

# Stroke of Genius

APTA Neurology Section, Stroke Special Interest Group (SIG)



## Invigorate Your Practice:

### An Invitation from the Stroke SIG

**Julia Castleberry MS PT, DPT, CLT, GCS, NCS**  
**Stroke SIG Chair**

#### Special points of interest:

- \* Updates from the Stroke SIG Chair
- \* Upcoming events
- \* Clinician's Corner
- \* General resources

Welcome to the APTA's Neurology Section's Stroke Special Interest Group (SIG). Our initiatives focus on creating and supporting stroke rehabilitation and stroke related educational opportunities for clinicians. We strive to provide clinically relevant tools and information to promote stroke recovery. Education and professional engagement are key components of clinical practice and successful rehabilitation.

novel treatment interventions, clinical questions and solutions to client challenges. Collaborative efforts among clinicians will strengthen our position as advocates for our profession and our clients.

#### Current Initiatives

##### **Stroke SIG newsletter**

(rejuvenated yearly publication)

Submit articles, commentary, and clinical questions to [heather.hayes@hsc.utah.edu](mailto:heather.hayes@hsc.utah.edu)

##### **APTA's Combined Sections Meeting (CSM) sessions for 2016**

Submit neurology topics of interest, clinical educational needs, and potential speaker considerations to [Rachel.tabak@gmail.com](mailto:Rachel.tabak@gmail.com)

**Outreach initiatives:** website postings, clinician and general public engagement, support evidenced based rehabilitative and research efforts.

Submit ideas and availability

to myself, Julia Castleberry at [joxenreid@radford.edu](mailto:joxenreid@radford.edu)

We look forward to hearing from you!

#### **Meet your 2014-2015 Stroke SIG leadership team**

**Chair:** Julia Castleberry;

[joxenreid@radford.edu](mailto:joxenreid@radford.edu) or

[jcastleberry1@aol.com](mailto:jcastleberry1@aol.com)

**Vice-Chair:** Susanne Morton

**Secretary:** Brian LeLoup

**Nominating Committee members:**

Chair: Susan Linder

Heather Hayes

Rachel Tabak Tran

**[www.neuropt.org/special-interest-groups/stroke](http://www.neuropt.org/special-interest-groups/stroke)**

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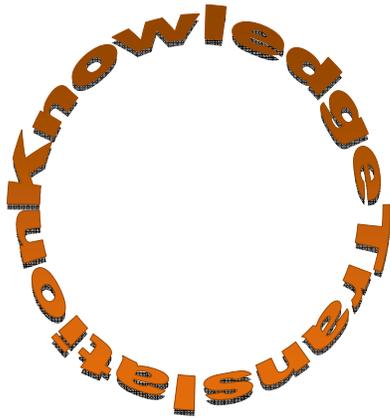
Join our dedicated and energizing stroke team. The first step is to contact the Stroke SIG. Volunteers serve in a variety of roles: creating clinical updates and innovative interventions postings for our webpage, assisting with planning the APTA's Combined Section Meeting (CSM) yearly programming, promoting educational outreach initiatives, and by submitting to the Stroke SIG newsletter. The Stroke SIG newsletter is currently seeking commentaries and articles describing



## Clinician's Pages: Novel clinical approaches from clinicians

### Moving forward with clinical practice change: Time to know about Knowledge Translation (KT)

By: Amber M. Devers PT, DPT, NCS; Sheltering Arms Physical Rehabilitation Centers, amdevers@shelteringarms.com




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**“Advance the use of evidence into daily clinical physical therapy practice using a systematic feasible approach.”**

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The first strategic goal of the Neurologic Section of the American Physical Therapy Association (APTA) is “advance the use of evidence into daily clinical physical therapy practice using a systematic feasible approach.” This goal is in line, of course, with the APTA’s own strategic plan to achieve the association’s vision. Activities like the EDGE groups and increased effort toward creating clinical practice guidelines show progress in achieving this goal. Hopefully we have been inundated with positive pressure to use evidence-based practice (EBP) by integrating research evidence, expertise, and patient/client preferences. More recent work seeks to understand the gap in applying evidence to daily practice. This gap has been described in many health professions including medicine,<sup>1</sup> and is proposed to be narrowed with knowledge translation (KT). As a staff clinician, the most exciting part about research on KT is its ability to demonstrate real-world translation and application of evidence. I’ve seen many of my colleagues frustrated by an inability to understand how research done in laboratory-controlled environments with few real-world constraints (e.g. third party payment) often with subjects with chronic neurologic impairment can evolve their everyday practice. Awareness of KT is going to be one of the most important areas practitioners of physical therapy should get a handle on in order to transform practice.

