GERINOTES

SECTION ON GERIATRICS, AMERICAN PHYSICAL THERAPY ASSOCIATION

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All advertisements that appear in or accompany *GeriNotes* are accepted on the basis of conformation to ethical physical therapy standards, but acceptance does not imply endorsement by the Section on Geriatrics, APTA.

The Section on Geriatrics Presents

Manual Physical Therapy for the Geriatric Patient

July 10-11, 2010 at Mercy Outpatient Physical Therapy Center Portland, ME

Presented by Carleen Lindsey, PT, MScAH, GCS. This two day course is designed to give experienced therapists a practical approach to manual therapy interventions for the geriatric patient. Look for registration information in the mail and on the Geriatrics PT Web site!

Contact Latasha Magness at lataschamagness@apta.org to register for any of these courses!

If you are a facility interested in hosting the CEEAA series or are interested in hosting any other courses, please contact Danille Parker or NovaLeigh Dodge-Krupa, co-Chairs of the Regional Course Committee at danille.parker@marquette.edu (414-288-3179) or NovaLeigh.Dodge-Krupa@genesishcc.com(978-247-5112).

PRESIDENT'S PERSPECTIVE: READY FOR PRIME TIME?

John O. Barr, PT, PhD

I've always found it ironic that the relatively young founding cast of Saturday Night Live seemed to reluctantly accept their roles as the "Not Ready for Prime Time Players"…while many of our Section's senior statespersons continued to embrace their leadership roles in founding our physical therapy profession's Prime Timers.

Established in 1987 as a special interest group, the Prime Timers are a nationwide organization of over 160 senior and retired physical therapists, at least 50 years of age, striving to support each other and the physical therapy profession. Individuals who do not meet these requirements may participate as a friend of the Prime Timers.

Importantly, the Prime Timers are interested in sharing their knowledge and experience with APTA components and individual members, as volunteer resources. They also have a lot of fun at APTA's Combined Sections Meetings and Annual Conference, hosting luncheons and day-trips, and publish a quarterly newsletter for members and friends. Activities of the group are determined based on the expressed interests of the members. The group annually sends birthday cards to members who are over 75 years of age. The group is supported by annual dues or donations of $10 from both members and friends. In addition, all social activities are supported by those attending the functions. Members and friends may participate to any degree they wish in the group's activities. The Foundation for Physical Therapy recently announced its partnering to host the Prime Timers newsletter by posting both current and archived editions.

During a meeting of the Prime Timers Steering Committee at the Combined Sections Meeting in San Diego, it was determined that the Prime Timers did not wish to have a special membership category within the Section on Geriatrics. This matter, and mechanisms for funding and distribution of their newsletter, had long been discussed by the leaders of our two organizations, so it is good to come to successful closure on these issues. Prime Timers are planning to have a 25th anniversary celebration in 2012.

Prime Timers Steering Committee Meeting, CSM 2010
L to R: Donna El-Din, Pat McAdoo, Neva Greenwald (Secretary), Fran Kern, Jane Hollerman, Pat Traynor (Vice President/Activities), JoAnn Niccum-Johnson (President), Bette Horstman, Evie Hallas (Special Attention Photography), Clara Bright (Newsletter), & Darcy Umphred (Treasurer)

In 2003, Brown and colleagues reported on their survey of over 900 physical therapist respondents, 60-103 years of age, who were APTA members. Key findings indicated that: (1) While there were age-related declines in ambulation and physical function, there were less physical compromises than in age-matched peers. (2) Reduced endurance was perceived to be the most limiting extrinsic factor impacting ambulation, followed by pain. (3) Walking surfaces, weather, and obstacles were the primary extrinsic factors affecting willingness to venture into the community. (4) The community at large was not perceived to be older adult friendly. Overall, it was concluded that physical therapists age better than the general population until the later part of the 9th decade.[1]

For those of you who have had the opportunity to observe and interact with the Prime Timers at APTA meetings and conferences, these findings should come as no surprise!

Further information about the vitally active Prime Timers, including their newsletters, can be found at http:apta.org/primetimers. Annual dues or donations should be sent before the end of June to Darcy Umphred, 2551 Heritage Park Lane, Sacramento, CA 95835. Please also make sure to include your email address, phone number, birth date, and APTA membership number. Your support will be greatly appreciated. Sooner or later, we'll all be ready for Prime Time.

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Dr. Barr is a Professor in the Physical Therapy Department at St. Ambrose University, Davenport, IA. He also serves on the Editorial Board for the Journal of Geriatric Physical Therapy.

EDITOR'S MESSAGE: RECOGNIZE A LEADER, NOMINATE A LEADER, BE A LEADER

Carol Schunk, PT, PsyD

One of the highlights at the Combined Sections Meeting is the award ceremony. The Section has developed several awards to honor members for their outstanding contribution to the Section or to the practice of Geriatric Physical Therapy or to the well being of older adults. The 2010 award winners were announced in the March issue of *GeriNotes*. In this issue we provide details about the awards and the awardees. Congratulations to all the awardees. I want to also bring attention to awards that were not presented at CSM. This includes the Advocacy for Older Adult Award, The Volunteers in Action Community Service Award, and the Outstanding Physical Therapy Assistant Award. In most cases, there were no nominations for awards. This is not due to a lack of a deserving individual, but a lack of someone taking the time to make the nomination. This recently happened in my chapter in Oregon (OPTA). The deadline for the OPTA awards was drawing near and there were very few nominations, which was a concern for the Awards Committee Chair. He solicited suggestions from the Board of Directors but unfortunately the deadline loomed so the response was minimal. Having received the Joan Mills Award in the past, I know the experience of being honored by your peers is wonderful. I bring this topic up so Section members can start to consider co-workers and peers who may be qualified and would be thrilled to receive an award. The deadline is in November, details will in published in future issues of *GeriNotes*.

I am going to change hats to my role as Chair of the SOG Nomination Committee, which is actually a closely related topic of recognizing leaders in the Section. On this page is information about the 2011 vacancies on the Section Board of Directors and the Nominating Committee. The percentage of members voting last year was a record due to the introduction of on line voting. In 2009 the nominating committee had the unique experience of having a large pool of qualified candidates who were willing to serve. I think this is a very positive situation that is reflective of member's interest and satisfaction with the Section. Like receiving an award, being active on the Board or on a committee is a unique rewarding experience; it is just more work! Consider submitting your name as a candidate for office or the name of someone you think has the qualities to be a Section leader.

Speaking of leaders in the SOG, Part 2 of the interview with the *GeriNotes* Editorial Board is in this May issue. The 12 members of the Board are intelligent, interesting therapists. Their responses to issues related to *GeriNotes* and being therapists specializing in geriatrics are insightful. Also in this issue are two articles on falls, one focuses on rural issues and the other on a community-based prevention program. Sometimes I am concerned that we publish too many articles related to falls but as evident in these articles, falls continues to be a major problem in the elderly and being in physical therapy we are uniquely qualified to intervene. Both add a dimension that readers can adapt to their clinical setting. In addition, the article on incorporating the Wii in the skilled nursing facility brings the application of technology to therapy.

The July 2010 issue of *GeriNotes* will be a focus issue on Parkinson's disease. This will be our third year of having an issue in which Section members can earn continuing education credits by reading *GeriNotes* articles, completing the test, and submitting an application. Response to these issues has been very positive; we encourage readers to participate. If anyone is interested in writing an article for the focus issue, please contact me. Just another opportunity to be a leader, recognize a leader, or nominate a leader.

CALL FOR CANDIDATES

CALL FOR LEADERS

The SOG Nominating Committee is interested in Section members who would like to be considered as a candidate for Section office.

Available offices for 2010 are:
Secretary
Director
Nominating Committee

NOMINATE A PEER OR NOMINATE YOURSELF

Contact Carol Schunk, Nominating Committee Chair at carolschunk@earthlink.net

USE OF THE NINTENDO WII™ WITH OLDER ADULTS IN THE SKILLED NURSING FACILITY SETTING

Ashley Guy, SPT; Kimberly K. Cleary, PT, PhD; Chris Henderson, PT

The Nintendo Wii™ (Nintendo Company Ltd., Japan) is a commercially available gaming system emerging as an intervention tool in physical therapy. Specifically, the Wii has been described as an effective tool for use in the pediatric/adolescent population. It also has been anecdotally described as promoting patient enthusiasm and adherence to exercise when used as in intervention in the outpatient orthopedic and inpatient rehabilitation settings.

The Wii incorporates a variety of simulated sport and fitness activities. The player uses a wireless control, and can participate in either sitting or standing positions. Use of one or both upper extremities can be promoted through specific game selection. Available games within Wii Sports and Wii Fit software programs allow players to engage in balance training, strengthening, and aerobic conditioning. Functional activities like cooking related tasks also can be performed using the Wii. Not surprisingly, word of this physically engaging video game has spread quickly. Physical therapists nationwide are beginning to incorporate this technology into their intervention planning.

Many of the Wii characteristics are appealing to younger patients who have grown up in an era of gaming, and to patients of all ages who are recovering from sports related injuries in the private practice setting. Newspaper and magazine articles also describe that the Wii has been incorporated into inpatient rehabilitation settings to encourage enthusiasm and adherence, primarily among patients with spinal cord injury, traumatic brain injury (TBI), or stroke. The notion of incorporating the Wii into the skilled nursing facility setting and geriatric population, however, is just beginning to emerge. Not only can the Wii serve as a tool for physical therapists to address older patients' balance and strength impairments and functional limitations, but it may also serve to promote socialization and interaction among older adults.

From the formation of extended care facility resident "bowling leagues" to interfamily rivalries of "Tiny Tim versus Grandpa," the fun and benefits of these and other Wii games may enhance the quality of life in older adults. Evidence linked to virtual reality (VR) training, and anecdotal evidence associated with the Wii have consistently reported increased motivation, socialization, and interaction among older adults.[1-5] These added benefits are yet another factor that may boost patient adherence and even excitement about physical therapy intervention.

Despite the growing popularity of the Wii in rehab, no research exists to support the use of the Wii in geriatrics, and little research regarding the use of the Wii in any patient population is available. However, mainstream media outlets and trade magazines suggest that this widely popular gaming system is being incorporated into skilled physical therapy settings across the nation.

The Wii also has been subjectively described as promoting enthusiasm and adherence in the outpatient orthopedic and inpatient rehabilitation settings. Currently, however, research regarding incorporating the Wii into physical therapy is limited. A single case study about a child with cerebral palsy reported that use of the Wii improved visual-spatial processing, postural control, and functional mobility.[6] It has also been suggested that using the Wii increased compliance and enhanced sensorimotor and sport-related skills in healthy young adults.[1,7]

Though sound evidence specific to the Wii is lacking, evidence to support the efficacy of VR in physical therapy is available.[3-5,8-16] Much like the Wii, VR training immerses an individual in a virtual environment and requires the user to complete game-like tasks that challenge range of motion, limits of stability, movement precision, and cognition.

Research supports VR in rehabilitation of healthy adults as well as adults with known neurological pathology including stroke, TBI, and Parkinson disease. Results of VR training in populations with neurological deficits have included vast physical, cognitive, and psychosocial benefits.[3-5,9,10,12,15-18] In community dwelling adults over the age of 65, improved balance, reaction time, endurance, and functional mobility have been described.[8,14,15]

Though benefits of VR training are vast, these systems are generally very expensive and impractical for clinical application.[15] Functions of the Wii, however, appear to parallel that of many VR programs. This similarity creates a sound theoretical basis for implementing this readily available and affordable alternative in the skilled nursing facility setting. The purpose of this report is to describe how the Wii can be used as an interactive intervention tool for older adults in the skilled nursing facility setting. Clinical guidelines are provided to help physical therapists determine the specific steps in their examination, evaluation, and intervention planning necessary to begin using the Wii in clinical practice (Table 1).

As the geriatric population often presents with a variety of co-morbidities, a thorough systems review is necessary prior to initiating intervention. Physical therapists must identify precautions and contraindications that apply to individual patients. People with pacemakers or a history of seizure disorder should not use the Wii. Those with weight bearing restrictions must be monitored closely during any standing activities. To diminish safety risks, a gait belt should be used on all residents to decrease the risk of fall. In addition, patients can participate in seated activities using the Wii.

