BEACON 2026

The Female Brain

Women’s Health and Cognition

A PRESENTATION BY
ROBIN BONE, MD, FACOG, MSCP
Signature Health

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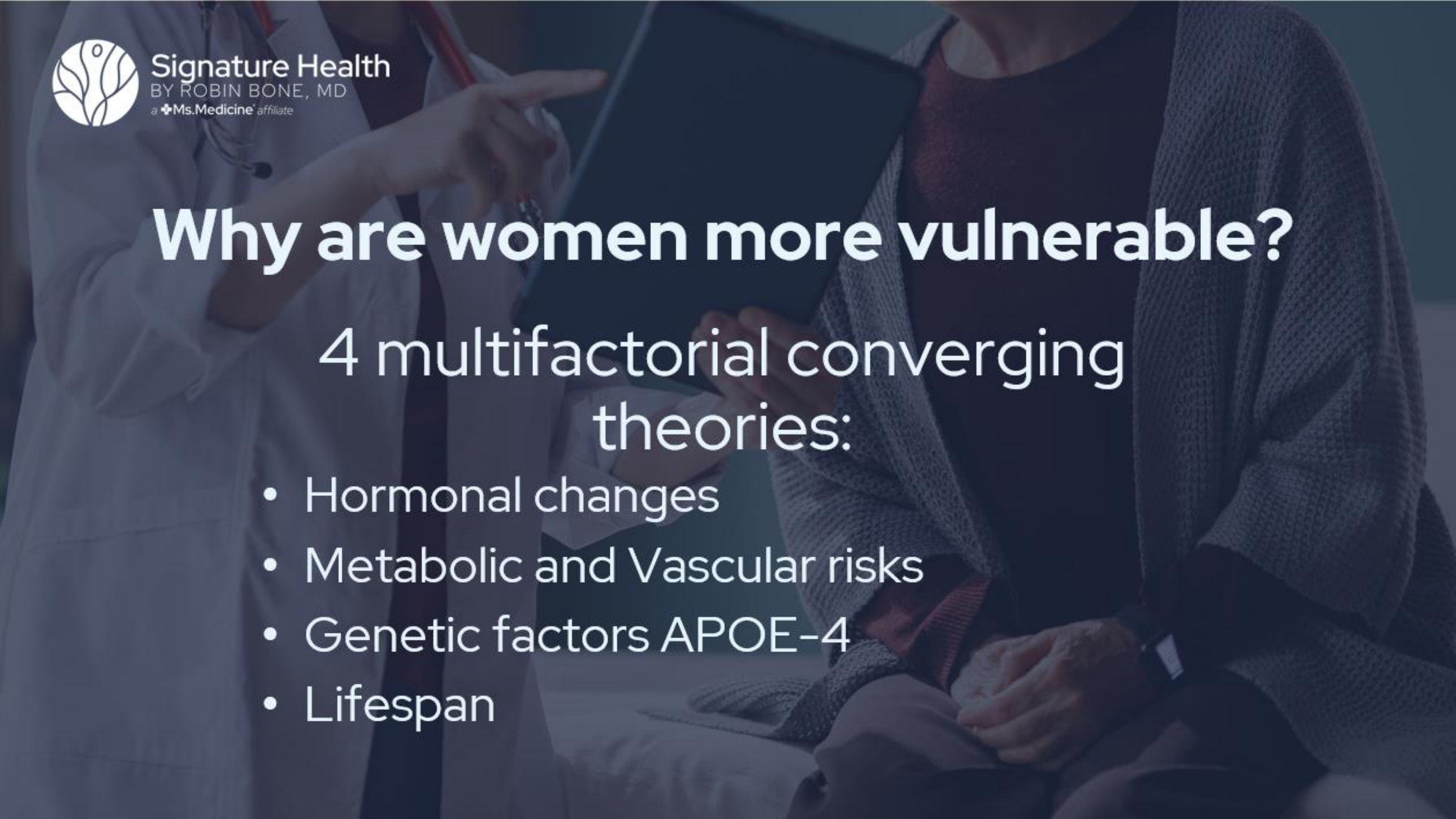
Brain health & menopause


