



## Sensory Integration Use With Elders With Advanced Dementia

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By Diane C. Tonelli

*Using a sensory integration protocol to increase times of comfort and consistency in the daily schedules of elders with severe advanced dementia.*

The Occupational Therapy Department at Beaumont Skilled Rehabilitation and Nursing Center, in Northbridge, Massachusetts, has received many referrals to assess elderly residents with advanced dementia who present with discomfort and agitation during their daily routines. These daily routines included in-bed time for rest and sleep as well as out-of-bed seating for meals and leisure pursuits. The discomfort reported by nursing staff, through nursing reports, and observed during the occupational therapy assessments was noted to be "negative," with "distress" discomforts including moaning and crying; facial grimaces and vocalizations; and physical resistance, including pushing, grasping the bed rail, and tightening muscles in the limbs and trunk in response to routine personal care and when in a personal seating system. Additionally, the elders reportedly were extending their sleep patterns through the morning meal and were awake during late night hours.

The focus of the occupational therapy evaluation and treatment plan was to "structure, modify, or adapt the environment and context to enhance and support performance" (American Occupational Therapy Association, 2015, p. 6913410050p1), thereby re-engaging the residents.

The residents lived in the dementia care unit and presented with a severe advanced stage of dementia. The Functional Assessment Staging (FAST; Sclan & Reisberg, 1992) was used to help define this advanced stage. Very severe dementia is staged at skill level 7 (Kverno, Black, Nolan, & Rabins, 2009). Stage 7b and 7c skill levels state that speech is intelligible and is generally limited to a single word in the course of an average day, and ambulatory ability and the ability to sit up are lost (Reisberg, 1984).

### Occupational Therapy Evaluation

During the evaluations, the occupational therapists observed the residents' reactions and categorized them as "comfort" or "discomfort." The evaluation process included assessment of the residents' ability to participate in tasks, attempts to participate in tasks, and any resistance to:

- Upper extremity motion and function
- Washing of face and hands
- Brushing of teeth and combing of hair
- Full bed bath
- Full dressing
- Mealtime intake and self-feeding activities
- Positional transfers from bed to seating
- Posture and stability in personalized seating system



Discomfort responses in these evaluations included tapping fingers, humming, and looking away from the evaluator. Goals writing focused on the problem areas of discomfort and creating episodes of comfort.

### Case Examples

**Case 1:** Mary was an 85-year-old resident. Her FAST level was 7c. She was alert and nonverbal, except to occasionally say "Hi." She was dependent for personal care tasks and accepted being fed foods and drinks when offered. Her discomfort responses included vocalizations and facial grimaces, and these occurred during transfers, during times in the cardiac chair, and while lying flat during personal care tasks.

**Case 2:** Lorraine was a 74-year-old resident with a FAST level of 7b. She was alert and nonverbal. She was able to maintain a seated position with supervision. The care staff used a mechanical lift to move her from her bed to a wheelchair. No discomfort was displayed during the transfers. Lorraine's discomfort responses occurred during loud activities in the day room and during upper body dressing while in bed. They included grimacing and clenched fists.

**Case 3:** Adele was an 85-year-old resident with a FAST level of 7c. She was alert and nonverbal. She consistently scanned toward visual and auditory input. Adele's discomfort responses were vocalizations, grimaces, and crying sounds. These discomfort responses occurred during mechanical transfer to her chair, often during seated leisure times and meal times, and with wrist movement during care.

The occupational therapy evaluations revealed that these residents:

- Expressed consistent personal discomfort signs throughout the evaluation process
- Had varied levels of alertness throughout the day, impacting mealtime intake and disrupting sleep during night time
- Were unable to initiate engagement in their current environment, and thus lacked sensory input from their surroundings

### Current Treatment Trends

Research of current approaches in treating older adults with dementia to decrease negative symptoms and increase quality of life, revealed the trend of using a multi-sensory protocol designed for this population (Chitsey, Haight, & Jones, 2002; Knight, Adkison, & Kovach, 2010; Kverno et al., 2009; Lape, 2009; Letts et al., 2011; Padilla, 2011). Kverno et al. (2009) noted in their literature review of non-pharmacological treatment of individuals with dementia that "individuals with advanced levels of dementia benefited to a greater extent from nonverbal patterned multisensory stimulation" (p. 840). Multisensory stimulation incorporates the use of tactile, visual, auditory, olfactory, and gustatory sensory pathways, along with movement, to help the individual interpret his or her environment (Lape, 2009).

Sensory protocols can also support a traditional sleep-wake pattern. A sleep-wake state—the circadian rhythm—is a roughly 24-hour cycle in our biochemical, physiological, and behavioral processes (National Institute of General Medical Sciences [NIGMS], 2016). It is an internal and external clock that controls the metabolic, hormonal, and central nervous systems rhythms. When well controlled by a consistent daily pattern of daylight and darkness, coordinated with sleep-wake, meal, and activity times, the body remains in homeostasis (NIGMS, 2016). The sensory integration frame of reference is used here to provide a structured pattern of sensory input. Vestibular, tactile, and proprioceptive input is essential for focusing on sensory processing (Case-Smith & O'Brien, 2010; Watling & Clark, 2011). Dysfunction in sensory integration can result in an inability to regulate emotional and sleep-wake states (Case-Smith & O'Brien, 2010).

