

# Optimizing Cognitive Functioning in Daily Life

---

David Sheppard, PhD

Clinical Neuropsychologist

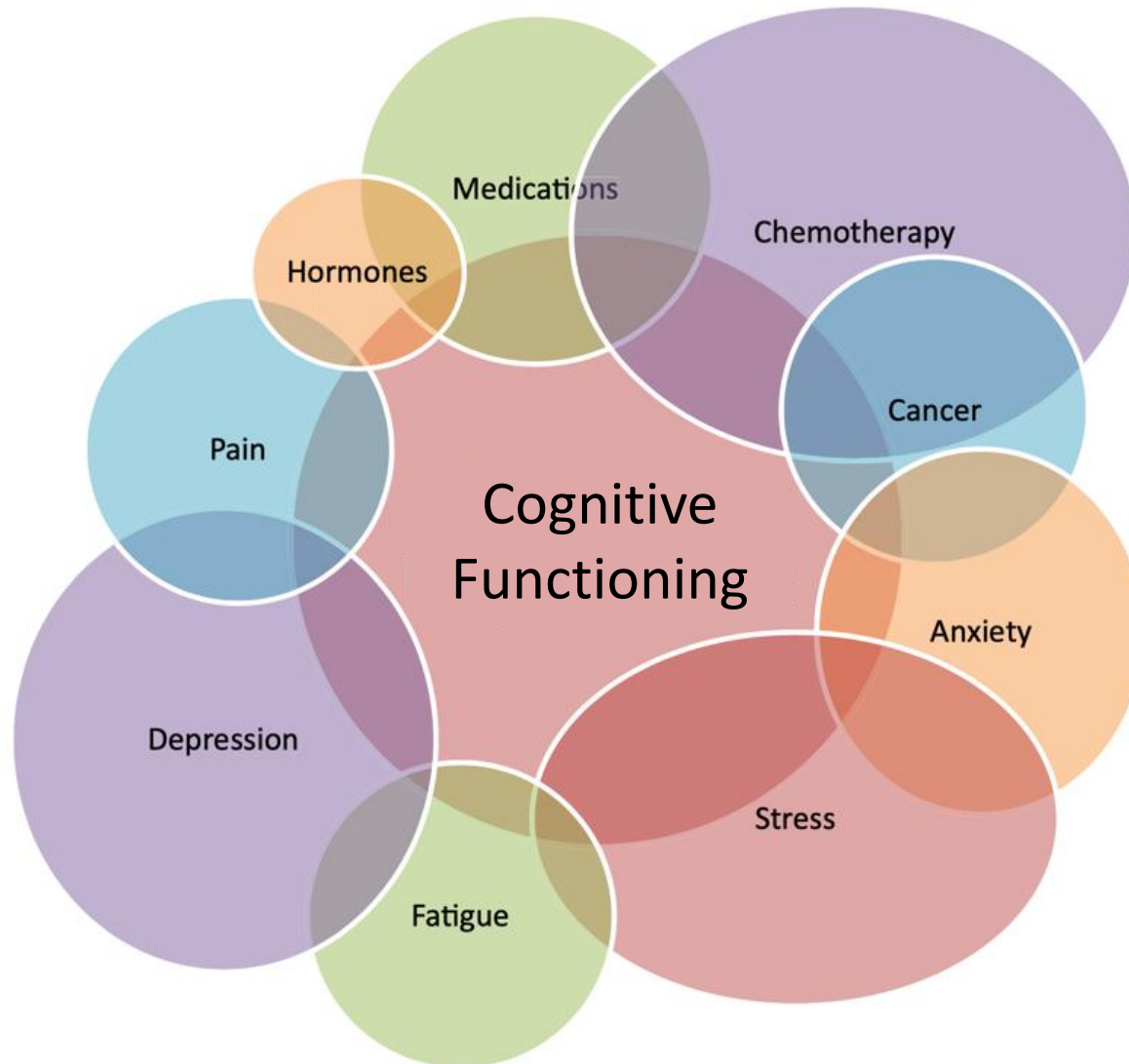
Assistant Professor

Department of Rehabilitation Medicine

June 1, 2024 – 18th Annual Moving Beyond Cancer to Wellness

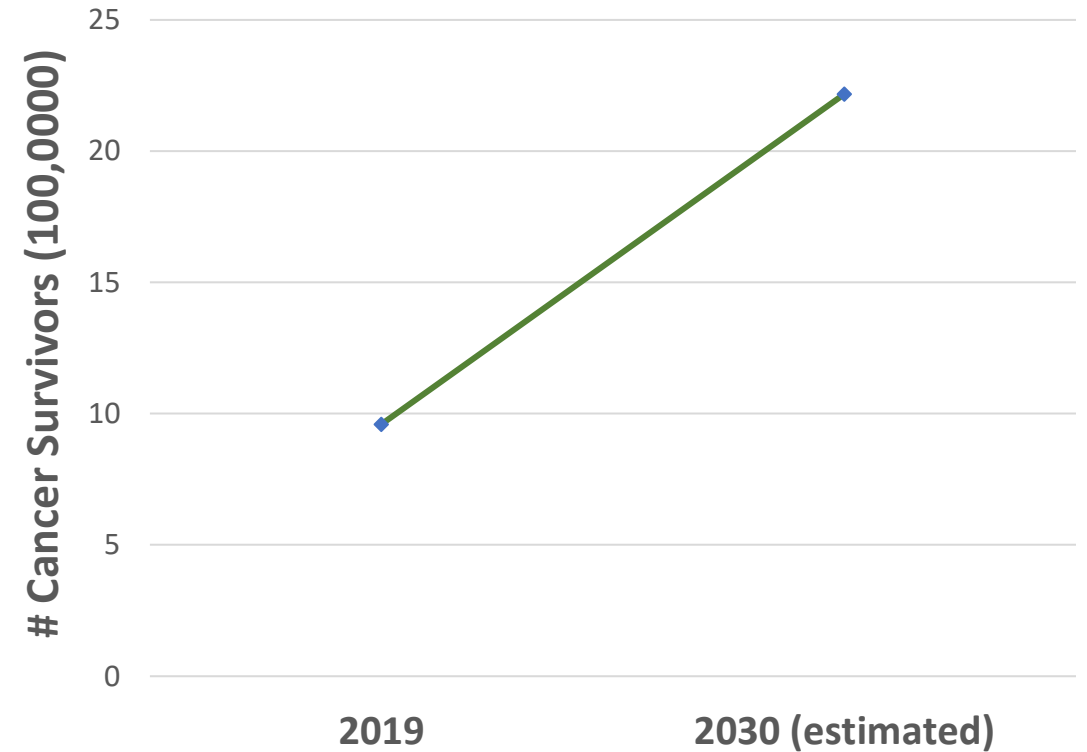
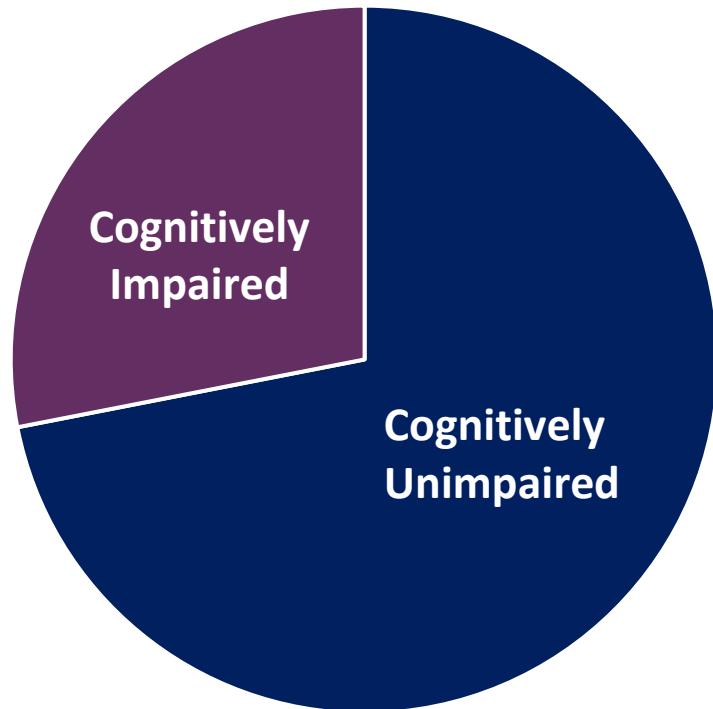
CONFIDENTIAL – DO NOT DISTRIBUTE

