Symptomatic epilepsy in Africa

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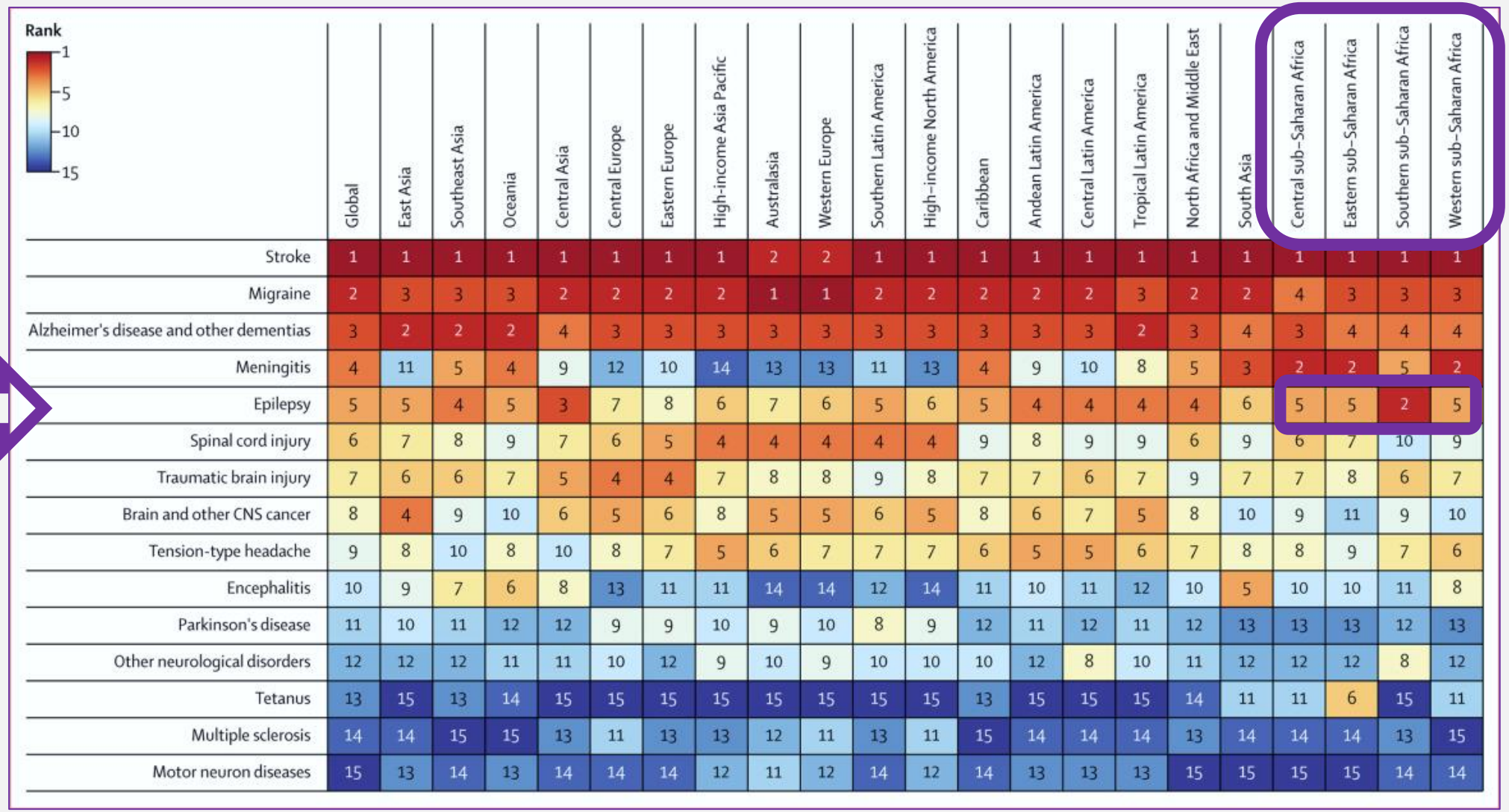
Neurological disorders are the leading cause of disability and the second leading cause of death worldwide (Lancet 2016)

The bulk of the burden is in low-income and middle-income countries (Lancet 2016)

Epilepsy: a public health imperative!

