



COMMON NEUROLOGICAL DISORDER IN CHILDREN

What you need to know ?



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PARIJMA NEURODIAGNOSTIC & REHABILITATION CENTER

EPILEPSY - FACTS & MYTHS

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Why me ? Being diagnosed with epilepsy seems such a handicap. If I am to have an illness, why cannot it be something less obvious such as diabetes and hypertension ? Do I have to live with the fear of seizure attacks for the rest of my life ? I too have dreams and will this disease prevent me from doing anything worthwhile in life ?

These are some of the questions that you may have asked yourself several times.

We may not be able to answer all your questions. But surely, we can provide relevant scientific information that will change your outlook towards epilepsy and help you lead a more fruitful life.

INCIDENCE OF EPILEPSY:

Epilepsy is a brain disorder that occurs due to the disruption of normal neuronal activity and disorderly discharge of electrical energy in the brain. Epilepsy is a common medical condition affecting around 50,000,000 people world wide. Epilepsy is universal in that it affects people of all ages, both sexes. The incidence of epilepsy in India is around 50 per 100,00, comparable to the global incidence.

Causes:

In over two-third of patients, the cause of epilepsy is unknown. The disease seems to occur due to a combination of genetic and environmental factors.

In some cases, the cause is known Head injury, Brain tumors, Brain infections, injury during child birth or metabolic factors may lead to epilepsy.

Epilepsy has nothing to do with curses, possession of supernatural process and punishment for past sins.

TYPES OF EPILEPSY

Seizures, convulsion, epileptic attacks and fits are different words to describe the entity. However, not everybody who has

seizure attack have epilepsy. This is especially true in children who have seizure attack when they have fever (febrile convulsions).

There are several types of epilepsy, depending on the area of the brain from which they originate.

PARTIAL SEIZURES

Simple Partial Seizures

These are seizures that are localized to one part of the brain. The seizures are named according to the area of the brain from which they originate. Usually there is no loss of consciousness and the patients will have jerky movements on one side of the body.

Complex Partial Seizures

The patients may do repetitive movements such as moving the arms or legs, blinking, moving in circle etc., may experience a degree of impaired conciseness.

GENERALIZED SEIZURES

A generalized seizure is one in which the abnormal electrical activity spreads to the entire brain. It begins with stiffening of the limbs (tonic phase) following by jerking of the limbs and face (clonic phase). The patients have a loss of consciousness and may fall.

There are also other types of generalized seizures, like absence, these are characterized by staring, and brief lapses of awareness. These are frequently so brief that they escape detection. It is more common in children. Most individuals with epilepsy have normal intelligence. It is well established that persons with epilepsy are not mentally ill. However, some people may have epilepsy secondary to a brain injury. In such persons, the brain injury may itself be a cause for some disabilities.

Epilepsy does not spread from person to person by any physical means such as touching or by coughing.

Investigation

A detailed history is obtained on the number of seizure attacks, nature of attacks and possible triggers. The person is made to undergo blood test, electroencephalography (EEG) and brain imaging to determine the type and location of epilepsy and any causes that may predispose to epilepsy.

Treatment

The good news is that four out of every five people with epilepsy can have their seizures controlled by proper medication. There are several drugs that are available and the doctor makes a decision based on several factors such as the age of the patients, associated illness and type of epilepsy. Withdrawal of the medication may be considered when seizures have been reliably controlled for atleast 2 years, and in few after 3 years.

Do not stop medication unless your doctor instructs you to do so.

Epilepsy in Children

Seizures are the commonest neurological symptom in pediatrics. Epilepsy occurs in 0.5-1.0% of the general population and including febrile convulsions (seizures during fever), seizures occur in 3-5% of all children. In more than half of the people with epilepsy, the disease starts in childhood.

There are some additional problems associated with frequent seizure attacks in children. During childhood, the brain undergoes growth and development. Unfortunately seizures can affect or alter the brain development and functions esp lengthy or frequent attacks.