# There are Multiple Factors that Impact Cognitive Functioning



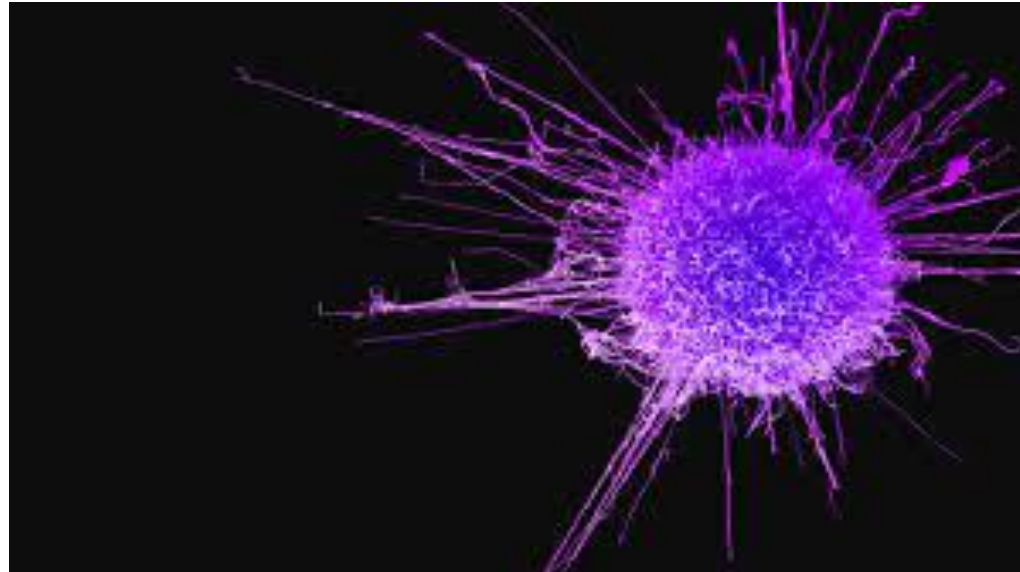
Vannorsdall, 2017; Med Clin North Am

# The Prevalence of Cancer Survivors Living with Cognitive