Occupational Therapy and Stroke

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- Stroke is a leading cause of disability, half of those who survive require assistance with personal activities of daily living six months post stroke (Legg et al, 2007)

National Stroke Association

- 10% of stroke survivors recover almost completely
- 25% recover with minimal impairment
- 40% experience moderate to severe impairments that require special care
- 10% require care in a nursing home or other long-term facility
- 15% die shortly after the stroke
- Approximately 14% of stroke survivors experience a second stroke in the first year following a stroke

The Goals of Stroke Rehabilitation

- **Prevent, Recognize, and Manage Comorbid Medical Conditions**
- **Maximize Functional Independence**
- **Optimize Psychosocial Adaptation of Patients and Families**
- **Facilitate Resumption of Prior Life Roles and Community Reintegration**
- **Enhance Quality of Life**

Stroke Rehab Principles

- Identify impairments
- Careful attention to comorbidities and complications
- Early goal directed treatment
- Systematic assessment of progress
- Experienced interdisciplinary team
- Education
- Comprehensive discharge planning

Interdisciplinary Team

- Rehabilitation physician
- Nurse
- Physiotherapist
- Occupational therapist
- Speech therapist
- Psychologist
- Social Worker
- Prosthetist and Orthotist
- Dietician

Stroke rehab: Where?

- Inpatient
- Community Hospital
- Nursing Home
- Day Rehabilitation Centers
- Home based therapy (eg. Community rehab programm)

Rehabilitation during the Acute Phase

GOALS:

- **Prevention of Medical complications**
- **Prevention of Deconditioning and Contractures**
- **Training of New Skills**

Rehabilitation during the Acute Phase

TASKS:

- **Range of Motion Stretching Exercises**
- **Frequent Position Changes**
- **Sitting in Upright Position to Improve Orthostatic Tolerance**
- **Psychological Counseling**
- **Patient and Family Education**

Rehabilitation during the Acute Phase

TASKS:

- **Training Personal Care Skills, Mobility, and Ambulation Training**
- **Bladder and Bowel Management**
- **Evaluation of Swallowing Function**
- **Initiate Nutrition and Hydration**
- **Identification and Treatment of Depression**

Medical Complications of Stroke

- Venous Thromboembolism
- Pneumonia
- Dysphagia
- Ventilatory Dysfunction
- Cardiac Disease
- Seizure
- Central Post-Stroke Pain Syndrome
- Spasticity

Medical Complications of Stroke

- Bladder Dysfunction
- Bowel Dysfunction
- Pressure Ulcers
- Malnutrition and Dehydration
- Depression
- Falls and Injuries
- Shoulder Pain and Dysfunction

Medical Complications of Stroke

- **Recurrent Stroke**

The evidence

- Rehabilitation of sensory-motor and cognitive deficits is best carried out in functional activities due to inability of stroke patients to generalize skills (Toglia, 1991)
- Research proves the effectiveness of occupational therapy intervention in the community (home setting) in increasing independence level (Legg et al, 2006)

What is Occupational Therapy?

- Occupational therapy is skilled treatment that helps people become successful in their everyday occupations'.
- ADL
- Work
- Leisure

Role of OT

- Pivotal role in screening for perceptual and cognitive deficits which are often missed
  - Screening tests
  - Standardized testing
  - Observation of participation within functional tasks

Continue…

- Determining rehabilitation potential and ensuring appropriate onward referral to suitable services (inpatient, community, placement)
  – Home access assessments with patients in those ‘borderline safe

- Ax and Training of sensory motor functions
  - Ax and training of cognitive functions
  - Ax and training of skills (ADLs)
  - Advice and instruction in the use of adaptive devices
  - Provision of splints and slings

