

Seizures

CHAPTER 29

Epilepsy

What are they? Seizures (also called fits or convulsions) are sudden, usually brief, periods of unconsciousness or changes in mental state, often with strange jerking movements.

One out of every 10 or 20 children has at least 1 seizure by age 15. But only 1 in 50 of these children goes on to have chronic seizures (repeated fits over a long period of time)—a condition known as **epilepsy**.



CAUSES OF CHRONIC SEIZURES (EPILEPSY)

Seizures come from damage to, or an abnormal condition of, the brain. Common causes include:

- **Injury to the brain.** This causes at least 1/3 of epilepsies. Injuries may be before birth, during birth, or at any time after. The same causes of brain damage that result in cerebral palsy can cause epilepsy (see p. 91). In fact, **cerebral palsy and epilepsy often occur together.** **Meningitis** is a common cause of this combination. In small children common causes of seizures are **high fever** or **severe dehydration** (loss of liquids). In very ill persons, the cause may be **meningitis, malaria of the brain, or poisoning** (see *Where There Is No Doctor*, p. 178). Epilepsy that steadily gets worse, especially if other signs of brain damage begin to appear, may be a sign of a **brain tumor** (or of **hydrocephalus** in a baby—see p. 169). Seizures caused by a tumor usually affect one side of the body more than the other. Sometimes, seizures may be caused by pork tapeworms that form cysts in the brain (see *WTND*, p. 143).
- **Hereditary.** There is a family history of seizures in about 1/3 of persons with seizures.
- **Unknown causes.** In about 1/3 of epilepsies, no family history or history of brain damage can be found.

Fever seizures. Children who have once had a seizure with a high fever often will have seizures again when they have a fever—especially if other persons in the family have had seizures with fever. Be sure to check for **infections** of the ears and throat, as well as bacterial dysentery (diarrhea with blood and fever), and **treat the cause**.

Seizures that come only with fever usually stop occurring by the time the child is 7 years old. Sometimes they may develop into 'non-fever-related epilepsy', especially if the child has signs of brain damage (see "Cerebral Palsy," p. 87 and 88).

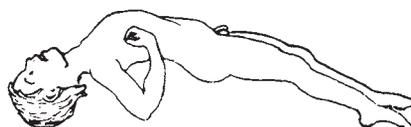
WARNING: Seizures in a very ill child may be a sign of **meningitis**—for which immediate medical treatment is necessary to save his life. Learn how to check for signs of meningitis (see *Where There Is No Doctor*, p. 185).

MENINGITIS



The spasms of **tetanus** can be mistaken for seizures. The jaw shuts tightly (lockjaw) and the body suddenly bends back. Learn to spot early signs of tetanus (see *WTND*, p. 182).

TETANUS



MORE ABOUT SEIZURES (EPILEPSY)

Mental ability. Some children with epilepsy are intelligent. Others are mentally slow. Occasionally, seizures that are very frequent and severe can injure the brain and cause or increase *mental slowness*. Treatment to control seizures is important.

Types of seizures. Seizures may appear very differently in different children. Some may have severe, ‘big’ or ‘major’ seizures with strong, uncontrollable movements and loss of consciousness. Others may have smaller or ‘minor’ seizures. These can be ‘brief spells’ with strange movements of some part of the body. They can be sudden unusual behavior such as lip-sucking or pulling at clothes. Or they can be brief ‘absences’ in which the child suddenly stops and stares—perhaps with blinking or fast movement of the eyelids.

Some children will have both minor and ‘big’ seizures or they may first have minor ones and later develop big ones.

Warning signs or ‘aura’. Depending on the kind of seizures, the child (and parents) may be able to sense when a seizure is about to begin. Some children experience a ‘warning’ in which they may see flashes of light or colors. Or they may suddenly cry out. In one kind of seizure, the ‘warning’ may be fear or imagined sights, sounds, smells, or tastes. In some kinds of seizures there is no ‘warning’. The child’s body may suddenly jerk or be thrown violently. These children may need to continuously wear some kind of safety hat or other head protection.

