



Assessing Unilateral

Unilateral neglect is one of the most disabling effects of stroke, leading to longer hospital stays, increased risk of falls and injury, and decreased ability to regain independence in activities of daily living (ADLs).¹ The assessment of unilateral neglect is complicated by the complexity of neglect and some possible misconceptions. One misconception is that neglect occurs only on the left side following damage to the right hemisphere. Although unilateral neglect most often occurs following right hemisphere damage, a systematic review by Vahlberg and Hellstrom² reported the presence of neglect in 20% of persons with left-brain lesions. Unilateral neglect is a deficit of attention, and although the presentation of unilateral neglect is often not as severe following left hemisphere damage, likely due to hemisphere specialization, neglect may occur after damage to any part of the attention network in the brain, according to Mesulam.^{3,4}

Another common misconception is that neglect symptoms fully resolve with time. However, Farne et al.⁵ found that spatial attention improved in fewer than 50% of people during the acute stage. Although more people improved during the chronic stage, the symptoms never fully resolved. Berger, Johannsen, and Karnath⁶ found that neglect persisted in 40% of persons following a subcortical stroke, with about a one-third reduction in symp-

toms. Many practitioners are familiar with the Clock Drawing Test (CDT)⁷ as a way to assess for neglect. However, the CDT appears to be less sensitive when compared with other measures of neglect, according to Agrell, Dehlen, and Dahlgren.⁸

The many ways neglect can manifest makes assessment challenging. Unilateral neglect may present in three modalities: sensory, motor, or representational. Unilateral neglect may also occur in three distributions, or spaces: personal, near extra-personal, and extra-personal.⁹ To further complicate assessment, the presentation of neglect can change very rapidly during the acute stage—worsening, improving, or altering in presentation over the course of a day.¹⁰

Classic signs of unilateral neglect include having a left or right gaze preference, washing only one side of the body, or eating from only one side of the plate. Unilateral neglect may also present more subtly, with signs easily missed in the absence of routine or standardized assessment. A recent study by Lindell et al.¹¹ found there is no single assessment to cover all modalities and distributions of neglect. Because neglect may present in many combinations of modalities and distributions, recent studies recommend using multiple approaches to assessment in the acute stage.^{2,11}

The following case examples illustrate the importance of a diverse approach to assessing neglect that

Neglect in Acute Care

Raising Clinician Awareness

JOYCE E. GOFF

Understanding multiple approaches to assessing unilateral neglect, a disabling effect of stroke that may manifest itself in complex, yet subtle ways.

includes evaluation during functional tasks and the importance of multiple testing methods.

CASE EXAMPLES: JOE AND MARK

Joe, who was 45 years old, was admitted to an acute care hospital due to a right hemisphere stroke. He was independent in basic ADLs and functional mobility, with mildly decreased balance and no gross visual deficits. The initial occupational therapy evaluation for his current admission stated that no signs of neglect were evident, although no testing information related to neglect was included in the documentation. On a subsequent visit, Joe expressed frustration with his inability to text a message on his cell phone. When given a letter cancellation task, which is a deficit-level test, he missed each critical item on the left-most side of the page. When the occupational therapist facilitated Joe's discovery of the omissions, he stated: "Wow, thanks. It's not just texting—that explains why what I read doesn't make sense." Observation during routine ADLs and functional mobility had not led to the identification of possible unilateral neglect in this case.

Mark, a 56 year old admitted to an acute care hospital due to a left hemisphere stroke with expressive aphasia and disassociation apraxia, was assessed using a brief multifactorial approach toward neglect. Mark easily and independently completed several cancellation tasks, crossing off letters and stars using a systematic search pat-

tern in a timely fashion. However, when grooming items were placed on both sides of midline on his hospital tray, he was unable to find any items to the right. In this case, observing grooming and hygiene captured possible unilateral neglect, whereas a valid and reliable deficit-level test did not do so.

DISCUSSION

Given the pace and constraints of the acute care environment, it may be difficult to fully assess for neglect across all types and spaces. However, by clinically observing functional tasks and using valid and reliable assessments for neglect appropriate to acute care, it may be possible to improve detection. The combination of using both top-down and bottom-up (deficit-level) tests may offer the opportunity to capture neglect across type and space. As seen in the case examples, both deficit-level tests and tests of occupational function were required to capture the presence of neglect. In Joe's case, ADL evaluation alone did not detect neglect. In Mark's case, deficit-level testing (e.g., letter cancellation) did not detect neglect.