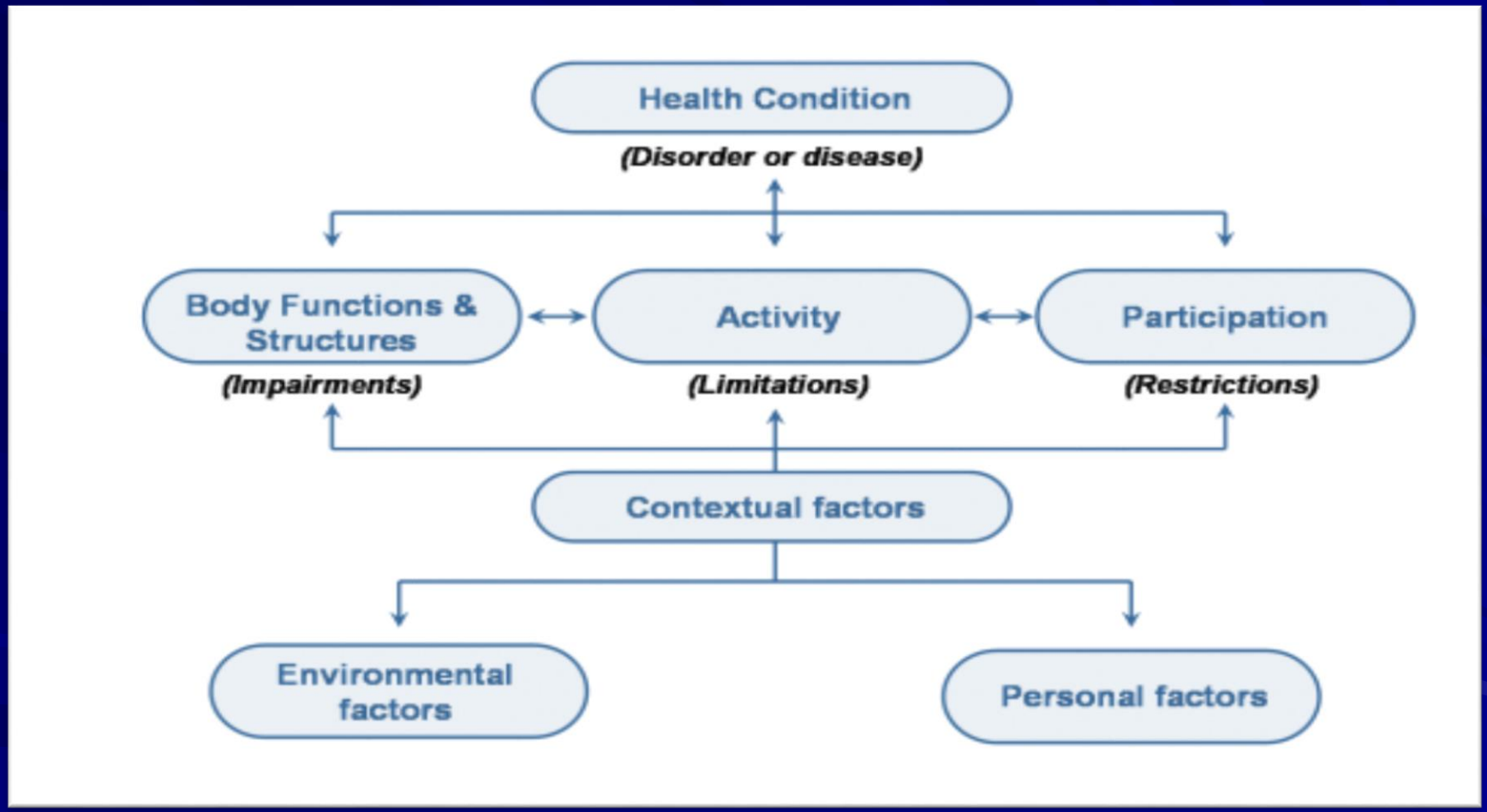
- Education of family and primary caregivers
- Facilitation of safe discharge
- Referral to support agencies, vocational services
- Seating and positioning (jointly with PT)

How OT can help a person with stroke?

- Functional independence is the goal and can be achieved through:
- Skilled treatment in rehabilitating lost physical function
- Remediating or Compensatory method
- Adaptive equipment
- Home modifications
- Client and caregiver guidance

Acute care is a dynamic environment:		
Review Medical Records	Attend Team Rounds	Improve Therapeutic Skills in the Acute Care Setting

ICF concepts and OT



OT process

- Assessment
- Program planning
- Implementation
- Re assessment

Assessment

- Activities of Daily Living (ADL),
- motor function,
- sensation,
- coordination,
- visual perception,
- and cognition

Activities of Daily Living (ADL)

- Interviews with the patient and the career
- Observational assessment
- Standardized measures
  - Functional Independence Measure (FIM),
  - the Modified Barthel Index (MBI),
  - the Assessment of Motor and Process Skills (AMPS)

The Barthel ADL Index

- Feeding
- Bathing
- Grooming
- Dressing
- Bowels
- Bladder
- Transfers (bed to chair, and back)
- Mobility (on level surfaces)
- Stairs

Continue..

