

Know When it Hurts - If They Can't Tell You

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This clinical case commentary was part of content for the July 2022 Journal Club. These case studies are intended to demystify the more formal statistics and format of a peer-reviewed article and translate key concepts into clinically usable information. Join us for Journal Club on the third Tuesdays of January, March, May, July, September, and November at 8 pm ET to discuss current concepts with a wide range of peers.

*Case study presentation based on the research article from Journal of Geriatric Physical Therapy: Coronado RA, Albers HE, Allen JL, Clarke RG, Estrada VA, et al. **Pain-Reducing Effects of Physical Therapist-Delivered Interventions: A Systematic Review of Randomized Trials Among Older Adults with Dementia.** J Geriatr Phys Ther. 2020;43(3):159-169.*

Pain, among older adults, negatively impacts physical function, mobility, safety, and independent living.¹ Assessing pain when clients are unable to verbalize or accurately express themselves due to cognitive deficits such as dementia or other neurologic deficits like expressive aphasia poses a major challenge in physical therapy (PT) evaluation and treatment.

The Pain Assessment in Advanced Dementia Scale (PAINAD) is a valid and reliable pain assessment tool for identifying and evaluating pain among those with cognitive and/or expressive deficits.² Such standardized pain behavior assessments can optimize chances to identify pain and evaluate associated benefits, or lack thereof, of PT sessions. The purpose of this case study is to highlight the use of the PAINAD during PT services for a patient with severe cognitive and communication impairments recovering from kyphoplasty while in a skilled nursing facility (SNF).

History of Present Illness

JA is an 86-year-old female admitted to a skilled nursing facility after kyphoplasty of lumbar spine (L2) vertebral spine compression fracture attributed to osteoporosis. Hospitalization and surgery were prompted by worsening pelvic and lower back pain for a few days; JA's caregiver also reported a recent fall. Post-operative precautions included the use of a lumbar spine orthosis (LSO) when out of bed. While in the hospital, JA was diagnosed with vascular dementia. She scored 6 out of 7 on the Global Deterioration Scale (where a 1 indicates no cognitive decline to a 7 indicates severe cognitive decline). This is interpreted as indicating a moderately severe dementia.³

Past Medical History

In the previous year, JA experienced a cerebrovascular accident (CVA) with aphasia and right hemiparesis that resulted in right-sided foot drop mediated with the use of an ankle foot orthosis for ambulation. Additional diagnosed comorbidities include hypertension, hyper-

lipidemia, depression, atrial fibrillation, ejection fraction 60%-65%, lower extremity deep vein thrombosis status-post inferior vena cava filter, upper gastrointestinal bleed, gastroesophageal reflux disease, thoracic vertebral spine compression fracture s/p vertebroplasty, low back pain, osteoporosis, repeated falls, herpes zoster, and dementia.

Medications: Amlodipine, Lasix, Coumadin, Pregabalin, Atorvastatin, Omeprazole, Oxycodone acetaminophen PRN.

Social History, Home Environment and Prior Level of Function (PLOF)

JA lives in a one-level condominium on the 10th floor that is accessible by elevators. Two regular private aides rotate within a 24-hour period and report that JA requires contact-guard assistance (CGA) to stand-by assistance (SBA) with:

- Functional mobility: bed mobility, transfers (sit to stand, toilet transfers with elevated toilet seat and grab bars), and ambulation using a small-based quad cane (SBQC).
- Activities of daily living: dressing, bathing, and grooming. JA has a walk-in shower with a handheld shower head, grab bars and shower chair.

Patient / Family Goals

JA has a daughter from out-of-state who is her health care power of attorney. She expressed desire for JA to be able to return home and be safely assisted by the private aides with no fall episodes.

