

# GERI NOTES

Academy of Geriatric Physical Therapy

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## IN HONOR/MEMORIAM FUND

Each of us, as we pass through life, is supported, assisted and nurtured by others. There is no better way to make a lasting tribute to these individuals than by making a memorial or honorary contribution in the individual's name. The Academy of Geriatric Physical Therapy has established such a fund which supports geriatric research. Send contributions to:

**The Academy of Geriatric Physical Therapy | 3510 East Washington Avenue | Madison, WI 53704**

Also, when sending a contribution, please include the individual's name and any other person you would like notified about your contribution. If you are honoring someone, a letter will be sent to that person, and if you are memorializing someone, the surviving family will be notified of your contribution.

In the field of geriatric physical therapy, we receive many rewards from our patients, associates, and our mentors. A commemorative gift to the Academy of Geriatric Physical Therapy In Honor/Memorial Fund is a wonderful expressive memorial.

# President's Message

Greg Hartley, PT, DPT



Our collective voice matters. As many of you are aware, *Reader's Digest* published an article (September 2018) titled "14 Exercises to Never Do After Age 50."

The article was misleading and full of ageist information. It quickly generated a backlash among therapists on social media, prompting a combined response from the AGPT and APTA (<https://geriatricspt.org/news/index.cfm?n428>). Within a few hours of receiving the letter to the editor from APTA and AGPT, *Reader's Digest* retitled the article to "Exercises You Should Modify If You're Over 50" (<https://www.rd.com/health/fitness/exercises-to-modify-over-50/>). While the title changed, most of the content did not. Thankfully, *Reader's Digest* invited APTA, AGPT, and individual physical therapists to write a follow-up article that was later published as "Myths You Shouldn't Believe About Fitness Over 50" (<https://www.rd.com/health/fitness/myths-shouldnt-believe-fitness-after-50/>). I am very proud of our members and the PT/PTA community at large for speaking up against the original ageist article and supporting our response and the subsequent follow-up article. This series of events is perfect example of how we can work together and have a broad societal impact.

While the *Reader's Digest* articles got mainstream and widespread attention, there are many examples of activism AGPT participates in on behalf of its members and aging adults. This form of advocacy occurs quite regularly but is often less visible. Examples of this include comments submitted by AGPT to the Department of Health and Human Services (HHS), the Centers for Medicare and Medicaid Services (CMS),

or various other government agencies on a wide variety of proposed rules and regulations. In 2018, AGPT submitted comments to HHS on the proposed rules for SNF PPS, IRF PPS, and Home Health PPS; IMPACT Act implementation; proposed opioid rules for residents in long-term care; and a letter to the editor of the *New York Times* regarding an article they published titled, "Costly Rehab for Dying is on the Rise at Nursing Homes, a Study Says" (<https://www.nytimes.com/2018/10/12/business/nursing-home-residents-rehabilitation-therapy.html>). The AGPT's comments are always aligned with our mission to improve access to promote physical therapist best practice and to advocate for optimal aging. These comments are in the public domain but are admittedly difficult to find. The AGPT has begun posting our comments to our own website in an effort to inform our members of all of our advocacy work. Look for them in the News Section (<https://geriatricspt.org/news/>).

This commitment to transparency and advocacy is directly related to the Academy's 2019-2021 strategic plan. In early October 2018, AGPT leadership met to develop a new strategic plan, including a revised vision and mission. The vision, mission, and overall goals will be presented to the membership for endorsement during the member's meeting at CSM this month. Members received information about the new language and strategic plan in eNews, email, and on the website. The proposed **vision**, "*Embracing aging and empowering adults to move, engage, and live well,*" describes a vision of the Academy's outward facing societal role in the future. The proposed **mission**, "*Building a community that advances the profession of physical therapy to optimize the experience of aging,*" defines the Academy's internal approach to reach the goals and ultimately, the vision. There are 3 primary **goals** in the 2-year plan. They are:

- (1) *AGPT provides education that enhances practice by producing value, empowering advocates, and promoting the use of evidence informed practice;*
- (2) *AGPT attracts, engages, and mobilizes physical therapists, physical therapist assistants, and students serving aging adults; and*
- (3) *AGPT builds relationships to expand its influence and the reach of physical therapy.*

There are several objectives and strategies embedded within each goal. Transparency (information sharing, communication), collaboration (internal and external partnerships), advocacy (anti-ageism, payment and policy), evidence-based practice and education, and health promotion/prevention/wellness and themes in each of the strategies. I am excited to get to work on this bold and energetic plan. Implementation of the plan will require many volunteers. Some activities do not require a long-term commitment and are quick tasks. Some tasks require ongoing committee work, while others will be handled by short-term task forces or micro-volunteers (volunteers who commit to one quick task). Please watch for calls for volunteers and check the website frequently. We cannot achieve our vision without your help!

With that, I would like to thank the members who volunteered their time to develop this language and plan. *I am inspired by all of you.* Your dedication to the AGPT, APTA, and aging adults is admirable. I cannot wait to see where this takes us! And let us know how you can help by going to <https://geriatricspt.org/volunteer/index.cfm>.

# Editor's Note

Michele Stanley, PT, DPT



H A P P Y NEW YEAR! I keep thinking that I should come up with a witty regular column name... but I haven't, don't, not even sure that it is a resolution. Clearly, it has not been a priority in the one year that I have enjoyed this editor's position. What has been a priority has been increasing the number of new authors published (that aren't a school assignment-based submission, although I'm always happy to read and consider those as well). Success. With this issue that number rises to 8 new authors and I'm delighted with the information those colleagues have shared and challenged us with. In that vein, please read the op/ed piece on productivity from Gabe Alaine, one of our newest colleagues. What a good lead-in that is to an understanding how we got to the position as an industry/profession that now looks at a different measure of value: MIPS, PDPM, PDGM. Do you understand this new alphabet soup? If not, one of *your New Year resolutions* should be to read Ellen Strunk's explanations. Like it, or not, value based payment systems are coming on hard starting this month, depending on your practice setting.

Are you a member of the Listserv? Subscribing is a great way to get not only regular updates from Ellen but also to participate in all the discussion, tips, frustrations that are sure to be expressed as the new payment systems are implemented. Our listserv is moderated so it remains spam-free; when you request to join the listserv make sure that you give not only your email but also your real name and credentials so that you are automatically vetted. Academy of Geriatrics APTA listserv website at <http://health.groups.yahoo.com/group/geriatricspt/>

One of the missions of *GeriNotes* is to illustrate the works and projects of the component SIGs of the Academy of Geriatric PT. Balance and Falls related problems are not only the bread and butter for lots of PT practices, the Balance and Falls SIG is one of the biggest and busiest components of our group. Read about how many members celebrated Fall Awareness Prevention Day (FPAD) – and get some ideas for community education and service projects that *you/your clinic* can institute for next September FPAD or October's PT month. Fall(s) are the ultimate 4 letter word for our older clients but also for institutions that serve elders. Heidi Moyer presents some thoughts on how we approach this problem

Knowledge Translation (KT): a fancy way to express the process that moves ideas and techniques from research labs to clinical settings and integration into professional practice. *GeriNotes*, along with *JGPT* (journal of the Academy of Geriatric Physical Therapy) and the Academy is committed to fostering KT to improve the functional evidence-based interactions of physical therapy professionals and their clients. Mary Milidonis and Marianna Wingood provide a simple explanation of the process. In follow-up, you will see a more interactive and cooperative approach by the Academy publications that I hope that you will find useful. One way to expedite this is to recruit and encourage recognized opinion leaders (content experts) who will write an article or commentary for *GeriNotes* that includes implications/applications of one or more articles featured in the corresponding edition of the *JGPT*; the publications editors *resolve* to coordinate at least some content in 1 to 2 issues each/year. Watch for the initial attempt in both of the July publications. **IF** there is an area in which you are knowledgeable and passionate (and would like to produce thoughtful commentary on) – contact an editor! We want to hear from you!

GET LIT, the popular and KT based regular column by Carole Lewis and Valerie Carter returns this month to talk about CORE values evidence (as in trunk strength not religion or ethics), they will continue this topic in the next *GeriNotes* as well (May issue). In follow-up responses to the GET LIT series on the evidence in treating PD, there is a case report on using the LSVT approach and a literature review specific to gait cueing strategies when working with persons with Parkinson's disease.

- Still looking for therapists who work within an Emergency Department to collaborate on an article in an upcoming issue: share informal case studies, structure, and competency required for this practice, productivity issues.
- Do you have a wellness or fitness-based practice? A future issue would like to focus on this aspect of physical therapy and your stories would be welcomed.
- Hey, all you VA residency peeps! Word on the street is that many of you are starting or involved in some pretty amazing projects – share the details! Articles duly referenced in AMA style between 900-2700 words are welcomed. Maybe we can do an issue highlighting the VA's role in caring for our aging and amazing vets?
- **PTAs** – we would like to highlight a PTA with advanced proficiency or other certifications in every issue - nominate yourself or a colleague and we will interview and share your story.
- Does your personal resolution include getting healthier and/or changing your exercise routine in 2019? Are you a personal trainer....or have you ever used one? Write about it! If the thought of writing intimidates you, I'll interview you. Michele Stanley: [mms@uwalumni.com](mailto:mms@uwalumni.com)



# Policy Talk: Post-acute Care Payment is Changing

Ellen R. Strunk, PT, MS

By the time you are reading this article, there will be less than 12 months before the post-acute care environment is forever changed. Skilled nursing facilities (SNFs), home health agencies (HHAs), and inpatient rehabilitation facilities (IRFs) all received news in their final rules that, while not unexpected, is likely overwhelming to many.

## SKILLED NURSING FACILITY'S PATIENT-DRIVEN PAYMENT MODEL (PDPM)

On July 31, 2018, the Centers for Medicare and Medicaid Services (CMS) published the *Prospective Payment System (PPS)* and *Consolidated Billing for Skilled Nursing Facilities (SNF) Final Rule for Fiscal Year (FY) 2019*. The rule finalized CMS's proposal to replace the current SNF PPS Resource Utilization Group (RUGs) with a new payment model called the Patient-Driven Payment Model (PDPM) beginning on October 1, 2019.

Therapists who have practiced in the SNF setting for any length of time have not been immune to the criticism of the RUGs payment system. Perhaps those reading this article may have voiced their own criticism of the model because it ties payment to the volume of therapy minutes delivered. For years, policymakers have complained about how the system might incentivize a level of therapy that is not warranted in an effort to receive a higher payment. In 2016, CMS began releasing public use files of SNF payments and utilization. They illustrated that a significant number of patients' therapy time was within 10 minutes of the lowest possible threshold that would still allow the SNF to receive that payment, prompting the Deputy Administrator at the time to refer the issue to the Recovery Auditor Contractors for further investigation.<sup>1</sup>

Others have criticized the fact that the nursing and nontherapy ancillary payment was underfunded. The CMS responded to those criticisms in June 2017

when they released an Advanced Notice of Proposed Rulemaking (ANPRM) asking stakeholders for feedback on a payment system they called the Resident Classification System Version 1 (RCS-1). The provider community responded in mass to the proposal, and a year later, CMS formally proposed a new model called the Patient-Drive Payment Model (PDPM). The PDPM was finalized on July 31, 2018.

The PDPM is a fundamental shift from the RUGs system used today and will replace it entirely. The CMS's intent with the new model was to pay providers based on patient characteristics instead of the number of therapy days and minutes. In fact, the number of therapy days and minutes will not have any influence over how much a SNF is paid. Under the new system, patients will be assigned a Case Mix Group (CMG) using 5 components: physical therapy (PT), occupational therapy (OT), speech language pathology (SLP), nursing, and non-therapy ancillaries (Table 1).

## HOME HEALTH AGENCY'S PATIENT-DRIVEN GROUPER MODEL (PDGM)

On October 31, 2018, the CMS published the *CY 2019 Home Health Prospective Payment System Rate Update and CY 2020 Case-Mix Adjustment Methodology Refinements*. The rule finalized CMS's proposal to replace the current Home Health Resource Groups (HHRGs) with a new payment model called the Patient-Driven Group Model (PDGM) beginning on January 1, 2020.

Like their colleagues in the SNF, home health therapists have experienced the criticisms related to therapy visits and the HHRG level. The HHRG payment is influenced by the number of therapy visits delivered over the course of a 60-day episode: as the number of therapy visits increases, so does the payment to the home health agency. And like the RUG's analyses, the Medicare Payment Advisory Commission (MedPAC) has

repeatedly called on CMS to eliminate the number of therapy visits as a payment factor since they believe it "creates financial incentives that distract agencies from focusing on patient characteristics." Their research supports a model that increases "payments for medically complex patients and lowering payments for patients who receive rehabilitation therapy unrelated to their care needs."<sup>2</sup>

In July 2017, CMS released its proposed rule for HHAs for calendar year 2018 displaying an "early" version of the PDGM. At the time it was called the 'Home Health Groupings Model' (HHGM). Like the current PDGM, HHGM aimed to classify patients by admission source, principle diagnosis, and certain functional OASIS items. One key difference between the two models was that HHGM was estimated to decrease payments to HHAs by \$950 million, an amount that would be devastating to many providers and patients. The PDGM, on the other hand, is required to be done in a budget-neutral manner. However, it does include "assumptions about behavior changes that could occur as a result of the implementation of the 30-day unit of payment and a change to the case-mix methodology."<sup>3</sup>

Like PDPM, the new Home Health model is designed to classify the patient using only clinical characteristics and other patient information components (Table 2). Under the new payment model, the unit of payment for home health services will also move from a 60-day period to a 30-day period.

