THE TREATMENT GAP AND POSSIBLE THERAPIES OF EPILEPSY IN SUB-SAHARAN AFRICA

DR A.O. CHARWAY-FELLI, MD, PhD
NEUROLOGIST
37 MILITARY HOSPITAL, ACCRA, GHANA
SECRETARY-GENERAL
AFRICAN ACADEMY OF NEUROLOGY

WHAT IS THE TREATMENT GAP?

The difference between the number of people with active epilepsy and the number whose seizures are being appropriately treated in a given population at a given point of time, expressed as percentage. This definition includes diagnostic and therapeutic deficits.

ILAE; Meinardi et al, 2001

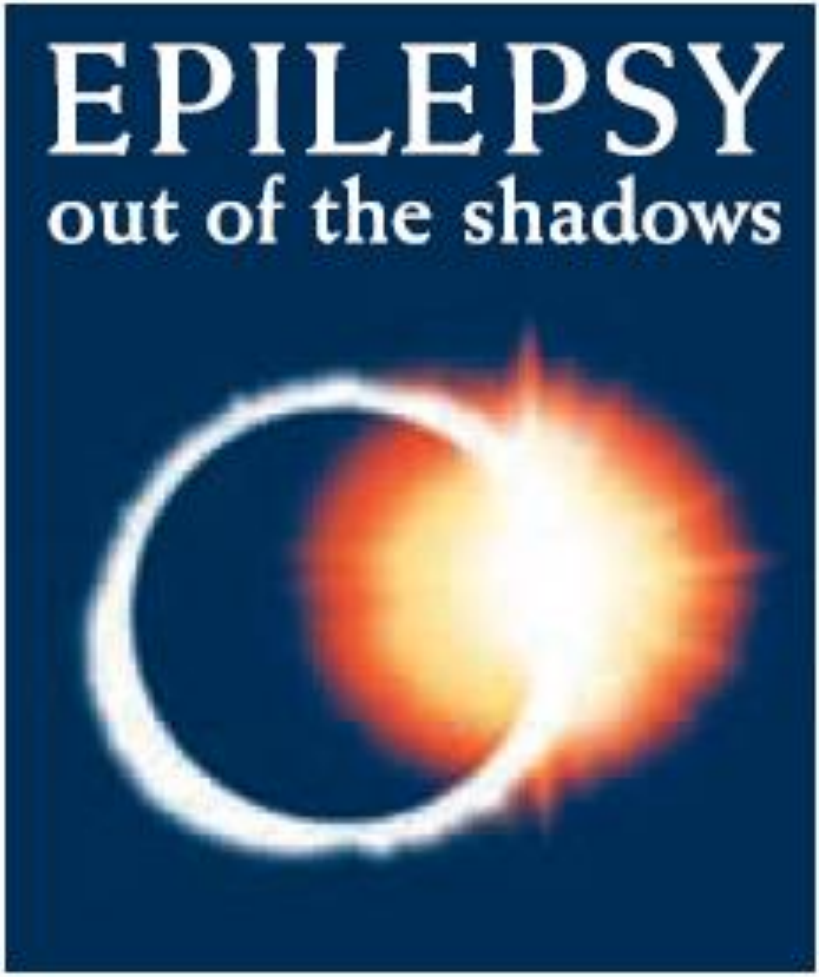
THE TREATMENT GAP IN AFRICA

- Wide range depending on the definitions and calculation modalities used
- 23% - 98%!!

Factors affecting the Epilepsy Treatment Gap

- Inadequate supplies and costs of anti-epileptic medications
- Lack of primary health workers trained to diagnose and treat epilepsy
- Limited access to health facilities particularly in rural areas
- Social stigma, misinformation, and traditional beliefs
- Limited opportunities for specialty training in neurology

The Global Campaign Against Epilepsy
"Out of the Shadows"



AFRICAN ACADEMY OF NEUROLOGY (AFAN)