Use of the Wii in the skilled nursing facility must be prescribed as a skilled intervention tailored to address specific impairments, functional limitations, and participation restrictions of the individual.[14] Once impairments, functional limitations, and participation restrictions have been identified, they should be integrated into a specific physical therapy practice pattern.[19]

With over 400 games available for the Wii, it may be challenging to select appropriate games for rehabilita-

tion. Though the most common games described in available literature are Wii Sport, Wii Fit, and Cooking Mama, a total of 18 games exist that have been identified with potential for physical rehabilitation (Table 2). It is important that physical therapists have a general understanding of games available to better select specific games tailored to patients' individual interests.

In implementing the Wii for rehabilitation, selecting appropriate activities for underlying impairments and functional limitations is essential. Indications for use and suggestions for therapeutic application to older adults are described here (Tables 3 and 4). Physical therapists can use these guidelines to incorporate the Wii as a specific intervention primarily to address balance and strength deficits, but also to provide an entertaining option that may promote socialization among older adults.

While using the Wii is relatively simple, the concept of gaming is new to many older adults. It is important to select the intervention only for patients capable of understanding the game objectives. This is not to say that the system is inappropriate for individuals with dementia. To avoid intimidation and frustration, it is important to select games that are appropriate for each patient's cognitive and physical ability.

There are a variety of codes that apply to use of the Wii as an intervention tool. Therapeutic exercise is certainly an appropriate code, but others may also apply depending on the specific goal of the Wii activities (Table 5). As with any skilled intervention, documentation should carefully reflect skilled analysis and adjustment of the program specific to the patient's underlying impairments and the patient's response to treatment.

As therapists continue to seek innovative, efficacious, and creative rehabilitation strategies for patients of all ages, it can be expected that the Wii will continue to gain prevalence in skilled nursing facilities nationwide. Though evidence

Table 1. Patient Management Steps

	Examples	
1. Identify impairments that may be addressed by the Wii	Balance Strength Endurance ROM Postural concerns	Coordination Cognition Motivation Attention Visual scanning
2. Identify Practice Pattern	Musculoskeletal: 4C,D,E,F,J Neuromuscular: 5A-H Cardiovascular/Pulmonary: 6B Integumentary: 7C-E	
3. Identify appropriate outcome measures	Functional Reach Test Timed Up & Go Geriatric Depression Scale 6 or 2 minute walk test DASH	CTSIB Fugl Meyer Berg Balance Scale FIM Tinetti
4. Identify patient interests	Boxing Golf Baseball Bowling	Tennis Cooking Dancing Music
5. Set functional goals	1. Patient will maintain sitting balance independently during upper extremity reaching activities for 10 minutes. 2. Patient will maintain standing balance with contact guard assist during upper extremity reaching activities for 5 minutes.	
6. Select appropriate game	Wii Sport Wii Fit	Wii Play Cooking Mama
7. Determine appropriate modifications	Easier • Set game to easiest level • Sit to play • Play shorter games (3-hole golf or Bowling)	Harder • Stand to play • Stand on foam • Sit on Ball • Add weights • Add perturbation
8. Guard patient as appropriate	Use a gait belt Manually block extremity ROM	

Table 2. Games with Rehab Potential and Approximate Prices

Wii Fit ($85)	**Dance Dance Revolution ($70-$160)**
Wii Play ($45)	**Dance Dance Revolution: Hottest Party 2 ($60)**
Wii Sports (included with gaming console)	**Family Trainer with Mat ($80)**
We Love Golf! ($8)	**Life Outdoor ($47)**
Cooking Mama Cook Off ($15)	**Active Challenge ($57)**
Cooking Mama World Kitchen ($28)	**We Ski ($21)**
Punch Out!!($47)	**We Ski and Snowboard ($35)**
Victorious Boxers: Revolution ($25)	**Equilibrio ($35)**
EA Sports Active ($57)	**Deca Sports ($28)**
	Celebrity Sports Showdown ($20)

(Source: http://www.nintendo.com/games/guide and http://www.amazon.com)

Table 3. Suggested Use of the Wii Sports™ in a Skilled Nursing Facility

General Description	• Movement of the arms is required to manipulate your character. • One arm is used for bowling, tennis, and pitching in baseball. • Both arms are used to bat in baseball, swing a golf club, and participate in boxing. • Each game can be performed in sitting or standing as appropriate. • Characters in the game can be set to right or left handed.
Sitting Suggestions	• **Sitting in wheelchair:** Have resident scoot forward in the chair to remove trunk support. • **Wedge sitting:** Have the resident sit on the edge of the mat table on a wedge to focus on pelvic tilt position and increase the core workout. • **Sitting on Exercise Ball:** More difficult than the wedge. Creates a good core workout with upper extremity movement.
Standing Suggestions	• **Use of an assistive device:** Select activities requiring the use of only one arm in order to allow an assistive device for added stability. • **Unsupported standing:** Stand on a firm surface to complete activities. • **Change base of support:** Reposition feet to complete appropriate activities. Examples include a narrow base of support, tandem stance, static stance in a step position, one foot on a block, or single leg stance. • **Unstable surface:** Have resident stand on a foam block or other compliant surface to increase work of ankle strategies.
Group Suggestion	• **Create a bowling group:** Up to four people can bowl using one remote. By lining up chairs away from the console, each resident may be asked to transfer to standing if appropriate, walk to the designated area in front of the console, bowl, walk back to their chair and pass the remote to the next individual. • **Create a golf group:** Perform similar to bowling group.
NOTE: This game takes longer and can be more frustrating than bowling.	

Table 4. Suggested use of the Wii Fit™ in a Skilled Nursing Facility

General Description	• Yoga, strength training, aerobic exercise, and balance games are included. • Make sure to select appropriate activities for underlying impairments. • Make sure difficulty level is appropriate for the residents. • Many yoga and strength training activities will be too difficult for most residents.
Weight Shift Activities	
Side to Side	• **Soccer:** Side to side weight shifting. • **Tightrope:** Weight shift side to side to walk across the tightrope. More difficult than soccer. • **Penguin Slide:** Weight shift side to side to make a penguin catch fish. More difficult than soccer and tightrope.
Anterior/Posterior	• **Ski Jump:** Anterior weight shift with knees bent while traveling down ramp, then resident extends knees to jump and maintain balance while in the air.
Side to Side and Anterior/Posterior	• **Downhill Skiing:** Side to side weight shifting to maneuver with speed controlled by anterior/posterior weight shifting. • **Table Tilt:** Weight shift in all directions to move a ball into holes on the platform. • **Bubble Course:** Weight shift all directions to maneuver a bubble through a course without touching sides and obstacles. • **Snowboard:** Weight shift in all directions. The board is rotated 90° while navigating down the course.
Circles	• **Hula-Hoop:** Weight shift in circles to move the hula-hoop. Lateral shifting demanded to catch additional hoops.
Stepping Activities	
Step aerobics	• Stepping on and off the board to the rhythm of music. ***Note:*** Challenge strength and endurance by adding ankle weights. Challenge strength and balance by adding elastic tubing around the ankles.
Rhythm boxing	• Coordinates stepping and upper extremity movement with the remote and nun chuck.

Table 5. Documentation: Common CPT Codes for the Wii

Cognitive Development: 97532	Neuromuscular Re-education: 97112
Gait: 97116	Therapeutic Activity: 97530
Group Therapy: 97150	Therapeutic Exercise: 97110

specific to the Wii is in its infancy, theoretical application in rehabilitation closely parallels that of VR training. General guidelines and considerations for use of the Wii in the skilled nursing facility setting have been provided. Combination of available evidence, clinical experience, and patient preference appear to highly support progressing with the use of the Wii as a skilled intervention for the geriatric patient population.

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Other Suggested Reading

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Ashley Guy will graduate from the DPT program at Eastern Washington University in June 2010. During her physical therapy education, she worked as a graduate research assistant for Dr. Cleary. Ashley enjoys the neurological rehab setting, and plans to start her PT career in inpatient rehabilitation.

Kimberly Cleary, PT, PhD, is Associate Professor of Physical Therapy at Eastern Washington University. She teaches the screening for medical referral and adult neuromuscular systems management courses. Dr. Cleary has conducted research on quality of life in various patient populations, including well elderly, rural adults, and patients with heart disease. She is currently collecting data on balance and falls in community dwelling older adults.

Chris Henderson, PT, is a Clinical Specialist with Aegis Therapies. Chris primarily works with geriatric patients in the skilled nursing setting. Chris is an Eastern Washington University alumnus, and a regular guest speaker for the program on topics like Medicare rules and regulations. Chris is a co-investigator on Dr. Cleary's balance and falls in community dwelling older adults study.

DIZZINESS, LIGHTHEADEDNESS, AND VERTIGO—PHARMACOLOGICAL AND NONPHARMACOLOGIC INTERVENTIONS

Kenneth L. Miller, PT, DPT

INTRODUCTION

Dizziness affects 30% of people over the age of 65, increasing to over 50% of people over the age of 75, and is the most common reason for visiting a physician after the age of 75.[1,2] In order to provide the most effective treatment for dizziness, lightheadedness, and vertigo, it is crucial for the practicing clinician to identify, manage, and treat the patient's dizziness based on the etiology of the dizziness, lightheadedness, and/or vertigo complaint. The etiology could be from a neurological, cardiovascular, psychiatric, medication-related, and/or metabolic origin.[2,3] Most experts regard benign paroxysmal positional vertigo (BPPV) as the most commonly diagnosed vestibular disorder. It accounts for at least 20% of diagnoses made by doctors specializing in dizziness and vestibular disorders. It is the most frequent cause of vertigo in the elderly. The number of people affected by this disorder each year has been estimated between 10 and 64 per 100,000 people, and some experts feel even more may be affected.[4,5] The purpose of this article is to provide a general overview of nonpharmacologic and pharmacological interventions for common forms of dizziness, lightheadedness, and vertigo based upon etiology.

NONVESTIBULAR DIZZINESS AND LIGHTHEADEDNESS

Orthostatic Hypotension

Orthostatic hypotension (OH) is a commonly diagnosed, physical finding among elderly patients defined by the American Autonomic Society and the American Academy of Neurology as a systolic blood pressure decrease of at least 20mm Hg or a diastolic blood pressure decrease of at least 10mm Hg within 3 minutes of standing.[6,7] Gupta and Lipsitz reported that OH can be asymptomatic or symptomatic (dizziness, light headedness, weakness, syncope, nausea, para-cervical pain, low back pain, angina pectoris, and transient ischemic attacks). In the elderly population, disturbed speech, visual changes, falls, confusion, and impaired cognition are more commonly seen.[7] Bradley and Davis reported that the result of orthostatic hypotension is cerebral hypoperfusion that may result in symptoms as follows: weakness, nausea, headache, neck ache, lightheadedness, dizziness, blurred vision, fatigue, tremulousness, palpitations, and impaired cognition.[6]

As for the management of OH, treatment usually begins with the nonpharmacologic treatment options followed by pharmacologic intervention. The nonpharmacologic options are: withdraw offending medication (either substitution or discontinuation); rise slowly from supine to sitting to standing position; avoid straining, coughing, and prolonged standing in hot weather; cross legs while standing; squat, stooping forward; raise head of bed 10° to 20°; small meals and coffee in the morning; elastic waist high stockings; increase salt and water intake; exercise (eg, swimming, recumbent biking, and rowing); dorsiflex feet several times before standing; and schedule activities in the afternoon.[7,8] Bradley and Davis recommend avoiding standing motionless, rising quickly after prolonged lying or sitting, large meals, alcohol consumption, vigorous exercise, heat, hot baths and hot environment, dehydration, working with arms above shoulders, straining with urination or defecation, coughing spells, rapid ascent to high altitude, hyperventilation, and fever.[6]

"The number of people affected by this disorder each year has been estimated between 10 and 64 per 100,000 people, and some experts feel even more may be affected."

