Disclosures for

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None

I will not be discussing the off-label use of various medications.
Objectives:

- Describe PD symptoms as they limit function and relate to disability
- Conceptualize and discuss client daily functioning using WHO terminology and Occupational Therapy Practice Framework
- Utilize the PEO model to guide occupational therapy assessment and intervention for PD
- Identify and incorporate interview and assessment tools for intervention with clients at different stages of Parkinson Disease
- Develop intervention plans based on client’s goals and evidenced based desired treatment outcomes

WHO International Classification of Functioning, Disability and Health - ICF

Health as vital body and mind, capable performance of activities, and personally satisfying participation in society

www.who.int/classifications/icf/en/

*Nagi Disablement Model (1965)
Transactive Approach to Occupational Performance - PEO

Person

Environment

Occupation

Law, Cooper, Strong, Stewart, Rigby, & Letts (1996)


Occupations: Daily life activities that client needs to, wants to, is expected to do. Central to client identity and sense of competence - BADL, IADL, rest/sleep, education, work, play, leisure, social participation

Client factors: Values, beliefs and spirituality, and capacities of body functions/structures that reside within a person, group or population that influence and are influenced by occupational performance and contexts.

Performance skills: Small units of goal-directed actions (motor, process, social) during engagement in daily life occupations

Performance patterns: Habits, routines, roles, rituals that support/hinder occupational performance

Contexts & environments: Situational influences on occupational performance – Cultural, personal, physical, social, temporal, virtual [occupational justice is part of the socio-cultural ecology]
Models guide the process of **clinical reasoning**, which involves...

1. Asking questions for performing clinical tasks
   - To increase knowledge about a clinical population *(descriptive evidence)*
   - To choose how best to assess the client’s OT needs *(assessment/outcome evidence)*
   - To develop best-practice intervention plans *(intervention effectiveness evidence)*

2. Finding information for possible answers

3. Testing out those possible answers in practice


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**Evidence-based practice** involves specialized clinical reasoning in which...

- there is a **systematic** and **unbiased** search for and evaluation of information,
- and **research evidence** is one of several important sources for possible answers to clinical questions.
Evidence-based medicine
(coined by Sackett)

“EBM is the integration of best research evidence with clinical expertise and patient values. When these three elements are integrated, clinicians and patients form a diagnostic and therapeutic alliance which optimizes clinical outcomes and quality of life.”


Best Research Evidence
for OT’s working with clients with PD

1. Descriptive: characteristics, needs and prognostic indicators of the clinical population
2. Assessment/outcomes: reliability, validity and trustworthiness of quantitative and qualitative assessment procedures

New research evidence replaces previously accepted knowledge, assessments and interventions with ones that translate into more powerful, accurate, efficacious, and safer OT services.
AOTA Evidence-Based Literature Review Project

Intervention Effectiveness Question

What is the evidence for the effectiveness of interventions within the scope of occupational therapy practice to improve performance skills, occupational performance & quality of life of people living with Parkinson’s disease?

www.aota.org


How much rigorous research is there that supports OT as beneficial to people with Parkinson’s?

Summary of Review Findings

People with PD benefit from

a) Exercise and activity that strengthen physical performance skills and occupational performance of physical activities (P interventions)

b) Environmental cues, stimuli and objects that elicit regulated task and occupational performance (E interventions)

c) Cognitive-behavioral education & practice that integrate individualized performance patterns of self-management of health & wellness into daily life (PEO interventions)
Summary of Review Findings

Exercise and activity that target motor and sensory-perception performance skills, e.g. necessary for physical fitness and balance:

(+) multi-session, repetitive physical exercise tasks and simple physical activity training improve performance skills, especially in short term.

(+) task-specific is better than non-specific training for improving task performance skills

Summary of Review Findings

Exercise and activity that target motor and sensory-perception performance skills, e.g. necessary for physical fitness and balance:

(-) Vestibular/sensory rehab may reduce balance problems- unclear if reduce falls

(-) little support for generalization of task-specific motor training to complex occupations or quality of life outcomes

(-) little support for long-term effects

(-) almost no research on non-motor performance skill training (cognitive, emotional regulation, social)
Summary of Review Findings

Training that targets more complex occupational performance, e.g. dual-task, multi-task or multi-model occupations:

(+) functional mobility training, general ADL training, sports/dancing (Tango) appear to improve short-term improvement in functional movement activity

(+) beginning evidence that cognitive and movement complexity of the occupation involved in training has positive benefits for executive functioning.