## INPATIENT REHABILITATION'S FUNCTIONAL INDEPENDENCE MEASURE (FIM™)

The final rule for FY2019 Inpatient Rehabilitation Facilities (IRFs) included some good news for providers related to documentation requirements. In its effort to reduce regulatory burden on rehabilitation providers and physicians,

**Table 1.** Components Used in the Patient-Driven Payment Method

Component	Patient Characteristics		Per Diem Payment
PT	Primary reason for SNF Stay falls into 1 of 4 categories: (1) Major Joint Replacement or Spinal Surgery (2) Non-orthopedic Surgery or Acute Neuro (3) Other Orthopedic (4) Medical Management	Functional Status using Section GG Early and Late-Loss Abilities: (1) Self-Care GG0130: 3 items (2) Mobility GG0170: 8 items	Beginning with Day 21, per diem payment amount decreases by 3% every 7 days
OT	Primary reason for SNF Stay falls into 1 of 4 categories: (1) Major Joint Replacement or Spinal Surgery (2) Non-orthopedic Surgery or Acute Neuro (3) Other Orthopedic (4) Medical Management	Functional Status using Section GG Early and Late-Loss Abilities: (1) Self-Care GG0130: 3 items (2) Mobility GG0170: 8 items	Beginning with Day 21, per diem payment amount decreases by 3% every 7 days
SLP	Primary reason for SNF stay falls into 1 of 2 categories: (1) Acute Neuro (2) Non-Neuro	<ul style="list-style-type: none"> <li>• Cognitive Status</li> <li>• Presence of swallowing disorder and/or mechanically altered diet</li> <li>• Presence of other SLP comorbidities</li> </ul>	Per diem payment is the same for all covered days
Nursing	<ul style="list-style-type: none"> <li>• Clinical information from the SNF stay using MDS data</li> <li>• Extensive services received</li> <li>• Presence of depression</li> <li>• Number of restorative nursing services received</li> </ul>	Functional Status using Section GG Early and Late-Loss Abilities: (1) Self-Care GG0130: 2 items (2) Mobility GG0170: 5 items	Per diem payment is the same for all covered days
Non-therapy Ancillaries	<ul style="list-style-type: none"> <li>• Number and type of comorbidities present</li> </ul>	<ul style="list-style-type: none"> <li>• Extensive service used</li> </ul>	Per diem payment is the same for all covered days

Abbreviations: SNF, skilled nursing facility; PT, physical therapist; OT, occupational therapist; SLP, speech language pathology; MDS, minimum data set

there were several revisions to the coverage criteria to include allowing the post-admission physician evaluation to count as one of the weekly required face-to-face visits; allowing the rehabilitation physician to lead the interdisciplinary team meeting remotely; removal of the admission order documentation requirement since it is duplicative of other admission requirements.

The final rule for IRF also announced that beginning on or after October 1, 2019, the FIM™ instrument and the associated Function Modifiers will be removed from the IRF Patient Assessment Instrument (PAI). Therapists working in this setting may be concerned about that since it has been a cornerstone of the IRF-PAI as well as a method of measuring functional outcomes between and among IRF facilities nationally. However, CMS pointed to the fact that under the IRF Quality Reporting Program (QRP), they began collecting a number of patient assessment items mandated by the

Improving Medicare Post-Acute Care Transformation (IMPACT) Act (Policy Talk in the September 2018 *GeriNotes*). One of the domains called for by the IMPACT Act was function. In October 2016, IRFs began collecting Section GG self-care and mobility items. Center for Medicare and Medicaid Services intends to use these items to assign patients into a Case-Mix Group (CMG) for payment purposes under the IRF PPS beginning with discharges on or after October 1, 2019. They will incorporate two full years of data (FY 2017 and FY 2018) into the analyses used to review the CMG definitions, and stakeholders will have an opportunity to comment on that analysis in future rulemaking.

### IS THERAPY GOING AWAY IN POST-ACUTE CARE?

The short answer is no. Might it look different than it does today? Yes. The patients being seen in the post-acute care setting require and benefit from the provision of therapy services. That

will not change just because the way that SNFs, HHAs, and IRFs get paid is changing.

Will facilities and agencies have a new incentive to decrease the amount of therapy provided? Or will other providers, such as restorative nursing aides or therapy aides replace therapists since they cost less than therapists and therapist assistants? Providers should be very cautious of either of these approaches because functional outcomes will likely suffer. Therapists should remind their colleagues and their facilities/agencies that each of the PAC settings are still required to participate in their respective Quality Reporting Programs (QRP) and Value-Based Purchasing (VBP) programs. Therapy programs and effective patient care delivery have a direct impact on many of these quality measures (Table 3). Therapists working in post-acute care should become familiar with the measures in their setting and begin discussing with colleagues and facility/

**Table 2.** Components Used in the Patient-Driven Group Model

Timing*	Admission Source^	Clinical Grouping*	The Primary Reason for the HH episode is:	Functional Level~	Comorbidities **	LUPA^^
Early or Late	Community or Institutional	Musculoskeletal Rehabilitation	PT, OT, or ST for musculoskeletal condition	Lo, Med, Hi	None Low High	>/=2 </=6
		Neuro/Stroke Rehabilitation	PT, OT, or ST for neurological condition	Lo, Med, Hi		>/=2 </=6
		<b>Assessment, Treatment &amp; Evaluation of:</b>				
		Wounds – PO Wound Aftercare and Skin/Nonsurgical Wound Care	Surgical wound(s), nonsurgical wounds, ulcers, burns, other lesions	Lo, Med, Hi		>/=2 </=5
		Behavioral Health Care	Psychiatric conditions	Lo, Med, Hi		>/=2 </=4
		Complex Nursing Interventions	Complex medical & surgical conditions including IV, TPN, enteral nutrition, ventilator, and ostomies	Lo, Med, Hi		>/=2 </=5
		<b>Medication Management, Teaching and Assessment (MMTA): Assessment, Evaluation, Teaching and Medication Management for:</b>				
		MMTA – Surgical Aftercare	Surgical aftercare	Lo, Med, Hi		>/=2 </=5
		MMTA – Cardiac/Circulatory	Cardiac or other circulatory related conditions	Lo, Med, Hi		>/=2 </=5
		MMTA – Endocrine	Endocrine related conditions	Lo, Med, Hi		>/=2 </=5
		MMTA – GI/GU	GI or GU related conditions	Lo, Med, Hi		>/=2 </=5
		MMTA – Infectious Disease/Neoplasms/ Blood-forming Diseases	Conditions related to infectious diseases, neoplasms, and blood-forming diseases	Lo, Med, Hi		>/=2 </=4
		MMTA – Respiratory	Respiratory related conditions	Lo, Med, Hi		>/=2 </=5
		MMTA - Other	A variety of medical and surgical conditions not classified in one of the previously listed groups	Lo, Med, Hi		>/=2 </=5

Abbreviations: HH, home health; PT, physical therapist; OT, occupational therapist; ST, speech therapist; TPN, total parental nutrition; MMTA, medication management, teaching and assessment; GI, gastrointestinal; GU, genitourinary

\*Timing: Early (1<sup>st</sup> episode) or Late (2<sup>nd</sup> or later)

^Admission Source: Community or Institutional (Institutional is defined as having an acute care, inpatient psychiatric facility, long term care hospital, skilled nursing facility, or inpatient rehabilitation facility stay that occurred in the 14 days prior to the HH SOC); For the 2<sup>nd</sup> or later episode, if an acute care stay (only) occurred in the 14 days prior to the subsequent episode of care.

\*Clinical Groups: 12 groups to describe the primary reason for which patients receive HHC

~Functional Level: Low, Medium, High using OASIS items (4 ADL items, 3 mobility items and 1 item about risk for rehospitalization). Each category has its own cut-off points for low, medium, or high functional level.

\*\*Comorbidities: Presence of one or more of 13 comorbidity subgroup interactions would receive the low adjustment; Presence of one or more of 34 comorbidity subgroup interactions would receive the high adjustment; Absence of secondary diagnoses in either comorbidity would receive no adjustment.

^^LUPA thresholds vary depending on the final PDGM group assigned.

agency administrators how therapy can contribute to the outcomes and overall quality of care to the patients they serve.

### ARE YOU READY?

This article is just an overview of the changes to come. Over the next 12 months, the Academy of Geriatric

Physical Therapy, the Home Health Section, HPA The Catalyst section, and the APTA will be partnering to bring members more information and more resources about PDPM, PDGM, and the looming Uniform Post-Acute Care (UPAC) payment model that is sure to follow. We welcome your suggestions

and feedback on what you need to prepare. Contact us at [geriatrics@geriatricspt.org](mailto:geriatrics@geriatricspt.org).

As I stated in the last issue of *GeriNotes*, therapy services have been paid on volume for too many years: eg, the number of visits made, the number of minutes provided, the number of

**Table 3.** Post-acute Care Quality Reporting Programs

SETTING	QUALITY REPORTING PROGRAM	“COMPARE” WEBSITES
<b>Skilled Nursing Facility</b>	<a href="https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Nursing-HomeQualityInits/Skilled-Nursing-Facility-Quality-Reporting-Program/SNF-Quality-Reporting-Program-Measures-and-Technical-Information.html">https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Nursing-HomeQualityInits/Skilled-Nursing-Facility-Quality-Reporting-Program/SNF-Quality-Reporting-Program-Measures-and-Technical-Information.html</a>	<a href="https://www.medicare.gov/nursinghomecompare/Data/About.html#quality-OfResidentCareData-Collection">https://www.medicare.gov/nursinghomecompare /Data/About.html#quality OfResidentCareData-Collection</a>
<b>Home Health Agency</b>	<a href="https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Home-HealthQualityInits/Home-Health-Quality-Measures.html">https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Home-HealthQualityInits/Home-Health-Quality-Measures.html</a>	<a href="https://www.medicare.gov/HomeHealthCompare/Data/Patient-Care-Star-Ratings.html">https://www.medicare.gov/HomeHealthCompare/Data/Patient-Care-Star-Ratings.html</a>
<b>Inpatient Rehab Facilities</b>	<a href="https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/IRF-Quality-Reporting/IRF-Quality-Reporting-Program-Measures-Information-.html">https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/IRF-Quality-Reporting/IRF-Quality-Reporting-Program-Measures-Information-.html</a>	<a href="https://www.medicare.gov/inpatientrehabilitation-facilitycompare/#about/theData">https://www.medicare.gov/inpatientrehabilitation-facilitycompare /#about/theData</a>

codes recorded. Some therapists have never worked in a time when minutes, visits, units, and days were not a focus and point of discussion in the therapy workplace. These changes in payment – while uncomfortable and uncertain – may help therapists to begin to understand what effective care is and for whom. We must not lose sight of the fact that the effectiveness of our clinical skills in these settings will still be important to a SNF, HHA, and IRF. Are you ready?

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Reporting Requirements; Home Infusion Therapy Requirements; and Training Requirements for Surveyors of National Accrediting Organizations. <https://federalregister.gov/d/2018-24145>. Accessed October 31, 2018.

#### OTHER RESOURCE

Strunk ER. Policy Talk: Have you heard? Functional Outcome Measures are here. *GeriNotes*. 2018;25(4):9-13.

## Congratulations to the following candidates who will take office at the AGPT Member Meeting at CSM 2019 in Washington, DC!

Treasurer – Kate Brewer  
Directors – Ken Miller and Sue Wenker  
Nominating Committee – Lucy Jones

We also congratulate the following SIG officers:

BFSIG Chair – Jennifer Vincenzo  
BFSIG Vice Chair – Shweta Subramani  
BFSIG Secretary – Heidi Moyer  
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*A big Thank You to all the candidates who participated in  
this year's election and to the members who voted!*



# *My Opinion: Productivity, an Ambiguous but Widely Sighted Monster*

*Gabriel Alain, PT, DPT*

As a recent graduate who came from a non-traditional background (Finance), I cannot help but notice current practice cultures in place which, in my opinion, are hampering our ability to provide meaningful patient care. In my experience as a physical therapist, it seems our profession is eager to use or pioneer new ways of thinking but quick to move on without refinement. Previously as an analyst I often found most value was realized not through discovery but through optimization. This is my call to action to optimize productivity and more importantly, standardize it. Productivity only measures billable time at this time. It does not measure what is done during those minutes, only whether or not minutes were filled. I think one of productivities greatest ironies is its total blindness to quality. In a skilled nursing facility (SNF) setting when a patient walks to the rehabilitation gym and then is treated with 1 lb ankle weighted LAQs, this is considered productive. But for who? People go their whole career treating this way and would be seen by a hiring manager as “highly productive.” My own gut reaction is to say “well the therapist should know better and use time in a more challenging manner.” This is not always the case, though.

During one of my clinical rotations at a SNF setting, the therapists were tasked with finishing 90% of the note, regardless of its type, before leaving the patients room or the intervention was finished. Documentation was done on an iPad. I felt myself being strong-armed into situations I had no desire being in. For example, in some situations I was hands on with patients for the majority of the treatment yet I still needed to find time to finish documentation so I could meet productivity requirements. I found myself using equipment like the Nu-Step (nothing against it) so my hands could be free and I could type. This would be fine except I did not want

to use the Nu-Step, I wanted to ambulate with my patient as I felt the sensory input from full weight bearing through the kinetic chain would be far superior than a seated activity. Can the Nu-Step be made into a challenging intervention? Absolutely. However, in my opinion it becomes exceedingly difficult to document, keep an activity skilled while hands free, and maintain patient safety at the same time. Therapists should not have to forgo what I deem is clinically necessary in the name of productivity.

