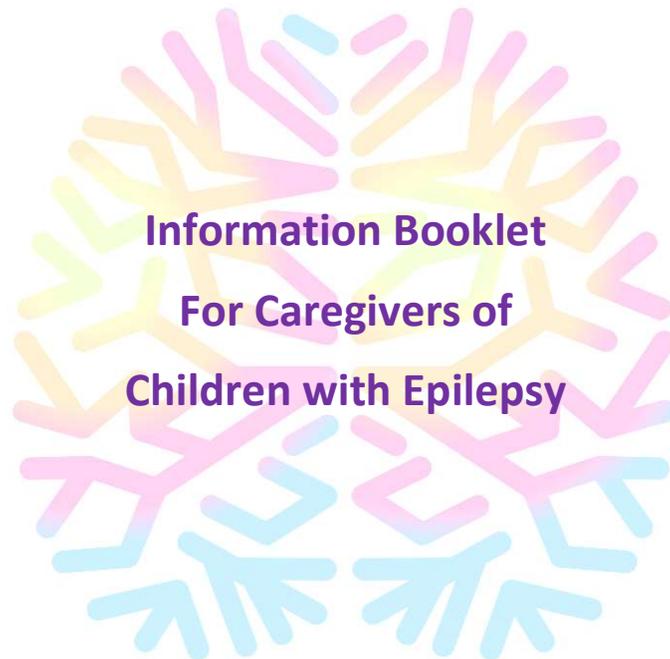


# EPICARE



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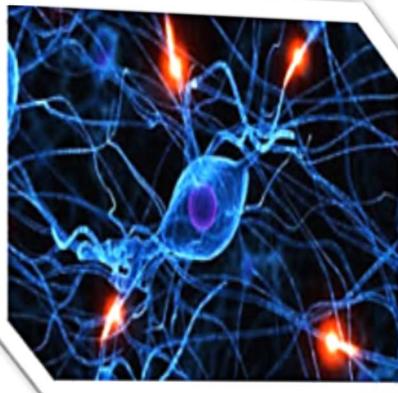
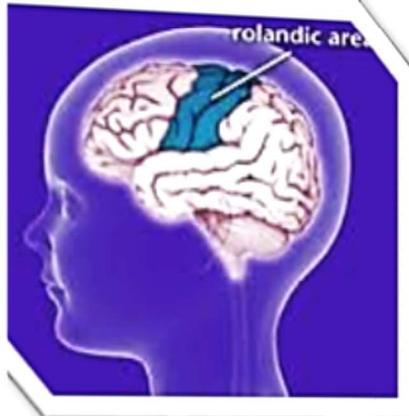
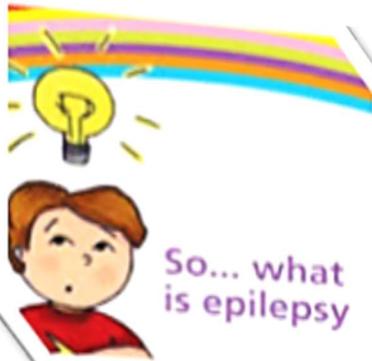
*“Seizures last several minutes or less.*

*Worry about the next seizure can last a lifetime.”*

**Let’s Conquer Childhood Epilepsy**

1 in 20 children are affected by epilepsy

share & support  
enlensv awareness



Classification according to EEG findings

Generalized	Focal	Focal with 2y 6
Both Cerebral Hemispheres	Only a part of a hemisphere	
Loss of Consciousness	No loss of consciousness	
Treated by Valproate	Treated by Carbamazepine	

MRI

Common epilepsy syndromes

- Neuronal frontal lobe epilepsy
- Benign rolandic epilepsy
- Benign occipital epilepsy of childhood
- Childhood absence epilepsy
- Juvenile myoclonic epilepsy
- Lance-Goussier syndrome
- Temporal lobe epilepsy
- West syndrome

