

# **Cognitive Behaviour Therapy (CBT) and Stroke Rehabilitation**

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# Learning Objectives

- To understand that CBT:
  - has common ground with neuroscience
  - principles are consistent with stroke best practices
  - treats barriers to stroke recovery
  - is an opportunity to optimize stroke recovery

# Question?

Why do humans dominate Earth?

# The power of THOUGHT

- **Adaptive**
  - Functional behaviours
  - Health and well-being
- **Maladaptive**
  - Dysfunctional behaviours
  - Emotional difficulties

# Emotional difficulties post-stroke

- “PSD is a common sequelae of stroke. The occurrence of PSD has been reported as high as 30–60% of patients who have experienced a stroke within the first year after onset”

*Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue Following Stroke*  
practice guidelines, update 2015 <http://onlinelibrary.wiley.com/doi/10.1111/ijvs.12557/full>

- Australian rates: (Kneeborne, 2015)
  - Depression ~31%
  - Anxiety ~18% - 25%
  - Post Traumatic Stress ~10% - 30%
- Emotional difficulties post-stroke have a negative impact on rehabilitation outcomes.

# Emotional difficulties post-stroke: PSD

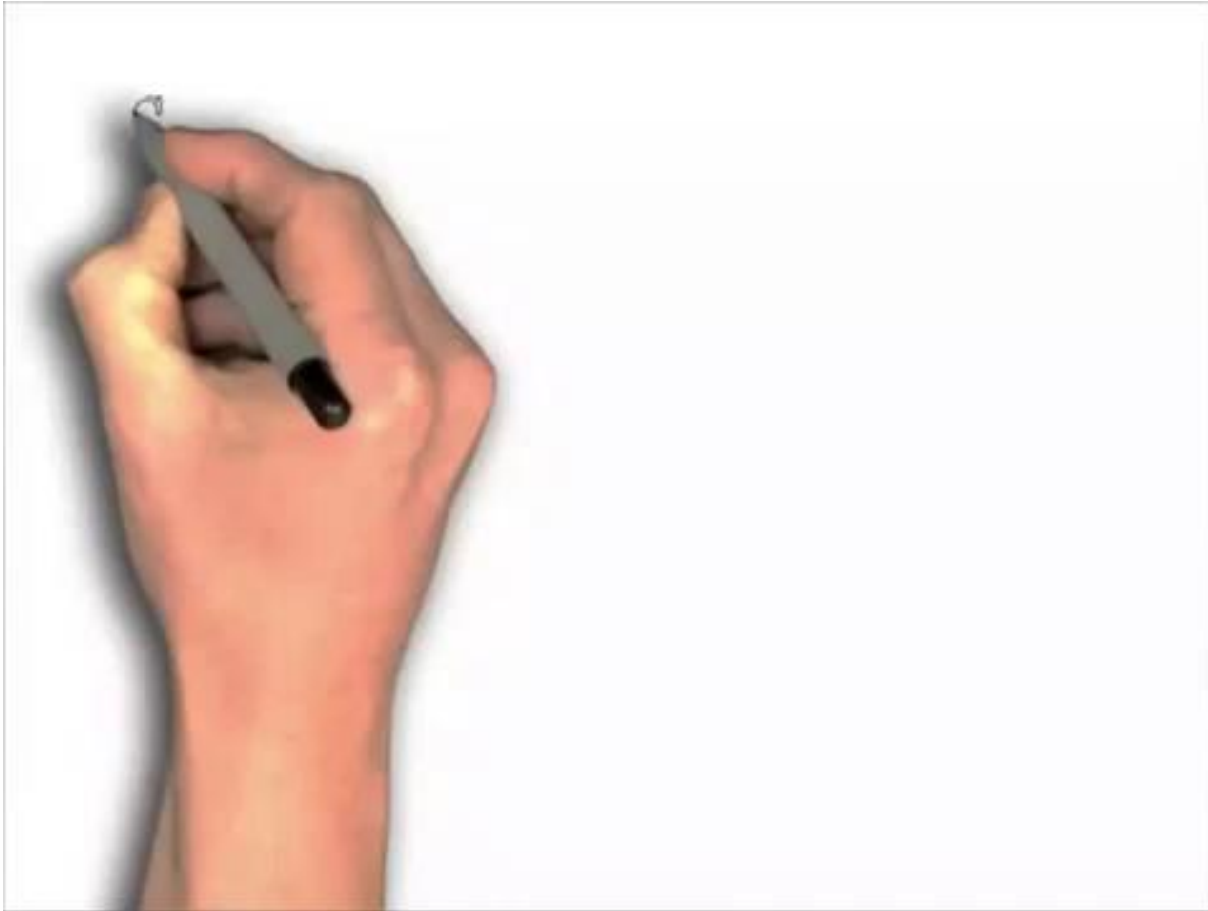
- Post stroke depression (PSD) is associated with:
  - Increased utilization of hospital services
  - Reduced participation in rehabilitation
  - Maladaptive thoughts
  - Increased physical impairment
  - Increased mortality

# Negative thoughts & depression

- Negative thought associated with depression has been linked to greater mortality at 12-24 months post-stroke

Nursing Best Practice Guideline from RNAO Stroke Assessment Across the Continuum of Care June : [http://rnao.ca/sites/rnao-ca/files/Stroke\\_with\\_merged\\_supplement\\_sticker\\_2012.pdf](http://rnao.ca/sites/rnao-ca/files/Stroke_with_merged_supplement_sticker_2012.pdf)