Perhaps my most disappointing experience regarding productivity was in the case of a patient who was previously on my case load who I will refer to as Patient A. Patient A was in long-term care and had an inoperable brain tumor that presented with stroke like symptoms as it continued to grow. Symptoms included severe expressive aphasia and hemiplegia. I had just finished seeing another patient and as I was returning to the gym, I saw Patient A who was clearly in some sort of distress and unsuccessful in communicating his need to nearby personnel. Patient A's eyes lit up when he saw me and I began trying to figure out what it was the patient needed. It took about 10 minutes to figure out what the patient wanted but when I finally pieced it together and figured out Patient A wanted to return back to his room and take a nap, the patient pumped his fist in the air and I received a handshake. No staff was available so I proceeded to transfer Patient A from the wheelchair to the bed. Once the patient was positioned and well supported his eyes began to tear, he gave a clear and audible “Wow” and I received another handshake. Who knew sufficient back support and communication could go such a long way. It was my pleasure to have helped out and an emotional moment for both of us. However just 2 hours later I was reprimanded by my supervisor for helping Patient A because he

was not on my case load. Even one of the aides complained to my supervisor because now she would have to get the patient out of bed when lunch time rolled around. I was dumbfounded. I told my supervisor “Respectfully, if the situation were to occur again I would do it again.” If the concern of productivity has caused us to forget about basic human respect especially during the last few months of life, we are in a scary place.

I frequently encountered having 30 minutes to complete a progress note yet the patient had 5 goals that needed to be examined. Could I have looked at previous treatment notes done by another therapist to save myself time and fill in goal progress instead of examining it for myself? Sure. Is that ethical to the patient and 3rd party payers who are expecting a skilled service? I do not think so. What quality of documentation can be expected in situations like these? I see these types of situations quite often. I think productivity often pushes therapists to pursue submaximal interventions. Sometimes the therapists are at fault, sometimes it is the expected productivity requirements for the given setting, sometimes it is both. I realize a solution to this will require a multi-faceted approach as it is quite the monster we are dealing with. But rather than just going after the monster, it seems more reasonable to first define what everyone wants to call it. Once defined I believe it will become clearer as to what therapist “true” productivity expectations are across the board and how they can be better managed. I think market forces will also dictate what is and what is not reasonable.

Every facility defines productivity differently. Some allow nuances such as mandatory meetings, patient family phone calls, etc. to be written off and not affect productivity. Other facilities are rigid and do not allow deductions to lost time. Some facilities require evalua-

tors maintain 60% productivity, others require 92%. The percentages do no matter, only what they are constituted of. I would not be surprised if productivity was defined this second as say: billable time with deductions for mandatory meetings, phone calls, and repeated patient non-compliance. Some facilities would probably find themselves to have been requesting over 100% productivity from their therapists.

Let me be clear the aim of this writing is not to complain about what is being asked of therapists, but to sound the warning bells. Payments are not growing and insurance continues to increase the amount of documentation required for reimbursement. Standardizing productivity should be in the interest of all

health professionals. Directors, rehab managers, and other hiring managers should be actively looking for a more comprehensive way of monitoring productivity. After all productivity takes no consideration of patient outcomes, denied insurance reimbursement, or patient satisfaction just to name a few. We as therapists should also be looking for opportunities to prove how we continue to provide value across the spectrum that often goes unmeasured. If I have an opportunity to spend an extra 15 minutes with a patient that is not billable but they go home happy and refer just one new patient to the facility, I just made the facility thousands of dollars. Yet by current metrics, I was unproductive. We can do better! Let's standardize how we

define productivity so we can better define the value being provided to patients.



Gabriel Alain, PT, DPT, is a recent graduate from Marshall University. He previously was a financial professional trading equities and derivatives. He will

be the incoming resident to the National Church Residences/OSU Geriatric Residency Program from 2018-2019. He may be contacted at [Gabriel.n.alain@gmail.com](mailto:Gabriel.n.alain@gmail.com).

## CMS Releases New Resource to Prevent All Cause Harm in Nursing Homes

On behalf of The Centers for Medicare & Medicaid Services (CMS) and the Quality Innovation Network National Coordinating Center, we are excited to share a new resource with you: a Change Package to prevent all cause harm in nursing homes:  
<https://qioprogram.org/all-cause-harm-prevention-nursing-homes>

We're all living longer, and we need our healthspan to keep up with our lifespan. Right now our lifespan is exceeding our health span, especially when it comes to our brains. That can be done not only with pharmaceuticals and drugs, which we're working on, but it starts with you. Take care of your body, brain and mind—that staying healthy and staving off disease begins with you.

—Rudy Tanzi, Harvard Professor of Neurology and a co-discoverer of early-onset familial Alzheimer's genes and the link between herpes and Alzheimer's disease when asked what one thing he would change about aging in America  
<https://www.nextavenue.org/rudy-tanzi/> Accessed December 5, 2018.

# Debility and Functional Decline in Long-term Care Facilities: Are We Part of the Problem?

*Heidi Sue Moyer, PT, DPT*

Members of the Academy of Geriatric Physical Therapists see themselves as champions for aging and older adults. We serve others, we advocate for others, we teach others, we challenge others. How often do we take a step back and re-evaluate ourselves? The more we place ourselves in the spotlight, the more criticism and speculation we will face. A solid self-re-evaluation might save us a little bit of trouble in the long run, particularly in our clinical tool use.

A Combined Section Meeting presentation by the Balance and Falls SIG tackled the topic of falls and balance assessment and management in long-term care facility (LTCF) residents. The presentation detailed that little evidence supporting this area exists within this unique subgroup of the older adult population. Consequently, physical therapists are selecting outcome measures that are not psychometrically supported for use in this population. While an outcome measure may be clinically relevant for a specific disease pathology during an evaluation, it might not be statistically supported to detect change in the LTCF population due to limited research.

Consider this scenario: You evaluate an individual living on the long-term side of a LTCF who was recently hospitalized for 2 days following a terrible sinus infection (a new medication caused orthostatic hypotension, resulting in an ER visit). During evaluation, you use an outcome measure that is not valid within the LTCF population but is highly supported in community dwellers. This individual has been a facility resident for 5 years and going home will not be an option anytime soon. Your assessment tells you that the patient is at a moderate fall risk. While they move slowly, the resident demonstrates no loss of balance, no safety awareness deficits, and is compliant with all safety protocols

within the facility. The function appears unchanged. The patient denies falls and facility records support this claim. Decreased balance performance is demonstrated by the test, but function appears unchanged; the patient was ambulatory without a device before and seems to be functioning the same (the patient's subjective report supports your subjective assessment).

As a result of the failed balance test, you recommend that the patient use a wheelchair to decrease the risk of fall within your facility. Now the patient is demonstrating depression-like symptoms, has withdrawn from social activities at the facilities, and her physical performance is declining. Consider these following questions:

1. Was that the best outcome assessment to use?
2. Was there another option in terms of activity limitations?
3. What else could be in place to prevent events such as this?

Use of outcome measures that are inappropriate for use in a setting that were not validated may place residents at risk of creating a self-fulfilling prophecy and propagating a fear of falling in individuals who previously were not at risk. We as clinicians think they are at risk of falling, therefore we limit mobility, furthermore perpetuating deconditioning and weakness, and then: they Fall. What if the clinician had chosen an outcome measure that was validated in the SNF setting? If therapists recommend limited activity for a patient, and in reality said patient was safe to be mobile within the facility because we are lacking the tools to accurately measure this, then we as therapists are a prime component of this problem. Physical therapists should be promoting mobility, not demoting it.

Psychometric validation studies within long-term care populations are limited for several reasons. First, many residents have a diagnosis of dementia or other cognitive decline, classifying them as a "special/at risk population" which requires additional protections in terms of enrolling and participating in a research study. This often requires additional consent both from the patient and his or her power of attorney. This may make attrition during the recruiting process very high. Next, this population has a high prevalence of comorbid conditions. In many research trials, a health control cohort is required for best evidence, but this is not a possibility in this place. Individuals come to live in LTCF due to complications and functional decline from comorbidities. Quality of the research study may be compromised by the volatile health of these residents that results in hospitalizations or death during the usual course of the 6- to 12-month follow-up. Finally, the predominant culture of the LTCF is the reduction of injuries. Yes, fall prevention is key to prevent resulting fall-related injuries and further physical and functional decline. Literature has shown that alarms, protective gear, and other "preventative" measures do not actually prevent falls: physical therapy intervention does!

Barriers are not going to disappear anytime soon. Our management and approach to addressing these barriers must change. While counties with different health care models have been able to perform RCTs in this population, our own system is not conducive for conducting a study such as this. Physical therapists, as a profession, should consider the value that "lesser quality" studies (case studies, case series, cohort studies, etc) could provide. Health status changes are typically rapid; the standard 12-month follow-up time used with community dwellers may

not be appropriate. It is a disservice to our profession and our LTCF patients when functional studies are not considered because usual research design cannot be achieved.

This is a multi-faceted problem that requires intervention from a multitude of angles. Our values are in place, but the execution is not solid yet. We have to ensure that the literature reflects ev-

idence-based practice within the LTCF population. Therapists have to facilitate the propagation of a culture of mobility within the facility, which challenges many of the policies in place in many facilities already. We have to continue to advocate for our patients even if it is not the popular opinion. Complacency by the therapist is dangerous for the health of these individuals and makes us complicit in their functional decline.



Heidi Sue Moyer, PT, DPT, graduated from Angelo State University in May 2016 and is based out of Chicago, IL. She serves in several roles such as East-

ern Regional Coordinator and Illinois Co-chair for the AGPT state advocate program, Clinical Liaison for the AGPT Balance and Falls SIG, a committee member on the GeriEdge Task Force, and also holds various commitments and positions within the Gerontological Society of America. She can be reached for questions or further information on this topic at [moyerheidis@gmail.com](mailto:moyerheidis@gmail.com)

## Pitch your story ideas to the GeriNotes Editor

**Meet at the AGPT booth in the Exhibit Hall at CSM on Friday from 11:30 -12:30. You can even volunteer at the same time.**

**The AGPT CSM Booth Volunteer sign-up is available at <https://geriatricspt.org/csm>**

Volunteering at the Booth is a great way to connect with your peers, help out the Academy, and be registered to win a free year's membership.

# AGPT State Advocates

**AGPT has State Advocates working locally in 48 states, advocating for older adults, promoting geriatric-related issues, courses, meetings, AGPT SIGs, and being a liaison between AGPT and state chapters.**

Find your State Advocate contact info online at [www.geriatricspt.org/](http://www.geriatricspt.org/)  
Select "Members" tab, then "Contact Your State Advocate" or  
<http://geriatricspt.org/members/state-advocates/index.cfm> .

**We are actively looking for new State Advocates in Alaska and South Dakota, plus looking to share duties with current State Advocates in: California, Hawaii, Montana, North Dakota, and Utah. Additional positions may be opening in 2019.**

## Interested, or want more info about the program?

Contact Beth Black at [BBlackPT@gmail.com](mailto:BBlackPT@gmail.com) and Heidi Moyer, [moyerheidis@gmail.com](mailto:moyerheidis@gmail.com), AGPT State Advocate Regional Coordinators.



# A Multi-disciplinary Event to Celebrate Falls Prevention Awareness Day

Bonnie L. Rogulj, PT, DPT; DeAnn Taylor, SPT

On September 8, 2018, the University of St. Augustine for Health Sciences (USAHS) hosted an event titled, *Don't Be Trippin'*. The event was created to celebrate national Falls Prevention Awareness Day (FPAD) 2018. The event was created by Doctor of Physical Therapy Student, DeAnn Taylor, and Instructor, Bonnie L. Rogulj, PT, DPT, GCS. The event hosted over 70 community-dwelling older adults, multi-disciplinary health care providers, community organizations and businesses, and over 80 physical and occupational student volunteers.

On arrival, community-dwelling older adult participants were provided a passport that included a list of the available event resources and activities. Participants were greeted by various health care providers, community organizations, and businesses that represent health and fall prevention within St. John's County, located in northern Florida. Health care providers in attendance included physical therapists, occupational therapists, pharmacists, vision specialists.



DeAnn Taylor, Bonnie Rogulj

The activities available to participants consisted of an educational section offering a multitude of health-related education hand-outs, an evidence-based health screening, a fall risk scavenger hunt, balance-themed games, a maze with obstacles and dual-cognitive task, and raffle prize drawings. Doctor of physical therapy students performed health screenings that consisted of providing each participant a copy of the STEADI Fall Risk Checklist and Questionnaire, vitals assessment (blood pressure, pulse rate, respiratory rate, oxygen saturation), grip strength measured with a hand-held dynamometer, Timed Up and Go (TUG) test, and the 30-Second Chair Stand Test (30CST). The participants were provided education regarding their performance on the health screenings, based on normative values and ranges per evidence. The scavenger hunt designed by a physical therapist and occupational therapist resembled a typical home's living room. The set-up included multiple fall risks that participants were instructed to identify. The fall risk hazards located within the room included a lost pair of glasses (poor vision), scattered medication bottles (medication management and polypharmacy), slippers (improper footwear), a bathrobe placed on the floor (potentially hazardous clothing), throw rug, low-level cushioned couch, vacuum with extended cord, a glass with spilled liquid content, and scattered clutter. The event provided games to challenge participants' balance that were decorated with a fall theme that correlated with the event décor. The games included a scarecrow reach station that resembled the Functional Reach Test and cornhole toss station. The cornhole toss challenged participants to stand in advancing balance positions, marked by tape on the floor, located at progressive distances from the cornhole boards. With each progressive position and dis-

tance, the participant then performed the dual-task of tossing a beanbag into the cornhole board. A maze was created for participants to navigate with a variety of obstacles, including pumpkins, scattered leaves decor, step boxes ranging in height from 2 to 6 inches, compressed foam pads, and cones. The maze was constructed with tables and further challenged participants by using tape to create multi-directional arrows on the ground, which allowed patients to use cognition in order to navigate their appropriate path.