Impairment is Increasing

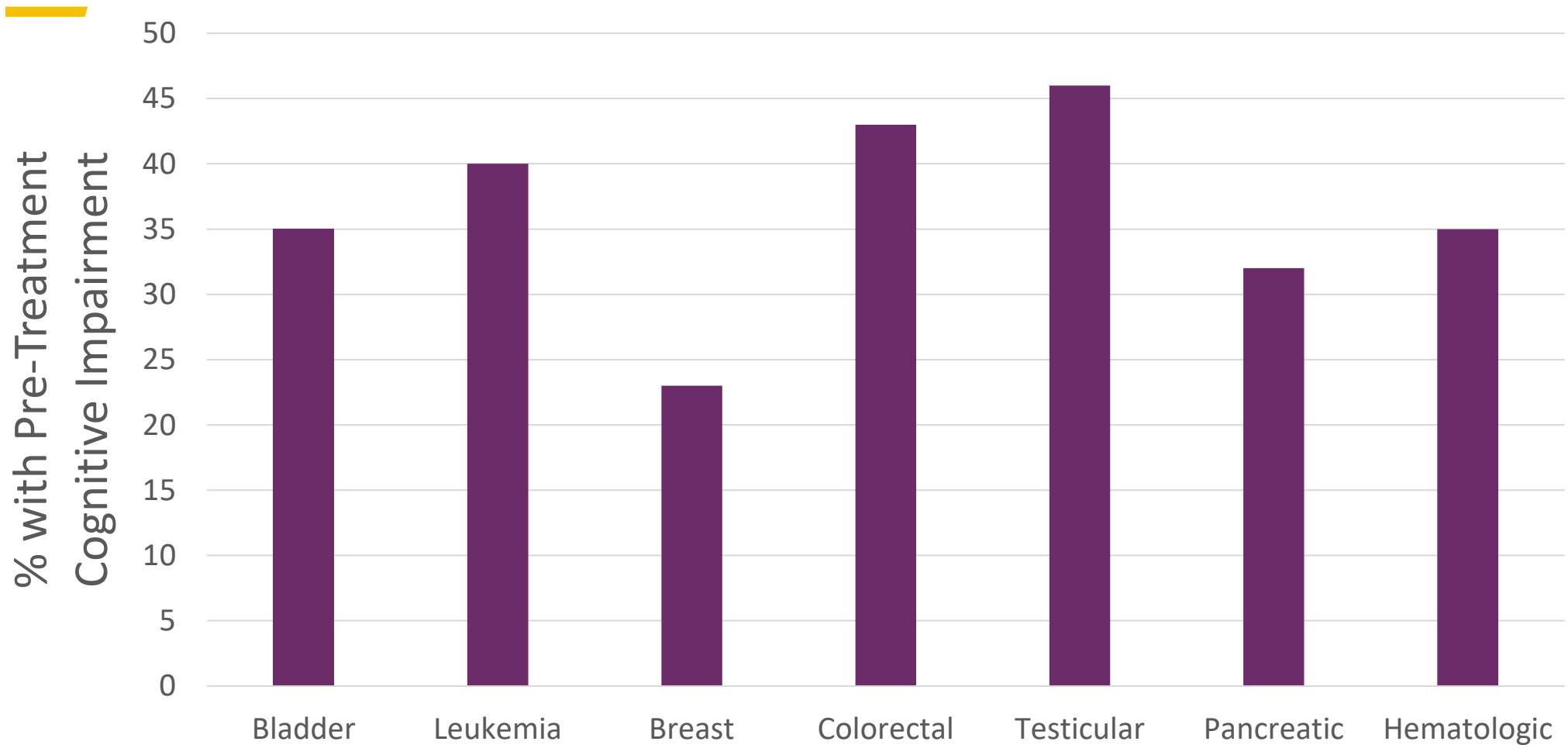


American Cancer Society, 2019

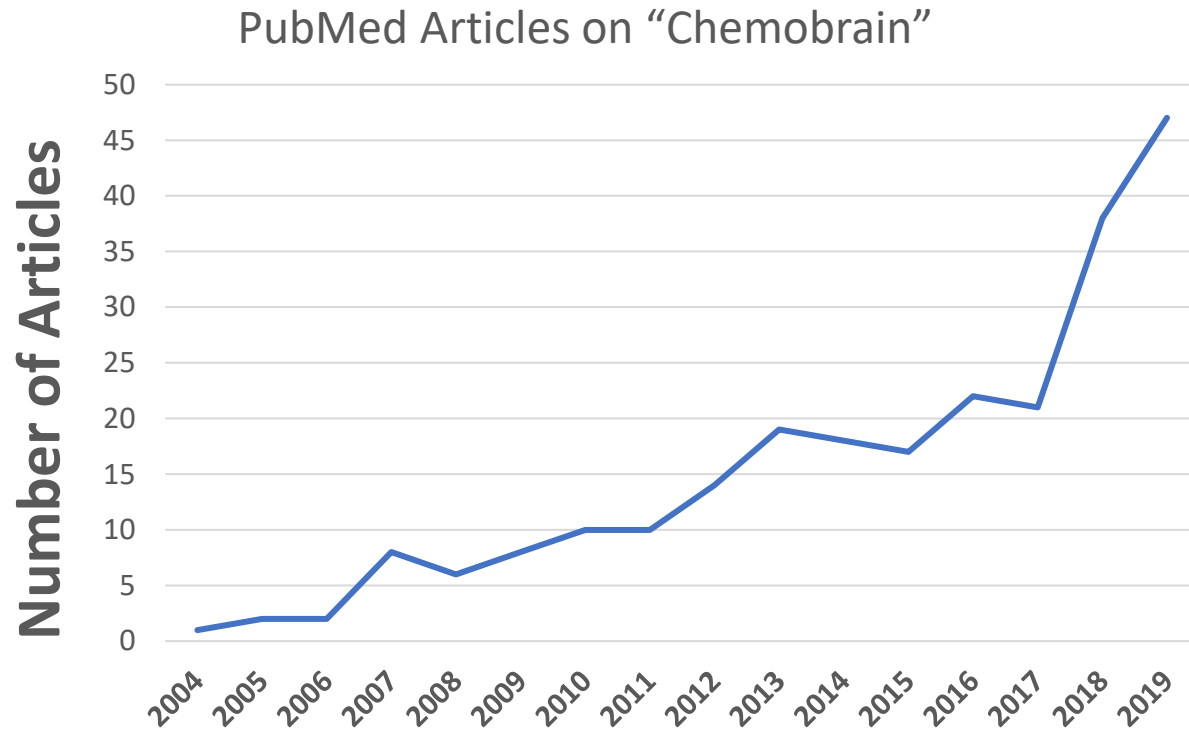
# Effects of Cancer and Treatment on Cognitive Functioning