Gupta and Lipsitz have recommended pharmacologic interventions when nonpharmacologic interventions do not resolve symptoms. The pharmacologic interventions are: Fludrocortisone, Midodrine, ibuprofen, caffeine, Erythopoietin, Clonidine or Yohimbine.[7] The principal mode of action for Fludrocortisone is reducing salt loss and expanding blood volume and increasing blood pressure. Common side effects include hypokalemia, supine hypertension, heart failure, and headache. Caution must be exercised when prescribing this medication due to potentially severe side effects. Midodrine is an alpha-agonist with selective vasopressor properties that increases arterial and venous tone thereby increasing blood pressure. Midodrine has been shown to be beneficial, alone or together in combination with fludrocortisones. Adverse reactions to Midodrine include supine hypertension, piloerection, pruritus, and paresthesia. Midodrine is contraindicated with coronary heart disease, heart failure, urinary retention, thyrotoxicosis, or acute renal failure. Midodrine must be used cautiously in elderly patients who are taking medications that decrease heart rate, such as beta-blockers, calcium channel blockers, and cardiac glycosides. Treating OH in the elderly patient is challenging as a result of cardiac co-morbidities and their interventions. In addition, the elderly are prone to dehydration as a result of decreased fluid intake.

Reflex Syncope (Neurally Mediated Syncope)

Besides OH, syncope is another etiology of dizziness and/or lightheadedness. The *European Heart Journal* published the guidelines for the diagnosis and management of syncope in 2009. The guide classifies syncope into several categories, reflex syncope (neurally mediated syncope), orthostatic hypotension (discussed above), and cardiac syncope.[8] Management of the syncopal symptoms is dependent upon the classification of

the syncope. Reflex syncope also called neurally mediated syncope is a classification including vasovagal syndrome, situational syncope, carotid sinus syncope, and atypical forms. As a group, the clinical features that suggest this diagnosis are: absence of heart disease; long history of recurrent syncope after sudden, unexpected unpleasant sight, sound, smell or pain; prolonged standing or crowded; hot places; nausea, vomiting associated with syncope, during a meal or postprandial, with head rotation or pressure on carotid sinus, after exertion.[8]

Moya et al reported that the cornerstone of nonpharmacologic management of patients with reflex syncope is education and reassurance regarding the benign nature of the condition.[8] Education regarding avoidance of triggers (eg, hot crowded environments, volume depletion), early recognition of prodromal symptoms and performing maneuvers to abort the episode (supine posture, physical counterpressure maneuvers).[8] It is important to avoid agents that lower BP including alpha blockers, diuretics, and alcohol. Tilt training has also been described as a treatment of reflex syncope. Physical therapists are able to assist physicians with the nonpharmacological interventions for reflex syncope by educating the patient with avoidance techniques, recognition of prodromal symptoms, and in maneuvers to avoid the event altogether.

Pharmacologic management using various agents has shown limited effectiveness for reflex syncope.[8] Cardiac pacing has also been implemented but has been shown to play a small role in therapy for reflex syncope, unless severe spontaneous bradycardia is detected during prolonged monitoring.[8]

Zaqqa and Massumi reported that neurally mediated syncope (NMS) may be controlled by an increased fluid and salt intake and avoidance of triggering factors such as dehydration, extreme heat, alcohol consumption, and prolonged standing.[9] Pharmacological intervention has been hampered by the unpredictable nature of the syncopal episodes, however, the medical interventions include beta-blockers, midodrine (an alpha agonist), selective serotonin re-uptake inhibitors (SSRI), or fludrocortisones. Beta-blockers assist in preventing hypotension and bradycardia. Midodrine has been discussed above. Serotonin is a neurotransmitter with cardiovascular effects. Selective serotonin re-uptake inhibitors (including Prozac, Paxil, Cymbalta) increase the concentration of serotonin having effects of increasing blood pressure.[9]

Cardiac Syncope

Moya et al have reported that with cardiovascular syncope there is presence of definitive structural heart disease, abnormal ECG, sudden onset palpitation followed by syncope, ECG findings suggesting arrhythmic syncope, occurs during exertion or supine.[8] The treatment of cardiac syncope must be specific to the cause. Treatments for cardiac syncope include cardiac pacing, catheter ablation, antiarrythmic drug therapy, and implantable cardioverter defibrillator devices.[8] When treating the elderly patient with syncope, the clinician must be cognizant that different forms may co-exist making diagnosis more difficult. See Table 1 for the nonpharmacological and medical management of orthostatic hypotension, reflex syncope, and cardiac syncope.

Medication-related Dizziness

Tusa has reported that there are many medications that may cause dizziness or be harmful to the dizzy patient.[1,10] Medications such as anticonvulsants, antidepressants, antihypertensives, anti-inflammatory agents, hypnotics, muscle relaxants, tranquilizers, and chronic use of vestibular suppressants may cause disequilibrium and lightheadedness. It has been suggested that the use of vestibular suppressants (ie, meclizine) and scopolamine be used for only a few days during acute vestibular hypofunction caused by vestibular neuronitis and labyrinthitis. These drugs are known to interfere with central compensation within the denervated vestibular nucleus. Other drugs, aminoglycosides, which are antibiotics, are known to cause vestibular ototoxicity leading to disequilibrium. These drugs must be used very cautiously with the clinician closely monitoring for signs and symptoms of vestibular ototoxicity. Vestibular rehabilitation may be helpful for these patients and will be discussed below.

Psychogenic Dizziness

Psychogenic dizziness is a classification of dizziness that includes psychological conditions such as depression, anxiety, panic attacks, phobias, and somatoform disorders.[1,10] Panic attacks are a type of anxiety disorder that cause intense fear or discomfort and is frequently associated with dizziness, nausea, shortness of breath or chest tightness, paresthesia, and sweating. Chronic subjective dizziness (CSD) is a term defined about 10 years ago to better define psychogenic dizziness.[3] The symptom complex for CSD includes: lightheadedness, heavy headedness, a feeling of imbalance that frequently is not apparent to others, a feeling that the floor is moving from underneath them, a feeling of dissociation from one's environment.

Anxiety disorders are the most common psychiatric pathology identified with CSD, including generalized anxiety disorder, panic or phobia disorders, or minor anxiety. In a small minority, depression, posttraumatic stress disorder, hypochondriasis, and conversion disorder were also identified.[3] Treatment of psychogenic dizziness or CSD begins with psychoeducation. It is important to stress that their symptoms are from a psychiatric process. The patient must be educated as to how psychologic disease can produce and sustain physical symptoms. Following this education, the patient should receive psychological therapy, such as cognitive behavioral therapy. Pharmacologic intervention usually begins with an SSRI, which are the first-line therapy for anxiety disorders. Supplementation of an SSRI with a benzodiazepine such as clonazepam, may be useful during the initial few weeks of treatment. If patient also has migraine with CSD, a tricyclic antidepressant (eg, nortriptyline) may be added that treats both CSD and a migraine. Lastly, vestibular rehabilitation may also play a role by introducing the patient to provocative stimuli in a controlled environment. See Table 2 for the nonpharmacological and medical management of medication-related and psychogenic dizziness.

TRUE VERTIGO

Peripheral Type

Peripheral type vertigo results from abnormalities in the vestibular end organs (semicircular canals and the utricle), the vestibular nerve, and the vestibular nuclei. The most common cause is BPPV that occurs when debris (otoconia) from the utricle within the

Table 1. Nonpharmacological and Medical Management of Dizziness and Lightheadedness due to Orthostatic Hypotension, Reflex Syncope and Cardiac Syncope[7-9]

Classification	Nonpharmacological intervention	Medical intervention
Orthostatic Hypotension	• Withdraw offending medication once identified (either substitution or discontinuation) • Rise slowly from supine to sitting to standing position • Avoid straining, coughing, and prolonged standing in hot weather • Cross legs while standing, squat, stooping forward • Raise head of bed 10° to 20° • Small meals and coffee in the morning • Elastic waist high stockings • Increase salt and water intake • Exercise (eg, swimming, recumbent biking, and rowing) • Dorsiflex feet several times before standing • Schedule activities in the afternoon • Avoid standing motionless, rising quickly after prolonged lying or sitting • Avoid large meals, alcohol consumption, vigorous exercise, heat, hot baths and hot environment, dehydration, working with arms above shoulders, straining with urination or defecation, coughing spells, rapid ascent to high altitude, hyperventilation and fever	• Fludrocortisone is a mineralocorticoid that reduces salt loss and water loss thereby increasing blood volume and pressure • Midodrine is an alpha agonist that has selective vasopressor properties that increases vascular tone and resistance thereby increasing pressure • Ibuprofen and other nonsteroidal anti-inflammatory drugs can block prostaglandins and raise blood pressure in patients with orthostatic hypotension • Caffeine is an adenosine-receptor blocker that inhibits adenosine-induced vasodilatation by blocking these receptors • Erythopoietin has been shown to be effective in a subgroup of patients with anemia or autonomic dysfunction, although the mechanism of action is not fully known • Clonidine is a peripheral α-2 adrenergic agonist that improves orthostatic hypotension in causes of autonomic failure
Reflex Syncope (Neurally Mediated Syncope)	• Education regarding avoidance of triggers (eg, hot, crowded environments, volume depletion agents that lower BP including alpha blockers, diuretics, and alcohol) • Reassurance regarding the benign nature of the condition • Early recognition of prodromal symptoms • Performing maneuvers to abort the episode (supine posture, physical counterpressure maneuvers) • Increase fluid and salt intake • Avoidance of triggering factors such as dehydration, extreme heat, alcohol consumption, and prolonged standing • Tilt table training	• Beta-blockers prevent hypotension and bradycardia • Midodrine (see above for mechanism of action) • Selective serotonin re-uptake inhibitors serve to increase serotonin levels that helps to maintain blood pressure • Fludrocortisones (see above for mechanism of action)
Cardiac Syncope	• Requires medical intervention	• Cardiac pacing • Catheter ablation • Antiarrythmic drug therapy • Implantable cardioverter defibrillator device

Table 2. Nonpharmacological and Medical Management of Medication-related or Psychogenic Dizziness[3,10]

Classification	Nonpharmacological intervention	Medical intervention
Medication-related dizziness	• Withdraw offending medication once identified (either substitution or discontinuation) • Vestibular rehabilitation	• Requires nonpharmacological intervention • Use of medications for symptom control as needed
Psychogenic dizziness	• Psychoeducation explaining to the patient why and how the psychological disease can develop and maintain physical symptoms • Cognitive behavioral therapy for patients with anxiety • Vestibular rehabilitation in which the patients are exposed to provocative stimuli in a controlled environment	• SSRI are the first-line therapy for anxiety disorders • Supplementation of SSRI with a benzodiazepine such as clonazepam, may be useful during the initial few weeks of treatment • If patient also has migraine with CSD, a tricyclic antidepressant (eg, nortriptyline) may be added that treats both CSD and migraine

endolymphatic system causes positional irritation to the cupula in the semicircular canals stimulating vertigo and nystagmus. The nonpharmacologic treatment for BPPV include vestibular rehabilitation, specifically, canalith repositioning maneuvers and habituation exercises.[11,12] Canalith repositioning maneuvers, such as the Epley and Semont maneuvers have been used to treat BPPV to direct the otoconia back to the utricle.[11,12] The vast majority of all BPPV cases are from otoconia entering the posterior canal. The other 2 canals can also be affected by otoconia; however, cases affecting the anterior canal are very rare.[13]

Other causes of peripheral type vertigo include: otitis media, labyrinthitis, vestibular neuritis, trauma, endolymphatic hydrops (eg, Meniere disease) and acoustic neuroma. Otitis media is a condition treated medically with antibiotics to resolve the infection in the middle ear. When treated quickly, the symptoms of vertigo can be avoided. Labyrinthitis is a condition that is characterized by inflammation of the inner ear due to bacterial or viral insult. The cause is unknown, but commonly follows otitis media or an upper respiratory infection. Bacterial labyrinthitis usually requires hospitalization with intravenous antibiotics and sometimes surgical drainage and debridement. Nonpharmacological interventions include habituation exercises. Vestibular neuritis usually results

following an upper respiratory infection. Treatment with prednisone for 10 days is the usual medical intervention. Trauma from traumatic brain injury may also result in a peripheral vertigo, but symptoms usually resolve spontaneously over weeks to months. A perilymphatic fistula occurs when there is a rupture of the round or oval windows that separate the perilymphatic space from the middle ear. Most cases heal spontaneously, but medical intervention (surgical repair) is recommended in severe cases.[11] Meniere disease is a condition attributed to dilation and periodic rupture of the endolymphatic compartment of the inner ear. Medications such as meclozine, diazepam, lorazepam, and clonazapam are the most useful suppressive agents for Meniere vertigo attacks. Common practice to advise salt restriction and use of a mild diuretic are prescribed in hopes of less frequent attacks.[14] Lastly, acoustic neuroma is a tumor of Schwann cells of the vestibular nerve, causing vertigo. Treatment for acoustic neuroma includes radiotherapy or surgical removal.