A top-down approach to assessment is client centered, considers the context and priorities of the client, and frequently includes occupation-based measures.¹² Some examples of occupation-based or top-down assessments for neglect include the Comb and Razor Test¹³ and the Catherine Bergego Scale (CBS).¹⁴ The Comb and Razor Test requires the exam-

iner to, for example, count how many times the person uses the comb on the left, the right, or ambiguously, and then compare the average. The CBS includes 10 common ADL items, and Azouvi et al.¹⁴ reported that it is a strong test in terms of reliability and validity. However, administering the entire test within the constraints of an acute care environment may not be possible. For example, it may be difficult to keep an accurate count because of multiple interruptions or the need to monitor vital signs during the session. In addition, training is recommended for the therapist who does not have experience with neglect.¹⁵

A bottom-up approach assesses deficits in client factors. For example, the therapist tests range of motion or strength rather than how the person performs on a particular functional task. Bottom-up assessments for neglect include pencil-and-paper tests such as the Line Bisection test¹⁶ and the Single Letter Cancellation Test.¹⁷ The advantages of these types of tests include quick administration, decent validity and reliability, and the possibility of building client and family awareness of deficits because it is very easy to see the errors and patterns caused by neglect. Possible disadvantages include the basic skills a client must have to participate (e.g., the ability to point or hold a pencil) and limited assessment across type and space of neglect.

The short version of the Rivermead Behavioral Inattention Test (RBIT)¹⁸

FOR MORE INFORMATION

Occupational Therapy Practice Guidelines for Adults With Stroke

By J. Sabari, 2008. Bethesda, MD: AOTA Press (\$59 for members, \$84 for nonmembers). To order, call toll free 877-404-AOTA or shop online at <http://store.aota.org/view/?SKU=2211>. Order #2211. Promo code MI)

AOTA Webcast: *Paradigm Shift and Innovations in Stroke Rehabilitation*

Presented by L. Dunn, V. Hill-Hermann, & L. Finnen, 2009. Bethesda, MD: American Occupational Therapy Association. (Earn .3 AOTA CEU [3 NBCOT PDUs/3 contact hours]). \$79 for members, \$112 for nonmembers. To order, call toll free 877-404-AOTA or shop online at <http://store.aota.org/view/?SKU=CWS402>. Order # CWS402. Promo code MI)

Neurorehabilitation SPCC Series: Core Concepts & Stroke

By the American Occupational Therapy Association, 2006. Bethesda, MD: Author. (Earn 1.7 AOTA CEUs [17 NBCOT PDUs/17 contact hours]). \$297 for members, \$422 for nonmembers. To order, call toll free 877-404-AOTA or shop online at <http://store.aota.org/view/?SKU=3021K>. Order # 3021K. Promo code MI)

Occupational Therapy Manager, 5th Edition

Edited by K. Jacobs, & G.L. McCormack, 2010. Bethesda, MD: AOTA Press. (\$79 for members, \$112 for nonmembers). To order, call toll free 877-404-AOTA or shop online at <http://store.aota.org/view/?SKU=1390C>. Order #1390C. Promo code MI)

Screening Adult Neurologic Populations: A Step-By-Step Instruction Manual, 2nd Edition

By S. A. Gutman & A. B. Schonfeld, 2009. Bethesda, MD: AOTA Press. (\$59 for members, \$84 for nonmembers). To order, call toll free 877-404-AOTA or shop online at <http://store.aota.org/view/?SKU=1226A>. Order #1226A. Promo code MI)

AOTA Webcast: *Hemianopsia: Strategies Based on Research and Clinical Experience That Support Performance in Daily Occupations*

Presented by T. Holmes, 2009. Bethesda, MD: American Occupational Therapy Association. (Earn .15 AOTA CEU [1.5 NBCOT PDUs/1.5 contact hours]). \$45 for members, \$64 for nonmembers. To order, call toll free 877-404-AOTA or shop online at <http://store.aota.org/view/?SKU=CSC223>. Order # CSC223. Promo code MI)

includes bottom-up subtests. The longer version of the RBIT includes occupation-based items such as menu and article reading. Advantages of the RBIT include good reliability and validity¹⁹ and a cut-off score that indicates the point at which there is no need to continue testing, which can save time. Further, Jehkonan et al.²⁰ found that identifying neglect using the RBIT within 10 days of stroke correlated with instrumental ADLs (IADLs) 1 year poststroke.

