Interdisciplinary Treatment Strategies for Pusher Syndrome & Visual Inattention

Molly Kimmel, OTR/L, May 2, 2024

Who am I?

- Occupational Therapist since 2011
  - Inpatient, outpatient, acute care, mental health, NICU, community-based
- MonTECH Program Director and Rural Institute Interim Director
- OT Faculty & MT State Liaison for URLEND
- Montana Occupational Therapy Association President
- Passionate about neurorehabilitation
- Disclosures: honorarium, lapsed CSRS certification

Objectives

- Define pusher syndrome & visual inattention in accessible language
- Discuss evidence-based treatment options for each condition
- Learn ways to involve other team members and family members in comprehensive intervention strategies for success at home and in the community

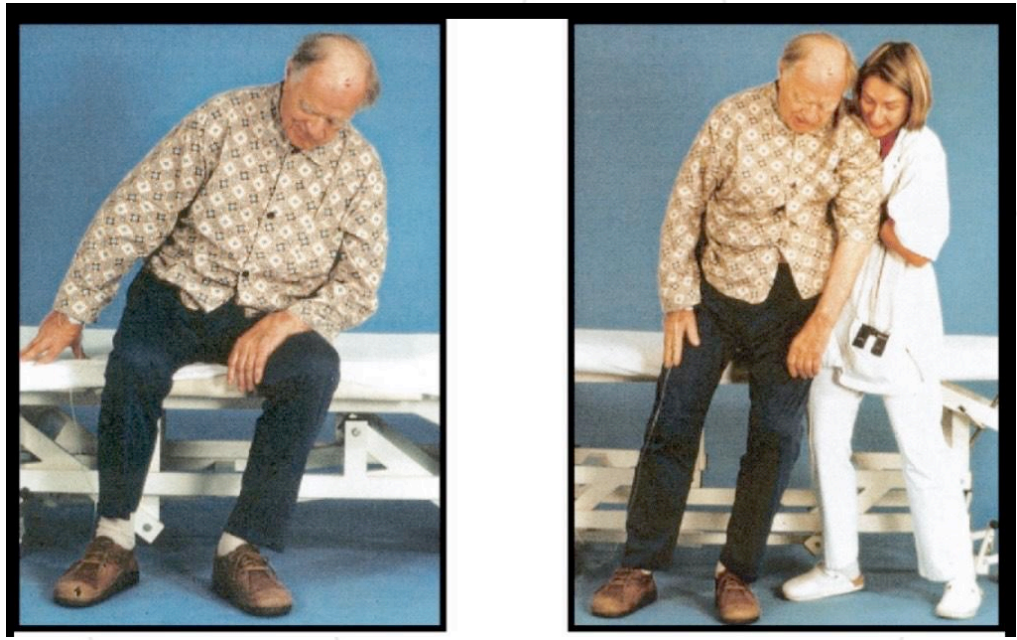
Definitions: Pusher Syndrome

- Non-accessible language: Lateropulsion, Ipsilateral Pushing, Contraversive Pushing
- What it really means:
  - Posture tilts towards affected side
  - Non-affected limbs “push” to affected side
  - Patient pushes against hands-on corrections to posture
  - Misperception of where body is in space
  - They experience upright, it is really 18 degrees off vertical

https://fb.watch/rde_lltHjg/

Prevalence: Pusher Syndrome

- Present in approximately 10% of strokes with hemiparesis
- Higher incidence with R-sided brain lesions
- Can happen with L-sided lesions as well
- Often paired with
  - Anosognosia
  - Inattention (R-sided lesions)
  - Aphasia (L-sided lesions)



- Typically involves posterolateral thalamus damage (right or left)
- Can “see” upright, cannot “perceive” upright

Karnath and Broetz 2003

Prognosis

- Short term: difficult transfers, skin integrity challenges, increased rehab stay, increased fear
  - Can take 3-4 weeks longer to reach same functional outcomes as those without
- Long term: Pushing rarely present after 6 months post-CVA!
- Caveat to above: with consistent and appropriate therapeutic involvement
- Note: visual inattention is identified as a factor that worsens the prognosis of pusher syndrome