# Cognitive Behavioral Therapy (CBT)



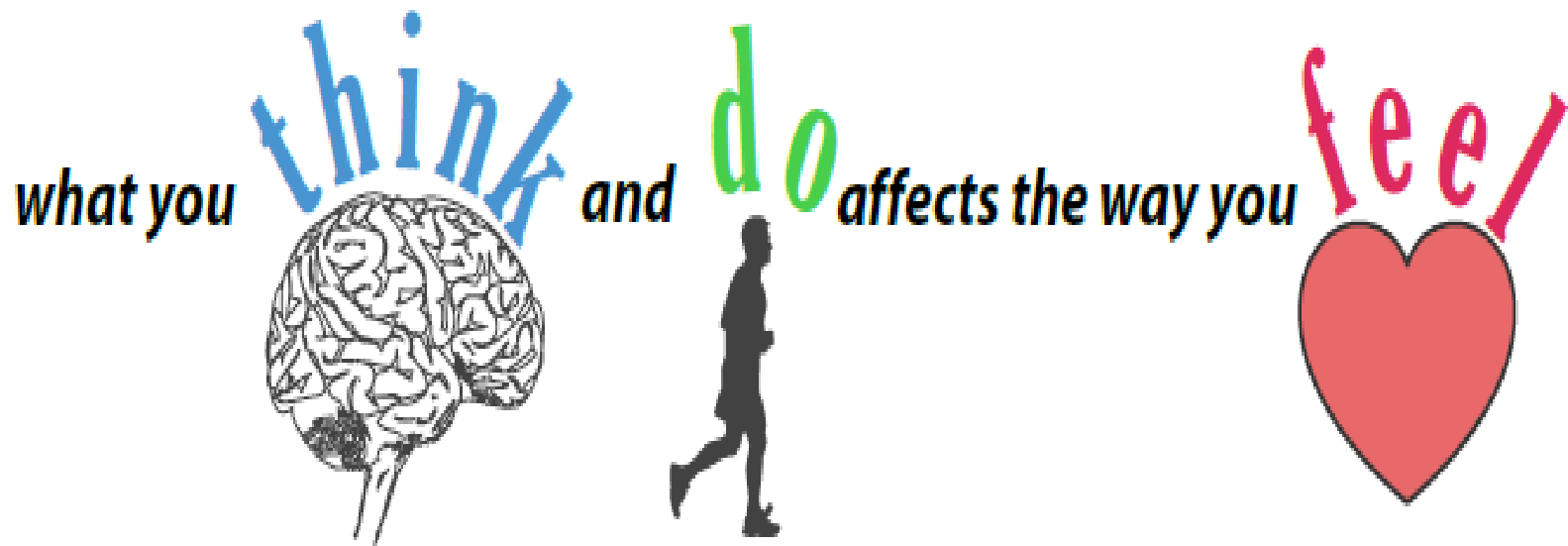
<https://www.youtube.com/watch?v=0ViaCs0k2jM>