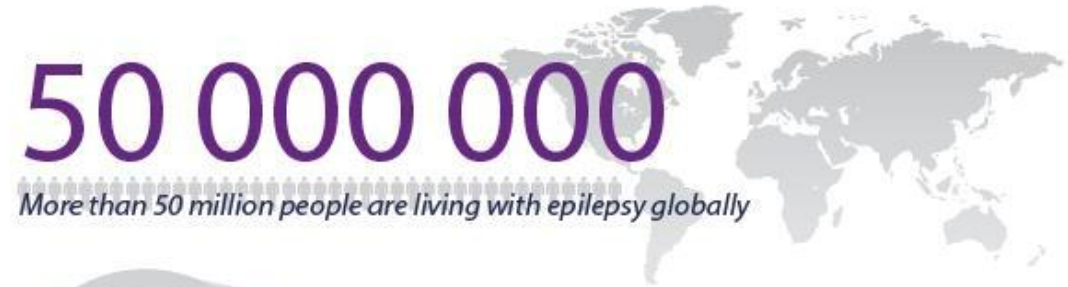


	Global	East Asia	Southeast Asia	Oceania	Central Asia	Central Europe	Eastern Europe	High-income Asia Pacific	Australasia	Western Europe	Southern Latin America	High-income North America	Caribbean	Andean Latin America	Central Latin America	Tropical Latin America	North Africa and Middle East	South Asia	Central sub-Saharan Africa	Eastern sub-Saharan Africa	Southern sub-Saharan Africa	Western sub-Saharan Africa
Stroke	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1
Migraine	2	3	3	3	2	2	2	2	1	1	2	2	2	2	2	3	2	2	4	3	3	3
Alzheimer's disease and other dementias	3	2	2	2	4	3	3	3	3	3	3	3	3	3	3	2	3	4	3	4	4	4
Meningitis	4	11	5	4	9	12	10	14	13	13	11	13	4	9	10	8	5	3	2	2	5	2
Epilepsy	5	5	4	5	3	7	8	6	7	6	5	6	5	4	4	4	4	6	5	5	2	5
Spinal cord injury	6	7	8	9	7	6	5	4	4	4	4	4	9	8	9	9	6	9	6	7	10	9
Traumatic brain injury	7	6	6	7	5	4	4	7	8	8	9	8	7	7	6	7	9	7	7	8	6	7
Brain and other CNS cancer	8	4	9	10	6	5	6	8	5	5	6	5	8	6	7	5	8	10	9	11	9	10
Tension-type headache	9	8	10	8	10	8	7	5	6	7	7	7	6	5	5	6	7	8	8	9	7	6
Encephalitis	10	9	7	6	8	13	11	11	14	14	12	14	11	10	11	12	10	5	10	10	11	8
Parkinson's disease	11	10	11	12	12	9	9	10	9	10	8	9	12	11	12	11	12	13	13	13	12	13
Other neurological disorders	12	12	12	11	11	10	12	9	10	9	10	10	10	12	8	10	11	12	12	12	8	12
Tetanus	13	15	13	14	15	15	15	15	15	15	15	15	13	15	15	15	14	11	11	6	15	11
Multiple sclerosis	14	14	15	15	13	11	13	13	12	11	13	11	15	14	14	14	13	14	14	14	13	15
Motor neuron diseases	15	13	14	13	14	14	14	12	11	12	14	12	14	13	13	13	15	15	15	15	14	14

Ranking of age-standardised DALY rates for all neurological disorders by region, 2016
DALY=disability-adjusted life-year
(Lancet 2016)