(-) uncertain long-term benefits

(-) almost no task-specific intervention research on adult occupations listed in OT Practice Framework (e.g., BADL, IADL, rest/sleep, education, work, leisure)
Environmental cues, stimuli and objects that target regulated task and occupational performance:

(+) rhythmic external cues (audio, video and somatosensory), especially audio or client-preferred cues, facilitate movement performance

(+) multi-session training with external cues may have both short- and long-term effects

(+) performance can be enhanced/hindered by context, environment or supervision cues

(-) most studies are on simple movements, functional mobility, not on complex occupations or performance patterns

(-) unclear what the intensity of cues must be or how long effects of context can endure
Summary of Review Findings

Cognitive-behavioral education & practice that target integrate individualized performance patterns of self-management of health & wellness into daily life:

(+ ) individualized intervention that promotes wellness lifestyle initiative and personal control appear to be helpful to targeted areas of quality of life,

(+ ) gains appear to be larger in targeted than non-targeted areas, especially in client’s personally problematic areas

(+ ) effects appear to persist for several weeks to months

(- ) new research in PD -- few studies

(- ) unsure if activity levels increase

(- ) difficult to tease out the “active ingredients” of what works in complex, individualized interventions that are inter- or multi-disciplinary, for example:

Since the AOTA Review


Home-based, individualised occupational therapy led to an improvement in self-perceived performance in daily activities in patients with Parkinson's disease. Further work should identify which factors related to the patient, environmental context, or therapist might predict which patients are most likely to benefit from occupational therapy.

International OT Resources

Occupational therapy for people with Parkinson’s: Best practice guidelines

(Aragon & Kings, 2010) UK


Guidelines for Occupational Therapy in Parkinson’s Disease Rehabilitation

(Sturkenboom et al., 2008) Netherlands

www.parkinson.org/NationalParkinsonFoundation/files/a5/a5c7ef92-a101-4485-96b2-7d81b31a42c9.pdf
PD symptoms and their effect

- Motor planning and execution for accomplishment of functional task
  - Loss of automatic movement
  - Familiar, sequential patterns become impaired

PD symptoms and their effects

- Bradykinesia
  - Decreased momentum
  - Slow task performance
- Akinesia
- Hypokinesia
  - Reduced amplitude of movement
PD symptoms and their effect

- Patients with PD develop **axial bradykinesia** to the same extent that they develop **distal bradykinesia**. Functional limitation is mainly linked to **bradykinesia**, which can lead to soft tissue contractures and limited ROM. This is correlated with life satisfaction scores. Nieuwboer (1998)

Pd symptoms and their effect

- Functional weakness and limited ROM could be the result of disrupted motor planning, peripheral neuromuscular changes, rigidity, abnormal discharge in motor units, and disuse. Bridgewater, et al, (1998)
PD symptoms and their effect

• Dexterity
• Rigidity (shoulder, wrist, neck, etc.)
• Pain
• Fatigue
• Tremor

PD symptoms and their effect

• Gait Changes
  • Bradykinesia, akinesia
  • Decreased hip, knee, ankle movement – smaller steps
  • Decreased heel strike – flatfooted step
  • Difficulty turning and changing direction
  • Festinating gait
  • Propulsive gait
PD symptoms and their effect

- Postural reflexes
- Depression / Anxiety
- Obsessive compulsive symptoms

PD symptoms and their effect

- Sleep disturbance
- Cognition
- Visual function
- Olfaction
- Dysautonomia
- Stomach and upper GI disturbance
Parkinson’s disease and vision

- Visual Changes
  - Coarse object recognition
  - Contrast sensitivity
  - Visual spatial perception
  - Visual attention
  - Anticipatory eye movements