The event *Don't Be Trippin'* was created to celebrate FPAD 2018. The celebration allowed for community members, students, health care providers, organizations, and businesses to unite for a worthy cause. The event promoted health, safety, education, and attempted to positively impact the lives of all who participated.



Bonnie L. Rogulj, PT, DPT, GCS, completed her Doctor of Physical Therapy degree at Old Dominion University and completed a geriatric residency

at Brooks Institute of Higher Learning. She is a board-certified geriatric specialist (GCS), Stepping On Instructor, and Mental Health First Aid Instructor. She is a licensed Physical Therapist and Doctor of Physical Therapy program Instructor at the University of St. Augustine for Health Sciences.

# National Fall Prevention Awareness Day Celebrations

*Mariana Wingood, PT, DPT*

National Fall Prevention Awareness Day (NFPAD) occurs every year on the first day of fall and every year members of the Balance and Falls SIG are actively involved in various fall prevention community events. This year members partnered with fall prevention coalitions, other health care providers, home improvement experts, meal sites, exercise experts, and various senior service agencies. Together they put on various events including presentations, health fairs, screenings, and workshops. Here is a short summary of some of their success stories:

## ALABAMA:

Had a couple of events, including:

- (1) The Alabama State University Physical Therapy Program participated in the Successful Aging Initiative Conference where they screened over 200 older adults.
- (2) Infirmity Health, a non-profit health care system, screened over 100 older adults at 4 senior centers in south Alabama during the week of NFPAD.

## FLORIDA:

The University of St. Augustine for Health Sciences hosted an event titled “Don’t Be Trippin’”. The event was an interdisciplinary health event that involved community organizations/businesses as well as physical and occupational student volunteers. For more information read the article titled “A Multi-Disciplinary Event to Celebrate Falls Prevention Awareness Day.”

## GEORGIA AND SOUTH CAROLINA:

Physical therapists in Georgia and South Carolina collaborated on an amazing dual-state effort. They supported fall prevention via the **STOP** Falls (Screening One-Thousand Older Adults to Prevent Falls) initiative. The impetus behind the initiative was to honor the father of a Georgia physical therapy educator who passed away this year related to the consequences of a fall and support NFPAD. The STOP Falls is the result of

collaboration between 6 DPT Programs in Georgia (faculty and students) and multiple clinical and community partners. As of October 31, 2018, a total of 681 individuals were screened for fall risk using the CDC STEADI initiative.

## IDAHO:

Southeastern Idaho Public Health collaborated with community partners as well as faculty and students from Idaho State University (ISU) to hold their 7th Annual “Humpty Dumpty” Falls Prevention Health Fair. The health fair included various health stations to determine fall risks and how to prevent a fall. The student health disciplines from ISU included dietetics, occupational therapy, physical therapy, and health education. The participatory health stations focused on walking tests, foot checks, getting back up safely from a fall, balance tests, nutrition and hydration evaluation, exercises to prevent falls, and navigating a room with fall risk factors.

## NEW JERSEY:

Held a Fall Prevention Community Event at the Senior Appreciation Day Fair in Freehold, NJ. The event was a multi-university and community collaboration that included a proclamation presented by Governor Murphy, fall-prevention screening, and distribution of 150 promotional bags (containing education regarding fall prevention and exercise).

## NEW MEXICO:

Held two separate events:

- (1) There was a “Fall Fiesta,” an event that included community screenings based on the CDC STEADI and interdisciplinary collaboration as well as education.
- (2) A physical therapist organized a week of fall prevention education at Rust Medical Center in Rio Rancho, with flyers around the hospital promoting the event. Handouts included the CDC’s “Stay Independent,” “What You can Do to Prevent Falls,” “Check for Safety,” and National Center on Aging’s

handout: “6 steps to Prevent a Fall.” Therapists engaged in conversations on fall prevention throughout the week with visitors to the hospital and patients and family members.

## NEW YORK:

Had multiple NFPAD events:

- (1) “Don’t” Fall Festival: held in conjunction with fitness department’s “Active Aging Week” activities. The festival activities included:
  - Pumpkin Painting with a casual vision exam to educate participants of vision check-ups and its importance to fall prevention.
  - Apple Picking instructing on safe use of step stools and reachers to demonstrate safety at home.
  - Mummy Wrap was a fun game that allowed therapists to screen attendees for balance issues.
  - Matching card game included educational material about home safety and fall prevention presented in a fun and entertaining format.
  - Throw Away the Throw Rug which had attendees tossing harvest themed rugs into garbage cans to stress the tripping hazard that throw rugs present.
  - The last table included educational fall prevention materials and free night lights along with Apple Cider and Cider Donuts! Event was held between 1:00 pm and 2:00 pm and had about 45 attendees.
- (2) A free Stepping On Program: with 16 community members participated.
- (3) A Fall Prevention Initiative that included sending the community members the ABC test. The 85 that responded received a fall risk classification (low, moderate, and high fall risk) and recommendations based on the classification. The low fall risk residents were encouraged to participate in a variety of fitness classes located within the community. Moderate fall risk members were requested to participate in the Otago fall prevention program

with an outpatient physical therapist. High fall risk group members were offered a home assessment from occupational therapist and the Otago fall prevention program from a physical therapist.

#### **NORTH CAROLINA:**

Provided state-wide community services learning opportunities for Physical Therapy and Physical Therapy Assistant students as well as fall prevention activities. This included multiple fall prevention presentations, educational opportunities including floor transfers demonstration, screenings, and individualized recommendations based on screening results.

#### **OREGON:**

The Providence Hospital Network hosted 10 free events. The events featured a 1-hour education class taught by Physical Therapists, Occupational Therapists, and Pharmacists. Followed by a Tai Chi or Strong for Life exercise demonstration/class. Pharmacists educated about fall risk increasing medications and performed individualized medication reviews. Vendors, such as Tunstall medical alert devices and representatives from our local Providence Optimal Aging caregiver service, were also present. Providence Hospital Network provided all participants with a mobility kit, which included a paper bag filled with a water bottle, non-skid slipper socks, a pen, and nightlight.

#### **PENNSYLVANIA:**

The faculty members and students from the Gannon University DPT program participated in a local event where they focused on gait speed, sit to stand, and fall recovery. Students provided handouts with explanations of the tests

and how these relate to the daily tasks they perform. Students also demonstrated various methods for getting up after a fall and practiced with those participants who wanted to give it a try.

#### **TENNESSEE:**

Completed a week-long event at a local health center/assisted living facility. This included a daily stand up meeting and a Fall Festival. The meeting was an interdisciplinary effort that had representation from each department, including maintenance, housekeeping, dietary, recreation, nursing, and of course all of the therapies. The Fall Festival consisted of fun activities including walking an obstacle course with fall mats and oxygen tubing, throw the throw rugs, sit stand from a variety of chairs and stools, Bingo (with fall-prevention prizes such as non-ski socks and night lights), and more.

#### **TEXAS:**

Had two different screening events, one at the Age Well Brazos Health Fair and one at the Austin Speech Labs.

#### **WASHINGTON:**

Hosted fall prevention screening events at local Senior Center. They used the STEADI for screenings and recommendations.

#### **WISCONSIN:**

Hosted multiple events including:

- (1) An exercise class with balance screening and other community-based balance screenings using Timed Up and Go, 4 step balance test, Self-selected Walking Speed, and 5xSit-to-Stand. Individuals were provided with recommendations based on the results.

- (2) Week long social media post with tips on how to help prevent fall.
- (3) A video series, first with a balance test and then subsequent short videos on balance exercises that you can work on at home to improve your balance and decrease your falls risk.
- (4) The University of Wisconsin in Madison involved its DPT students with Occupational Therapy, Nursing, Pharmacists, and Safe Communities Organization to put on an event titled "Only Leaves Should Fall." The event included an education program (luncheon) and Falls Risk Screenings. During the event the students manned the screening stations and acted as buddies for the participants. The buddies accompany the participants to the various stations, help record the results, and then use their motivational interviewing skills to foster the participants development of a plan.

#### **VERMONT:**

Hosted their annual Vermont Stay Steady Events, this included providing educational material via a fun game of Bingo, a community screening, and recommendations based on the STEADI. Their education and screening sites included Senior Centers, Meal Sites, and ALF. The events were run by Physical Therapists with assistance from physical therapy students and members of the Vermont Falls Coalition.

Thank you to everyone who participated, you all made a difference in someone's life.

If you have any questions regarding the event, how to be involved, or what to do better for next year, feel free to e-mail me at [mariana.wingood@outlook.com](mailto:mariana.wingood@outlook.com).

## **STRICTLY PROFESSIONAL**

### **Let's meet for a think**

Enthusiastic journal editor<sup>1</sup> seeks passionate geriatric clinicians for knowledge translation, evidence-informed practice, and life-long learning. Must be curious, enjoy professional growth, and be tolerant of Tables, Charts and Graphs. Participation in Journal Club<sup>2</sup> a plus! Apathetic individuals and wisecracks need not apply. Rekindle the fire! Check out your next issue of the *Journal of Geriatric Physical Therapy (JGPT)*.

1. Leslie Allison, PT, PhD; Editor-in-Chief, *JGPT*. You can contact me with suggestions about how the *JGPT* can support advanced clinical practice at [Allisonlk.prof@gmail.com](mailto:Allisonlk.prof@gmail.com)
2. Contact Marianna Wingood, PT, DPT, to learn about how you can join other engaged clinicians to participate in Journal Club: [Marianna.Wingood@outlook.com](mailto:Marianna.Wingood@outlook.com)

# Knowledge Translation- What Is It?

Mariana Wingood, PT, DPT; Mary Milidonis, PT, PhD

Knowledge translation (KT) is an under-used tool that has the power to significantly improve our practice. Knowledge translation helps with synthesis, dissemination, exchange, and application of evidence into patient care. The primary goals are to improve patient health as well as the effectiveness of health care.<sup>1</sup> It is the solution to many clinical difficulties that stem from one major problem--lack of evidence implementation. Currently it can take more than 17 years to get evidence into practice, demonstrating that traditional educational methods of infusing research into practice have not worked.<sup>2</sup>

Knowledge translations can be divided into two parts: knowledge development and knowledge implementation (includes review and sustainability).<sup>1,3</sup> Implementation is the most commonly used component and includes both education and decision aids to ease the application of the research into an individual's clinical practice. A recent Cochrane review identified the benefits of decision aids; these include improving patient and clinician knowledge of options, increased participation in decision making, increased awareness of risk and/or benefit, and increased likelihood of patient-clinician discussion about the decision.<sup>4</sup>

Research has identified several barriers to implementation including time, access to literature, and critical appraisal skills. Additional factors that affect the use of evidence-based practice (EBP) include attitude toward research, education about EBP, exposure to EBP, confidence in EBP, years in clinical practice (newer grads use more EBP), and attainment of a post-graduate degree.<sup>1</sup>

To overcome these barriers the World Health Organization (WHO) has identified 9 knowledge translation models that relate to healthy aging. Three of those models are found in physical therapy and include Promoting Action on Research Implementation in Health Services (PARHIS), Ottawa Model of Research Use (OMRU), and Knowledge

to Action framework (KTA).<sup>5,6</sup> The KTA and the OMRU detail all stages of KT intervention and address the greatest number of barriers to EBP.<sup>6</sup>

Using the KTA, framework clinicians, managers, and educators can assist with overcoming barriers to EBP.<sup>7</sup> The initiation of the framework occurs when an individual identifies and recognizes the knowledge gap and/or issue.<sup>7</sup> The next step is either one or both cycles of KTA, known as Knowledge Creation and Action Cycle.<sup>7</sup> Knowledge Creation includes knowledge inquiry, synthesis, and composes clinical tools.<sup>7</sup> While the Action Cycle includes problem identification; identifying, reviewing, and selecting knowledge; adapting knowledge to local context; assessing barriers to knowledge use; selection, tailoring, implementing interventions; monitoring knowledge use; outcome evaluation; and sustained knowledge use.<sup>7</sup> During the implementation process, barriers are identified and overcome, this allows for the knowledge to be applied to local practice.<sup>7</sup> The finalized implementation model may take several cycles of both Knowledge Creation and Action Cycle, highlighting that this is not a linear pathway.