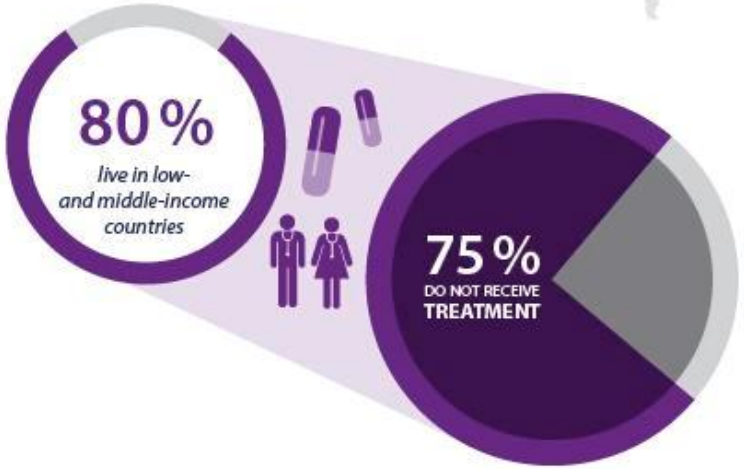
World Health Organization

What is the IMPACT of epilepsy?



50 000 000

More than 50 million people are living with epilepsy globally



3-6 TIMES GREATER RISK OF PREMATURE DEATH

CAUSES OF TREATMENT GAP:

- *lack of trained staff*
- *poor access to anti-epileptic medicines*
- *societal misconceptions*
- *poverty*
- *low prioritization for the treatment of epilepsy*

STIGMA & DISCRIMINATION

Definitions

Idiopathic epilepsy

An epilepsy of predominately genetic or presumed genetic origin and in which there is no gross neuroanatomic or neuropathologic abnormalities nor other relevant underlying diseases.

Provoked epilepsy

An epilepsy in which a specific systemic or environmental factor is the predominant precipitant of the seizures

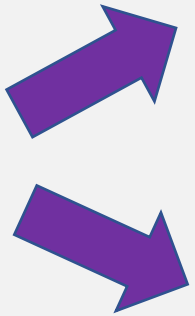
Cryptogenic epilepsy

An epilepsy of presumed symptomatic nature in which the cause has not been identified.

Symptomatic epilepsy

An epilepsy predominately due to a gross neuroanatomical or neuropathological abnormality or a relevant systemic disease, which can be acquired or genetic in origin.

Symptomatic epilepsy



Genetic or developmental causation
(e.g. progressive myoclonic epilepsies, neurocutaneous syndromes…)

Acquired causation
(e.g. hippocampal sclerosis, perinatal causes, cerebral trauma, cerebral tumor, cerebral infection, cerebral immunologic disorders, degenerative conditions…)

Aetiologies in the African Region

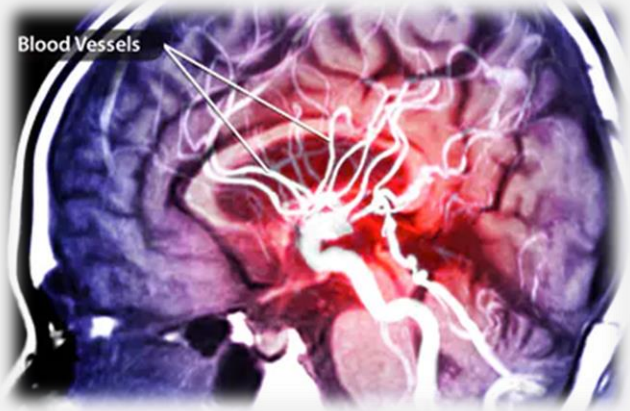
The prevalence of symptomatic epilepsy is higher in developing countries

Higher prevalence rates of epilepsy in LMICs are likely due to symptomatic epilepsies.

An estimated 25% of symptomatic epilepsies are preventable.

