

## Global trends in neurorehabilitation

### DOMOTICS: A New Gamechanger in Neuro-rehab?

The face of neuro-rehabilitation has progressively changed in recent years. Traditional neurorehabilitation procedures may have limited efficacy in most patients with common neurological diseases, such as stroke, Parkinson's disease, spinal cord injury, severe brain injury, spasticity, and cognitive disorders. New technologies have been reported to enhance the effectiveness of rehabilitation strategies in these conditions. They include robotic-assisted training, virtual reality, functional electrostimulation, and non-invasive brain stimulation (NIBS) to improve the intensity and quality of neurorehabilitation and manipulate brain excitability and plasticity and innovative approaches such as domotics.



There are already equipment companies in India automating.

DOMOTICS means building automation for a home, called a smart home or smart house. A home automation system will monitor and control home attributes such as lighting, climate, entertainment systems, and appliances. It may also include home security such as access control and alarm systems. A home automation system typically connects controlled devices to a central smart home hub. The user interface for control of the system uses either wall-mounted terminals, tablet or desktop computers, or a mobile phone application.

Our Neurorehab patients who are either bound to a wheelchair for life, bedridden, or somehow cannot walk around the room to perform their daily activities, this concept of domotics might give them a new way to improve their quality of life.

- Security for the house, e.g., IP-based web cameras and buzzers, gate openers and closers
- Drawing-room equipment like Smart TV, light, fan, air conditioners and additional equipment like washing machine, driers
- Kitchen equipment like refrigerator, exhaust, toasters, microwave
- Bathroom equipment like brilliant shower, geysers, soap dispensers, switches in the washroom
- Bedroom equipment like curtains, lighting including mood lighting, fan, and air conditioners

Someone interested in implementing some of the above automation needs to involve a system integrator. They can help individuals through the process of understanding the needs, designing the solution, and verifying it with the users. Subsequently, assist in the implementation of the systems and maintenance.

If a completely integrated solution is not viable to implement, users can choose innovative products increasingly available in the market that can be operated given the functional constraint. e.g., a remote-operated ceiling fan or lights.

DOMOTICS at the home of a stroke or spinal injury patient can restore complete independence of lifestyle along with other Neuro-Rehab Measures.

### Employees of the month



Raja Mohanta



Madhusudan Paricha

**Rehab Technicians**, who keep all our rehab equipment clean and working, sparkles the facility and caters to the whims and demands of all our patients.

1st June 2022

rehabana.com  
98367 46565



Dedicated Neuro Rehab Centre  
For STROKE, SPINE INJURY, PARALYSIS, NEURO DISEASES

### Director's Desk



Dr M N Basu Mallick

There is a BIG HOLE in the health care system, but nobody is talking about it. That hole is NEURO REHAB for patients suffering from stroke, brain injury, spine injury, Parkinson's disease, and similar disorders. To get an idea of how big that gap is, let's look at some figures.

Let's look at STROKE figures. No, figures are boring; let's look at some stroke facts in India over the last three decades.

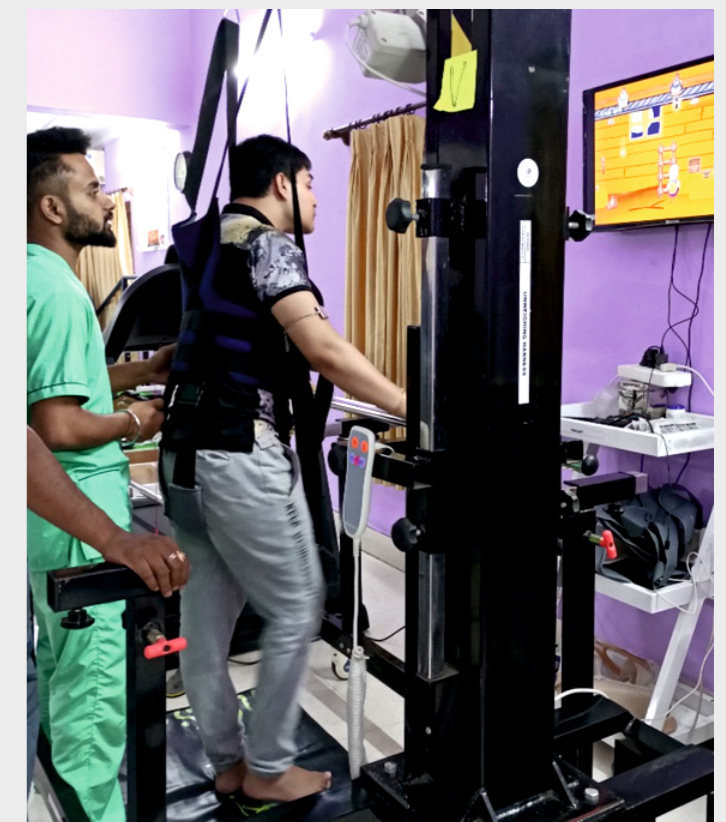
- The number of stroke patients is INCREASING, mainly because people live longer.
- The number of stroke patients who survive and get out of hospital - is INCREASING, mainly because of widening healthcare facilities.
- The number of stroke patients who live for more than one year. - INCREASING, again because of better healthcare and early intervention
- The Number of stroke rehab centers - NOT INCREASING MUCH. Here's the big hole, a massive gap in the healthcare system in India compared to the western world.