Recent research suggests that more subtle cognitive and perceptual deficits are not usually identified in the acute stages of stroke, possibly because of decreased use of standardized measures of detection as a result of the challenges of the acute care environment, such as time constraints.^{21,22} These challenges to assessment in acute care include an emphasis on mobility and orientation, decreasing lengths of stay, and challenges to a "top-down" approach.¹⁹ Also, clinicians may not be aware of the subtle presentations or changing nature of neglect, or they may not have access to valid and reliable measures. Further, occupational therapists may be reluctant to implement standardized screening measures when the initial evaluation of function does not indicate

the presence of a deficit. In a recent study, researchers found that only 38% of patients with acute stroke were evaluated for unilateral spatial neglect, and only 13% of those were assessed using a standardized measure despite the fact that unilateral neglect has an estimated prevalence of 30% and leads to significant functional deficits.²² Further, Edwards et al.²¹ found that 61% of neglect cases identified with the star cancellation test¹⁸ went undetected by a clinical stroke team assessment.

CONCLUSION

Occupational therapists in acute care traditionally assess for unilateral neglect through observation during ADLs and functional mobility. However, with recent evidence demonstrating the underdetection of unilateral neglect in acute care in the absence of routine valid and reliable testing methods, clinicians might consider increasing their awareness of the best methods for testing for unilateral neglect. When valid and reliable measures are not available, therapists can educate supervisors and administrators on the value of obtaining the tests that will help them to meet client needs. They also may seek further training related to detecting neglect through observing ADLs, IADLs, and functional mobility,

CONNECTIONS

Discuss this and other articles on the OT Practice Magazine public forum at <http://www.OTConnections.org>.

including driving. In the absence of standardized tests, therapists can offer clients more challenging tasks during their acute stay that target various types and spaces of neglect (i.e., copy phone numbers from the Yellow Pages, send a text message, cross off the letter *e* in a news article). Most importantly, therapists should approach assessing neglect in multiple ways to increase the likelihood of detection across the various types and spaces.

AOTA's Centennial Vision charges us to provide occupation-based assessment and treatment rooted in the evidence base and clinical reasoning.²³ The vision of providing valid and reliable occupation-based assessment in the acute care environment can be difficult to realize because of the rapid pace, high volume of clients, limited contextual opportunities, decreased access to clients due to testing or critical illness, and limited time with clients. Occupational therapy assessment in acute care following stroke is even more challenging because of the multitude of symptoms contributing to decreased occupational performance. Despite these challenges, detecting neglect is critical because of its association with disability. Identifying neglect may lead to more focused intervention during the acute stay, safety measures to prevent falls and injury due to neglect, and improved discharge and follow-up recommendations.²²

Combining clinical observation skills; standardized, valid, and reliable top-down assessments; and deficit-level testing may be one way to increase the detection of neglect in acute care. This approach to evaluation may be a more evidence-based way to provide our clients, families, and intervention teams with education, training, and discharge recommendations that improve the client's recovery after a stroke. ■

References

1. Katz, N., Hartman-Maeir, A., Ring, H., & Soroker, N. (1999). Functional disability and rehabilitation outcome in right hemisphere damaged patients with and without unilateral neglect.

Archives of Physical Medicine and Rehabilitation, 80, 379-384.

