

BACKGROUND

- According to the Center for Disease Control and Prevention (CDC), an individual experiences a stroke every 40 seconds equaling approximately 795,000 individuals per year²
- Stroke is a leading cause of serious long-term disability, impacting an individual's participation in Activities of Daily Living (ADLs)²
- Stroke reduces mobility in more than half of survivors age 65 and over¹
- Research indicates inpatient rehabilitation facilities play a large role in high functional status outcomes in individuals who have experienced a stroke⁴
- Upper extremity hemiparesis and visual deficits are two of the most common impairments post-stroke³ and are a main focus during occupational therapy intervention
- Home programs are designed to aid in continued recovery and improve function and independence in ADLs

PROGRAM DETAILS

- In order to assist patient's in enhancing their function and increasing independence post discharge, it is important that occupational therapists provide patients with sufficient education and tools to succeed at home
- For the neurological population at an inpatient rehabilitation facility, upper extremity motor deficits and spatial neglect were two of the most common and impactful deficits
- While patients are educated on these deficits and compensatory/remediatory strategies are implemented into treatment sessions, patients often require continued education throughout their rehabilitation secondary to poor carryover and recall of strategies
- In order to improve carryover and increase function post discharge, educational resources and home programs were created for spatial neglect and upper extremity motor recovery.

FOCUSED QUESTION

Will providing educational resources and home exercise programs for specific neurological deficits impact function and independence post discharge from an inpatient rehabilitation facility?

METHODS

- A needs assessment was completed to assess the current need for resources and programs for the neurological population within an inpatient rehabilitation facility
- Once a gap in service was identified, a survey was created and distributed to therapy staff
- The survey consisted of:
 - Questions regarding sufficiency of current educational resources
 - Comfort levels for staff providing education
 - Topics to include in educational resources for upper extremity hemiplegia, visual field deficits and spatial neglect
- Results were analyzed and guided a literature review on current research regarding above topics
- Evidence was interpreted and integrated into the development of spatial neglect and upper extremity motor recovery educational resources and home programs

COMMON VISION TERMS

- Visual acuity:** clarity or quality of vision
- Visual fields:** quantity of vision or visual surround
- Oculomotor control:** efficient use of eyes together to achieve and maintain binocular vision
- Visual attention:** ability to observe objects closely to gain information
- Visual scanning:** eyes moving around objects and space gathering information

HOW DO WE SEE?

Visual information comes in through both eyes and is sent to the brain to make sense of the images. Typically, the left side of the brain process visual information from both eyes about the right side of the world and the right side of the brain processes visual information from both eyes about the left side of the world. This allows for the images from both eyes to be combined and compared to create one visual image.

CHANGES AFTER BRAIN INJURY

Two common changes following a stroke or brain injury are **visual field deficits** and **spatial neglect**.

VISUAL FIELD DEFICITS

Caused by a blockage in the pathway between the eyes and the brain, impacting the brain's ability to receive visual images captured through the eyes, or visual field. This disruption in the connection between the eyes and the brain causes a visual field cut, otherwise known as homonymous hemianopsia which essentially means loss of half of the field of vision on the same side of both eyes

SPATIAL NEGLECT

Failure or inability to recognize space on one side of an individual's body because the brain is not processing information from that side very efficiently. It is **not** a loss of vision, but rather a lack of awareness to one side of the body. Individuals with spatial neglect may demonstrate failure or slowness to respond or initiate action towards stimuli on the affected side.

RESULTS

Upper Extremity Hemiplegia

- Current educational resources at this inpatient rehabilitation facility for patients and caregivers provided general information on upper extremity motor recovery and hemiparesis
- The resources did not highlight the importance of neuroplasticity and the role it plays in recovery, nor did it provide any information on ways to foster and enhance function.
- Evidence supports Constraint Induced Movement Therapy (CIMT) as an intervention to improve arm function by capitalizing on neuroplasticity and motor learning principles through repetitive exercises using affected limb for 90% of daily activities for 2 weeks⁵
- Traditional CIMT is intensive, difficult to implement and difficult for patients to adhere to schedule, therefore a modified protocol (mCIMT) exists that utilizes a lower treatment dose (i.e. 3hr/day, 3 weeks)
- A mCIMT home program was developed that emphasized the use of affected arm during daily functional tasks (i.e. dressing, grooming, etc.) in conjunction with completing 2-3 tasks additional tasks for a total of 20-30 repetitions per day.

CONSTRAINT INDUCED MOVEMENT THERAPY HOME EXERCISE PROGRAM

You can implement a modified CIMT program at home through completing your normal, everyday tasks using your affected arm while constraining your non-affected arm (use an oven mitt!) for about 3-4 hours per day.

To supplement your everyday tasks, choose 2-3 of the below activities to repeatedly complete (20-30 repetitions) using your affected arm.

Remember, repetition is the key to promoting neuroplasticity so repeating the task over and over helps to strengthen the connection between the brain and your arm, allowing for more movement and use of your arm.

RESULTS

Visual Field Deficits and Spatial Neglect

- Current educational resources for neurological population did not provide any detailed information on visual deficits or spatial neglect, despite the high prevalence within the patient population
- Visual field deficits and spatial neglect are often thought of to be interchangeable terms despite one being a visual deficit and one being a cognitive deficit
- New educational resources provided definitions of visual field deficits and spatial neglect in layman's terms as well as general information about visual system and the impact of a brain injury
- A literature search was conducted to find evidence on interventions for spatial neglect and visual field deficits to include in home program
- Compensatory strategies include: lighthouse scanning, anchoring, proprioceptive input, visual cues, self reminders

BOTTOM LINE FOR OT

Spatial neglect and upper extremity hemiparesis greatly impact an individual's ability to participate in Activities of Daily Living and can continue to create barriers to independence post-inpatient rehabilitation. In order to provide patient's with tools regarding interventions for more complex deficits, it is important for occupational therapists to provide more specialized education and home programs to better serve the patient population. By providing patients the education and tools to aid in their recovery, hopefully patients will experience improved function, participation and independence in ADLs.

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