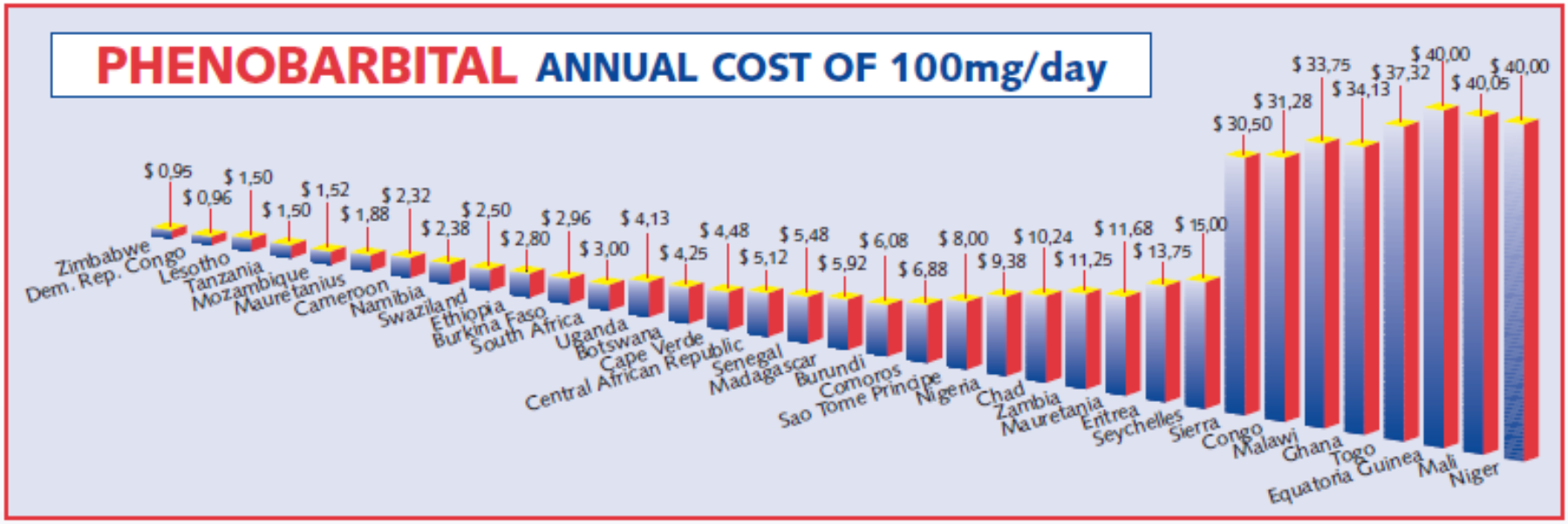
MEMBER COUNTRIES (National Neurologic societies, with WFN)

- **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**

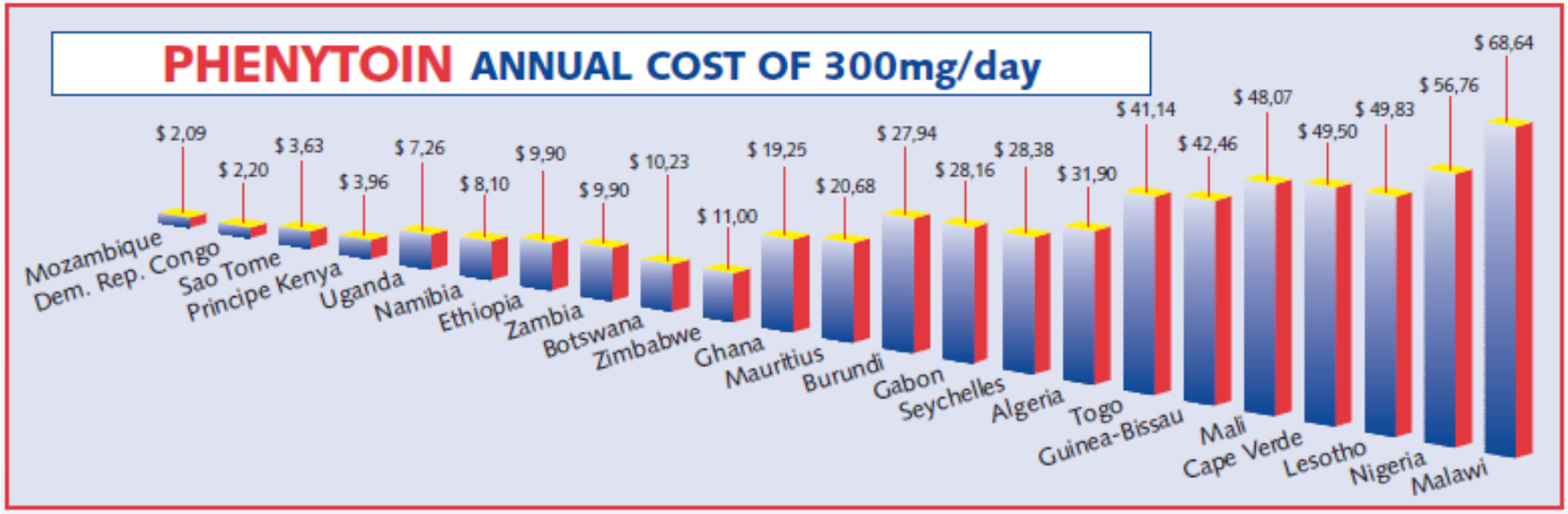
MEMBER COUNTRIES (w/o National Neurologic societies – in process of registration)