The major preventable risk factors for epilepsy:

- perinatal insults
- central nervous system infections
- traumatic brain injury
- stroke

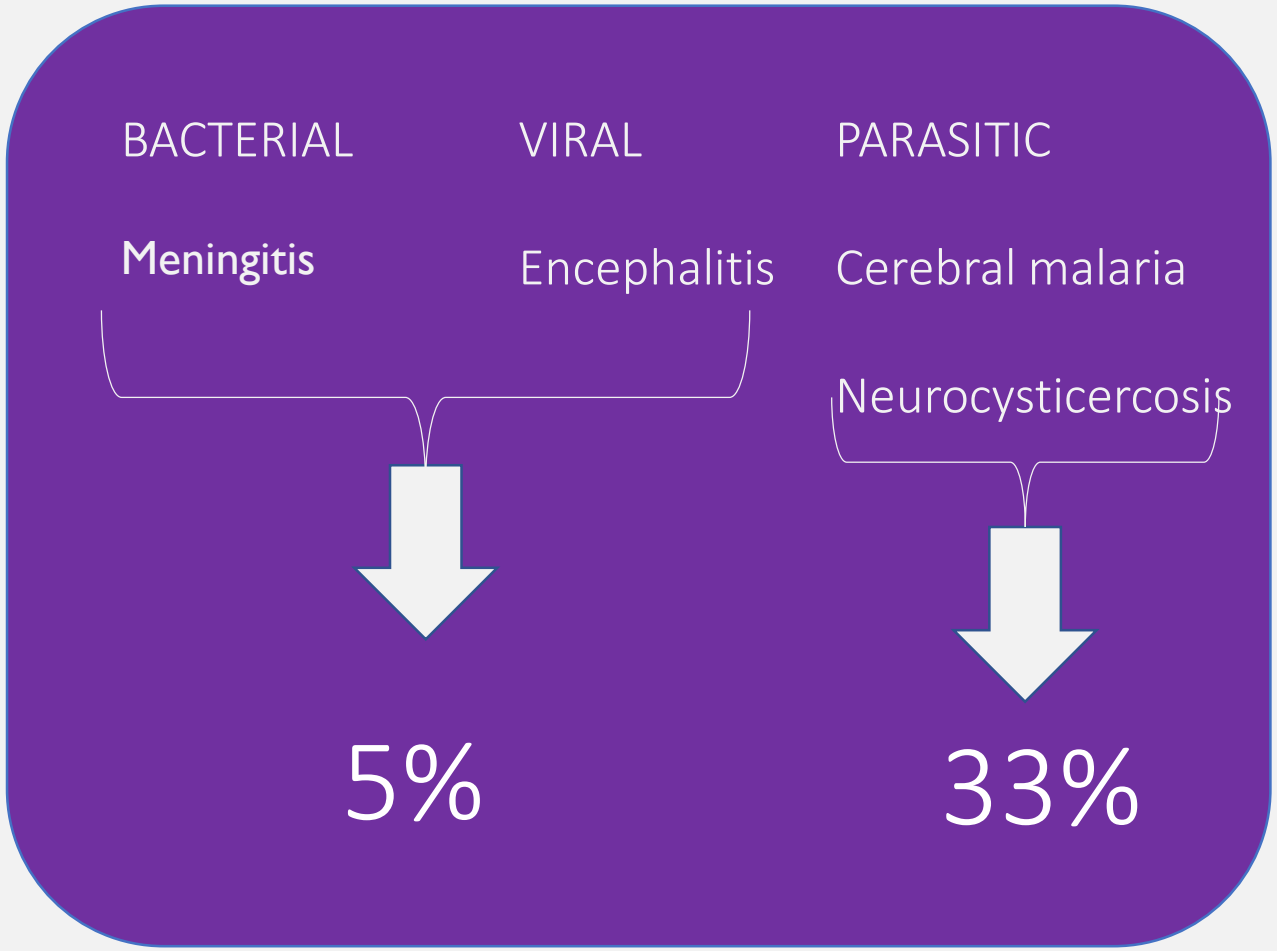


Perinatal risk factors

33%

- Short gestational age at delivery
- Low birth weight
- Maternal health conditions: low nutritional status, pre-eclampsia
- Presence and skill of birth attendants
- Method of delivery
- Hypoxic-ischemic encephalopathy
- Neonatal hypoglycaemia
- Perinatal infection (human immunodeficiency virus, …)
- …

All endemic causes of infection can involve the brain, at all ages!



Traumatic brain injury

- Road traffic injuries
- Falls
- Violence, armed conflict

Severe injury → higher risk!