# Pre-Treatment Neurocognitive Impairments



# Effects of Chemotherapy on Cognitive Functioning



Pubmed.gov

CONFIDENTIAL – DO NOT DISTRIBUTE

**MAYO CLINIC**

Search Mayo Clinic

Care at Mayo Clinic | Health Information | For Medical Professionals | Research

Patient Care & Health Information > Diseases & Conditions

## Chemo brain

Symptoms & causes | Diagnosis & treatment | Doctors & departments

[Print](#)

### Overview

Chemo brain is a common term used by cancer survivors to describe thinking and memory problems that can occur during and after cancer treatment. Chemo brain can also be called chemo fog, cancer-related cognitive impairment or cognitive dysfunction.

Though chemo brain is a widely used term, the causes of concentration and memory problems aren't well-understood. It's likely that there are multiple causes.

No matter the cause, chemo brain can be a frustrating and debilitating side effect of cancer and its treatment. Researchers are working to understand the memory changes that people with cancer experience.

Mayoclinic.org

**UW Medicine**  
DEPARTMENT OF  
REHABILITATION MEDICINE

# What is “Chemobrain?”

- *“Fogginess,” “forgetfulness,” “going blank”*
- *“Why am I not doing it the way and as quickly as before?”*
- *“... when driving, I couldn’t remember if I am supposed to turn or not.”*
- *“You backtrack. I forget where I put things.”*
- *“The other day I asked my son, “Where is my telephone?” and I was talking on it!”*

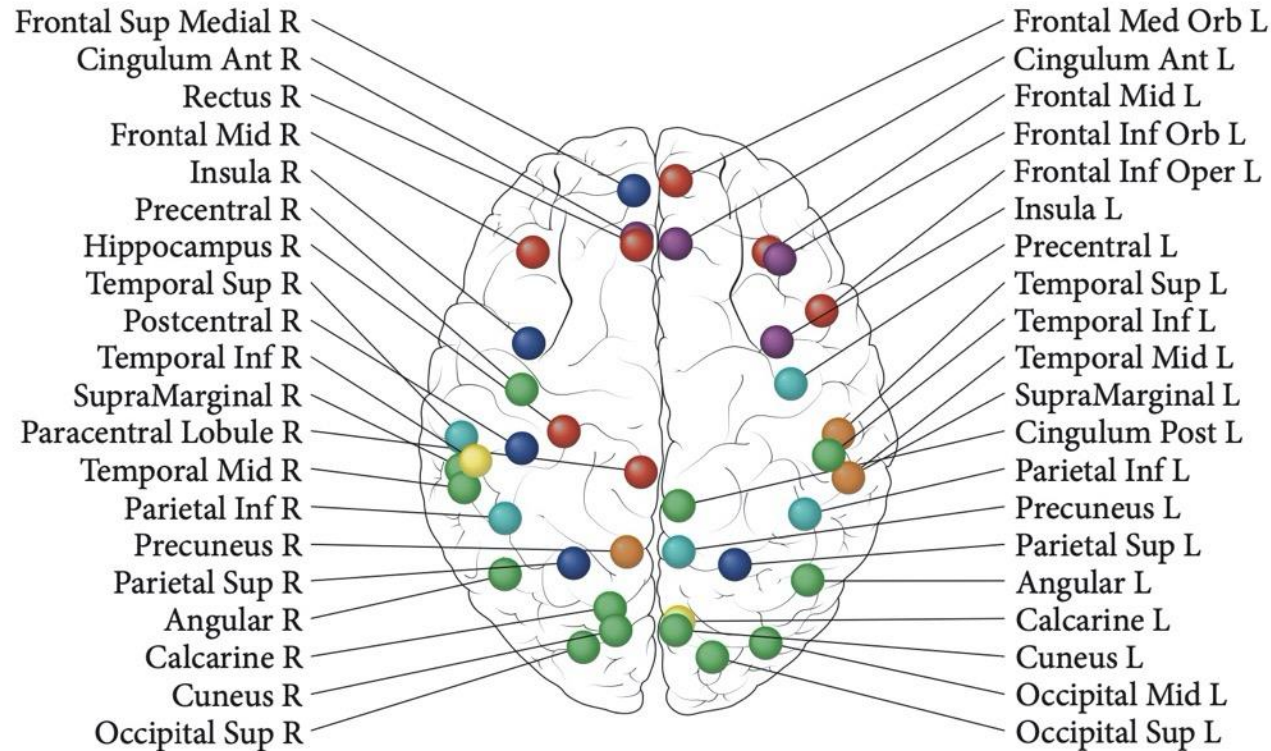
## Chemobrain in Underserved African American Breast Cancer Survivors: A Qualitative Study