- Total score (0-100)
- 0= unable
- 5= needs Help
- 10= Independent

Motor function

- Gross motor
- Fine motor

Motor assessment scale

It includes 8 different items representing 8 areas of motor function and 1 item related to muscle tone on the affected side, and each item is scored on a 7- point scale from 0 to 6. Although 2 of the items assess hand motor function, the primary focus of the MAS is gross motor function.

Fugl-Meyer Assessment

The FMA comprises 4 different sections: motor function (voluntary movements and reflexes of limbs), balance, sensation, and passive joint motion and joint pain. The items are scored in a 3-grade ordinal scale, with 0 as minimum and 2 as maximum, and a maximum score of 226

Sensory, Motor, and Upper Limb Function

- Manual Muscle Testing
- Grip and pinch strengths,
- Modified Ashworth Scale (MAS)

Visual Perception

- Visual Perception is the brain's ability to interpret he information that our eyes take in
- Visual Perception is often affected by stroke and other neurological conditions
- Adult Perceptual Screening Test (OT-APST)

Con..

- Visual Perception includes many sub-skills, 3 of which will be highlighted today:
- Figure Ground Discrimination
- Spatial Relations
- Hemi-Inattention

Figure Ground Discrimination

- People with Figure Ground Discrimination impairments have difficulty perceiving objects in a complex array

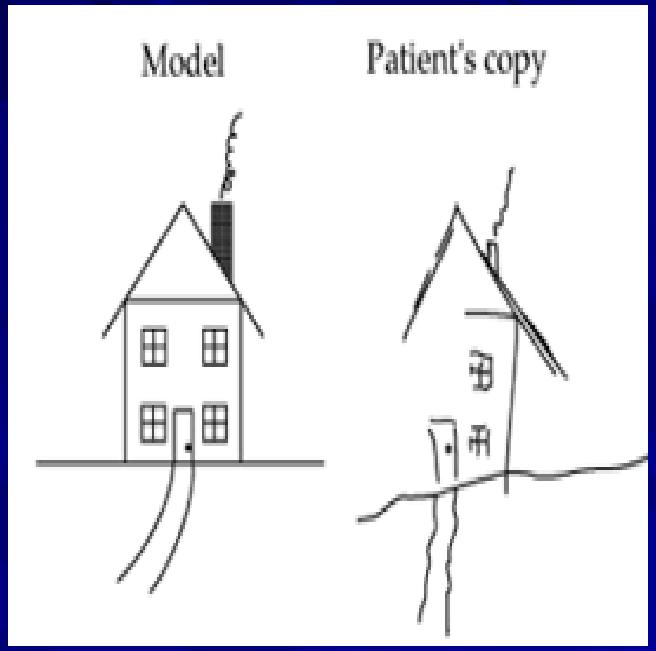
- Finding things in a drawer, on a counter or in the closet are examples of FGD in ADLs

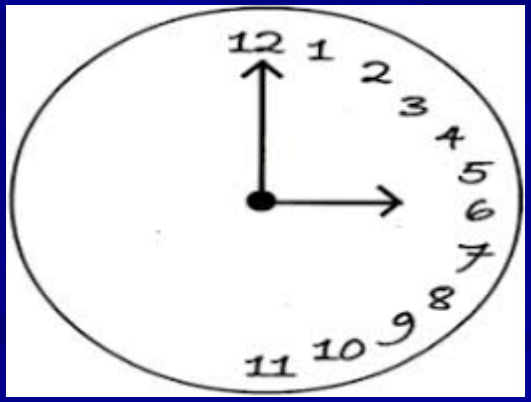
Spatial Relations Disorder

- People with spatial relations disorder have difficulty orienting things in space
- Difficulty orienting themselves in relation to chairs or doorways
- • Difficulty orienting objects in relation to each other or self

