ALLIED TEAM TRAINING FOR PARKINSON
Emerging Challenges: Designing PT Intervention for Middle and Advanced Stage PD

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Session Learning Objectives

• Identify emerging complications impacting functional mobility in patients with middle and advanced stage Parkinson’s Disease
• Describe appropriate PT interventions to address these complications with PD progression
• Identify gait and balance features unique to PD and describe appropriate intervention strategies
• Discuss physical therapy interventions and role in education and training of professional and family caregivers in advanced stage PD
Difficulty With Ambulation

- Difficulty with ambulation is a “clinical red flag” for emerging disability
  Shulman L. Understanding Disability in PD. Movement Disorders, 2010; 25 (1):S131-135

Emerging Complications: Ambulation Difficulties

- Loss of automaticity becomes more pronounced

- Increase in symptoms of hypokinesia and bradykinesia impacting foot clearance and functional walking speeds for daily activities

- Muscle rigidity affecting the trunk and limbs with musculoskeletal constraints (i.e. loss of flexibility in spine, hamstrings, calf muscles)

- Reduced ability to perform dual task activities while walking

- Reduced overall stability with increased risk of falls
PD Impact on Motor Function: Gait Changes

- Poor initiation and termination
- Effects of hypokinesia: foot clearance, reduced step length, narrowed BOS
- Decreased push-off from stance; reduced force generation at gastrocnemius
- Decreased hip flexor pull-off in early swing phase
- Reduced weight shifting
- Turning accentuates severity of hypokinesia
  - Worse at end of dose
  - Worse with advanced PD

Intervention: Gait Training

- Still employ large amplitude strategies
- May need to also add cuing strategies to bypass defective “automatic pilot” to a greater degree with disease progression
- Treadmill training with emphasis on safety using harness system or LiteGait if necessary
- Nordic walking poles
**Intervention Strategies : Activating Movement**

from the work of Meg Morris, PT-World Parkinson Congress 2006

- Separate movement sequence into parts
- Perform parts step by step
- Mentally rehearse movements first
- Focus attention on each movement
- Modify the environment
- Optimal body positioning
- Avoid dual task performance Instruct carepartner in cueing strategies to reinforce them

**Intervention: Cueing Strategies**

**RESCUE PROJECT**

*Nieuwboer A et al., J Neurol Neurosurg Psychiatry 2007*

- Consortium of Universities in Europe (UK, The Netherlands and Belgium) collaborated in research about cueing strategies in PT as a method of improving mobility
- Clinical trial that confirmed use of cueing as an effective treatment in the home setting
- Cues defined as prompts that give information on when and how an action should be carried out
Types of Cues

- Attention-thinking about the movement
- Auditory-rhythm
- Visual-a marker in the environment
- Tactile-sensory stimulation
- Kinesthetic-movement

Intervention: Attentional Cues

- Consciously focusing on movements (for transfers, ambulation)
- Breaking the movement into parts
- Concentrating on each step of process

Example-sit to stand:
1. Scoot to edge of seat 2. Position feet back and apart 3. Bend forward to get nose over toes 4. Stand up

Example-gait:
Focus on: standing tall, taking long strides, landing with heel first
Intervention: Rhythmic Cues

- Counting aloud
- Clapping hands or snapping fingers
- Metronome
  Portable metronome resource: [www.korg.com](http://www.korg.com)
  Smartphone app-used with earbuds
- Rhythmic auditory stimulation (carried out with music therapist)

Walking with Music

*de Bruin N, Doan JB et al Parkinson’s Dis 2010 Jul*

22 subjects
Control group-continued regular activities
Music group—“cadence-matched” individualized music playlist into a walking program 3X/wk for 13 weeks
Music group showed improvements:

- Gait velocity
- Stride time
- Cadence
- Motor symptom severity
Intervention: Visual Cues

- Horizontal lines taped in regular intervals especially across thresholds
- Carepartner’s foot placed in front of PWP’s as an obstacle to step over
- Visualization of kicking through a glass wall
- Laser pointer
- Taped “floor ladder” for gait training
- Use of floor targets such as small hula hoops for large amplitude step training and stepping exercises

Intervention: Tactile Cues

- PWP taps foot with cane or kicks soft object to advance foot
- Carepartner touches hand on knee/foot
- Posture Perfect (vibration device)