Connie Rust, PhD, DPh, MSW, and Cindy Davis, PhD



Although research has been conducted to address specific medical and psychosocial needs of breast cancer survivors, little has been done to address needs along the entire trajectory of care. One such need is chemobrain, a phenomenon recognized as an identifiable psychosocial cognitive change in breast cancer survivors. The purpose of this article is to present the findings of a qualitative study conducted with two focus groups of underserved African American breast cancer survivors. Four themes emerged from the transcribed interviews: the concept of chemobrain, variability among individuals, the stigma of chemobrain, and methods of coping.

# Neuroimaging: Chemotherapy Can Impact Both Brain Structure and Function



- **Problem:** Some cognitive concerns reported by patients are not seen on cognitive testing or appreciated by others

*Lange et al., 2019; Annals of Oncology*



# Cognitive Dysfunction After Chemotherapy?

Twin A = Cancer + Chemotherapy

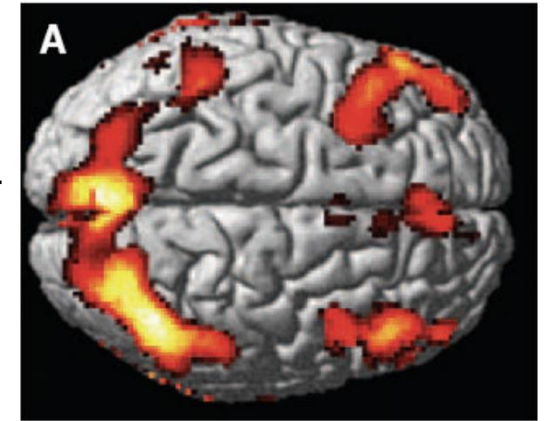


Cognitive Concerns?

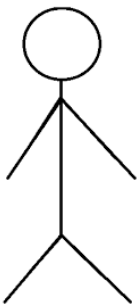
YES

Performance on Cognitive Testing

“Normal”



Twin B = No Cancer, No Chemotherapy

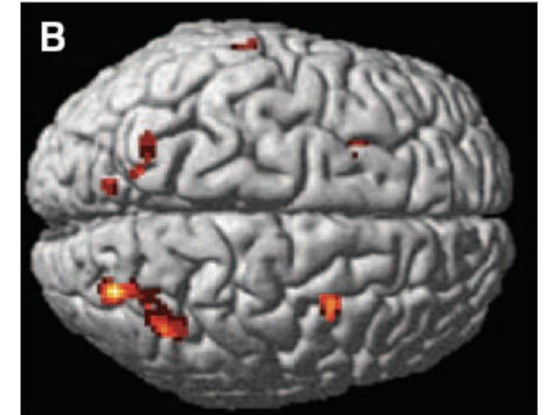


Cognitive Concerns?

NO

Performance on Cognitive Testing

“Normal”



# Nature and Course of Chemotherapy-Related Cognitive Impairments

---

- Generally mild cognitive weaknesses
  - Can affect everyday functioning (work, education, etc.)
- Usually resolve within 1 year
  - For some cancer survivors, mild cognitive changes may persist for years (or possibly decades)