Hemi-Inattention

- Some people who have had a stroke have difficulty perceiving one side of space or one side of themselves
- Also commonly referred to as neglect
- Hemi-inattention can occur on either side,always the weaker side (the side opposite the lesion)
- Hemi-inattention can be obvious or subtle


Model
Patient's copy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Memory and Cognition

- Mini Mental State Examination (MMSE)
- Assessment of Motor and Process Skills (AMPS)
- Unless identified and addressed, impairments in memory, cognition, and executive skills can impact significantly upon a person's ability to participate in a rehabilitation program and to complete personal, domestic, leisure, and work - related tasks

Home Assessment

- it is safe for the stroke patient to return to their pre-stroke environment
- A home assessment involves the occupational therapist observing the patients' ability to physically negotiate their environment and perform their usual activities.

Occupational Therapy intervention

- Treatment, including individually selected and graded tasks and activities, involves retraining motor, sensory, visual, perceptual, and cognitive skills within the context of functional activities; minimizing secondary complications; and providing education and support to the patient and caregivers.

- Maintaining or improving soft tissue properties of the upper limb
- Reduction of spasticity include stretching and static or dynamic splinting,

- For patients who have developed contractures, management may include electrical stimulation or casting

Care of the shoulder and upper limb

- incidence of Hemiplegic Shoulder Pain (HSP) varies between 9-73% in research Gambel (2002)
- Development of hemiplegic shoulder pain is associated with:
- Decreased functional outcomes
- Depression
- Increased risk of secondary shoulder complications
- Increased medical and rehab cost

- Active therapies

- Aggressive ROM exercises or overhead pulleys result in increased rates of pain
- Electrical stimulation

- Mirror therapy

continue ..

- Active therapy and graded task selection is used to encourage sensorimotor return; the therapy may include muscle facilitation and strengthening, in conjunction with everyday activities to develop reach, grasp, and object manipulation skills

Specific techniques

- functional electrical stimulation,
- Self- range of motion
- Constraint induced movement therapy,
- progressive resistive exercise and sensory-related training,
- and avoidance of movements that reinforce the synergistic movement patterns of the upper limb that limit function

Self-Range of Motion Exercises

- Self-range of motion exercises can be used after a stroke when one arm or hand is unable to perform exercises on its own.
- During self-range, the less affected arm is used to help the affected arm or hand through the desired movement

Why is it important?

- Prevention of stiffness
- Improved movement within the joint
- Improved sensory and body awareness
- Reduced swelling

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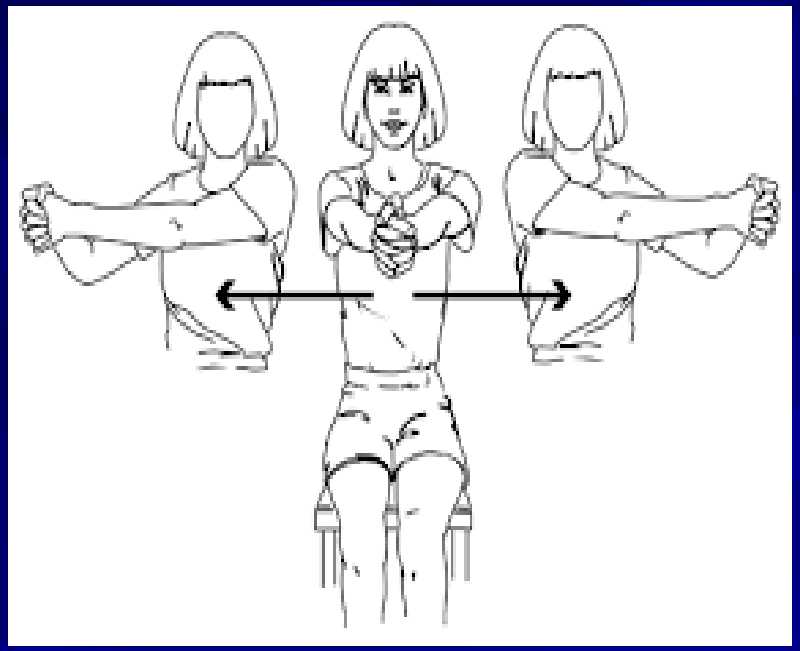
- **Most importantly, self-range of motion exercises can help make daily activities (e.g.: dressing, grooming) easier.**



Considerations

- Keep movements slow and controlled; avoid rapid and jerky movements
- Do not “overdo it”; do not force the movement.
- Exercises will cause a stretch but should not cause sharp pain
- if exercises cause sharp pain, stop it.