The good news is that more than half of all childhood epilepsy disappears over time.

WHAT A PERSON AROUND A PATIENT HAVING A SEIZURE SHOULD DO:

1. Keep calm, take control and reassure people around not to panic.

2. Loosen the persons' clothes especially around the neck so that there is no obstruction to breathing.
3. Remove furniture and other potentially dangerous things that are around patients in order to prevent injury.
4. Do not move the patients to another area unless he/she is in a dangerous situation such as on a road.
5. Do not hold the person by force or try to stop the violent movements or try to wake up a person having an attack by shouting or shaking him/her.
6. Try to gently make him/her lie on one side with something soft such as folded jacket under the head (support the head with palm of hands till you are able to insert something soft under the head).
7. Do not put any object (or food) in the mouth of person having a seizure attack. Please note that putting something in the mouth is very dangerous as it may enter his/her lungs and patients may even die. Also note that it is not that the tongue can be swallowed and hence do not put your hand to hold the tongue.
8. Once the attack is over, place the patient on his/her left side and allow any secretions or vomit to drain out. Do not give the patient water, food or medications unless he/she is fully alert. Stay with the patient until he/she is fully alert, be supportive and help fill their seizure diary.
9. Please call the patient's physician (a) if the seizure lasts longer than 5 minutes, (b) if another seizure begins soon after the first or (c) if the person cannot be awakened after the movements have stopped.

We at Parijma Neurodiagnostic and Rehabilitation Center have a comprehensive Epilepsy Program, which has been running now for the last 23 years. Each epileptic patient is individually evaluated, investigated to look for underlying cause of epilepsy and type of epilepsy and later appropriate antiepileptic medication started. We have the state of the art Video EEG and Imaging equipments to investigate patients with epilepsy. The

associated academic difficulties, behaviour problem and speech difficulties seen in these patient infrequently, is managed by our multidisciplinary team consisting of psychologists, special educators and speech therapists.

For more details visit us at:

www.parijmaneurology.com

Can epilepsy be cured ?

Epilepsy is a disease like hypertension, asthma and diabetes mellitus. Full or partial control may be achieved in about 80% of cases. Prompt detection and early medical intervention can greatly improve seizure control and the patient's quality of life. Epilepsy still remains under diagnosed and under treated. In some people, especially children the seizures never recur after stopping their anti-epileptic treatment. These people can be considered to be cured of their epilepsy. In addition, very few people can be cured of their fits by surgical means.

To what extent can drug treatment help in patients with epilepsy?

The world wide experience is that complete control of seizures can be expected with appropriate drugs in almost 75% of newly diagnosed, previously untreated patients of epilepsy. The choice of drugs mainly depends on the type of seizures in a given patient. Drug treatment should only be started when the diagnosis of epilepsy has been established beyond doubt. To begin with it is always better to start with single most appropriate drug (monotherapy). It is not recommended that patients should be started with two or more anti-epileptic drugs (polytherapy). The drug chosen is usually introduced gradually, in small doses because most drugs have some side effects if these are introduced rapidly. The final maintenance dose is usually built up over a period of a few weeks.

How long the treatment should be continued ?

The duration of treatment is dependent upon many factors like the type of epilepsy, age of the patient, control of seizures

etc. In most cases, however, the treatment is continued for a period of 2 to 3 years after achieving complete seizure control. The treatment should never be stopped suddenly and the decision to stop treatment must be taken by the doctor in-charge of the patient.

Why is it important to take anti-epileptic drugs regularly ?

The aim of taking anti-epileptic drugs is to obtain adequate control of fits. It is very important to maintain a constant level of the drugs in the brain to control seizures. In order to achieve that constant level of the drug in the blood, it is required and very important to take medicines regularly.

What is the effect of anti-epileptic drugs on behaviour ?

Most anti-epileptic drugs do not have any effect on the behaviour. Phenobarbitone (Gardenal) and benzodiazepines (frisium) are known to cause over activity in about one third of the children who are treated with these drugs.

