



Coping with Attention, Learning and Memory Problems after Transplant

Celebrating a Second Chance at Life Survivorship Symposium

April 17- 23, 2021



Shelli Kesler PhD
Livestrong Cancer Institute,
The University of Texas at Austin

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WHAT STARTS HERE CHANGES THE WORLD

Coping with Attention, Learning and Memory Problems after Transplant

Shelli R. Kesler, PhD
Associate Professor
The University of Texas at Austin



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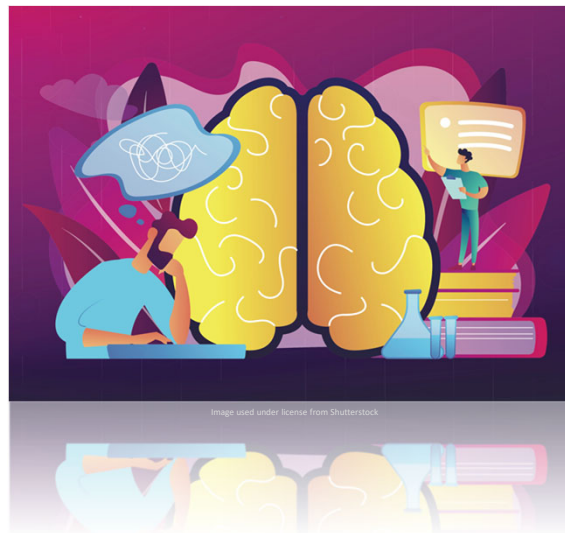
Overview

- What is “cancer-related cognitive impairment”?
- Who is affected?
- How long does it last?
- What causes it?
- How is it measured?
- What can be done about it?

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Cognition

- Problem solving
- Reasoning
- Learning and Memory
- Attention
- Language



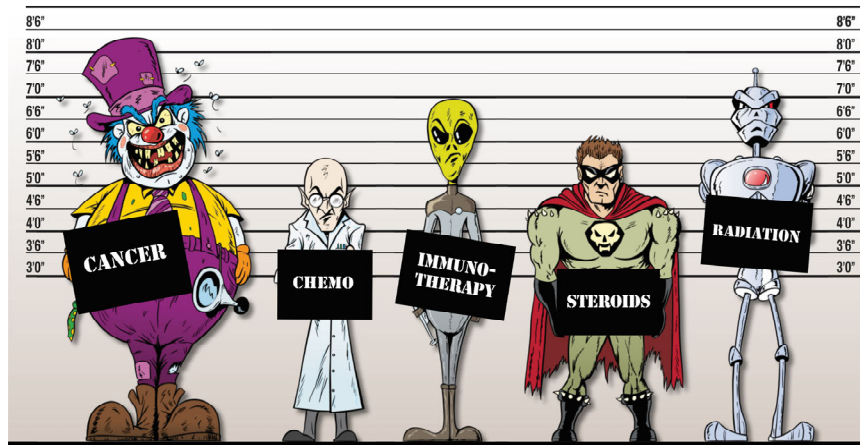
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Cancer-related Cognitive Impairment


- Occurs before, during and/or after treatments
- Different skills can be affected
- Sometimes called “chemobrain”

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Multiple Suspects



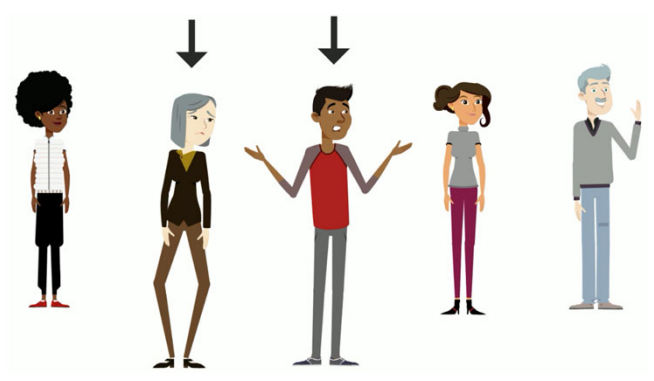
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Incidence

About 40% (2 out of 5 patients) have cognitive impairment 5 years post-transplant



