



**Optimal Management of
Movement Disorders:
The Importance of the
Collaborative Care Team**

Greg Pontone, MD, MHS
Director, Parkinson's Neuropsychiatry Clinical Programs
Johns Hopkins University School of Medicine

6

Disclosures

Dr. Pontone has consulted for Acadia Pharmaceuticals Inc

7

Learning Objectives

- Broadly discuss how a collaborative team provides optimal care for movement disorder
- Using Parkinson's disease as an example, discuss best evidence treatments and the role of the collaborative care team
- Illustrate best-evidence care using cases vignettes

8

Successful Management of Movement Disorders

Meet the Collaborative Care Team

9

Movement Disorders

- Movement disorders affect >40 million people in the US
- May affect voluntary or involuntary movement
- Hypokinetic or hyperkinetic
- “Primary” disorders are caused by a neurodegenerative process
- “Secondary” disorders are usually caused by medication side effects, illness, or brain damage

10

Movement Disorders

- Ataxia – clumsiness, inaccuracy, imbalance, tremor, lack of coordination of voluntary movement
- Atypical parkinsonism – progressive supranuclear palsy, cortical basal syndrome, MSA, DLB
- Drug induced movement disorders – a range of disorders, tremor, TD, parkinsonism, others
- Dystonia – involuntary muscle spasms, abnormal postures or positions; generalized or focal
- Essential tremor – uncontrolled shaking or trembling, postural tremor, may include head tremor
- Idiopathic Parkinson’s disease – bradykinesia, rigidity, tremor
- Motor stereotypies – rhythmic, repetitive, fixed, predictable, purposeful, but purposeless movements

11

Movement Disorders

- Treatment for movement disorders most often includes, oral medications, botulinum toxin injection, and sometimes surgical procedures, eg, deep brain stimulation, thalamotomy, pallidotomy, rhizotomy
- However, an equally important part of treatment includes a collaborative care team:
 - Physical therapy (PT)
 - Occupational therapy (OT)
 - Speech language therapy (SLP)
- An advantage is that PT/OT/SLP are more easily scaled to disease stage and severity and can accommodate both progression and improvement of symptoms

12

Collaborative Care Team for Movement Disorders

What, When, Why?

13

Collaborative Care Team – What?

- Allied health professionals are essential members of the care team for treating movement disorders
- Primary focus includes evaluation and management of (motor and nonmotor) impairments that limit optimal functioning and in many case strategies for risk mitigation
- Covered by insurance and available in both inpatient and outpatient settings
- Mental health services have not traditionally been considered part of this package

14

Collaborative Care Team: Physical Therapy (PT)

- Overarching goals of PT are to prevent, treat, and rehabilitate the physical symptoms associated with the disorder to restore optimal movement and functional ability
- Ideal outcomes are to maximize participation in work, family, and societal activities, maintain independence, and improve quality of life over the course of the disorder
- PT will assess the impact of the movement disorder on gait, posture, balance, risk of falls, transfers, and upper limb function
- Additionally, deconditioning, muscle weakness or imbalances, joint stiffness, and pain can be addressed

15

Collaborative Care Team: Occupational Therapy (OT)

- OT is the therapeutic use of functional activities (occupations) to restore, maintain, and enhance participation in roles at home, work, and in the community
- OT promotes health and wellness using 3 approaches: 1) working directly with the patient, 2) modifying the task and/or environment to better accommodate the impairment caused by the disorder, 3) working with patients' caregivers and families help support these interventions and to promote adaptive coping
- Patient approaches: training of motor skills (bed mobility and transfers, balance and mobility, reducing fall risk, and improving hand function), process skills (organization and task adaptation), and psychosocial adaptation
- Task modifications (use of adapted utensils, built-up handles, adaptive clothing)
- Environmental modifications (rearranging furniture, organizing ramps and walk-in shower, grab bars) and prescription of assistive devices (raised toilet seats, walking aids, splints and braces, prosthetics)

16

Adolf Meyer and Occupational Therapy



- Adolf Meyer the first psychiatrist-in-chief of the Johns Hopkins Hospital
- He was the head of the first occupational therapy department, which was in Baltimore, MD
- 'mental illness was a problem of adoption and habitat deterioration.' He postulated that these problems arose from a lack of balance of work, rest, and play
- Meyer made an important connection between the activities of an individual and their mental health
- He incorporated community-based activities and services to develop people's everyday living skills