  *Pilot study (STOPA study) done in the Netherlands on 16 patients found this to be a feasible device for use in cueing for PD patients regarding conscious correction of stooped posture*

- Use of companion dog responding to “touch paw” cue
Intervention: Kinesthetic Cues

- Performance of a more complex motor task such as marching or skipping

- PWP performs rocking side to side to “unlock”

- Carepartner assists by placing hands on PWP’s pelvis and “dancing” by shifting weight side to side
  *useful for pivot turns

Emerging Complications:
Specific Gait Deficits/Postural Instability

- Freezing

- Retropulsion

- Festination (Propulsion)
Freezing of Gait

**Freezing of Gait**: temporary, involuntary inability to move; legs may tremble or person goes up on the tiptoes

Common Triggers:
- initiation of movement,
- turning,
- approaching a destination (chair, bed)
- walking through a doorway
- confined spaces
- physical/emotional stress
- lack of sleep/fatigue
- Fear

* sudden worsening of this problem may indicate a systemic infection such as UTI *

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Freezing of Gait Assessment (FOGA)

*Ziegler, K et al. Mov Disord 2010*

The FOGA is a standard, objective measure used to trigger freezing episodes by walking a detailed course.

1. Sit in a chair for 30 seconds.
2. Stand up when timer says, “Begin.”
3. Walk to a box outlined in tape on the floor.
4. Walk clockwise around the box, then turn around and walk counterclockwise around the box.
5. Walk through a doorway by opening the door and walking all the way through.
6. Turn around once through the entire doorway and return to the chair.
7. Sit down in the chair.
Freezing of Gait Questionnaire (FOGQ)
Giladi, N et al, Parkinsonism Relat Disord, 2000

PD EDGE: NR Stage I; R Stage II-IV; NR Stage V
• Self-reported questionnaire-6 items
• 5 point scale (higher score=worse severity)
*Question 3 found to be good single question for FOG frequency:
“Do you feel that your feet get glued to the floor while walking, making a turn or when trying to initiate walking?”
0 Never
1 Very rarely—about once a month
2 Rarely—about once a week
3 Often—about once a day
4 Always—whenever walking

“Unfreezing” Exercise Program
Dr. Becky Farley: Anti-Freeze Boot Camp-poster presentation World Parkinson Congress 2013

• Intensive 5 day exercise program-1.5 hours in am and pm

• High-effort, task specific training

• Exercises that target FOG triggers (turns, obstacles, doorways)

• Aerobic exercise-treadmill, pole walking

• Large amplitude movements (strength, flexibility, agility)

• Cuing for home mobility (fall prevention)
Freezing of Gait: Verbal Cues

4 S’s:
STOP (don't force your way through a freeze)

STAND TALL (COG over BOS)

SHIFT SIDE TO SIDE to unlock

STEP LONG (initiate with “sticky” foot first)

Freezing: Step Estimation Technique

*John Argue – Parkinson’s Disease and the Art of Moving*

- Have PWP give an estimate of how many steps it will take to reach a destination (bed to toilet)

- Have them count them out while stepping

*Often acts as a rhythmic auditory cue for them to lengthen their steps to match the count*
Visual Cues for Freezing

Path to Toilet Marked

Retropulsion

**Retropulsion**: backward balance loss; abnormal underscaled stepping response

*may lead to serious head injury due to lack of protective response or fall on buttocks/hip (fracture risk)*

Triggers:
- Backing up to sit down
- Stepping away from a sink
- When approached from the front
- Overhead reaching
Retropulsion: Treatment Strategies

- Instruct in BIG step retrowalking, if safe to do so
- Stand in Bow and Arrow stance and practice weight shift anterior and posterior; add UE activity if able
- Standing-BIG backward stepping R and L for compensatory step training for balance reactions
- Do resisted push/release of trunk repeatedly for retraining, if safe

Retropulsion Cuing Strategies

- Instruct PWP in counterbalancing while reaching—one hand on stable object such as bathroom counter or doorjamb of closet
- Bow and Arrow stance with feet staggered and wide base
- Teach sidestepping rather than backing away from a table or sink
- Getting Up: emphasize NOSE OVER TOES to avoid falling backward with sit to stand and stand to sit
Stable Stance