# Neurocognitive Areas Commonly Affected in Cancer and Associated Treatments

## Learning & Memory Retrieval

*Remembering items on a shopping list*

## Speed of Mental Processing

*Keeping up with conversations*

## Attention / Concentration

*Maintaining attention*

## Executive Functions

*Switching between cooking and talking with a family member*

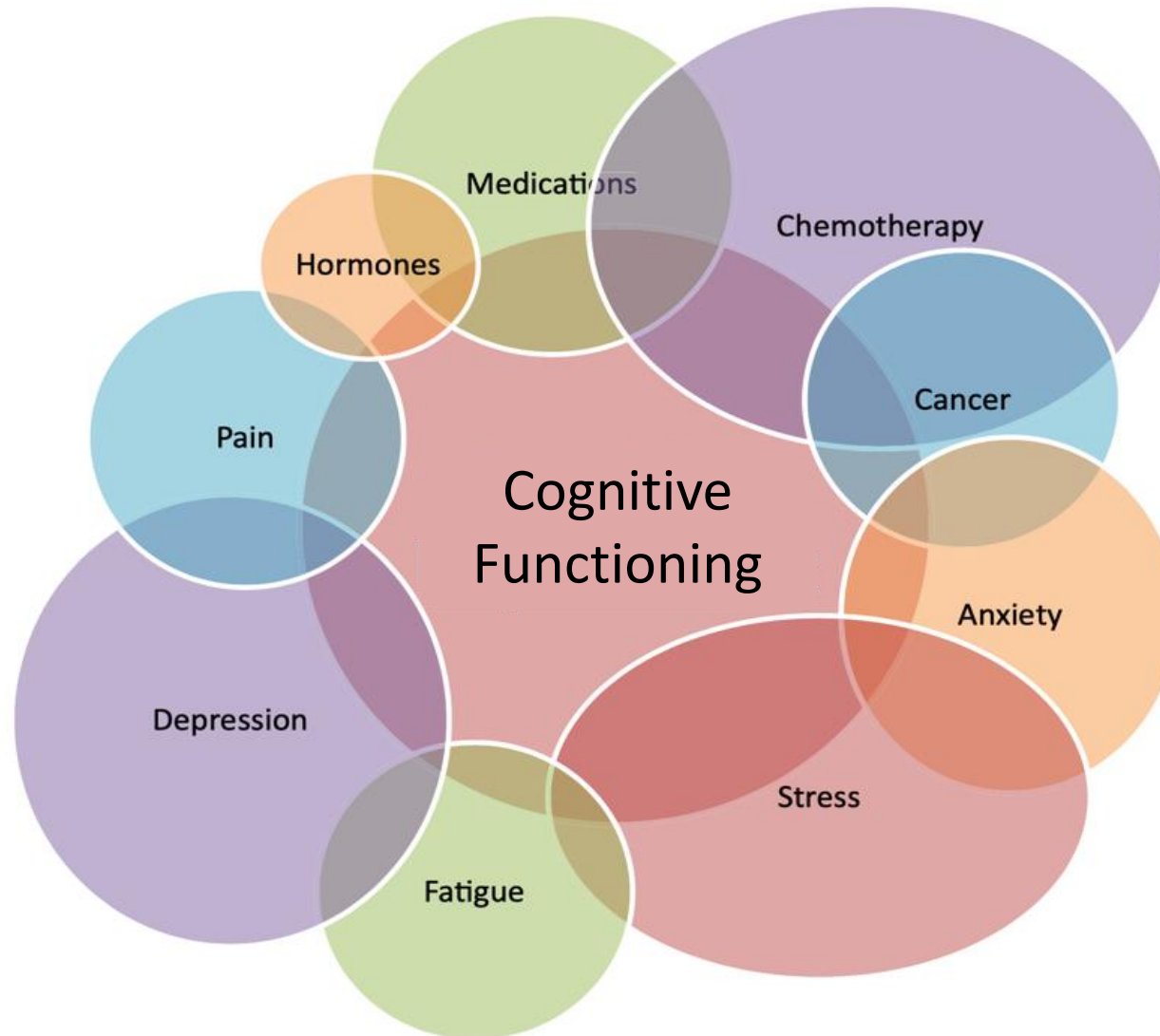
*Problem Solving*

*Organization and Planning*

# Cognitive functioning in cancer: Is it all just cancer and treatment effects?



# There are Multiple Factors that Impact Cognitive Functioning



Vannorsdall, 2017; Med Clin North Am



# Management Strategies for Cancer-Related Cognitive Impairment



# Managing Factors that Impact Cognitive Functioning

## Your brain is like a cup

**Water** = information your brain is managing daily

**Ice cubes** = distractors (e.g., stress, fatigue, pain)

**Ice cube distractors take up cognitive energy that our brain cannot use for more important daily functioning tasks.**





# Strategies to Manage Cognitive Dysfunction

- Look for your own patterns in thinking lapses (journals/diaries can help identify patterns)
  - Consider tracking mood, fatigue, pain, medications, etc.
- Talk with healthcare provider about possible contributors (medications, pain, mood, etc.)



# Some Cognitive Lapses are Normal

- Remind yourself that cognitive lapses are common
- Ask yourself if something contributed to a cognitive lapse

Things We Normally Forget	Percentage
Forgets telephone numbers	58%
Forgets people's names	48%
Forgets where car was parked	32%
Loses car keys	31%
Forgets groceries	28%
Forgets reason for entering room	27%
Forgets directions	24%
Forgets appointment dates	20%
Forgets store locations in mall	20%
Loses items around the house	17%
Loses wallet or pocketbook	17%
Forgets content of daily conversations	17%

# Improving Cognitive Functioning – What Works?

- Restoration? Improving/restoring our natural cognitive abilities
- Compensation? Minimizing interference of cognitive difficulties in daily life
  - Alarms, calendars, to-do lists, etc.
- Compensation has better support for improving real-world cognitive functioning.



# When to Use Cognitive Rehabilitation Strategies

---

- **Anytime, including before changes occur (prehabilitation).**
  - Compensation strategies can be implemented prior to any cognitive changes, or long after they began.
- Everyone (patients, families, care partners) can use compensatory cognitive strategies!



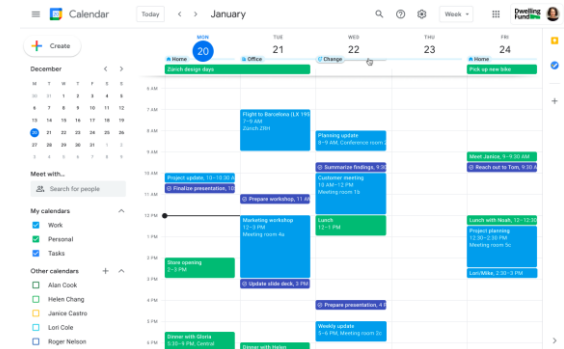
# External Compensatory Strategies

- Use a list or memory notebook
  - Use a single system. Multiple lists increase multitasking.
- Use an organizer or planner
  - Find a time each day to review schedule and prioritize tasks or adjust schedule.
- Use a wall calendar
  - Some people prefer this. Put it in an obvious place.