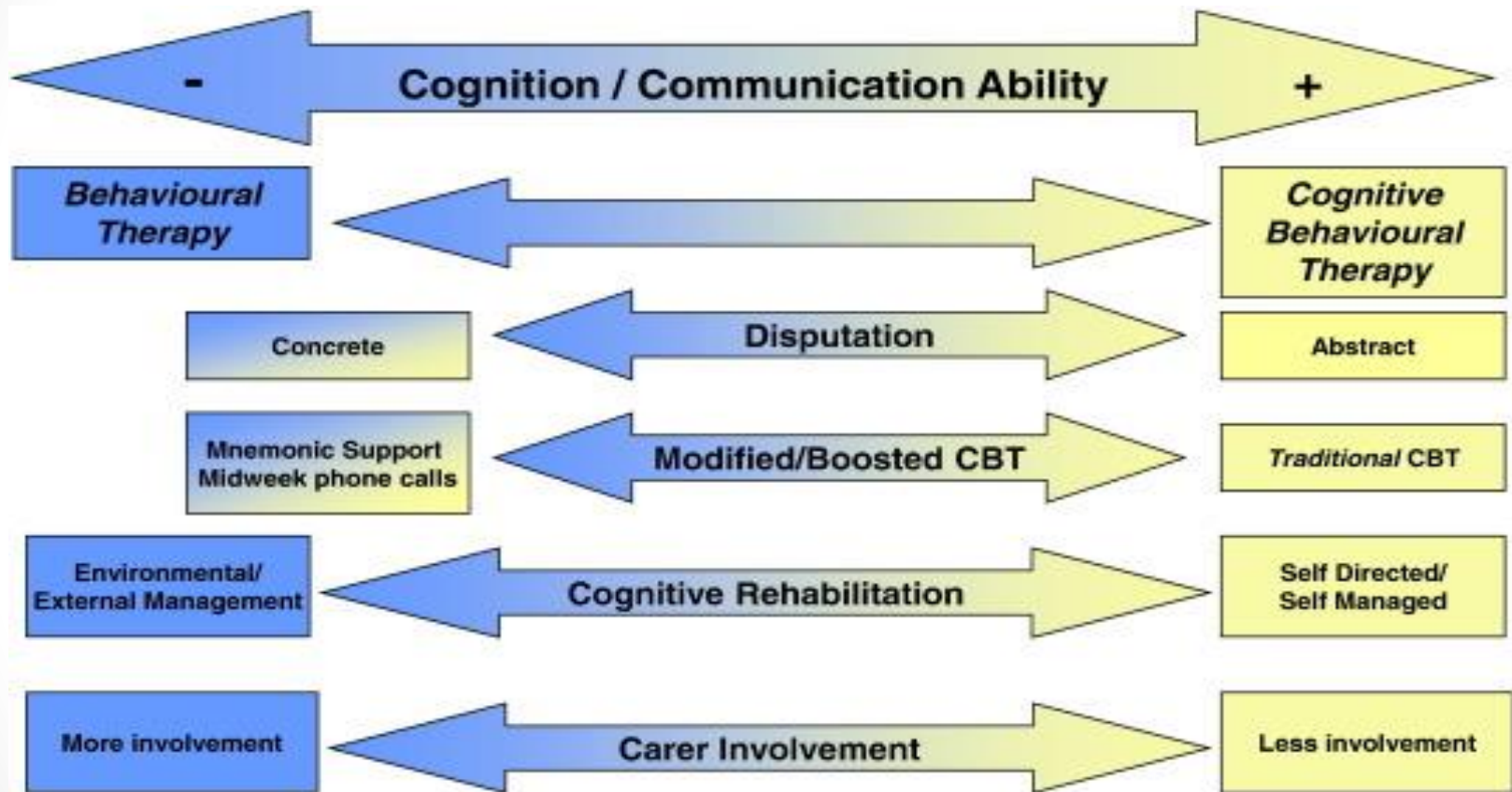
# Cognitive Behavioral Therapy - CBT

## What is Cognitive Behavioral Therapy (CBT)?

The key idea behind cognitive behavioral therapy is that:



# A Framework to Support CBT for Emotional Disorder After Stroke\*



\*Figure 2, Framework for CBT after stroke. Ian I Kneebone. Cognitive and Behavioral Practice, Volume 23, Issue 1. 2016, 99-109. <http://dx.doi.org/10.1016/j.cbpra.2015.02.001>

# Techniques for Changing Behaviors

- Diversion techniques
- Scheduling activities
- Activity rating logs (pleasure and mastery)
- Graded task assignment
- Cognitive rehearsal
- Role playing
- Family or social supported activities

# CBT Framework: *Visual Activity Schedule*



Figure 3, Pictorial behavioral activation plan for Doris. Ian I Kneebone. *Cognitive and Behavioral Practice*, Volume 23, Issue 1. 2016, 99-109. <http://dx.doi.org/10.1016/j.cbpra.2015.02.001>

# CBT Framework: *Pictorial behavioral activation plan*



\*A framework to support cognitive behavioral therapy for emotional disorder after stroke:  
Figure 1. Graduated behavioral activation for a client with aphasia: Gardening. Ian I Kneebone.  
Cognitive and Behavioral Practice, Volume 23, Issue 1. 2016, 99-  
109. <http://dx.doi.org/10.1016/j.cbpra.2015.02.001>

# Cognitive Model (Beck 1964)

“People’s emotions, behaviours and physiology are influenced by their thoughts. It is not the situation itself that determines what people feel but rather how they construe the situation.”

(Beck 1964: Ellis, 1962)

# Three levels of thoughts

## 1. Conscious thoughts:

- Rational thoughts and choices that are made with full awareness.

## 2. Automatic thoughts:

- Flow rapidly so that you may not be fully aware of them and therefore unable to check them for accuracy. May not be logical or reality based.

## 3. Schemas:

- Core beliefs and personal rules for processing information. Schemas are shaped by life experience.

# Lessons learned from CBT

- CBT has enhanced my skill set in enabling people to optimize stroke recovery
- In my clinical practice, CBT has become more than a treatment for emotional disorders
- CBT enables active engagement of the mind, brain and body to harness neuroplasticity



# CBT: Post stroke

- Treatment after stroke:
  - Demands a modified approach
  - Requires substantial individual tailoring because of the added dimension of physical, cognitive and communication disability
- Although CBT must be tailored to the individual there are principles that underlie CBT for all clients

# Neuroscience

- Validates the power of thought
- Validates the power of occupation/ activity
- “Neuroplasticity is the property of the brain to change its structure and function in response to activity and mental experience.” (Norman Doidge 2007)

# Thought and Activity

## CBT

- Evidence based treatment that focuses on addressing thoughts and behaviors to help people become and stay healthy.

## Neuroscience

- Thought and activity have the power to change the structure and function of the brain.

# CBT & Stroke Best Practices

## CBT (Beck, 2011)

- CBT aims to be time limited (usually 6-20 sessions)
- CBT sessions are structured

## Stroke Best Practices

- Payment, policy and planning support quality and efficient use of resources. (QBP Ministry of Health)

# CBT & Stroke best practices (cont'd)

## *Structured Sessions*

### Therapy Session

1. Symptoms check
2. Agenda setting
3. Homework review
4. Work on specific problems and skills teaching
5. Homework setting
6. Feedback

### Rehabilitation Intensity

- Efficiency utilization of face to face time
- Homework supports increased engagement in therapy outside of direct therapy time
- Homework brings stroke survivors together

# CBT & Stroke best practices (cont'd)

## CBT (Beck, 2011)

- CBT initially emphasizes the present

## Stroke Best Practice

- The here and now conceptualization model of CBT perfectly matches the immediate nature of stroke survivors' concerns.

# CBT & Stroke best practices (cont'd)

## CBT (Beck, 2011)

- CBT requires a sound therapeutic alliance. (empathy, genuine regard)
- CBT emphasizes collaboration and active participation

## Stroke Best Practice

- “Involvement in decision making is most important” (Survivor)
- Well-being of survivors is enhanced with active involvement in care planning. (Ellis-Hill et al 2009)

# CBT & Stroke best practices (cont'd)

## CBT (Beck, 2011)

- CBT is goal oriented and problem focused

## Stroke Best Practice

- CBT adopts a skills building, problem-solving focus that fits with the needs of people who have survived a stroke when learning to manage the personal impact of their stroke. Laidlaw, K. (2008)
- QBP 9.1.1 Individuals with residual impairment after stroke and needing rehabilitation should receive therapy services to set goals and improve task-oriented activity