4%

Stroke

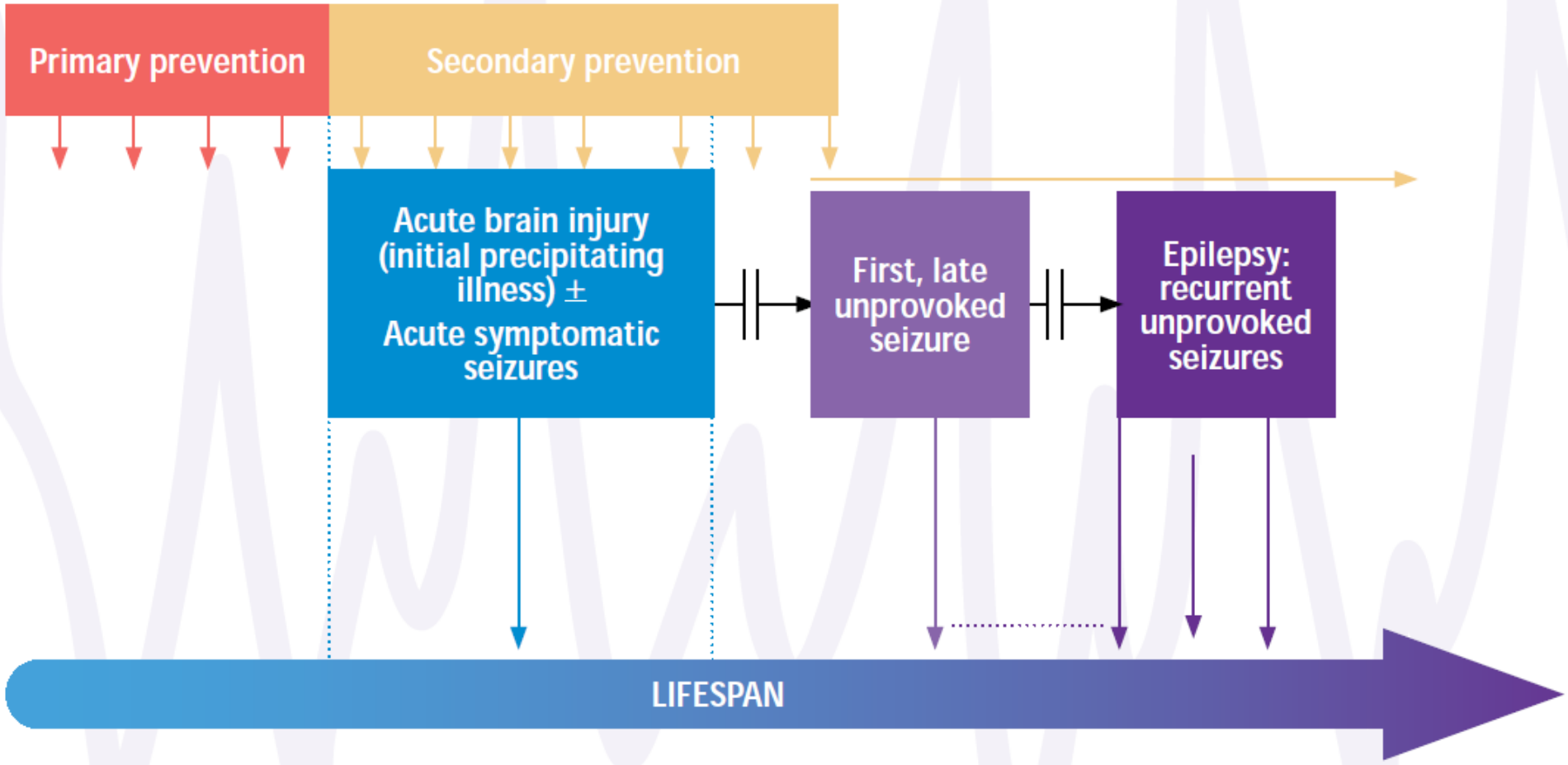
Seizures after stroke

- ↗ premature mortality
- ↗ disability

Common cause of status epilepticus

2.7%

Prevention


Primary prevention
Secondary prevention
Acute brain injury (initial precipitating illness) ±
Acute symptomatic seizures
First, late unprovoked seizure
Epilepsy: recurrent unprovoked seizures
LIFESPAN