Instruct in “Bow and Arrow “Stance

Mark targets on floor for foot placement in trigger area

Environmental Modification for Retropulsion

• Consider grab bar near closet for safety while reaching

• Lower the clothes bars or shelving

• Carry items in the basket of a walker rather than in both hands

• If able, reduce tension on doors with automatic closing mechanism
**Door Opening Safety**

**Counterbalancing Reminder**

**Vertical Grab next to Door**

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**Festination**

**Festination**: accelerated walking with reduced step size; “runaway train”

- walking cadence increases and step size decreases
- center of gravity tips forward and feet cannot keep up
- Results in forward falls; often landing on hands and knees
- Near-falls with crashing into walls or furniture

*Strongly associated with freezing and falling*

**Triggers:**

- Rolling walker pushed too far ahead of them
- Worsening postural flexion; often associated with fatigue
- Over-reaching toward a target (into closet)
Festination Cues

Teach PWP to identify what leads up to an episode:
• Posture begins to flex forward
• Steps begin to shorten
• Cadence speeds up

Reinforce safe approach to chair with COMPLETE turn rather than lunging toward it

MANTRA:
❖ STOP-Do not continue in the above manner
❖ STRAIGHTEN –Get center of gravity over feet again
❖ STEP LONG-initiate with big step again

Festination/Propulsive Gait Treatment Strategies

• Big Step Training-used taped walking grid with lines spaced approximately 18” apart or small hula hoops as stepping target

• Rhythmic training to SLOW walking cadence with BIGGER steps
  Use metronome or slower bpm music (can sing Row Row Row Your Boat)

• Consider heavier walker or add weight to the seat/basket (package of copy paper works well)

• May need a walker with added resistance such as the U Step
Assistive Devices For PD

- 4 post walkers and quad canes are NOT appropriate for PD gait pattern
  - Interrupts flow; unable to sequence 3 point pattern
  - Lifting device may trigger retropulsion

- PWP may need a more specialized 4 wheeled walker, brakes and a seat
  - Better steering and control
  - Turning maneuverability
  - Ability to stop or slow down by engaging the brakes
  - Can add additional weight to the basket for more stability
    (package of Copy paper weighs 5#)
  * May not be appropriate for those with apraxia or dementia or with significant festination

U-Step Walker

- Heavy-duty, U-shaped base
- Reverse braking system; operates unilaterally
- Resistance control feature
- Optional laser feature
- Indications
  - Severe instability (PSP, advanced PD)
  - Significant freezing, retro-/propulsion
- Drawbacks
  - Heavy to transport
  - Difficult to roll on uneven terrain
Laser Feature of U Step

Creative Adaptations
Emerging Complication: Falls

- Sensitive subject
- Fear and embarrassment surrounding the issue
- Often underreported by PWP
- Helpful for PT to approach matter-of-factly (perhaps with humor) to break the ice
- Clearly define what is considered a fall or a near-fall

Intrinsic Risk Factors for Falls in PD

- Most often person-centered factors NOT environmental in PD are responsible for falls
- Often occur during dynamic activities such as walking or transfers
- Many occur during the ON state when medications are working well and the person is more mobile
Ask the Right Questions
Dr. Bastiaan Bloem, Dept of Neurology, The Netherlands

Was there loss of consciousness (LOC) prior to the fall?
*to determine preceding LOC, ask if they have a memory of their contact with the floor

Spontaneous falls in Parkinson’s Disease (PD) include:
• Brief LOC (possible orthostatic hypotension)
• Freezing of gait (catches person by surprise)

Freezing of gait is the leading cause of falls in persons with PD
(in numerous studies)
• Often occur forward or sideways
• Turning in tight spaces

Falls Diary
For a frequent faller, it may be helpful for staff to fill out a falls diary
Written log of falls and near-falls and pertinent info (refer to questions)

Purpose:
• Each fall is unique and can be viewed as a learning experience
• Useful in categorizing nature and type of fall
• Will help in development of recommendations unique to the individual and implement appropriate intervention strategies
All Falls in PD are Not the Same

Gait and Balance Initiative Study (GABI) Findings conducted at Struthers Parkinson’s Center

Categories of falls in PD:
- Rising/Sitting (19.6%)
- Forward Falls (28.7%)
- Sideways Falls (23.9%)
- Backwards Falls from Standing (10.9%)
- Falls During Complex Motor Task (17%)