# CBT & Stroke best practices (cont'd)

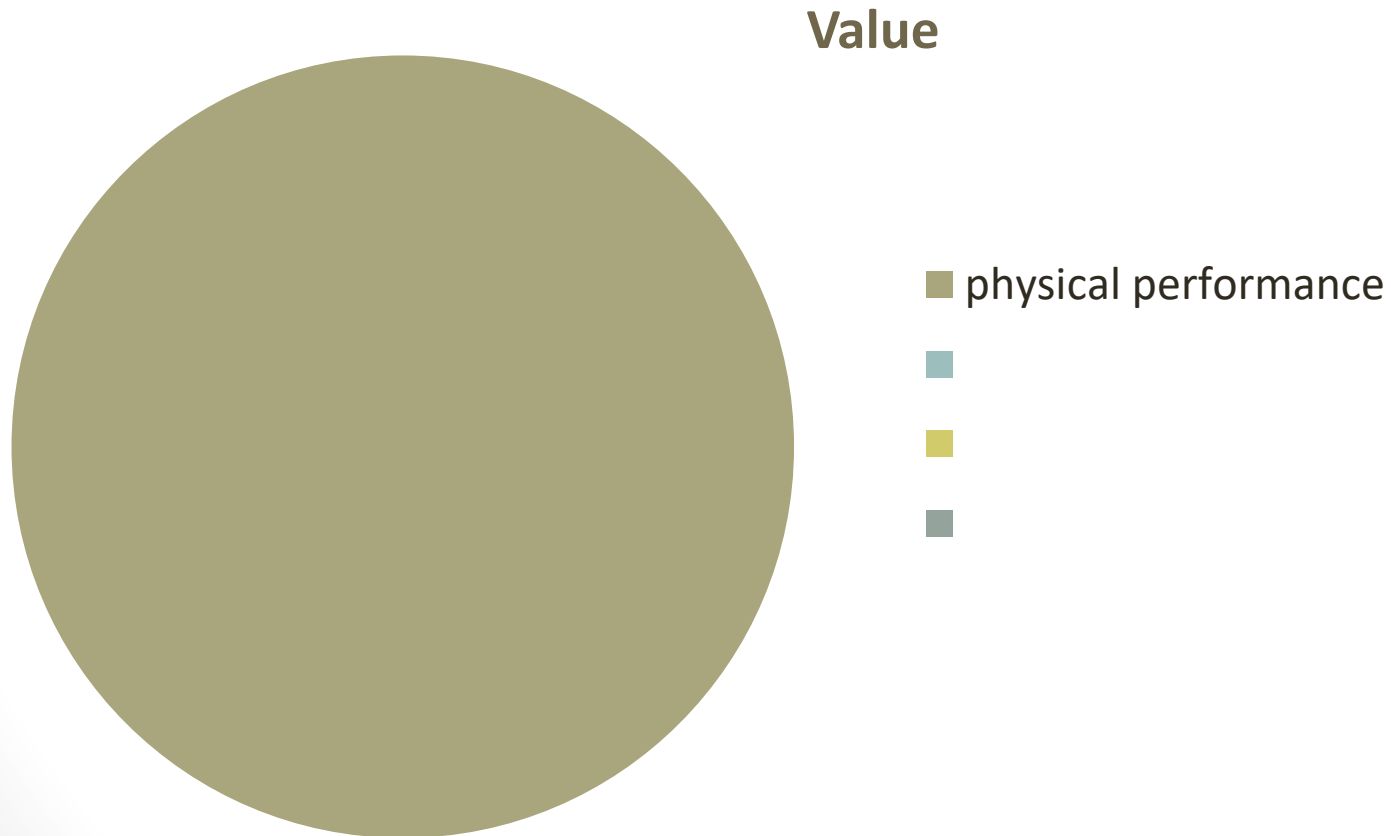
## CBT (Beck, 2011)

- CBT is educative, aims to teach the client to be her own therapist and emphasizes relapse prevention.