*to do list*

A vertical list of 15 empty rectangular checkboxes, each followed by a horizontal line for writing. The checkboxes are arranged in a column on the right side of the page.



# External Compensatory Strategies

- Use alarms or electronic calendar to cue memory
- Central hub / memory station for essential items (keys, phone)
- Pillbox for organizing medications
- Minimize distractions during important tasks



# Other Compensatory Strategies

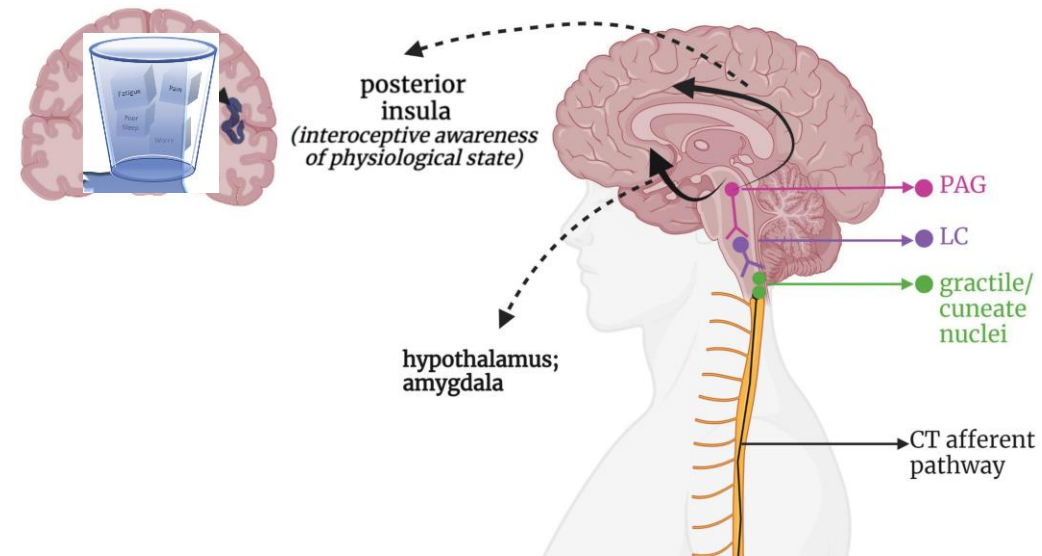
- **Intentional noticing:**
  - State out loud important tasks you are to perform, or visualize completing them
    - “I’m going to pick up my prescription on my way home”
    - Imagine yourself picking up a prescription on the way home today
- **Chunking:**
  - bananas, asparagus, strawberries, broccoli, peppers, grapes
  - [bananas, strawberries, grapes] and [asparagus, broccoli, peppers]
- Repeat information. Repeat information.



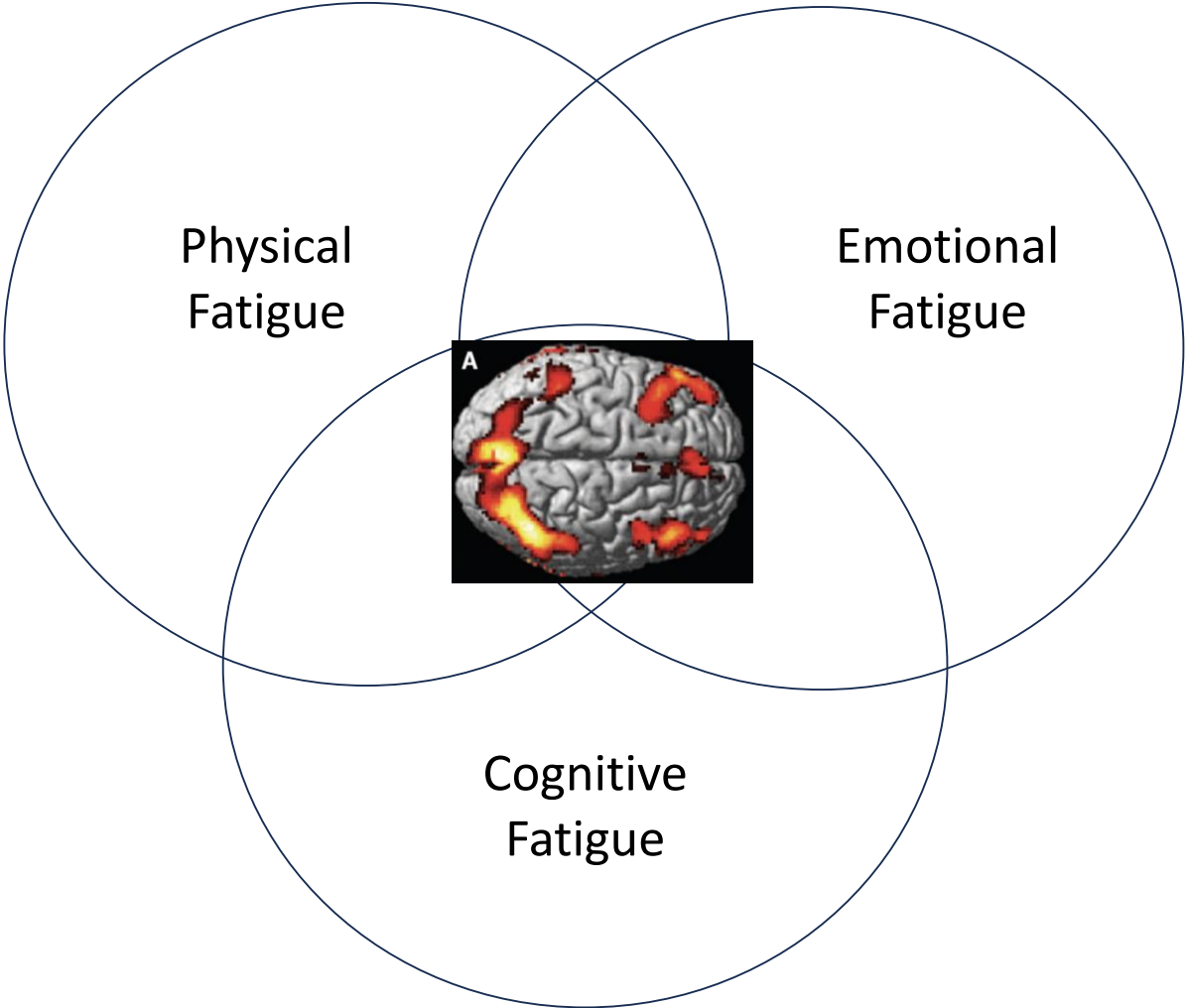
# Behavioral Management of Mood and Stress