GABI Fall Findings Continued

Associated PD Symptoms:
- Wearing off of PD Meds (27 %)
- Fatigue (24%)
- Freezing of gait (21%)
- Dizziness (15%)

Associated Activities:
- Walking (41%)
- Standing (27%)
- Reaching (22%)
- Getting up/down (15%)
Individually Tailored Approach to Falls

Dr. Bastiaan Bloehm

Treatment aimed at the *person* rather than the environment

- Exercise
- Instruction in cues and compensatory strategies
- Walking Aids

<table>
<thead>
<tr>
<th>TYPE OF FALL</th>
<th>CONTRIBUTING FACTORS</th>
<th>INTERVENTION</th>
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<tbody>
<tr>
<td>Elderly controls</td>
<td>Hip</td>
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<td>Parkinson patients</td>
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<td>Wind</td>
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Emerging Complication: Increased Axial Rigidity/Core Muscle Weakness

- Loss of spinal flexibility interfering with bed mobility, dressing and other daily activities

- Loss of core muscle strength in key muscle groups: abdominals, spinal stabilizers and extensors, hip stabilizers which affect posture and balance

Address Axial Muscle Rigidity

ROM/Flexibility in key areas: neck and trunk rotation

TREATMENT IDEAS:
- Head turns in supine, sitting and standing
- In bed: REACH and roll to side and punch a target (pillow/ball)
- Holding dowel-trunk twists
- Supine low trunk rotation; legs supported on ball
- Sidelying upper trunk rotation
Intervention: Spinal Rotation

Core Muscle Weakness

Address abdominals, back extensors and hip stabilizers

TREATMENT IDEAS:

- Seated on ball (stabilized on a stand) or on a mat: sit backs, simulated kayak motion using a dowel
- Sitting on a DynaDisc or Bosu-pelvic mobility
- Supine ab stabilization-knee lifts; add opp UE extension
- Standing with support as needed-noncompliant>compliant surface-ankle sways, hip circles, throwing/catching ball
- Unilateral stance activities-step taps, side taps
- Repeated sit<>stands with reduced UE support
Core Strengthening: “Kayaking” on ball

Emerging Complication: Visual Changes

• Reduced Contrast Sensitivity: unable to clearly distinguish a figure from the background
  ➢ Difficulty locating armrests of a chair or hand brakes on a walker

• Reduced Visual perception: impaired spatial relationships
  ➢ Inaccuracy in judging distance to a chair or maneuvering walker

• Reduced Saccades: slowed visual scanning/pursuit of eyes
  ➢ Unable to anticipate changes in floor surface or obstacles in path
Reduced Contrast Sensitivity

Poor Visual Perception
Visual/Perceptual Compensatory Strategies

Use bright-colored tape to identify key items in environment

• Mark walker handles and brakes
• Mark bed rail or toilet rails
• X’s on floor for foot placement prior to sitting down
• Mark W/C footrests/armrests and brakes

Intervention: Increase Contrast

Mark walker handgrips

Mark Chair
Intervention: Visual Training

TREATMENT IDEAS:
Visual tracking exercises-eye movement in all planes; scanning for saccades
Identification of various objects in visual path strewn along walkway

Emerging Complications: Motor Fluctuations

Fluctuations in mobility as a consequence of the effectiveness of the medication-may be sudden or unpredictable
ON: meds are working well and patient’s motor function and mobility is at its best
May have side-effect of medication:
dyskinesia: abnormal, involuntary movements; twisting/writhing
• Often not bothersome to the person; preferable to being OFF
• If severe, they may sometimes affect stability
• Sitting still in a chair/unstable
• Unsteady, ataxic gait appearance; scissoring feet or veering off-course; bumping into walls or furniture
Motor Fluctuations-continued

OFF: meds are wearing off or not working effectively

Characterized by:

• Increased bradykinesia: slowness of movement, delayed performance

• Increased hypokinesia: smaller movements, loss of automatic movement

• Increased rigidity: stiffness of muscles; may also have involuntary muscle jerking or cramping (dystonia)

• Increased bradyphrenia: slowness in mental processing

Management of Motor Fluctuations

• Address through specific questions in PT assessment:
  ➢ Ask if they have variations in function throughout the day
  ➢ Ask if they are in ON, OFF, or in between state at time of evaluation
  ➢ Have them describe their function in other states particularly if you are seeing them at their best