The application of the KTA process within physical therapy has been published in two case reports.<sup>8,9</sup> One case report details a series of 3 educational workshops for 8 physical therapists working within a skilled nursing facility.<sup>8</sup> The primary objective of the KTA application was to improve use of EBP while respecting time constraints and productivity pressure.<sup>8</sup> In the second case report, the authors used a multicomponent interactive continuing education process that involved both research and practice to successfully implement gait and balance assessments.<sup>9</sup>

These two case studies are prime examples of successful application of KTA. They created a positive change in physical therapist's beliefs, attitudes, skills, and clinical practice guideline awareness.<sup>8-10</sup> Clinicians and clinics are

encouraged to adopt example frameworks such as KTA to implement the highest level of evidence. Using these frameworks will help improve knowledge implementation and EBP, resulting in tremendous advancement in both clinical knowledge and skills. Such improvements will lead to enhanced patient outcome, a primary motivator for many clinicians and clinics.

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For more on related topics to this month's *GeriNotes*, check out the first issue of the *Journal of Geriatric Physical Therapy (JGPT)* for 2 more articles related to balance and falls and 2 related to MCI and dementia.

*Happy Reading!*



Mariana Wingood, PT, DPT, GCS, CEEAA, is a physical therapist at University of Vermont Inpatient Rehab Department. She is also the Balance and

Falls SIG Chair who is very enthusiastic about fall prevention as well as knowledge translation/implementation.

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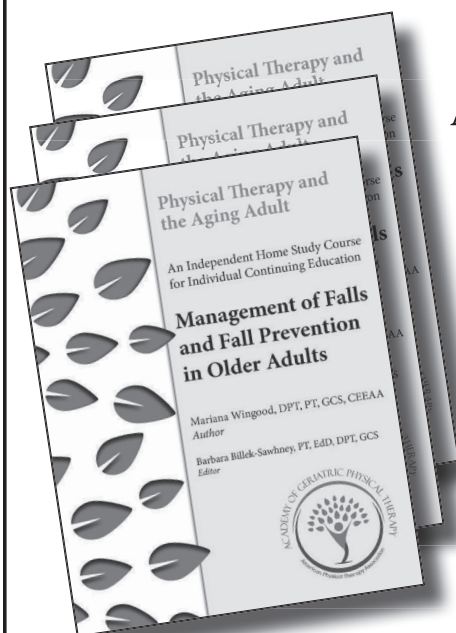
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# Persistent Postural Perceptual Dizziness in the Elderly: A Theoretical Hypothesis for a Missed Diagnosis in an Underserved Population

Jeffrey R. Guild, PT, DPT

## INTRODUCTION

Persistent postural perceptual dizziness (PPPD) is a chronic functional neuro-otologic disorder<sup>1</sup> usually triggered by a vestibular<sup>2-4</sup> or medical event or hospitalization resulting in a maladaptive non-spinning dizziness and perception of unsteadiness. Persistent postural perceptual dizziness exists independent of a lesion or other disease.<sup>1</sup> Persistent postural perceptual dizziness is a combination of diagnoses such as chronic subjective dizziness, phobic postural vertigo, space-motion discomfort, visual vertigo, and others.<sup>1,5</sup>

Clinicians who specialize in vestibular or balance disorders may think of individuals with PPPD as the 40 year old working full-time and raising a family whose world has been turned upside-down after an initial vestibular event. They find themselves in a chronic state of dizziness and anxiety<sup>2-4</sup> that lasts for months and years<sup>4</sup> resulting in fear-avoidance of daily life activities.<sup>4,6,7</sup> Seemingly unrelated symptoms such as shortness of breath, palpitations, and abdominal symptoms<sup>7</sup> add complexity to the disorder. Elaborate gait abnormalities<sup>1,7</sup> that reduce with increased gait velocity and distraction<sup>6,7</sup> tend to leave health care providers and families thinking the patient is malingering or in need of help from a psychologist. Since PPPD is a functional disorder that is independent of any lesion or disease,<sup>1</sup> it does not show up on traditional medical tests,<sup>8</sup> resulting in patients seeing several specialists.<sup>1,9</sup> However, very recent imaging studies have shown the physical evidence that PPPD is a functional neurological disorder with observable changes to the cerebral cortex.<sup>3,10</sup>

Persistent postural perceptual dizziness is most prevalent among people in their 30s, 40s, and 50s.<sup>2,4,9</sup> Although research does identify people into their

80s with the disorder, this is very few compared to younger individuals.<sup>4</sup> This age factor is also true in clinical practice in vestibular and balance specialty clinics where these younger individuals with PPPD represent a large percentage of the clientele, possibly the second most common vestibular disorder in these specialized practices.<sup>9</sup>

The purpose of this article is to ask a basic question about PPPD and to explore possible answers. Why would this common vestibular disorder occur predominantly when people are in their 30s, 40s, and 50s, and prevalence reduce dramatically over the age of 70? This article proposes a theoretical hypothesis to this question to promote discussion and debate.

## PROBLEM

Most of the research about PPPD is performed in otolaryngology/vestibular/neurological specialty practices and research departments.<sup>4,7-9</sup> This makes sense given the specialty of the disorder. However, since specialty clinics tend to receive referrals from other providers, there is a risk that certain populations could be missed and not referred out by primary and secondary providers. Those providers less familiar with the disorder of PPPD may miss this diagnosis in populations with common symptoms that are similar to PPPD, such as the elderly.

A third of 70 year olds and over half of people by age 85 experience the symptoms of dizziness or vertigo.<sup>11,12</sup> Prevalence of fear of falling in the elderly ranges widely between 21% and 85%.<sup>13</sup> Studies consistently support that 50% of older people with a fear of falling have not even experienced a fall.<sup>13</sup> Activity avoidance behavior is significantly higher amongst elders with a fear of falling<sup>14</sup> and gait abnormalities are significantly higher for those with a fear of

falling with or without a history of falls compared to those without a fear of falling.<sup>15</sup> Common presentations in older people of dizziness,<sup>11,12</sup> fear of falling,<sup>13</sup> activity avoidance behavior with fear of falling,<sup>14</sup> and gait abnormalities with fear of falling<sup>15</sup> are similar to presentations of PPPD.

Studies seeking diagnostic causes of dizziness in the elderly do not mention PPPD as a possible cause,<sup>16-18</sup> even for studies with inclusion criteria down to age 50, well within the age-range commonly associated with PPPD.<sup>16,17</sup> Moreover, in a recent multidisciplinary study consisting of a geriatrician, vestibular neuroscientist, psychologist, and exercise physiologist who sought to identify causes of dizziness in a cohort of 424 individuals over the age of 50, 23% had an unrecognized reason for their dizziness; in 18%, anxiety or depression were considered the cause.<sup>16</sup> Given the high rates of PPPD in specialty clinics,<sup>9</sup> is it possible PPPD would be present in 41% of those over the age of 50 with unidentified causes of dizziness or dizziness labeled as caused by anxiety or depression?

## HYPOTHESIS

Why would PPPD have minimal prevalence over the age of 70? Is there a neurological, physiological, or psychological difference between younger individuals and those over the age of 70 that would prevent elderly people from getting PPPD? This is certainly a possibility worth studying. However, since acute vestibular events are known to trigger PPPD,<sup>1-5</sup> is there a possibility that PPPD is even more prevalent over the age of 70 since vestibular events are more common for this age group?<sup>11,12</sup>

This article hypothesizes the possibility that PPPD is being missed in clinics and research facilities that do not specialize in vestibular or balance

disorders since PPPD is usually identified in specialty tertiary care centers. In practice, neurologists, otolaryngologists, geriatricians, and internal medicine specialists usually refer individuals to vestibular or balance clinics when there is a presentation of dizziness, balance problems, anxiety, and abnormal behavior of a previously young and healthy individual. These same symptoms in the elderly may be easily interpreted as fear of falling, gait abnormalities due to fear of falling, or simply another older individual with dizziness, balance problems, and anxiety about falling.

### **Difference in Persistent Postural Perceptual Dizziness between Younger vs. Older Populations**

Persistent postural perceptual dizziness may present slightly differently for those over the age of 70 compared to younger populations:

- (1) Persistent postural perceptual dizziness is not associated with fall risk despite the perception of imbalance.<sup>7</sup> Those with PPPD over the age of 70 may actually be at high risk for falls and injury since fear of falling in the elderly is associated with increased fall risk<sup>13</sup> and decreased physical activity and physical health.<sup>13,14</sup>
- (2) The perception of a lack of balance due to PPPD in the elderly may be mixed with actual balance impairments due to vestibular dysfunction, proprioceptive loss, physical decline, strength deficits, and other medical complexities more common in older compared to younger populations. This may make the diagnosis and treatment of PPPD in an older person more complex and difficult. This is especially true since comorbidities can co-occur with PPPD and the presence of a comorbid structural, metabolic, or psychological condition does not forestall the diagnosis of PPPD.<sup>1</sup>
- (3) Cognitive behavioral therapy at the onset of treatment for PPPD (and usually so efficacious with PPPD<sup>9,19</sup>) may have a more mixed affect in a person surrounded by peers with similar challenges and who accepts his or her functional status due to age changes. Cognitive and memory deficits may also increase challenges

to treatment if there is a lack of retention or understanding of the information provided about the diagnosis. In other words, age is often blamed by the elderly themselves.

- (4) Treatment of PPPD for those over the age of 70 may need a little more of a hands-on approach. Some vestibular clinicians may see younger patients with PPPD once every 2 to 3 weeks. Geriatric populations with this diagnosis may need a higher frequency. Reasons for increased frequency may be related to higher fall risk due to other physical limitations and more consistent repeated positive reinforcement that symptoms are an actual diagnosis not necessarily related to age. Cognitive and memory deficits may limit the efficacy of cognitive behavioral approaches that is so successful at the onset of treatment in younger populations. Cognitive behavioral therapy may need to be repeated throughout the entire spell of illness.

### **SOLUTION**

Given a theoretical possibility that PPPD may be more prevalent than currently recognized in those over the age of 70, this could be an interesting area to investigate with slight variations in research and more awareness in clinical practice. Specialists investigating prevalence of PPPD might collaborate with geriatric researchers to address incidence and prevalence of PPPD over the age of 65 or 70 specifically. Could the 41% of unknown causes of dizziness or dizziness due to anxiety or depression for those over the age of 50 be reduced if PPPD is part of a list of causes of dizziness? This type of research could bring awareness to those who work in geriatric populations and allow more people to be identified, referred, and treated.

Clinicians can contribute to the solution as well. Recognition of signs and symptoms of PPPD and reflection on how that likely presents in an older person can aid clinicians to identify, treat, and help older individuals suffering from PPPD. Subtle clues to differentiate an older individual with PPPD from their dizzy and anxious peers may include autonomic symptoms with vestibular stimulation, improved balance, and reduced gait abnormalities with

increased gait velocity and dual-tasking, and elaborate movements beyond typical furniture walking often seen in geriatric populations. Physical therapists who work in geriatric settings have a trained eye for this population; these clinicians could be prime to identify these subtleties. Moreover, the addition of case studies from clinicians would help contribute to the growing body of literature about PPPD.

### **CONCLUSION**

Theoretically PPPD could be a diagnosis overlooked in the geriatric population because of similarities to complaints of dizziness, fear of falling, and gait abnormalities. Fear of falling by itself is associated with fall risk,<sup>13</sup> activity avoidance, and physical and health decline.<sup>13,14</sup> Persistent postural perceptual dizziness is a diagnosis worth investigating for those over the age of 70. Presentation of PPPD in an older person may slightly differ due to additional complexities and comorbidities of the elderly; basic diagnostic criteria of PPPD would still apply to those over age 50. Treatment for PPPD is specific to include cognitive behavioral-type therapy, vestibular rehabilitation, possibly selective serotonin reuptake inhibitors, and serotonin norepinephrine reuptake inhibitors.<sup>1</sup> Correctly identifying this diagnosis in older people could dramatically help many people live a better quality of life, prevent physical/health decline, and prevent falls.

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## Impact of LSVT- BIG on Functional Outcomes in a Patient with Parkinson's Disease: A Case Study

*Blake A. Hampton, PT, DPT; Niamh Tunney, PT, DPT, MS; Daryll Dubal, PT, BSPT*

### INTRODUCTION

Parkinson's disease (PD) is a debilitating condition affecting between 4.1 and 4.6 million individuals over the age of 50, making it the second most common neurodegenerative disorder after Alzheimer's disease.<sup>1</sup> Exercise has a beneficial effect on physical functioning,

health-related quality of life, strength, balance, and gait speed for patients with PD, and high-intensity exercise has been shown to improve corticomotor excitability in PD.<sup>1,2</sup>

LSVT-BIG emphasizes training movement amplitude as a single treatment parameter through high effort,

intensive treatment with a focus on generalized recalibration in sensory perception of normal amplitude of movements.<sup>3,4</sup> Research is limited on the impact the LSVT-BIG program has on PD with regard to mobility and function. Evidence supports an increase in gait velocity and cadence, a decrease brady-



kinesia in upper and lower limb movements,<sup>5</sup> improved balance function,<sup>6</sup> and enhanced motor learning, but the ability to transfer skills to automatic routines is impaired.<sup>7</sup> However, not all evidence supports the superiority of LSVT-BIG over other approaches in managing PD.<sup>8</sup> Therefore, the impact of the LSVT-BIG program must be explored in order to ensure efficacy of the intervention in meeting its stated goals, and effective use of health care resources. The purpose of this case study is to determine the impact of LSVT-BIG on functional outcomes in a patient with PD.

## CASE DESCRIPTION

This case study presents a 69-year-old male diagnosed with Idiopathic Parkinsonism in 2010, presenting in Hoehn and Yahr Stage III, indicating bilateral disease; mild to moderate disability with impaired postural reflexes; physically independent.<sup>9</sup> He was referred to the outpatient physical therapy department of a skilled nursing facility after having 3 falls in the 2 weeks prior to the start of care for the LSVT-BIG program.