17

Collaborative Care Team: Speech Language Pathologists (SLP)

SLP work to prevent, assess, diagnose, and treat speech, language, social communication, cognitive-communication, and swallowing disorders

Speech disorders - difficulty producing speech sounds correctly or fluently (eg, stuttering is a form of disfluency) or problems with voice or resonance

Language disorders occur when a person has trouble understanding others (receptive language), or sharing thoughts, ideas, and feelings (expressive language)

Social communication disorders occur when a person has trouble with the social use of verbal and nonverbal communication

Cognitive-communication disorders include problems organizing thoughts, paying attention, remembering, planning, and/or problem-solving

18

Medicare Coverage for Physical, Occupational, and Speech Therapy

- Confusion has surrounded the conditions under which individuals with chronic or progressive disease can receive physical, occupational and speech therapy covered by Medicare
- Services terminated for some with severe cases of multiple sclerosis or Parkinson's disease, because therapists said they weren't making sufficient progress or have been told that they reached an annual limit on services and didn't qualify for further care

19

Medicare Coverage for Physical, Occupational, and Speech Therapy

- As of February 2018 Medicare does not require demonstrated improvement in order to receive ongoing therapy, nor does it limit the amount of medically necessary therapy, for the most part
- Care can last up to 90 days, with the potential for renewal if a physician certifies that ongoing services are necessary
- Bottom line for beneficiaries: you may have to advocate aggressively for the care you think you need and enlist your physician to intervene on your behalf

20

Collaborative Care Team – When?



21

An Example: Parkinson's Disease

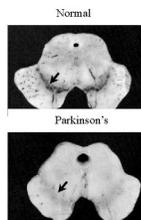
Collaborative Team – Answering the Why?

22

Clinical Diagnosis of PD Requires Only Motor Symptoms

- First essential criterion:
 - Slowing of physical movement (bradykinesia)

- Plus at least one of the following:
 - Tremor (4-7hz)
 - Muscle rigidity



Portuma RB et al Mov Disord 2015

23

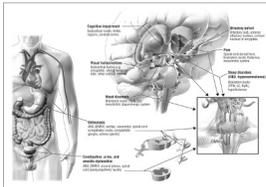
23

Stage and Severity of Parkinson's Disease

- Hoehn and Yahr Stage
- Stage 1 – unilateral involvement only, usually with no functional disability
- Stage 2 – bilateral involvement without impairment of balance
- Stage 3 – bilateral involvement with impairment of postural reflexes (balance)
- Stage 4 – severely disabling disease; still able to walk with assistive device or stand unassisted
- Stage 5 – confinement to bed or wheelchair unless aided
- Unified Parkinson's Disease Rating Scale – part 3 motor exam, example for rigidity
- 0: normal: no rigidity
- 1: slight: rigidity detected only with activation maneuver
- 2: mild: rigidity detected without activation maneuver, but full range of motion easily achieved
- 3: moderate: rigidity detected without activation and full range of motion is achieved with effort
- 4: severe: rigidity detected without activation and full range of motion not achieved

24

'Extranigral' Nonmotor Symptoms of PD

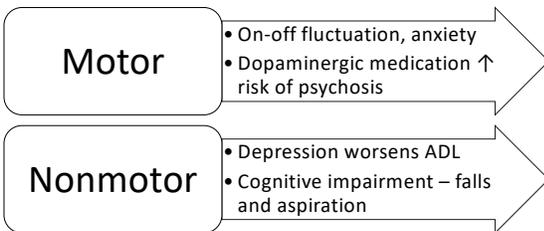


(Arch. Neurol 2009, Lim et al)

- Cognitive impairment >80%
- Neuropsychiatric disorders >75%
- Olfactory loss ≤90%
- Dysautonomia ≤70%
- Sleep disturbances >30%
- Speech and swallowing dysfunction >70%

25

Motor and Nonmotor Symptoms Must Be Treated in Parallel



26

Case Vignettes

27

Case 1

- 71-year-old right-handed male with a 6-year history of PD, bilateral symptoms well managed with carbidopa/levodopa. No major motor complications of treatment at this time, only mild dyskinesia at peak dose. Recently he has had several falls while working in the yard, one while stepping up on his deck carrying things in both hands resulted in 5 stitches above his left eye and a chipped tooth.
- Evaluation by his neurologist shows no significant worsening of his tremor, rigidity, or bradykinesia on the Unified Parkinson's Disease Rating Scale. However, on the pull test, his neurologist needed to catch him after pulling his shoulders.