Patient Story
• can’t remember words
• walks into rooms and forgets why she’s there
• terrible sleep
• mentally foggy
Dementia? Perimenopause

WHY THIS MATTERS

⅔ of Alzheimer's patients are women

More than 6 million Americans are living with Alzheimer's disease--expected to double by 2050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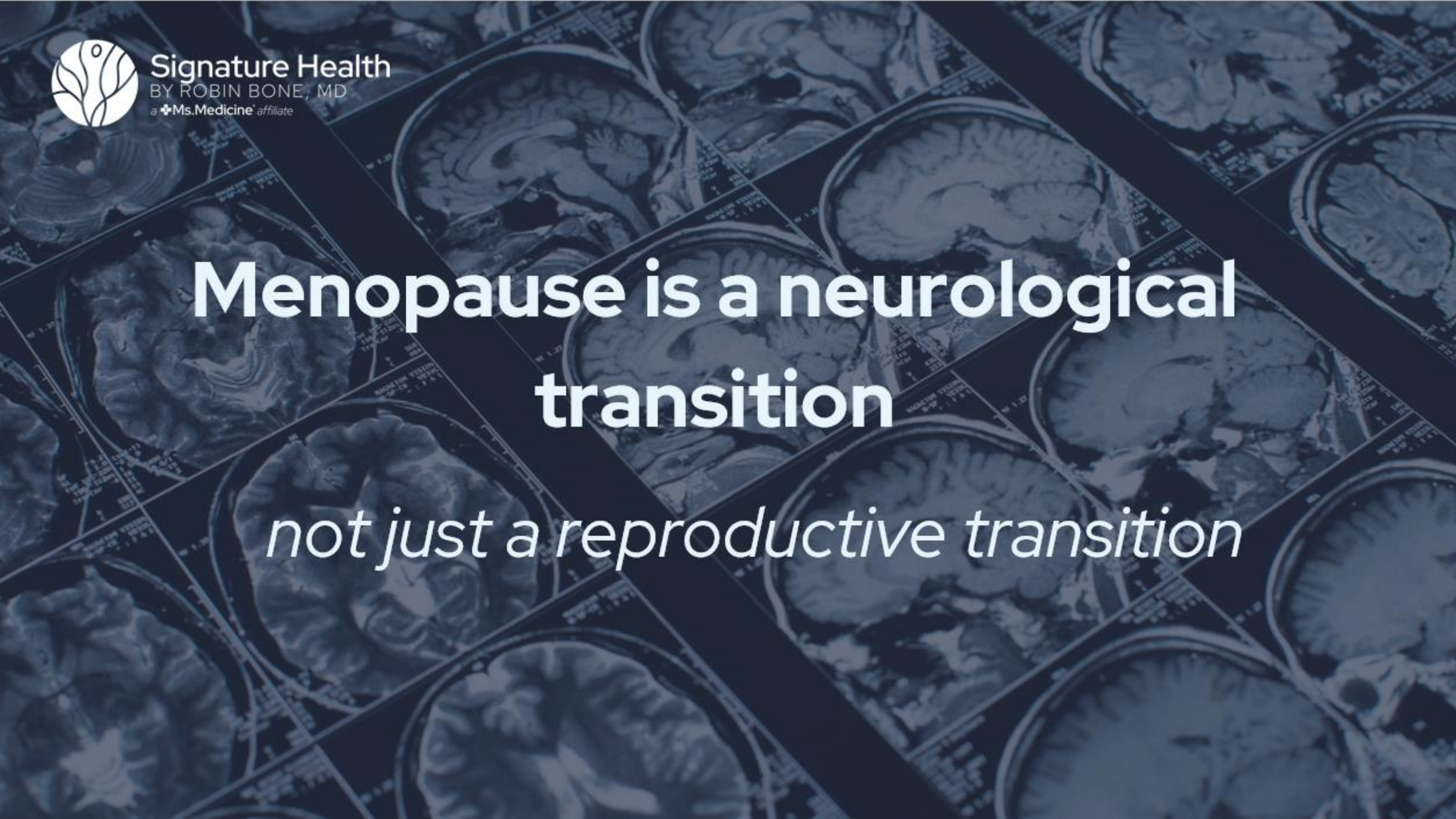
