Stroke rehabilitation Occupational therapy services

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Rehabilitation

- Rehabilitation therapy should start as early as possible, once medical stability is reached
- Spontaneous recovery can be impressive, but rehabilitation-induced recovery seems to be greater on average.
- Even though the most marked improvement is achieved during the first ۶ months, rehabilitation should be continued for a longer period to prevent subsequent deterioration.

Rehabilitation

- No patient should be excluded from rehabilitation unless he is too ill or too cognitively devastated to participate in a treatment program.
- Proper positioning and early passive ROM exercises help to avoid complications at a flaccid stage.
- Family members should participate in therapy sessions.
- The family should also be referred to community groups that offer psychosocial support such as stroke clubs at the time of discharge.

Stroke Rehabilitation Phases

- Phase I: In patient
- Phase II: Early post discharge
- Phase III: Out patient
- Phase IV: Long time

Types of Recovery Services

- Rehabilitation unit in the hospital
- In-patient rehabilitation facility
- Home-bound therapy
- Home with outpatient therapy
- Long-term care facility
- Community-based programs

MultidisciplinaryRehabilitation Team

- Rehabilitation specialist
- Physical, occupational and speech therapist
- Social worker
- Dietician
- Recreational therapist
- Psychologist
- Vocational rehabilitation counsellor
- Nurses
- Orthotist
- Patient, caregiver

Successful Rehabilitation

Depend on

- how **early** rehabilitation begins
- the **extent** of the brain injury
- the survivor's **attitude**
- the rehabilitation **team's skill**
- the **cooperation** of **family** and **caregiver**

- age , cognitive status, functional status, psychological condition, …

Poor Prognosis

- Decreased alertness, inattention , poor memory, inability to learn new tasks or follow simple commands
- severe neglect
- significant medical problems
- serious language disturbance
- less well defined & economic problem

Basic Principles of Rehabilitation

- To begin as possible early (first 48 to 72 hours)
- To assess the patient systematically (first 2-7 day)
- To prepare the therapy plan carefully
- To include the type of rehabilitation approach specific to deficits
- To evaluate patient's progress regularly

Effect of a Stroke

- Weakness on the side of the body opposite the site of the brain affected by the stroke
- Spasticity, stiffness in muscles, painful muscle spasms
- Problems with balance and/or coordination
- Problems using language, including having difficulty understanding speech or writing(aphasia); and knowing the right words but having trouble saying them clearly (dysarthria)
- Being unaware of or ignoring sensations on one side of the body (bodily neglect or inattention)
- Pain, numbness or odd sensations

Effect of a Stroke (con't)

- Problems with memory, thinking, attention or learning (cognitive problems)
- Being unaware of the effects of a stroke
- Trouble swallowing (dysphagia)
- Problems with bowel or bladder control
- Fatigue
- Difficulty controlling emotions (emotional lability)
- Depression
- Difficulties with daily tasks

Rehabilitation Goal

- To restore lost abilities as much as possible
- To prevent stroke-related complications
- To improve the patient's quality of life
- To educate the patient and family about how to prevent recurrent strokes
- Promote re-integration into family, home, work, leisure and community activities

Word definition

- Acute stroke rehabilitation unit
- Medical rehabilitation treatment
- Rehabilitation treatment team
- Dysfunction
- Disability
- Handicap

Types of rehabilitation service

- preventive interventions against secondary complications of stroke

- dedicated rehabilitation service

preventive interventions against secondary complications of stroke

- pressure ulcer
- decreased ROM and joint contracture
- shoulder pain
- DVT
- edema
- falling

dedicated rehabilitation service

- functional mobility
- positioning
- muscle tone modulation
- balance
- upper limb function
- sensory reeducation
- visual intervention
- non language cognitive intervention
- self care and ADL

dedicated rehabilitation service (con't)

- Cardiopulmonary rehabilitation
- gait
- management of urinary incontinence
- splinting
- Transfer
- language disorder
- swallowing
- communicative disorder
- family and patient education

Pressure Ulcer

- Post-stroke hospitalization rates and the cost of the stroke patient to the health system may also vary depending on where the patient is in this wide range of stroke spectrum.
- It is known that pressure ulcers and similar complications that occur after a stroke increase both the duration of hospitalization and the cost of the disease
- rates of pressure ulcers from 0.7% to 22 %

Pressure ulcer causes:

- Urinary tract infection
- Increased risks of intensive care unit stay,
- Prolonged length of stay
- High medical expenditure
- In-hospital mortality
- Debridement and use of antibiotics for pressure ulcer care may also impact post stroke mortality

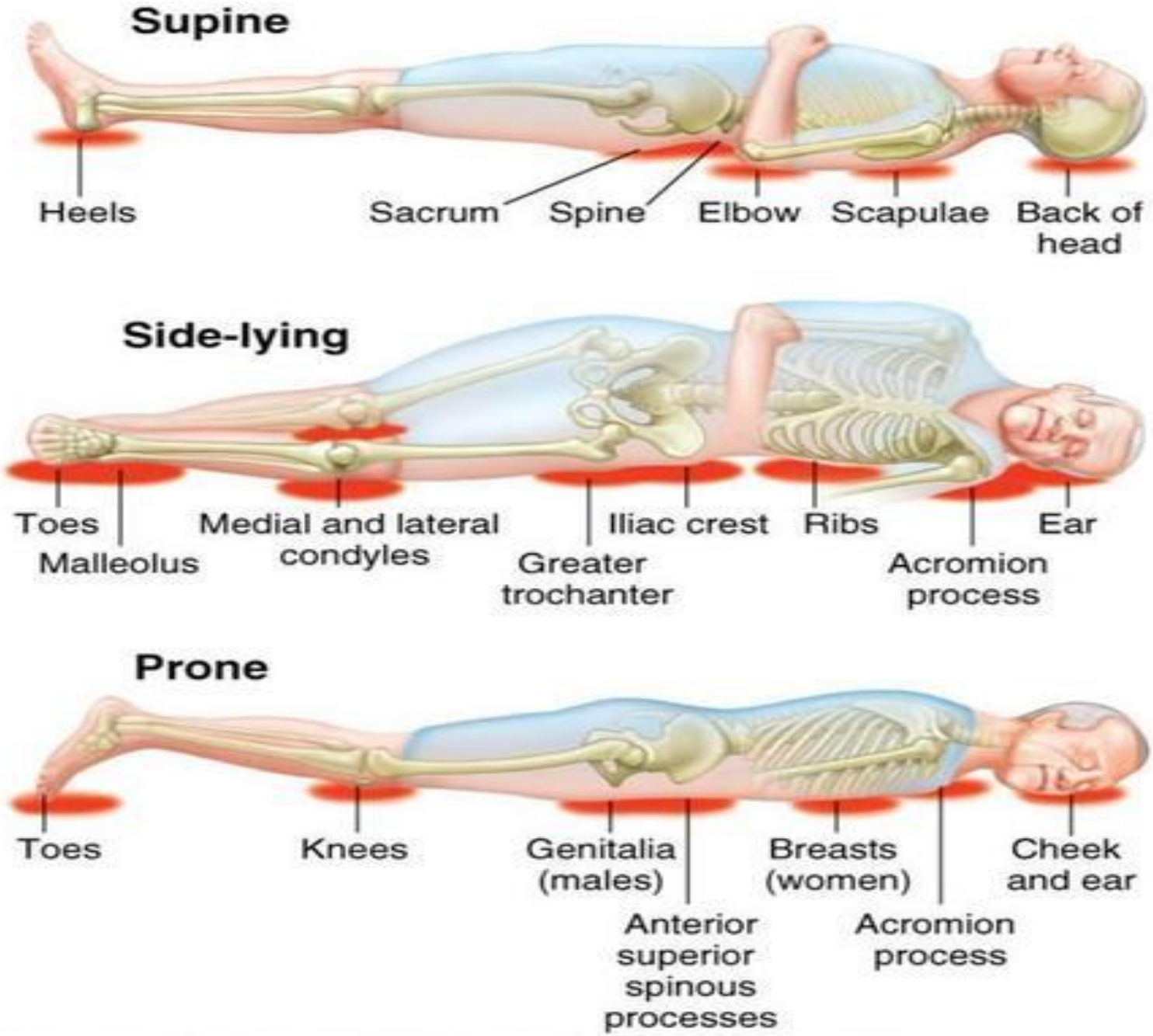

Fig. 33-2. Bony prominences subject to pressure, ischemia, necrosis, and ulceration in the supine, side-lying, and prone positions.