Precautions

Spinal precautions, LSO when out of bed, osteoporosis, pain, falls, aphasia, dementia, cardiac, R hemiparesis with R AFO use when ambulating. JA understands Spanish better than English, her private aide translates. Code status: full

Initial Evaluation Findings

- Vitals: Blood Pressure: 132/76; Pulse: 78-86 bpm; SpO2: 94%-97% on room air; Temperature: 97.5°F;

- PAINAD (Figure 1): 3/10 at rest; 10/10 with movement
- Cognition: Alert and oriented to name, but not to time nor place; Mini-Cog: 0/5
- Range of Motion of both Lower Extremities: Within functional limits
- Strength of Lower Extremities: Right: 2+/5 to 3-/5 hip and knee musculatures, ankle 2-/5 with footdrop; Left: 3/5 to 3+/5
- Functional Performance: (Table 2)
 - Bed mobility: maximum assistance rolling side to side and supine<->sit
 - Transfers: maximum assistance sit<->stand, stand-pivot, and bed<->wheelchair<->toilet
 - Gait: totally dependent; one step attempt at the parallel bars with retro pulsive response
- Outcome Measures:
 - Patient Driven Payment Model (PDPM) Section GG
 - Elderly Mobility Scale (EMS)⁴: 0/20

Physical Therapy (PT) Treatment Plan

JA participated in PT 6x per week for 30 days (26 treatment encounters) for an average of 45 minutes per session. In addition, she participated in activities with nursing, occupational therapists, and speech therapists.

PT Interventions (Table 1)

- Therapeutic Exercises – Active-assisted to active cycling using motorized lower extremity ergometer while seated in wheelchair; progressive resistive exercises with ankle weights up to 3 lb. LLE and 2 lb. RLE; trunk stabilization and strengthening exercises with progressive elastic band resistance
- Therapeutic Activities / functional mobility training—bed mobility with rolling side to side and supine<->sit training; transfers training with bed<->w/c, sit<->stand, stand-pivot, and toilet transfers

Table 1. PT Interventions

<u>Intervention</u>	<u>Types</u>	<u>Intensity</u>		<u>Time</u>	<u>Frequency</u>
Therapeutic Exercises	Lower extremity ergometer	Levels 0-1 Level 2 Level 3		Week 1 Week 2 Weeks 3-4	5-6x/week
	Progressive resistive exercises – ankle weights	RLE 0 lb. RLE 1 lb. RLE 2 lb.	LLE 2 lb. LLE 2.5 lb. LLE 3 lb.	Week 1 Week 2-3 Week 4	3-4x/wk
	Trunk strengthening progressed with elastic band resistance	Seated unsupported Yellow Red		Week 1 Week 2-3 Week 4	3x/wk
Therapeutic Activities Training	Bed mobility	Max Mod Min		Week 1 Week 2-3 Week 4	3x/wk
	Transfers	Max Mod Min		Week 1 Week 2 Week 3-4	6x/wk
Neuromuscular re-education	Standing weight-shifting	Parallel bars Hemi-walker Hand-held support		Week 1 Week 2-3 Week 4	4-6x/wk
Gait training	Parallel bars Hemi-walker Wide-based quad cane Hemi-walker	Max to mod Max to mod Mod Mod to min		Week 1 Week 2 Week 3-4 Week 3-4	5-6x/wk
Pain management	TENS with MHP followed by exercises	20 minutes duration		Week 1-4	6x/wk

- Neuromuscular Re-education / Balance training with focus on achieving midline stability and improving confidence—standing weight shift within the parallel bars with the following progressions: hemi-walker support on R side to handheld support.
- Gait training—within parallel bars with the following progressions: hemi-walker on R side; wide-based quad-cane attempted in training (noted with increased negative expressions and greater assistance needed due to lateral and posterior loss of balance that may be associated with fear of falling).
- Pain management – TENS unit with moist heating pad for 20 minutes; followed by manual therapy/ massage with menthol-based cream for about 6 to 8 minutes to the low back area. Pain management modalities were provided prior to functional mobility and gait training.