Why are women more vulnerable?
4 multifactorial converging theories:
• Hormonal changes
• Metabolic and Vascular risks
• Genetic factors APOE-4
• Lifespan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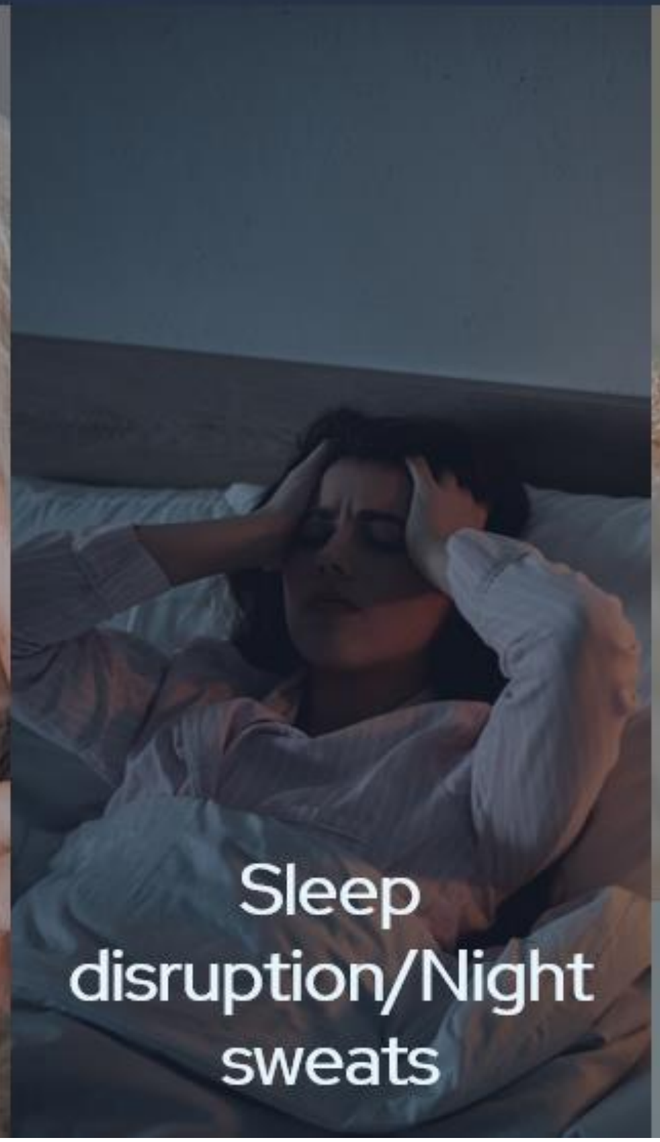
Menopause is a neurological transition
not just a reproductive transition