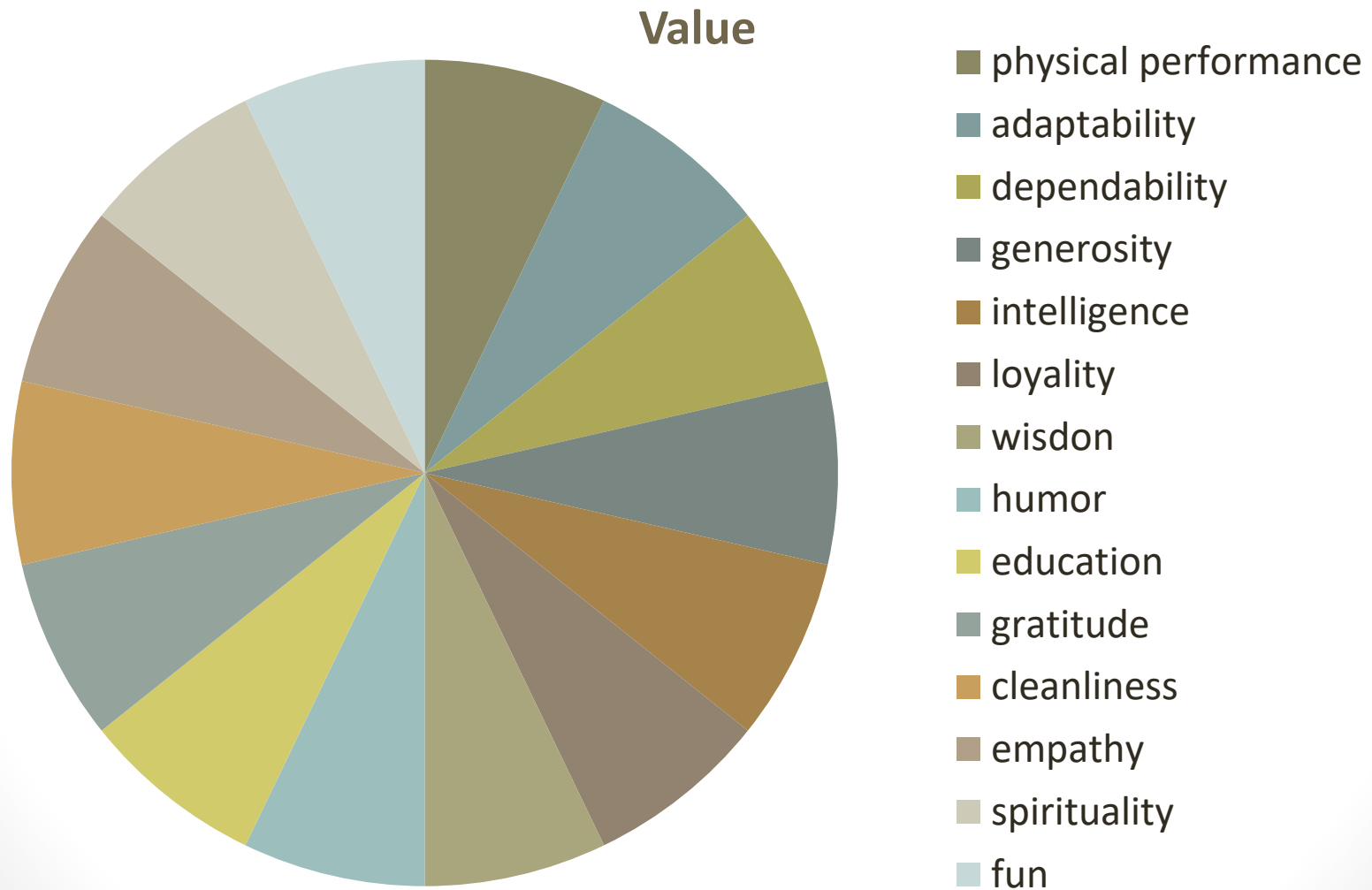
## Stroke Best Practice

- QBP 3.8.2 Patient and family education should occur at all stages of stroke care.
- QBP 3.5.1. All patients should be given cross-continuum secondary prevention assessments and therapies.

# CBT Case Example #1: *Value of a person*



# CBT Case Example #1: Value of a person



# CBT & Stroke best practices (cont'd)

## CBT (Beck, 2011)

- CBT teaches clients to identify, evaluate and respond to dysfunctional thoughts

## Stroke Best Practice

- QBP 9.8.1 Clients who are cognitively able should have a self-management plan and receive support for this plan through the duration of the care

## CBT Case Example #2

“If I can’t walk, I am  
useless, I am worth  
nothing.”

# CBT Case Example #2: *Worth of a person*

0                      25                      50                      75                      100

---

Me

A person who walks

## CBT Case Example #2: *Worth of a person*

0                      25                      50                      75                      100

---

Me

A person who walks  
Donald Trump

# CBT Case Example #2: *Worth of a person*

0                      25                      50                      75                      100

---

Donald Trump

Me



# CBT & Stroke best practices (cont'd)

## CBT (Beck, 2011)

- CBT is based on the ever evolving formation of the client's problems and the individual conceptualization of each client in cognitive terms.
- CBT uses a variety of techniques to change thinking, mood and behavior.

## Stroke Best Practice

- Client centered practice
- Care is organized around the person to support their health (ECFAA)

# CBT Case Example #3: *Activity Logs*

- When stroke survivors engage in activity they often derive low levels of pleasure and satisfaction related to change in performance and self critical automatic thoughts.

# CBT: Treating Maladaptive thoughts

- CBT helps people reduce problems by teaching clients to:
  - Identify distortions in their thinking
  - See thoughts as ideas rather than facts
  - Stand back from their thinking to consider different viewpoints

# CBT & Stroke best practices (cont'd)

- Evidence as it pertains to Stroke and CBT is at an early stage.
- There is a lack of robust evidence for many of the prevalent post-stroke rehabilitation interventions.

# CBT & Stroke best practices (cont'd)

- CBT also has utility in the overall rehabilitation of an individual after a stroke, as it provides a means of reducing depression after stroke and this can be very important for the individual's post-stroke recovery generally. Laidlaw, K. (2008).
- Cognitive behaviour therapy is an appropriate treatment for some depressed stroke patients and beneficial for some patients. Further evaluation of this treatment with stroke patients is warranted. Lincoln, N. B., et al. (1997).
- Post-stroke depression does not differ qualitatively from general depression and that general theories and thus treatments for depression may be valid within this population. Nicholl, C. R., et al. (2002).
- Behavioural therapy seemed to improve the mood of people with aphasia. Thomas, S. A., et al. (2013).

# CBT & Stroke: Evidence

- Post stroke depression (PSD) is a common sequela of stroke associated with increased morbidity and mortality among stroke survivors. PSD has been associated with poorer rehabilitative outcomes, longer inpatient stays, inefficient use of medical resources, worsened cognitive decline, and increased suicidality. This article reviews the definition and proposed etiology of PSD as well as current and emerging evidence-based prevention, screening, and treatment modalities. The timely use of prevention and treatment techniques including pharmacologic and nonpharmacologic methods may improve treatment outcomes and enhance the quality of life in stroke patients.