• Try and time PT sessions so you are seeing them in OFF state if possible (good to see worst case scenario and document to justify need for intervention)

• Design different strategies for ON and OFF times
  ➢ In ON state can focus on HEP recommendations/physical activity
  ➢ In OFF state may need AD and use of specific cuing strategies for safety and fall prevention
Emerging Complication:
Orthostatic Hypotension

Drop in BP upon position change (becoming more upright)

- supine to sit or sit to stand
- systolic BP drop of 20 mmHg or more
- patient is symptomatic—feels lightheaded, faint, dizzy, everything goes black

Autonomic Nervous System Dysfunction
-more prominent in atypical Parkinsonism such as Multiple System Atrophy (MSA)

Also can be a side-effect of PD meds (levodopa)

*May need to address with MD and nursing staff*

Orthostatic Hypotension:
Rehab Strategies

*Involve other members of medical team (Doctor, Nursing) to address medications, support stockings, elevate head of bed

PATIENT EDUCATION:
- Slow position changes
- LE exercises prior to standing up—ankle pumps, leg kicks
- Staying hydrated
- Supportive surface or assistive device to hold upon standing
- Sit down immediately if warning signs of feeling lightheaded, dizzy, narrowing field of vision, sudden "weak spell"
Emerging Complication: Fatigue

- Often results due to sleep disorders (REM behavioral disorder)
- General fatigue also from effort it takes to move
- Mental fatigue with reduced attention to motor tasks
- Increases fall risk

MANAGEMENT STRATEGIES:
- Counsel PWP to take breaks; balance activity and rest
- Consider “doses” of movement and exercise throughout the day
- Discourage excessive daytime sleeping; provide stimulation
- Create a daily activity schedule
- Encourage most movement with ON and feeling more energetic

Emerging Complication: Postural Change

Increased muscle rigidity and progressing balance changes result in loss of automatic position change

- Inability to independently change position
- Reduced activity levels
- Potential skin changes
Seating Systems

- Correction for asymmetries (trunk lean/pelvic obliquity)
- Reclining back to compensate for fixed forward lean
- Cushion to maintain integrity of integumentary system
- Possible tilt in space options

Improved W/C Positioning

Standard Lightweight W/C

Recliner W/C with extended legrests
Improved Function
• Swallowing
• Breathing
• Communication
• Engagement

Intervention: Postural Exercise
• Let gravity assist: supine lying flat (as tolerated) with support under head for neutral position
  ➢ Supine lying program for WC-dependent or limited ambulators, particularly prior to meals for improved swallowing/eating when upright

• Prone lying (over pillows, if necessary) if tolerated for spinal extension

• Standing wall presses
Emerging Complications: Cognitive Deficits

**Impaired Attention:** Difficulty with multi-tasking

**Impaired Executive Function:** affects problem-solving, anticipation of consequences and making accurate assessments of safety; insight and judgement may be impaired

**Impaired Memory:** Learning and remembering new information

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**Divided Attention Intervention:**

**Earlier Stages**

- **Exercise Principles:**
  - Gait and balance with secondary task and sequences of actions; motor and cognitive or combined

- **Examples:**
  - Tossing ball hand to hand while doing agility course
  - Alphabet name task while doing lunges on a compliant surface
  - Reading aloud on treadmill

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Later Stage PD: Parkinson Disease Dementia

- Most pronounced deficits in:
  - Psychomotor speed (slowed thought and response time)
  - Executive functions (putting a plan together)
  - Verbal fluency (lose train of thought easily)
  - Visuospatial processing (misperception of space, distance and items in the environment)
  - Complex Attention (easily distracted, unable to “switch” topics easily)
  - New learning and memory (affects use of assistive devices, equipment, safety instructions, etc)
- All of these deficits produce safety concerns, increased carepartner burden and difficulty with participation in Rehab treatment

Later Stage Cognitive Deficits

Determine if PWP is able to self-manage with cuing strategies on their own or if they will need ongoing assistance with them

*they may no longer be capable of learning and assimilating new information
*collaboration with Speech and OT can give you greater insight into their deficits

- May need to put restrictions on unsupervised movement if they are high risk with impaired judgement and insight
- Tape Cue Cards to assistive device, on mirror or in the room as a reminder
- Simple 1-2 word commands; Wait for response before giving next cue
- Consider using less verbal info and more visual/tactile cues instead
Intervention: Later Stages

Counterbalancing Reminder

![Image of counterbalancing reminder]

Walker Reminder

![Image of walker reminder]

Cognitive Challenges: Strategies for Treatment

• Keep session interesting and challenging for patient
  ➢ Consider use of props: balls, boxing gloves, foam noodles, games (bowling)
  ➢ Use of music
  ➢ Incorporate past leisure/sport interests

• Use “testing”: Hold patient’s attention by letting them know they will be tested. Learning demands **focused attention**

• Encourage active patient involvement in setting goals - “how will you do?”