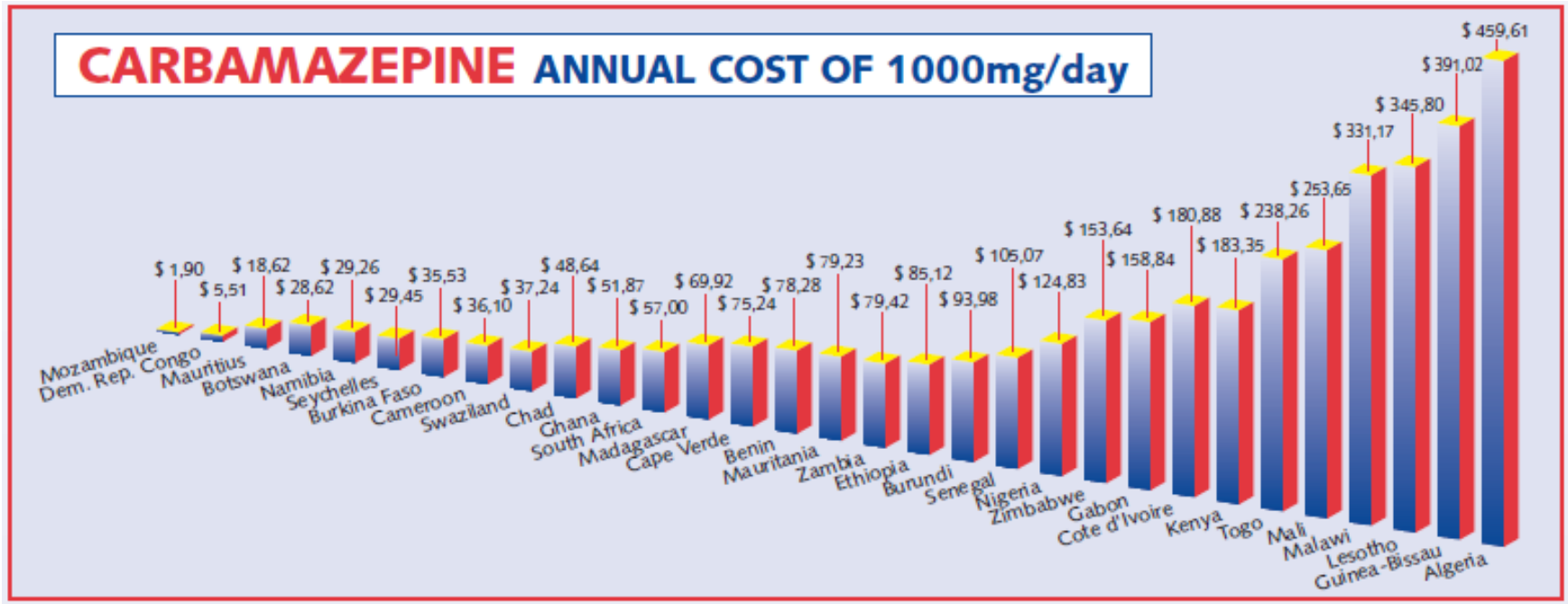
- **Angola**
- **Benin**
- **Congo Brazzaville**
- **Ghana**
- **Guinee**
- **Madagascar**
- **Mali**
- **Mauritanie**
- **Mozambique**
- **Niger**
- **Rwanda**
- **Togo**

