



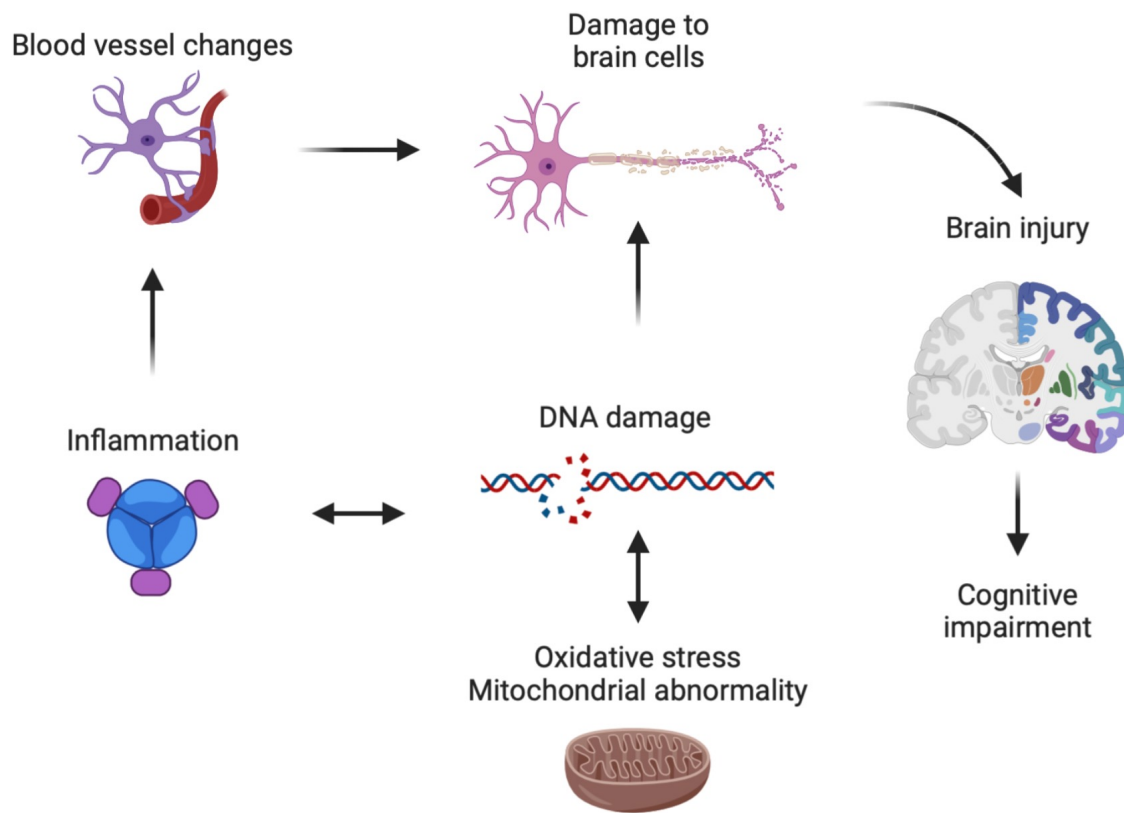
# Chemobrain Facts and Fictions

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

# What is Chemobrain?

- “Chemobrain”, also known as cancer-related cognitive impairment (CRCI), is a neurological condition associated with cognitive decline during or after cancer treatment.
- Approximately 60% of patients with cancer experience some degree of CRCI making it one of the most common side effects of cancer treatment.





## Why Does Chemobrain Occur?

- There are many biological reasons why chemobrain occurs. Damage to blood vessels, injury to brain cells, elevated inflammation, DNA damage and injury to mitochondria are believed to result from cancer and its treatments.
- These changes ultimately cause brain injury which can then lead to cognitive impairment.



## Is Chemobrain Caused by Stress?

- Many patients are told that chemobrain is not real or that it is “just stress”.
- Stress can certainly make chemobrain symptoms worse, but stress is not the cause of chemobrain.
- Multiple research studies have shown that chemobrain occurs in patients without significant symptoms of stress.
- Other studies have shown that even when a patient is struggling with stress in addition to chemobrain, the biological causes of these two problems are not the same.