Syjtava, KL, et al. 2011. J Clin Oncol, 29, pp. 2397-404

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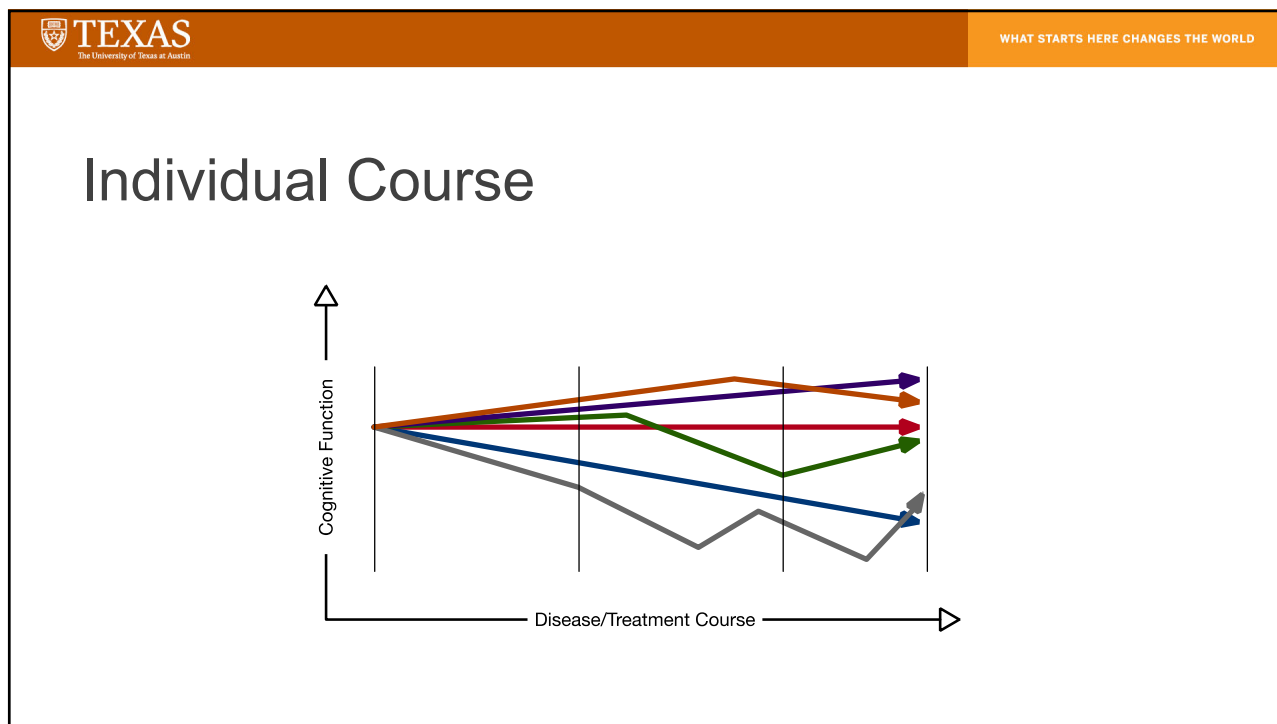
Duration

- Months to years
- Permanent in some patients
- Some show difficulties later on
- Some worsen over time



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Risk Factors: Non-modifiable

- Older age
- Genetic factors
- Disease severity
- Treatment intensity/duration

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Risk Factors: Modifiable

- Stress
- Sleep disruption
- Fatigue
- Low mental activity
- Sedentary




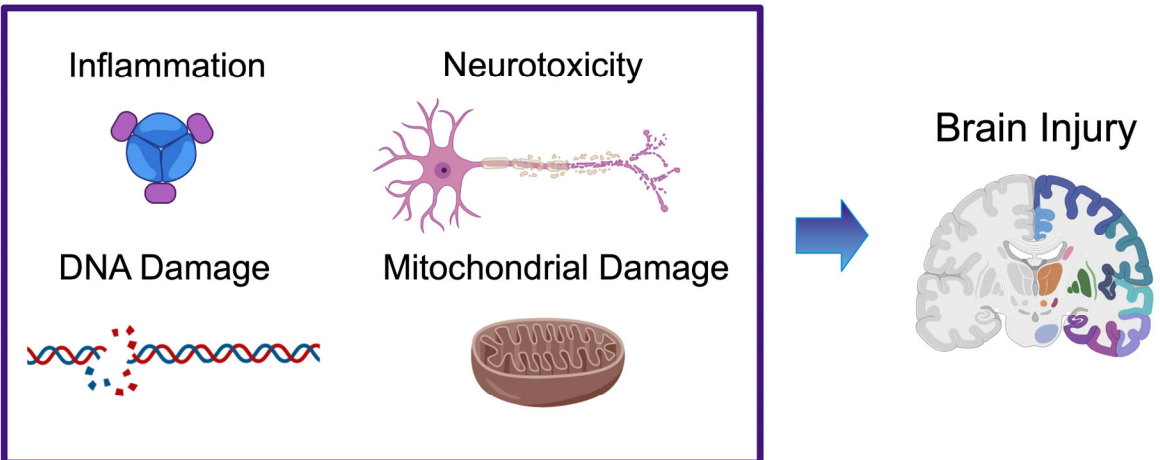
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Causes