Capaldi, V. F., II and G. H. Wynn (2010). "Emerging strategies in the treatment of poststroke depression and psychiatric distress in patients." [Psychology Research and Behavior Management Vol 3 2010, ArtID 109-118](#)

# CBT & Stroke: Evidence (cont'd)

**Aim:** Currently, no evidence-based treatment is available for mood problems after stroke. We present a new psychological intervention designed to reduce depressive complaints after stroke. **Method of protocol development:** This intervention was based on cognitive behavioural therapy principles and was shown feasible in a pilot study. In order to meet the specific needs of stroke patients (concerning both sensori-motor, cognitive, and behavioural problems), we incorporated motivational interviewing, grief resolution, and psycho-education. We emphasised for each session to take into account the cognitive deficits of the patients (i.e. be concrete, accessible, structured, specific, and repeat information). Moreover, we augmented the psychologist-administered therapy with the contribution of an occupational or movement therapist aimed at facilitating patients' goal-setting and attainment. The intervention consisted of 12 one-hour sessions with a psychologist and three or four one-hour sessions with an occupational or movement therapist. Currently, the effectiveness of the intervention is evaluated in a randomised controlled trial. **Discussion:** The proposed psychological treatment protocol is innovative, as it applies cognitive behavioural therapy in a stroke-specific manner; moreover, it supports goal attainment by incorporating occupational or movement therapy sessions.

Kootker, J. A., et al. (2015). "An augmented cognitive behavioural therapy for treating post-stroke depression: Description of a treatment protocol." Clinical Rehabilitation **29**(9): 833-843.

# CBT & Stroke: *Person Therapy Fit*

- Important to consider:
  - Interaction between client characteristics and treatment modality in order to maximize positive therapeutic outcomes
  - Some client characteristics have been found to interact with treatment type to influence clinical outcome.  
Bagby et al. (2006)



# CBT Case Example #4

- Referral Information
  - OT assessment
  - Cognitive concerns (MoCA 14/30)
  - Return to driving
- Presenting problems
  - Loss of driving
  - Loss of environmental access
  - Loss of meaningful occupational engagement
  - Self critical automatic thoughts

# CBT Case Example #4: *Treatment Plan*

- Behavioural Activation = enable meaningful occupational engagement
  - Spend more time with family
  - Graded progression of household tasks
  - Swimming

## CBT Case Example #4: *Mistakes in Thinking*

- Catastrophizing: “If I can’t drive, I will not survive.”
- Labelling: “I am a failure, if I can’t drive.”
- Emotional Reasoning: “I feel so useless.”
- Should and must statements: “It is terrible to ask others to drive me. I should always be independent and drive myself”

# CBT Case Example #4: *Outcomes*

## **Initial**

- PHQ-9 score 22
- MoCA 14/30

## **Post Treatment**

- PHQ-9 score 5
- MoCA 24/30
- Return to driving

# CBT & Post Stroke Anxieties

- Stroke reoccurrence
- Not regaining functional abilities
- Inability to regain a specific occupational performance level
- Abandonment
- Social judgement
- Falling

# CBT & Post-Stroke Anxieties

Anxiety disorders are common after stroke. However, information on how to treat them with psychotherapy in this population is highly limited. Modified cognitive-behaviour therapy (CBT) has the potential to assist. Two cases of individuals treated with modified CBT for anxiety after stroke are presented. The modification was required in light of deficits in executive and memory function in one individual and in the context of communication difficulties in the other. The anxiety symptoms were treated over seven and nine sessions, respectively. Both participants improved following the intervention, and these improvements were maintained at 3 month follow-ups. Further case-series and randomised controlled designs are required to support and develop modified CBT for those with anxiety after stroke.

Kneebone, II and F. W. Jeffries (2013). "Treating anxiety after stroke using cognitive-behaviour therapy: two cases." Neuropsychological Rehabilitation **23**(6): 798-810.

# Stroke survivor quotes

“I was so sick of hearing all that was wrong with me, I just wanted something to be right”

# Stroke survivor quotes

“I felt broken like I would never mend and you came in and gave me a win. A win that saved me.”



# Empower “I CAN”

- To optimize stroke recovery give survivors an opportunity to do something that they think they can't and affirm their expertise in brain building.

# CBT: An opportunity to optimize stroke recovery

- Treatment of post stroke depression and anxiety
- Enable health affirmative behaviors and thoughts to harness neuroplasticity
- Enable active engagement of the mind, brain and body to harness neuroplasticity

# THANK YOU

- Stroke survivors partners
  - Experiential experts in neuroplastic transformations
  - Live fully despite debilitating strokes
- QHC stroke team
- Jessica Melchiorre