Discharge Status

- Vitals: Within normal physiological variations for BP, HR, respirations
- PAINAD (Figure 1): 0/10 at rest; 4/10 with movement
- Strength of Lower Extremities: Right: 3-/5 to 3+/5 hip and knee musculatures, ankle 2-/5 with footdrop; Left: 4/5 to 5/5
- Functional Performance:
 - Bed mobility: minimal assistance rolling side to side and supine<>sit
 - Transfers: minimal assistance sit<>stand, stand-pivot, and bed<>wheelchair<>toilet
 - Gait: minimal assist with hemi-walker x 75 feet, retropulsion response with posterolateral loss of balance about 50% of the time
- Outcome Measure:
 - PDPM Section GG: see Figure 2 Discharge
 - EMS: 6/20, see Table 2

Assessment/Discussion

Pain assessment among individuals with dementia and/or aphasia poses a challenge in the delivery of physical therapy.⁵ This journal club article on Pain-Reducing Effects of Physical Therapist-Delivered Interventions

resonates well among PTs delivering care in skilled nursing facility settings. Although evidence-based strategies to identify pain among people living with dementia who experience severe cognitive and/or communication have improved with the development of standardized measures to quantify pain behaviors, strategies for pain assessment remains complex. Pain can manifest as challenging behavior, but so can other unmet needs such as overstimulation, under-stimulation, hunger, voiding etc. Hence, the job of PTs extends beyond identifying pain. This includes differentiating challenging behaviors while assessing and characterizing pain (e.g., location, description, severity, etc.), treatment tolerance, and assessment of potential treatment benefits or the lack thereof. Aligning with the literature review by Coronado et al, the 3 included studies reported pre and post pain assessments using behavioral observation, which should be the minimal strategy for assessing pain including for people living with dementia.

In addition, this case report illustrates that standard of care for pain management extends beyond massage and passive range of motion. Specifically, the benefits that JA gained in this case study exceeded the functional and pain benefits (standard deviations) reported in the studies included in the systematic review. This is in part due to a multi-modal approach that prioritizes active and resistive exercises and not the sole use of passive treatments. Unfortunately, based on Coronado et al, prospective randomized control trials have yet to assess the effectiveness of PT delivered exercise for pain management among people living with dementia. Ellis et al⁶ reported use of PT for pain management among residents with dementia. Abd El-Kader et al⁷ reported using treadmill to improve quality of life among people with Alzheimer's disease. However, while both of those studies demonstrated promising outcomes, they were limited by study design (i.e., case – cohort and retrospective, or not delivered by PT) and excluded from Coronado et al.

Other systematic reviews on pain management for this vulnerable population continue to focus on passive and pharmacological interventions, which are often limited and can impose adverse risks that perpetuate additional

Table 2. Comparison of Levels and Outcome Measures

Case JA	PLOF	Evaluation	Discharge
Bed mobility	CGA	max	min
Transfers	CGA	max	min
Gait	CGA	TD	min
Distance / assistive device	100 feet / SBQC	0 feet / parallel bars	75 feet / hemi-walker
Elderly Mobility Scale	6 / 20	0 / 20	6 / 20
PAINAD	NT	10 / 10	4 / 10

Figure 1. Pain Assessment in Advanced Dementia (PAINAD) Scale 09/03/19 10/02/19

Items*	0	1	2	Score	Score
Breathing independent of vocalization	Normal	Occasional labored breathing. Short period of hyperventilation.	Noisy labored breathing. Long period of hyperventilation. Cheyne-Stokes respirations.	2	0
Negative vocalization	None	Occasional moan or groan. Low-level speech with a negative or disapproving quality.	Repeated troubled calling out. Loud moaning or groaning. Crying.	2	1
Facial expression	Smiling or inexpressive	Sad. Frightened. Frown.	Facial grimacing.	2	1
Body language	Relaxed	Tense. Distressed pacing. Fidgeting.	Rigid. Fists clenched. Knees pulled up. Pulling or pushing away. Striking out.	2	1
Consolability	No need to console	Distracted or reassured by voice or touch.	Unable to console, distract or reassure.	2	1
Total**				10	4

Figure 2.