Objective Measures

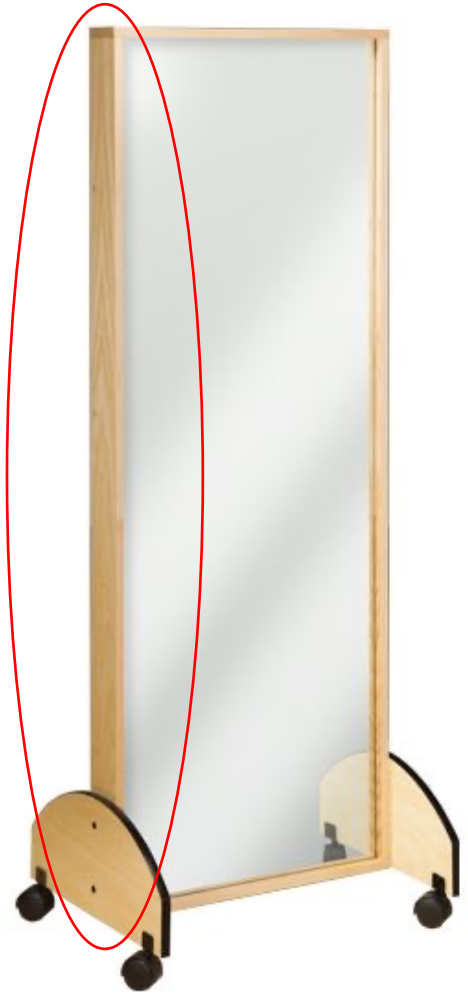
- Scale for Contraversive Pushing (SCP) – 3 items
- Burke Lateropulsion Scale (BLS) – 5 items
- Full disclosure: I never used either.

Don’t

- **Push or pull patient!**
- Use objects that patient can push from
- Use mirror therapy on its own
- Start with transfers (likely not an issue by post-acute care)

Do

- Start with everything in sitting, advance to practice in standing
- Use the environment!
- Have them point out vertical items in their direct line of sight
- Help patient with their internal perception of upright
- Teach how to move to vertical body position
- Reinforce how to maintain upright during activity
- Help patient stand/sit with unaffected side against a wall
- Assist in controlled falls to sidelying
- Facilitate with pressure at the sternum and back instead of the sides



Do, continued

- Try wedges under pelvis to level it
- “load” affected leg progressively (provide more input)
- Reach for items cross-midline to non-affected side (override push)
- With severe pushing, transfer to affected side
- With mild pushing, transfer to non-affected side
- Practice side-lying on non-affected side, weightbearing through non-affected elbow/forearm
- Distract the affected arm (hold something, reach for something)
- Go swimming

New RCTs

- All small N's (less than 25)
- Vestibular Stimulation vs. Machine Supported Gait Training vs PT
  - Most improvement after supported gait training
- Interactive Visual Feedback Training –used wii balance board
  - Better outcomes in experimental group than traditional
  - Wii was better than mirror
- Prone positioning: 10 minutes of relaxation x2/day + traditional therapy
  - All patients sat independently after treatment, SCP scores improved

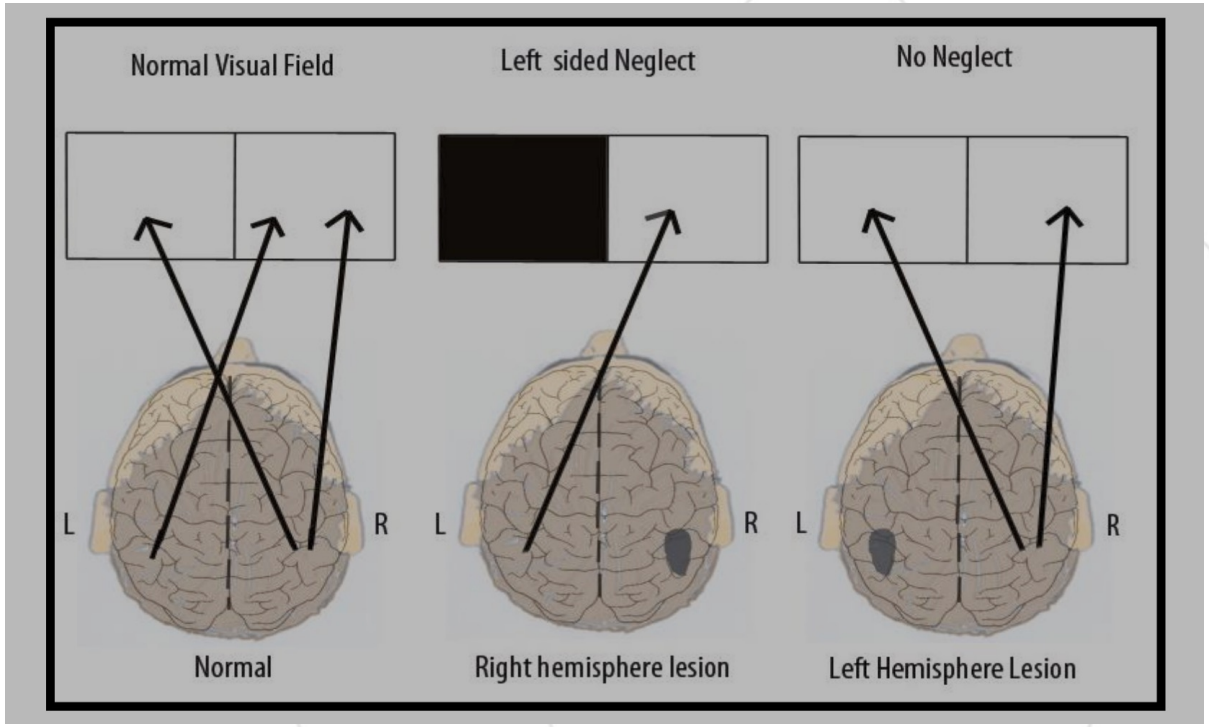
Questions?