What is the risk of seizure recurrence after stopping anti-epileptic treatment ?

A number of factors are known to influence the risk of relapse of seizure after withdrawal of medications in patients who have been seizure free for 2-3 years while on treatment. In no individual case can the safety of anti-epileptic withdrawal be absolutely guaranteed. Usually, 70% of the cases whose treatment is stopped go into complete remission. If a patient has epilepsy secondary to brain damage or partial seizures, the risk of seizure recurrence is much higher and in most such cases, the treatment should be continued for many more years even if the seizures are controlled. The maximum risk of seizures recurrence is during withdrawal and within 3-6 months after the drug withdrawal. If a patient has no fits for 4 to 5 years after the drug withdrawal, then his/her chance of having recurrence of seizure is extremely small. Healthy life style is important, like adequate sleep and good nutrition.

Should the anti-epileptic drug be discontinued during any other intercurrent illness ?

It is very common mistake to stop the anti-epileptic drug when the patient has fever or other intercurrent illness. The anti-epileptic drugs should never be stopped in such circumstances. If the patient vomits within an hour or so of taking the drugs, an extra dose can be given after sometime. It must always be remembered that the medicines used in the treatment of the intercurrent illness can have some pharmacological interactions with the anti-epileptic drugs. It is always better to inform the treating physician about the patient's dosage schedule of the anti-epileptic drugs so that necessary precautions can be taken.

What should be done if the patient forgets to take a dose of anti-epileptic drugs ?

It is not uncommon for many patients to forget to take a dose of their anti-epileptic medication once in a while. Very often the patient may not even remember if a dose was take or not. In such a situation it is better to taken an extra tablet within the same 24 hours period rather than risking the occurrence of seizure due to low levels of the drugs in patient's blood.

How frequently should a person with epilepsy visit the treating doctor ?

This is mostly on individual basis but if the epilepsy is well controlled, a checkup once in 3-4 months is enough. Persons who have poorly controlled seizures or are on multiple drugs may need to visit the doctor more frequently. In certain situations like epilepsy and pregnancy, epilepsy in the elderly and recurrent febrile convulsions more frequent visits may be required.

What is the effect of fits on the memory ?

A single or occasional fit usually does not have any effect on the memory. However, very frequent seizures of long

duration and certain type of fits (temporal lobe seizures) can have effects on the memory. In addition, therapy with multiple anti-epileptic drugs or even a single drug in heavy dosage can also contribute to the memory loss complained by persons with poorly controlled epilepsy. In such patients nothing much can be done about the memory problems and the best thing is to try and achieve optimal seizure control with minimum drugs.

Can seizures cause brain damage ?

A single brief seizure probably causes no permanent damage to the brain. Prolonged grand-mal seizures or even febrile convulsions can definitely damage the brain. In addition, seizures occurring one after the other without the patient becoming conscious in between two seizures, can also damage the brain. It is an accepted fact that any seizure lasting for 20 to 30 minutes can result in brain damage which is not secondary to the fit itself but results from the lack of oxygen supply to the brain during the prolonged fit.

What is the role of different investigations like EEG, CT Scan and MRI Scan in the diagnosis of epilepsy ?

The electroencephalograph (EEG) which records the electrical activity of the brain cells has its own limitations. It is helpful, when it is clearly abnormal but 40-50% of patients with epilepsy have a normal single inter-ictal EEG. On the other hand, about 5% of non-epileptic patients may have nonspecific EEG abnormalities. Despite its limitations, the EEG is a simple non-invasive and relatively inexpensive test that gives useful information if used judiciously and correlated with the clinical description of seizures. When abnormal, it is helpful in making a correct diagnosis of epilepsy and may even help in the choice of anti-epileptic drug therapy in a given case. The availability of CT scanning in larger cities of our country has been of a great help in the management of some cases of epilepsy, especially where an underlying pathology is suspected as the cause of seizures. Magnetic resonance imaging (MRI) is now established to be a better and safer diagnostic modality than CT scanning

for the detection of an epileptogenic focus or the suspected abnormality in the brain of patients with seizures.