Section GG Mobility Items (Assessment Item GG 0170*)**

	Admission	Goal	Discharge	Item	Definition
A	2	5	4	Roll left and right	The ability to roll from lying on back to left and right side, and return to lying on back on the bed.
B	2	4	3	Sit to lying	The ability to move from sitting on side of bed to lying flat on the bed.
C	2	4	3	Lying to sitting on side of bed	The ability to safely move from lying on the back to sitting on the side of the bed with feet flat on the floor, and with no back support.
D	2	4	3	Sit to stand	The ability to safely come to a standing position from sitting in a chair or on the side of the bed.
E	2	4	3	Chair/bed-to-chair transfer	The ability to safely transfer to and from a bed to a chair (or wheelchair).
F	2	4	3	Toilet transfer	The ability to safely get on and off a toilet or commode.
G	88	3	3	Car transfer*	The ability to transfer in and out of a car or van on the passenger side. Does not include the ability to open/close door or fasten seat belt.
Score "1" through "0" only if the client is walking					
I	88	4	3	Walk 10 feet	Once standing, the ability to walk at least 10 feet in a room, corridor, or similar space. If admission performance is not assessed, Skip to M (1 step (curb)).
J	88	4	3	Walk 50 feet with 2 turns	Once standing, the ability to walk at least 50 feet and make two turns.
K	88	4	88	Walk 150 feet*	Once standing, the ability to walk at least 150 feet in a corridor or similar space.

6: Independent—Patient/resident safely completes the activity by themselves with no assistance from a helper.

5: Setup or Cleanup Assistance—Helper sets up or cleans up; patient/resident completes activity. Helper assists only prior to or following the activity.

4: Supervision or Touching Assistance—Helper provides verbal cues and/or touching/steadying and/or contact guard assistance as patient/resident completes activity. Assistance may be provided throughout the activity or intermittently.

3: Partial/Moderate Assistance—Helper does less than half the effort. Helper lifts, holds, or supports trunk or limbs, but provides less than half the effort.

2: Substantial/Maximal Assistance—Helper does MORE THAN HALF the effort. Helper lifts or holds trunk or limbs and provides more than half the effort.

1: Dependent—Helper does ALL the effort. Patient/resident does none of the effort to complete the activity. Or, the assistance of 2 or more helpers is required for the patient/resident to complete the activity.

07: Resident Refused

09: Not Applicable—Resident did not perform this activity prior to current injury, exacerbation, or injury.

10: Not Attempted—Due to environmental limitations.

88: Not Attempted—Due to medical condition and safety concerns.

health issues.⁸ In any patient population, especially with persons living with dementia, non-pharmacological solutions need to be prioritized in pain management. Physical therapists need to be at the forefront.

Utilization of exercises and physical activities (functional mobility and gait) preceded by passive methods (i.e., massage with menthol-based cream in combination with TENS unit and MHP for pain management) as in JA's case example, seemed to have pain-reducing benefits that facilitated participation and progress in functional outcomes. During PT, an improved EMS score to prior level (0/20 to 6/20) allowed JA to safely return to her own home while continuing to receive care with her familiar aides; this achieved the family goal.

Future research should consider evaluating exercise and physical activity for pain management among individuals with dementia. These interventions will need to be assessed with behavioral observation measures such as the PAINAD, which was beneficial when assessing JA's level of discomfort. The PAINAD was used to inform pain; however, we also took note of facial expressions that may also be associated with apprehension and fear of falling. At the time of discharge, JA's facial expressions and PAINAD scores reduced to near baseline ease while she improved movement quality, performance, activity tolerance, and overall confidence. These observations lead to additional considerations of whether behavioral responses were induced by fear and apprehension versus pain.

As characteristic of a case study, data is reported for one person, which limits generalization to other patients that may similarly experience pain and achieve similar treatment benefits. In addition, one behavioral observation was used to assess pain, which as discussed can be biased to other factors associated with challenging behaviors or similar behavioral expressions. The EMS is a reliable and valid measure, with established MCID⁹ of 3 points distribution-based and 7 points criterion-based; JA demonstrated MCID progress. The Section GG of the PDPM showed improvements indicating benefits gained from skilled PT treatments, including pain management. Inability to effectively use other higher standard outcome measures for individuals with advanced dementia poses as another barrier to this case.

Overall, the use of PAINAD and the skilled PT pain management with other active interventions for JA yielded beneficial gains with mobility and function. Although JA did not meet her PLOF during SNF stay, her progress enabled her discharge home to her prior set-up of receiving aid from 24-hour formal caregivers. In addition, JA is expected to make additional gains, as home-health PT was recommended following discharge from SNF.

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