Definition: Inattention

- Non-preferred language: Neglect
- Non-accessible language: hemispatial neglect, visuo-spatial neglect, hemineglect, unilateral spatial neglect
- What does that mean?
  - Spatial = vision, motor, and sensory
  - Attention-based impairment
  - Decreased awareness of one side
  - Affects functional vision but not visual function (not a visual field cut)

Prevalence: Inattention

- Most common with R hemisphere lesions, ergo L Inattention
- R inattention happens in 10-13% of cases (with inattention)
- One report (2002) noted 23% of patients in a stroke incidence study had inattention
- Frequency and frequency of recovery vary widely
  - One study noted neglect ranged from 13 – 82% of patients with right brain lesion



Subtypes

- Personal inattention (body centered)
  - Neglect of one's own body
  - Misjudges midline
  - Doesn't groom or dress affected side
- Peri-personal inattention (with arm's reach)
  - Noted with tabletop activities
  - Seen with food/eating (picture of plate of food)
- Extrapersonal inattention (outside of arm's reach)
  - Inattention to large space environments
  - Often mobility-based impairments (bumping into walls)

Prognosis (inattention)

- Short term
  - higher incidence of falls
  - increased rehab stay (11 days)
  - increased potential for damage to affected side
  - progress more slowly than those without inattention
  - Most improvement happens in first 6 months
- Long term
  - Potential risk of functional worsening at 1 year
  - Less independence at home after d/c
  - Lower QOL at 1 year post stroke

Objective Measures for Inattention

- Lots of conventional tests only assess in near space/tabletop
- Important to include real world observation (subjective)
- Catherine Bergego Scale is reliable and valid, tests for all 3 subtypes
- Best to use at least 3-4 tests as symptoms fluctuate

Catherine Bergego Scale

	0	1	2	3
1. Forgets to groom or shave the left part of his/her face	❑	❑	❑	❑
2. Experiences difficulty in adjusting his/her left sleeve or slipper	❑	❑	❑	❑
3. Forgets to eat food on the left side of his/her plate	❑	❑	❑	❑
4. Forgets to clean the left side of his/her mouth after eating	❑	❑	❑	❑
5. Experiences difficulty in looking towards the left	❑	❑	❑	❑
6. Forgets about a left part of his/her body (eg, forgets to put his/her upper limb on the armrest, or his/her left foot on the wheelchair rest, or forgets to use his/her left arm when he/she needs to)	❑	❑	❑	❑
7. Has difficulty in paying attention to noise or people addressing him/her from the left	❑	❑	❑	❑
8. Collides with people or objects on the left side, such as doors or furniture (either while walking or driving a wheelchair)	❑	❑	❑	❑
9. Experiences difficulty in finding his/her way towards the left when traveling in familiar places or in the rehabilitation unit	❑	❑	❑	❑
10. Experiences difficulty finding his/her personal belongings in the room or bathroom when they are on the left side	❑	❑	❑	❑
Total score (/30)				

0=no neglect; 1=mild neglect; 2=moderate neglect; 3=severe neglect

Don’t

- Say “look to your left” or “you’re missing something”
- Let frustration get in your voice
- Leave patient alone with needed items on Left side
- Force strategies when patient is fatigued or frustrated

Do

- **Use the environment! (Don’t rely on internal processes)**
- Use specific, gentle, cueing related to objects in the environment
- Use a “lighthouse” approach
- Be patient
- After scanning activity, discuss how it went and how to use skills during other parts of the day
- Move the affected limb(s) creating motor stimulus and activating the right hemisphere
- Put frequently used (but not imperative) items on left side to encourage scanning
- Use anchoring techniques – highlighters at edges, bright tape along hallways, etc.