Timing of seizures. Seizures may happen weeks or months apart, or very often. Minor seizures or ‘absences’ may come in groups—often in the early morning and late afternoon.

Seizures are usually short. Minor seizures may last only a few seconds. Big seizures seldom last more than 10 or 15 minutes. Rarely, however, a child may enter into a long ‘epileptic state’ which may last hours. This is a medical emergency.

Some kinds of seizures may appear at any age. Others begin in early childhood and usually disappear or change to other patterns as the child grows older.

Many persons have epilepsy all their life. However, some children stop having seizures after a few months or years.

Usually there is no need to know the exact kind of seizures a child has. However, some kinds of seizures require different medicines. **The chart on p. 240 and 241** describes the main types of seizures, when they begin, and their treatment.

WHEN ARE SPECIAL MEDICAL STUDIES NEEDED?

In some poor countries, doctors sometimes prescribe medication for seizures without properly checking for signs of causes that may need attention. However, more and more doctors regularly order expensive testing such as an ‘EEG’ (electroencephalogram). Even if these services are ‘free’, they are often only available in a distant city, which causes the family much time and expense. Such tests do not usually help much in deciding treatment—unless a brain tumor is suspected. And even if it is a tumor, the possibilities of surgery or successful treatment may be very small, and the costs are often much too high.

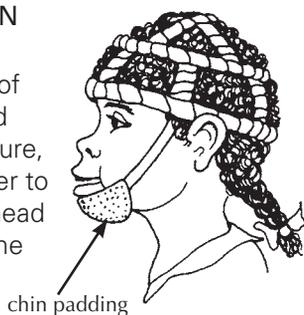
Usually EEGs and other costly testing are not helpful.

WHAT TO DO WHEN A CHILD HAS A SEIZURE

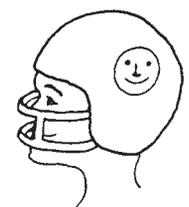
- Learn to recognize any 'warning signs' that a seizure is about to begin, such as sudden fear or a cry. Quickly protect the child by lying her down on a soft mat or other place where she cannot hurt herself.
- When a 'big' seizure starts, do not try to move the child unless she is in a dangerous place.
- **Protect the child as best you can against injury, but do not try to forcefully control her movements.** Remove any sharp or hard objects near her.
- **Put nothing in the child's mouth while she is having a seizure**—no food, drink, medicine, nor any object to prevent biting the tongue.
- Between spasms, gently turn the child's head to one side, so that spit drains out of her mouth and she does not breathe it into her lungs.
- After the seizure is over, the child may be very sleepy and confused. **Let her sleep.** For **headache**, which is common after a seizure, give acetaminophen (paracetamol) or aspirin.

HEAD PROTECTION

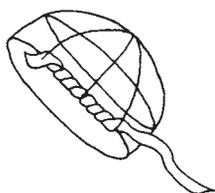
To protect the head of a child who falls hard when she has a seizure, it may be wise for her to wear some kind of head protection most of the time.



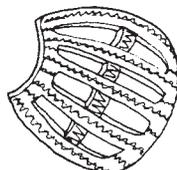
A child who often injures his face with seizures may need a 'hard hat' helmet with a face mask.



You can make a 'cage' of stiff wire and wrap it with strips of inner tube, soft cloth, or sponge rubber.



Or cut a piece of old car tire something like this.



Or sew strips of cloth filled with padding



MEDICINES TO PREVENT SEIZURES

There are no medicines that 'cure' epilepsy. However, there are medicines that can prevent the seizures of most children—as long as they keep taking the medicine regularly. **As long as a child has epilepsy—which may be for years or all his life—he must continue to take anti-seizure medicines.**

Sometimes preventing seizures for a long time seems to help stop epilepsy permanently. For this reason, if the child has had many seizures in the past, it is usually wise for him to keep taking anti-seizure medicines regularly for at least one year after the last seizure. Only then should you gradually lower and stop the medication to see if he still needs it.