THE INTERNATIONAL LEAGUE AGAINST EPILEPSY CLASSIFICATION OF EPILEPSIES AND EPILEPTIC SYNDROMES

LOCALIZATION-RELATED (FOCAL, LOCAL, PARTIAL) EPILEPSIES AND SYNDROMES

A. IDIOPATHIC (WITH AGE-RELATED ONSET). AT PRESENT, TWO SYNDROMES ARE ESTABLISHED:

- BENIGN CHILDHOOD EPILEPSY WITH CENTROTEMPORAL SPIKES
- CHILDHOOD EPILEPSY WITH OCCIPITAL PAROXYSMS

B. SYMPTOMATIC. THIS CATEGORY COMPRISES SYNDROMES OF GREAT INDIVIDUAL VARIABILITY.

SEIZURE FIRST AID

- + STAY WITH THE PERSON
- + TIME THE SEIZURE
- + PROTECT FROM INJURY
- + LOOSEN ANYTHING TIGHT AROUND THE NECK
- + DO NOT RESTRAIN THE PERSON
- + DO NOT PUT ANYTHING IN THE MOUTH
- + ROLL THE PERSON ON HIS/HER SIDE AS THE SEIZURE SUBSIDES
- + AFTER THE SEIZURE TALK TO THE PERSON REASSURINGLY

TREATMENT OF EPILEPSY

- Treatment should be initiated following the occurrence of **two or more unprovoked seizures**
- Risk of developing a second seizure following a single unprovoked seizure is about 35- 40%
- Therapy started only after diagnosis of epilepsy is confirmed.
- Treatment after first seizure reduces recurrence by 50 %...15 % discontinue due to ADR

"Kids with epilepsy should be able to participate in as many normal, typical activities as possible. Many kids with epilepsy go swimming, ride bikes, go on sleepovers, play hockey, and play soccer."

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## 1. General Information about Epilepsy:

- Epilepsy is a chronic disorder caused by abnormal & excessive electrical activity in the brain. It occurs due to abnormalities in neurons which produce excess electrical activity which spreads to neighboring neurons leading to seizure. Epilepsy means a tendency to have recurrent seizures.
- Every seizure is not epilepsy. Some children may get seizures due to various causes like fever, low calcium, electrolyte disturbance etc.
- Epilepsy may occur due to a genetic tendency, passed down from one or both parents (inherited) or a genetic tendency that is not inherited, but is a new change in the person's genes. A structural change in the brain (sometimes called 'symptomatic'), such as the brain not developing properly, or damage caused by a brain injury at the time of birth, infections like meningitis can often lead to seizures.
- There are many types of seizures. They are essentially classified as focal or generalized. There are various types of generalized seizures like absence seizures, atonic seizures, generalized tonic/clonic seizures, myoclonic seizures etc. It is important to identify the seizure type to classify the syndrome. Therefore, a video recording of seizure by parents is very useful.
- Epilepsy is diagnosed by expert clinicians (neurologists/epileptologist/pediatricians with special interest in epilepsy) along with EEG, sometimes MRI and rarely genetic or/and metabolic studies.
- Though it is curable in 80-85% cases, it needs regular & long-term treatment.
- Many epilepsies are benign and may recover with age, some need antiepileptic drug treatment, some are refractory to drugs and need dietary treatments and few need epilepsy surgery. The response to treatment depends on the cause.
- Comorbidities are common in epilepsy, hyperactivity, inattention, academic issues, anger outbursts may be seen along with seizure and need to be discussed. They may occur due to the electrical abnormalities, drugs or parental attitude.

## **2. Role of parents in day to day treatment**

### **A. Medications: Regular medicine to achieve 2 years of seizures freedom is the most important aspect of treatment.**

- Once epilepsy is diagnosed, we identify the right medication based on various factors, which is to be given for a period of 2 years of seizure freedom. If seizure recurs then compliance need to be reviewed and drug may need to be increased in dose, changed or another drug may be added.
- Parents must report seizures to doctor immediately as this means the epilepsy is not yet well controlled and appropriate action is taken. Uncontrolled epilepsy can later become difficult to treat; it may affect child's intelligence behavior & school performance.
- Medicines can be given before or after food, with a gap of ½ an hour.
- Some drowsiness may occur at the start of treatment but will reduce gradually.
- Reporting of side effects if any is compulsory.
- Medicine should be stopped gradually after seizures freedom only after consulting the treating doctor.

