Over 5000 Patients Treated from 50 Countries

72 Scientific Papers & 14 Published Books

International Centre of Excellence For Neurological Disorders
Greetings from the NeuroGen Team!!!

NeuroGen Brain & Spine Institute has been set up to help patients with incurable neurological disorders such as autism, cerebral palsy, mental retardation, muscular dystrophy, spinal cord injury, head injury, stroke, etc. We use a multidisciplinary approach to relieve the symptoms and improve quality of life of such patients.

We are the pioneers of introduction to Stem Cell Therapy for neurological disorders. We make use of holistic, comprehensive approach to treat our patients with a combination of Stem cell Therapy and Neuro-Rehabilitation.

We use adult stem cells derived from the patient's own bone marrow, as they are the safest and most feasible type of cells. Since every patient is different, our treatment protocol is customized according to the patient's requirement.

Along with treating our patients, there is also a strong emphasis on Research as we constantly endeavor to offer our patients the latest and the best medical treatments. The clinical results of our treatments are all published in peer reviewed medical journals and are easily accessible to both the medical fraternity as well as the patient.

Pasiënte wat ly aan neurologiese versteurings kan lewensgehalte te verbeter met NeuroGen se stamselterapie en neuro revalidatie
NeuroGen Brain and Spine Institute is a 11th Floor building located in the serene surroundings of Seawoods adjacent to a lake and the Arabian Sea. It is located just off the prestigious Palm Beach road and next to India’s largest railway station complex “The Seawoods Grand Central Station. It is easily accessible by road and local train service and close to prestigious 5 star hotels such as Four Point Sheraton, Tunga, IBIS and large shopping complexes such as D-Mart and Inorbit.
Stem cells are the building blocks of our body. These are very unique cells which have the property to multiply many times and form different types of cells and tissues of our body. Hence these stem cells can be used to regenerate & repair the damaged parts of our body, for e.g., these cells have been used to form neural cells in patients with brain damage, heart cells in cardiac patients, insulin producing cells in diabetic patients, corneal cells in patients with blindness.

There are two main types of stem cells:

a) Autologous stem cells: These are the stem cells derived from the patient’s own body, such as bone marrow stem cells. Since these cells are obtained from the patients themselves they are absolutely safe and have no compatibility issue. Hence rejection is not a possibility. Also they are available in abundance and can be isolated easily. They are therefore the safest option.

b) Allogenic Stem cells: These are the stem cells taken from another person hence compatibility issues have to be taken into account. The sources of these stem cells could be from the embryo or unborn fetus. These are known as embryonic stem cells & are obtained from spare embryos from IVF clinics. The other source is Allogenic stem cells from the umbilical cord of a new born baby.

Our approach consists of using a combination of:

1. Stem Cell Therapy
2. NeuroRehabilitation
3. Other Medical and Surgical treatment

Stem cells work by following mechanisms:

1. They release growth factors which have a healing and regenerative effects on damaged tissue.
2. They cause angiogenesis or increase in the blood supply of damaged tissue thereby helping in their repair process.
3. They convert into the tissue type of cells into which they are implanted, thereby replacing non-functioning tissue.

At NeuroGen Brain and Spine Institute we use patient’s own bone marrow derived stem cells making it the safest cell type to use.
The procedure for stem cell transplantation is minimally invasive, with extremely simple steps. There is no major surgery or incision required. The procedure is carried out in only three steps.

**Bone marrow aspiration:** Bone marrow is the place where blood is formed. In simple terms, it can be called a factory of blood. As is common knowledge, blood is formed in the hollow space of bones. It is easiest to extract bone marrow from the hip bone.

This is done through a bone marrow aspiration needle, which is a thin needle inserted into the hip bone. Procedure is usually done under local anesthesia. For children and adults who cannot tolerate the procedure, sedation or general anesthesia as required is administered. The entire time taken to do this is only 15 minutes to 30 minutes. Between 80ml to 120ml of bone marrow is aspirated, depending on the weight of the patient. The patient is then sent back to the room for about 3 to 3 and a half hours, to rest for the next step of the procedure.

**Separation of stem cells:** On the same day, within 3-5 hrs, the stem cells are separated and purified in our stem cell laboratory by using a procedure referred to as density gradient centrifugation. Basically, stem cells have a fixed density and this property is used to separate them.

**Stem cell injection:** Once stem cells are separated and purified (in about 3-4 hrs), patient is taken back to the operation theatre. Injection of stems cells into the fluid around the brain and spine (intrathecal injection) is carried out using either an epidural needle (portex) or a spinal needle. Stem cells are first diluted in the CSF and then injected into the spinal space. In certain patients where stem cells are to be injected into the muscles, (eg. Muscular dystrophy patients – as assessed and recommended by the rehabilitation team) these cells are diluted in the CSF and then injected into the muscles using a very thin needle.
What can be treated?

**Pediatric**

### Autism
Autism is a neurodevelopmental disorder characterized by impaired social interaction, verbal and non-verbal communication, and restricted and repetitive behavior. Parents usually notice signs in the first two years of their child's life. These signs often develop gradually, though some children with autism reach their developmental milestones at a normal pace and then regress.

### Mental Retardation
Mental retardation/Intellectual disability (ID) is a generalized neurodevelopmental disorder characterized by significantly impaired intellectual and adaptive functioning. It is defined by an IQ score below 70 in addition to deficits inability to perform activities of daily routine.

### Cerebral Palsy
Cerebral palsy, is a neurodevelopmental disorder, which is caused by any event leading to the damage to brain around the time of birth. The causes can range from nutritional factors, to physical trauma, hypoxia/lack of oxygen flow due to factors such as cord around the neck, birth asphyxia, etc. The impact ranges from mild physical disability to very severe disability along with comorbid mental retardation.

### Muscular Dystrophy
Muscular dystrophy (MD) is genetic disorder which causes the muscles in the body to gradually weaken and eventually stop working. It is caused by incorrect or missing genetic information that prevents the body from correctly making the proteins needed to build and maintain healthy muscles. Over time, people with MD lose the ability to walk, sit upright, breathe easily, and move their arms and hands. Hence it is a progressively deteriorating disorder, which leads to death, sometimes as early as 20 years of age.