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pressure ulcer

- Daily monitoring and recording of the patient's skin condition in high-risk areas such as ankles, heels, and elbows
- Training in high-risk areas prone to pressure ulcers
- Advice on skin hygiene, no wrinkles and clean sheets
- Prescribe the use of special mattresses or heel and elbow protectors
- Prevent abrasion of the skin with clothing, sheets or objects, especially when moving in or out of bed ,chair and weelchair

Range of motion and contractures

- wrist and finger contracture is more prevalence
- Perform passive movements on paralyzed limbs
- Encourage active movements of the joints, especially in the half-involved body
- Daily stretching of the involved limbs and trunk
- Implementation of upper limb joint mobilization techniques in cases where there is limited movement

Shoulder pain

- Sensorimotor dysfunction of upper extremities
- 72% of stroke patient in first year
- Delay rehabilitation
- A patient prone to shoulder dislocation should have a warning sign installed to avoid pulling the injured shoulder during movement.

Causes of Shoulder Pain

- etiology of hemiplegic shoulder pain is probably multifactorial.
- Spasticity and hemiplegic shoulder pain are related. particularly of the subscapularis and pectoralis muscles
- It is uncertain whether shoulder subluxation causes hemiplegic shoulder pain
- the sustained hemiplegic posture: shoulder contractures or restricted shoulder range of motion

Causes of Shoulder Pain

- Poor handling and positioning of the affected upper limb in stroke patients contribute toward shoulder pain.

- Many types of shoulder pathology have been suggested as causes of shoulder pain including shoulder subluxation, capsulitis, tendonitis, rotator cuff injury, bursitis, impingement syndrome, spasticity, brachial plexus injury, and proximal mononeuropathies

Prevent injury and reduce shoulder pain

- Put the patient's shoulder in the maximum outward rotation, daily, for 30 minutes in the supine position
- Maintain shoulder range of motion
- Avoid excessive and violent repetition of shoulder movements up and down
- Avoid passive raising the shoulder with the arm rotated inward
- In a sitting position, place the arm in the abduction and rotate outward
- Active exercises in the range without arm pain

...

- Avoid using pulleys to raise the arm
- Avoid weight bearing on the upper limbs at angles greater than 80 degrees of wrist extension
- Awareness of the patient of the dangers of repetitive movements of the affected arm by a healthy hand
- Proper handling training for caregivers and families
- Electrical stimulation
- Modalities : ice, heat, massage
- Shoulder strapping

deep vein thrombosis (DVT)

- Using Intermittent pneumatic compression device
- Use elastic compression stockings to improve blood circulation
- Active movements of the lower limbs
- limbs elevation

limb edema

- Move the limbs as fast as possible
- The position of the affected limb, above the level of the heart
- Massage
- Use of pressure gloves and special socks or sometimes elastic bands

falling

- About 14 to 65% of patients fall during hospitalization
- And 73% experience falls in the first 6 months after discharge
- The most important consequence of a fall is a fracture, especially in the hip and pelvis
- Falling risk factors such as muscle weakness, gate disorder, imbalance, visual, cognitive disorders, drug side effects, etc.

Prevention of falling

- Identify the risk factors for falling in the patient
- Informing the patient of complications such as fractures and subsequent immobility
- Strengthen the muscles of the lower limbs
- Teaching balance exercises
- Use walking aids
- Informing the patient about the impact of low ambient light, construction barriers, floor material, etc. on falling