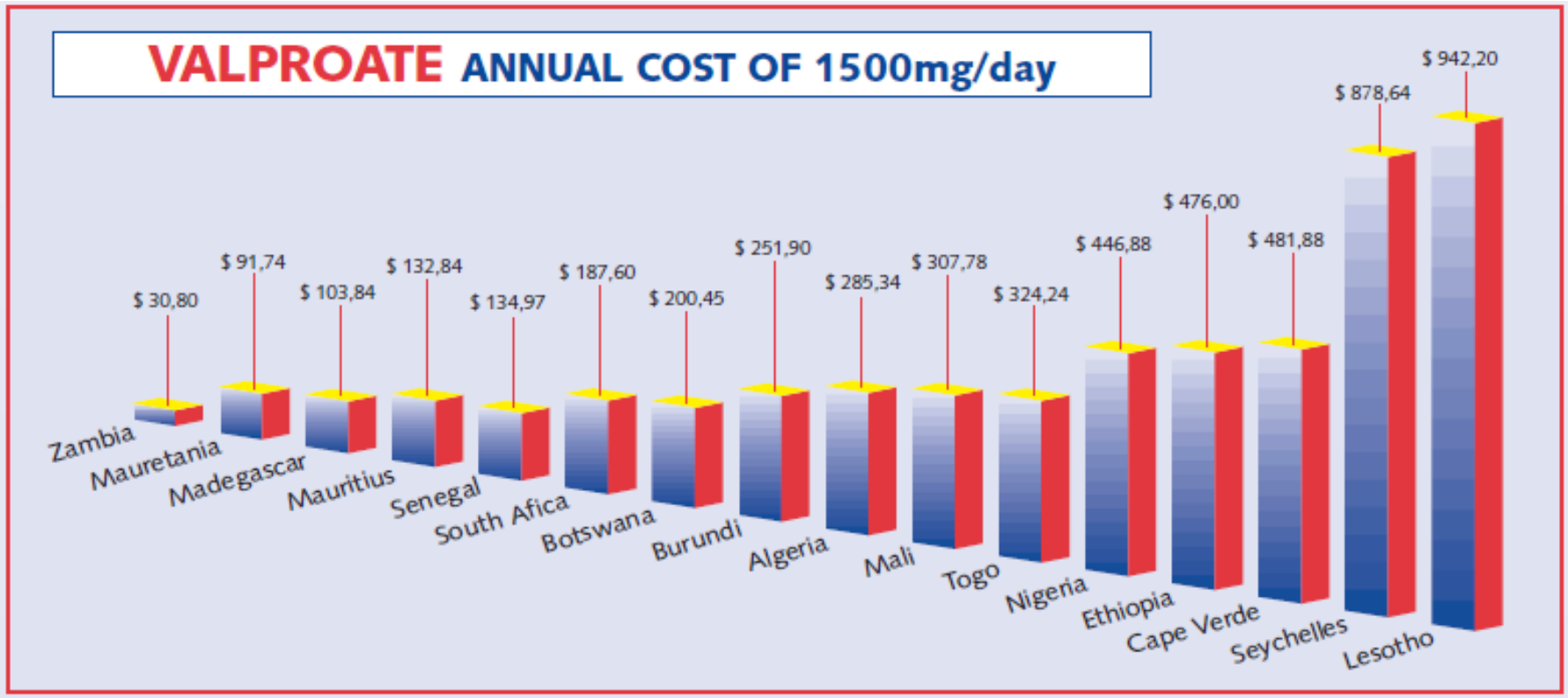
COST OF AEDS



EPILEPSY
out of the shadows


PHENYTOIN ANNUAL COST OF 300mg/day
$ 2,09
$ 2,20
$ 3,63
$ 3,96
$ 7,26
$ 8,10
$ 9,90
$ 9,90
$ 10,23
$ 11,00
$ 19,25
$ 20,68
$ 27,94
$ 28,16
$ 28,38
$ 31,90
$ 41,14
$ 42,46
$ 48,07
$ 49,50
$ 49,83
$ 56,76
$ 68,64
Mozambique
Dem. Rep. Congo
Sao Tome
Principe
Kenya
Uganda
Namibia
Ethiopia
Zambia
Botswana
Zimbabwe
Ghana
Mauritius
Burundi
Gabon
Seychelles
Algeria
Togo
Guinea-Bissau
Mali
Cape Verde
Lesotho
Nigeria
Malawi