**Adult**

### Spinal Cord Injury
An injury to the spinal cord can happen due to trauma (such as road traffic accident, fall from a height, etc.) or due to non traumatic conditions (spinal tumor or infection of the spine). Depending on the level of the injury, a person can be rendered paralysed below the neck in a cervical cord injury (quadriplegia) or below chest/waist in a thoracic/dorsal cord injury (paraplegia) along with loss of bladder and bowel continence.

### Stroke
Brain Stroke or Cerebrovascular accident is the most devastating condition of brain. Stroke is a leading cause of disability in the world. It causes permanent damage of the brain functions which might result in inability to move limbs, vision problem, speech problems, altered sensations or cognitive impairments. Stroke can be of two types, Ischemic or Hemorrhagic.

### Traumatic Brain Injury / Head Injury
Brain damage sustained due to trauma can be very devastating, leading to physical disability, loss of function, amnesia, loss of cognitive function and understanding. This often leaves a permanent disability and renders a person completely dependent on his caretaker for all activities.

### Motor Neuro Disease / Amyotrophic Lateral Sclerosis
A motor neuron disease (MND) is a neurological disorder that selectively affect motor neurons, the cells that control voluntary muscle activity including speaking, walking, swallowing, and general movement of the body. They are neurodegenerative in nature, and cause increasing disability and eventually, death.

### Other Neurological Disorders
Cerebellar Ataxia, Cerebral Atrophy, Spino Cerebellar Ataxia, Multiple System Atrophy, Dementia,
Children from 5 different continents undergoing treatment at our centre at the same time.

Changing Life For The Better for patients from Africa
Facilities at NeuroGen

Medical and Surgical departments

• Operation Theater
• Stem Cell Laboratory
• Diagnostic Center

Adult and Pediatric Neurorehabilitation Department

• Physiotherapy Department
• Occupational Therapy Department
• Autism Child Development Center
• Speech Therapy
• Department of Psychology
Patient Care at NeuroGen

At NeuroGen we believe in providing healthy recovery along with a luxury stay, specially designed for our International Patients - The Suites at NeuroGen for the 9 day stay makes the patients feel at home. It has a beautiful aerial view of the Lake.

We offer the best comfort and each Deluxe- Suite offers a host of amenities including:-

General (No additional charge):
• Hi-speed Wi-Fi connection
• Laptop
• Local SIM Card
• In Phone dial

Food: We cater to all kinds of food requirements (Veg & Non-Veg) at international standards.

Amenities:
• Fully Air conditioned Deluxe-Suite rooms
• 32' Plasma Led TV with a cable connection providing over 300 channels including news, entertainment and kids program in all major languages
• Refrigerator
• Microwave
• Electric coffee maker/ tea kettle
• Electronic Safe
• Cabinet for storage
• Laundry service • 24x7 Room service
• General Supplies (Local Toiletries Available in in - house Pharmacy
NeuroGen Neuro Rehabilitation

Adult Rehabilitation

Rehabilitation Services
- Physiotherapy
- Occupational Therapy
- Neuro-psychological Intervention
- Neuro-pediatric Department
- Speech Therapy
- Diet Counseling
- Aquatic Therapy
- Pain and Spasticity Management
- Hand & Splinting Rehabilitation
- Yoga Therapy
- Electro Therapy

NDT (Neuro Developmental Therapy)
Internationally Recognized
“Walking Programme” for spinal cord injury & other paralysed patients.

Special Consultations
- Urologist (for patients suffering from bladder and bowel problems)
- Andrologist (for sexual rehabilitation)
- Cardiologist (for patients with cardiac complications)
- Anesthetist (for pain management)
- Psychiatrist (for tackling behavioral issues)
- Orthopedia Surgeon (for patients who have developed contractors and deformities)
- Plastic Surgeon (for pressure sore and wound management)
- Neuro Surgeon (for addressing neurological issues)
Neurogen Special Facilities

Spinal Cord Injury Walking Track

Aquatic Therapy
Autism Child Development Centre (ACDC), based in NeuroGen Brain and Spine Institute, is a centre offering latest-treatments under one roof in a comfortable & child-friendly environment. Our aim is to provide multi-disciplinary rehabilitation for children with autism spectrum disorders (ASD) and other Neurodevelopmental disorders like Mental Retardation, Attention Deficit hyperactivity disorder, Cerebral Palsy, Retts syndrome, Learning disability, Global developmental delay etc.

MEET the TEAM
Our panel of certified professionals at ACDC

Dr. Renuka Desai
M.O.Th, A.I.O.T.A
Head - Autism Child Development Centre & Senior Occupational Therapist 16yrs Clinical & teaching experience

Dr. Hema Biju
M.O.Th (Neuro), A.I.O.T.A
Head - Occupational Therapy
A licensed OTR from states of New Jersey, Florida and Georgia. She has practiced at the prestigious Kesler Institute of Rehabilitation, New Jersey with 5 years work experience in USA.

Meenakshi Raichur
M.A. (Clinical Psychologist) M.S. (ABA) (USA Certified)
Head - Pediatric Psychology & ABA 4 years of work experience in the USA with autistic children.
Every child is assessed personally by expert doctors and therapists from each department at ACDC and a treatment plan is customized according to the child’s needs. In our experience, we have noted maximum improvements in children who have received a combination of cellular therapy with other therapies.
What is the treatment protocol comprised of?

At NeuroGen we use a combination of stem cell therapy and neuro-rehabilitation. This unique protocol followed at NeuroGen is termed as Neuroregenerative rehabilitation therapy (NRRT).

The total hospitalization period is 6 days. Extended stay options for longer rehabilitation are also available.

The complete treatment involves stem cell therapy using adult stem cells, Neurological and other treatments (using Neuroprotective and other medications) and rehabilitation (including physiotherapy, occupational therapy, speech therapy, counseling, creative visualization etc).

All the complaints, problems, symptoms of the patient are attended to by appropriate consultants and suitable treatments are initiated.