Central Type

The management of central type vertigo is varied with many etiologies as follows: vertebrobasilar insufficiency, neurolabyrinthitis, cerebellar hemorrhage, brainstem ischemia, multiple sclerosis, and migraine.[11] These common etiologies have a broad range of medical and nonpharmacological interventions beyond the scope of this article. Suffice it to say that nonpharmacological interventions include physical therapy for balance training, vestibular rehabilitation, fall prevention, and other physical therapy interventions addressing the individual impairments our patients may have.

CONCLUSION

Dizziness is a common complaint among the elderly with a broad range of etiologies. Dizziness is managed by nonpharmacologic and pharmacological interventions based upon the etiology. Physical therapists have many nonpharmacologic interventions to provide their patients. In addition, physical therapists have a framework from which to treat their patients or refer their patients for appropriate medical attention, based on the etiology. Understanding the difference between orthostatic hypotension, reflex syncope, cardiac syncope, and vertigo will allow the clinician to safely and effectively manage their patient's complaints of dizziness, reduce their patient's symptoms, reduce the risk of falling, and improve their quality of life.

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REACHING OUT TO PREVENT FALLS IN RURAL AND ISOLATED AREAS

Regina Ugrinsky, SDPT; Tiffany E. Shubert, MPT, PhD

The elderly population in the US is growing. Keeping older adults independent as long as possible with a high quality of life is the focus of many health promotion efforts. One major health promotion focus is reducing the risk of falling that can lead to injury, functional decline, or death. In more rural areas, the projected growth is even more pronounced than in urban areas, but the shortage of physical therapists and isolated living condition creates a greater challenge to disseminate fall prevention interventions in the traditional office setting. New delivery options are needed for greater dissemination of fall prevention strategies and exercise regimes to improve leg strength and balance, and reduce the risk of falls and injury. These interventions in rurual areas should focus on improving compliance and correct performance of an exercise regime, two barriers to successful participation in an effective home exercise routine.

BACKGROUND

Falls are a great concern for adults over the age of 65 due to the resulting mortality and morbidity. Each year more than 33% of adults over the age of 65 will fall.[1,2] Falls are the most common cause of injury deaths and the leading cause of nonfatal injuries, and the rates are increasing. The death rate from falls increased significantly between 1994 and 2003[3] and nonfatal falls were the leading reason for hospitalizations in 2004.[4,5] Injuries include bruises, hip fractures, or head traumas, all of which can negatively affect independent living. Injury, together with fear of falling, increases the falls risk and decreases the quality of life of an older adult.

The number of elderly residing in rural areas is growing faster than in urban areas.[6] According to the Economic Research Service, part of the US Department of Agriculture, baby boomers will tend to retire in more rural and small town areas.[7] This is contributing to an increasing trend in rural states where there are more people over age 65 in rural counties than under age 18, essentially reversing the population pyramid, traditionally composed of significantly more younger people than older. A report from Cornell University's Community and Rural Development Institute gives 3 reasons for this trend: (1) young people have traditionally migrated away from rural areas, (2) the birth rate has declined more in rural areas compared to urban areas, and (3) there has been an influx of more people seeking to retire in rural areas.[6]

Compared to urban regions, individuals in rural areas have poorer health status, more chronic health conditions such as diabetes, asthma, and obesity, and are less likely to meet the CDC recommendations for moderate to vigorous activity.[7] In 2004, falls were the most common reason for hospitalization in rural areas with 240 individuals per 100,000 hospitalized due to falls, followed by motor vehicle accidents with 135 per 100,000.[5] Woman living in rural areas have a higher risk of hip fracture due to a fall compared to women living in urban areas,[4] and 22% of unintentional injuries in rural populations were due to falls.[4] Contributing to this situation is limited access to fall prevention programs and services for people living in more rural communities.[8]

"The number of elderly residing in rural areas is growing faster than in urban areas."

The existing shortage of health care providers, including physical therapists, who are trained in effective falls prevention, is more pronounced in rural areas. In 2008, the APTA reported an overall vacancy rate of 13.8% for physical therapists in acute care settings and 13.1% in outpatient settings,[9] resulting in an imbalance between the growing need for falls prevention intervention programs and a shortage of program providers.

FALLS: INTRINSIC/EXTRINSIC FACTORS

Falls are due to a combination of both the intrinsic and extrinsic factors of the individual and their environment. Intrinsic factors leading to falls pertain to issues of the individual and include a history of falls, increased age, female gender, sedative medications or taking more than 4 prescribed medications, chronic medical conditions, impaired mobility and gait, sedentary behavior, fear of falling, nutritional deficiencies, impaired cognition, depression, visual impairments, and foot problems.[2,4,5,8,10] Older adults in rural areas have even less access to resources and specialists to implement appropriate interventions to address these factors.[11] Extrinsic risk factors pertain to the environment and includes poor lighting, slippery floors, uneven surfaces, footwear and clothing, and inappropriate or unavailable walking aides or assistive devices.[2,10] These risks can be assessed and addressed by a physical therapist, who can develop a safe and effective exercise program to increase a person's strength, balance, and functional mobility and assess the home for safety. Fall prevention exercise interventions are traditionally done either in a series of treatments in an outpatient clinic or in group exercise programs. They are not always feasible in more remote areas where transportation and cost need to be considered. Innovative partnerships with other providers can be a feasible venue to provide interventions for at risk elders in rural settings. An excellent example of this is the "Senior Safety Prevention Intervention and Community Education" (SPICE) program offered by the Pitt County Department on Aging in North Carolina. The purpose of this program was to provide seniors identified as at risk for falls and caregivers with access to resources to help maintain independence.[12] The SPICE program paired a physical therapist and an occupational therapist with a female contractor to help older women living alone in their homes make the

appropriate structural modifications to improve home safety.[12]

HOME EXERCISE PROGRAM

A home exercise program designed to increase balance and strength is as effective as group exercise interventions[13] and provides a more practical solution for older adults living in remote areas. A study comparing group based and home based endurance exercise programs for older adults reported that some older adults prefer home exercise over a formal exercise setting, and the outcomes for either setting were equal.[14] Further evidence supporting feasibility of home based falls risk reduction in rural communities was demonstrated by Yates et al whose program consisted of structured exercise, nutritional counseling, environmental hazards, and home safety education.[15] Participants in the intervention group increased lower extremity strength, improved balance, and falls efficacy compared to a control group. A home based intervention fosters self-management of an individual's health, requires occasional monitoring and reassessment, thus demanding less resources from the health care system.[15]

Correct performance of exercises is a prerequisite for a successful home exercise program. Physical therapists rely on a patient's motor skills to perform an exercise program. Kisner and Colby define motor learning as "a complex set of internal processes that involves the relatively permanent acquisition and retention of a skilled movement or task through practice.[16] Physiological changes occurring with age may become barriers to learning. Physical barriers are hearing, visual, and musculoskeletal changes affecting the ability to adapt to instructions. Cognitive barriers are decreased memory capacity and a decreased recall for knowledge and instruction.[17-19]

LEARNING

Harrington describes two sets of memory changes that affect learning.[18] Implicit memory is an automatic form of memory[20] and is involved in skill learning. Explicit memory is verbalized and specific, associated with recall and recognition.[18] Harrington examined both forms of memory in older adults (average age 76 years old) who were learning a motor sequence. She compared reaction times of older adults to younger adults and found that implicit memory of the older adult is 43% to 60% that of a younger adult, and explicit memory is only 63% to 74% that of the younger adult. These results suggest that older adults need more time, practice, and feedback to successfully learn a motor sequence or exercise.[18] Individuals in rural areas who need to travel over greater distances or who have limited access to trained therapists will need alternative methods to enhance learning as they may not have the time or resources to attend therapy sessions at the optimal frequency required to enhance learning.

Some researchers have studied alternative mediums to deliver educational content and improve performance. Live instruction generally results in better outcomes than illustrated brochures.[20-22] Reo et al compared groups of elderly patients being trained by one of three methods: a live therapist, a video of a therapist teaching, or an illustrated brochure with instructions. They found no differences in exercise performance scores between the groups who learned via therapist and video, and both groups improved performance scores compared to those who learned via brochures.[22] For best outcomes, therapists need to instruct in person, model exercises, and give appropriate feedback to facilitate the learning process. Due to possible visual, cognitive, or literacy issues, written instructions should be reviewed verbally.[23] In cases where time, distance, or cost is an issue, video is a viable and effective substitution, and one that should be considered in rural settings.

ADHERENCE

Another prerequisite for success is adherence to the exercises. Adherence is one of the strongest predictors of successful outcomes.[24] Guccione describes adherence as "consistent behavior that is accomplished through an internalization of learning, enhanced by independent coping and problem solving skills." The term "compliance" is used to assess how a patient adheres to a prescribed set of behaviors or interventions. While adherence implies a process self-direction and choice, compliance implies more a subservient carrying out of orders without choice.[17,24] Both characteristics are important to study best methods to facilitate behavioral change.

Many people do not achieve adherence with exercise. Reports suggest that only one-third to two-thirds of patients receiving physical therapy are compliant with their prescribed exercises, and most don't admit to noncompliance.[19,25,26] These rates are similar to community-based adult fitness programs, with adherence rates ranging from 40% to 65% during the first year.[19] Factors negatively affecting adherence include smoking, inactivity, nonspouse support, preference to exercise alone, overall intensity, an inconvenient location, lower income, poorer health and depression,[27] and several of these factors are more prevalent among older adults living in rural areas.[4,7] A person's age will influence adherence. Although people over the age of 60 demonstrate greater adherence than those younger,[28] those over the age of 75, exhibited 60% less adherence than 65 to 69 year olds.[27,29]

Adoption of the exercise regime and delivery influences adherence and outcomes. For example, Henry et al demonstrated that having 2 to 5 exercises led to greater adherence than 8 exercises.[30] Education concerning the purposes of the regime and exact implementation instructions increases compliance.[24] An exercise regime too complex or not tailored to a person's individual routine fosters less adherence.[26,31] Hussey found compliance with a medication regime is increased by simplifying instructions and tailoring the regime to the individual.[23] A good relationship to the health care provider is important. A study of compliance with medications in the Japanese elderly reported that intentional noncompliance was most influenced by the relationship between the patient and the health care provider. Those who tended to have poor relationships tended to comply less.[32]

Adherence can be improved the following ways: (1) exercise regimes should be simple; (2) patients educated on how, when, and why these exercises should be performed;[33, 34] (3) no more than 5 exercises should be given at a time;[30,31] (4) the most convenient time to exercise in the daily routine should be discussed and identified. In a study of compliance with medications in older adults, a picture schedule was prepared for each subject after discussing and taking into consideration their daily routine and medication schedule. This served to enhance compliance when compared to a group

that only received verbal instructions.[23] This step also decreases the patient's perception that there is no good time to do exercises, one of the strongest barriers related to compliance.[19,26]

Feedback and reminders have been shown to improve adherence and outcomes.[19,23,26,33] Continued feedback is essential to ensure progress. It gives information about how the patient is managing and if any changes may need to be made. Feedback can be achieved efficiently and economically by telephone in regular time intervals, such as weekly or bi-monthly as demonstrated by a study to increase physical activity for males older than 70 years of age who lived too far away to participate in a facility based program.[35] In baseline counseling, the participant learned an exercise program, received a workbook, resistant elastic bands, a pedometer, and a poster showing leg strengthening exercises. The same counselor provided telephone counseling 3 additional times over a 6-week period, then monthly for 12 months. The calls were designed to assess physical activity goals and offer support and reinforcement. Primary care providers provided endorsements of the program during regular visits. Automated personalized telephone messages were delivered monthly to encourage the patient. An individualized report was mailed quarterly to the patient encouraging progress towards achieving goals and depicting progress achieved so far. When compared to participants receiving usual care, individuals demonstrated significant improvements of rapid gait speed and accomplished more minutes/week of moderate/vigorous physical activity. This study showed successful and resource efficient ways to effectively increase physical activity at home for older adults.[35]

TECHNOLOGY

Advances in technology promise to close the distance gap in rural health care and can be used to deliver many of the evidence-based methods in this paper. Telehealth is defined as "the use of telecommunications technology for medical diagnostic, monitoring and therapeutic purposes when distance separates the users."[36] Telehealth can be used as store-and-forward, meaning data is collected, stored, and then forwarded for later interpretation, or it can be used as real time self-monitoring/testing telemedicine services, to monitor physiologic measurements, test results, images, and sounds collected at a patients home or health care facility, or it can be used as clinician-interactive services, when situations would require a face-to- face approach, such as consultations, home visits, etc.[36]

"Advances in technology promise to close the distance gap in rural health care and can be used to deliver many of the evidence-based methods in this paper."