One of the most widely used definitions of KT is “the ex-

change, synthesis and ethically-sound application of knowledge – within a complex system of interactions among researchers and users.”<sup>2</sup> Comparing it with EBP, there is increased emphasis on collaboration among many stakeholders for improved outcomes, identifying barriers to knowledge use, and understanding the outcomes that are produced to later maintain the knowledge use.<sup>3</sup> I recently had the opportunity to investigate KT in my facility’s inpatient rehabilitation hospital. For two years we implemented an institution-developed clinical practice guideline (CPG) to synthesize the best ways to utilize advanced technology for gait recovery. Upon researching outcomes of stroke survivors before and after the CPG existed, we found positive trends but had difficulty demonstrating statistical differences. Among the limitations of our research, we knew not all clinicians were systematically applying the CPG and likely for various reasons. We implemented a KT strategy giving two therapists additional training and follow up regarding use of the CPG and called them “standardized users”. They also completed other reflective activities to increase knowledge use. In studying outcomes, we found patients treated by the standardized users with the CPG had significantly better results in balance, stair climbing, and various dimensions of walking. We believe that unwarranted variation in practice was reduced using this method.

I encourage you to read about other KT activities and determine

how you can utilize them in your own practice. An article published in 2013 described the implementation and use of evidence-based pathways by both PT and OT professionals in Danish rehabilitation.<sup>4</sup> The discussion elucidates themes of the implementation that are very helpful to clinical practice change such as how the professional culture interfaces with the daily work. This body of work is developing quickly and I am encouraged by practical articles like the one published in the April 2014 issue of JNPT that discusses KT in context of implementing a new novel gait training technique.<sup>5</sup> The authors describe the use of meetings, chart audits, and consultation among other activities that can be incorporated into all practice settings. Another excellent resource is a webinar that describes a KT framework, knowledge-to-action process, and positive results in changing clinical practice: <http://www.apta.org/ResearchtoPractice/Video/KTAFramework>.

#### References and Suggested Readings:

1. Cabana MD, Rand CS, Powe NR, et al. Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA*. 1999;282:1458-1465.
2. Canadian Institutes of Health Research. <http://www.cihr-irsc.gc.ca/e/26574.html#defining>. Published 2009. Accessed June 19, 2014..
3. Graham ID, Tetroe MA. Some theoretical underpinnings of knowledge translation. *Acad Emerg Med*. 2007; 14:936-941.
4. Kristensen HK and Hounsgaard L. Implementation of coherent, evidence-based pathways in Danish rehabilitation practice. *Disabil Rehabil*. 2013;35:2021-2028.
5. Perry SB, Zeleznik H, Breisinger T. Supporting clinical practice behavior change among neurologic physical therapists: a case study in knowledge translation. *Jour Neural Phys Ther*. 2014;38:134-143.

## The use of a driver alert device to improve midline head position for patients with stroke

By: Rosemary Peng, PT; Kessler Institute for Rehabilitation, Chester, NJ.,  
rpeng@kessler-rehab.com

Poor or impaired posture is a common problem associated with stroke, resulting in impaired balance and function. Physical therapists usually provide feedback to patients verbally or visually to correct the posture. Although posture may improve after feedback is given, carryover is not always easy to attain.

An alternative type of feedback that can be used is auditory biofeedback. Biofeedback has been demonstrated to improve limb function in individuals after stroke<sup>1</sup>. One low tech method to apply auditory biofeedback is through the use of a commercially available driver alert device which produces a loud noise to a head tilt. These devices were developed to prevent drivers from falling asleep. The noise stays on as long as the head is tilted and shuts off when upright position is regained. These de-

vices are inexpensive and can be hooked on the ear or attached with strong Velcro to a firm baseball cap. Although the device is designed to respond to a forward head tilt, it will respond to right head or body tilt if positioned in the back of the head and will respond to left head or body tilt if positioned in the front of the head. The device can be used during static posture training as well as during functional tasks such as gait training. This method has been used successfully by the author with patients with CVA, including cerebellar ataxia and hemiparesis. Initially the device was used constantly until they learned how to correct their posture. Within a few minutes, the device was used intermittently to pro-



vide motor learning<sup>2</sup>. Patients were able to attain midline position using the device without verbal or visual cues in sitting, standing and while walking. After a few sessions of biofeedback using this device, carryover of midline posture was seen in sitting, standing and with gait activities and the auditory biofeedback treatment was discontinued.