Inflammation

Neurotoxicity


DNA Damage

Mitochondrial Damage

Brain Injury

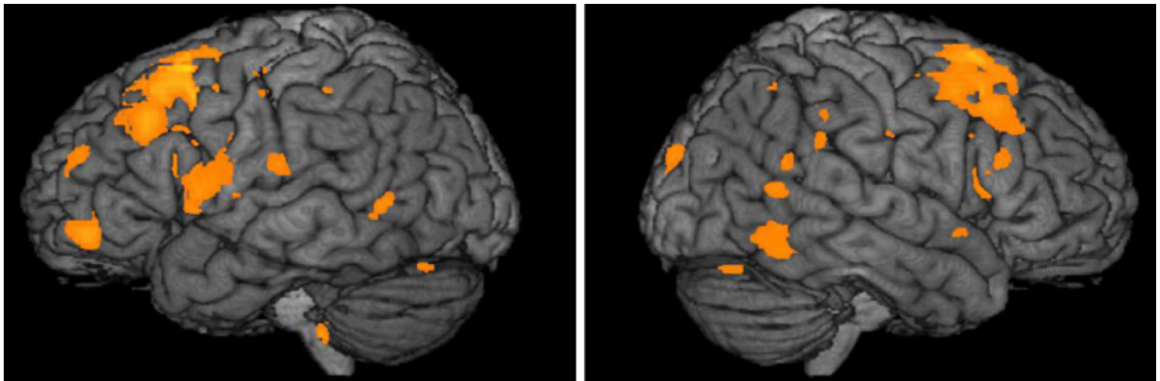
Figure created with BioRender.com

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Lower Brain Volumes After BMT



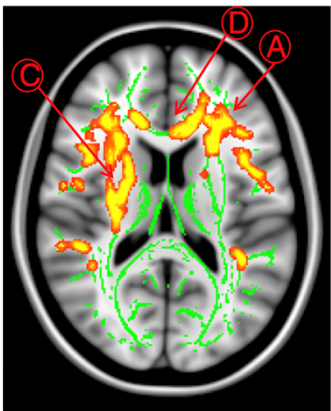
Comea, D.D., et al. 2015. Brain Imaging Behav, 7, pp. 478-90.

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Injured White Matter Pathways After BMT



Comea, D.D., et al. 2016. Brain Imaging Behav, 10, pp. 486-96.

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Neuropsychological Assessment

- Interview
- Review medical records
- Several hours of tests
- Report/review results
- Annual follow-up

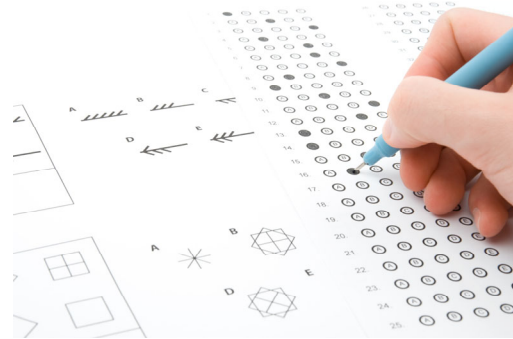



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How To Get Neuropsychological Exam

- Request referral to Neuropsychology
 - Neurology/Neuro-oncology service
- Billed to health insurance

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Physical Activity

- Promotes neurogenesis
- Improves cardiovascular function
- Improves cancer-related fatigue
- Improves functional capacity




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Physical Activity and White Matter Pathways

<p>Sedentary</p> 	<p>Exercise</p> 
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Salmone, I. et al. 2016. Neuro Oncol. 20, pp. 695-704.