Mirror Therapy

- mirror therapy is a technique that uses visual feedback about motor performance to improve rehabilitation outcomes

- mirror therapy may be appropriate for select patients to improve ADLs, reduce pain, and improve visual spatial neglect

The client is then directed to perform a movement with their unaffected hand and to simultaneously attempt to copy the movement with their hidden affected hand. The client should be looking at the image in the mirror while attempting to move the affected hand.

Sensory Stimulation and Re-training

- The Evidence-Based Review of Stroke Rehabilitation states: “sensorimotor impairment is associated with slower recovery following stroke; therefore, therapies to increase sensory stimulation may help to improve motor performance” (Foley, Mehta, Jutai, Staines, & Teasell, 2013, p. 30).

Continue..

- Use your less affected hand to check water temperature (e.g. before having a shower or washing the dishes).
- Label water faucet handles for hot and cold (e.g. red for hot and blue for cold).
- Use your less affected hand to handle sharp, hot or cold objects.
- Look at the position of your affected arm

Constraint Induced Movement Therapy

- Visual and perceptual impairments are minimized by retraining in specific skills, teaching compensation techniques, substitution of unimpaired skills, or adapting the task or environment
- Cognitive therapy may be used in rehabilitation of attention and concentration impairments.

Positioning

Side lying – stronger side

Side lying – weaker side

Sitting upright

Adjusted position

Sitting

BED Mobility

- Bridging
- Movement of the upper trunk
- Rolling onto the side
- Moving from lying to sitting

Bed Mobility

Rolling onto Your Side in Bed

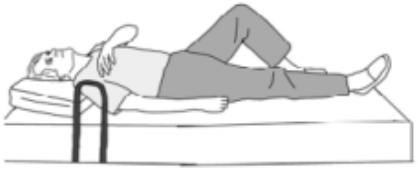
1. Lie on your back. Bend your knee up so your foot is flat on the bed. Reach your arm over to the side toward the edge of the mattress or a bed handle.

2. Begin pushing with your foot to roll to the side. As you push with your foot, pull on the bed handle or mattress edge rolling onto your side.

3. Your caregiver can help you to roll by supporting you at your shoulder and hip.

Getting In and Out of Bed – Right Hemiparesis

1. Lie on your back, bend your left knee up so your foot is flat on the bed.



2. Reach your left arm over to the right side toward the edge of the mattress or a bed handle.

Getting In and Out of Bed – Right Hemiparesis

5. Once you are on your right side, hook your left foot behind your right foot.

6. Push your right foot off the bed as you push up using your left arm.

7. Continue to push until you are sitting upright.

8. Sit on the side of the bed for a few minutes before you stand up.

Assisted Sit-Pivot Transfers, Moving to the Left
Transfers To and From a Wheelchair, Chair, Bed or Commode

If possible, your caregiver will transfer you toward your stronger side. They will review the steps of the transfer and ask when you are ready to move.

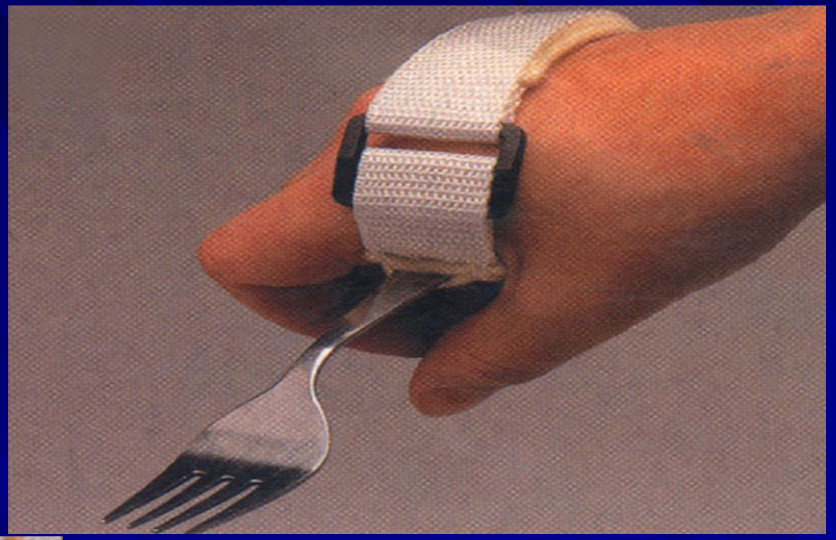
1. Your caregiver will help you scoot to the edge. They will squat in front of you and grab your transfer belt. They should bend their knees and keep their back straight.