CAUTION: Great care is needed to select the medicines that help the individual child most, and which do her the least harm. Try to avoid giving so much medicine that she always seems sleepy, dizzy, slow-moving, or loses interest in things. A few seizures may be better than too much medicine—which can poison the child.

Choosing medicines

The best medicine (or medicines) for a child with epilepsy is one that is:

- effective (prevents the seizures).
- safe (has few side effects).
- cheap (because it must be taken for years).
- easy to take (long-acting, few doses a day).
- easy to get.

WARNING: When child is having a seizure **do not put his feet into a fire**, it will not 'frighten him back to life' but will severely burn him.



Many different medicines are used for epilepsy. Some types of seizures are controlled better by one medicine and some by another medicine, or by a combination of medicines. Some children's seizures are easy to control. Others are very difficult. It may be necessary to try different medicines and combinations to find the most effective treatment. In a few children, no medicines will control the seizures completely.

The best medicine to try first for almost all types of seizures is usually phenobarbital. Often it is very effective, and is relatively safe, cheap, and easy to take. Usually it is taken 2 times a day, but with some people only once a day at bedtime is enough.

The next best medicine for 'big' seizures is usually phenytoin. It is also fairly safe, cheap, and usually needs to be taken only once each night. (For some kinds of epilepsy, however, phenytoin may make seizures worse.)

For most epilepsies, phenobarbital and phenytoin are often the best drugs. First try each alone, and if that does not work, try both together. Most other drugs are less likely to be effective, are often less safe, and are much more expensive.

Unfortunately, many doctors prescribe more expensive, less safe, and often less effective medicines before trying phenobarbital or phenytoin. Partly this is due to drug companies that falsely advertise their more expensive products. In some countries, phenobarbital is difficult to get—especially in pill form. The result is that many children's seizures are poorly controlled, using drugs that cause severe side effects and that are very costly. *Rehabilitation* workers need to realize this and do what they can to **help provide the safest, cheapest medicines that will effectively control each child's seizures.**

CAUTION: To prevent choking, do not give medicines to a child while she is lying on her back, or if her head is pressed back. Always make sure her head is lifted forward. Never give medicines by mouth to a child while she is having a seizure, or while she is asleep or unconscious.

It is usually best to **start with only one anti-seizure medicine—usually phenobarbital**, if available. Start with a low to medium dose, **and after a week, if seizures are not controlled and if there are no serious side effects, increase to a higher dose.** After a few days, if the seizures are still not controlled, add a second medication—usually phenytoin, for ‘big seizures’. Again, start with a low to medium dose and gradually increase as needed.

CAUTION: When you stop or change a child’s medicine, do so gradually. Sudden stopping or changing the medicine may make seizures worse. Also, it may take several days for a new medicine to have its full effect.



WARNING: All anti-seizure medicines are poisonous if a child takes too much. Be careful to give the right dose and to keep medicines out of reach of children.

INFORMATION ON DOSAGE AND PRECAUTIONS FOR ANTI-SEIZURE MEDICINES

Phenobarbital (phenobarbitone, Luminal)

For all types of seizures. Usually comes in:

tablets of 15 mg.	tablets of 30 mg.	(It costs less to buy 100 mg. tablets and cut them into pieces.)
tablets of 60 mg.	tablets of 100 mg.	

Dosage: Because tablet sizes differ, we give the dosage in milligrams (mg.).

The usual dose is 3 to 8 mg. for each kg. of body weight every day (3 to 8 mg./kg./day)—usually given in **2 doses** (morning and evening):

Give 2 doses a day. In each dose give:

children over 12	50 to 150 mg.
children 7 to 12 years.	25 to 50 mg.
children under 7 years	10 to 25 mg.