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Guidelines for Brain Health

- 150 mins moderate intensity aerobic exercise per week
 - Brisk walking
 - Riding a bike
 - Gardening
- 120 mins vigorous intensity
 - Jogging
 - HIIT (high intensity interval training)

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Alternatives

- Gentle yoga
- Stretching



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Cognitive Training





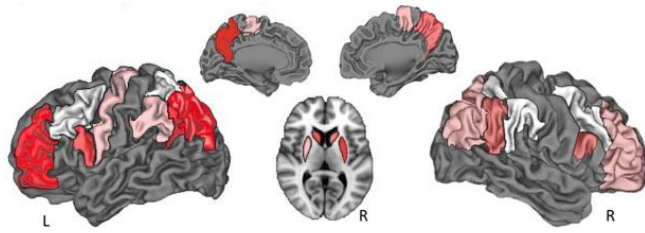
Image © Shelli Kesler

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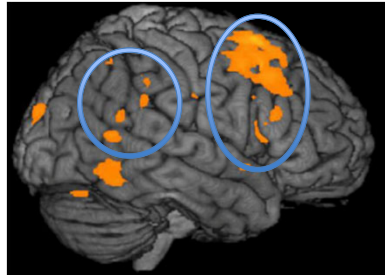
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Trained Brain




Madley, A et al. 10.1523/JNEUROSCI.4141-12.2013




Correa, DD, et al 2013. Brain Imaging Behav, 7, pp. 478-90.

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Active Journaling



- Describe events, thoughts, feelings
- Analyze, interpret, integrate
- Concise, organized
- Grammar, spelling

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Examples

- What inspires you and why?
- What interactions did you have with others and what did they mean to you?
- What new things did you learn?
- What do you think about certain events, ideas or people and why?

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Language Learning

- Language training results in neuroplasticity
- Improved memory and concentration skills
- Don't have to become fluent to have benefit



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Music

- Musical training results in neuroplasticity
- Musical activity protects brain
- Don't have to go on tour to have benefit!





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Mental Exercise

- Regular, consistent (daily)
- Something you enjoy
- Challenging (Goldilocks)

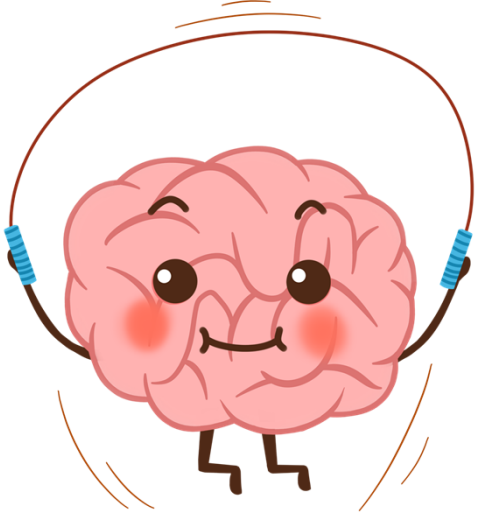



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Cognitive Reserve

- Might not notice changes in daily life
- Improves brain resilience and reserve
 - Increase your brain “bank”




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Cognitive Rehabilitation

- In-clinic cognitive exercises, compensatory strategies
- Occupational therapy, neuropsychology
- Requires referral/billed to insurance
- Not widely available

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Compensatory Strategies

- External devices for cuing, reminding, alerting
 - Notebook, planner, smartphone
- Managing situational demands
 - More time, doing one thing at a time

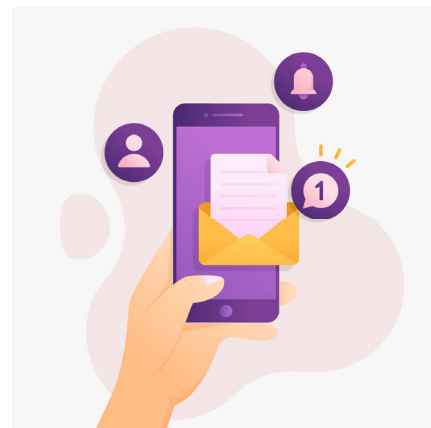


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Workplace Accommodations

- Americans with Disabilities Act (ADA)
- Short/long term disability benefits
- Workplace modifications
 - Reduced hours/workload, relocating desk to quieter area, partnering with colleague
- Requires supporting documentation from qualified provider

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Stimulant Medication

- Help with attention/concentration and fatigue
- Insomnia and other side effects
- Clinical trials not impressive
 - Clinical experience suggests positive effects
 - Neuropsychological testing might not be sensitive to effects

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Supplements

- Evidence not consistent
- Few studies
- Sensitivity of cognitive measures




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Physical *plus* Mental Exercise

- Most consistent supporting evidence
- Physical activity generates new brain cells
- Mental activity helps these new cells become “wired in”
- Protect against effects of aging and future injury/illness

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WHAT STARTS HERE CHANGES THE WORLD

Summary


- About 2 out of 5 BMT recipients experience chronic cognitive problems
- These result from alterations of the brain
- It is important to manage modifiable risk factors
- Regular physical + mental activity is the best treatment


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Cancer Neuroscience Laboratory

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<https://nursing.utexas.edu/cnl>



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Questions?

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