### **B. Lifestyle Tips: Epilepsy does not need any major change in lifestyle.**

- The child should be encouraged to continue his routine as earlier & should be treated as his siblings.
- Unsupervised swimming is to be avoided, as seizure while swimming can lead to drowning. Strobe lights in discotheques can precipitate a seizure and may be avoided.
- Realistic expectations in behavior, academics and other life goals should be maintained.
- Overprotection, unnecessary restriction, anxious discussions can lead to lowering of self-esteem and related complications like depression, anxiety poor academic performance etc., and should be avoided.
- Switching to healthy dietary options, regular sleep, exercise help, but no specific dietary changes are required in most cases of routine/benign epilepsies.

### 3. Emergency Management of Seizures

#### A. Emergency Management of Seizure at Home:

- Be calm & reassuring.
- Keep the child in lateral position, protect him from injury- remove any harmful objects that the child may hit, cushion their head and loosen any tight clothing. Stay with the person until recovery is complete.
- Most seizures are self-terminating.
- Do not restrain the person OR put anything in the person's mouth OR try to stop the person from moving unless in danger OR give anything to eat and drink until fully recovered.
- If seizure continues beyond 2 minutes, use Midazolam spray for nasal or buccal use in doses advised by your doctor.
- Hospitalize the child if seizures continue even after use of spray on 2 occasions or if seizures occur without person regaining consciousness between seizures OR if any injury has occurred during seizure.
- Every seizure does not need hospitalization.

#### B. Extra Protection with Medications: When & Why?

During any infectious illness associated with fever, during periods of stress or menstruation, it may be worthwhile to put the child on additional intermittent prophylaxis with Clobazam - 5mg or 10 mg in 2 divided doses as advised by the doctor. This may also be done if the child has tendency for clustering of seizures i.e. more than one seizure in a day.

#### C. Management of Febrile Seizures & Seizure with Fever:

- Manage the fever with paracetamol in adequate doses round the clock.
- You may give oral Clobazam during fever in prescribed doses.
- If child gets a seizure, bring down the temperature with sponging using tap water.
- Use nasal midazolam as prescribed.

#### 4. Diagnostic Tests:

**Neurophysiological Tests:** They are a non-invasive test and does not cause any harm. EEG records the electrical activity of the brain.

##### EEG recording -

- Hair should be washed & clean & off any oil before EEG.
- A sleep EEG gives better yield (natural sleep is preferred), therefore the child should be sleep withdrawn previous night with 4-5 hours of night sleep only. Do not allow sleep during the travel to EEG lab.
- Encourage a proper meal before the tests (Anesthesia is not used ever).
- Safe sedatives may be used during the recording.
  - A. Routine EEG** – A routine EEG is recorded in awake & sleep state for 20-30 minutes to document the abnormality in the electrical activity in the brain.
  - B. Long Term EEG Monitoring** - This may be required when routine EEG does not identify the abnormality & a better yield is required for diagnosis. Here EEG is performed for a period of 2-4 hours on outpatient basis at our center.
  - C. Video EEG** - Video EEG is required to see the nature of event and the simultaneous EEG. This is performed for 2-8 hours at our center on outpatient basis.

##### Neuroimaging -

MRI of the brain is needed if we suspect structural lesion. MRS is an addition imaging technique to see the metabolites in the brain and is needed to help diagnose metabolic epilepsies. CT scan is useful in a few cases. MRI is often a preferred imaging technique in childhood epilepsies.

##### Genetic & Metabolic Tests -

In cases of complex epilepsies, the cause may be genetic which may be a chromosomal disorder, deletion, duplication disorder or a single gene mutation. Some such mutations may lead to metabolic disorders which in turn lead to deficiencies or accumulation of metabolite leading to neuronal damage. We order these tests when we suspect these disorders based on clinical picture.

## 5. Antiepileptic Drugs

Let your doctor know about any side effects like rash, fever and change in behavior your child while on treatment. This helps the doctor to find the best medicine and dose suitable to your child.