2. Your caregiver will block your weaker knee, in case it buckles. They will rock you forward, until your bottom lifts. Don't pull on your caregiver's neck.

Standing Up with Help Wheelchair, Chair, Bed or Commode

1. Your caregiver will stand on your weaker side. They will hold onto the walker and your transfer belt and help you scoot forward in your chair.

2. Your caregiver will help you lean forward with your "nose over toes." You will push up from the armrests. Avoid pulling up with the walker.

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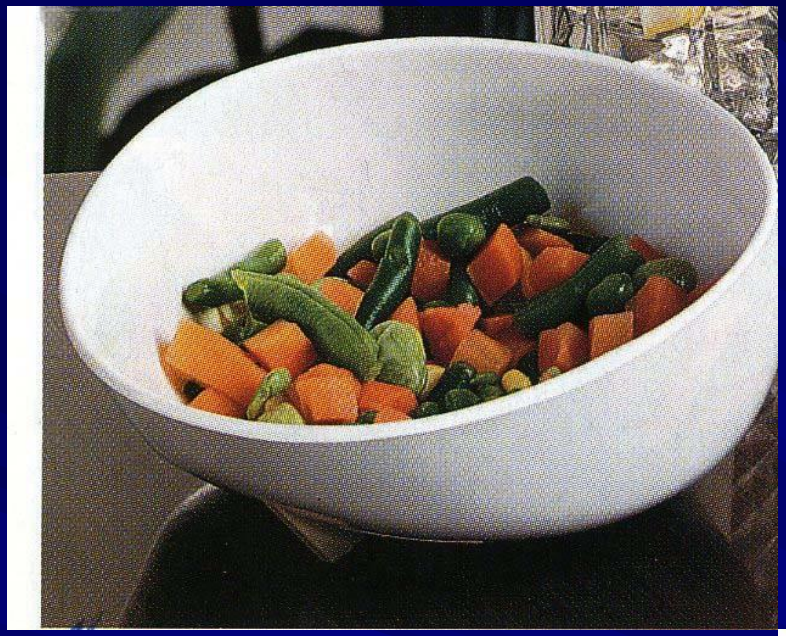