Store-and-forward describes the way telehealth has been used in physical therapy. Therapists use this technology to collect patient background information and develop assessments before a patient arrives in the clinic. Many facilities are moving towards electronic medical records,[37] which is a basic "store and forward" application where the patient history can be assessed prior to the initial interaction with the patient. This approach could be used in telehealth to improve patient's adherence by recording each exercise session, and then forwarding the information to the therapist prior to the interaction with the patient. This allows therapists to monitor adherence on a regular basis without face to face contact and to track if changes or offer encouragement is needed.

The self-monitoring/testing services are useful in physical therapy. Video conferencing can be used to monitor patients in their homes and video documentation can be used to record patient progress for reports to the insurance companies.[37] In the area of falls prevention, this technique could be used to monitor a person's exercise performance and model corrections if necessary.

There are few trials in the literature demonstrating the effectiveness of clinician interactive services in physical therapy and rehabilitation. One study demonstrated telehealth is as effective as face-to-face interactions with orthopedic patients. Researchers examined a group of patients following total knee arthroplasty, comparing those who received their rehabilitation via telehealth with those who had face-to-face interaction with a therapist. Both physical and functional improvements were used as outcome measures. Physical outcomes included pain, knee flexion, and limb girth measurements. Functional outcomes included a Gait Assessment Rating Scale, the Patient Specific Functional Scale, and the Timed "Up-and-Go." The telehealth group had outcomes equal to the face-to-face group. The participants were an average age of 67, and most reported little or no confidence in using a computer prior to the study, but the majority were highly satisfied with the perceived benefits.[38] This study demonstrates that telehealth can be successfully used in the elderly population even if they are not computer literate.

There are financial barriers to using telehealth. Technological requirements include using a medium to high bandwidth, placement of a monitor and other equipment in the patient's home, support to the patient using the equipment, and ongoing technical support to monitor technical issues that arise.[39] Setting up a program requires an initial investment. It must then become self-supporting. Reimbursement is still an issue for telehealth, some payers include it in health plans, but if not, then patients would need to self-pay. Many existing programs are funded by grants and cannot be continued when money runs out.[37] Despite these issues, the possibilities of using technology to overcome distance, decrease cost of care in the long run, and increase ease of use when working with the elderly in rural areas is promising.

SUMMARY

With the growing population of elderly persons in rural USA and the shortage of physical therapists, it is possible that effectively preventing falls will become difficult and costly without innovative application of technology. Older adults in rural areas already suffer from disproportionate injury and death from falls, and the numbers will continue to rise. New ideas are needed to expand care using fewer resources. Developing effective home based exercise interventions for dissemination in rural areas can help reduce falls and the risk of falling and lead the client to more health self-management. Continued supervision

will ensure that the program is carried out safely, correctly, and over an amount of time to be effective. Using technology to increase communication with patients could facilitate this process.

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Regina Ugrinsky, SPT is graduating in summer of 2010 in the first class of the UNC entry level Doctorate in Physical Therapy program. Gina wanted to gain a greater understanding of the barriers facing older adults, specifically older adults in rural and underservered areas, in adherence and compliance with home exercise programs, and registered for an optional research elective with Dr. Tiffany Shubert to learn about different technologies available or in development to help deliver home exercise programs. This paper, delineating the challenges facing older adults in rural areas and potential ways to improve care is an outcome of that elective.

Dr. Tiffany Shubert received her PhD from the Human Movement Science curriculum at UNC Chapel Hill and her MPT from UC San Francisco. In her position as a research scientist at the UNC Institute on Aging, she has studied factors associated with successful aging. She is exploring how physical therapists can incorporate both evidence-based health promotion programs and technology in their treatment sessions to facilitate behavioral change in older adults patients to improve function and mobility and minimize falls risk.

MARK YOUR CALENDARS

Annual Conference: PT 2010
June 16-19, 2010
Boston, MA

National Student Conclave
October 29-31, 2010
Cherry Hill, NJ

GERINOTES EDITORIAL BOARD: PART TWO INSIGHT AND ADVICE

Editorial Board members: Kathy Brewer, Lucy Jones, Carol Schunk, (2nd row) Jill Heitzman, Sandra Levi, Nora Francis, Pat Antony, Pam Wenndt, Bill Staples (Editorial Board members not present for this photo include: Jennifer Bottomley, Helen Corneley, Ken Miller, and Ellen Strunk)

In the March issue we presented Part One of Meet the GeriNotes Editorial Board. Part 2 is the responses to questions about GeriNotes and being a Geriatric Practitioner.

GERINOTES EDITORIAL BOARD MEMBERS:

Patrice Antony
Kathryn Brewer
Jennifer Bottomley
Helen Cornely
Nora Francis
Jill Heitzman
Lucy Jones
Sandra Levi
Kenneth Miller
William Staples
Ellen Strunk
Pam Wenndt

WHAT ADVICE WOULD YOU GIVE PROSPECTIVE GERINOTES AUTHORS?

LEVI: When planning an article, carefully think through (1) what you want the reader to know, to do, or to believe after reading your article and (2) the content the reader would need to adopt this knowledge, skill, or belief. When I write from the perspective of what I want the reader to learn rather than from the perspective of what I want to share, I write more coherent articles.

CORNELY: Just do it. Stop thinking about writing something and just sit in your chair in front of your computer and write down your ideas. Don't fret about references and organization on first draft; that can come later. Write down your ideas. My experience is if you are thinking it, someone else is also.

JONES: Share with us what you feel passionate about as you treat the older adult. What excites you when working towards your patient's best function?

ANTONY: Focus topics on "real world" practice issues.

HEITZMAN: Find topics you like within your practice and share the information either through case studies or practice tips. If you are afraid to publish, ask one of the members of the editorial board to proof it for you.

BOTTOMLEY: It is important to share your clinical and professional perspectives with colleagues. Writing is also a wonderful way of organizing your own thoughts and can be very relaxing and enjoyable.

♦ ♦ ♦ ♦ ♦

WHAT DO YOU SEE IS THE MOST IMPORTANT ISSUE FOR THERAPISTS WORKING WITH OLDER ADULTS?

STRUNK: I think therapists need to keep in mind that older adults are exciting and challenging to work with. Many people still harbor stereotypes of older people as being at the end of their life or not able to participate a lot in functional activities. We risk not being as proactive in our treatment approaches as we could be.

WENNDT: I would encourage all students and therapists to look closely at the older adult as a client. To me, the older adult challenges all of my education and knowledge! I must be clinically competent in all areas to be able to evaluate and develop a treatment plan for these clients. Working with the older adult makes me give 110%!

BREWER: (1) ALWAYS see the whole person. Don't get too focused on the reason for referral without considering all of the social, emotional, and functional aspects of the patient. If there is a factor in this person's life that affects your treatment outcome, it is something that deserves your attention. (2) ALWAYS look for opportunities to engage your patient in physical activities beyond your plan of care. Address the barriers and help problem solve, educate, and identify resources that help to maximize participation in all aspects of wellness.

LEVI: Frailty is common among older adults. Research suggests that frailty is a distinct syndrome, rather than normal aging. The most important issue for physical therapists working with older adults is to identify frailty at its earliest stages when physical therapy interventions can often attenuate or reverse the process.

MILLER: I believe that the most important issue when working with older adults is to have evidenced-based assessment tools and objective measurable treatment outcomes that not only directs patients' care, but provides for quantifiable and irrefutable evidence that what we do makes a difference in our patient lives. By having these tools and outcomes, the RAC auditors and any other insurance auditor

cannot deny the need for physical therapy services without just cause.

JONES: The most important concept for those working with the older adult is to be actively promoting wellness and encouraging independence, however able, in any living environment.

HEITZMAN: Challenge our aging population! Do not accept the stereotype that they cannot do stuff because they are old. Push activity and successful aging.

CORNELY: Most important issue is health promotion. I think mobility, strength, and joint flexibility are critical to our physical well-being. Also a positive attitude and a smile does wonders for us all.

FRANCIS: I believe the most important issue for therapists working with older adults is the provision of patient education about health and wellness and the value of physical activity. I sense there is a tendency for older adults to link aging automatically with a decline in physical health and mobility. As health care professionals who specialize in human movement, physical therapists have an amazing opportunity to provide education, based on evidence in the literature, about strategies that older adults can use to maintain health physically, cognitively, emotionally, and spiritually.

BOTTOMLEY: Changing health care policy and reimbursement, restrictions on care, lack of preventive approaches.

STAPLES: We need to look at the whole patient with a bio-psychosocial view. Physical function is important but we need to look at their environment, their nutrition, and their social involvement among other health issues.

ANTONY: Being able to see the "big picture" as it relates to the patient's functioning ability. What are the community resources available to that patient? How can the therapist maximize those resources in meeting the needs of the patient?

♦ ♦ ♦ ♦ ♦

HOW CAN WE ENCOURAGE STUDENTS OR THERAPISTS TO SPECIALIZE IN THERAPY FOR OLDER ADULTS?

FRANCIS: I think the best way to encourage students to specialize in geriatric physical therapy is to promote and provide an adequate number of clinical education opportunities that focus on provision of services for older adults. In addition, these clinical opportunities need to be valued by the academic program, ie, fulfill clinical education requirements for entry-level practice. I also believe students and therapists can be encouraged to specialize in geriatrics because of the numerous practice opportunities that will be available and grow as a result of the aging of the baby boomer generation.

HEITZMAN: Have them work on physical activity programs to promote successful aging. Many students still see the aging adult as the stereotyped frail NH patient, and we need to get out of that mindset. I would suggest working on programs for retirement groups or Senior Olympics.

JONES: The exciting aspect of geriatric care is the challenge of solving the "geriatric puzzle" as each patient presents themselves to us. The list of co-morbidities, medications, mobility challenges, family dynamics, individual motivation, and degree of health crisis all play into the assessment and intervention of the older adult population. It is an exciting time when, with our doctorate of physical therapy, our definitive diagnostic skills greatly enhance our problem solving capability in working with our older patients to make the life ahead for these seniors rich and rewarding whatever their condition.

CORNELY: Assigned exposure as a student is what captured my interest in the field. If I had not had a clinical rotation in a skilled nursing facility as a student, I might have never found my passion for working with older adults.

STAPLES: I really enjoy spending time with my patients and listening to their life stories and experiences.

BOTTOMEY: Take a look at who you are treating ... they may be surprised that most are 65 and older... so, though they may not realize it, they are practicing geriatrics.

♦ ♦ ♦ ♦ ♦

WHAT IS THE BIGGEST CHANGE IN THERAPY IN RELATION TO OLDER ADULTS IN THE LAST 10 YEARS?

