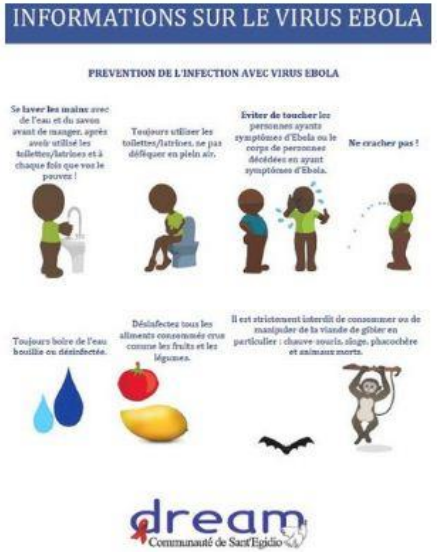
# Primary health care to deliver services for chronic diseases: the DREAM model

# DREAM, a primary health care system: to be ready for new challanges Ebola Guinea 2014

Prevenzione in sala prelievi al centro DREAM di Conakry

Prevenzione al centro DREAM di Conakry


Lezione per la prevenzione di Ebola al centro DREAM di Conakry



# The DREAM program delivers services for chronic diseases in sub-Saharan Africa

## Main achievements of DREAM:

- High retention
- High survival
- Education and training
- Communication and relationship
- Prevention
- Scaling up of programs for CDs and NCDs
- Networking and partnership

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Un modello italiano costruito sull'eccellenza

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We are also working in close partnership with the Union for International Cancer Control's (UICC) City Cancer Challenge, a ground-breaking initiative to enhance quality cancer care at a city level. Four Key Learning Cities launched in this first year are up and running – Cali in Colombia, Asunción in Paraguay, Yangon in Myanmar and Kumasi in Ghana. We are now identifying gaps to develop sustainable solutions that can be scaled-up and applied to other cities.

As part of our commitment to increase our own individual company efforts, we launched or extended 27 company access programmes in 2017. These programmes span 15 LMICs and eight disease areas.

Critical to Access Accelerated is our ability to track progress and continuously adapt our approach. We have put independent measurement at our core by working with Boston University's School of Public Health to develop a framework that will rigorously measure and evaluate our programmes.

In 2018, we will build on the progress made in year one. To contribute to the achievement of SDG 3.4, which targets a reduction in the number of premature deaths from NCDs and the promotion of mental health and well-being, we must continue to listen, learn, work across silos and put the patient at the centre of all our efforts.

We will launch our remaining pilots, advance learnings across programmes, and expand local dialogues on how to advance NCD care in alignment and collaboration with country stakeholders.

As we reflect on 2017's activities and achievements in this report, we would like to thank all of our partners and colleagues, who have worked tirelessly to improve people's health.

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# FORMAZIONE E SALUTE GLOBALE. NUOVE SFIDE PER LA NEUROLOGIA ITALIANA

**08 Novembre 2018**

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***In collaborazione con il Centro di Ricerca sulle relazioni Interculturali dell'Università Cattolica del Sacro Cuore di Milano***