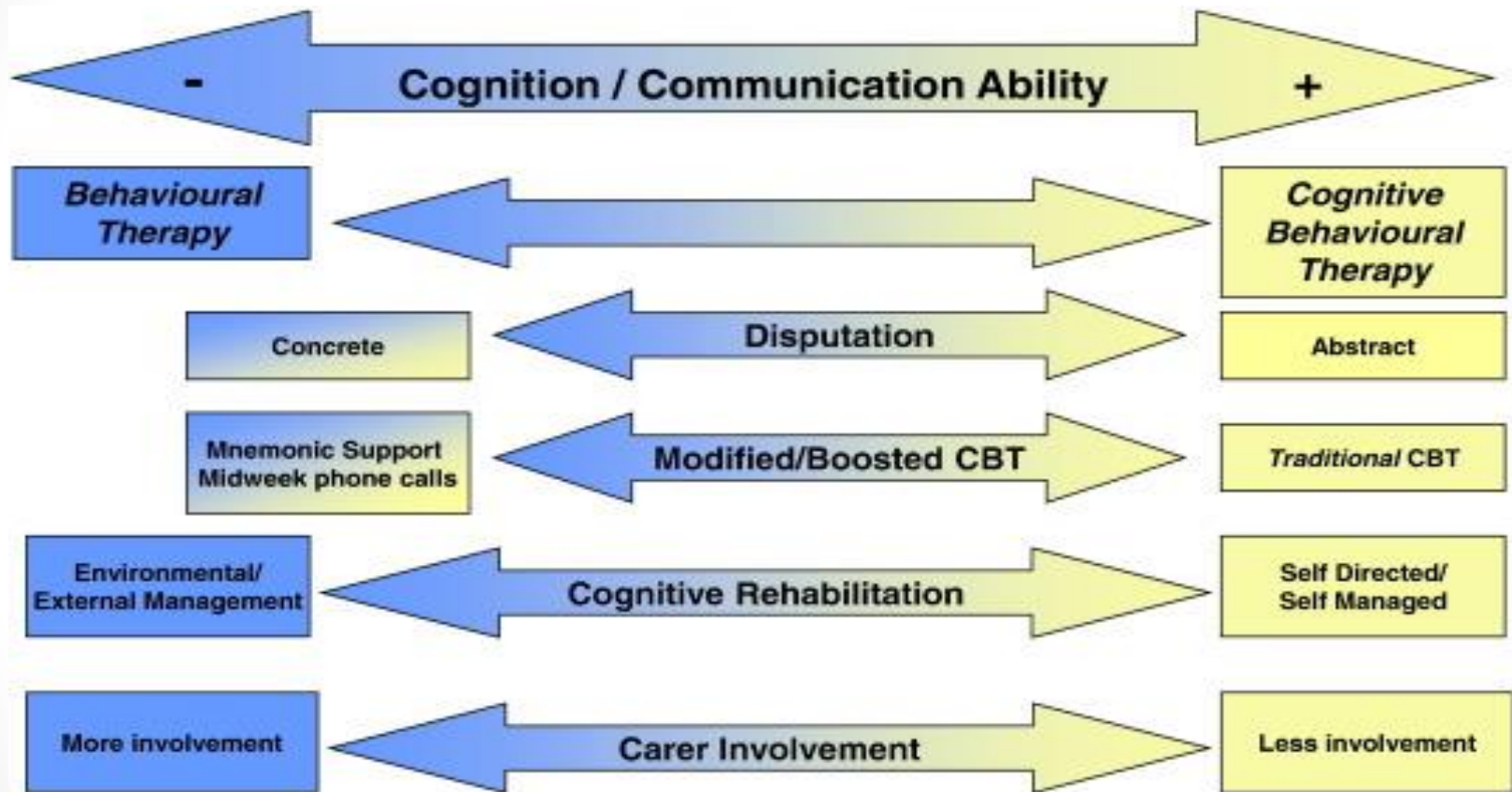
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# REFERENCES

- Barrett, A. M. and T. Muzaffar (2014). "Spatial cognitive rehabilitation and motor recovery after stroke." Current Opinion in Neurology **27**(6): 653-658.
- 
- Beck, J. S. (2011) *Cognitive Behaviour Therapy, Basics and Beyond*. New York: Guilford Press
- 
- Beck, J. S. (2005) *Cognitive therapy for challenging problems: What to do when basics don't work*. New York: Guilford Press
- 
- Blumenthal, J. A., et al. (2016). "Enhancing Cardiac Rehabilitation With Stress Management Training: A Randomized, Clinical Efficacy Trial." Circulation **133**(14): 1341-1350.
- 
- Broomfield, N. M., et al. (2011). "Post-stroke depression: The case for augmented, individually tailored cognitive behavioural therapy." Clinical Psychology & Psychotherapy **18**(3): 202-217.
- 
- *Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue Following Stroke* practice guidelines, update 2015 –  
<http://onlinelibrary.wiley.com/doi/10.1111/ijps.12557/full>

# REFERENCES

- Capaldi, V. F., II and G. H. Wynn (2010). "Emerging strategies in the treatment of poststroke depression and psychiatric distress in patients." Psychology Research and Behavior Management Vol 3 2010, ArtID 109-118 **3**.
- 
- Cha, Y. J. and H. Kim (2013). "Effect of computer-based cognitive rehabilitation (CBCR) for people with stroke: a systematic review and meta-analysis." Neurorehabilitation **32**(2): 359-368.
- 
- Clements, T. and M. P. Galea (2001). "Post-stroke depression: prevalence and management." Physical Therapy Reviews **6**(1): 53-61.
- 
- Dekker, R. L. (2008). "Cognitive behavioral therapy for depression in patients with heart failure: a critical review." Nursing Clinics of North America **43**(1): 155-170.
- 
- Doidge, Norman (2007) *The brain that changes itself*. New York: Viking Penguin
- 
- Doidge, Norman (2015) *The brains way of healing*. New York: Viking Penguin

# REFERENCES

- Evans-Hudnall, G., et al. (2014). "Improving secondary stroke self-care among underserved ethnic minority individuals: a randomized clinical trial of a pilot intervention." Journal of Behavioral Medicine **37**(2): 196-204.
- 
- Graham, C. D., et al. (2015). "An acceptance and commitment therapy (ACT)-based intervention for an adult experiencing post-stroke anxiety and medically unexplained symptoms." Clinical Case Studies **14**(2): 83-97.
- 
- Jones, C., et al. (2013). "Alleviating psychosocial issues for individuals with communication impairments and their families following stroke: a case series of interdisciplinary assessment and intervention.[Erratum appears in NeuroRehabilitation. 2013;32(4):979 Note: O'Keeffe, Kiadhnaít [corrected to O'Keeffe, Fiadhnaít]." Neurorehabilitation **32**(2): 351-358.
- 
- Knapp, P., et al. (2000). "Non-drug strategies to resolve psycho-social difficulties after stroke." Age & Ageing **29**(1): 23-30.
- 
- Kneebone, I. I. and F. W. Jeffries (2013). "Treating anxiety after stroke using cognitive-behaviour therapy: two cases." Neuropsychological Rehabilitation **23**(6): 798-810.
- 
- Kneebone, I. I. (2016). "Stepped psychological care after stroke." Disability & Rehabilitation **38**(18): 1836-1843.
-