Some children do better with **1 dose** a day instead of 2 doses. Give twice the amount listed here at bedtime. But if the seizures return or the child has problems going to sleep or waking up, go back to **2 doses** a day of the regular amount.

SIDE EFFECTS AND COMPLICATIONS

- Too much can cause sleepiness or slow breathing.
- Some very active children become over-active or behave badly.
- Rare side effects include mild dizziness, eye-jerking, and skin rash.
- Bone growth problems may occur—especially in children with mental slowness. Extra vitamin D may help.
- Bitter taste. It may help to grind up the tablet and give it with honey or jam.
- Habit forming.

CAUTION: If tablets of 100 mg. are used, be very sure the family understands that they must be cut into pieces. Show them first and then have them do it.





Giving a whole tablet instead of a small piece can poison the child.



Phenytoin (diphenylhydantoin, *Dilantin*)

For all types of seizures except brief seizures that suddenly throw the child out of balance ('jolt seizures') or 'minor seizures' with staring, blinking, or fast movement of eyes. (Phenytoin may make these kinds of seizures worse.)

Usually comes in: capsules or tablets of 25 mg., 50 mg., and 100 mg.
syrup with 30 mg. in each 5 ml. (1 teaspoon)

Dosage: Give 5 to 10 mg./kg./day in 2 divided doses, but do not exceed 300 mg./day.

Start with the following dose once a day:

- children over 12 years 100 to 300 mg.
- children 7 to 12 years 100 mg.
- children 6 or under 50 mg.

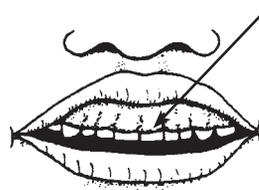
After 2 weeks, if the seizures are not completely prevented, the dose can be increased, but not to more than twice the amount.

If child has no seizures during several weeks, try lowering the dose little by little until you find the lowest dose that prevent the seizures.

SIDE EFFECTS AND COMPLICATIONS

WARNING: Watch for **dizziness, eye-jerking, seeing double, and severe sleepiness.** Lower the dose if any of these occur. They are early signs of poisoning, which could cause permanent brain damage.

- **Swelling and abnormal growth of the gums** often occurs with long-time use. It can be partly prevented by good mouth care. **Be sure the child brushes or cleans his teeth and gums well after eating.** If he cannot do it by himself, help him, or better, teach him. If the gum problem is severe, consider changing medicines. (See *Where There Is No Dentist*, p. 109.)



very swollen, sore gums almost covering teeth—caused by not keeping teeth clean while taking phenytoin

- Occasional side effects: increased body hair, rash, loss of appetite, vomiting.
- High dosage may cause liver damage.
- Bone growth problems sometimes occur—especially in children who are mentally slow. Extra vitamin D may help.

WARNING: Sudden stopping of phenytoin may cause the child to have a **long-lasting seizure.** Therefore, when stopping or changing the medicine, **lower the dosage gradually.**

Carbamazepine (*Tegretol*)

Useful for almost all types of seizures as a second choice, or in combination. Especially useful for 'psychomotor' seizures (see p. 241). High cost is a disadvantage. (Unfortunately, many doctors prescribe it as first choice when cheaper drugs such as phenobarbital are likely to work as well or better.)

Usually comes in: tablets of 100 mg. or 200 mg.

Dosage: 10 to 25 mg./kg./day divided into 2 to 4 doses. Or you can start with these doses 4 times a day:

- children 10 to 15 years 200 mg.
- children 5 to 10 years 150 mg.
- children 1 to 5 years 100 mg.
- children under 1 year old 50 mg.

It is best to **take it with meals.**

The dose of carbamazepine should be adjusted to the individual. Depending on how well it controls the seizures, it can be raised to 30 mg./kg./day (but no higher) or dropped to 10 mg./kg./day. Try to give the lowest amount of medicine that stops the seizures.