Our comprehensive treatment involves a holistic approach towards the total well being of the patient, which through an improvement in their neurological condition, helps in making the quality of life better.
The NeuroGen Team

Our team is headed by Dr. Alok Sharma and the panel includes:

A Medical team (Neurosurgeon, Neurophysician, Pediatric Neurologist, Psychiatrist, Orthopedic Surgeon • Regenerative Medicine, Expert, General Physician, Urologist, Andrologist, General Surgeon, Cardiologist, Pediatric Orthopaedician, Cosmetic Surgeon, Ophthalmologist)

A basic science team (Neuropathologist and Biotechnologist) • A Rehabilitation team (Physiotherapists) Occupation Therapists, Clinical Psychologists) Speech Therapists, Aqua Therapist, Yoga Therapist and Special Educator)

Dr Alok Sharma -
Dr Alok Sharma is a world renowned Neurosurgeon, Neuroscientist and Professor who brings with him extensive surgical expertise & experience in the areas of Neurosurgery, Neuroscience and Stem cells. He is currently the Director of NeuroGen Brain and Spine Institute. He has over 25 years of experience in the field of Neurosurgery and has several awards and recognitions to his name.

Dr Nandini Gokulchandran -
Dr Nandini Gokulchandran is the Deputy Director and Head of Medical Services for Neurogen Brain and Spine Institute. She has worked for several years with the esteemed Tata Institute of Fundamental Research (TIFR) where she worked around subjects concerning stem cells and neuroregeneration. She brings to Neurogen an astute amalgamation of medical / clinical backgrounds with deep faith and understanding of stem cell research & regenerative medicine.

Dr Hemangi Sane -
Dr Hemangi Sane is the Deputy Director and Head of Research and Development at Neurogen Brain and Spine Institute. She is a trained physician with an MD in Internal Medicine from New York Medical College, USA. She is one of the leading physicians of the world and is committed towards finding treatment for neurological disorders through research. Along with her interest in medicine and academics, she is a deeply devoted socialist and runs her foundation "Asha-Ek Hope" for patients diagnosed with ALS/MND.

Dr V. C. Jacob
Dr. V. C. Jacob (PT) has been the Deputy Director of NeuroGen Brain and Spine Institute since its inception and is currently the Head of NeuroRehabilitation at Neurogen. He has to his credit over 35 years of experience in the field of Neurorehabilitation. He was the former President of the Indian Association of Physiotherapists and has had several such titles to his credit.

Dr Prerna Badhe
Dr Prerna Badhe is a Consultant Neuropathologist, Deputy Director and Head Regenerative Laboratory services at the NeuroGen Brain and Spine Institute. She has authored several research papers and most of her work has been published in journals of an international repute. Trained at the National Institute of Health, NIH, Baltimore, John Hopkins, USA, in Neural Stem Cells and at the Kentucky Spinal Cord and Injury Research Centre, KSCIRC, USA, in Molecular Neurobiology and Neuroregeneration, she set up the Stem cell Centre at the L.T.M. Medical college & L.T.M. General Hospital, Sion, Mumbai.
International Patient Assistance

**Before Arrival**

- **Consultation**: Once you share your reports and your medical condition with us, our team of doctors will analyze the same and share their expert opinion on the treatment to be followed. This can be done at the convenience of your residence, on Call / Email / Skype.

- **Post consultation**: Our experts will guide you through the treatment protocol.

- **Visa and travel assistance**: We will send you the list of documents and other relevant information that you might for obtaining the VISA.

- **Payment Options**: Payments are accepted via Credit Card / Debit Card / Cash / Wire Transfer & Bank Details will be provided as per the chosen payment mode.

**On Arrival**

- **Airport Transport**: You will be provided with a car / ambulance pickup at the airport along with NeuroGen Staff.

- **Local Transport**: As required by the patient.

**At NeuroGen**

- **Admission Process**: Our International Desk Team will ensure that you are comfortable and have no difficulties settling in upon your arrival. A detailed admission process will be explained to you and also we shall inform you about everything concerning your stay at NeuroGen. The patient along with the care taker will be accommodated for the duration of the treatment.

- **Preoperative Investigations**: Once you arrive at NeuroGen, the tests and special investigations based on our experts advice will be arranged for you along with ground transport.

- **Therapy**: This will be followed by a complete treatment plan customized on the basis of the patient's condition.

Our aim is to make your travel and stay at NeuroGen as comfortable as possible.
If you are flying in from another country, we understand that the process is more complicated with the embassies and visa coming into play.
Autism...

About Autism
Autism is a neurodevelopmental disorder characterized by impaired social interaction, verbal and non-verbal communication, and restricted and repetitive behavior. Parents usually notice signs in the first two years of their child's life. These signs often develop gradually, though some children with autism reach their developmental milestones at a normal pace and then regress.

Improvements after stem cell therapy
At NeuroGen BSI, we have treated over 450 patients of Autism with 91% patients showing overall improvements in the clinical symptoms.

Symptoms that improve are
- Hyperactivity reduces
- Eye contact improves
- Attention span improves
- Speech and communication improves
- Response to commands improves
- Overall behavior becomes more manageable
- Fine motor activity becomes much better
- Self stimulatory behavior reduces
- Social awareness as well as Interaction with peers improves
- Cognition, understanding and apprehensions improve tremendously.
- Improvement in the brain metabolism observed in PET-CT scan (Positron emission tomography- computerized tomography)
VM 12 year old boy from Nairobi, Kenya is a case of autism. He came to India for Stem cell therapy on 10 February 2015. The child was born full term with C section delivery with no complications reported at birth. His all motor (physical) milestones were age appropriate but he had a delay in speech. At the age of 2.5 years his school teacher noticed that he is not did not show age appropriate behavior and had poor social behavior, academic skills so his parents consulted a neurologist who diagnosed him as a case of Autism. Mr. VM was attending a special school and had lot of social, behavioral, academic issues, inability to speak and communicate leading to difficulty in doing activities of daily living.