### Analysis of Process

I created a treatment protocol for the older adults who were evaluated, with a focus on the problem areas of decreased comfort during daily routines, and atypical circadian rhythms. Individualized plans included two key components:

1. Specific individualized sensory stimulation used throughout the day to accentuate remaining abilities
2. The sensory integration protocol added to the daily routine at certain times of day to reinforce a daily rhythm, thus restoring and preserving homeostasis

Interdisciplinary care meetings with the primary caregivers, the families, the nursing team, the dietician, and social workers occurred to coordinate this plan, and input from each was used in creating an individualized sensory plan whose central focus was the client's comfort and engagement.

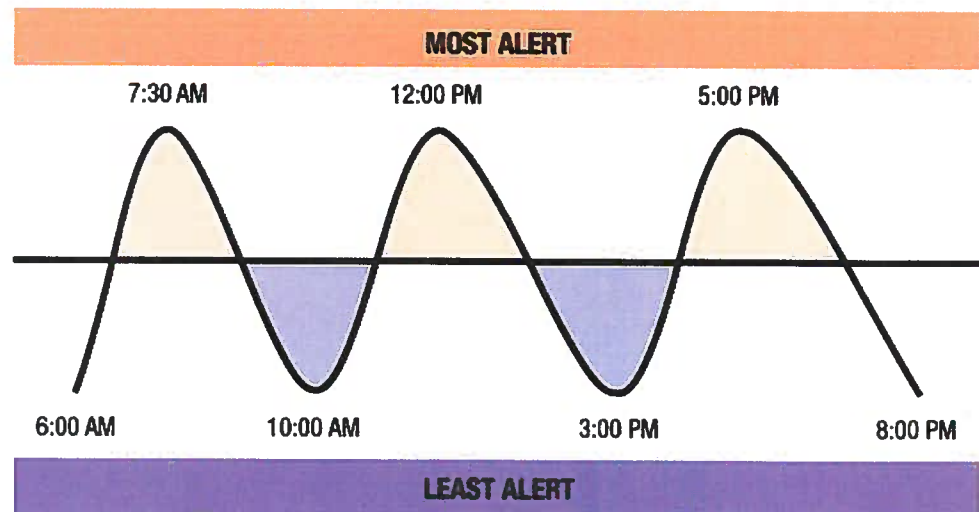
### Creating a Sensory Plan

Figure 1 illustrates the overall daily rhythm timeline created as a tool to aid the care team in building a sensory plan. The wave above the horizontal line represents the times for "waking" (upward), "task with environment" (precipice), and decreasing stimulation (downward). The wave below the horizontal line represents times toward rest and sleep. The resting times are at 10:00 a.m. and 3:00 p.m., and the time for full sleep starts at 8:00 p.m. and extends until 6:00 a.m.

The sensory plan for "waking" includes turning the room lights on, turning on music, playing a CD with a fast beat, using a warm facecloth for morning care, wafting citrus scent into the room, raising the client's head and knees partially, and providing a snack or cool drink—all of which combined engage the five senses.

Just before the "task with environment" time of the plan (mealtime), the elder's head and knees are raised to seated position and the bed is moved, thus adding proprioceptive and vestibular sensory input. During this time a meal is offered and visual stimulation is added—this can include sunlit prisms and a hanging mobile in the client's visual pathway, with a caregiver present to provide personalized attention.

**Figure 1: Daily Flow (Tonelli & Davis, 2014).**



The sensory plan for the "decreasing stimulation" time of day includes dimming the lights slightly; lowering the bed to a semi-reclined position; adding soft sounds, which include the spoken word, nature, or soft music; placing a weighted warm wrap or blanket on the client; adding the scent of vanilla or lavender into the room using a scent diffuser; and offering a cool drink.

Serendipitously, while using this specific routine, it is noted with this program that during the "task with environment" times, when the layers of proprioceptive input and then vestibular input are added, the clients present with a heightened level of alertness. They consistently lift their head up and off their pillow, open their eyes, and then visually scan the room. During this time, it is noted that the clients will gaze toward faces and at objects in the room and display comfort signs, such as smiling and having a relaxed facial expression. On two particular instances, Adele appeared to recognize her daughter's face when she turned to look at her, then grinned broadly. This perceived facial recognition skill was not noted before the program started.

These episodes of heightened alertness were re-created three times a day during the clients' participation in the program. Mary participated in the program for 5 months. At that time, the program ended due to a decline in her medical status toward end of life. Lorraine participated in the program for 15 months. During this time, she transitioned from a plan that included use of her bed and her seating system to a full bed schedule. Adele participated in the evaluation and active program for 15 days; she passed away suddenly as a result of a medical event.

## Conclusion

Using an individualized daily sensory program based on comfort statements and observed preferences as an occupational therapy protocol with older adults with severe advanced dementia resulted in an improved quality of life. The process of integrating sensory input into added proprioceptive and vestibular input during scheduled times of day resulted not only in increased comfort, decreased agitation, and restoration and preservation of a sleep-wake cycle, but also in predictable times of day when the client demonstrated heightened alertness and engaged in quality interactions. This protocol is now an integral part of the interdisciplinary team plan, termed Tapestry Advanced Care, which is used at the Beaumont Skilled Rehabilitation and Nursing Centers in Northbridge, Worcester, and Northborough, Massachusetts.

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