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

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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

MEMBER COUNTRIES (w/o National Neurologic societies – in process of registration)
- Angola
- Benin
- Congo Brazzaville
- Ghana
- Guinee
- Madagascar
- Mali
- Mauritanie
- Mozambique
- Niger
- Rwanda
- Togo
- Zambia
COST OF AEDS

PHENOBARBITAL ANNUAL COST OF 100mg/day

Epilepsy in the African Region
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

Decision to treat

Partial onset seizures

Primary generalised or unclassified seizures

Frail elderly?

Young female planning/at risk of pregnancy?

Drug interactions contraindicate use of carbamazepine e.g. with warfarin, oral contraceptive

Female at risk of pregnancy

valproate

no

yes

no

yes

no

yes

no

valproate

carbamazepine

lamotrigine
WHICH DRUG FIRST?

‘one size fits all’???

- Epilepsy syndrome/seizure type
- Age
- Sex
- Comorbidities
<table>
<thead>
<tr>
<th>AEDs THAT INDUCE HEPATIC ENZYMES</th>
<th>NON-ENZYME INDUCING AEDs</th>
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<tbody>
<tr>
<td>Carbamazepine</td>
<td>Acetazolamide</td>
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<td>Oxcarbazepine</td>
<td>Benzodiazepines</td>
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<td>Vigabatrin</td>
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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 pharmacokinetic 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.
  o Seizure disorders are common in individuals infected with HIV, with a reported incidence as high as 11%.\(^1\)–\(^3\)
  o HIV/AIDS, especially prevalent in sub-Saharan Africa, is becoming a chronic condition as ARV therapies become increasingly available.\(^4\)
  o 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