

# Case study

**Gender:** male

**AGE:** 31

**Diagnosis:** multiple sclerosis

**Main dysfunctions affecting performance:**

- (motor control deficits, visual dysfunction, and gait disturbance secondary to multiple sclerosis).

**Reason for OT rehabilitation:**

- The severity of dysfunction in ADL

**Medical history:**

- 31-year-old man who was diagnosed with multiple sclerosis 2 and half years before the inpatient rehabilitation admission outlined here.
- His initial symptoms appeared 5 years before this admission and were characterized by diplopia, gait dysfunction, and limb coordination problems.
- He was admitted to the hospital with severe ataxia and an inability to care for himself
- He was admitted to the inpatient rehabilitation unit after receiving 10 days of intravenous solumedrol on the acute care unit of the same medical unit

**Medications:**

- Regime of oxybutynin chloride, clonazepam, propranolol, and methotrexate was monitored by his neurologist.

**Therapy history:**

Currently, He receives occupational therapy for 90 min daily, physical therapy for 90 min daily, and therapeutic recreation.

**Functional level:**

- He reported that his neighbors were shaving him and performing his oral care
- He is attempting to eat by bringing his head to his plate or bowl because he had a complete breakdown in upper-extremity function due to the ataxia.
- His bladder function was affected he required intermittent catheterizations every 4 to 6 hr.

**Social history:**

- Lives alone, and although his immediate family members did not live locally, they were involved in his care.

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- He had a large support system of friends.

## **Financial status:**

His private insurance covered 5 weeks of inpatient rehabilitation and limited home therapy, but it did not cover a home health aide.

## **ADLs and communication Routine:**

### **Feeding:**

- Required maximal assistance to eat.
- Attempts at hand-to-mouth patterns with and without utensils resulted in a complete breakdown of motor control, characterized by utensil stabbing of lips, cheeks, and tongue; food being propelled off his utensils; and emotional distress readily verbalized by Phil.
- It was noted that as his utensil approached his mouth, his upper-extremity tremors and head and neck titubation worsened; in other words, as he approached the endpoint of the movement, his motor control deteriorated.

### **Grooming:**

#### **Oral care**

- He was again characterized by stabbing of the oral cavity, multiple unsuccessful attempts to place his toothbrush in his mouth, and inability to control brushing movements secondary to dysdiadochokinesia.
- His attempts at brushing patterns resulted in the brush being propelled out of his mouth secondary to the severe ataxia.

#### **Shaving**

- He was evaluated with an electric razor, and He required maximal physical assistance to maintain contact of the razor on his face and to control the required movement patterns.

**He frequently propelled both the razor and toothbrush out of his hands secondary to violent tremors. Head and neck tremors also became a limiting factor during grooming activities.**

### **Bathing:**

- Showering required maximal assistance.
- *Limiting factors for showering included:*

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- Lack of endurance to complete the task and an inability to hold and effectively use the soap.
- A tub seat was used during the evaluation to compensate for balance dysfunction and to ensure safety.

## **Bowel and bladder management:**

- He required intermittent catheterization secondary to the bladder dysfunction associated with the multiple sclerosis.
- He required maximal assistance to complete this task.
- Bowel management required supervision only secondary to minimal balance dysfunction during clothing management.
- He was able to perform toilet hygiene independently while seated.

## **Dressing:**

- At the time of his evaluation, he preferred loose-fitting clothing without fasteners (sweatsuits, etc.);
- He required supervision only for safety while dressing with this type of clothing.
- He did not view this task as an area for immediate intervention and was satisfied with his performance.

## **Communication:**

- He was unable to ***use the telephone*** because he could not place the phone to his ear. Attempts to perform this movement pattern resulted in his throwing the phone receiver and hitting it into his skull.
- His ***speech*** was intact, with the exception of minimal dysarthria that was manifested during periods of fatigue.
- ***Writing*** was not evaluated because both the patient and the occupational therapist did not consider this activity to be a realistic goal at that time.