Do, continued

- Stand or sit to patient's left side when talking
- Explore prisms with vision expert
- Incorporate mental practice, especially when physically fatigued
- Try TENS unit applied to left posterior neck muscles/upper trap as precursor or during activity
- Use functional tasks rather than random searching: deal cards, set a table, use a map, make the bed, describe the environment

What other functional tasks can you come up with?

Accessible Treatment Approaches

- Visual scanning training
- Limb/affected side activation
- Mental Practice
- Mirror therapy

Evidence

- The literature is mixed regarding visual scanning, virtual reality rehab, prism training, neck muscle activation, rTMS, and limb activation training for improving inattention
- Visuomotor feedback strategies, anodal dTCS, FES, TENs, mental practice, and theta burst stimulation may be beneficial in improving inattention (but not motor rehab or ADLs)
- Eye patching, galvanic vestibular stimulation, and trunk rotation therapy may not be beneficial for improving inattention or ADLs
- Check it out: www.EBRSR.com & www.strokengine.ca

Evidence, cont'd…

- Cochrane Review on non-pharmacological interventions for spatial neglect or inattention (2021)
- "the effectiveness of non-pharmalogical interventions for spatial neglect in improving functional ability in ADL and increasing independence remains unproven"
- No rehab approach can be supported or refuted based on current RTCs
- Continue to provide rehab for inattention that moves patients towards pt-centered goals and encourage research participation

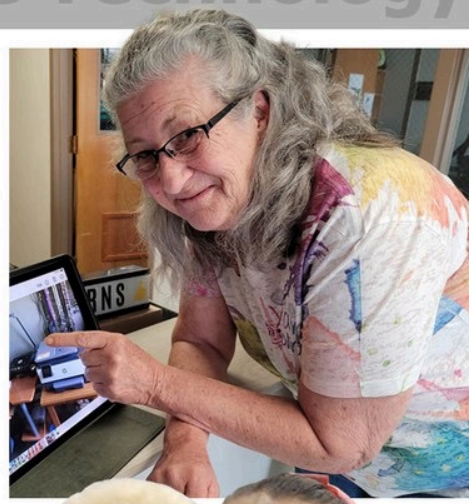
Questions?

Opening a world of Accessibility & Opportunity

Promoting Education & Excellence through **Assistive Technology**

MonTECH

IMPROVING LIVES WITH TECHNOLOGY



Improving Lives with Technology

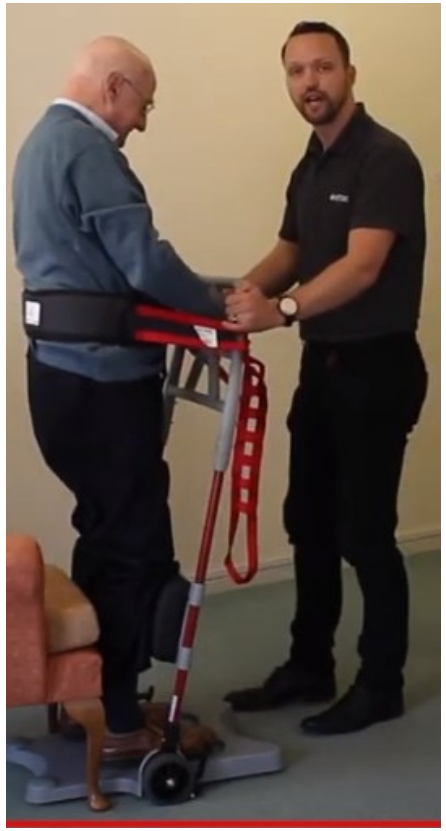
Enhancing Independence

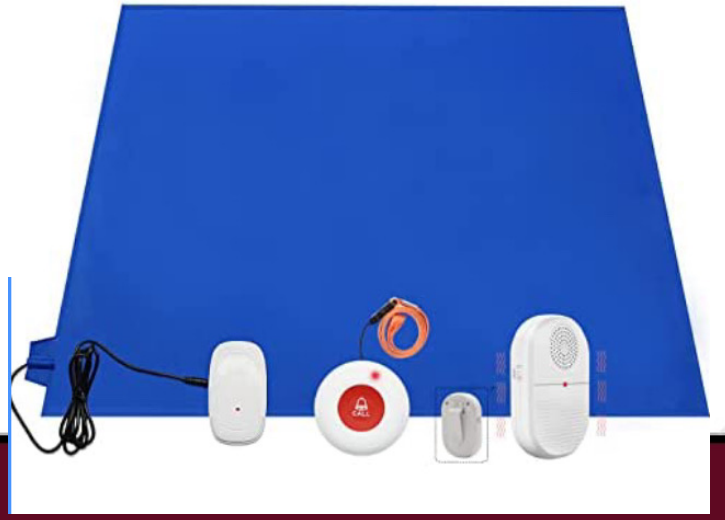
Empowering through Assistive Technology

MonTECH as a Resource

- One of 56 federally funded AT Act Programs
- Provides free access to assistive technology through
  - Equipment loans
  - Consultations
  - Financial loans
  - Training and technical assistance