### Patient History and Interview

#### Medical History

Cellulitis, debility, respiratory failure, diabetes mellitus (Type II), Parkinson's disease, dementia, previous cerebrovascular accident, hypertension, congestive heart failure, nephrolithiasis, obesity, and sleep apnea. These conditions had been managed with prescribed medication and previous physical therapy for several years including a short-term inpatient rehabilitation admission to the same skilled nursing facility.

#### Social History

Retired and lives with his wife in a single story home with 7 steps to enter, handrails on both sides.

#### Current Level of Function

Independent with basic activities of daily living, ambulates in his home independently using a rolling walker, and outdoors with supervision using a rolling walker for up to 400 feet. Patient was able to ambulate without an assistive device on occasions for short distances indoors independently and was able to ascend/descend the stairs in and out of his home with the use of handrails and support from his wife. The patient's stated goal for therapy was to return to

his prior level of function with decreased risk of falling. In addition, the patient states that he would like to reduce his neck and low back pain.

## PHYSICAL EXAMINATION

The patient was screened for readiness to start the LSVT-BIG program by an LSVT certified physical therapist. Mr. J was alert and oriented to person, place, and time and was able to follow 1 to 2 step commands. Mild hypophonia was noted throughout the physical examination. Vision and hearing presented within normal limits with the use of prescription glasses. Light touch and pain sensations were intact bilaterally in both the upper and lower extremities. Muscle strength was 4-/5 for all major muscle groups of bilateral lower extremities.<sup>10</sup> The patient also presented with moderate bradykinesia, hypokinesia, and minimal cogwheel rigidity. The patient reported 2/10 neck pain at rest and 8/10 low back pain during ambulation greater than 400 feet (0/10 at rest) on the verbal pain rating scale (VPRS).

### Activity Limitations/Participation Restrictions

The patient required moderate assistance to safely transition from supine to sitting with verbal cues. He required supervision to safely perform a sit to stand transfer from a chair with arms, and required stand by assistance during gait with a rolling walker for safe ambulation for more than 150 feet on level surfaces.

### Outcome Measures

The patient's static and dynamic standing balance, gait, and fall risk were

assessed using a number of measures recommended as reasonable or reasonable to recommend by the PDEDGE task force for use with individuals with PD presenting in Hoehn and Yahr Stage III.<sup>11</sup> From the recommended list the following were used: 5 repetition Sit to Stand, 30 second Sit to Stand, 6-Minute Walk Test, Functional Reach Test, Timed Up and Go (TUG) test, Tinetti Performance Oriented Mobility Assessment (POMA), and the 10-Meter Walk test.<sup>11</sup> As proposed by Dibble et al, multiple measures of balance function were used to predict fall risk for Mr. J.<sup>12</sup> Refer to Table 1 for initial and discharge scores on these measures.

## ASSESSMENT

The clinical impression was that the patient would benefit from the LSVT-BIG rehabilitation program. The patient's impairments included generalized muscle weakness of bilateral lower extremities, impaired dynamic standing balance, impaired reactive postural control responses/balance recovery, impaired coordination, bradykinesia, hypokinesia, hypophonia, and micrographia. These all contributed to increased fall risk and activity limitations in bed mobility, transfers, and ambulation. Goals for this patient during the 4-week program were established: (1) increase gait velocity to 2ft per second or greater without an assistive device on even surfaces; (2) increase his Tinetti score to 27 out of 28 to lower fall risk; (3) decrease fall frequency to 0 falls per week for 12 weeks; (4) complete supine to sit transfer at a level of modified independence; (5) decrease TUG score to 13 seconds or less without use of an assistive device; and

**Table 1.** Outcome Measure Data

Outcome Measure	Initial Evaluation Score	Discharge Score
Timed Up and Go	23 seconds with AD	10 seconds without AD
Tinetti	23/28 with AD	28/28 without AD
Functional Reach	10 inches	20 inches
30 second sit to stand	12 repetitions	15 repetitions
5 time sit to stand	18 seconds	9 seconds
6-minute walk test	480 ft with AD	600 ft without AD
10-meter walk test	22 seconds (.45m/sec) with AD	6 seconds (1.67m/sec) without AD

Abbreviation: AD, assistive device

(6) improve endurance to be able ambulate 600 feet in 6 minutes to increase the score of his 6-Minute Walk Test with decreased complaints of low back pain.

## INTERVENTION

The patient continued his established regimen of Sinemet® without adjustment while in the LSVT-BIG program. The patient did not receive any other form of physical rehabilitation while participating in the LSVT-BIG program. The participant engaged in the 4-week LSVT-BIG training protocol administered by an LSVT-BIG certified physical therapist as defined by LSVT-BIG Global Inc.<sup>4</sup> The high intensity of LSVT-BIG is predefined by a training mode of 16 individual 1-hour sessions 4 consecutive days a week for 4 weeks and an independent home training program. Each treatment session consisted of:

1. Seven Maximal Daily Exercises: 2 maximum sustained movements and 5 repetitive directional movements (3 multidirectional, balancing movements involving inter-limb coordination and 2 intra-limb coordination movements). During the maximal daily exercises, movements were shaped by modeling, and use of tactile, visual, verbal, auditory, and proprioceptive cues to create big movements with good quality.
2. Five Functional Component Movements (1 of which is sit to stand; the other 4 are chosen by the patient and can be part task relating to a hierarchy task): The purpose of these movements is to over-learn familiar commonly used and salient everyday movements. This encourages compliance with the home exercise program and carryover to daily tasks facilitating sensory recalibration. The other 4 Functional Component Movements selected by the patient were: stand and reach, walk and turn, rolling in bed, and putting on the seatbelt in the car.
3. Walking BIG: The patient practiced Walking BIG during every session with an emphasis on increasing stride length, improving posture, and increasing arm swing.
4. 1-3 Hierarchy Tasks (more complex salient activities-multi-step functional activities): The Hierarchy Tasks were also selected by the patient and

were: getting out of a recliner, making a drink and carrying it without spilling, and getting out of the car.

During each 1-hour, one-on-one session, Mr. J was constantly encouraged to focus on how it feels and what it looks like to move big and work with an effort of at least 80% of the maximal workload.

The daily homework consisted of Daily Maximal Exercises, the 5 Functional Component Movements, walking BIG, and a carryover assignment (assigned daily and relates to the person's plans for the day). The patient selected part of a Hierarchy Tasks to use as his carryover task.<sup>4</sup> Mrs. J was trained to provide cues throughout the home program and she was able to cue with 100% accuracy by the end of the 15th session on all exercises required in the home training program. Training was adapted weekly by increasing volume or intensity of the exercises. The Functional Component Movements and Hierarchy Tasks did not change throughout his program in response to the patients expressed desire to achieve mastery of these specific movements and tasks. Throughout the program, movement was calibrated by highlighting the relationship between increased movement effort and normal motor output ultimately allowing big movements to feel more normal and matching perception to reality. Instructions and explanations were kept to a minimum to reduce the cognitive demand of the session. Sensory recalibration was achieved by focusing the patient's attention on how it felt to move big during everyday activities and probing for the feedback that people in his life provided regarding his bigger movements. It is important to note that the patient only participated in 15 of the 16 1-hour, one-on-one sessions due to the supervising physical therapist being unable to administer the last training session.

## RESULTS

### Outcome Measures

Data were obtained at initial evaluation before training started and after 4 weeks of LSVT-BIG training at the 15th session. Results of all outcome measures are listed in Table 1. After 4 weeks, performance on all of the outcome measures for gait and balance improved.

### Gait/Stairs

Observational gait analysis at 4 weeks showed improvements in stride length, velocity, sequencing, and weight shifting during all phases of the gait cycle. Furthermore, the patient was able to ambulate 300 feet safely while using a rolling walker, and was able to safely ascend/descend 7 stairs requiring supervision and bilateral handrails.

### Bed Mobility

After 4 weeks of the LSVT-BIG program, the patient was able to perform supine to sit with modified independence (secondary to increased time required to complete transfer) and sit to stand transfers from the edge of the bed independently. At the end of the 4-week program, the patient reported that he no longer considered it difficult to get out of bed.

### Strength

After completion of the 4-week protocol, the patient's gross lower extremity strength was also increased at discharge which was hypothesized to be related to improve motor unit recruitment and coordination, as resistance training to achieve muscle hypertrophy is not incorporated in the LSVT-BIG protocol.

## DISCUSSION

The patient in this case report demonstrated improvements on several outcome measures, and in activities not captured on outcome measures, after completing 4 weeks of LSVT-BIG training. Consistent with the Berlin LSVT-BIG Study, we saw increases in the TUG and 10-meter walk tests.<sup>13</sup> Farley et al posited that patients with PD in Hoehn and Yahr Stage III, and possibly Stage II, were limited in their capacity to spontaneously generate increased velocity.<sup>5</sup> However, in this case study the patient substantial improvements in gait velocity.

Observed increases in Tinetti POMA score, Functional Reach Test, and 10-meter walk test all exceeded the minimal detectable change (MDC), and the patient achieved a discharge score of 10 seconds for TUG (a 13 second decrease from baseline).

It is important to note that Mr. J met his stated personal goals, but these changes were not captured on the

outcome measures used. He became independent in rising from his recliner, pouring a glass of water, carrying the water and returning to sitting in his recliner without spilling, getting in and out of his car independently, and walking at a speed similar to his wife to be able to keep up with her when out in the community. These achievements reflect a change in Mr. J's quality of life that could have been captured by a quality of life outcome measure such as the PDQ-39 as recommended by the PDEdge task force.<sup>11</sup> The patient was able to achieve all of his goals and was independent without use of his assistive device at discharge and at 12-week follow-up.

Mr. J only completed 15/16 of the supervised sessions. However, in a study comparing the established 4-week protocol to a shorter 2-week 10 session protocol similar motor improvements were noted.<sup>7</sup>

Future studies into the efficacy of LSVT-BIG program for individuals with PD should examine the long-term benefits on gait speed, gait amplitude, stride length, arm swing, functional mobility transitions, and quality of life.

## CONCLUSION

In conclusion, this case study demonstrates the significant impact LSVT-BIG training had on this patient in the areas of gait, balance, bed mobility, and functional mobility as well as decreased fall risk, and supports the efficacy of LSVT-BIG on functional outcomes in patients with PD.

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# External Gait Cues: Improving Gait in Persons with Parkinson's Disease

Alex Piersanti, PT, DPT

## INTRODUCTION

### Background and Purpose

Parkinson's disease (PD) affects about 3.3% of adults over the age of 65 making it the second most common neurodegenerative disorder in this age group.<sup>1,2</sup> Parkinson's disease results from a degeneration in dopamine producing cells in the substantia nigra within the basal ganglia in the brain.<sup>3</sup> Due to the lack of curative treatment options, there is a rising economic burden on both patients and payers.<sup>4</sup> In the United States, approximately \$14.4 billion was spent on medical costs associated with PD in 2010 which equates to about \$22,800 per patient per year.<sup>4</sup> This cost is projected to grow substantially in the coming years.<sup>4</sup>

Parkinson's disease presents with many motor and non-motor symptoms that can severely impact functional mobility to varying degrees. The 4 cardinal features of PD include resting tremors, rigidity, akinesia, and postural instability.<sup>1</sup> More recently, gait disturbance has been suggested as a fifth cardinal feature.<sup>5</sup> Gait disturbances in those with PD include stooped posture, freezing of gait (FOG), festination, shuffling steps, shortened stride length, increased cadence, and falling<sup>1,5</sup> that are thought to stem from the loss of postural reflexes associated with PD.<sup>1</sup>

Most motor and non-motor symptoms that result from PD can be treated effectively through pharmacological interventions, however, gait disturbances have a poor response to pharmacological treatment and are usually altogether ineffective.<sup>2</sup> External cueing is often used as a non-pharmacological treatment for gait disturbances in PD. Visual, auditory, and vibrotactile cueing have been used clinically to improve gait kinematics in those with PD.<sup>2</sup> Cueing has especially shown significant improvements in balance that has led to reduced fall risk, reduced FOG, decreased cadence, and improvements in stride length.<sup>2</sup> A study by Suteerawattananon et al pro-

posed that visual and auditory cueing strategies are successful in improving gait because the recruited neural pathways may bypass the basal ganglia.<sup>6</sup>

Currently, it is unknown which external cueing strategy is most effective in improving gait in those with PD. The purpose of this literature review is to evaluate the effectiveness of different cueing strategies on spatiotemporal gait characteristics in those with PD and to suggest an evidence-based guide for clinicians to improve practice strategies.

## METHODS

### Search Strategy and Eligibility Criteria

A literature review completed between September 2017 and February 2018 was conducted using the search engines PubMed, CINAHL, MEDLINE, and Sports Discuss. Studies were included in the literature review if they: (1) evaluated the effects of visual, auditory, vibrotactile, or a combination of cues on gait in individuals with PD; (2) included evaluation of spatiotemporal gait characteristics; (3) were written between 2004 and 2018; (4) were written in the English language; and (5) were available in full text. Studies were excluded if they: (1) did not involve external cues to affect gait, (2) were not available in the English language, or (3) were not available in full text.