So his parents took a decision of coming to Mumbai for Stem cell therapy treatment. He underwent first stem cell therapy in Feb 2015, after which he received various treatments like Occupational therapy, speech therapy, special education, ABA therapy psychological counseling for parents. He went back to Nairobi and continued therapies. After which he showed significant improvements such as reduced hyperactive behavior and also reduction in anappropriate behaviors like spitting (spitting on therapists/parents/ trachers). His sitting tolerance has further improved due to which he could sit for longer duration in school and perform academic tasks. His attention and concentration improved due to which he could follow commands with less prompts. His parents took a decision of taking stem cell therapy again. After 2nd stem cell therapy, after 2nd stem cell therapy there were further improvement in his attention span. He started understanding the concept of finishing the activity. There was an improvement noted in his tongue movement and now he has started speaking simple words. Most importantly, as reported by parents he has become more manageable child now.
Cerebral Palsy...

About Cerebral Palsy:
Cerebral palsy, is a non progressive neurodevelopemental disorder, which is caused by any event leading to the damage to brain around the time of birth. The causes can range from nutritional factors, to physical trauma, hypoxia/lack of oxygen flow due to factors such as cord around the neck, birth asphyxia, etc.. The impact ranges from mild physical disability to very severe disability along with comorbid mental retardation. Some children also have accompanied fits / seizures / convulsions, which complicates the prognosis.

Improvements after stem cell therapy:
At, NeuroGen BSI, we have treated over 450 patients of Cerebral Palsy with 92.6% patients showing overall improvements in the clinical symptoms.

- Symptoms that improve are
  - Oromotor & Speech improves
  - Balance improves
  - Trunk activity improves
  - Upper limb activity improves
  - Muscle tone improves
  - Better ambulation
  - Fine motor activity becomes much better
  - Milestone development in the children improves
  - Cognition, understanding and apprehensions improve tremendously
  - Improvement in the brain metabolism observed in PET-CT scan (Positron emission tomography- computerized tomography)
AK is a 6.5 year old male child from Somalia, Africa and is a case of cerebral palsy that was treated with stem cell therapy on 7th of August 2015. When he had come to us he could not use his right hand and also could not stand or kneel due to weakness in his right leg. He could not hold objects with two hands; neither could he come to sit on his own due to poor strength in right hand muscles along with tightness. He required help for doing his activities of daily living such as dressing, eating, bathing etc. He required help for transfers due to which he had to be lifted by his parents. Though he could talk but his speech was not very clear and he also had drooling.

After undergoing stem cell therapy and vigorous rehabilitation such as Physiotherapy, NDT, Occupational Therapy, Speech Therapy, Psychological Intervention etc he showed vast variety of changes in the span of 1 month such as, his tightness in right hand reduced due to which he could hold objects with both hands, he could initiate getting up from lying down position, he could stand with the help of walker and take few steps, he could also perform bottom shuffling to move within the premises and also he could perform few of his activities of daily living like bathing, eating etc though he required assistance for them but it was much lesser than before.

**Representative Case Report:**

PET CT scan of the brain before stem cell therapy shows the blue areas that represent reduced brain activity due to the damage that occurs to the brain tissue in CP.

PET CT scan brain 6 months after stem cell therapy shows that the blue areas have reduced indicating that the damaged tissues have been repaired highlighting the positive effects of the stem cell therapy.
Muscular Dystrophy...

About Muscular Dystrophy
Muscular dystrophy (MD) is a genetic condition which causes the muscles in the body to gradually weaken and eventually stop working. It is caused by incorrect or missing genetic information that prevents the body from correctly making the proteins needed to build and maintain healthy muscles. Over time, people with MD lose the ability to walk, sit upright, breathe easily, and move their arms and hands. Hence it is a progressively deteriorating disorder, which leads to death, sometimes as early as 20 years of age.

There are different types of MD; some start in infancy, others may not appear until early adulthood. Common types are Duchenne MD, Becker MD, Myotonic dystrophy, Limb-girdle MD and Facioscapulohumeral MD.

Improvements after stem cell therapy:
At NeuroGen BSI, we have treated over 860 patients of Muscular Dystrophy with 86% patients showing overall improvements in the clinical symptoms.

- Symptoms that improve are
  - Increased trunk muscle strength
  - Increased limb strength on manual muscle testing
  - Balance improves
  - Better ambulation
  - Muscle tone improves
  - Increased stamina
  - Better trunk balanced
  - Increased hand function standing
  - Improved posture
  - With proper physiotherapy after stem cell therapy, the patients who have stopped walking, are now able to walk with gaiters.
MO 8 years / Male is a case of Duchene Muscular Dystrophy from Kenya, Africa. When he had come to neurogen in December 2015 he has already developed weakness in his stomach muscles, back muscles and hip muscles due to which he had minimum 2 falls every day, difficulty in getting up from the floor and difficulty in climbing stairs. He could perform activities of daily living but he still required some help to lift objects or perform over head activities. His teachers in the school always complained that his concentration in class is poor and he doesn't pay much attention. He would also avoid outdoor activities and instead of playing with his friends he would prefer to sit indoors and watch television.

After undergoing stem cell therapy within 3 to 6 months he showed quiet lot of improvements such as he became more active and he could play with his friends outdoors instead of watching TV whole day, He could ride his bicycles longer than before, His concentration and handwriting in class Improved as per his teachers, his frequency of falls reduced from an average of 2 per day to about one in two to three days.
About spinal cord injury
An injury to the spinal cord can happen due to trauma (such as road traffic accident, fall from a height, etc.) or due to non-traumatic conditions (spinal tumor or infection of the spine). Depending on the level of the injury, a person can be rendered paralysed below that level (such as below the neck in a cervical cord injury, below chest/waist in a thoracic/dorsal cord injury) along with loss of bladder and bowel continence. The damage could be complete or incomplete. The damage is usually of a permanent nature, leaving the person dependent for his routine activities. Conventional therapies, such as physiotherapy, may help return of function to a certain extent. However, stem cell therapy goes a long way in assisting return of function.