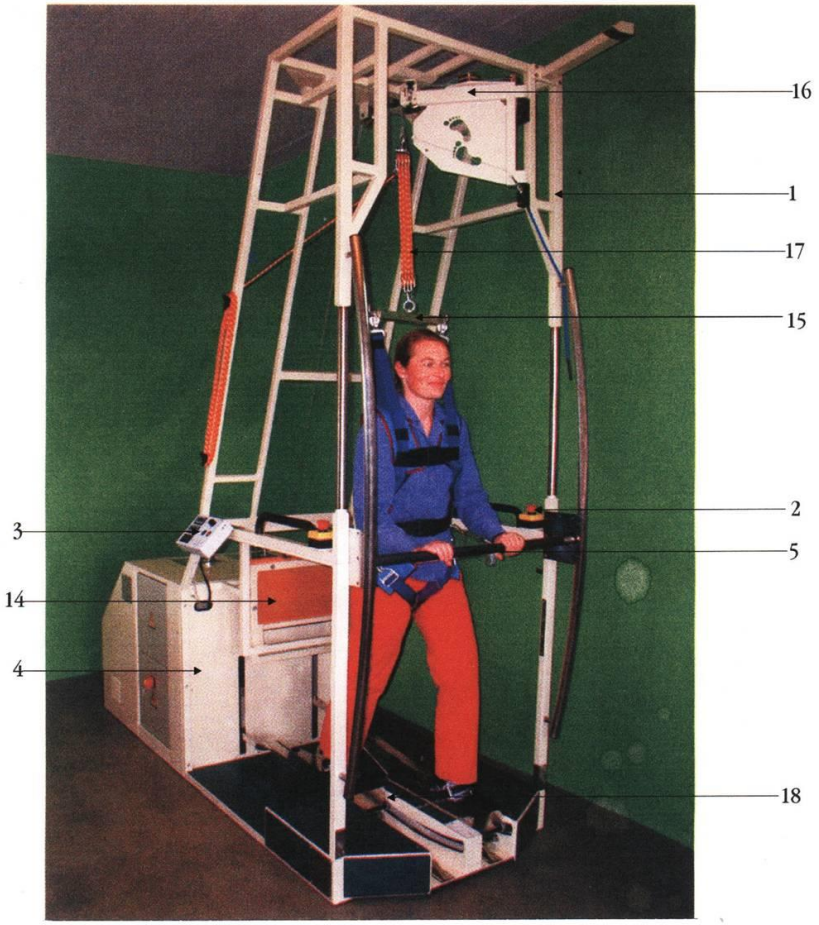
Early Mobility

- If patient's condition is stable, however, active mobility should begin as soon as possible, within 24 to 48 hours of admission
- Early mobility is beneficial to patient outcome by reducing the complication
- It has strong positive psychological benefit for the patient
- Specific tasks (turning from side to side in bed, sitting in bed) and self-care activities (self-feeding, grooming and dressing) can be given for early mobility.

Maintain mobility

- Explain the need for mobility in bed to the patient
- Emphasis on observing mobility safety in bed
- Inform the patient of the dangers of not using the affected organs in the long run
- Encourage the patient to perform active movements, especially in the semi-involved
- Rotate the upper and lower torso in both directions
- Bridging practice training

Treadmill training with body weight support



Robotics

positioning

positioning goals in the acute phase

- prevention of pressure ulcers
- prevention of contracture
- increase of sensory awareness
- improvement of respiratory function
- prevention of exacerbation Spasticity is in the subacute and chronic phase

positioning

- Positioning in supine , side lying and sitting
- Layout of the environment
- Therapists teach team members how to position the patient to avoid skin damage
- Reduce the risk of contractures and ensure joint comfort and alignment

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Tone modulation

- Muscle tone is the amount of resistance shown to passive movement
- Velocity dependent hyperactivity of tonic streach reflexes
- Shock, muscle tone tends to decrease, and after a few days to a few weeks, muscle tone begins to increase.
- Muscle tone is a prerequisite for muscle activity

Aim of treatment

- Pain ↓
- ROM ↓
- Cosmatic ↑
- Hygiene
- Mobility
- Easy use orthosis ↑
- Delay surgery

Tone modulation

- Apply tone facilitation techniques
- Weight bearing on involved limbs
- Proper positioning of the limbs in a position outside the pattern of spasticity

Balance retraining

- Balance is a prerequisite for the activities of daily living
- Weigh bearing on the upper limb with sitting and standing positions
- Emphasis on symmetrical weight distribution on both pelvic / leg halves
- Perform techniques to improve static sitting and standing balance
- Implement techniques to improve the balance of sitting and standing dynamics

. . .

- Help the patient stand with the help of protective splints behind the knee
- Stretching the trunk muscles in the half involved by performing exercises in a sitting position
- Reach out to grasp the object in different directions and distances

Upper limb function

- Positioning of upper limb in bed and chair
- Techniques to maintain soft tissue length and avoid upper limb pain
- passive , active assistive and active motion
- task specific exercise
- mental practice
- mirror therapy
- virtual reality

Constraint-Induced Movement Therapy (CIMT)

- Principle of FORCED USE to avoid the Learned Nonuse of the paretic side for Stroke patients
- Mainly for training of upper extremity
- 20 degree active wrist ext. & 10 active finger ext.
- dynamic splint