MILLER: Over the past 10 years, the need for evidenced-based practice has moved front and center. Medicare's pay 4 performance and other insurance companies tying payment to outcomes have forced the PT profession to look at outcomes much more closely. It is no longer acceptable to simply say, "That's the way we always do it!" With the expansion of our professional degree to DPT and the development of residencies and fellowships we as PTs are evolving our profession and improving our evaluative and treatment skills. This is most important with our growing older population, whereby we will be treating the first of the baby boomers within the next year. It is imperative for us to be able to triage who needs our services most and who will benefit from what we do.

CORNELY: Expectations are much higher for functional gains. Rehabilitation is more extensive and intensive for older adults. We used to think of older adults as fragile and breakable. I still remember when we did not use resistive exercise for fear of injuring arthritic joints. Luckily, physical therapy changes and now we know how resilient older adults are and even with advanced age, there is an enormous capacity for healing and functional improvement in older adults.

STAPLES: I believe that therapists need to stand up for their patients when it comes to treatment. In nursing homes minutes have become currency, and are seemingly more important than caring for the whole patient. We should be looking to maximize care not trying to achieve a certain level of care while supplying the minimum amount of minutes.

BOTTOMLEY: The Balanced Budget Act.

HEITZMAN: More older adults are living in their own homes longer and not staying in the hospital for total joint replacements and other surgeries. Home health and outpatient PTs need good skills in acute postsurgery.

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A 1-day preconference geriatric review course will be held July 28, 2010. See www.expaac.org for more details.

American Physical Therapy Association

PAIN CONTROL FOLLOWING TOTAL KNEE ARTHROPLASTY: IMPLICATIONS FOR PHYSICAL THERAPISTS

Lee Ann Eagler, PT, DPT

INTRODUCTION

Degenerative joint disease (DJD) or arthritis is a common diagnosis in the United States, particularly in the elderly population ages 65 years and older. In 2003-2005, the Centers for Disease Control have estimated the prevalence of doctor diagnosed arthritis among adults at 21.6% or 46.4 million people, with 50% of those diagnosed being elderly.[1] Prevalence of DJD is estimated from 20% to 50% in patients greater than 70 years of age.[2] A common treatment used for arthritis of the knees and hips are total joint replacement. The American Academy of Orthopedic Surgeons reported more than 250,000 total knee arthroplasties (TKA) are performed annually.[3]

In general there is no consensus on the indications for TKA; however, TKA is being increasingly performed.[2] In 1996, Mancuso et al did a survey of orthopedic surgeons asking about indications used to determine if TKA was indicated.[4] Their results were variable; however, they were able to compile a list of indicators that these surgeons used. This list includes pain, decrease in functional ability, and results of physical examination including the amount of joint space remaining visible in radiographs. Specifically, pain factors indicating the need for TKA included severity of the pain, presence of pain at rest, and pain with transfers. The functional variables that indicate the need for TKA included walking distance, need for assistive devices, and difficulty manipulating stairs. The physical examination indicators included range of motion, joint stability, and quadriceps strength.[4]

Since pain and function appear to be primary indicators for TKA, 299 French patients were surveyed to study pain and disability one day prior to TKA.[2] The mean age of these patients was 73 years of age. Prior to their surgery, the mean visual analog scale score for pain with walking was 55.8 mm and overall pain 54.1 mm (on a 0-100mm scale) that researchers ranked as severe. Based on two functional scales, Lequesne and WOMAC, patients also reported severe disability. Measures of both of these scales included pain, walking distance, stiffness, and general function. Consequently, researchers also found a prevalence of self-reported depression.[2]

Generally, TKA is considered an effective procedure for decreasing knee pain and improving function.[2] Another group of researchers, Wylde et al, recorded pain scores prior to and following the TKA procedure.[5] They reported pain reporting using the WOMAC pain scale of 0 being maximal pain and 100 representing no pain. Prior to surgery, mean scores prior to TKA were 40-45.

"Physical therapists may be the first to encounter patients using some of these pain management techniques and observe complications that arise."

Following TKA mean scores improved to 76 at 6 months, 82 at 2 years, and 88 at 10 years, meaning that patients have mild pain with activities following their surgery at this time. The WOMAC functional scores also demonstrate improvements from preoperative functional abilities. Preoperatively scores averaged 43. This improved to 70 at 2 years, 78 at 5 years, and 79 at 10 years.[5] However, there have been some disputes to these findings with qualitative interviews. Using qualitative interviews, the researchers found only 33% of patients report no functional limitations following TKA. Eleven percent of patients have reported they thought their current function was the same or worse than function before TKA. Thus, there is some discrepancy in the outcomes of TKA.[5]

PAIN CONTROL

The National Institute of Health (NIH) has developed a consensus statement created by a panel of experts regarding care needed for the success of the TKA surgical procedure. The panel found that the factors that improve these outcomes are a "systematic antibiotic prophylaxisis, aggressive postoperative pain management, perioperative risk assessment and management of medical conditions, and preoperative education."[4] They also found that success rates may improve as the technical skills of the surgeon are greater.[4]

As reported by NIH, pain management is a tremendous factor in the success of the TKA in improvement of function and quality of life.[6] Different pain techniques can also have an influence on the recovery of patients. With current trends in the health care system pushing for shorter lengths of stay in the hospital and the push for patients to return to their homes, it is essential to see that pain control is an extremely important factor in the recovery from TKA and any other type of surgery.

Generally, postoperative pain control in the elderly is known to be underestimated and undermanaged.[7] It tends to be complex due to changes due to aging in function of the cardiovascular systems where 50% to 65% of geriatric patients have cardiovascular disease, nervous system where nerve conduction is slowed, the pulmonary system where there is a decrease in defense in respiratory infection, the renal system where there is a reduction of renal metabolism and clearance of analgesics, and the digestive system and hepatic function change the metabolism of medications.[7] Therefore, the geriatric patient may have more complications from pain management techniques. Physical therapists may be the first to encounter patients using some of these pain management techniques and observe complications that arise.

There are multiple different methods used to control pain following TKA.

These can include:

1. Nonsteroidal Anti-inflammatory Drugs (NSAIDS)
2. Opiods (also known as narcotics)
3. Regional Anesthesia
4. Combination of Medications

Nonsteriodal Anti-inflammatory Drugs

Nonsteroidal anti-inflammatory drugs are among the leading drugs used for control of pain following total knee replacement. Nonsteroidal anti-inflammatory drugs are designed to decrease inflammation, relieve mild to moderate pain, decrease body temperature when fever is present, and decrease blood clotting properties.[8] There are many different types of NSAIDS, too numerous to list here. For use of musculoskeletal pain, NSAIDS have little sedation and psychotic effects that are associated with other drugs. Therefore, there are only a few implications for therapists treating patients who are using these types of drugs particularly if NSAIDS are the only medication used for pain control. However, pain may not be well controlled with this class of drugs alone, which may impair therapeutic interventions especially in the acute and subacute phase of recovery following the TKA unless NSAIDS are combined with other medications.[8]

In geriatric populations as well as younger populations, NSAIDS can have some severe adverse effects.[9] Gastrointestinal symptoms are the most common and well known. Upper gastrointestinal damage (ie, esophagitis, gastritis, and ulcers) can occur, along with the complications of these including bleeding and perforation. Gastrointestinal complications increase with increasing age, presence of disability, and history of ulcers.[9] If patients do have known gastrointestinal problems, there may be co-treatment with gastroprotective drugs to prevent complications.[8]

Another series of complications includes cardiovascular events, particularly thromboembolic in nature.[9] The prevalence has become so great the Food and Drug Administration has issued a warning of risk in addition to that of gastrointestinal events already mentioned. This is primarily related to COX-2 inhibitors, a class of NSAIDS.[9]

Finally, there are renovascular complications with use of NSAIDS as well.[8,9] These include sodium retention, edema, and hypertension. For elderly patients with pre-existing renal disease, hypertension, and heart failure, there is an increased risk for renal failure, nephritic syndrome, or acute interstitial nephritis.[8,9]

Opiods

Opiods (also known as narcotics) are recognized to be the most effective in treating moderate to severe pain including acute pain following surgery.[8] Commonly known examples of opiods include fentanyl, morphine, hydrocodone, and oxycodone. One option following for pain control with this class of drug is through patient-controlled analgesia (PCA) so that patients control when the drug is received in prescribed doses. Most clinical trials have demonstrated a higher pain control satisfaction provided by this method when compared to other pain methods.[8] Despite the good pain control these drugs offer, there is the potential for significant side effects particularly in the elderly since the half life of morphine is longer than that of a younger patient.[10] Thus, the drug is not eliminated as quickly. Geriatric patients also have increased sensitivity to this class of drugs.[10]

The primary complications of using narcotics that would affect the rehabilitation process are sedation, mental slowness, and/or drowsiness.[8] In addition, patients may have mood changes. There are also life threatening side effects that can include respiratory depression (the respiratory rate slows), orthostatic hypotension, and gastrointestinal illness particularly nausea and vomiting. Constipation is also a complication.[8]

Elderly patients in Canada were followed by researchers, Ebly and colleagues, to determine effects of narcotic use but not necessarily following TKA but for arthritis pain.[10] It is important to note that these researchers also investigated the use of other drugs in this study as well. In the patients using narcotic pain relief, there was a significant increase in falls, increased difficulty in activities of daily living, and some neuropsychological deficits. These problems were increased when multiple medication classes were introduced, which would be representative of the geriatric patients treated following TKA.[10] Being aware of these drugs side effects can impact the elderly recovery process and therapy.

The side effects of opiods can help or hinder the rehabilitation process. With gastrointestinal illness, sedation, and of course respiratory and cardiac abnormalities, the ability to participate in rehab is decreased. With the significant amount of pain control opioids offer, however, the rehabilitation process can be enhanced.[8] Timing is key in the rehab process as patients will have better pain control during the peak of the drug. Education is important for constipation is a side effect that these drugs can produce. If a patient has been using opiods for a prolonged time prior to and following their TKA, withdrawal symptoms of aching and an increase in pain may occur. These symptoms can be decreased with physical agents and manual techniques.[8]

Regional (Local) Analgesia

Continuous regional analgesia is becoming more prevalent in acute care settings following TKA.[11] There are a variety of different methods for this type of pain control including peripheral nerve blocks, where anesthesia is injected in the nerve trunk to block transmission of pain messages along the peripheral nerve, central neural block (otherwise known as epidurals) where anesthesia is injected within the epidural space, and intravenous regional anesthesia where anesthesia is injected into a peripheral vein of the involved leg so that vasculature can carry the drugs to the nerves of the operated leg. [8]

Where regional analgesia has traditionally been used during surgical procedures, there is a recent trend in use of continuous regional analgesia following surgery. Therapists in the acute care setting may be seeing more patients with this type of pain control. Therapists also may treat patients status post TKA who have had continuous regional analgesia in home care, inpatient rehab settings, and outpatient settings, thus making it crucial to understand how it is administered, potential side effects, and outcomes.[11]

Typically, a catheter is inserted through the skin to the nerve chosen by the anesthesiologist.[11] Anesthesia medication is then administered through the catheter in a single dosage, through PCAs, at a continuous rate, or in combination. Tape is used to secure the catheter and an infusion device is also connected and secured in this manner

to provide continuous analgesia. Therapists will have to be very careful when mobilizing patients who have this pain control method in order to maintain the integrity of the catheter.[11]

Multiple studies have demonstrated that postoperative pain management is improved with these regional analgesia techniques when compared to the general anesthesia.[2,12] Because of this, continuous regional analgesic techniques can also have an impact on the recovery of a patient having a TKA as well. Studies have found that some of the side effects that occur with narcotic use are decreased with the use of regional analgesia since oral opiod medication use is decreased.[12] Allen et al found that pruritus, nausea, and sedation were decreased with the use of regional analgesia in addition to decreased use of opiods.[12] Some of the unique side effects of regional analgesia techniques are decreased sensation in the area below the block and potential motor weakness in the involved leg. There are also reports of discomfort at the site of the block.[11] It has been reported that these motor blocks may delay the effectiveness of physical therapy and early mobilization.[12] However, Brueilly et al when describing physical therapy management with patients who have undergone continuous regional analgesia techniques report that patients can be mobilized with caution, by first assessing the patients capability of maintaining knee extension and controlling eccentric knee flexion movements.[11] Brueilly et al recommend using an assistive device to allow some decreased weight bearing of the involved leg to promote safe ambulation.[11]

Allegri et al performed a literature review on the safety and side effects of the use of regional anesthesia in 2008.[13] Nerve blocks have rare incidences of severe side effects. These side effects are neurological complications such as nerve damage, neurotoxicity from the specific medications used, direct nerve injury, and infection. The authors suggest that larger prospective studies will need to be performed to have a true picture of the safety of the use of nerve blocks. At this time, there are no known articles that specifically investigate the effects of nerve blocks on the elderly. It is unknown if side effects are more likely in this population. It is important for therapists treating patients that have this type of pain control to monitor patients for these side effects.[13]

Combination

While each type of pain control method has been presented individually, therapists should be aware that a multimodal approach is recommended and used in many cases.[14] Due to this circumstance, therapists will need to be aware of the medications used by each patient and be aware that a combination of side effects could occur that may alter treatment plans.