SIDE EFFECTS AND COMPLICATIONS

- Rarely causes liver damage or reduces ability of blood to clot.

OTHER DRUGS SOMETIMES USED FOR EPILEPSY

- **Primidone (*Mysoline*)** For all seizures. Start with low doses and gradually increase to 10 to 25 mg./kg./day in 2 to 4 divided doses. May cause sleepiness, dizziness, vomiting, or rash.
- **Ethosuximide (*Zarontin*)** First choice for 'minor seizures' with blank staring, eye-fluttering, and perhaps strange motions—especially if the seizures occur in groups in the morning and evening. Give 10 to 25 mg./kg./day in 1 or 2 doses, with food to avoid stomach ache. Rarely causes liver damage.
- **Valproic acid (*Depakene*)** Used alone or in combination with other anti-seizure drugs, except carbamazepine, for 'minor seizures' with blank staring or 'absences,' especially when the seizures occur in groups. For children between 1 and 12 years. The dosage for a child who weighs up to 20 kg. is initially 20 mg./kg./day in 2 to 3 divided doses. (For example, a child weighing 10 kg. would take 200 mg. a day, and a child weighing 20 kg. would take 400 mg. a day.) Children over 20 kg can start with 400 mg. a day in divided doses, and the dose can be increased until the seizures are controlled (usually up to 30 mg./kg./day). Never give more than 60 mg./kg./day. Few side effects. May cause liver damage, so monitor liver function for the first 6 months, especially for children younger than 3 years old.
- **Corticosteroids (or *corticotropin*)** These are sometimes tried for 'baby spasms' and 'jolt seizures' (see p. 240) that are not controlled by other medicines. Long-term use of these medicines causes serious and possibly dangerous side effects (see p. 137). They should be used only with highly skilled medical advice when all other possible medicines have failed.
- **Diazepam (*Valium*)** Sometimes used for 'newborn seizures' or 'baby spasms' (see p. 240), but other medicines should be tried first. May cause sleepiness or dizziness. Mildly habit forming. Give about 0.2 mg./kg./day in divided doses.

CAUTION DURING PREGNANCY: Many of the anti-seizure drugs, especially phenytoin, **may increase the risk of birth defects when taken by pregnant women.** Also, some of the drug goes into breast milk. Therefore, pregnant women should use these drugs only when seizures are common or severe without them. Women taking seizure medicine should not breast feed if they are able to feed their babies well without breast milk. Phenobarbital is probably the safest anti-seizure medicine during pregnancy.

TREATMENT FOR A LONG-LASTING SEIZURE

When a seizure has lasted more than 15 minutes:

- if someone knows how, inject IV diazepam (*Valium*) or phenobarbital **into the vein.**

CAUTION: Diazepam and phenobarbital must both be injected very slowly. For diazepam, take at least 3 minutes to inject the dose for children. For phenobarbital, inject children at the rate of 30 mg./minute or slower, and in adults, not more than 100 mg./minute.

	<p>Doses for injectable diazepam:</p> <p>Adults 5 to 10 mg. Children 7-12 years 3 to 5 mg. Children under 7 1 mg. for every 5 kg. of body weight.</p>		<p>Doses for injectable phenobarbital:</p> <p>Adults 200 mg. Children 7-12 years 150 mg. Children 2-6 years 100 mg. Children under 2 years 50 mg.</p>
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- or put a 'suppository' of diazepam, paraldehyde, or phenobarbital up the rectum (asshole).

NOTE: These medicines do not work as fast or well when they are injected into a muscle. If you only have injectable or liquid medicine, put it up the rectum with a **plastic syringe without a needle.** Or grind up a pill of diazepam or phenobarbital, mix with water, and put it up the rectum.