Primary prevention

Cause	Estimated attributable fraction	Primary preventive measures
Pre- and perinatal insults E.g. prematurity, fetal exposures to infections, toxins, cerebral haemorrhage or infarction, hypoxic-ischaemic encephalopathy	5% (HIC) 11% (LMIC)	Maternal and child health care systems with universally available: screening for pregnancy complications; trained birth attendants and hygienic birthing environments; referral to obstetrical and neonatal care as needed; and standardized protocols for care during the pre-, peri- and postnatal periods
Central nervous system infections E.g. bacterial meningitis, viral encephalitis, parasitosis	2% (HIC) 5% (LMIC)	Communicable disease control programmes making universally available: immunizations for *H. influenzae* b, *N. meningitidis* and *S. pneumoniae*; malaria control programmes in endemic areas; and hygienic pig husbandry programmes and human sanitary waste management
Traumatic brain injury E.g. attributable to road traffic collision, falls and violence	5% (HIC) 4% (LMIC)	Multiple road traffic safety measures and programmes; fall prevention measures for children, older adults and high-risk occupations; violence prevention programmes
Stroke Cerebral infarction and haemorrhage	12% (HIC) 3% (LMIC)	Individual interventions and community programmes to reduce cardiovascular risk factors: e.g. hypertension, diabetes mellitus, hyperlipidaemia, obesity and tobacco use
Total Combined pre- and perinatal insults, CNS infection, traumatic brain injury and stroke	25% (HIC) 24% (LMIC)	See above

Secondary prevention

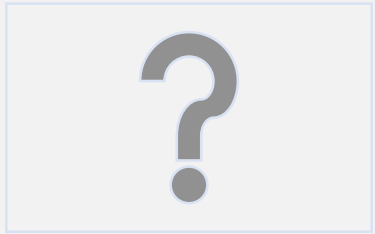
Secondary prevention

Antiseizure medication
All available compunds can be prescribed.
Usually long-term treatment is indicated.

Secondary prevention

Pre- and perinatal insults

- Hypothermia
- Intravenous magnesium
- Calcium channel blocking agents flunarazine



Secondary prevention

Central nervous system infections

- Antibiotic, antiviral, antiparasitic agents (albendazole for NCC, …)
  - → cyst resolution
  - → improved seizure control?
- Antiseizure medication for malaria
  - → acute seizure reduction!
  - → late unprovoked seizure reduction?

Secondary prevention

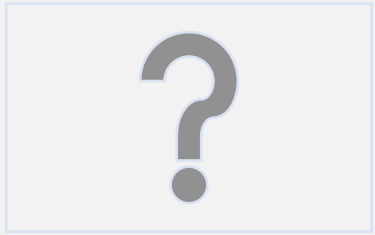
Traumatic brain injury

Prophylactic use of antiseizure medicines for a period during and following TBI recovery.

Secondary prevention

Stroke

- Influence of thrombolytic or endovascular stroke therapy on epilepsy risk?
- Antiseizure medication as prevention for post-stroke epilepsy?



Key messages

Preventing epilepsy is an urgent unmet need.

Key messages

Effective interventions for primary prevention are available.

Key messages

Effective interventions for primary prevention delivered as part of …

Key messages

… broader public health responses in maternal and newborn health care, communicable disease control, injury prevention and cardiovascular health.

EPILEPSY

A public health imperative

The time to act is NOW.

Urgent actions are needed, and these include:

- **Promote** epilepsy as a public health priority to reduce its burden.
- **Improve** public attitudes, reduce stigma and promote protection of the rights of people with epilepsy.
- **Invest** in health and social care systems to improve accessibility to epilepsy care.
- **Enhance** access to cost-effective antiseizure medications globally.
- **Prevent** acquired epilepsies through improved care for common causes, such as perinatal injury, central nervous system infections, stroke and traumatic brain injuries.
- **Increase** priority given to epilepsy in research agendas.