Balance and Functional Skill Training for a Patient With Cognitive Dysfunction and Impaired Safety Awareness: A Case Report

C McCombs, BS, DPT Student
University of New England

Background:

- With advances in medicine, there are increasing numbers of people living who have had a stroke.
- One of the major factors that can limit improvement is cognitive dysfunction.
- Cognitive rehabilitation in conjunction with large amounts of repetition can result in lasting neuronal changes.

Purpose:

- The purpose of this case study is to describe the decision making process for physical therapy examination and intervention for a patient who had a stroke with accompanying cognitive dysfunction and decreased safety awareness.

Case Description:

- The patient was a highly educated nonagenarian who had a stroke.
- A CT scan showed a small infarction involving the left parietal region that confirmed the stroke.
- Further examination confirmed impairments with cognition, strength, endurance, and balance. These impairments affected his ability to safely perform functional tasks.

Examination:

Test/Measure/Outcome Tool	Admission	Discharge	Comment
Light Touch	Intact bilaterally	NT	
Sharp/Dull Discrimination	Right extremity had mild deficit	NT	
Mini-BesTest	6/28	18/28	Scores <17 Fall risk
Tinetti POMA	13/30	16/30	Scores<20 Fall risk
TUG	49 Seconds	16 Seconds	>30=High Fall Risk, 12-30=ModFall Risk
Strength	R LE=4/5, L LE=5/5	R LE=5/5, L LE=5/5	4=Good, 5=Normal
2MWT-Gait Speed	.44 meters/second	.71 meters/second	>.8=Community Ambulator, .4 to .8= Limited Community Ambulator
2MWT-Distance	53 meters	85 meters	Normal = 150 meters
Functional Assessment	Roll R/L=CGA, supine<>sit=Min A, sit <> stand= CGA	Roll R/L=Independent, supine<>sit=Independent, sit<>stand=Independent	
Gait Assessment	Forward lean, dec step length, dec toe clearance, dec heel strike, shuffling	Improved step length, toe clearance, and heel strike.	
Global Deterioration Scale	3	NT	Mild Cognitive Impairment
Standardized Mini-Mental State Examination	13/30	17/30	10-19= Moderate Cognitive Impairment

Interventions:

The patient was seen 7 days per week. Interventions were chosen to improve balance, strength, and endurance with an emphasis on problem solving. Each day's treatment consisted of approximately 30% endurance, strength, and balance training.

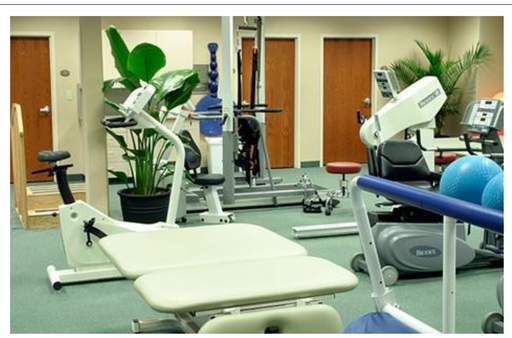

Figure 1: Rehabilitation gym.

Outcomes:

Improvement was seen in his ability to safely perform functional transfers, improved static and dynamic balance, and cognitive function.

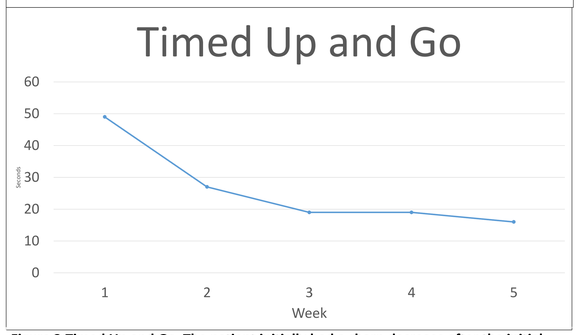

Figure 2:Timed Up and Go. The patient initially had a sharp decrease after the initial evaluation from 49 seconds to 27 seconds. His final time at discharge was 16 seconds. Times greater than 30 seconds indicate high fall risk and times between 12 and 30 indicate moderate fall risk.

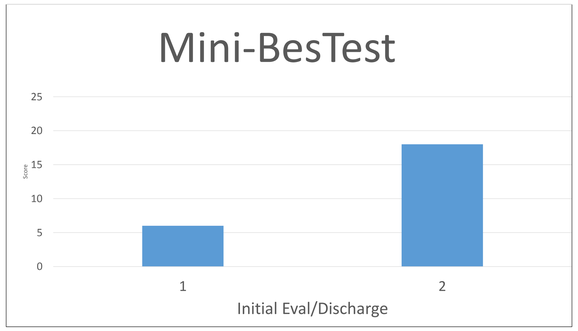

Figure 3: Mini Best Test. The patient improved by 18 points from the initial evaluation to discharge, five weeks later. Scores less than 17 indicate a greater risk for falls.

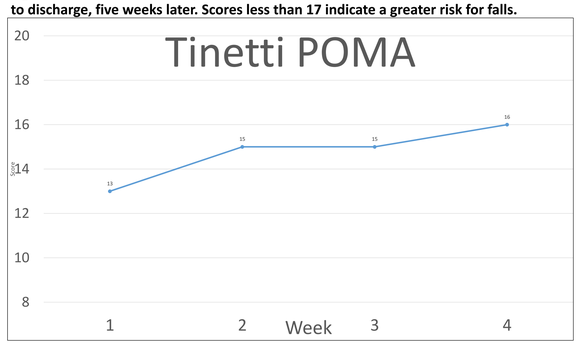

Figure 4: Tinetti POMA. The patient showed gradual improvement. The score at the initial evaluation was 13 and improved to 16 at time of discharge. Scores less than 20 indicate fall risk.

Discussion:

- The Patient improved enough to qualify to return to live in former home, an assisted living facility, with his wife.
- If he had not been independent with functional transfers, he would have needed additional assistance. This would have increased his costs.
- This case demonstrates that a patient who has a stroke on the left side of the brain with associated impairments of weakness and impaired cognitive function can improve with physical therapy.
- Cognitive training may be helpful as it relates to the ability to independently complete functional tasks as problem solving skills are developed.
- The continued publication of individual case reports is an important way to describe the decision making process for the many different presentations seen in patients who have had a stroke.

UNE
UNIVERSITY OF NEW ENGLAND