Vision and Parkinson’s Disease

Davidsdottir (2005), -Uc (2005)

- Occulomotor function
- Decreased smooth pursuit
- Color perception
- Saccades
- Abnormal perception of motion
- Nystagmus
- On/Off fluctuations
Vision and Parkinson’s Disease
Davidsdottir and Uc (2005)

- Mild to Moderate PD:
- Reduced contrast sensitivity deficits in spatial and motion perception, attention
- Worse cognitive function
- Visual processing speed
- Correlated with postural instability and gait difficulty

Vision and Parkinson’s Disease

- Non-tremor predominant Parkinson’s patients have more impairment in visual ADL’s, including light/dark adaptation, acuity/spatial vision, depth perception, peripheral vision and visual processing speed.
  - Seichepine, (2011)
Vision and Parkinson’s Disease

- Reduced UFOV in early PD
  - Uc (2005)

- Increased Reaction Time due to reflexive saccades
  - Deijen, et al.

Visuospatial Skills

- Independent of visual acuity
- Correlates with reduced motor planning ability
- Sensitivity to fatigue
- Impairment of intake, storage and use of visual information
Draw A House

Common medication side effects

- Dyskinesia
- Nausea
- Loss of appetite
- Confusion
- Hallucinations
- Vivid dreams
- Insomnia
- Blood Pressure
- Dizziness
- Dry mouth
- LE edema
- Urinary retention
- Drowsiness
OT evaluation in early stage PD

• “…there is presently no single measure that comprehensively assesses the full spectrum of disease manifestations... most presently focus of specific aspects... such as... motor function, ADL, and QOL…”
  - Sarwar, Trail, Lai (2008)

OT evaluation in early stage PD

• Occupational Profile
  • Patterns of daily living
  • Interests, values, needs
  • Problems, concerns regarding daily life activities
  • Client’s priorities
OT evaluation in early stage PD

- Chart Review
- ADL Questionnaire
- PDQ-39, PDQ-8
- Interview
- AROM
- MoCA
- Motor exam
- Mm strength

Fine Motor
Posture
Balance
Visual Perception
PPT
PAS

Canadian Occupational Performance Measure (COPM) Law, et al ‘98

- Client-centered, measures satisfaction and perception of improved performance over time.
- Reliability and validity established.
- Not performance-based.
- Administered in interview.
- Useful for including patient in goal setting.
COPM

- Reassessment – identify five most important issues and rate satisfaction and performance
- Must be scored separately for on and off states
- Requires 10 to 18 minutes to administer

Upper Extremity Assessment

- AROM
- Rigidity
- Tremor
Upper Extremity Assessment

- Bradykinesia, Motor planning
- Reciprocal motion
- Supination/Pronation
- Finger taps
- Hand Movements
- Prehension patterns

Upper Extremity Assessment

- Strength
  - Dynamometer
  - Manual Muscle test
- Coordination
  - 9 Hole Peg
Unified Parkinson’s Disease Rating Scale (UPDRS) – Fahn (1987)

- Gold standard for measurement of signs and symptoms of PD
- Identifies activity limitations
- Evaluates performance components
- Considers on and off states, mental difficulties, dyskinesias, advancing symptoms
- Does not consider patient perspective

Unified Parkinson’s Disease Rating Scale (UPDRS) – Fahn (1987)

- Five Sections:
  - Signs and symptoms:
    - Motor skills (performance-based), ADL’s (based on patient and family report), mental deficits
  - Complications related to medications
  - Hoehn and Yahr ratings scale
  - Schwab and England scale
  - Weight, blood pressure and pulse
UPDRS Activities of Daily Living Scale – (Fahn, et al)

- Patient questionnaire based on selected UPDRS items
- 13 items, 0-4 scoring system
- Identifies changes in function to alert nurse/MD to need for rehab intervention
- “Thumbnail sketch” of ADL
- Does not account for variability in cases (components are not weighted)

PDQ-39 Parkinson’s Disease Questionnaire

- Self-administered questionnaire
- Measures emotional well-being, quality of life, social relationships, physical health, environment, psychological function
- Takes 15 minutes to administer
Physical Performance Test – Reuben (1990)