2. Vahlberg, B., & Hellstrom, K. (2008). Treatment and assessment of neglect after stroke—from a physiotherapy perspective: A systematic review. *Advances in Physiotherapy*, 10, 178-187.
3. Mesulam, M. (1981). A cortical network for directed attention and unilateral neglect. *Annals of Neurology*, 10, 309-325.
4. Mesulam, M. (1990). Large-scale neurocognitive networks and distributed processing for attention, language, and memory. *Annals of Neurology*, 28, 597-613.
5. Farne, A., Buxbaum, L., Ferraro, M., Frassinetti, F., Whyte, J., Veramonti, T., et al. (2004). Patterns of spontaneous recovery of neglect and associated disorders in acute right brain-damaged patients. *Journal of Neurology, Neurosurgery & Psychiatry*, 75, 1401-1410.
6. Berger, M., Johanssen, L., & Karnath, H.-O. (2009). Subcortical neglect is not always a transient phenomenon: Evidence from a 1-year follow-up study. *Journal of Clinical and Experimental Neuropsychology*, 31, 617-623.
7. Ishiai, S., Sugishita, M., Ichikawa, T., Gono, S., & Watabiki, S. (1993). Clock-Drawing Test and unilateral spatial neglect. *Neurology*, 43, 106-110.
8. Agrell, B., Dehlin, O., & Dahlgren, C. (1997). Neglect in elderly stroke patients: A comparison of five tests. *Psychiatry Clinical Neuroscience*, 51, 295-300.
9. Swan, L. (2001). Unilateral spatial neglect. *Physical Therapy*, 81, 1572-1580.
10. Hamilton, R., Coslett, H., Buxbaum, L., Whyte, J., & Ferraro, M. (2008). Inconsistency of performance on neglect subtype tests following acute right hemisphere stroke. *Journal of the International Neuropsychological Society*, 14, 23-32.
11. Lindell, A., Jalas, M., Tenovu, O., Brunila, T., Voeten, M., & Hamalainen, H. (2006). Clinical assessment of hemispatial neglect: Evaluation of different measures and dimensions. *Clinical Neuropsychologist*, 21, 479-497.
12. Fasoli, S. (2008). Assessing roles and competence. In M. Radomski & C. Latham (Eds.), *Occupational therapy for physical dysfunction* (pp. 65-89). Philadelphia: Lippincott Williams & Wilkins.
13. Beschin, N., & Robertson, I. (1997). Personal versus extrapersonal neglect: A group study of their dissociation using a reliable clinical test. *Cortex*, 33, 379-384.
14. Azouvi, P., Olivier, S., De Monety, G., Samuel, C., Louis-Dreyfus, A., & Tesio, L. (2003). Behavioral assessment of unilateral neglect: A study of the psychometric properties of the Catherine Bergego Scale. *Archives of Physical Medicine and Rehabilitation*, 84, 51-57.
15. Quintana, L. (2008). Assessing abilities and capacities: Vision, visual perception, and praxis. In M. Radomski & C. Latham (Eds.), *Occupational therapy for physical dysfunction* (pp. 235-259). Philadelphia: Lippincott Williams & Wilkins.
16. Schenkenberg, T., Bradford, D., & Ajax, E. (1980). Line bisection and unilateral visual neglect in patients with neurological impairment. *Neurology*, 30, 509-517.
17. Diller, L., Ben-Yishay, Y., Gersman, L., Goodkin, R., Gordon, W., & Weinberg, M. (1974). *Studies in cognition and rehabilitation in hemiplegia*. New York: New York University Medical Center, Institute of Rehabilitation Medicine.
18. Wilson, B., Cockburn, J., & Halligan, P. (1987). Development of a behavioral test of visuospatial

neglect. *Archives of Physical Medicine and Rehabilitation*, 68, 98-101.

19. Menon, A., & Korner-Bitensky, N. (2004). Evaluating unilateral spatial neglect post stroke: Working your way through the maze of assessment choices. *Topics in Stroke Rehabilitation*, 11(3), 41-66.
20. Jehkonen, M., Ahonen J. P., Dastidar P., Koivisto, A. M., Laippala, P., Vilkkilä, J., et al. (2000). Visual neglect as a predictor of functional outcome one year after stroke. *Acta Neurologica Scandinavica*, 101, 195-201.
21. Edwards, D., Hahn, M., Baum, C., Perlmutter, M., Sheedy, C., & Dromerick, A. (2006). Screening patients with stroke for rehabilitation needs: Validation of the post-stroke rehabilitation guidelines. *Neurorehabilitation and Neural Repair*, 20(1), 42-47.
22. Menon-Nair, A., Korner-Bitensky, N., Wood-Dauphinee S., & Robertson, E. (2006). Assessment of unilateral spatial neglect post stroke in Canadian acute care hospitals: Are we neglecting neglect? *Clinical Rehabilitation*, 20, 623-634.
23. Baum, C. (2006). Presidential Address 2006: Centennial challenges, millennium opportunities. *American Journal of Occupational Therapy*, 60, 609-616.

Joyce Goff, OTR/L, is an occupational therapist at Life Care Center of Post Falls, a skilled nursing facility in Post Falls, Idaho. She previously worked in acute care full time at Providence Holy Family Hospital in Spokane, Washington, and has also worked extensively with persons with mild to severe brain injury.

Leading Therapists Worldwide are using Power-Web... the "All-In-One" Finger, Hand, Wrist & Forearm Exerciser!

- Patients can perform virtually all joint actions: extension, flexion, opposition and supination.
- Users range from geriatric stroke patients to children and professional athletes.
- 6 color-coded resistance levels in 14" diameter and 3 in 7" diameter.
- Includes illustrated instruction manual with 39 exercises, in a retail package.
- Also featuring 4 patented Power-Web Combos.
- Available through leading therapy dealers nationwide.



**POWER-WEB
INTERNATIONAL**
888-823-0310
Fax 330-630-5091
www.pwrwebintl.com

P-5056



Power-Web Combo



Power-Web Junior

THERMOPHORE® The Deep-Heat Therapy Advantage!



ICE IT!
ColdCOMFORT™ System

Targeted, convenient
cold therapy to get you
back in the game of life!

Enhancing Comfort, Enhancing Treatment, Enhancing Lives!



BATTLE CREEK
Equipment

800-253-0854 • BattleCreekEquipment.com

P-5045