CARBAMAZEPINE ANNUAL COST OF 1000mg/day
$ 1,90
$ 5,51
$ 18,62
$ 28,62
$ 29,26
$ 29,45
$ 35,53
$ 36,10
$ 37,24
$ 48,64
$ 51,87
$ 57,00
$ 69,92
$ 75,24
$ 78,28
$ 79,23
$ 79,42
$ 85,12
$ 93,98
$ 105,07
$ 124,83
$ 153,64
$ 158,84
$ 180,88
$ 183,35
$ 238,26
$ 253,65
$ 331,17
$ 345,80
$ 391,02
$ 459,61
Mozambique
Dem. Rep. Congo
Mauritius
Botswana
Namibia
Seychelles
Burkina Faso
Cameroon
Swaziland
Chad
Ghana
South Africa
Madagascar
Cape Verde
Benin
Mauritania
Zambia
Ethiopia
Burundi
Senegal
Nigeria
Zimbabwe
Gabon
Cote d'Ivoire
Kenya
Togo
Mali
Malawi
Lesotho
Guinea-Bissau
Algeria


VALPROATE ANNUAL COST OF 1500mg/day
$ 30,80
$ 91,74
$ 103,84
$ 132,84
$ 134,97
$ 187,60
$ 200,45
$ 251,90
$ 285,34
$ 307,78
$ 324,24
$ 446,88
$ 476,00
$ 481,88
$ 878,64
$ 942,20
Zambia
Mauretania
Madegascar
Mauritius
Senegal
South Afica
Botswana
Burundi
Algeria
Mali
Togo
Nigeria
Ethiopia
Cape Verde
Seychelles
Lesotho

GOALS OF MANAGEMENT

- **!!! SEIZURE FREEDOM**
- **Monotherapy/ rational polytherapy**
- **No / minimum adverse effects**

THERAPEUTIC OPTIONS
HOW TO CHOOSE AN ANTI-EPILEPSY DRUG (AED)

WHICH AED TO CHOOSE?

- **Standard AEDs**
- **Carbamazepine - First line for partial and generalized tonic clonic seizures**
- **Valproate - First line for partial seizures, primary generalized, myoclonic and absence seizures**

WHICH AED TO CHOOSE?

- **Old AEDs**
- **Phenytoin - Generalized tonic-clonic and partial seizures, *short-term seizure prevention and treatment***
- **Phenobarbital - Generalized tonic-clonic and partial seizures**

WHICH AED TO CHOOSE?

- **Newer AEDs**

- **Gabapentin - Add-on therapy for partial onset seizures**
- **Lamotrigine - Primary generalized and partial onset seizures**
- **Levetiracetam - Add-on therapy for partial onset seizures, also effective in primary generalized seizures including myoclonic seizures**

WHICH AED TO CHOOSE?

- **Newer AEDs**

- **Oxcarbazepine** — **Partial / secondary generalized seizures**
- **Tiagabine** — **Add-on therapy for partial onset seizures.**
- **Topiramate** — **Generalized tonic-clonic and partial onset seizures**
- **Vigabatrin** — **Restricted to infantile spasms or refractory epilepsy**

WHICH AED TO CHOOSE?