The device can be purchased online for as little as \$1.50 and as much as \$20, depending on the vendor. There are several styles available but the method of auditory biofeedback delivery is the same.

#### References:

1. Stanton R, Ada L, Dean CM, Preston E. Biofeedback improves activities of the lower limb after stroke: a systematic review. *J Physiotherapy*. 2011;57:145-155.

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**“One low tech method to apply auditory biofeedback ...to assist with midline posture... is a commercially available driver alert device.”**

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## Enhancing Neuroplasticity through Brain Derived Neurotrophic Factor

By Susanne Morton, PT, PhD, Associate Professor, Dept of PT, Univ of Delaware

This year, the stroke SIG is sponsoring a half-day program on brain plasticity to be held during CSM in February 2015. The focus will be on brain derived neurotrophic factor (BDNF), a protein that has recently become recognized as a key contributor to some forms of neuroplasticity. In particular, BDNF is thought to play a role in central nervous system (CNS) neurological recovery, motor learning and memory formation. New evidence suggests that certain forms of exercise appear to promote the release of BDNF and may improve

motor learning and recovery. This demonstrates the potential for physical therapy to have a critical role in facilitating neuroplasticity through BDNF. Two sessions will be held on this topic. The first is entitled “Effects of Brain-Derived Neurotrophic Factor on Neuroplasticity” and will review the role of BDNF in health and after neurological injury and discuss the links between BDNF, motor learning, motor recovery and exercise. The speaker for this session is Lara Boyd, PT, PhD, of the University of British Columbia. The second session,

“High Intensity Aerobic Exercise to Enhance Plasticity Post-Stroke”, will focus on recent and ongoing clinical research examining the effects of aerobic exercise to “prime” the CNS for optimal learning and motor recovery, presumably through BDNF-mediated neuroplasticity. Speakers in this session are Susan Linder, PT, DPT, NCS, Jay Alberts, PhD and Anson Rosenfeldt, PT, DPT, MBA, all from the Cleveland Clinic. All levels of learners are welcome to attend one or both of these exciting talks!



Join the neuro section list serve: This is a free, optional membership LISTSERV of the American Physical Therapy Association Neurology Section. The LISTSERV provides a forum for the discussion of professional issues related to neurologic physical therapy clinical practice, research, and education and the opportunity to network with members, partners and others with an interest in neurological disorders. <http://neuropt.org/go/join-us/neuropt-listserve/join-the-neuropt-listserve>

## Featured Neurology Section Developed Course for Stroke

### Advancing Clinical Practice in Acute Stroke Rehabilitation

September 20-21, 2014 Casa Colina Centers for Rehabilitation, Pomona, CA

October 4-5, 2014 University of Colorado Hospital, Aurora, CO

### Advancing Neurological Practice: The Impact of Physical Therapy Interventions on Neuroplasticity

September 13-14, 2014 Frazier Rehabilitation, Louisville, KY

April 11-12, 2014 Chicago, IL

More information at: <http://www.neuropt.org/education/neurology-section-developed-courses>

## General Resource List: Assessments and Outcome Measures

[www.rehabmeasures.com](http://www.rehabmeasures.com)

American Heart/Stroke Association Journals: [www.stroke.ahajournals.org](http://www.stroke.ahajournals.org)

Journal of Physical Therapy: [www.ptjournal.org](http://www.ptjournal.org)

[www.physio-pedia.com/Outcome Measures](http://www.physio-pedia.com/Outcome_Measures)

National Stroke Association: [www.stroke.org](http://www.stroke.org)

American Stroke Association: [www.strokeassociation.org](http://www.strokeassociation.org)

Agency for Healthcare Research and Quality: [www.qualitymeasures.ahrq](http://www.qualitymeasures.ahrq)

University of Oxford, UK: [www.cebm.net](http://www.cebm.net)

Physical therapy Journal [www.physther.org](http://www.physther.org)

PubMed for articles: [www.ncbi.nlm.nih.gov/pubmed](http://www.ncbi.nlm.nih.gov/pubmed)

StrokEngine: The Canadian Stroke Network [www.strokengine.ca/index.php](http://www.strokengine.ca/index.php)

This list serves as an introduction to assessments and outcomes measures information available for no charge on the internet.

*Created and published by Heather Hayes, Stroke SIG nominating committee 2014-15  
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