Improvements after stem cell therapy
At NeuroGen BSI, we have treated over 450 patients of Spinal Cord Injury with 82% patients showing overall improvements in the clinical symptoms.

- Symptoms that improve are
  - Improved sensation
  - Spasticity Reduced
  - Increased Muscle Tone
  - Improved Trunk Control
  - Improved Ambulation
  - Improved Activities of Daily Living.
  - Improved Posture
  - Improved Standing and Sitting Balance

![Improvements in Cervical SCI After Stem Cell Therapy (N=70)](chart.png)
Representative Case Report:

SM is a 50 year old teacher from Rwanda, Africa, who was paralysed below the neck after a road traffic accident in the year 2015.

Since the injury, he was completely bed ridden and had been dependent for all movements in the bed like turning, getting up from lying position; and also activities of daily living such eating, bathing, writing. After he underwent stem cell therapy, he could move his arm better in all directions. He initiated turning in the bed while lying supine. He also started sitting up from a lying down position with minimal assistance. His balance in sitting improved because of which he could sit without a back rest. He initiated eating food by himself with the help of an assistive device and also started writing.

He has been continuing rehabilitation after stem cell therapy. The changes seen in him after stem cell therapy and rehabilitation has made him a more positive and motivated person.
**Stroke...**

**About Brain Stroke**
Brain Stroke or Cerebrovascular accident is the most devastating condition of brain. Stroke is a leading cause of disability in the world. It causes permanent damage of the brain functions which might result in inability to move limbs, vision problem, speech problems, altered sensations or cognitive impairments. Stroke can be of two types, Ischemic or Hemorrhagic.

**Improvements after stem cell therapy**
At, NeuroGen BSI, we have treated over 100 patients of Stroke with 96% patients showing overall improvements in the clinical symptoms.

- **Symptoms that improve are**
  - Improvements in upper limb activity
  - Improved hand functions
  - Improved Lower limb activity
  - Improved Trunk Activity
  - Improved Balance
  - Higher Mental Functions
  - Improved Speech
  - Improved Ambulation
  - Improved Activities of Daily Living
A 38 year old patient, who had developed left sided hemiplegia, following a brainstroke, 2 years back, underwent stem cell therapy at NeuroGen. Over 2 years the patient has had remarkable recovery of function in his hand and leg, such that now she is able to dress herself on her own. Gradually walking has become easier. She is independent in his daily life and has resume work. The most important achievement is that he is able to ride bike/two wheeler on his own!!  

Stem cell therapy has afforded her a new lease of life!
About Head Injury
Traumatic brain injury / head injury Brain damage sustained due to trauma can be very devastating, leading to physical disability, loss of function, amnesia, loss of cognitive function and understanding. This often leaves a permanent disability and renders a person completely dependent on his caretaker for all activities.

Improvements after stem cell therapy
At, NeuroGen BSI, we have treated over 80 patients of Head Injury with 94% patients showing overall improvements in the clinical symptoms.

- Symptoms that improve are
  - Progress in Higher Mental Functions
  - Improved Posture
  - Improved Trunk Activity
  - Improved Upper Limb Activity
  - Improved Lower Limb Activity
  - Improved Coordination
  - Improved Oromotor Skills
  - Improved Ambulation
  - Improvement in All Activities of Daily Living.
Mr. NY, a 34 years old professional male, working in a reputed lift company, met with an accident and sustained a severe head injury. This left him comatose for a long time and finally when he gained consciousness, he was paralyzed on the right side. He also had memory loss and loss of higher executive functions and was the only earning member of his family. This head injury had left him unfit for resuming work. Stem cell therapy with rehabilitation has helped him not only regain function in his right hand and leg, but also improved his speech, cognition, decision making abilities and confidence. Now, he has resumed work, is earning and supporting his family, traveling alone to work and living a normal family life!
Motor Neuron Disease...

About MND
A motor neuron disease (MND) is a neurological disorder that selectively affect motor neurons, the cells that control voluntary muscle activity including speaking, walking, swallowing, and general movement of the body. They are neurodegenerative in nature, and cause increasing disability and eventually, death.

Improvement after stem cell therapy
We evaluated the period of survival of the motor neuron disease patients treated with intrathecal autologous stem cell transplantation. We made a research through Kaplan-Meier survival analysis. It revealed that the chance of the survival period of the patients treated with intrathecal autologous stem cell transplantation was better compared with those patients who did not undergo stem cell therapy.

- Symptoms that improve are
  - Reduced choking
  - Improved swallowing
  - Reduced saliva drooling
  - Increase respiratory capacity
  - Better neck control
  - Better limb function
  - Improvement in the lower extremity function
  - Improved Ambulation
  - Improved Fine Motor Activities
  - Static and dynamic standing and sitting balance.
Cerebellar Ataxia...

About Cerebellar Ataxia
Cerebellar Ataxia is a clinical syndrome of in-coordination caused due to lesions of cerebellum and its afferent and efferent connections. Cerebellar Ataxia is distinguished into a group of hereditary and non-hereditary disorders. Symptoms of Cerebellar Ataxia include gait/postural abnormalities, balance issues, incoordination and involuntary movements, poor motor skills, visual abnormalities, increased fatigue, cognitive and mood problems, speech and swallowing difficulties. Thereby difficulties in performing daily activities like self care, locomotion, transfers.

Improvement after sct
It has been observed that there is improvement in the neurological function following cell therapy. Stem cells work by enhancing angiogenesis and contributing to neovascularisation by producing signalling molecules such as vascular endothelial growth factor (VEGF) and fibroblast growth factor (FGF2). They also provide the advantage of minimizing immune reactions because cells can be derived from the respective patient. Stem cell therapy is a safe and feasible form of complimentary treatment that slows down or halts the progression of the disease. Thus in this progressively deteriorating condition Stem Cell therapy offers a new promise as an interventional modality.

> Symptoms that improve are
  • Speech Improves
  • Sitting Balance Improves
  • Standing Balance Improves
  • Walking Improves
  • Cerebellar Signs Improves
What examinations and investigations are to be performed before the therapy?

The patient is subjected to basic routine tests for medical fitness and some special imaging and tests, based on condition/disorder.