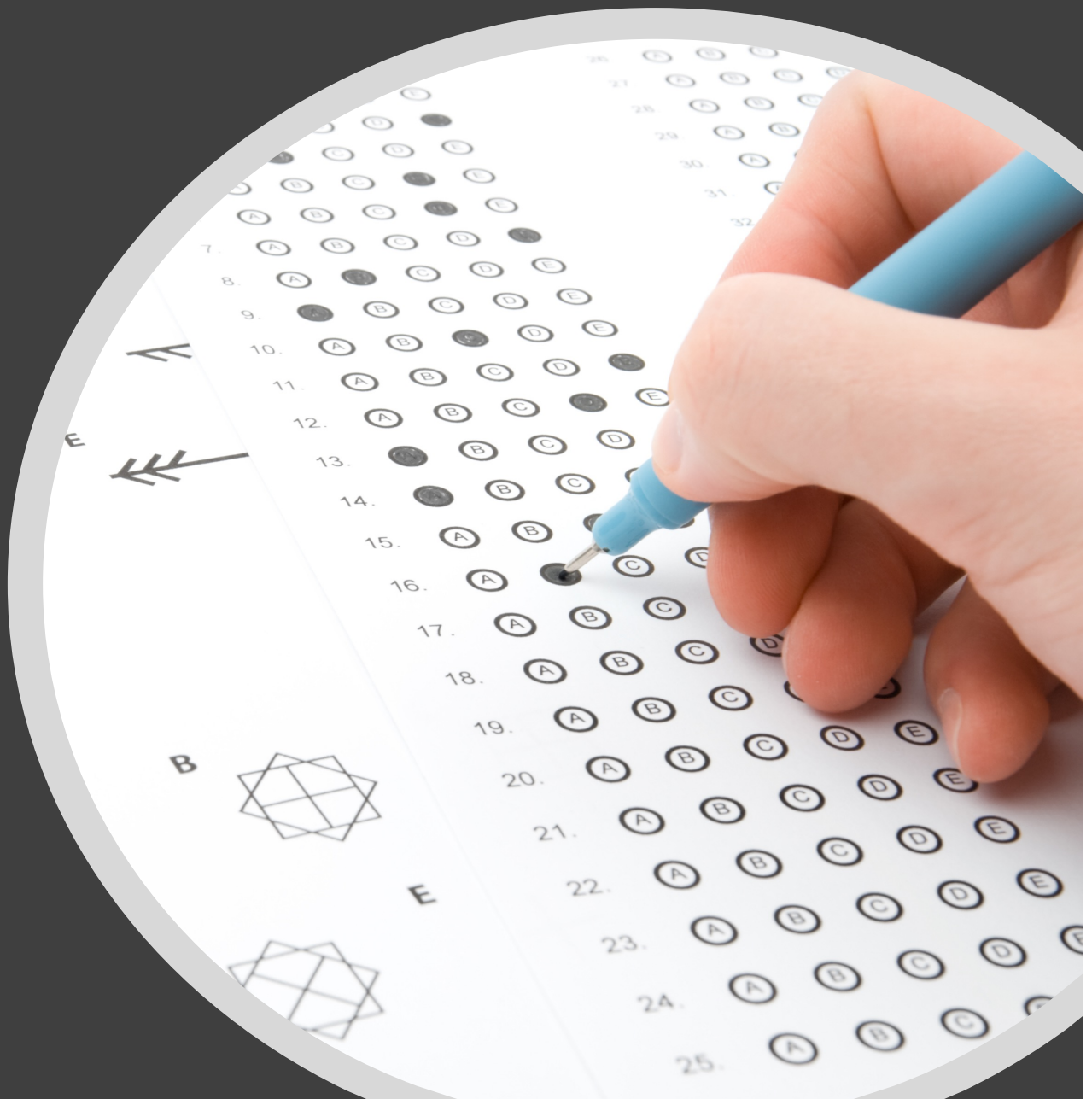


## Do Only Women Get Chemobrain?

- Both men and women can experience chemobrain.
- Chemobrain can also affect children with cancer.
- Some research studies suggest that chemobrain may disproportionately affect people of color.

# How is Chemobrain Diagnosed?

- Currently, chemobrain is diagnosed using tests that focus on cognitive symptoms.
- Unfortunately, these measures tend to underdiagnose chemobrain.
- Additionally, these measures don't tell us what causes the patient's chemobrain.







## Can Chemobrain Be Treated?

- Unfortunately, there is no specific treatment currently available for chemobrain because we first need to know what causes it.
- Some research studies have suggested that physical activity can improve cognitive function after cancer.
- Other studies suggest cognitive training or rehabilitation is helpful.
- Some patients may benefit from a short course of stimulant medication, especially if they are also experiencing fatigue.
- However, it is currently unknown which of these treatments is best for which patients.

# Biological Diagnosis of Chemobrain

- In the School of Nursing at The University of Texas at Austin, we are developing a way to diagnosis chemobrain from biology using brain MRI scans and machine learning.
- This method is called biotyping and it involves identifying the individual patterns of brain abnormality that cause chemobrain.
- Biotyping will tell us the cause of a patient's chemobrain, so that we can then design treatments that are specific to their particular pattern of brain abnormality. This is known as precision health.







## Brain Health Neuroscience Lab

School of Nursing  
The University of Texas at Austin

512-232-4762

[kesler.lab@austin.utexas.edu](mailto:kesler.lab@austin.utexas.edu)

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



The University of Texas at Austin  
School of Nursing



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