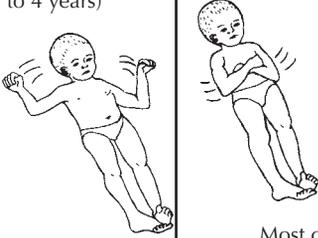
Putting diazepam up the rectum (without a needle!) works faster than injecting it into a muscle.

If the seizure does not stop in 15 minutes after giving the medicine, repeat the dose.

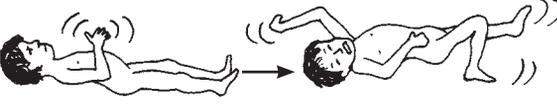
Do not repeat more than once.

Types of epileptic seizures

Note: This information is for rehabilitation workers and parents because many doctors and health workers do not treat seizures correctly. With care, perhaps you can do better. However, correct diagnosis and treatment can be very difficult. If possible, get advice from a well-informed medical worker. Ask her help in using this chart. It is adapted from *Current Pediatric Diagnosis and Treatment* by Kempe, Silver, and O'Brien (Lange Medical Publishing), in which more complete information is provided.

TYPE	AGE SEIZURES BEGIN	APPEARANCE	TREATMENT
<p>Newborn seizures</p> 	<p>birth to 2 weeks</p>	<p>Often not typical of later seizures. May show sudden limpness or stiffness; brief periods of not breathing and turning blue; strange cry; or eyes roll back; blinking or eye-jerking; sucking or chewing movements; jerks or strange movement of part or all of body.</p> <p>WARNING: Make sure spasms are not from tetanus or meningitis (see p. 233).</p> <p>With cerebral palsy in the newborn, the baby is usually limp. Stiffness and/or uncontrolled movements usually appear months later, but the baby does not lose consciousness.</p>	<p>Phenobarbital or phenytoin. Add diazepam if not controlled.</p> <p>(Seizures due to brain damage at birth are often very hard to control.)</p>
<p>Baby spasms (West's syndrome)</p>	<p>3-18 months (sometimes up to 4 years)</p>	 <p>Sudden opening of arms and legs and then bending them—or repeat patterns of a strange movement. Spasms often repeated in groups when waking or falling to sleep, or when very tired, sick, or upset.</p> <p>Most children with these spasms are mentally slow.</p>	<p>Corticosteroids may be tried—but are dangerous. Try to get help from an experienced doctor or health worker. Valproic acid or diazepam may help.</p>
<p>Fever seizures (seizures that only occur when child has a fever)</p> 	<p>6 months to 4 years</p>	<p>Usually 'big' seizures (see next page) that happen only when child has a fever from another cause (sore throat, ear infection, bad cold). May last up to 15 minutes or longer. Often a history of fever seizures in the family.</p> <p>WARNING: Look for signs of meningitis.</p>	<p>A child who has had fever seizures on several occasions should be treated with phenobarbital continuously until age 4 or until one year after the last seizure. Seizures usually do not continue in later childhood.</p>
<p>Jolt or 'lightening bolt' seizures (Lennox-Gastaut syndrome)</p> 	<p>any age but usually 4-7 years</p>	<p>Sudden violent spasms of some muscles, without warning, may throw child to one side, forward, or backward. Usually no loss of consciousness, or only brief.</p> <p>Many children also have 'big' or generalized seizures.</p> <p>May be a history of 'baby spasms' (see above) in earlier childhood.</p>	<p>Try phenobarbital, with valproic acid. If no improvement, consider trying corticosteroids as in baby spasms, or other medicines with medical advice.</p> <p>Protect child's head with headgear and chin padding.</p> 

Types of epileptic seizures (continued)