## Behavioral stress management

- Diaphragmatic breathing, paced breathing, etc.
- Meditation
- Mindfulness
- Yoga
- Physical activity
- Additional treatment of mood (example: psychotherapy)



# Managing Cancer-related Fatigue





# Managing Fatigue

---

- **Physical activity: strongest evidence for cancer-related physical and cognitive fatigue**
  - Regular physical activity, and don't over-exert
  - Pacing and energy conservation
- **Follow the clock, not your body, for breaks**
  - Even if your body is not tired, take regular breaks to maximize brain function



# Sleep Hygiene

- Nap or not to nap?
  - Sleep is like a hunger—eating a snack before a big meal can impact our appetite
- Keep a consistent schedule
- Minimize caffeine use in afternoon/evening, avoid alcohol before bedtime, turn off electronics 30 minutes before bed
- Give yourself 20-30 minutes to fall asleep, then get out of bed to perform a quiet activity in low light. Return to bed when sleepy and repeat as needed.

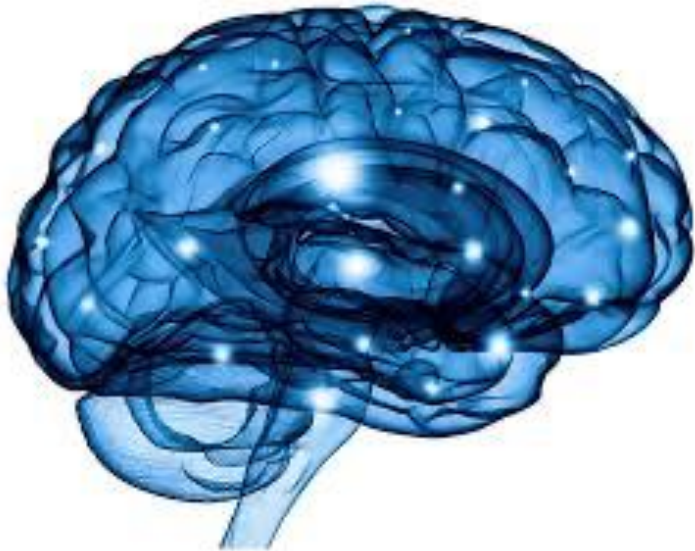


# Healthy Cognitive Aging

- Regular physical activity
  - Aerobic activity has benefits for memory and executive functions
- Healthy diet
  - Fruits, vegetables, whole grains, fish
  - Minimize saturated fats and transfats
- Brain Health = Heart Health



# Where to Start: Cognitive Rehabilitation and Prehabilitation



- Start a to-do list notebook, and set an alarm to review this each morning or afternoon
- Set an alarm to take a 10-minute break twice per day to give your brain a rest and minimize fatigue
- Practice diaphragmatic breathing once daily for 5-minutes
- Schedule a walk or time for chair yoga each day

# Additional Steps to Address Cognitive Difficulties

---

- **Work with medical team to treat risk factors for cognitive decline**
  - Sleep apnea, high blood pressure, high cholesterol, diabetes, thyroid dysfunction
- **Talk with your doctor about additional workup**
  - This could include meeting with a neuropsychologist to further assess thinking skills, or referral to cognitive rehabilitation

# Additional Resources

---

- **National Cancer Institute**

- [https://www.cancer.gov/about-cancer/treatment/side-effects/memory/cognitive-impairment-pdq#\\_AboutThis\\_1](https://www.cancer.gov/about-cancer/treatment/side-effects/memory/cognitive-impairment-pdq#_AboutThis_1)
- <https://www.cancer.gov/about-cancer/treatment/side-effects/memory>

- **American Cancer Society**

- <https://www.cancer.org/cancer/managing-cancer/side-effects/changes-in-mood-or-thinking/chemo-brain.html>
- <https://www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/getting-help-for-chemo-brain.pdf>

# QUESTIONS?