Blood levels of anti-epileptic drugs are frequently prescribed by doctors. What is the role of getting blood levels done ?

There is no role of routinely checking the blood levels of anti-epileptic drugs. However, estimation of blood levels is important to check compliance, to correlate side effects with drugs, to know the drug interactions in patients receiving more than one drug for control of their seizures, and in certain situation where metabolism of drugs may be altered like during pregnancy, very old or very young age, and in presence of hepato-renal disease.

Is any special care needed for children with epilepsy while at school or play ?

Epilepsy is common in school going children. Most children with epilepsy can be in a normal class or school and have the same intelligence and learning abilities as compared to children without epilepsy. Some children (those with poorly controlled seizures or associated handicaps) may need special attention while at school and play. Children with epilepsy, whose fits are well controlled, must be encouraged to express their full potential as they can do as well as their peers. Children with poorly controlled seizures can be on multiple drugs and have associated physical or mental handicaps. They can have poor school performance due to frequent fits and effect of anti-epileptic drugs on the learning and memory. These situations should be recognized and proper attention given as and when possible. Such children should not be overprotected. Concern about safety of children with epilepsy may lead to them being stopped from their daily activities. Such restrictions are often unnecessary and should be individualized for each child. Children whose seizures are controlled can participate in most normal activities including sports, athletics, cycling etc. Even those who do not have complete control of seizures can carry out most such activities under supervision. Most children with epilepsy can watch TV and play with video games.

Can persons with epilepsy have a normal married life ?

From a medical point of view, persons with epilepsy can marry. It is important that the would be spouse of a person with epilepsy should be aware of the situation. This prevents a lot of unnecessary misunderstandings later on in life. Epilepsy should not be a bar to marriage in individuals with good seizure control. In a case where the seizures are too frequent with poor control, marriage may be inadvisable because of the obvious handicap. The risk of a child of an epileptic parent having epilepsy is only marginally higher than the risk of a child born to non-epileptic parents except when the parents have one of the well-defined hereditary epileptic syndromes.

However, if both parents have epilepsy the risk of their children developing epilepsy is substantially higher than in general population. It is, therefore, medically recommended that most patients with epilepsy can marry and have children.

What is the effect of epilepsy on pregnancy ?

Women with epilepsy need to consult with an obstetrician and neurologist prior to planning a family and must be reassured that most of the drugs can safely be continued throughout pregnancy and the risk for the baby is not greater than the harm that may be caused by stopping the treatment and precipitating seizures. Oral contraceptives have a higher failure rate in women who take antiepileptic drugs. One third of the women with epilepsy have more seizures during hormonal fluctuations such as during menses, pregnancy and menopause; the other two-thirds either have fewer seizures or experience no change.

More than 90% of women with epilepsy will have a normal, healthy child. The incidence of major malformations in the general population is about 1%. If a woman is experiencing active seizures that require AED therapy during pregnancy, the rate doubles. Pregnancy may necessitate a change in dosage and / or type of medication. Several commonly used AEDS have been linked to birth defects such as spina bifida and cleft palate. A minimum dose (0.4 mg) of folic acid is recommended

before and during pregnancy. Oral vitamin K supplementation is recommended during the last month of pregnancy for some women.

Can mothers with epilepsy breast feed their babies while taking anti-epileptic drugs ?

Most of the anti-epileptic drugs taken by mothers are excreted in breast milk but their concentration varies according to chemical properties of the drug. On the whole, most mothers having epilepsy can safely breast-feed their babies while taking their anti-epileptic drugs. It is advised to breast-feed before taking medication and 2 hours after taking medication.

Can persons with epilepsy participate in sports and leisure activities ?