Sensory re education

- Prevalence of sensory disorders after stroke

Tactile 64%-94%

Proprioception 17%-52%

Vibration 44%

2PD, streognosis, graphestesia ,kinesthesia

- Sensory impairment have negative consequences on motor function, motor learning, and rehabilitation outcomes

Sensory re education

- Teaching the safety of anesthetized organs to the patient and family
- Using compression techniques, weight bearing on the involved limbs
- Use of electrical and thermal stimulation
- Use of vibrators

Non-linguistic cognitive interventions

- Cognitive problems after stroke increase the length of hospital stay and reduce functional independence

- The purpose of cognitive interventions is to improve social participation and independence in the activities of daily living

- including: motor praxis, memory, attention, executive function, problem solving,…

recommendations

- Cognitive assessment
- Informing families of risky situations for patients with severe pathology\
- Adaptive approaches
- Cognitive rehabilitation

Activity of daily living

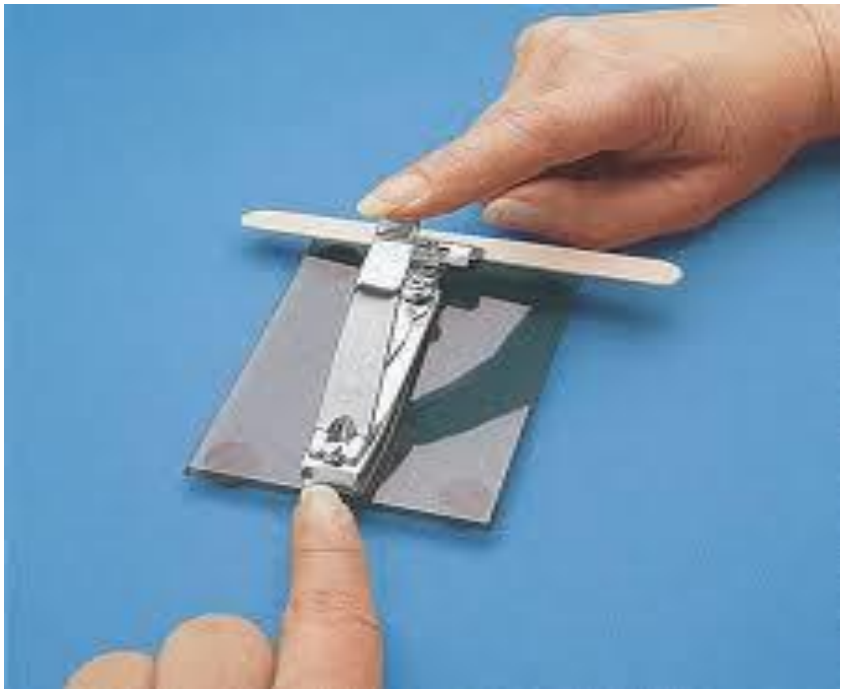
- BADL & IADL
  - Dressing
    Grooming
    Toilet use
    Bathing
    Eating
  - Shopping
  - Use of technology

  - Adapt or specially design device

Activity of daily living

- Initial evaluation 72 hours after stroke according to the patient's medical condition
- bed mobility
- Adaptive and one-handed methods for performing activities of daily living
- assistive technology
- Educate family and caregiver to facilitate daily activities such brushing , washing hands and face ,…
- grading of activities

Activity of daily living



gait

- Fear of walking
- assistive aid
- assistive technology

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Orthosis and splinting

- Shoulder slings
- Hand splint
- Foot slings
- Ankle foot orthosis

Shoulder slings

Hand splints

- Flaccid = functional position
  - Wrist extend 20 – 30 degree
  - Flex MCP joint 45 degree
  - Flex PIP joint 30 - 45 degree
  - Flex DIP joint 20 degree