TYPE	AGE SEIZURES BEGIN	APPEARANCE	TREATMENT
Blank spells or 'absences' (petit mal). (This type of seizure alone is rare.)	3-15 years 	Child suddenly stops what she is doing and briefly has a strange, empty or 'blank' look. She usually does not fall, but does not seem to see or hear during the seizure. These 'absences' usually happen in groups. She may make unconscious movements, or her eyes may move rapidly or blink. These seizures can be brought on by breathing rapidly and deeply. (Use this as a test.) Often confused with 'psychomotor' seizures, which are much more common.	Valproic acid or ethosuximide. Since many children also have 'big' seizures, add phenobarbital if necessary (or try it first if you think the seizures might be 'psychomotor' —see below).
'Marching' seizures (Focal seizures)	any age 	Movement begins in one part of the body. May spread in a certain pattern (Jacksonian march) and become generalized. Note: If seizures that occur in one part of the body get worse and worse, or other signs of brain damage begin to appear, the cause might be a brain tumor.	Phenobarbital or phenytoin (or both). If poor results, try carbamazepine or primidone.
Mind-and-body seizures (psychomotor seizures) 	any age	Starts with 'warning' signs: sense of fear, stomach trouble, odd smell or taste, 'hears' or 'sees' imaginary things. Seizure may consist of an empty stare, strange movements of face, tongue or mouth, strange sounds, or odd movements such as picking at clothes. Unlike 'blank spells', these seizures usually do not occur in groups but alone and they last longer. Most children with psychomotor seizures later develop 'big' seizures.	Try phenobarbital first —then phenytoin, or both together, then carbamazepine, or all 3 together. Valproic acid may also be useful. Or primidone instead of phenobarbital. Psychological counseling sometimes also helps.
Generalized or 'big' seizures (grand mal) 	any age	Loss of consciousness—often after a vague warning feeling or cry. Uncontrolled twisting or violent movements. Eyes roll back. May have tongue biting, or loss of urine and bowel control. Followed by confusion and sleep. Often mixed with other types of seizures. Often family history of seizures.	Try phenobarbital first. Then phenytoin. Then carbamazepine —or combinations. Or combine primidone with one or more of the others.
Temper tantrum fits (not really epilepsy) 	under 7 years	Some children in 'fits of anger' stop breathing and turn blue. Lack of air may cause loss of consciousness briefly and even convulsions (body spasms, eyes rolling back). These brief fits, in which the child turns blue before losing consciousness, are not dangerous.	No medical treatment is needed. Use methods to help the child improve behavior (see Chapter 40).

HELPING THE COMMUNITY UNDERSTAND EPILEPSY

Seizures can be frightening to those who see someone having them. For this reason, epileptic children (and adults) sometimes have a hard time gaining acceptance in the community.

Rehabilitation workers need to help everyone in the community realize that **epilepsy is not the result of witchcraft** or the work of evil spirits. It is **not a sign of madness**, is **not the result of bad actions** by the child or parents or ancestors, is **not an infectious disease**, and **cannot be 'caught' or spread to other people**.

It is important that epileptic children go to school and take part in day-to-day work, play, and adventures in family and village life. This is true even if seizures are not completely under control. The schoolteachers and other children should learn about epilepsy and how to protect a child when she has a seizure. If they learn more about epilepsy it will help them to be supportive rather than afraid or cruel. (See CHILD-to-child activities, p. 429.)

Although children with epilepsy should be encouraged to lead active, normal lives, certain precautions are needed—especially for children who have sudden seizures without warning. Village children can learn to help in the safety of such a child—especially at times when danger is greatest.



PREVENTION of epilepsy

1. Try to avoid causes of brain damage—during pregnancy, at birth, and in childhood. This is discussed under prevention of cerebral palsy, p. 107.
2. Avoid marriage between close relatives, especially in families with a history of epilepsy.
3. When children with epilepsy take their medicine regularly to prevent seizures, sometimes the seizures do not come back after the medicine is stopped. To make it more likely that seizures will not come back, be sure that the child takes her anti-seizure medicine for at least a year after her last seizure. (Often, however, seizures will still return when medicine is stopped. If this happens, the medicines should be taken for at least another year before you try stopping again.)