It should be remembered that a person with epilepsy is abnormal only during the 'seizure'. Such people when not having seizures should be able to lead a life with normal physical and outdoor activities. It is important to know that regular exercise makes epileptic people feel good and builds their self-confidence and fight depression. By sensible planning, most sports activities can be made safe for people with epilepsy.

Many factors like seizure type, frequency, and associated handicaps should be considered before deciding about sports and leisure activities in relation to persons with epilepsy. In general most sports and leisure activities like ball games, athletics, cycling, dancing etc., can be safely undertaken by epileptic persons whose seizures are well controlled. Swimming can also be allowed under supervision of a competent observer. TV and Video games are also safe except in patients whose seizures are triggered on by moving lights. There is no special risk to epileptic persons while traveling. It is important that they should carry sufficient medicines with them and take the medicines at scheduled time. Flying in an airplane is also safe but the airlines staff should be told in advance it fits are not adequately controlled.

Can persons with epilepsy drive ?

Laws with regards to epilepsy and driving vary from country to country. In general, it is not advisable for persons with epilepsy to drive during the first two years of treatment. Those persons whose fits are not controlled should not drive any vehicle. In any case, the driving of a vehicle by person with epilepsy should not be a source of danger to the public.

What are the common causes of epilepsy ?

Some common causes of epilepsy in children are cerebral palsy (most often due to complications related to child birth), infections of the brain, metabolic and certain systemic diseases, any structural disease of the brain, head trauma and certain hereditary diseases. In adults structural brain disease, trauma, infections, toxins etc., are more often the cause. It must be remembered that in about 50% of cases of epilepsy, no cause can be determined even with the best of technology available today and the epilepsy is believed to have a genetic basis in their etiology.

What are the main features of different seizure types ?

The seizures can be divided into two main types: Generalized and partial (focal). The Generalized seizures are characterized by features of involvement of both the halves of the brain (cerebral hemispheres) simultaneously from the onset of attack. They may be tonic-clonic (grand mal), brief absences (petit mal) or even sudden, brief jerks of limbs (myoclonic). Partial (focal) seizures start in one cerebral hemisphere and the electrical activity does not spread to the other side of the brain. Thus the term "Partial Seizure" means that only some part of the brain is involved. In some partial seizures, consciousness may be retained initially but then the fit may become secondarily generalized and the patient will become unconscious and have a major convulsion.

What is epilepsy surgery ?

Epilepsy surgery involves the surgical removal of the region of the brain responsible for the abnormal electrical signals that

cause seizures. This region of brain is called the epileptogenic zone. It is determined by neuroimaging studies, electrical recordings from the scalp (EEG), and clinical signs during a seizure. Epilepsy surgery can provide a "cure" for epilepsy, in that it can eliminate the source of seizures and epilepsy.

Who is a candidate for epilepsy surgery ?

Generally, patients who have seizures that start in a focal area of the brain, and that have not been controlled with medicine, are considered for surgery. This region might be small or might involve several lobes of the brain. A comprehensive pre-surgical evaluation - starting with EEG - video monitoring and high resolution brain MRI at an experienced epilepsy surgery center - is typically performed before a patient is recommended for epilepsy surgery.

Can epilepsy be prevented ?

Sometimes epilepsy may be preventable. Considering the causes of epilepsy, there are several opportunities for prevention. Some of the most important are:

- Reduce complications during pregnancy and child birth with proper care.
- Prevent infections with proper immunization (vaccination) against certain diseases and good hygiene (Cysticercoids).
- Prevent traumatic brain injuries and stroke with safety measures and good life style modification.



CEREBRAL PALSY

INTRODUCTION TO CEREBRAL PALSY (CP)

Given the fact that cerebral palsy (CP) has a scary aura around it, the information given below aims to dispel some of these fears and instill confidence that helps one come to terms with it.

What is cerebral palsy ?