Is the treatment painful?

The therapy is done under local anesthesia and a mild sedation. There is no significant pain or discomfort during or after the procedure.

When do I go home?

On the ninth day by evening, you would be handed over the discharge summary along with an exercise DVD. An extended stay option for rehabilitation therapy is also available.

How long will it take me to know that I have benefitted from the treatment?

Maximal improvements are seen around 3-6 months after the treatment. However, in many patients there are slow progressive improvements that continue for several months / years later. Most patients do show some immediate improvements also i.e before the discharge, in some of their symptoms.
Does the treatment have any side effects?

Stem cell therapy is minimally invasive and reasonably safe. None of our patients have shown any neurological deterioration so far in connection with the stem cell therapy itself. Some minor side effects, such as headache (spinal headache) lasting 3-4 days which is generally self limiting, neck/back pain, vomiting, some mild rash or pain at the site of bone marrow aspiration/stem cell injection may occur. These can be managed during the stay at the hospital itself.

If I go for the treatment, are there chances of me getting in a worse condition?

No. We have not observed any neurological deterioration in any of our patients due to the stem cell therapy per se. However it is important to keep in mind that certain neurological disease, e.g. MND, has a natural course of progress, which may continue despite the stem cell therapy. Patients with pre existing medical problems such as diabetes, hypertension, cardiac, respiratory, renal or hepatic problems may have a possibility of deterioration.

Is the transplantation of the stem cells done once or more than once?

The decision to do the therapy a second time is taken after seeing the progress/improvements after the first therapy. If the patients show some encouraging improvement, then the case is reviewed by the entire medical and rehabilitation team and a second treatment may be recommended. This may be done anytime between 3-6 months of the first therapy.
FAQs

Is any special diet required?

We have special dietitian/nutritionist, who will help chart out a diet plan to suit the disease, the patient and the process of Neuroregeneration.

Can other treatment be taken at the same time?

We will review other medications the patient is already on. In most cases we do not discontinue any already on going treatment. However this is decided on a case by case basis. Blood thinners like aspirin, clopidrogel, warfarin, etc needs to be stopped. Please inform us about any medications you are taking beforehand.

How do I make the payment and how is it handled?

In NeuroGen, there are a number of payment options—both Visa and MasterCard are accepted. The payment can be made in all major currencies—you can transfer the payment to our bank account or you can pay the hospital bills directly through cash.

Why should I select India over other destinations?

India is renowned for the top notch medical facilities, state of the art hospitals, world class clinical expertise. All this along with the natural warmth and hospitality of the Indian, makes the whole experience of medical treatment worth recommending again and again.
Can I consult the doctor in India before going to the trip?

You can reach out for the doctors in India through phone, email and video conference. The consulting doctors would gladly answer all of your questions. The doctor at NeuroGen would study your questions and share their expert opinion for the treatment. You will be ensured that selecting India as your destination for your complete medical care was the best option.

After reaching India, how do I go about my trip?

Correct answer: Once you reach Mumbai, the complete responsibility of your safety and well being will be taken by us. A member of our staff will be at hand, at the airport to receive you. Thereafter, he will be available to help you with any requirements, such as local transportation, currency exchange, local shopping, etc. Apart from that, you will be accommodate along with your caretaker in the hospital itself for the duration of the treatment.

Can I bring a relative or a friend along with me and will there be an additional charge for that?

You can bring along a relative or a friend to take care of you. Accompanying persons will be offered complementary stay and food at the hospital.
NeuroGen BSI is the only neurological institute/ stem cell facility in the world having 51 clinical scientific publications in medical journals showing the safety and efficacy of cell therapy in incurable neurological disorders. (In fact the world's first published paper showing the clinical results of cell therapy has been published in the prestigious journal 'Stem Cell International' by NeuroGen. In addition we have published 13th books which establishes the scientific basis of our work.

We have the experience of treating over 4000 patients of neurological disorders with cellular therapy from more then 40 countries.

We are using autologous bone marrow derived stem cells which are the safest form of cellular therapy. We have a proven and documented track record of safety.

Our method of obtaining the cells are minimally invasive and involves only 2 steps using needles. One is to aspirate from the bone and the other is to inject into the spinal fluid in the back. No surgery of any kind is involved.

Statistics have shown that, after Stem cell therapy, overall 91% of patients with Autism have shown improvements in social relationships, emotional responses, speech, communication, behavior and hyperactivity. 96% of Stroke patients showed improved upper and lower limb activity, 82% of patients with Spinal Cord Injury showed better Muscle tone, trunk activity, balance and other activities of daily living. In Cerebral Palsy, 92% of treated patients showed improvement in oromotor/ speech, balance, upper limb and lower limb activity. In Muscular dystrophy, which is a progressive disease of the muscles, about 90% of the patients attain stabilization in their progression with improved function.

We have a dedicated autism centre (Autism Child Development Centre), where a comprehensive, paediatric neurorehabilitation program is offered in combination with the cell therapy. Apart from all the conventional rehabilitation, such as occupational therapy, speech therapy, physiotherapy, counseling, etc., specialized rehabilitation such as aquatic therapy, sensory integration, neurobiofeedback, applied behaviour analysis, dance-music-art therapy, etc are also available. The senior professionals of this centre are USA qualified and have worked in the USA for many years.

The medical, surgical and the laboratory personal looking after the cell therapy are highly qualified and trained professionals with several years of clinical and research experience in the field.

We have various accreditations, such as ISO 9001:2015 and our stem cell laboratory is GLP and GMP certified. This is an assurance of quality in the various services being offered.

Our accommodation facilities are fully equipped and extremely comfortable. Our staff is very warm and responsive making you feel cared for in a home like environment.