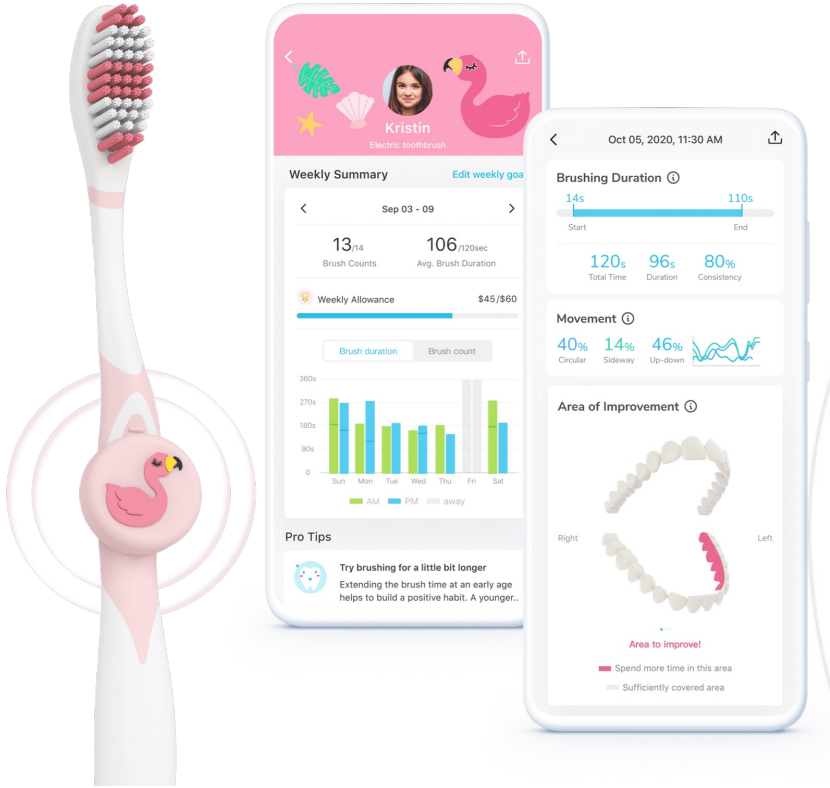
Transfer equipment & safety devices



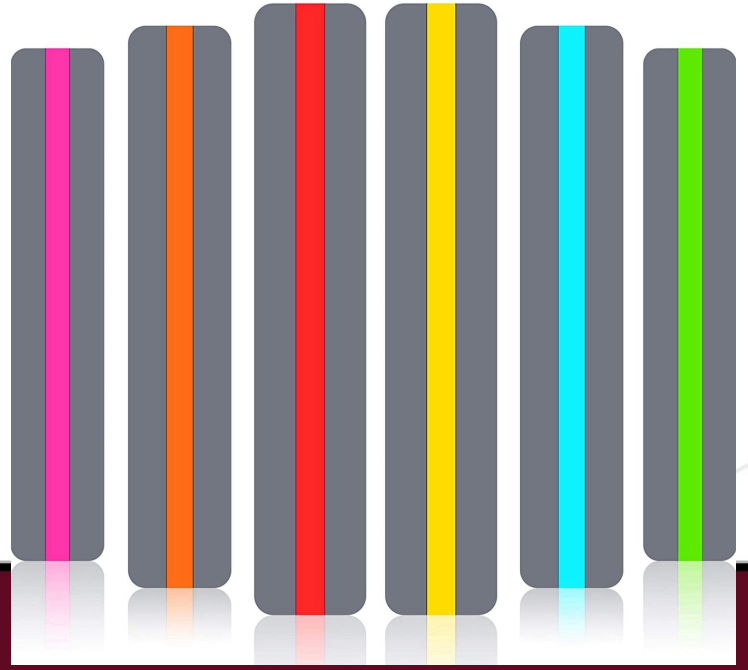


Movement & Positioning

Obstacle detection & ADLs



Communication and reading



Takeaways

- Early intervention across settings is important
- Use the environment
- Watch your language
- Be creative
- Continually be thinking about who can help/participate
- Explore AT

Questions?

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