**Table below lists the common antiepileptic drugs, common brand names and side-effects.**

\*(Brand names used for convenience & patient information, they do not substitute prescription)

Drug	Some Brand Names*	Common side-effects
Phenobarbitone	Gardenal, Phenobarbital	Hyperactivity, vitamin D deficiency
Phenytoin sodium	Eptoin, Epsolin, Dilantin, Epilan	Abnormal growth of gums, increased body hair, rash, swollen glands
Sodium Valproate	Valparin Chrono, Encorate Chrono, Torvate, Kronostar,	Weight gain, hair loss, bruising, tremors, liver toxicity, PCOD in teen girls
Carbamazepine	Zen Retard, Tegretal, Zeptol	Rash, double vision
Oxcarbazepine	Lovax, Vinlep, Oleptal, Oxetal	low blood sodium
Lamotrigine	Lamictal, Lamitec	Rash, serious allergic reactions
Clobazam	Frisium, Lobazam, Solzam,	Aggressive behavior, Restlessness
Clonazepam	Rivotril, Lonazep, Clonotril	Sedation, addiction
Topiramate	Nextop, Topamed, Topiral, Topamac, Leptomate	Weight loss, loss of appetite, anomia, increased intra-ocular pressure
Levetiracetam	Keppra, Levepsy, Livatira, Levipil, Torleva, Epilive, Levroxa, Ictacetam Levera	Aggressive behavior, Irritability
Zonisamide	Zonisep	Weight loss, difficulty in thinking clearly, renal stones
Lacosamide	Seizgaurd / Laconext	Heart rhythm changes, headaches, nausea, tremors, blurred vision
Vigabatrine		Vision difficulties, weight gain

## 6. Refractory Epilepsy - Treatment options

Patients whose seizures remain uncontrolled despite judicious use of medications are considered to have refractory epilepsy. We review the child for compliance, alternative diagnosis & offers dietary treatment options to drugs.

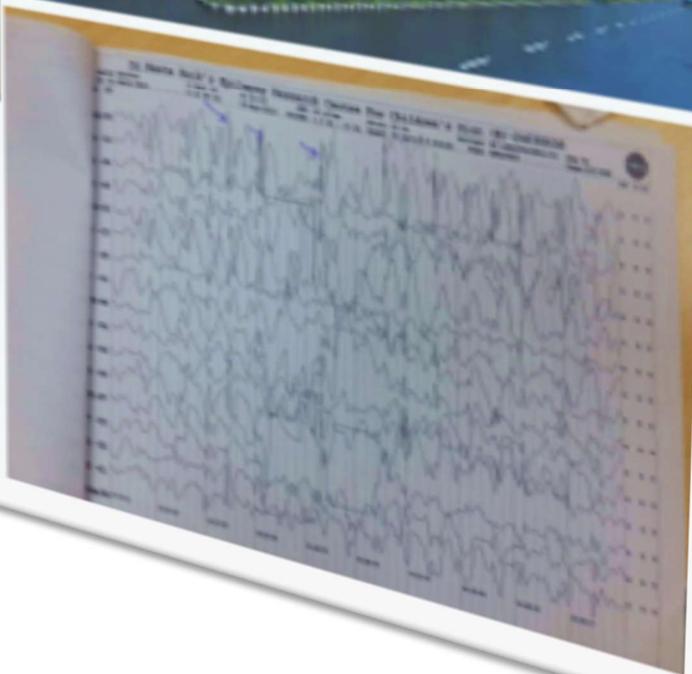
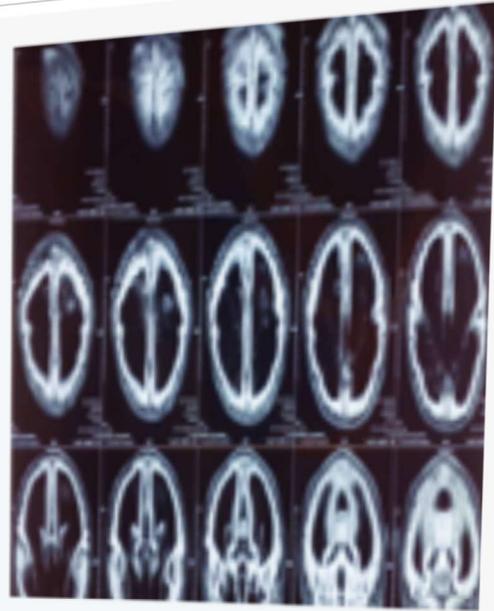
### Dietary treatment of epilepsy