Cerebral palsy is a disorder of muscle control that causes difficulty with moving and positioning the body. A part of brain that controls movement has been damaged early in life before or after birth, whilst the child was still a baby. The muscle receives the strong instruction from the damage part of the brain. This makes them feel stiff or floppy.

Sometime the damage affects other part of brain, which may cause difficulty in seeing, hearing, communicating and learning.

How common is cerebral palsy ?

CP is the most common cause of disability in children. It occurs in approximately one in 400 live births.

WHAT ARE THE TYPES OF CEREBRAL PALSY ?

1. **Spastic Cerebral palsy:** This type of cerebral palsy makes up about 80% of cerebral palsy suffer. With this type of cerebral palsy, movement can be very limited due to group of tight muscles. This can lead to the child being unable to hold or release objects properly, can lead to very stiff and difficult movement, and can result in difficulty in changing position.
2. **Extrapyramidal cerebral palsy (Athetoid, Dystonic):** This form is characterized by uncontrolled, slow, writhing movements. These abnormal movements usually affect the hands, feet, arms, or legs and, in some cases, the muscles of the face and tongue, causing grimacing or drooling. The

movements often increase during periods of emotional stress and disappear during sleep. Patients may also have problems coordinating the muscle movements needed for speech, a condition known as dysarthria. Athetoid cerebral palsy affects about 10 to 20 percent of patients.

3. **Ataxic cerebral palsy:** It means unsteady shaky movements. These unsteady movements are seen only when he / she tries to balance, walk or do something with his / her hands for example when a child reaches for a toy he / she may miss the first time. The ataxic form affects an estimated 5 to 10 percent of cerebral palsy patients.
4. **Mixed cerebral palsy:** Many children show features of more than one type of cerebral palsy. The most common mixed from includes spastically and athetoid movements but other combinations are also possible.

WHAT CAUSES IT ?

Before birth

- Infection in the mother in the early week of pregnancy, for example measles, rubella.
- Uncontrolled diabetic and high blood pressure in the mother during pregnancy.

Around the time of birth

- Damage to the brain in babies born before 9 months.
- Head injury during the time of delivery.
- The baby fails to breath properly.
- The baby develops jaundice.

After birth

- Brain infection such as meningitis.
- Accident causing head injuries.
- Very high fever, due to infection or water loss from

diarrhoea.

WHICH ARE THE HIGH RISK GROUPS ?

Breech Presentation

Babies with cerebral palsy are more likely to present feet first, instead of head first, at the beginning of labour.

Complicated labour and delivery

Vascular or respiratory problems of the baby during labour and delivery may sometime be the first sign that a baby has suffered brain damage or that a baby's brain has not developed normally, such complication can cause permanent brain damage.

Asphyxia

Presence of umbilical cord around the neck of the baby during delivery leading to choking and asphyxia causing damage to a part of the brain.

Low Apgar Score

The Apgar score (named for anesthesiologist Virginia Apgar) is a numbered ratio that reflects a newborn's condition. To determine an Apgar score, doctors periodically check the babies who are born less than 37 weeks into pregnancy. This risk increases as birth weight falls.

Nervous system malformation

Some babies born with cerebral palsy have visible signs of nervous system malformation, such as an abnormally small head. This suggests that problems occurred in the development of the nervous system while the baby was in the womb.

Maternal bleeding in last trimester

Vaginal bleeding during the sixth to ninth months of

pregnancy and the presence of excess proteins in the urine are linked to higher risk of having a baby with cerebral palsy.

Maternal hyperthyroidism, mental retardation or fits

Mothers with any of these conditions are slightly more likely to have a child with cerebral palsy.

Fits in the Newborn

An infant who has fits faces higher risk of being diagnosed later in childhood with cerebral palsy.

Multiple Births

Twins, Triplets and other multiple births are linked to an increased risk of cerebral palsy. Knowing these warning signs helps doctors to keep a close eye on children who face a higher risk of long-term problems in the nervous system. However, parents should not become too alarmed if their child has one or more of these factors. Most of these children are not likely to suffer from cerebral palsy.