CONCLUSION

Pain control can be tricky for patients who have undergone TKA. Geriatric patients may have particular difficulty with pain control that can be detrimental to improving function and quality of life. Many times patients are unaware of pain control options and potential side effects. Physical therapists who are knowledgeable in pain control methods both medicinally and through implementing modalities can have the greatest impact on recovery from TKA.

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Lee Ann Eagler is a 2003 graduate of Shenandoah University. She has primarily been in an acute care and long-term acute care setting. Recently, she made the shift to Academic Coordinator of Clinical Education at Lynchburg College. Lee Ann has been a member of the Section on Geriatrics, APTA since 2004.

STRENGTH IN NUMBERS–A COMMUNITY BASED FALL PREVENTION PROGRAM

John Yount, PT, MS, GCS; Jeanne Ryan, MA, OTR, CHCE, COS-C

THE NEED FOR FALLS PREVENTION IN THE COMMUNITY

The statistics and consequences of falls for older adults are well known. In the Western Massachusetts communities we serve, the rate of falls was found to be higher than the state average.[1] While local hospitals and nursing homes have internal falls prevention initiatives, there were no local falls prevention programs targeting seniors living in the community. This issue was identified by the VNA & Hospice of Cooley Dickinson (VNAH) and resulted in the design and implementation of an evidence-based, multifactorial falls prevention program called *Strength in Numbers-a Fall Prevention Program*. *Strength in Numbers* is a program involving physical and occupational therapists in a series of 6 one-hour weekly group sessions. The training was held primarily at local senior centers, housing sites, and retirement communities. The process of developing the curriculum, identifying funding, and implementing the program was both challenging and rewarding, with many lessons learned along the way. The outcomes after the second year of the program show a positive impact for participants, a reduction in falls, an increase in physical activity, an improved Functional Reach, single leg standing times, and safer home environments.

VNA & Hospice of Cooley Dickinson

The VNA & Hospice of Cooley (VNAH) provides care to 2,400 patients each year who live in the urban and rural communities of Hampshire and Franklin Counties located in Western Massachusetts. Home-based services and programs include skilled nursing, rehabilitation therapy, and hospice care. With a total of 109 employees, the staff includes specially trained nurses, rehabilitation therapists, social workers, and home care aides. When envisioning the VNAH's long-term impact in the community, the staff envisions the role as being more than a care provider, but also a leader in addressing the critical health needs of the elderly population. This vision led to the creation of the *Strength in Numbers* Program.

Program Development

In early 2008, the idea of creating a community-based falls prevention program began due to the passion and experience of a new administrator whose background was in rehabilitation. She brought with her the experience of developing and implementing a falls prevention initiative in an urban setting. At the VNAH, a team of two physical therapists, an occupational therapist, and an administrator was assembled to develop an educational program that would be appropriate for our community. The development team met weekly, first reviewing the current literature and published clinical guidelines, then evaluating existing falls prevention programs. Members suggested various topics to be included in the curriculum, and then reached a consensus on topics for the 6 sessions.

The session topics are as follows:

Session 1: The Problem of Falls, Personal Falls Risk Assessment, Fear of Falling

Session 2: Strengthening Exercises, Assessment of Balance and Mobility

Session 3: Balance Exercises

Session 4: Medications and Fall Risk

Session 5: Visual Impairments

Session 6: Home Safety Assessment

Once these topics were determined, the next step was to prepare the specific content of each session. Each group member took on the assignment of researching a particular topic and then presenting their findings to the whole group. Many exercise programs were considered, but the "Strong for Life" program, from Boston University,[2] appeared to have the most appropriate and cost effective approach for our group. Several assessment tools for measuring balance and mobility in community dwelling elders were considered. The Functional Reach, Timed Up and Go, and single leg standing tests were selected as part of the individual risk assessment.

After several months, the handouts and slide presentations for each topic were completed. Knowing that it would be important to enhance participation at home, various giveaways were distributed to participants. These included folders and tote bags to organize the materials, resistive bands for exercising, as well as medication boxes and nightlights that corresponded with specific session topics.

The two lead physical therapists held a training session for 12 physical and occupational therapists at the VNAH, who were interested in participating in the Strength *in Numbers* program. The training included outlines for each presentation, instruction in Functional Reach, Timed Up and Go, and a single leg standing test.

Funding

To make the program accessible to as many elders as possible, the goal was to offer the program free of charge to participants and caregivers. To achieve this goal grant funding was solicited with a total of $27,000 received from sources including private and corporate foundations as well as federal Title III funding administered through local organizations. The funding covered the cost of staffing and supplies for the presentations, with the planning time and administrative support provided in-kind by the VNAH.

Local Senior Centers and Councils on Aging were asked to partner with VNAH. A meeting for directors of local senior centers was conducted to present the curriculum and schedule programs for those who were interested in providing complimentary facility space to host the sessions. Directors were also enlisted to recruit volunteers to assist with registration.

Strength in Numbers Curriculum Overview

Session one: introduces the series, and each individual completes a fall risk assessment and Activities Specific

Balance Confidence scale. A discussion follows on falls statistics and the consequences of falls. Participants view the film "Fear of Falling: A Matter of Balance"[3] and have a discussion about this fear, including the downward spiral in physical function that can result. Warm up exercises are introduced in this session.

Session two: physical therapists assess the participants' Functional Reach, single leg standing, and the Timed Up and Go. Participants learn about age-related strength changes and strength training for seniors--how to go about it, safety, and its benefits. A strengthening program is initiated with the use of resistive exercise bands to address strength deficits in lower extremities and core musculature. Instruction in these exercises continues each week of the series. The participants take home the resistive bands and the illustrated exercise program so they can continue on their own. A copy of the video "Strong for Life," which is used in-part during the presentation, is made available through the program at each Senior Center.

Session three: the team of two physical therapists discuss balance--what it is, what is necessary for optimal balance, and how to improve balance. The group then learns balance exercises including: lunges, tip toes, toe raises, side-stepping, and single leg standing. There is an emphasis on safety and slowly progressing the balance exercises to stimulate a small challenge in balance. Everyone practices the balance exercises with the supervision of a minimum of 3 VNAH personnel. Instruction in the balance exercise program also continues each subsequent week.

Session four: emphasizes the risk factor of medication management. In the falls prevention literature, 4 or more prescription or over-the-counter medications increases fall risk. The therapists discuss being aware of how to take medications, use of a pill box (everyone receives one), high risk medications, medication interactions, adverse effects, and changes in medications. Emphasis is made on the necessity of keeping a current and accurate list of medications and bringing this to every medical appointment and pharmacy visit. Everyone is encouraged to discuss medications with their primary care providers.

Session five: focus is on vision. Occupational therapists lead the program and discuss visual changes as we age, including slower adaptation to light changes, a decline in depth perception, need for more lighting, and greater sensitivity to glare. The participants are given tips to optimize their vision and modify their home environments, such as marking the edges of stairs or using contrasting colors in the bathroom. There is also a talk about common visual disorders including glaucoma, cataracts, macular degeneration, and diabetic retinopathy. The seniors are given nightlights to install at home. At the end of this session, seniors also take home a safety assessment form. Their homework is to walk through their home with a family member or friend using the home safety checklist and to bring it back on the last week.

Session six: participants are encouraged to discuss the findings from the safety assessment of their own home. The occupational and physical therapists give a presentation on home safety including safe entryways, stairs, hallways, kitchen, living room, bathroom, and bedrooms. Frequently used adaptive equipment and home modifications are also discussed, and the balance and strengthening exercises are reviewed.

EVALUATION AND FOLLOW-UP

After each session participants are asked to evaluate the program and give feedback. These evaluations help to identify participants' needs, topics that need further discussion, and ways to improve the presentations. A follow-up session was held for each group 6 months after completing the series. The follow-up provides an opportunity to reassess an individual's rate of falls and behavior changes including activity, exercise, home safety, medication discussion with physicians, and eye exams. Participants fill out the Activities Specific Confidence Scale and are reassessed on the Functional Reach, Timed Up and Go, and single leg standing tests.

FIRST YEAR RESULTS

Over the first year, we presented *Strength in Numbers-a Fall Prevention Program* to a total of 273 individuals in 8 six-session series and 4 two-hour condensed format sessions. A 2-hour condensed presentation was offered as an option for audiences or locations that could not schedule the 6 weekly session series. The number of participants surpassed our proposed goal of serving 200+ people at 10 presentations; see Table 1 for a description of the participants.

Table 1. Demographic Data

Total Participants	322
Male	18%
Female	82%
Age Range	60-98 yrs
Average Age	77.5 yrs
Retention Rate	70%

The program's interactive group setting proved to be beneficial as participants learned from other's experiences as well as encourage each other during the exercise sessions. The feedback has been extremely positive. Many participants reported increasing their exercise activity, doing balance exercises regularly, making adaptations to their homes, getting adaptive equipment, and talking to physicians about their medications and falls risk. A total of 46 individuals returned for the follow-up sessions. Scores improved for Functional Reach, single leg standing, and Activity Specific Balance Confidence scale. The number of falls for the returning group decreased, and there was a trend toward improved Timed Up and Go. See Table 2 for details on the returning group and their scores.

SECOND YEAR EXPANSION

The success of the first year resulted in the VNAH receiving further grant funding from Tufts Health Plan Foundation to expand *Strength in Numbers* during the program's second year. Funding allowed for a 20-hour per week Falls Prevention Coordinator. This individual is a physical therapist who is presenting programs with colleagues, collaborating with local Senior Centers and Councils on Aging, sharing expertise with other groups, developing a Web site presence, and creating a replicable model so others may implement the program in their community. To date, we have reached approximately 200 seniors in the program for this year and expect to reach another 160. We are also presenting a condensed two-hour version of the program to church groups, senior housing sites, and retirement communities.

LESSONS LEARNED

We have learned that 20 participants is the group capacity of our program.

Table 2. Participant Data

	Pre- # Falls	Post- # Falls	Pre-FR	Post-FR	Pre TUG	Post- TUG	Pre- SLS	Post -SLS	Pre-ABC	Post-ABC
Average	0.73	0.33	11.4	12.6	11.5	10.9	12.6	16.2	71.0	76.8
Standard Deviation	1.19	0.83	2.50	2.86	4.56	4.71	17.50	21.86	20.16	18.176
T Test		0.028		0.00016		0.12		0.008		0.0447

Pre= start of program (for falls, refers to number of falls six months prior to program), **Post-** 6 months after program, **FR=** functional reach, **TUG=** timed up and go, **SLS=** single leg standing, **ABC=** activity specific balance confidence scale.

This size allows for individuals to get the personal instruction they need, to maintain the quality and safety, and to keep a sense of group camaraderie. The importance of allowing a group to form, exchange of advice between individuals, and tips for safety, especially when traveling, was valuable for all.

Participants had a wide range of physical and cognitive functioning. One man was hiking up to 3 miles a couple times per week, while others were using walkers, or were severely visually and hearing impaired, or had obvious cognitive impairments. The therapy staff needed to be prepared to provide appropriate assistance to these individuals during exercise segments as well as with completing needed paperwork.