# REFERENCES

- Kneebone, I. I. and E. Dunmore (2000). "Psychological management of post-stroke depression." British Journal of Clinical Psychology **39 ( Pt 1)**: 53-65.
- 
- Kootker, J. A., et al. (2012). "The effectiveness of an augmented cognitive behavioural intervention for post-stroke depression with or without anxiety (PSDA): the Restore4Stroke-PSDA trial." BMC Neurology **12**: 51.
- 
- Kootker, J. A., et al. (2015). "An augmented cognitive behavioural therapy for treating post-stroke depression: Description of a treatment protocol." Clinical Rehabilitation **29(9)**: 833-843.
- 
- Laidlaw, K. (2008). Post-stroke depression and CBT with older people. Handbook of behavioral and cognitive therapies with older adults. New York, NY, Springer Science + Business Media; US: 233-248.
- 
- Lawrence, M., et al. (2013). "A systematic review of the benefits of mindfulness-based interventions following transient ischemic attack and stroke." International Journal of Stroke **8(6)**: 465-474.
- 
- Lincoln, N. B. and T. Flannaghan (2003). "Cognitive behavioral psychotherapy for depression following stroke: a randomized controlled trial." Stroke (00392499) **34(1)**: 111-115.

# REFERENCES

- Lincoln, N. B., et al. (1997). "Evaluation of cognitive behavioural treatment for depression after stroke: a pilot study." Clinical Rehabilitation **11**(2): 114-122.
- 
- Loetscher, T. and N. B. Lincoln (2013). "Cognitive rehabilitation for attention deficits following stroke." Cochrane Database of Systematic Reviews **5**:
- 
- Magnusson, G., et al. (2010). "Long-term effects of integrated rehabilitation in patients with stroke: a nonrandomized comparative feasibility study." Journal of Alternative & Complementary Medicine **16**(4): 369-374.
- 
- McEwen, S. E., et al. (2010). "'There's a real plan here, and I am responsible for that plan': Participant experiences with a novel cognitive-based treatment approach for adults living with chronic stroke." Disability & Rehabilitation **32**(7): 541-550.
- 
- McEwen, S. E., et al. (2009). "Exploring a cognitive-based treatment approach to improve motor-based skill performance in chronic stroke: results of three single case experiments." Brain Injury **23**(13/14): 1041-1053.
- Moustgaard, A., et al. (2007). "Mindfulness-based cognitive therapy (MBCT) for individuals who had a stroke: results from a pilot study." Journal of Cognitive Rehabilitation **25**(4): 4-10.
- 
- Nicholl, C. R., et al. (2002). "Cognitions and post-stroke depression." British Journal of Clinical Psychology **41**(3): 221-231.

# REFERENCES

- Nursing Best Practice Guideline from RNAO Stroke Assessment Across the Continuum of Care June 2005-  
[http://rnao.ca/sites/rnaoca/files/Stroke\\_with\\_merged\\_supplement\\_sticker\\_2012.pdf](http://rnao.ca/sites/rnaoca/files/Stroke_with_merged_supplement_sticker_2012.pdf)
- 
- Olive, B. R. (2000). Treatment efficacy of a brief cognitive-behavioral intervention in patients with post-stroke depression, University of Mississippi. **Ph.D.:** 205 p-205 p.
- 
- Palmer, S., et al. (2004). "Crisis intervention with individuals and their families following stroke: a model for psychosocial service during inpatient rehabilitation." Rehabilitation Psychology **49**(4): 338-343.
- 
- Pfeil, M., et al. (2009). "Depression and stroke: a common but often unrecognized combination." British Journal of Nursing **18**(6): 365-369.
- 
- Quinn, T. J., et al. (2009). "Evidence-based stroke rehabilitation: an expanded guidance document from the european stroke organisation (ESO) guidelines for management of ischaemic stroke and transient ischaemic attack 2008." Journal of Rehabilitation Medicine (Stiftelsen Rehabiliteringsinformation) **41**(2): 99-111.
- 
- Rasquin, S., et al. (2009). "Cognitive-behavioural intervention for depression after stroke: Five single case studies on effects and feasibility." Neuropsychological Rehabilitation **19**(2): 208-222.
-

# REFERENCES

- Sunghee, L. E. E., et al. (2015). "The effects of cognitive exercise therapy on chronic stroke patients' upper limb functions, activities of daily living and quality of life." Journal of Physical Therapy Science **27**(9): 2787-2791.
- 
- Theeke, L., et al. (2014). "Quality of life and loneliness in stroke survivors living in Appalachia." Journal of Neuroscience Nursing **46**(6): E3-E15.
- 
- Thomas, S. A. and N. B. Lincoln (2008). Assessment and treatment of depression and anxiety after stroke. Handbook of emotional disorders in later life: Assessment and treatment. New York, NY, Oxford University Press; US: 363-382.
- 
- Thomas, S. A., et al. (2013). "An evaluation of treatment integrity in a randomized trial of behavioural therapy for low mood in stroke patients with aphasia." Clinical Rehabilitation **27**(12): 1097-1106.
- 
- Thomas, S. A., et al. (2013). "Communication and Low Mood (CALM): a randomized controlled trial of behavioural therapy for stroke patients with aphasia." Clinical Rehabilitation **27**(5): 398-408.
- 
- van Eeden, M., et al. (2015). "An economic evaluation of an augmented cognitive behavioural intervention vs. computerized cognitive training for post-stroke depressive symptoms." BMC Neurology **15**: 266.

# REFERENCES

- White, B. A. (1998). Development of a multidisciplinary cognitive rehabilitation program to maximize functional independence in geriatric stroke patients, Spalding University. **Psy.D.:** 143 p-143 p.
- 
- Zedlitz, A. M., et al. (2012). "Cognitive and graded activity training can alleviate persistent fatigue after stroke: a randomized, controlled trial." Stroke (00392499) **43**(4): 1046-1051.