## RESULTS

### Literature Search Results

Following an extensive search, 473 articles were identified. Duplicates were deleted, inclusion/exclusion criteria were applied, and the remaining articles were screened for relevance by title and abstract. Twelve studies were included within this review: 2 systematic reviews, 1 meta-analysis, 8 randomized control trials (RCTs), and 1 case study.

### Participant Characteristics

The total number of participants in all studies was 1,754 including 1,528 participants from systematic reviews and

meta-analyses and 206 participants from the RCTs and case study. Males were 37.5% of the participants and 62.5% were female. Ages ranged from 30 to 84 years old.

### Intervention Characteristics

Eleven of the 12 articles investigated the effects of auditory cues on gait characteristics.<sup>2,6-11,13-16</sup> Nine articles investigated the effects of visual cues on gait characteristics<sup>2,6,7,10-14,16</sup> and 4 articles investigated the effects of tactile cues on gait characteristics.<sup>2,13,14,16</sup> Two studies investigated the effects of auditory and visual combination cueing on gait characteristics.<sup>10,16</sup>

The frequency of interventions in the included studies ranged from 20- to 40-minute sessions, 3 to 5 times per week. The duration of the interventions ranged from 1 session to 8 weeks.

### Gait Characteristic Outcomes Stride length

Five studies evaluated the effects of external cueing on stride length.<sup>6-10</sup> Three studies used visual cues,<sup>6,7,10</sup> 5 studies used auditory cues,<sup>6-10</sup> and 1 study used combination cues.<sup>10</sup> Articles that evaluated the effects of external cueing on stride length found that both visual and auditory cueing improved stride length by 9% to 25%.<sup>6,8,9</sup>

### Step length

Four studies evaluated the effects of external cueing on step length.<sup>2,7,11,12</sup> Four studies used visual cues<sup>2,7,11,12</sup> and 3 studies used auditory cues.<sup>2,7,11</sup> Results show that visual cueing is more effective at improving step length.

### Cadence

Five studies evaluated the effects of external cueing on cadence.<sup>2,6-8,10</sup> Four studies used visual cues,<sup>2,6,7,10</sup> 5 studies used auditory cues,<sup>2,6-8,10</sup> and 1 study used combination cueing.<sup>10</sup> Overall, cadence improved with the use of auditory cues by 12% to 21%.<sup>6,8</sup>



### Gait initiation/Freezing of gait

Four studies assessed the effectiveness of external cueing on gait initiation and FOG.<sup>11,13-15</sup> Three studies used visual cues,<sup>11,13,14</sup> 4 studies used auditory cues,<sup>11,13-15</sup> and 2 studies used vibrotactile cues.<sup>13,14</sup> Results show that auditory cueing decreased start hesitation from 31.7% to 3.3%.<sup>15</sup> One article found that the use of fixed delay or countdown cueing is most beneficial when using visual cueing.<sup>13</sup>

### Gait speed

Eight studies evaluated the effectiveness of external cues on gait speed.<sup>2,6-10,12,16</sup> Six studies used visual cues,<sup>2,6,7,10,12,16</sup> 7 studies used auditory cues,<sup>2,6-10,16</sup> and 2 studies used combination cues.<sup>10,16</sup> Overall, the articles found that there was a 16% to 19% improvement in gait speed with the use of auditory cueing.<sup>6,8,9</sup> In one study, 85.7% of participants reported they walked faster with the use of the auditory pacer.<sup>9</sup>

## DISCUSSION

Gait abnormalities are one of the most detrimental functional limitations experienced by those with PD.<sup>6</sup> Gait disturbances may lead to a decline in functional mobility, loss of independence, and decreased quality of life (QoL). The purpose of this literature review was to evaluate the effectiveness of different cueing strategies on key gait disturbances in those with PD. Although differences in testing facilities and study protocols made comparison of results difficult, some conclusions can be drawn.

Results indicate that visual cues are most effective in improving step length.<sup>2,7,11,12</sup> Auditory cues are most effective in improving cadence and gait speed.<sup>2,6-10,12,15,16</sup> Both visual and auditory cueing strategies have similar impacts on improving stride length and gait initiation.<sup>6-11,13-15</sup> Vibrotactile cueing strategies were not found to improve gait characteristics within this review. Figure 1 provides a clinical decision-making flow chart based on the results of this review.

These results may assist clinicians in making evidence-based decisions when selecting the appropriate cueing strategy. For example, if a clinician evaluates that a patient's most significant gait disturbance is shortened step length, the clinician may choose a visual cueing strategy

during treatment sessions. In certain situations, it may be more feasible to use one cueing strategy over another due to resources, space, and time. Each clinician must use their clinical judgement to determine the appropriate cueing strategy based on the patient's limitation, response to cueing, and environment.

### Experimental Design and Study Limitations

External cueing strategies are cheap, easy to implement, and effective at improving gait in those with PD. Clinicians, such as physical therapists, occupational therapists, and nurses can use this information to help guide treatment sessions and patient/caregiver education. Caregiver training on specific strategies may increase carryover into the community or home environment and promote longer carry-over. However, the progressive nature of PD cannot be ignored when discussing long-term retention of gait improvements.

This study has several limitations. This literature review examined 12 articles from 2004 to 2018 that included a case study, RCTs, systematic reviews, and meta-analysis. Application of inclusion and exclusion criteria limited the number of articles reviewed. Several studies had small sample sizes that may have affected generalization of the results. Interpretation of results may be limited due to the diversity of trial designs, treatment protocols, and study parameters. It is difficult to generalize functional carry-over outside of the testing environment due to variability in practice setting, clinicians, and available resources for patients and clinicians.

### CONCLUSION AND SUGGESTIONS FOR FUTURE RESEARCH

It can be concluded that external cueing strategies are safe, easy, and effective

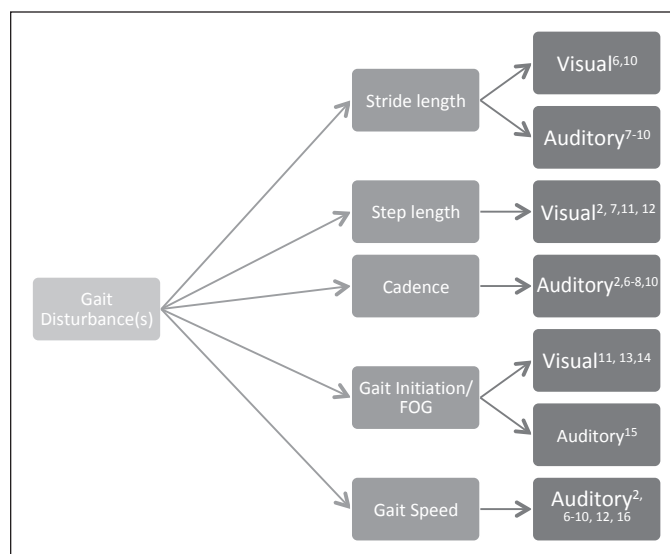


Figure 1.

at improving gait in those with PD. It should be emphasized that there are a wide variety of useful cueing strategies including some of the strategies mentioned in this article. Clinicians should select the most appropriate cueing strategy for their patient based on the patient's presentation, goals, response to treatment interventions, caregiver support, and living environment. Cueing strategies are a low cost and low risk intervention; clinicians can confidently apply these techniques.

Suggestions for further research include determining the relationship between improved gait and increased QoL, optimal parameters of external cueing strategies, and long-term carry-over of external cueing strategies on improving gait.

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# GET LITerature

## Core Values: Measurement in Older Adults

Carole Lewis, PT, DPT; Valerie Carter, PT, DPT

No therapist would deny the importance of core strength in our older patients. A strong core can help prevent back pain,<sup>1</sup> balance issues,<sup>2</sup> and problems with functional mobility.<sup>3</sup> However, few older adults seek out specific exercises to strengthen their core or realize the

importance of addressing this area. As strength experts, we are well positioned to screen for core strength deficits, just as we routinely test upper and lower extremity strength. The question for us is: how do we go about testing core strength? Do we have valid, reliable

measures that are both feasible and safe in the older population?

The prone bridge test, also known as the plank, has been shown to be a valid and reliable test for abdominal muscle performance in younger adults,<sup>4,5</sup> but has not been examined in older

adults until recently. In 2018, Dr. Richard Bohannon filled this gap by publishing a study in the *Journal of Bodywork and Movement Therapies* entitled, “The prone bridge test: Performance, validity, and reliability among older and younger adults.”<sup>6</sup> It was a descriptive study of 120 participants, 60 younger (20-35 years old) and 60 older (60-79 years old) that looked at validity and reliability of the test. Participants were timed in the prone bridge to their maximal ability; they reported their perceived rating of exertion at the beginning and the end of the test. The timed test was repeated 5 to 9 days later. The participants’ height, weight, and waist circumference were measured. They also completed the Veterans Specific Activity Questionnaire to assess their fitness level, the Rapid Assessment of Physical Activity to assess their exercise participation, and answered questions regarding usual activity with abdominal exercises including the plank.

The researchers found that the average prone bridge time for the older adults was 126.1 seconds, significantly higher than averages that have been reported previously for younger participants. They reported that the sample of participants may have had an above average level of fitness and exercise participation.

Better prone bridge time was significantly correlated with higher fitness levels, more exercise participation and more regular performance of abdominal exercise. Ratings of perceived exertion were higher at the end of the test than the beginning; those who reported lower exertion at the beginning held the bridge longer. These findings contribute to the validity of the prone bridge as a measure of core strength.

Test-retest reliability had an ICC of 0.915, confirming that the prone bridge is a reliable measure for both younger and older adults. Bohannon’s study allows us to use this tool with new confidence as a valid and reliable measure for older patients.

The prone bridge is a simple maneuver to test and requires no special equipment. Clients should be instructed from a prone position to keep only their forearms and toes in contact with the mat. In response to the tester’s command “go,” they should keep their head, neck, back, and hips in a neutral position as

long as possible. In Bohannon’s study, the participants were given up to 3 warnings if they deviated from a neutral position; timing ended when the position could no longer be maintained.

For patients who cannot tolerate the prone position, there is an alternative based on the work of Ito.<sup>7</sup> The participant is positioned in supine and lifts the head and shoulder blades off of the mat. In Ito’s study (average age 45.3 years), participants held their hips and knees in 90° of flexion. However, this position can be modified for older adults to a hooklying position, knees flexed, and feet on the mat. The average hold time for healthy controls in men was 182.6 seconds and 85.1 seconds in women. Ito’s work also included testing of trunk extensor endurance performed in a practical way. Subjects were positioned prone with a small pillow under the abdomen to neutralize the lumbar spine position. They were asked to lift the sternum off of the mat with their arms at their sides. Average hold time for healthy controls in men was 208.2 seconds and 128.4 seconds in women. While this study did not test the older population specifically, it nevertheless gives us a reference point for testing abdominal flexor and extensor strength with a safe, feasible, and reliable method.

It is imperative to have measures in our toolbox that are both reproducible and practical. These are simple tools for core strength that you could consider using for your older patients. Improving core strength is also of vital importance. In our next GET LITERature column, we will explore many interventions for improving core strength.

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# 3D Pharmacology: Management of Depression, Delirium, and Dementia in Older Adults

*Roslyn D. Burton, PT, DPT*

## INTRODUCTION

Depression, delirium, and dementia are geriatric syndromes commonly seen in clinical practice with the aging adult. These cognitive impairments negatively impact social capacity, functional independence, and may contribute to other geriatric syndromes such as urinary incontinence, frailty, and falls that are associated with poor outcomes.<sup>1</sup> It is estimated that about 25% of older adults experience some form of cognitive impairment<sup>2</sup> and it is suggested that the incidence will increase as older adults are living longer.<sup>3</sup> In fact, older adults may have one or more cognitive impairments as they may coexist with each other or be a risk factor for another. For example, depression may predispose a person to mild cognitive impairment; delirium may be a precursor to dementia<sup>4</sup> and depressive type behavioral symptoms may be expressed in people with delirium and/or dementia,<sup>4,5</sup> all of which may require pharmacologic interventions.

There are several pharmacologic interventions that aim to prevent, reverse, slow progression, and/or treat behavioral symptoms seen in these cognitive impairments. However, there are also medications that are linked to, precipitate, and/or exacerbate symptoms of depression, delirium, and dementia. As a practitioner of choice and patient advocate, it is vital for physical therapists to identify not only the current pharmacologic interventions for cognitive impairments but medications that may yield adverse effects for the aging adult who are at risk or have one or more of these cognitive geriatric syndromes. Although medication prescription is outside our scope of practice, awareness of pharmacological interventions that contribute to behavioral symptoms (ie, confusion, agitation, poor insight, self-neglect) seen in the older adult with cognitive impairment may help guide treatment strategies, referrals, and/or discharge planning.

The purpose of this article is to identify common pharmacological interventions to address depression, delirium, and dementia but also identify drug classes that are linked to, precipitate, and/or exacerbate symptoms of these 3 cognitive geriatric syndromes. In addition, a clinical drug chart is presented with a non-exhaustive list of these medications that are also listed on the 2015 American Geriatrics Society Beers Criteria as potentially inappropriate medications for the aging adult.

## DEPRESSION

It is estimated that the rate of depression in community dwelling older adults ranges from 1% to 5% but increases to 11.5% and 13.5% in older adults who require home health care and hospital care, respectively.<sup>6</sup> The Diagnostic and Statistical Manual for Mental Disorders Fifth Edition (DSM-5) published by the American Psychiatric Association states that symptoms such as mood disorder, loss of interest in activities, hopelessness, insomnia, fatigue or loss of energy, feelings of worthlessness, and decreased ability to think or concentrate must persist for at least 2 weeks for a major depressive disorder diagnosis.<sup>7</sup> However, medications may contribute to depressive symptoms that the older adult may express. These medications include benzodiazepines, corticosteroids, and antihypertensive agents.