Hand splints

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Foot slings

Ankle Foot Orthosis

- Plastic
- Metal

- stability of ankle
- ↑balance
- ↑speed walking
- ↑Not enhance recovery
  ↑

Ankle Foot Orthosis

Plastic AFO

Metal AFO

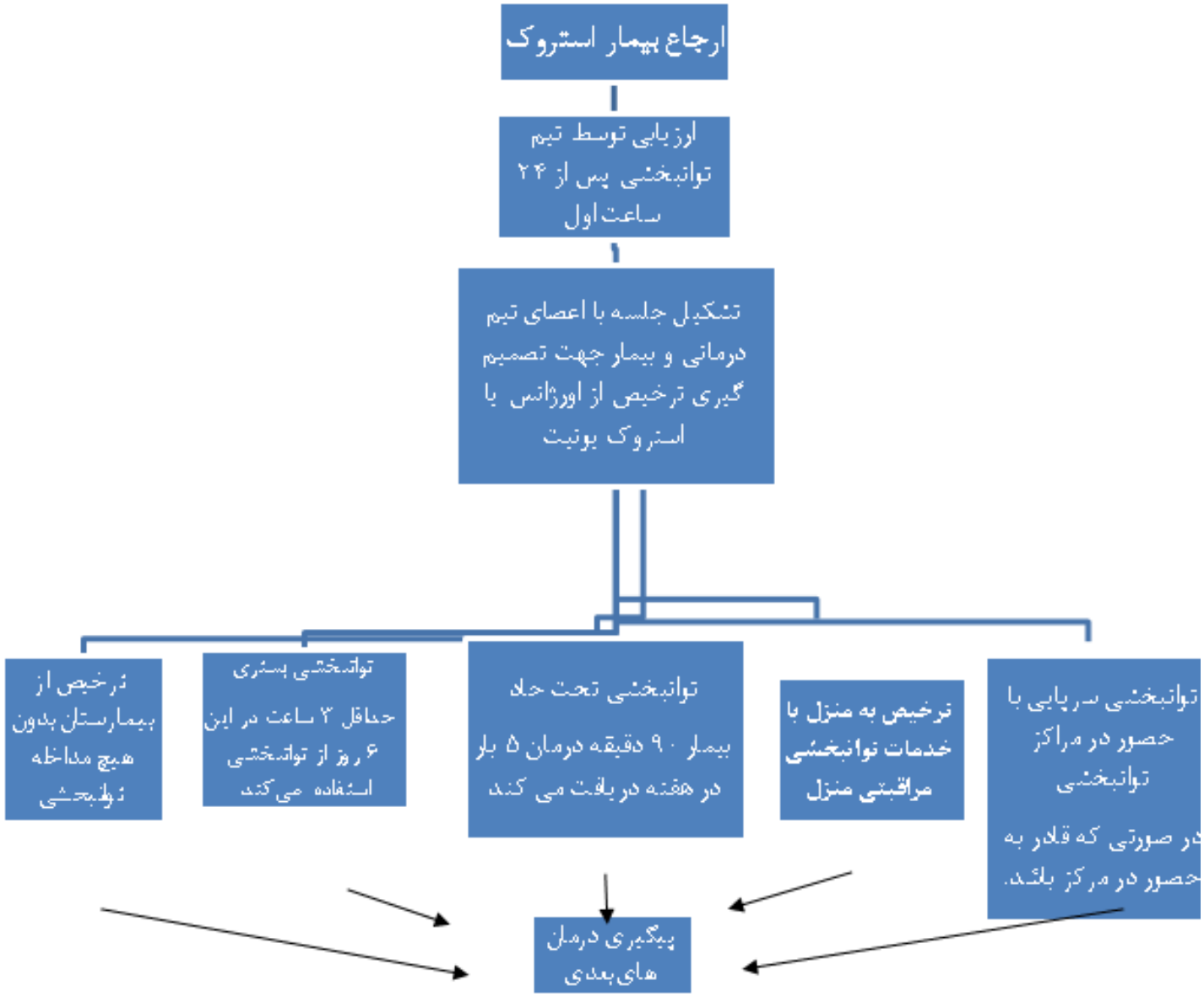

Electrode pads

transfer

- Teach proper and safe transfer to family and Patient
- Training to get up from a lying position by rolling from both sides of the body with observance of safety
- training from bed to wheelchair by stand pivot transfer
- Weight shift training on hips
- training to stand from a sitting position
- Coordinating with a relevant neurologist or specialist for transfer training