- A. **Ketogenic diet (KD)** - KD used since the 1920's, is complex and time-consuming & needs direction from a trained dietician and physician. The child may need hospitalization for fasting, and the parents are trained to weigh, measure and prepare foods. Calories & fluids are restricted, and foods are calculated in exact amounts. The ketogenic diet includes 80% fat, 15% protein, and 5% carbohydrate; the ratio of fat to carbohydrate plus protein ranges from 2:1 to 4:1, with higher ratios seen as more restrictive but more effective.
- B. **Modified Atkins diet(MAD)** - MAD version is less complicated. Patients do not need admission to the hospital, no fasting or dietician is required to plan meals. MAD is more "user friendly" version of the diet & can be recommended for older children, teenagers and adults. It is simpler to follow, less limiting socially, and more palatable.
- C. **Low Glycemic Index diet (LGIT)** - LGIT recommends ingestion of foods such as fruits, vegetables, nuts, and whole grains yields a slow, steady rise in serum glucose as compared with ingestion of refined grains. It recommends 40–60 g of carbohydrates with glycemic indices < 50 and 60% of energy from fat and 20–30% from protein.
- D. **The Medium-chain Triglyceride diet** - This is a variant of KD which uses medium-chain fatty acids provided in oil form (MCT oil) as a dietary supplement.

### Surgical treatment of epilepsy

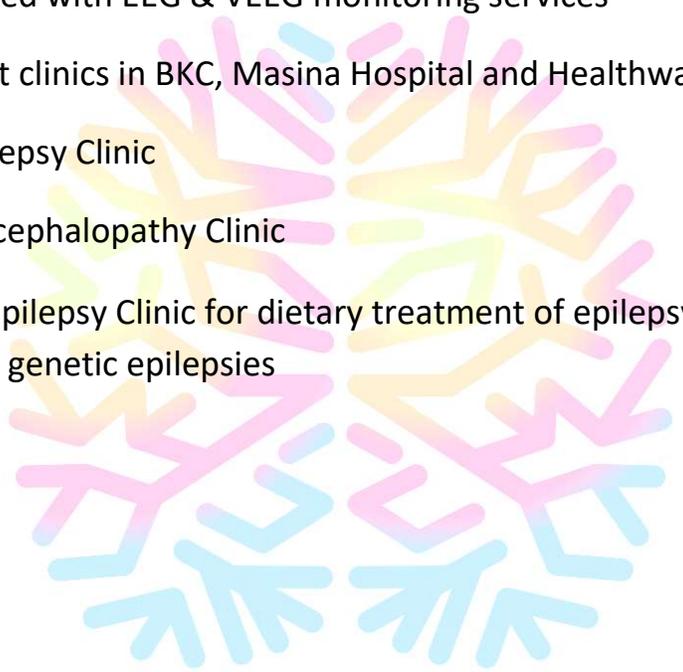
Surgery is considered in children who continue seizures despite adequate medication and diet. Decision for surgery is complex and requires comprehensive evaluation by a specialized team & investigations like video EEG, MRI, SPECT, PET, Functional MRI & sometimes invasive monitoring to for seizure focus & functional mapping. Final decision is taken only if the team is confident about significant reduction in seizure frequency without loss of important abilities.





## Paediatric Epilepsy Centre

- 1st stand-alone pediatric epilepsy clinic in Mumbai, started in 1999
- Treated more than 7500 cases of childhood epilepsy
- Fully equipped with EEG & VEEG monitoring services
- Independent clinics in BKC, Masina Hospital and Healthway hospital, Goa.
- Routine Epilepsy Clinic
- Epileptic Encephalopathy Clinic
- Refractory Epilepsy Clinic for dietary treatment of epilepsy, metabolic epilepsies & genetic epilepsies



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