- Others
- Acetazolamide — Add-on therapy for partial, tonic-clonic and absence seizures
- Clobazam — Add-on therapy
- Clonazepam — Myoclonic seizures
- Ethosuximide — Absence seizures

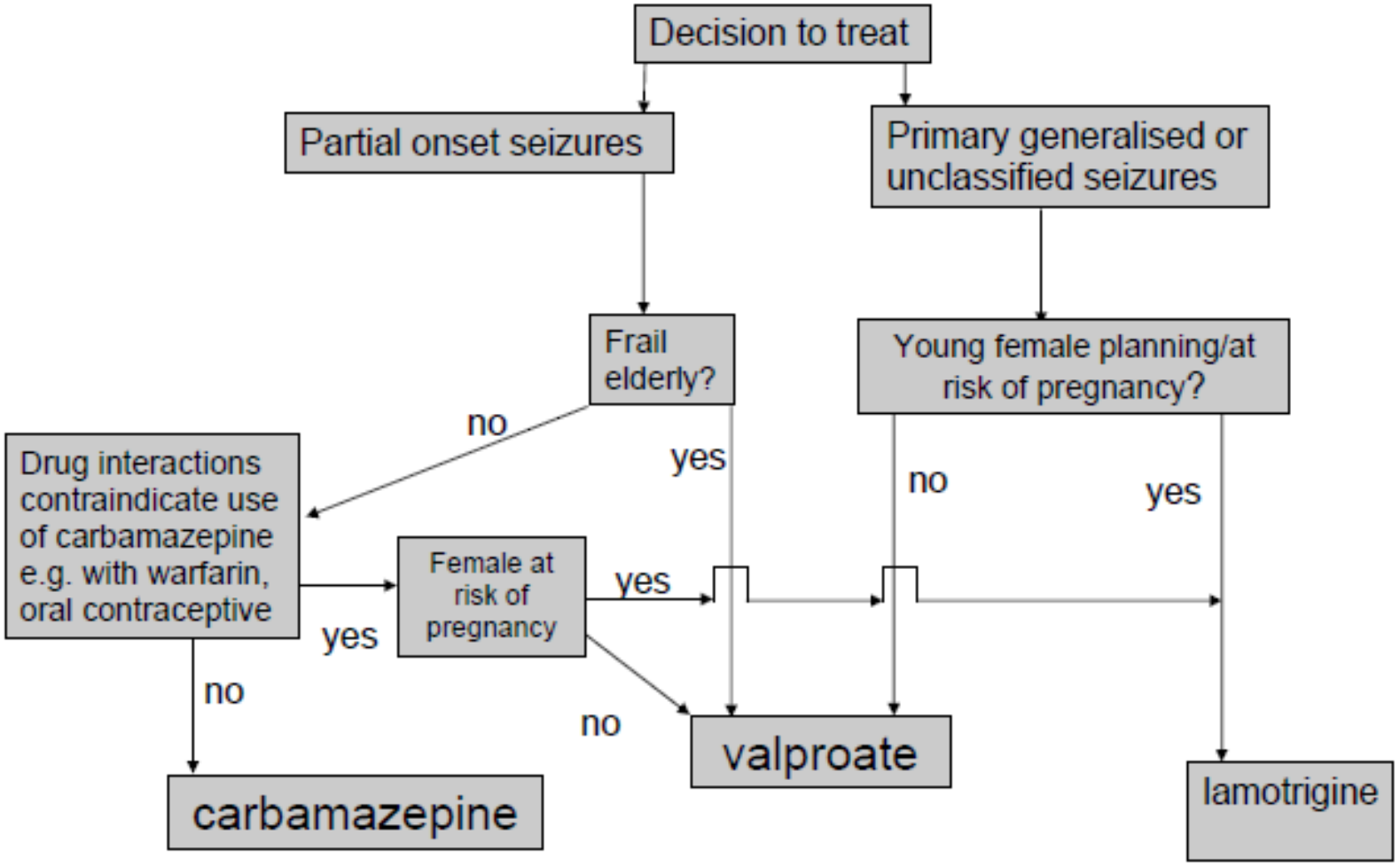
General Recommendations for first- line AED treatment