Discharge program

- Decisions are made in coordination with changing patient needs, new goals and progress in the recovery process
- The discharge process is an organized collaboration between the treatment team, patient, family and caregivers
- Assessing the home environment is essential for a patient being transferred home
- Pre-discharge assessment of the patient
- Caregiver training according to the patient's existing needs
- Planned, purposeful and specific visits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ترخیص از بیمارستان بدون هیچ مداخله توانبخشی
توانبخشی بستری
حداقل ۳ ساعت در این ۶ روز از توانبخشی استفاده می کند
توانبخشی تحت حاد
بیمار ۹۰ دقیقه درمان ۵ بار در هفته دریافت می کند
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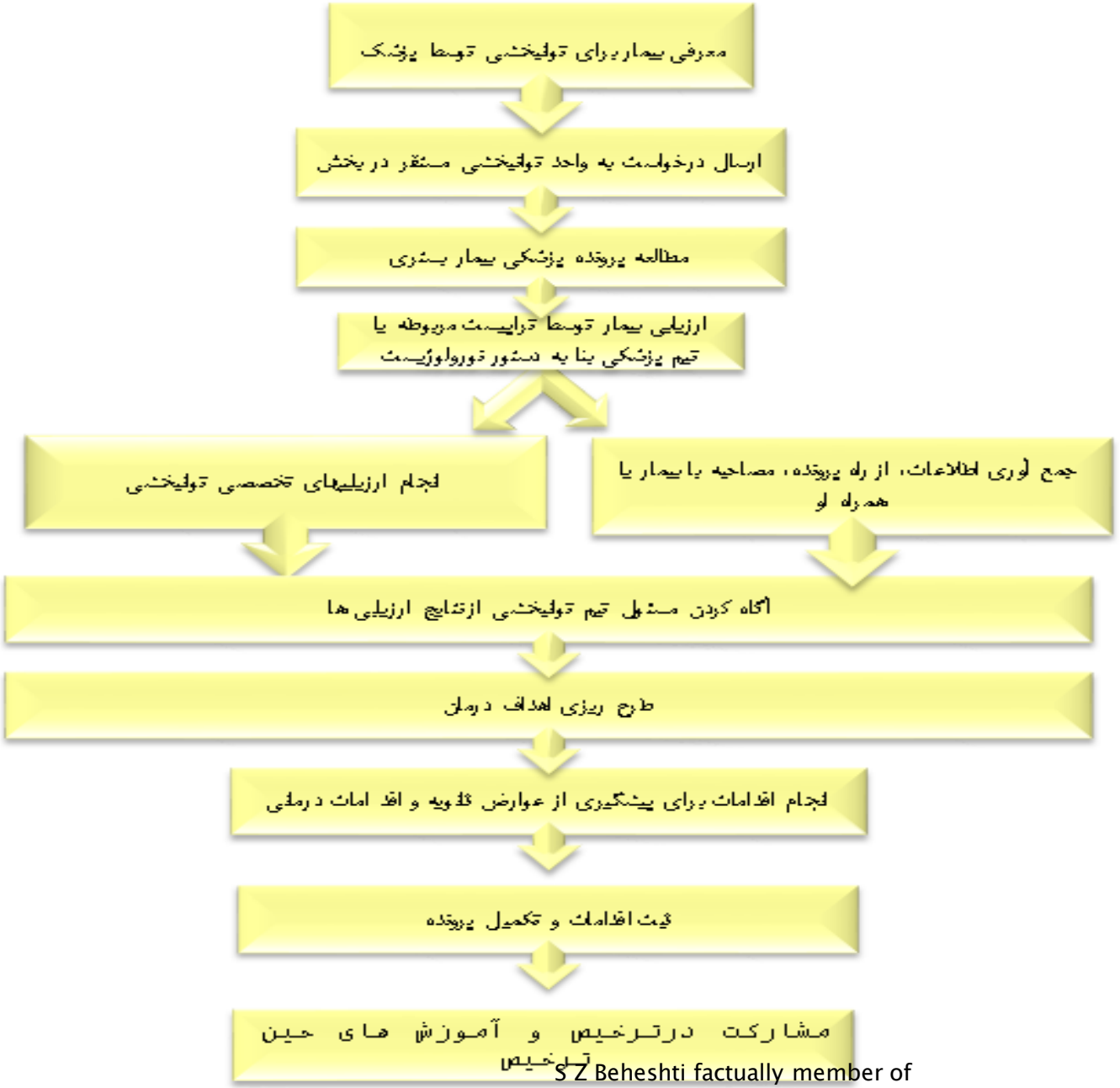
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طرح ریزی اهداف درمان
انجام اقدامات برای پیشگیری از عوارض ناتوانی و اقدامات درمانی
ثبت اقدامات و تکمیل پرونده
مشارکت درترخیص و آموزش های حین ترخیص


از توجه شما متشکرم