Benzodiazepines, which typically end in “-pam”, are psychoactive drugs used to promote sleep and decrease anxiety in older adults.<sup>8</sup> Examples of these drugs include clonazepam, diazepam, flurazepam, and lorazepam. These are long-acting benzodiazepines and remain in the older adult's body longer due to decreased drug metabolism. As a result, there is an increased drug effect that may manifest as feelings of depression.<sup>9</sup> Corticosteroids such as dexamethasone

and prednisone are used to address inflammation in the body but it is believed that these medications may lower serotonin levels.<sup>10</sup> Serotonin is a substance produced in the body that influences mood and emotional responses.<sup>11</sup> It is hypothesized that lower levels of serotonin can present as depressive symptoms such as confusion, agitation, poor insight, and self neglect.<sup>11</sup> Finally, antihypertensive agents are linked to depressive symptoms, specifically alpha agonist and rauwolfia alkaloid drug classes. Alpha agonists such as Clonidine<sup>12</sup> lowers norepinephrine-a neurotransmitter that heightens arousal and attention. If norepinephrine levels are decreased, an opposite mood effect may ensue. Reserpine, a rauwolfia alkaloid, also decreases serotonin and norepinephrine leading to the presentation of depressive symptoms.<sup>13</sup> In order to manage depressive symptoms in older adults, several types of medications are available.

Pharmacological interventions for depression are antidepressant medication, specifically second generation antidepressants.<sup>14</sup> Second generation antidepressant such as, selective serotonin reuptake inhibitors (SSRIs), selective serotonin and norepinephrine reuptake inhibitors (SNRIs), norepinephrine and dopamine reuptake inhibitors (NDRIs), and noradrenergic and specific serotonergic (NaSSA) are more commonly used.<sup>15</sup> It is hypothesized that reuptake inhibitors prevent reabsorption of the correlating neurotransmitter (ie, serotonin, norepinephrine, and dopamine) back into the nerve cell. As a result, the neurotransmitter is increased in the body to help regulate mood and emotional response.<sup>11</sup>

The most commonly used reuptake inhibitor, SSRIs, are divided into First Line Agents and Second Line Agents with First Line Agents being the drug of choice. First Line Agents have lower



potential for adverse drug effects and better response toward depressive symptoms.<sup>14,15</sup> These medications include Sertraline and Escitalopram.<sup>14</sup> Second line SSRIs such as Fluoxetine and Paroxetine, are not initially used because of their long half-life and high anticholinergic effects respectively, which may lead to adverse effects in the older adult.<sup>9,15</sup> Selective serotonin and norepinephrine reuptake inhibitors such as Venlafaxine and NDRIs such as Bupropion enhance activity of serotonin/norepinephrine and norepinephrine/dopamine respectively to affect mood.<sup>15,16</sup> Finally Mirtazapine, a NaSSA, increases the activity of nor-adrenaline and serotonin in the brain<sup>17</sup> thereby regulating mood response. It is important to specify that all antidepressants may cause side effects (ie, falls, nausea, weight gain)<sup>14</sup> but the antidepressants noted above demonstrate lower adverse effects in the older adult.

## DELIRIUM

It is estimated that 6% to 56% of hospitalized older adults experience delirium. It is described as a sudden onset of cognitive impairments that include fluctuating course of consciousness, short attention span, distractibility, impaired short-term memory, and disorientation.<sup>18</sup> The cause is multifactorial but may be attributed to surgery, acute medical illness, and medications. Medications that are linked to, precipitate, and/or exacerbate delirious symptoms are those with anticholinergic properties, antidepressants, analgesics, benzodiazepines, and corticosteroids.

Anticholinergics affect the activity of acetylcholine which is a neurotransmitter involved with learning and memory. Antihistamines, such as Benadryl and Meclizine, contain anticholinergic properties that may lead to confusion, nervousness, and drowsiness in the older adult.<sup>19</sup> Amitriptyline and Doxepin are first generation antidepressants that have strong anticholinergic effects leading to similar delirious symptoms.<sup>19</sup> Other medications associated with delirium are analgesics that include opioids and nonsteroidal anti-inflammatory drugs (NSAIDs) used to address pain. Demerol, an opioid, converts to an anticholinergic metabolite leading to delirious symptoms and indomethacin is thought to have the most adverse central nervous

system effect of all available NSAIDs.<sup>9</sup> Finally benzodiazepines, (short and long acting) and corticosteroids (ie, prednisone, dexamethasone) are associated with inducing or worsening delirium type symptoms.<sup>9,10,19</sup>

Many symptoms of delirium such as hallucination, delusion, and agitated behavior are similar to psychosis; therefore, antipsychotics are typically used as pharmacological interventions.<sup>20</sup> Antipsychotics are categorized as first generation and second generation with second generation antipsychotics having lower risk for adverse effects, thus more widely used.<sup>21</sup>

Although second generation antipsychotics have lower adverse effects, clinicians should be aware they may cause diabetes mellitus, hypotension, and weight gain in older adults.<sup>21</sup> Second generation antipsychotics include Quetiapine and Risperidone.<sup>18,21</sup> The first generation medication such as Haldol may also be used but it is associated with extrapyramidal side effects, ie, dystonia, akinesia, and dyskinesia.<sup>18</sup>

It is important to note that delirium is a risk factor for subsequent development of dementia and people with dementia may have episodes of delirium.<sup>21</sup> Accordingly, it is paramount to differentiate between delirium and dementia because the use of antipsychotics in people with dementia may increase the risk of stroke and death.<sup>18</sup> This further underscores the necessity to understand pharmacological interventions in older adults with cognitive impairment to better identify medications that may yield adverse events. It creates an opportunity to be advocates for our patients who may be at risk of severe medical consequences due to medication.

## DEMENCIA

There are several types of dementia (ie, Alzheimer's, Lewy Body, vascular) but it is estimated that 1 out of 10 adults 65 and older, have Alzheimer's dementia, the most common type.<sup>22</sup> The American Psychiatric Association (APA) has termed dementia under a broader category, Major Neurocognitive Disorder, in an effort to include all types of dementia. Although not an expectation of the APA, it may help decrease the stigma associated with the term dementia.<sup>23</sup> Dementia is progressive and irreversible with an insidious onset. As

the disease progresses, older adults may demonstrate behavioral symptoms such as immediate and remote memory loss, decreased reasoning and judgment, decreased ability to recognize people and objects, word finding difficulty, agitation and irritability, delusion and hallucinations, nervousness, and anxiety which interfere with daily function.<sup>4,10,23,24</sup>

Several medications are thought to exacerbate behavioral symptoms of dementia by increasing confusion and delirium. These include Dopamine promoters, Levodopa and Amantadine, often use to treat Parkinsonism.<sup>9</sup> Muscle relaxants and Antispasmodics, Soma and Atropine, result in anticholinergic effects and sedation that are not tolerated well by older adults thus increasing confusion.<sup>9</sup> As mentioned earlier, medications with Anticholinergics properties such as Benadryl and Meclizine<sup>9,19</sup> do the same. Corticosteroids, prednisone, and dexamethasone may cause corticosteroid-induced reversible dementia resulting in impaired memory, attention, concentration, and mental speed.<sup>10</sup> Finally benzodiazepines, especially long-acting, may accumulate in the body and lead to exacerbation of impaired memory.<sup>9</sup> It is found that these medications may render adverse effects in older adults and if a clinician or caregiver notices sudden increased confusion in an older adult with dementia these medications may be the culprit.

Currently, dementia is not curable but there are pharmacologic interventions aim to improve cognitive function and treat behavioral symptoms. Acetylcholinesterase inhibitors such as Donepezil and Galantamine prevent the breakdown of acetylcholine. This increases acetylcholine levels in the brain, subsequently reducing behavioral symptoms of dementia.<sup>25</sup> N-methyl-D-aspartate receptor antagonist (NMDA) such as Memantine is a cognition-enhancing medication and is found to address agitation, aggression, and delusional symptoms seen in those with dementia.<sup>26</sup> Finally, long term use of SSRIs such as Citalopram may delay the progression of mild cognitive impairment to Alzheimer's dementia<sup>27</sup> as well as treat agitation and delusion.<sup>28</sup>

## AMERICAN GERIATRICS SOCIETY BEERS CRITERIA 2015

The American Geriatrics Society Beers Criteria is an evidenced-based

clinical tool originally conceived by the late geriatrician, Mark H. Beers who researched medications that led to deleterious side effects in older adults. The tool compiles potentially inappropriate medication use in older adults, which are associated with poor health outcomes. The criteria list the disease or syndrome followed by the potentially inappropriate drug, rationale, recommendation, quality of evidence, and the strength of recommendation as decided by the Beers expert panel.<sup>19</sup> The 2018 Beers Criteria edition is currently under review. Table 1 summarizes drug classes previously mentioned in this article that are linked to, precipitate, and/or exacerbate symptoms of depression, delirium, and dementia but are also listed on the 2015 Beers Criteria. Please note that generic or brand names are listed in the table. These medications should cue the clinician to closely monitor and/or further investigate their use in older adults.

## CASE SCENARIO

A 70-year-old veteran presented to the hospital from the nursing home due to a fall and altered mental status. He was a former financial investor, avid runner, and divorced. Over a period of 3 years, he transitioned from living in a private home, to an assisted living facility, and finally to a nursing home due to mental and functional decline. He had a maternal history of dementia and a personal history of Parkinson's disease, osteoporosis, osteoarthritis, right hip open

reduction and internal fixation, left total hip arthroplasty, and major neurocognitive disorder. Upon hospital admission, he was found to have bradycardia, hypotension, dehydration, and an age indeterminate nondisplaced comminuted C7 fracture. The veteran was oriented to his name but not time nor place and met criteria for delirium based on the Confusion Assessment Method (CAM).<sup>29</sup> His medications included Mirtazapine, Carbidopa/levodopa, Tamsulosin, Ibuprofen, Atorvastatin Calcium, Alendronate, Aspirin, Calcium/Vitamin D, Cholecalciferol, Quetiapine, and Haldol.

This case demonstrates a quintessential example of delirium, depression, and dementia co-existing. In addition to the current CAM screen for delirium and personal history of dementia, one can deduct a history of depressive symptoms due to use of the antidepressant, Mirtazapine. Another vital component from this case is that he was on two antipsychotics. It is known that antipsychotics may lead to stroke or death in older adults who have dementia.<sup>18</sup> Furthermore, he was on a dopamine promoter, which is thought to exacerbate symptoms of confusion and delirium. This case exemplifies the importance of understanding medications that carry adverse effects in older adults with depression, delirium, and dementia. It should facilitate a discussion with the interprofessional team on risk versus benefits of medications in older adults. In this case, the antipsychotics were

discontinued by the geriatrician and the neurologist replaced Carbidopa/levodopa with a Rotigotine patch, a dopamine agonist, which has a lower risk for confusion and mental disturbances by addressing emotional symptoms, ie, depression, apathy, and anxiety.<sup>30</sup>

## CONCLUSION

Depression, delirium, and dementia are cognitive impairments that the older adult may experience. As a practitioner of choice, it is vital that physical therapists understand the current pharmacologic interventions for cognitive impairments but also identify medications that are linked to, precipitate, and/or exacerbate symptoms of these geriatric syndromes. In this manner, we can continue to be advocates for the aging adult by initiating a discussion or investigating medications that render adverse effects that may affect our plan of care. It provides an opportunity for physical therapists to continue to be part of the interprofessional team serving a special growing population. This article provided an overview of common pharmacologic interventions as well as a clinical drug chart to help practitioners identify potentially inappropriate medications related to depression, delirium, and dementia in the older adult.

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**Table 1.** Depression, Delirium, and Dementia (3D) Clinical Drug Chart. This table show medications (generic or brand) that are linked to, precipitate, and/or exacerbate 3D symptoms and listed on the 2015 American Geriatrics Society Beers Criteria. *It is recommended to avoid antipsychotics in older adults with dementia.*

Anticholinergics (antihistamines)	Analgesics	Sedatives (benzodiazepines)	Antihypertensives	Antidepressants	Antispasmodic/ Muscle Relaxants
Benadryl	Demerol	Diazepam	Clonidine	(First generation) Amitriptyline	Soma
Meclizine	Fortal	Flurazepam	Reserpine	Doxepin	Atropine
Dayhist	Indomethacin	Ativan	Norpace	Norpramin	Skelaxin
Phenadoz	Naproxen	Oxazepam	Guanabenz	Amoxapine	Oxybutynin
Hydroxyzine	Daypro	Quazepam	Aldomet	(2nd generation and 2nd line agent) Fluoxetine	Robaxin
Zyminc	Feldene	Halcion	Tenex	Paroxetine	Paraflex

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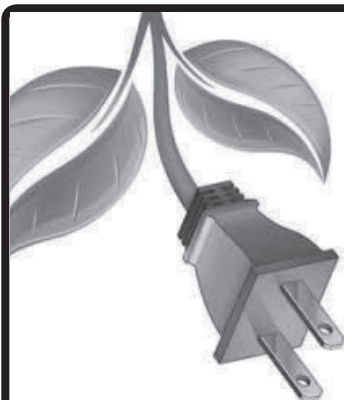
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