28

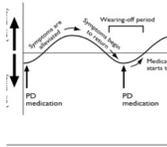
Case 1: Discussion

- Which findings represent the most important indication for allied professional services?
- What Hoehn Yahr stage is the patient?
- History of falling
- New finding on neurological exam of impaired postural reflex is a strong indication of impaired balance
- Physical therapy for
 - Fall prevention
 - Improved mobility
- Posture re-education (can affect visualization of trip hazards)
- Gait and balance training
- Strongly consider occupational therapy for:
 - Adaptive equipment recommendations
 - Activity analysis (carrying things in both hands-on step?)

29

Case 2

- 78-year-old female with an 11-year history of PD, bilateral symptoms with impairment of balance, recently hospitalized for a mild pneumonia. She did well in the hospital, recovered in less than a week, and returned home. At home she has moderate dyskinesia and severe on-off fluctuations. She is exceedingly anxious, often unwilling to leave her home and fears being unable to move due to wearing off.
- She uses a rolling walker appropriately and has little difficulty with transfers. She is losing weight and frequently coughs while eating and drinking. She denies any trouble swallowing.



30

Case 2: Discussion

- Which findings represent the most important indication for allied professional services?
- What are 2 of the biggest causes of morbidity and mortality in PD?

- History of aspiration pneumonia
- Despite denying she has any trouble swallowing, observed coughing when eating and drinking
- Speech language pathology
- Assess aspiration risk
- Address coughing/choking with meals
- Evaluate weight loss
- Strongly consider occupational therapy
- On-off fluctuations are sometimes due to mismanagement of medication administration
- Consider mental health referral if anxiety does not improve after OT and optimization by neurologist

31

Case 3

- 68-year-old male with an 18-year history of PD, bilateral symptoms, without impairment of balance while managed on carbidopa levodopa. He is depressed and reports increasing frustration with daily activities despite maintaining functional independence. He has mild dyskinesias and moderate on-off fluctuations.
- He is interested in deep brain stimulation and after evaluation he is deemed a suitable candidate for bilateral STN DBS. The procedure is a success with no major adverse events.
- The programming neurologist achieved good motor symptom control and was able to reduce carbidopa levodopa by 20%; both markers of an optimal clinical outcome. Despite this, the patient is dissatisfied and repeatedly asks to be reprogrammed.
- The patient misses his second programming session and subsequent follow up. Family later finds him unresponsive at home...

32

**Case 3:
Discussion**

- Which findings represent the most important indication for allied professional services?
- What mitigating steps may have helped?

- History of depression
- Potentially distorted perception of clinical outcomes could be due to depression, lack of education, or both
- Mental health practitioner
- Assess mood before the procedure
- Evaluate adequacy of social support network
- Manage mood symptoms before and after procedure

33



Any
Questions?

34

References

- Armstrong MJ, Okun MS. Diagnosis and Treatment of Parkinson Disease: A Review. JAMA. 2020 Feb 11;323(6):548-560. doi: 10.1001/jama.2019.22360. PMID: 32044947.
- Fox SH, Katzenschlager R, Lim SY, Barton B, de Bie RMA, Seppi K, Coelho M, Sampaio C; Movement Disorder Society Evidence-Based Medicine Committee. International Parkinson and movement disorder society evidence-based medicine review: Update on treatments for the motor symptoms of Parkinson's disease. Mov Disord. 2018 Aug;33(8):1248-1266. doi: 10.1002/mds.27372. Epub 2018
- Reich SG, Savitt JM. Parkinson's Disease. Med Clin North Am. 2019 Mar;103(2):337-350. doi: 10.1016/j.mcna.2018.10.014. Epub 2018 Dec 3. PMID: 30704685.
- Shepard MD, Perezko K, Broen MPG, Hinkle JT, Butala A, Mills KA, Nanavati J, Fischer NM, Nestadt P, Pontone G. Suicide in Parkinson's disease. J Neurol Neurosurg Psychiatry. 2019 Jul;90(7):822-829. doi: 10.1136/jnnp-2018-319815. Epub 2019 Jan 19. PMID: 30661029; PMCID: PMC7167903.

35



**Optimal Management of
Movement Disorders:
The Importance of the
Collaborative Care Team**

Greg Pontone, MD, MHS
Director, Parkinson's Neuropsychiatry Clinical Programs
Johns Hopkins University School of Medicine