• Repeat, repeat, repeat
Cognitive Challenges: Strategies for Treatment

• Group therapy activities may be beneficial as participants observe, teach and learn from others. Increased engagement in the outcome often occurs

• Use of the “Generation effect”: enhanced ability to remember information that is self generated rather than passively presented.

• Patients with PD have difficulty accessing information when they need it- may be able to retrieve information with cueing

• Prompting a first word or step in a process may result in PD patient success

Emerging Complication: Pain

• Somato sensory processing in the basal ganglia plays a role in pain/nocioceptive information before it reaches consciousness

• Common inter-related pathway in basal ganglia region that processes pain, PD causes abnormal signal between sensory pathways of basal ganglia and the thalamus

• Most pain correlates with “off periods” but is not always abolished with dopaminergic medications.

• Altered non dopamine systems may contribute to pain

• Locus ceruleus degeneration is greater than substantia nigra degeneration, contains largest group of nocioceptive receptors in the brain.

• Patients with PD have been found to have lower heat pain thresholds

• Graph to establish patterns, may be related to medication dosing schedule
Intervention: Pain Management

• Assess for patterns: Related to off times? Medication schedules?

• Assess severity: use rating scales or other tools.

• Most patients tolerate over the counter analgesics with PD meds quite well, though often are not prescribed or taken regularly.

• Regular repositioning /ROM programs are needed for maximized comfort.

• Superficial heat or cold, massage, myofascial work

• Kinesiotaping may be helpful (particularly fall-related injuries; hematomas)

• PT plays an important role in assessment, education and treatment

Intervention:
Family/Carepartner Instruction

*Important members of the team

PT Education and Intervention:

• Teaching good body mechanics/injury prevention strategies

• Transfer training

• Rising from the floor/Fall recovery

• Home evaluation

• Adaptive equipment: Transfer belts, pivot discs, mechanical lifts

• Lifting equipment in/out of car

• Resources for respite care and support
Professional Caregiver Education

• Providing the “gift of time”
• Understanding motor fluctuations
• Maintaining maximized quality of life
• Raising awareness of PD symptoms (what PD is, what it is not)
• Advocating for medications on time
• Offering ongoing education and support
• Development of fall prevention programs

Training Professional Caregivers

The TULIPS Training Program:

• Acronym developed by Struthers Parkinson's Center to raise awareness of what people with Parkinson's disease need.

• Emphasis on practical strategies for direct care providers.

• Successfully used in assisted living, long term care and Senior Nutrition sites in the Upper Midwest.
TULIPS Outcome Data

1 year pilot study

- 80% of ALL staff received core training.
- 63% of direct care providers completed at least an additional 4 hours of training
- 85% were able to accurately describe PD information from program when shown the TULIPS logo in spot surveys one year post training.
- TULIPS is now used in over 100 facilities

Principles of Care in Advanced Stage PD

- May have limited options, but even listening/acknowledgment /small steps have great impact for patients/families

- Many patients/families feel “abandoned” by healthcare providers at this stage

- It still takes a team to manage (no one can “do” PD alone)

- Care from beginning to end

- Anticipate comfort care

- Support and education
For everything this disease has taken, something with greater value has been given—sometimes just a marker that points me in a new direction that I might not otherwise have traveled. So, sure, it may be one step forward and two steps back, but after a time with Parkinson’s, I’ve learned that what is important is **making that one step count; always looking up.**

*Michael J. Fox,*
*Always Looking Up*

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**Topics for Further Discussion**

- Documentation and reimbursement issues
- Participants share unique treatment ideas or programs
- Discuss “difficult cases” – group problem-solving
- Assessment and treatment of:
  - DBS patients
  - Atypical Parkinsonism patients (PSP, MDA, LBD, et al)
- Other topic from the group