WHAT ARE THE EARLY SIGNS OF CEREBRAL PALSY ?

The following signs are of concern if they are seen in most of the time. Not every child will show these signs.

Stiffness

In some position, like lying on the back it becomes difficult to bend the baby's body, to dress or cuddle him.

Floppiness

The baby's limbs are floppy and he / she cannot lift it. His/ her arm and legs hang down when held in the air. The baby moves too little.

Slow Development

Learning to lift his head, sit and use the hand takes longer

than expected. He / she may use one part of body more than another. For example some babies only use one hand rather than learning to use both.

Poor Feeding

Sucking and swallowing is poor. His/her tongue pushes the milk and food out and has difficulty in closing the mouth.

Unusual behaviour

He may be crying, irritable baby who sleeps badly or he may be very quiet who sleeps so much. He may not smile by the age of three months.

Can it be prevented ?

Not entirely, whichever country you live in. It is possible to reduce the numbers of the children likely to get it by making sure that pregnant women go for regular health checks.

Is it infectious ?

No, no one else will catch cerebral palsy from a child who has it.

Will it happen again ?

It is very unusual for 2 children in one family to be affected.

Will medicine help ?

It will help to control or reduce the associated problems like stiffness, involuntary movements and fit.

Will an operation help ?

Operation cannot cure cerebral palsy. Sometime they are used to correct contractures (muscle which have shortened) or to weaken the pull of spastic muscles to prevent contractures

developing. But they may make the movement difficulty worse. Only children who are already walking are usually considered for a operation.

Will my child walk ?

Everyone is anxious about this but the answer becomes clear only as the child gets older. Less severely affected children will start, to walk earlier but the rest will at variable periods from 3-7 years depending on the severity of case.

How does physiotherapist help you out ?

Primarily a physiotherapist will help you out in setting the goals according to the condition. The goals are as follows:

1. To reduce the tightness / stiffness / spasticity.
2. To improve strength of the muscle.
3. To prevent deformity.
4. To improve functional activities.
5. To make an individual independent.

Treatment therefore focuses on assisting the person with cerebral palsy to maximize their function and prevent secondary complications. Treatment will be specific to the needs of the individual and may include.

- Management of abnormal muscle tone.
- Exercises to maintain joint range of movement.
- Stretching programme for tight muscles.
- Exercises to strengthen weak muscles.
- Positioning advice to improve posture and alignment.
- Development of gross motor skills e.g., rolling, sitting, standing, walking.

- Development of fine motor skills for hand function.
- Facilitation of normal movement patterns.
- Exercises to improve balance and coordination.
- Advice on the provision of specialist equipment such as seating, mobility aids, positioning aids and orthotics.
- Communicate and referral to other health professionals such as occupational therapists and speech and language therapists.
- Communicate with carers and parents to advise on handling techniques, positioning advice and home exercise programmes.

What are the benefits of regular physiotherapy ?

- Improved functional abilities.
- Improved muscle strength.
- Reduced muscle tone and joint range of movement.
- Improved posture and positioning.
- Improved balance and coordination.
- Improved mobility and independence.
- Improved quality of life.
- Improved confidence.

As cerebral palsy is a life long condition physiotherapy can be beneficial at various stages of life into adulthood. Physiotherapists can provide advice regarding transition into

school or working life or if activities such as walking become more difficult in later life.



EARLY INTERVENTION (INFANT STIMULATION)

It is a support system for children with developmental delays or disabilities and their families. The principle of early intervention is to provide appropriate therapies for children with disabilities, to minimize these delays and maximize their chances of reaching normal milestones in development. Early intervention is a system of coordinated services that promotes the child's growth and development. The overarching goal of early intervention programs is to enhance and accelerate development by building on a child's strengths and by strengthening those skills that are weaker in areas of development.