But that looks like a contradiction of sorts! Why aren't post-stroke rehab centers growing at the same pace as the healthcare sector if there are increasing potential clients?? The answer probably lies in our past. Historically, very few patients have returned to productive life after a stroke. To the family- they were thought to be burdens. For the government, they were burdens on society and our healthcare infrastructure.

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## The latest addition of new therapy methods

### Digital Rehab - Gamification



Gamification of Rehab is very effective to engage the patients in a fun way. The rehab process challenges the cognitive abilities and at the same time keeps them engaged to perform the required number of repetitions. Initially, these games are very difficult for most patients. Primarily because of fear and hesitation to take the first step on the mat.

The neurological disorder affects cognitive and physical abilities. Hence games may not excite the patients initially. But after a few sessions, when the easy levels are completed, patients look forward to the next levels. And success breeds success. Some of the benefits of gamified Digital Rehab have been observed are

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## Patient Testimonial



A 54-year-old diabetic hypertensive male teacher suffered a sudden onset of right-sided complete paralysis with loss of speech, difficulties in swallowing, and holding urine. He was diagnosed with ischemic stroke, and a Neurologist did initial stabilization in his hometown. Within four days, he was brought to REHABANA with in situ Ryle's tube, iv cannula, urinary catheter, and lots of HOPE.



Day 2 at Rehabana

Rehab Physicians' assessment showed entirely dependent activities of daily living and bed mobility. Medications were optimally adjusted, and iv cannulas were removed within 48 hours. Within five days, the indwelling catheter was removed with successful intermittent clamping and bladder training. Complications prevention measures were taken. In the meantime, short-term and long-term rehab goals were set in discussion with family members and calculation of prognostic factors.

The manual range of motion, chest physiotherapy, postural drainage, and neurological facilitation techniques from day one. The speech and language pathologist's assessment and training sessions established swallowing; Ryle's tube was removed in ten days. Transfer techniques, bed mobility, and sitting balance were regained rapidly



Day 11 at Rehabana

with daily occupational therapy sessions. Now the battle of walking (gait training) started. Neurowalker, parallel bar, body weight supported treadmill... conquering everything he was well independent in Hemi Walker. Upper limb recovery was not that hassle-free because of the nature and location of the stroke. The dynamic man with sudden stoppage of the world was going into depression for being impaired. With medication and regular rehab psychologist sessions, the crisis was well dealt.

Days of mirror therapy, functional electrical stimulation, and sensory stimulation finally gave the first flickering movement. Then came the synergy with profound hand muscle spasticity that hindered the motor relearning even with optimal oral baclofen. So botulinum toxin was injected, which led to spastic muscle release, and a handgrip was established. In the meantime, the team managed to develop an independent gait, staircase climbing, and a near clear speech with regular sessions. Fine motor functions are being regained day by day, and daily living activities are achieved.



Day 21 at Rehabana

Currently, on rehab holiday, he is counting the last small hurdles of community reintegration, only to bounce back to active life after the final touch sessions.

## Digital Rehab - Gamification

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- Increase in confidence
- Improving balance and coordination
- Increasing brain function
- Improve joint functions to perform challenging

levels

- Motivates to perform social interactions as a form of social games

The first step is often the difficult step, but rehab with fun is the path to rapid recovery.

## Director's Desk

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So, nobody talks about this gap in healthcare even today. But, we need to start talking about this NOW because two events have revolutionized stroke rehab one, advances in technology and robotics have radically changed outcomes after stroke rehab if done correctly. Second, our understanding of neuroplasticity has changed how stroke rehab programs are designed. Both these events adopted together have radically changed outcomes in stroke recovery with proper Neuro rehab. This has already been proven in western societies, where people continue to live independent, social and productive lives after stroke and spinal injuries. ( small stat- 3,001

participants in Paralympic 1992- 4,403 participants in Paralympic 2022- that's a growth of 50% in 30 years)

Having started REHABANA CARE, a dedicated advanced neuro rehab center for stroke and other neurological patients, in September 2021, we thought it's not enough only to treat those patients who come to us. It's also essential to start talking, a buzz, a conversation that can reach out to families, societies, and governments that a new world in Stroke recovery is here. And, Stroke and spinal injuries are nothing more than a blip in our productive life journey.

This newsletter is our effort in that direction.

## Employee Talk



### Priyanjita Sen Das

Speech Language Pathologist

I am Priyanjita Sen Das, a qualified Speech Pathologist and Audiologist, having done Masters in Audiology and Speech-Language Pathology (MAS-LP) from AYJNISHD, ERC Kolkata under WBUHS.

The speech-language pathologist (SLP) is the professional who engages in professional practice in the areas of communication and swallowing across the life span. Communication includes speech production and fluency, language, cognition, voice, resonance, and hearing. Swallowing includes all aspects of swallowing, including related feeding behaviors.

I work on speech impairment, language development, motor speech disorders, as well as on swallowing. After stroke or TBI, patients may

experience language as well as swallowing difficulties. Firstly I assess for the swallow status, decide for diet consistency and provide therapeutic maneuvers; teach them the therapeutic strategies to help them build their swallow back and make swallow safe... I make decisions on removal of the Ryles tube and plan for oral diet consistency accordingly.

I also work on voice. Sometimes after stroke patients may experience voice problems... that is due to incomplete adduction of vocal folds, voice becomes hoarse... I teach them different voice strategies to improve their voice qualities.

My victory lies in making people speak and eat normally again.