- Timed, simulated ADL’s: writing, eating, dressing, and ambulation
- Scoring system based on time category
- Test is 9 items (with stairs included) or 7 with stairs omitted
- Ten minutes to administer
- Incorporates the work of Jebsen, Tinetti, and others
Physical Performance Test Percentile Ranking

- Percentile 9 item 7 item
- 10th 12 11
- 25th 21 15
- 50th 29 22
- 75th 31 24
- Max Score 36 28

- Independent living elderly (median age 79 years) PD represented

Parkinson’s Activity Scale (PAS)- Nieuwboer, et. Al. (2000)

- Ten test items, performance based
- Chair transfers, gait akinesia, bed mobility, and bed mobility with cover
- Ranked 0 (normal)-4 (physically dependent)
Assessment of Motor and Process Skills (AMPS)

- Performance-based assessment of IADL’s, motor and process skills
- Measures effect of OT intervention on person with PD
- Requires 5 day training for certification

Cognition Assessment Goals

- Should span WHO domains of impairment, activity, participation
- Should include psychometric tests, structured observations, patient family ratings
- Picture of cognitive, emotional, interpersonal function; estimate ability to perform ADL, Ability to participate in rehab, and hypothesize best means to facilitate cognition
  - Sohlberg and Mateer(2001)
Cognition Assessment: Observation and Interview

- Client concerns
- Family/care-partner concerns
- Mood changes
- Bradyphrenia
- Quality of responses
- Judgment
- Insight
- Living environment
- Functional demands or tasks within family
- Level of independence or supervision
- Effect of medications on functioning
- Daily activity level

OT Assessment- Cognition

- Mini-mental Parkinson (MMP)
- SLUMS – Tariq, et.al. (2006)
OT Assessment - Cognition

- Mild cognitive impairment is common in PD patients with normal MMSE scores.
  - Mamikonyan (2009)

- MoCA identified cognitive impairment in cases with normal MMSE scores
  - Nazem (2009)

OT Assessment - Cognition

- MoCA is suitably accurate when screening all levels of cognition in PD. (10 minutes) is at least equivalent to the SCOPA –COG (20-25 minutes) and superior to the MMSE.
  - Dalrymple-Alford (2010)
Cube Replication

-Maeshima, et.al.

- Correlates difficulty in replicating simple cube with difficulty in motor planning and ADL function as measured by the Functional Independence Measure
- Difficulty present in up to 50% of patients with dementia
Clock Drawing

- Sunderland and Grafman -1989
- Used with variety of neurological diagnoses
- Simple assessment of visuospatial ability
Visuospatial Skills

- Developmental Test of Visual Perception DTVP-A
  - Reynolds, et al.

- Motor Free Visual Perception Test MVPT-3
  - Colarusso, et al.

Cognitive Linguistic Quick Test
-Nancy Helms-Estabrooks

- Cognitive Domains:
  - Attention
  - Memory
  - Executive Function
  - Language
  - Visuo-Spatial Skills

  Age-based normative data
  Administration time <30 min
  Specific domain and composite severity levels
Cognitive Performance Test (CPT)

- Theressa Burns (2002)

- Allen Cognitive Level
- Abbreviated version available
- Functional tasks
- Standardized on Alzheimer’s population
- No time limitations during administration
- Medication, shopping, phone, toast, travel, handwash, dressing
Cognitive Performance Test

- Individual tasks have face value
- Not an ADL assessment
- Composite score predicts abilities and needs for basic and instrumental ADL’s
- 5.6 ceiling score
- CPT has 89% sensitivity for not passing road test at 4.7

Cognitive Performance Test Levels

- 6 Efficient, error free task completion
- 5 mild memory or exec function imp- able to self correct slow, impulsive
- 4 goal directed, cannot attend to details at once
- 3 recognition memory, lose sight of goal
Allied Team Training for Parkinson's
Early Stage Parkinson's Disease
Arlington, VA March 15, 2012
Pain Inventories

- Verbal Numeric Pain Scale: Yound, Mentes, & Titler: Client verbally responds to the intensity of pain on a scale of 0 to 10
Mood & Depression

- Beck Depression Inventory: Beck(1996): A 21 item questionnaire yielding a severity rating of depression.