## **Initial evaluation:**

### **FIM scores:**

#### **Self-care**

- Feeding 2
- Grooming 2
- Bathing 2

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- Upper body dressing 6
- Lower body dressing 6

## Sphincter control

- Bladder management 1
- Bowel management 4

**Barthel index:** 40

## Intervention:

- Treatments focused on task-specific training in basic ADL incorporating the occupational therapy modalities of orthotics, environmental adaptation, adaptive equipment prescription, and movement retraining.
- The basis for all interventions was decreasing the degrees of freedom required to participate in each task while simultaneously decreasing postural requirements.

## Feeding:

- Orthotics were provided in an effort to decrease motor control requirements and to stabilize the cervical spine as well as the distal upper extremities.
- His feeding position promoted postural security and was characterized by leaning into the table in a position of forearm weight bearing to stabilize his upper trunk.
- In addition, his hand-to mouth pattern of movement was modified from a continuous trajectory from plate to mouth to **a three-step pattern** as follows:
  1. Slide hand and utensil across the table and manipulate food onto the utensil
  2. Bring the hand to a point approximately 2 in. from the mouth (to decrease the effects of intention and smaller target size on worsening tremors); and
  3. Relax and place food in the mouth.
- **Breaking the feeding pattern** into three steps, decreasing the degrees of freedom with orthotics, and increasing postural stability via positioning resulted in increased control of the desired movement pattern (see Figure 1).
- He was able to eat independently with utensils, albeit with effort and increased time.
- Continued practice eventually decreased the time required to eat to a performance level acceptable to him.
- Independence in finger-feeding was achieved by bringing food to his mouth and stabilizing his hand under his chin; this posture, in conjunction with wrist orthotics, had stabilizing effects on both Phil's upper extremity and his head and neck.

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- Food was then manipulated into the oral cavity, using his lips and tongue to bring the food into his mouth (see Figure 2).

## Oral care:

- Wrist supports were also helpful for tooth brushing because they decreased upper-extremity control requirements.
- Movement patterns were adapted to use the environment for upper-extremity stabilization and to minimize reach into space (see Figure 3).
- Phil stabilized his hands on the edge of the sink during manipulation of the toothpaste and when putting the toothpaste on his brush.
- An electric toothbrush minimized the need to perform rapid alternating movements.
- Positioning during toothbrushing was adapted to one of standing in front of a wall in a position of forearm weight bearing while simultaneously co-contracting his trunk to promote postural stability. Using these stabilization techniques, He moved his mouth around the toothbrush; that is, the toothbrush remained stable (see Figure 4).

## Shaving:

- Wrist supports were again used during this task.
- Positioning was modified so that HE was standing facing the corner of a wall.
- He used the facing wall to provide stabilization for the electric razor in a forearm weight bearing position while using the side wall to stabilize his head. While in this stabilizing position, he moved his face around the head of the razor (see Figure 5). Once stabilized, he was able to shave independently.

## Bathing:

- Techniques were adapted for bathing by prescribing a tub seat to conserve energy and provide stability.
- Soap-on-a-rope was provided to decrease manipulation demands.
- Movements were adapted so that He did not reach into space toward specific body parts but instead slid his hand along his body to reach various body parts.

## Instrumental activities of daily living (IADL):

He identified several IADL issues that he wanted to address before discharge. These included simple **meal preparation (cutting food items and carrying meal items to a dining area) and telephone use** to maintain work and social contact.

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- An adapted cutting board with a nail was provided to stabilize food items while he implemented previously learned upper-extremity control techniques (wrist supports, stabilizing forearm against work surfaces) to cut with a knife.
- Food items were transported via a basket that was lined with a nonskid surface, which he carried at his side with his arm stabilized against his trunk.
- A speakerphone was prescribed to allow him to be independent in work and social communication

In conclusion, the focus of occupational therapy for this client was to teach environmental strategies and adaptive techniques to compensate for the effect of his movement disorder on his functional performance in ADL. Interventions were not aimed at changing underlying movement capabilities but, instead, were focused on devising strategies to integrate available movement and control in the most effective and efficient manner possible.

**Reference:** Gillen G. Improving activities of daily living performance in an adult with ataxia. *Am J Occup Ther.* 2000 Jan-Feb;54(1):89-96. doi: 10.5014/ajot.54.1.89. PMID: 10686632.