Small conveniences to make your stay pleasant, such as airport pick up and drop, free wifi, laptop, mobile phone with local sim card, laundry services and request for special meals are all arranged.
Landmark Achievements of NeuroGen’s Patients

Patient of Transverse Myelitis Wins First Runner-up as Miss Wheelchair India 2014

Patient of Duchenne Muscular Dystrophy Gets invited to meet president Obama

(American Patient of Cerebellar Ataxia) wins bronze in the Special Olympics

Patient of Spinal Cord Injury wins the Wheelchair Marathon

Patient of Spinal Cord Injury wins a bronze medal in National Games for Pistol Shooting and Shaurya Chakra (Bravery) award by the hands of President of India
A) AUTISM:


12. Alok Sharma, Nandini Gokulchandran, Pooja Kulkarni, Sarita Kalburgi, Shruti Kamat, Riddhima Sharma, Samson Nivins, Hemangi Sane, Prerna Badhe. "Improvements in a case of autism spectrum disorder after cell therapy as noted on PET CT brain scan" *SISC*. May 2017

13. Baseline PET Autism - Sam - *World Journal of Nuclear medicine*

B) CEREBRAL PALSY:


22. Dr. Alok Sharma, Dr. Nandini Gokulchandran Mrs. Suhasini Pai , Ms. Pooja Kulkarni , Dr. Hemangi Sane , Dr. Khushboo Bhagwanani Dr. Prerna Badhe. Diplegic dystonic Cerebral Palsy treated with cellular therapy: a case report. Journal-International Journal of Case Studies. 2017

C) MUSCULAR DYSTROPHY:


27. Dr. A. Sharma, Ms. P. Kulkarni, Dr. G. Chopra, Dr. N. Gokulchandran, Dr. M. Lohia, Dr. P. Badhe. Autologous Bone Marrow Derived Mononuclear Cell Transplantation In Duchenne Muscular Dystrophy-A Case Report. Indian journal of Clinical Practice 2012; 23 (3): 169-72.


D) SPINAL CORD INJURY:


E) STROKE:


46. Dr. Alok Sharma, Dr. Hemangi Sane, Dr. Prerna Badhe, Ms. Pooja Kulkarni, Dr. Guneet Chopra, Dr. Mamta Lohia, Dr. Nandini Gokulchandran. Autologous Bone Marrow Stem Cell Therapy shows functional improvement in hemorrhagic stroke- a case study. Indian Journal of Clinical Practice, 2012:23(2):100-105.


F) ALS/MND:


F) MISCELLANEOUS:


61. Dr. Alok K. Sharma, Dr. Hemangi Sane , Dr. Nandini Gokulchandran , Dr. Amruta Paranjape , Ms. Pooja Kulkarni , Dr. Prerna Badhe. The need to review the existing guidelines and proposed regulations for stem cell therapy in India based on published scientific facts, patient requirements, national priorities and global trends. Indian Journal of Stem cell therapy. 2015; 1(1):7-20.


68. Alok Sharma, Ziad M Al Zoubi. Rethinking on ethics and regulations in cell therapy as part of neurorestoratology. Journal of Neurorestoratology 2016:4 1–14


Chapter on “Stem Cell Therapy for Cerebral Palsy” written from NeuroGen, published in an international book - “Cerebral Palsy Challenges for the Future” (Publisher - Intech)
Dr Wise Young (America), Dr Hongyun Huang (China) Dr Ziad Al Zoubi (Jordan), world leaders in Neurorestoratology releasing NeuroGen’s Book on Stem Cell Therapy at the 7th Annual Conference of International Association of Neurorestoratology.


Dr. Wise Young (America) releasing NeuroGen’s Book “Neurorehabilitation in Spinal Cord Injury - A Guidebook for Therapist and Patient”

Bollywood Singer Shankar Mahadevan releasing NeuroGen’s Book on “Autism”
NeuroGen Publications being Released
By Various Eminent National & International Dignitaries

Maharashtra Health Minister Suresh Shetty & Bollywood actress Rani Mukerjee releasing NeuroGen’s book on “Neurorehabilitation”

Health Minister of Andhra Pradesh Shree Kamineni Srinivas releasing NeuroGen’s Telugu Brochure in Vijaywada

Mr. K. N. Singh, DCGI (Drug controller General of India) releasing the 1st issue of Indian Journal of Stem Cell Therapy in New Delhi on occasion of the 2nd Annual Conference at Stem Cell Society. Dr Nandini Gokulchandran from NeuroGen Brain & Spine Institute is the founder editor of this journal.
Governor of West Bengal Shri Kesharinath Tripathi being presented with NeuroGen brochure in *Kolkata*.

Andhra Pradesh Chief Minister Shri. Chandrababu Naidu with Dr. Alok Sharma discussing advance treatment options for incurable neurological disorders.

Maharashtra Governor Shri Chennamaneni Vidyasagar Rao with Dr Alok Sharma of NeuroGen at Raj Bhavan.

Governor of West Bengal Shri Kesharinath Tripathi being presented with NeuroGen brochure in *Kolkata*.

Maharashtra Governor K. Sankaranarayanan with Dr Alok Sharma & Dr Nandini Gokulchandran of NeuroGen at Raj Bhavan.

His Highness Sheikh Faisal Bin Khalid Al Qasimi (*Sharjah*) being presented with the NeuroGen’s book on Stem Cell Therapy in Neurological Disorders.

His excellency Khaled Al Kamda (*Dubai*) being presented with the 1st copy of the Arabic brochure.
Special Recognition of NeuroGen Senior Doctor

Dr Alok Sharma receiving **National Business Service Excellence Award**

Dr Alok Sharma receiving **SUSHRUT AWARD** for exemplary work in the field of Surgery

Dr Hemangi Sane of NeuroGen receiving International Women’s Day Award from **Mumbai Mayor Sunil Prabhu**
Important Visitors to NeuroGen

Bollywood actor Hrithik Roshan visits NeuroGen

Mumbai Mayor Shobha Raul releasing NeuroGen’s book on “Muscular Dystrophy”

Shri K L Prasad, Commissioner of Police, Navi Mumbai visited NeuroGen on the occasion of World Autism Day (2nd April 2015)
A FOREWORD BY
HRITHIK ROSHAN
FOR
"NEUROREHABILITATION IN SPINAL CORD INJURY - A GUIDEBOOK FOR THERAPISTS AND PATIENTS"
A NEUROGEN PUBLICATION

To the therapists looking after patients of spinal cord injury and the patients themselves:-

Writing a foreword for this book takes me back in time when I was preparing for my role in Guzaarish. In the movie, I portrayed a man with quadriplegia and his fight to earn his own death. Euthanasia, the subject of the movie was grave and it portrayed one of the grim fates of people who suffer from quadriplegia. It took me a while to understand, comprehend and most importantly accept the way of living of a quadriplegic.