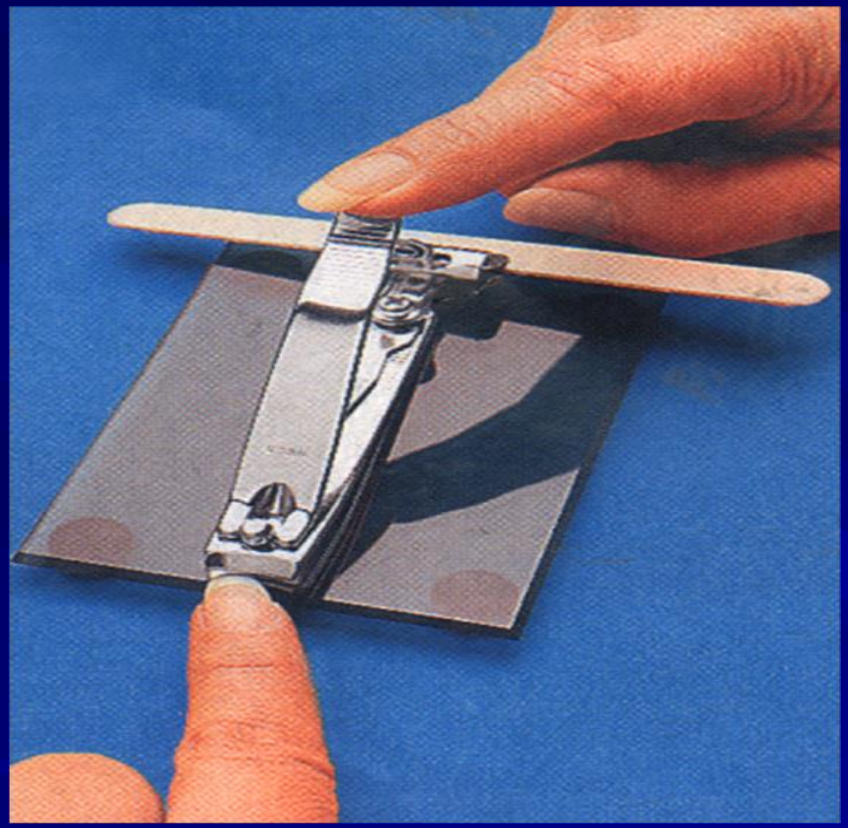


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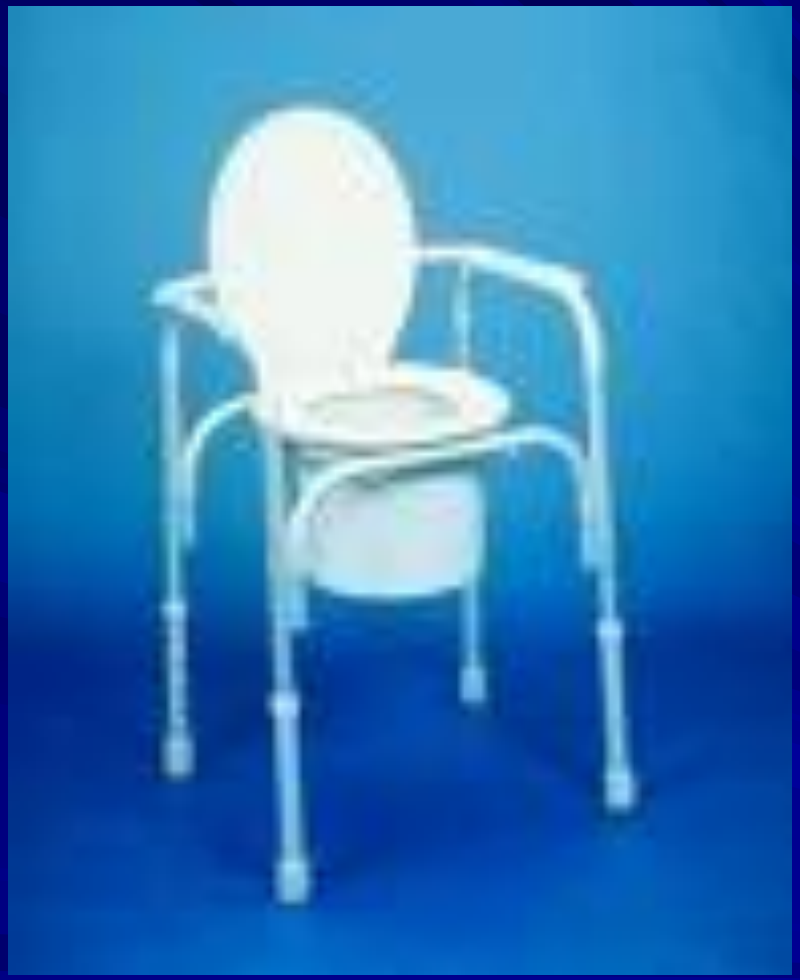