PD and Vision-Contrast Sensitivity
Caregiver Burden

- **Multidimensional Caregiver Strain Index** – Stull (1996)
  - 18 question survey
    - parkinson.org

- **Caregiver Strain Index** – Sullivan (1983)
  - 13 Questions
Outcome Measures

- Mini Mental Status Exam – Folstein (1975)

Cognition

- Mini Mental Status Exam – Folstein (1975)

Due to having the rehab visit, are you better able to...

1. get up from a sitting position? [ ] YES [ ] NO [ ] DID NOT RECEIVE
2. walk? [ ] YES [ ] NO [ ] DID NOT RECEIVE
3. avoid falling? [ ] YES [ ] NO [ ] DID NOT RECEIVE
4. use a louder voice? [ ] YES [ ] NO [ ] DID NOT RECEIVE
5. swallow? [ ] YES [ ] NO [ ] DID NOT RECEIVE
6. remember things? [ ] YES [ ] NO [ ] DID NOT RECEIVE
7. move in bed? [ ] YES [ ] NO [ ] DID NOT RECEIVE
8. do daily tasks such as handwriting, dressing, eating or manage your medication schedule? [ ] YES [ ] NO [ ] DID NOT RECEIVE
9. be more active in the community? [ ] YES [ ] NO [ ] DID NOT RECEIVE

Do you have any suggestions on how we can improve our services? 


services include physical, occupational and speech therapy. We would like your help with the following questions to improve our services. Please complete the survey and return in the self-addressed, stamped envelope. If you have any questions, please contact IPARK at 952-993-5495 or toll-free at 1-888-993-5495. Thank you for your help!

Vision and Driving in Parkinson’s Disease (Mild to Moderate) -Uc (2009)

- More total safety errors
- Age
- Contrast sensitivity
- Visual acuity attention, memory, visuospatial
- Daytime sleepiness
- Variability among PD drivers

Driving Safety and PD

- Difficulty making multiple / complex decisions
- Difficulty making rapid, exact motor responses
- Decreased anticipatory eye movement
- Distractibility
Vision and Driving in Parkinson’s Disease (Mild to Moderate) -Uc (2009)

- Lane violations
- Turns
- Stop signs
- Speed control
- Starting and pulling away from shoulder
- Parallel parking

Predictors of errors -Uc (2009)

- Age
- Far Vision acuity
- Visual processing speed and attention
- UFOV
- Motion Perception
- Visuoconstructional ability
- Visual memory
- General cognition
Vision and Driving in Parkinson’s Disease (Mild to Moderate)  
Crizzle, Uc (2012)

- May be impaired even in early stage
- No clear link between PD and occurrence of real life crashes.
- Contrast sensitivity, UFOV, Trails B, Rey-Osterrieth Complex Figure are probably predictive

Clinical Predictors of Older Driver Performance –  
S. Classen, et. al. (2008)

- Advanced age
- Prolonged time on Trail Making, part B
- Neuro dx: cerebrovascular, PD
Clinical predictors of driving fitness in PD

- Disease duration
- Contrast sensitivity
- Clinical dementia rating
- UPDRS motor section

- 91% correlation to results of behind the wheel evaluation results.

Multidomain Approach to Predicting driver Safety
- J Wood (2008)

- Vision- Useful field of vision, Dot motion
- Motor- Knee extension strength, Sway path length
- Cognitive- trail making part B, Color choice reaction time

- (91% sensitivity, 70% specificity in identifying safe and unsafe drivers
Driving and Parkinson’s disease

- Test Perception/cognition
- AAA Roadwise Review
- Clinical Testing
- Refer for behind the wheel driving evaluation
- Report to M.D.

AAA Roadwise Review
Discussion

• What is involved in being an effective interdisciplinary or inter-professional team member?

• Who are the critical disciplines in your care team?

• What are your and their unique and complementary roles?

• What are strategies for building inter-professional networks and community partnerships?

ALLIED TEAM TRAINING FOR PARKINSON

Questions?