I met a lot of quadriplegic people in the process and I felt that death is not the solution. One of them was John- a wheelchair bound quadriplegic, who had a road accident. The hopelessness that I had portrayed in the movie was whisked away by real life experiences with John. John in the coming time underwent stem cell transplantation and rigorous rehabilitation at NeuroGen Brain and Spine Institute and looking at the way he improved I felt that there is hope for patients with spinal cord injury. I also understood the importance of rehabilitation in the lives of quadriplegics and paraplegics. Rehabilitation is a tool that can help them maximize their potential and far beyond that.

This book is unique and special in its pictorial depiction of step wise rehabilitation for the patients with spinal cord injury. It will help numerous patients who have lost all hopes of living an independent life. There was much need for a guidebook for patients suffering from spinal cord injury and I am happy that such initiative has been taken.

Unlike the hopelessness and helplessness that I felt while I was portraying 'Ethan Mascarenhas' in reality the quadriplegics live with a great dignity and unyielding spirit. If this book had been available before I played the role of 'Ethan' it would have been a great help to me.

I thank the authors for putting together this much needed book as well as for asking me to write this introduction. My best wishes are with all the therapists and patients who read this book. I want all the therapists to know that your hard work helps makes a big difference to the lives of Spinal cord injury patients and I wish to tell all the patients who read this book to not give up on themselves since as long as there is life there is always hope.

Hrithik Roshan
A foreword by Priyanka Chopra for the “Parent and Teacher Guide Book for Autism” 2nd Edition - A NeuroGen Publication

Priyanka Chopra

Date: 24th January, 2013.

To,
The parents & Teacher of Children with Autism.

Recently I played the character of Jhilmil who was a character that suffered from autism. When we were researching what we wanted Jhilmil to be and how she would be, she turned into that person by meeting and speaking to a lot of people. That is how she emerged. There is no real reference point to how Jhilmil was. We have not derived her from any reference of any character.

Because autism's range and the range of symptoms are so huge, it can be anything. That is what exactly she is. She has an incredible childlike innocent quality to her.

Did you know that a child with high functioning autism may have a normal or high I.Q., be able to attend a regular school and hold a job later in life. However, this person may have difficulty expressing himself and may not know how to mix with other people.

Children with autism are creators, they live in their own world which is very different from ours, yet they seem so self sufficient whereas we struggle to grapple with our own surroundings. This is what interested me and got me to read and learn more about them.

This book is a step in that direction. We as parents need to understand what our child is going through and help nurture his interest by trying to understand their worlds. Its an effort to bridge the gap by helping us decipher them and help them to become a part of our society. A guidebook like this is invaluable for all the people and especially parents who deal with autism on a regular basis. I only wish that had such a book been available earlier, Jhilmil would have been understood a whole lot better.

Priyanka Chopra

403, Karan Apts., Behind Green Acres, Lokhandwala Complex, Andheri (W), Mumbai - 400 053.
A foreword by
Shri. Narendra Modi
for the “Patient & Parent Guide Book for Muscular Dystrophy” (Gujarati Edition) - A NeuroGen Publication

Date: 26-02-2013

One of the most valuable gifts that nature can bestow on a woman is the gift of a child. A new born child brings immeasurable happiness to a parent but when the child suffers from an incurable disease at birth this happens quickly turns into a nightmare. Today in the fast paced, ever evolving field of medicine it has become possible to treat such incurable diseases. Science & research has made it possible to develop test-tube babies and this proves that the possibilities are endless.

One of the most challenging task is to take care of the children suffering from such diseases and catering to their special needs. Muscular Dystrophy is one such disease that challenges the patience of the parents, treating doctors and the therapists and often keeps it on the edge. In such a situation a Guidebook on care for such patients in Gujarati proves to be an invaluable resource.

Dr Alok Sharma and his team have done a commendable job in the development of this book in English. Mrs Vibhuti Bhatt has translated this book in Gujarati keeping in mind the plight of the people of Gujarat suffering from such incurable diseases and this is an even more praise worthy endeavor. This book plays a vital role in reaching out to the common man by presenting concepts in a simple and easy to understand language. My best wishes that this book serves as a focal point for all the people associated in the treatment of Muscular Disease facilitates their work.

(Narendra Modi)
Over 5000 Patients from Over 50 Countries

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Stem Cell Therapy in Pediatric Neurological Disorders

Stem Cell Therapy in Neurological Disorders 3rd Edition

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Neurological Disorders A Handbook for Family Physicians

Parent & Teacher Guide Book for Autism 2nd Edition

Patient Guide Book for Cerebral Palsy

Patient & Parent Guidebook on Muscular Dystrophy

NeuroRehabilitation - A Multidisciplinary Approach

Neurorehabilitation in Spinal Cord Injury A guide for Therapists and Patients

Looking after children with autism - A handbook

ALS / MND Guide Book For Patients & Families
NeuroGen Brain & Spine Institute
Centre for Stem Cell Therapy and Neurorehabilitation
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NeuroGen Brain & Spine Institute, StemAsia Hospital & Research Centre, (Main Centre)
Plot No 19, Sector 40, Near Seawoods Grand Central Station,
Off Palm Beach Road, Nerul (W), Navi Mumbai - 400706, India
Contact No.: +91-9920200400  | Email: contact@neurogenbsi.com | Web : www.neurogenbsi.com

NeuroGen Brain & Spine Institute, (OPD Clinic)
Shop No 11, Krushal Shopping Complex, G.M. Road, Near Shopperstop & Amar Mahal Signal,
Chembur West, Mumbai, Maharashtra - 400089, Contact No.: +91-8767200400