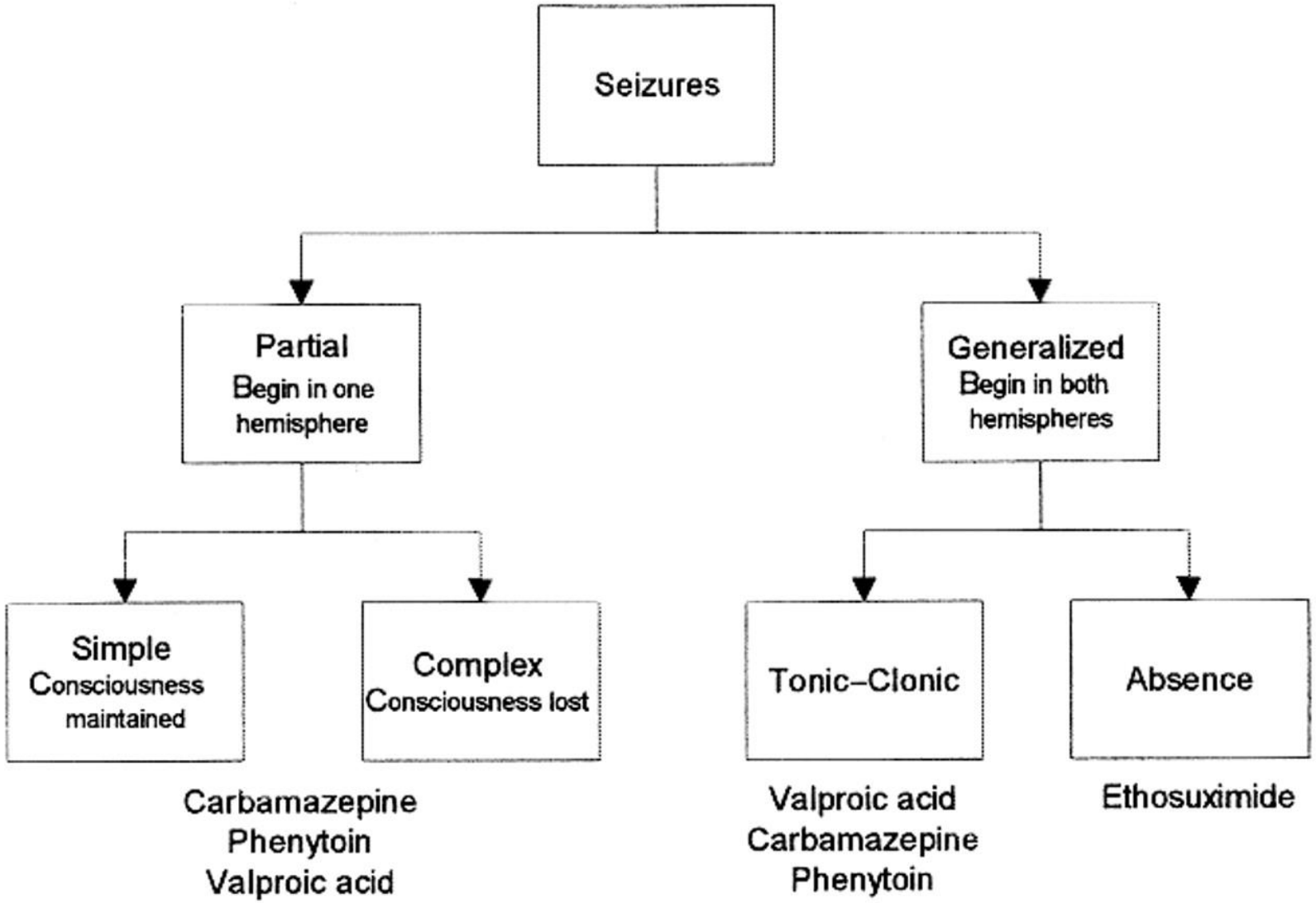
- Carbamazepine, valproate, lamotrigine and oxcarbazepine - first–line treatments for partial and secondary generalised seizures
- Valproate, lamotrigine - drugs of choice for primary generalised seizures and should also be prescribed if there is any doubt about the seizure types and/or syndrome
- **Individual patient, individual treatment!**

Epilepsy syndrome and seizure type

- **valproate** - juvenile myoclonic epilepsy;
- **carbamazepine** - frontal lobe epilepsy;
- **ethosuximide** - typical absence seizures.

ALGORITHM FOR CHOICE OF FIRST AED




Seizures
Partial
Begin in one hemisphere
Generalized
Begin in both hemispheres
Simple
Consciousness maintained
Complex
Consciousness lost
Tonic–Clonic
Absence
Carbamazepine
Phenytoin
Valproic acid
Valproic acid
Carbamazepine
Phenytoin
Ethosuximide

WHICH DRUG FIRST?