Fall prevention

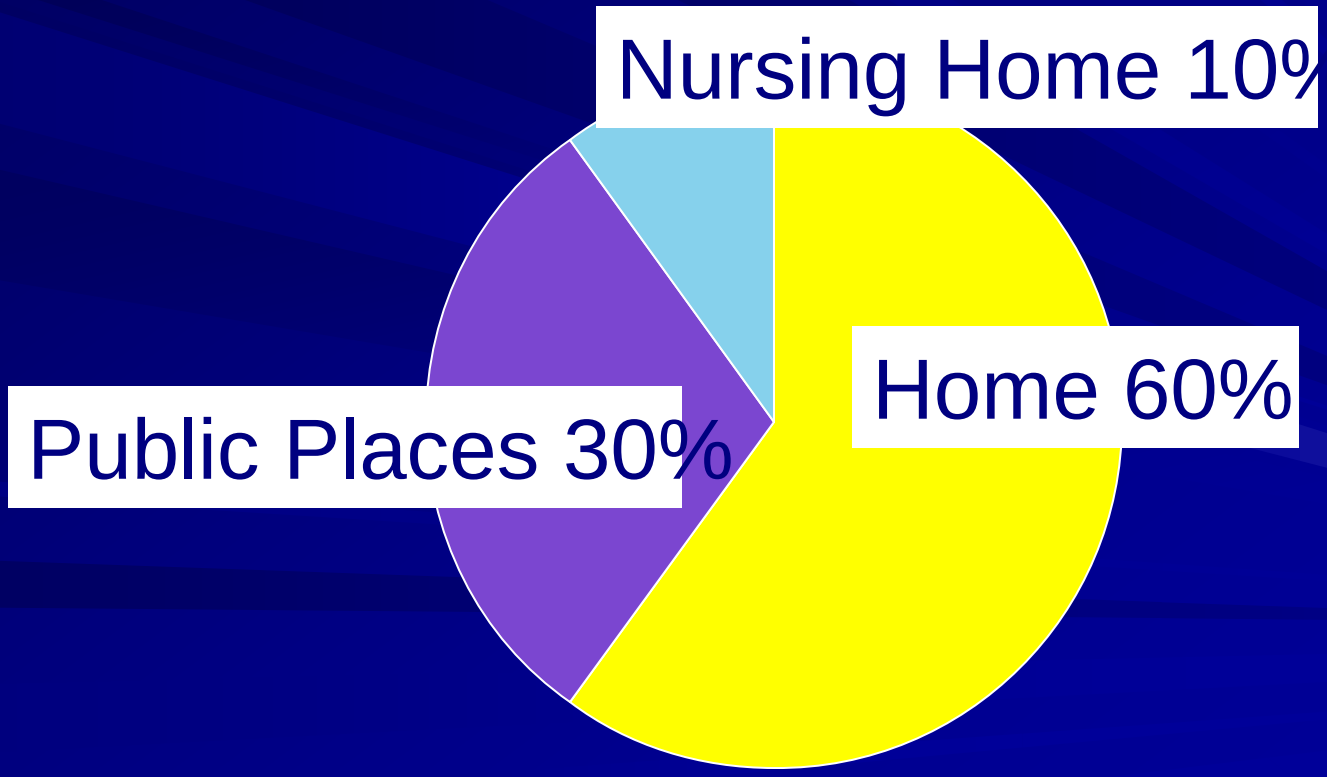
- Leading cause of accidental death for 65+
- 1 out of 3 adults 65+ falls each year
- Cause 90% of all hip fractures
- Most common cause of ER visits
- Women are 58% more likely than men to suffer a non-fatal fall injury
- 40% of those hospitalized for hip fracture do not return to independent living

Common Risk Factors for Falls

- Postural hypotension aka orthostatic dizziness
- Use of anti-anxiety and sleep medications
- Use of 4+ prescription medications
- Environmental hazards
- Impairment in muscle strength or range of motion

Where are people likely to fall?

For people 65 years old or older…..



Consequences of Falls

- **Mortality**
- **Morbidity**
  - **Fractures**
  - Soft tissue injuries
  - Head trauma
  - Joint distortions and dislocations
  - **Loss of confidence** - fear of falling
  - Restricted activity

Risks We Can Eliminate

- Poor lighting
- Clutter
- Uneven surfaces
- Stairways without railings
- Bathtubs and showers without grab bars
- Furniture that is too high or too low
- Loose carpets
- Wet floors or pavements

How to Get Up From a Fall

- Locate a sturdy piece of furniture
- Roll over onto your side
- Push your upper body up
- Crawl on your hands and knees
- Put your hands on the chair seat
- Slowly rise from the kneeling position
- Turn your body to sit in the chair
- **Regain your composure**

conclusion

- Occupational therapists treatment contributes to both the quality of life for survivors of stroke and their families and to timely evaluation of clinical outcomes for the multidisciplinary rehabilitation team.


Thanks for your kind attention