The important features to include in the early intervention are - the age of the child at the time of intervention, nature and severity of disability, the intensity and / or the amount of structure of the program model carried out under a trained therapist and the parents' involvement.

When should infant stimulation start ?

Infant stimulation should begin any time shortly after birth, and usually should continue until the child reaches age three. Infant stimulation is a set of specific programs to help children in the early years (0-3 years) that have developmental disorders.

How does infant stimulation programme help ?

Infant stimulation improves baby's attention span, memory and nervous and muscular - skeletal system development in addition to fostering a healthy social-emotional development. Also, babies who are stimulated reach developmental milestones faster, have better muscle coordination & a more secure self image.

What are important developmental milestones of an infant ?

At age one month most children can

- Raise their heads slightly when lying on their stomachs.
- Briefly watch objects.
- Pull away from a blanket on their face.

At age three months most children can

- Lift their heads and chest while lying on their stomach.
- Make cooing sounds.
- Follow a moving person with their eyes.
- Smile back at someone.

At age six months most children can

- Sit with minimal support.
- Roll from their back to their stomach.
- Respond to their name by looking.

At age 12 months most children can

- Pull themselves up to stand and take steps with hands held.
- Follow with their eyes in the direction that you are pointing.
- Start a game of peek-a-boo, imitate clapping hands, points to show you something.
- Say two or three words on a regular basis.
- Sit up when prompted.

At age 18 months most children can

- Walk backwards.
- Walk down stairs holding an adult's hand.

- Use words and gestures (like taking you by the hand) to get needs met.
- Perform simple pretend play like talking on the phone, feeding a stuffed animal.

At age 24 months most children can

- Kick a large ball.
- Describe an injury or illness to an adult (bumped my head).
- Show interest in other children by offering them a toy or taking their hand.

At age 32 months most children can

- Pretend to be an animal or favourite character.
- Talk about the past / future.
- Answer "what", "where", and "who" questions easily.
- Imitate drawing a horizontal line after being shown.

What does infant stimulation involve ?

Play for babies involve experiences, and parents are their baby's first playmate. When a parent stimulates baby's senses through play it will help him/her to learn and develop. This process of playing with your baby, under the supervision and guidance of the therapist, is known as infant stimulation. It involves presenting an object or providing an activity, which arouses or stimulates your baby in terms of sight, sound and touch. These activities may not be initiated by the baby due to the developmental disorder, hence they have to be additionally provided.

What are the areas in which a child can be stimulated?

- Cognition
- Language

- Self help skills
- Motor (Fine and Gross)
- Social/Emotional Development

Why does my baby have to undergo a special needs program at the hospital ?

- Appropriate toys may not be available or they may be out of reach.
- Under stimulation caused by being in the crib for long periods, dull surroundings and at times being done ?
- Over stimulation caused by lights, beepers, alarms etc.
- A person trained in infant stimulation will be able to guide you with the optimal and appropriate stimulation.

What are types of disability that child can be considered for Infant Stimulation?

- Developmental disability including intellectual disability.
- Fits or epilepsy.
- Genetic Disorder.
- Difficulty moving or mobility disability.
- Difficulty hearing and difficulty speaking or communication disability.
- Difficulty seeing or visual disability.
- Differences in behaviour.
- Multiple disability.



FACILITIES AVAILABLE AT PARIJMA

- **Neurological Consultation and Investigations**
- **Video EEG Monitoring**
- **Computerised 21 Channel EEG**
- **Computerised 4 Channel ENMG, EP (VEP, BAER)**
- **Psychological Assessment: Intelligence, Aptitude, Interest, Personality**
- **Educational Assessment**
- **Remedial and Behaviour Therapy**
- **Physiotherapy and Neuro Rehabilitation (Physical, Gross and Fine Motor Abilities)**
- **Hydro Therapy and Massage**
- **Counseling**
- **Instant Stimulation and Early Intervention Program**
- **Speech Evaluation and Therapy**
- **School for Slow Learners**