- Epilepsy syndrome/seizure type
- Age
- Sex
- Comorbidities

AEDs THAT INDUCE HEPATIC ENZYMES	NON-ENZYME INDUCING AEDs
Carbamazepine	Acetazolamide
Oxcarbazepine	Benzodiazepines
Phenobarbital	Ethosuximide
Phenytoin	Gabapentin
Primidone	Lamotrigine
Topiramate	Levetiracetam
	Tiagabine
	Valproate
	Vigabatrin

WHAT TO DO WHEN FIRST LINE TREATMENT FAILS

Standard AED or newer AED?

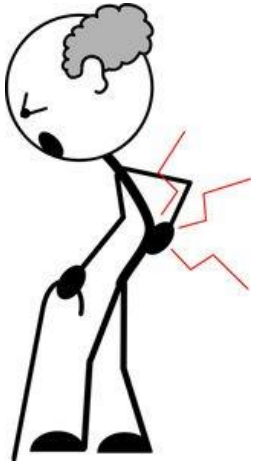
When should combination therapy be used?

Are certain combinations better than others?

“RATIONAL POLYTHERAPY”

- Different mechanisms of action
- Potentiating pharmacokinteic interactions
- Avoid combinations with similar mechanism of actions and/or unhelpful pharmacokinetic interactions

AED and Special Population Groups



AEDs and Pregnancy:

- Persisting seizures in pregnancy adversely affects both mother and foetus
- Monotherapy usually better than polytherapy.
- Folic acid is recommended to be given for every pregnant women with epilepsy
- Phenytoin, sodium valproate are contraindicated

AEDs in Children

- Choice by side effects:

1. **Sedation**
2. Erythrocyte formation
3. Hepatotoxicity
4. Other Side effects

AEDs in the Elderly

1. Co-morbidities NB Arrhythmias

Antiepileptic Drug Selection for People with HIV/AIDS

Report of the American Academy of Neurology and the International League Against Epilepsy

Gretchen L. Birbeck, MD, MPH, DTMH, FAAN; Jacqueline A. French, MD, FAAN; Emilio Perucca, MD, PhD, FRCP(Edin); David M. Simpson, MD; Henry Fraimow, MD; Jomy M. George, PharmD, BCPS; Jason F. Okulicz, MD; David B. Clifford, MD; Houda Hachad, PharmD; René H. Levy, PhD

AEDs in HIV/AIDS

- No formal AED treatment guidelines currently exist for individuals with HIV/AIDS.
- Worldwide the concurrent use of AEDs and ARVs is substantial.
  - Seizure disorders are common in individuals infected with HIV, with a reported incidence as high as 11%.[1–3]
  - HIV/AIDS, especially prevalent in sub-Saharan Africa, is becoming a chronic condition as ARV therapies become increasingly available.[4]
  - The indications for AEDs include neurologic and psychiatric conditions other than epilepsy.

Gaps in Care

- No formal AED treatment guidelines currently exist for individuals with HIV/AIDS; at the same time, seizure disorders are common in individuals infected with HIV.
- Worldwide the concurrent use of AEDs and ARVs is substantial, as ARV use expands with the increasingly chronic nature of HIV/AIDS and the increased use of AEDs for conditions other than epilepsy (e.g., neuropathic pain).
- Potential interactions between ARVs and AEDs are complex and extensive. This, along with the impact of ARVs on AEDs, warrants consideration.

Gaps in Care, cont.

- AED-ARV interactions that raise blood levels of drugs in either class may increase toxicity risk. Use of ARVs that reduce AED levels could lead to loss of therapeutic AED effects, including seizure control. Use of AEDs that decrease ARV levels (e.g., EI-AEDS phenytoin, phenobarbital, and carbamazepine) may lead to virologic failure and ARV resistant HIV strains.

THE END

THANK YOU

DAKAR

3RD AFRICAN EPILEPSY CONGRESS

5TH - 7TH MAY 2017

INTERNATIONAL LEAGUE AGAINST EPILEPSY
Established 1909

IBE International Bureau for Epilepsy