Teaching the exercise segments needs to be a gradual process--lots of repetition, modifying the exercise, and initiating the exercise without resistive bands. We have found that we must allow plenty of time for questions. A lot of informal work and referrals happen at the end of each hour-long session.

There are a lot of administrative duties that need to happen to run the program, including scheduling staff and programs, preparing packets, ordering resources, recording and analyzing data, and fielding questions from interested facilities and participants.

In hiring a Falls Prevention Coordinator, we were able to build on our success. Having a dedicated staff member greatly improved the effectiveness and efficiency of running the program, increasing our ability to reach out to more community settings and improving the program's visibility.

The experience has been quite positive for the physical and occupational therapists involved. The VNAH staff report a heightened awareness of falls risk among their own patients along with improved assessment and treatment skills for these patients. Our organization's visibility in the community has also increased with our presence in local senior centers, retirement communities, and senior housing sites. Today, we are recognized for our expertise in the area of falls prevention education and are fulfilling our mission of addressing critical health needs and having a long-term impact in the community.

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2. *Strong for Life.* University Medical Campus , School of Public Health, Health and Disability Research Institute, 580 Harrison Avenue, 4th Floor, Boston, MA 02118

3. *Fear of Falling: It's a Matter of Balance.* TERRA NOVA FILMS, Phone: 800-779-8491, Fax: 773-881-3368, Web site: www.terranova.org, Email: tnf@terranova.org

John Yount, PT, MS, GCS, has over 20 years of experience working with seniors, primarily in home care. He has been a geriatric specialist since 1997. He is currently the Falls Prevention Coordinator and staff physical therapist for the VNA & Hospice of Cooley Dickinson, Northampton, MA.

Jeanne M. Ryan, MA, OTR, CHCE, COS-C, is the Executive Director of the VNA & Hospice of Cooley Dickinson in Western Massachusetts. She is a member of Board of Directors of the Home Care Alliance of Massachusetts. Jeanne has been published in many home care journals including Home Healthcare Nurse and The Remington Report and Caring Magazine on topics including: "Teamwork Keeps the Pressure Off: The Role of Rehabilitation in Pressure Ulcer Prevention," "The Rehabilitation Professional as Agency Administrator and Executive," and "Strength in Numbers: A Community-based Falls Prevention Program."

SECTION ON GERIATRICS AWARDS 2010

Joan M. Mills Award: Exceptional Contributions to the Section on Geriatrics

Marilyn Moffat, PT, DPT, PhD, FAPTA, CEEAA. Marilyn, Moffat, an active member of the Section for Geriatrics, has advanced the practice of Physical Therapy with aging adults through writing, teaching, and advocacy at local, national, and international levels. She exudes a positive attitude for working with older individuals that is contagious among her colleagues and students. For example, her DPT students at NYU have been excited to work with her in promoting physical therapy for the elderly on TV shows in NYC; they willingly arise at 4:00 a.m. to join her on these projects! Her book, "Age-Defying Fitness: Making the Most of Your Body for the Rest of Your Life," coauthored with Carole Lewis, PT, PhD, GCS, has had a positive impact on both professionals and the general public. From 2004-2007, Marilyn co-chaired our Task Force on Promoting Physical Therapists as Exercise Experts for the Aging Population. This taskforce generated a large volume of educational resources for physical therapists, physical therapist assistants, and patients/clients that are now available on our Web site. Beginning initially in 2007, in collaboration with Dale Avers, PT, DPT, PhD, and Karen Kemmis, PT, DPT, MS, CEEAA, Marilyn initiated the popular CE course "Physical Therapists as Exercise Experts for the Aging Population: Evidence-based Assessment and Exercise Prescription" that has been delivered both nationally and internationally. Perhaps most importantly, Marilyn has been instrumental in developing and implementing our Certified Exercise Experts for the Aging Adult course series and certification process. Along the way she has personally updated course content, obtained sponsors for host facilities and equipment, and has mentored course faculty. To date, 120 physical therapists have obtained their CEEAA credential. Marilyn's leadership, generous time commitment, achievements, and ability to challenge and inspire others makes her an outstanding recipient of this award.

President's Award: Outstanding Service to the President of the Section on Geriatrics while fostering the mission and goals of the Section

Jill Heitzman, PT, DPT, GCS, CWS, FACCWS, has been our Program/Education Committee Chair since 2003 and is the key person responsible for the quality of our educational programs at CSM & AC; she also oversees virtually every onsite meeting detail at CSM. As a member of our Board of Directors since 2004, Jill has brought her attention to detail and advanced preparation, a broad range of clinical interests, and a dry sense of humor to our Board meetings. Jill has also served as Board liaison to our awards & PR committees, and is in the process of organizing the Section's submission for an APTA Public Relations Award.

Sharon Klinski, BS, has been the production editor for our *Journal of Geriatric Physical Therapy* since its inception. The *Journal* would not be as successful as it currently is without Sharon's dedication, good humor, and collaborative spirit. Sharon has been the constant that has allowed each of our editors for the *Journal* and *GeriNotes* to be effective in their roles. Her commitment to the Section has resulted in two beautifully designed and produced publications that are primary member benefits. We frequently receive complements from readers and researchers about not only the content of our publications, but the appearance, readability, and organization. These qualities contributed to two APTA awards for component publications that were awarded to *GeriNotes*. This is testament to the quality and consistency of Sharon's efforts on our behalf. Sharon's attention to detail has contributed to the growth of the *Journal's* reputation as a scholarly work that is published on time, with minimal errors in production, and in *GeriNotes* contribution as a clinical magazine. This has directly led to an increase in submissions from authors to the *Journal* from other health disciplines, as well as from countries around the world.

Bill Staples, PT, DPT, GCS, has been a member of our Board of Directors since 2001, most recently serving two terms as Treasurer. A fiscal arch-conservative, Bill has been an insightful and resourceful steward of our financial resources during turbulent economic times. Such oversight, through his work with our Finance Committee, has always permitted us to balance the budget, …and undertake creative initiatives (such as substantial support for the Foundation for Physical Therapy; a new publisher, with world-wide exposure, for our journal; and our national-level Exercise and Physical Activity conference later this summer)… all without the necessity of increasing our membership dues.

Clinical Excellence in Geriatrics: to recognize a physical therapist for outstanding clinical practice in geriatric health care settings

Shiela Thomas Watts, PT, GCS, MS, MBA

"Shiela represents the ideal physical therapy practitioner, able to provide compas-

QUESTIONS AND ANSWERS

1. Will the recently passed Health Care Reform bill increase the scrutiny on therapy documentation & claims? Will it increase the number of audits being done?

Answer:
The truth is that much of the "pay fors" in the new Health Care Reform bill is projected to come from increased fraud & waste recovery efforts. In other words, the government is counting on collecting money that allegedly should not have been paid in the first place, and then using it to fund expanding health care programs and/or coverage. Which specific programs will receive additional funding (OIG, CERT, RAC, etc) is still unclear.

2. What kind of compliance issues should my practice focus on as we prepare for Health Care Reform?

Answer:
According to Daniel R. Levinson, Inspector General for the Department of Health & Human Services, there are several questions an organization can ask themselves to better prepare for the additional scrutiny that will come in the future:

- Does your organization have the right systems & technologies to meet new demands to collect, organize, track, retain, and report information and data accurately & completely?
- Do your clinicians understand that quality is a compliance concern and that quality of care is increasingly integral to payment?
- Do you have systems that will ensure that charting, collection, and reporting of quality data and clinical documentation are accurate, complete and sufficient to justify payment?
- Do you have a compliance plan in place?
- Are you focused on identifying and addressing new fraud and abuse risk areas that may arise as your organization becomes involved with new payment and delivery systems (such as medical homes, accountable care organizations, bundled payments and value-based purchasing) to prevent risk areas like "cherry picking" patients, inappropriate stinting on care or gaming or payment windows?
- Are managers, staff, and contractors aware of their responsibilities to achieve quality and compliance?
- Do you have systems in place to screen for improper claims before they are filed?

Questions and Answers in this issue focuses on policy issues and have been answered by Ellen Strunk, PT, MS, GCS, CEEAA.

(continued from page 27)

sionate and effective care; using and creating the evidence needed to support and guide clinical decision making, and inspiring her colleagues and students to do the same. In doing so, she is open, honest, and self effacing, not requiring accolades but instead seeking always to learn, grow, and improve the quality of care that she provides. She is an incredible role model for all who know and work with her."

These are only a few of the incredible words of recognition included in the nomination submitted on Shiela's behalf. Congratulations Shiela, and thank you for your dedication to excellence!

RESEARCH AWARDS

EXCELLENCE IN GERIATRIC RESEARCH AWARD went to **Julie D Ries, PT, PhD, GCS,** first author for the published research report: Test-retest reliability and minimal detectable change scores for the Timed "Up & Go" Test, the Six-Minute Walk Test, and gait speed in people with Alzheimer Disease. *Phys Ther*. 2009;89:569-579.

ADOPT-A-DOC SCHOLARSHIPS were awarded to **Michael John Bade, PT, MPT, COMT, FAAOMPT,** a doctoral student at the University of Colorado studying patient outcomes after total knee arthroplasty, and **Che-Hsiang Elizabeth Wang, PT, MS,** a doctoral student at Drexel University, studying fall-risk reduction in postmenopausal women with low bone mass.

STUDENT RESEARCH AWARD was awarded to **Rebecca J Hess, BS, BPhil,** a DPT student, University of Pittsburgh, for involvement in geriatric research from idea to proposal, measurement to database, and analyses to presentation/publication.

RESEARCH POSTER AWARD went to Ellen McGough, V.E. Kelly, M.A. Ciol, J.M. Engel, R. Logsdon, S. McCurry, B. Cochrane, L. Teri. Rehabilitation Medicine and School of Nursing, University of Washington, Seattle, WA, for their poster presentation: Executive Function and Physical Performance Speed in Older Adults with Mild Cognitive Impairment.

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The mind is everything.

What you think, you become.

- Buddha

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COMMITTEE VOLUNTEER OPPORTUNITIES

Membership Committee
The Membership Committee exists to recruit new members and retain current membership. Committee members formulate and implement strategies designed to inform members and prospective members of the benefits of the Section on Geriatrics. The committee develops and promotes activities designed to demonstrate the advantages of Section membership. Other duties include assisting with booth activities at the CSM and National Meetings, conducting exiting member surveys, as well as welcoming and encouraging all members to contribute and be involved in Section activities. Committee member participation is flexible, depending on members' time and availability.

ACP Committee
This committee will promote specialist certification and the formation of clinical residencies in geriatrics. PTs interested in becoming Geriatric Certified Specialists should visit http://www.geriatricspt.org/gcs.cfm. Suggestions for additional GCS resources can be sent to the Committee Chair.

- Those working to establish geriatric residencies are encouraged to contact the Committee Chair. Postprofessional residencies in geriatric physical therapy should ideally have the following characteristics:
  - Include close mentorship and structured learning opportunities that guide therapists into effective, advanced practice in geriatric physical therapy.
  - Work to become APTA credentialed clinical residencies.
  - Prepare PTs to serve as primary care practitioners in geriatric physical therapy.
  - Give residency graduates experiences across the spectrum of older adults: wellness and health promotion; musculoskeletal, neuromotor, cardiopulmonary, and integumentary practice; acute to chronic; frail to athlete.

Web site Committee
Our Web site is revised and updated constantly to reflect our growing and expanding practice as the preferred provider for the older adult. It is an integrated member benefit reflecting content for the clinician, instructor, administrator, researcher, student, and consumer, built by members for the Section on Geriatrics of the APTA.

Regional Course Committee
West Regional Leader position
East Regional Leader position

The Regional Course Committee is in charge of developing and coordinating geriatric-based continuing education programs that would be appealing to our membership. Our goals are to provide educational opportunities for members who are unable to attend APTA conferences and to provide that education at affordable prices. We strive to locate these courses in locations other than the current year's CSM and Annual Conference sites, in order to reach members who may be too far away to attend these events.

The committee assists the chair with brainstorming topics, finding speakers, and finding locations for the courses. Committee members may also serve as on-site coordinators and leaders of Town Hall style meetings during these courses.