COMMON BRAIN SYMPTOMS



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Estrogen supports the brain's fuel, defense and signal system

Influences:

- brain energy metabolism
- cerebral blood flow
- neurotransmitter systems/connections
- synaptic plasticity
- reduces amyloid burden
- decreses neuroinflammation

ESTROGEN FUELS THE BRAIN

The brain represents only about 2% of our body weight, but **consumes about 20% of the body's energy.**

When estrogen levels decline, symptoms of brain fog, fatigue, & concentration issues occur.

BRAIN ENERGY

Glucose is the brain's primary fuel

Estrogen helps neurons use glucose

As estrogen declines, brain is less efficient at using glucose

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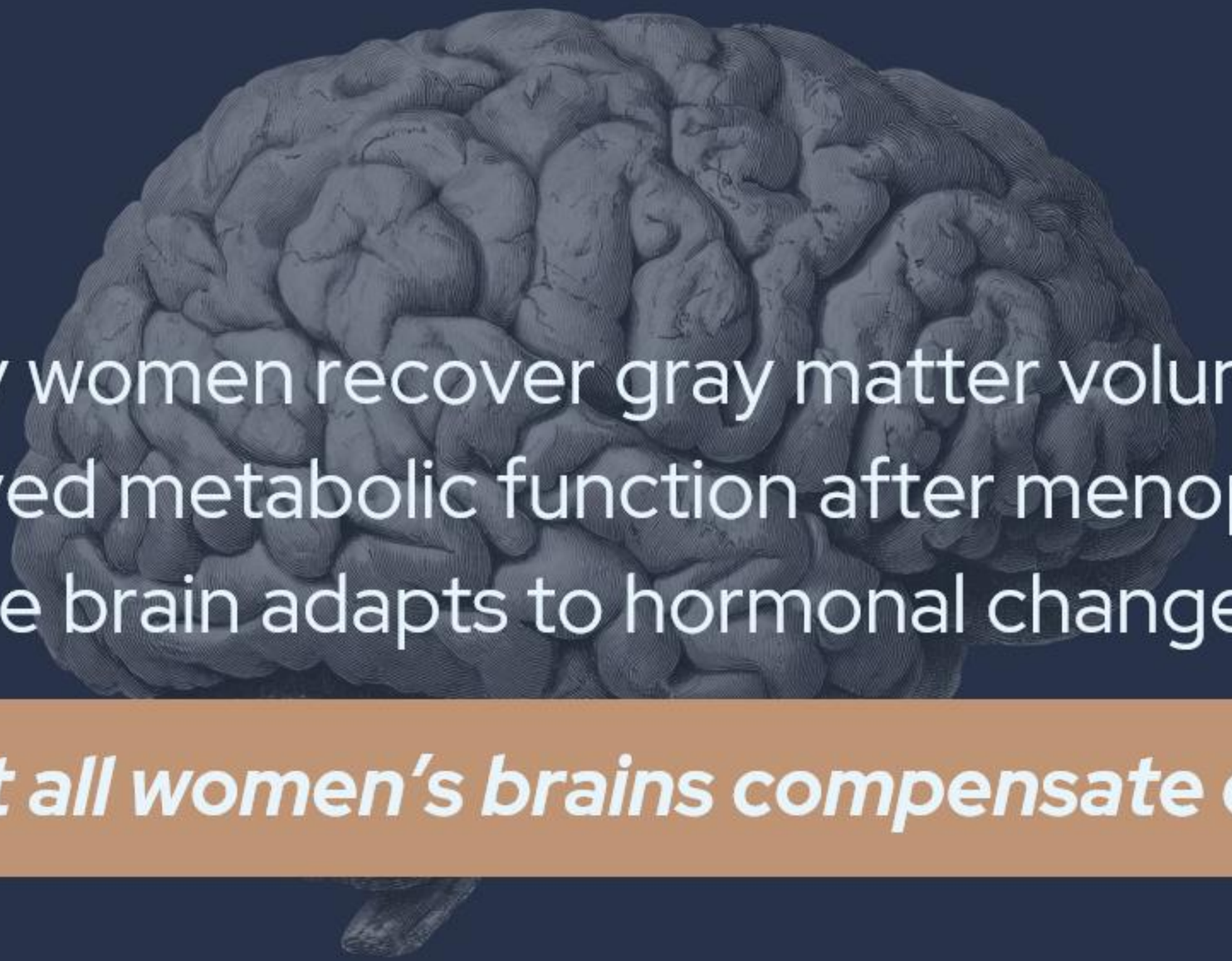
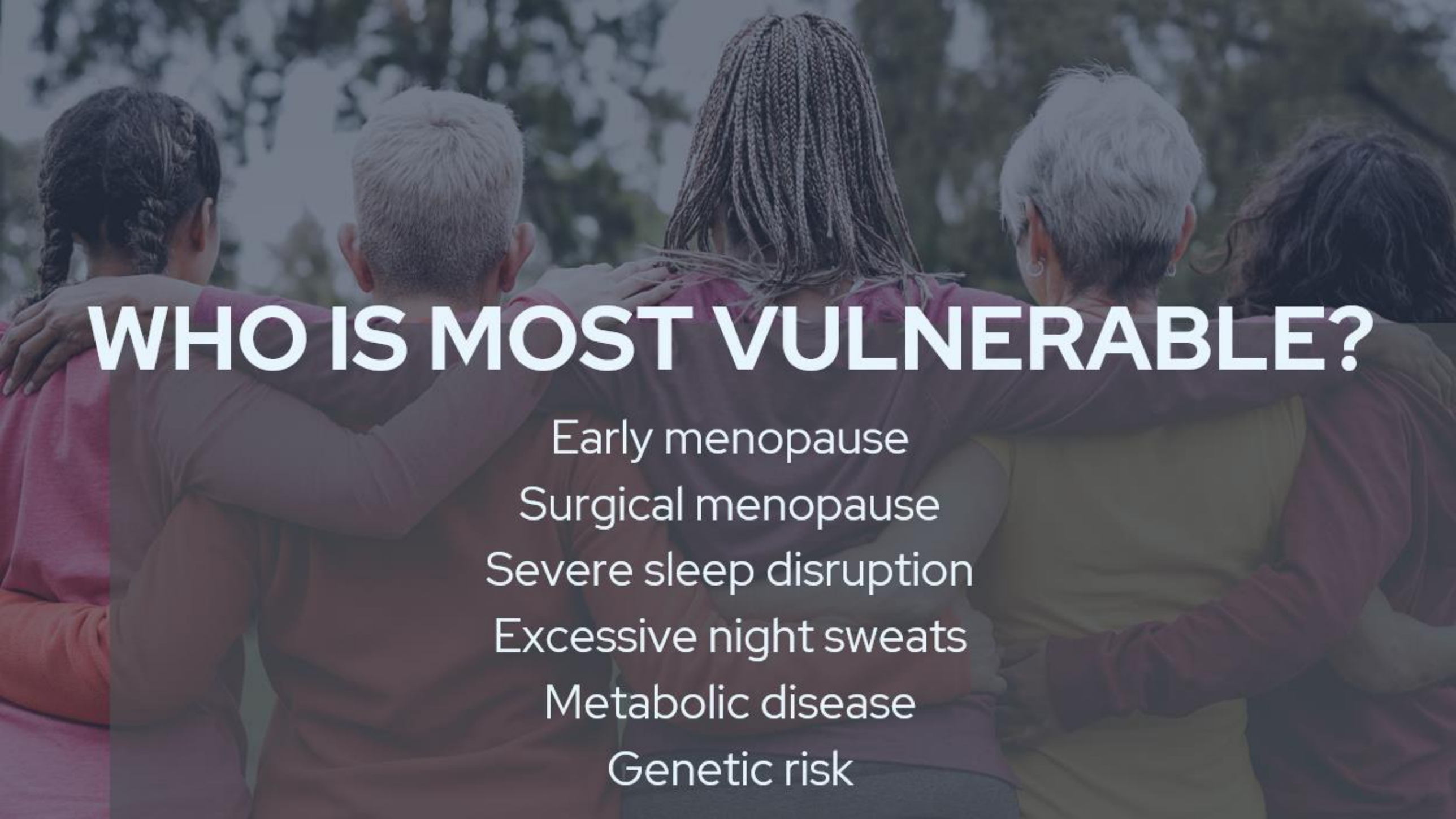
Brain changes during midlife transition

- Reductions in brain metabolism
- Reduction gray matter brain volume
- Increased white matter hyperintensities
- Changes in connectivity between brain networks that support memory & executive function



Many women recover gray matter volume & improved metabolic function after menopause. The brain adapts to hormonal changes.

But not all women's brains compensate equally.



WHO IS MOST VULNERABLE?

Early menopause

Surgical menopause

Severe sleep disruption

Excessive night sweats

Metabolic disease

Genetic risk

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Women's brains age differently

Before menopause:
estrogen fuels the brain for energy and enhances connections

When estrogen declines:
metabolic shift in the brain

HORMONE THERAPY DEBATE

Early headlines suggested increased dementia risk,
but these studies involved women
who started hormone therapy after age 65.

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Critical Window Hypothesis

Starting hormone therapy near the time of menopause may support brain health – starting hormone therapy decades later may not provide the same benefit.

TIMING MATTERS

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Key Research

- Increased dementia risk when hormone therapy was started after 65 (WHIMS study)
- Trials demonstrated improved cerebral blood flow (KEEPS & ELITE)
- Early hormone therapy may slow cognitive decline in APOE-4 gene carriers

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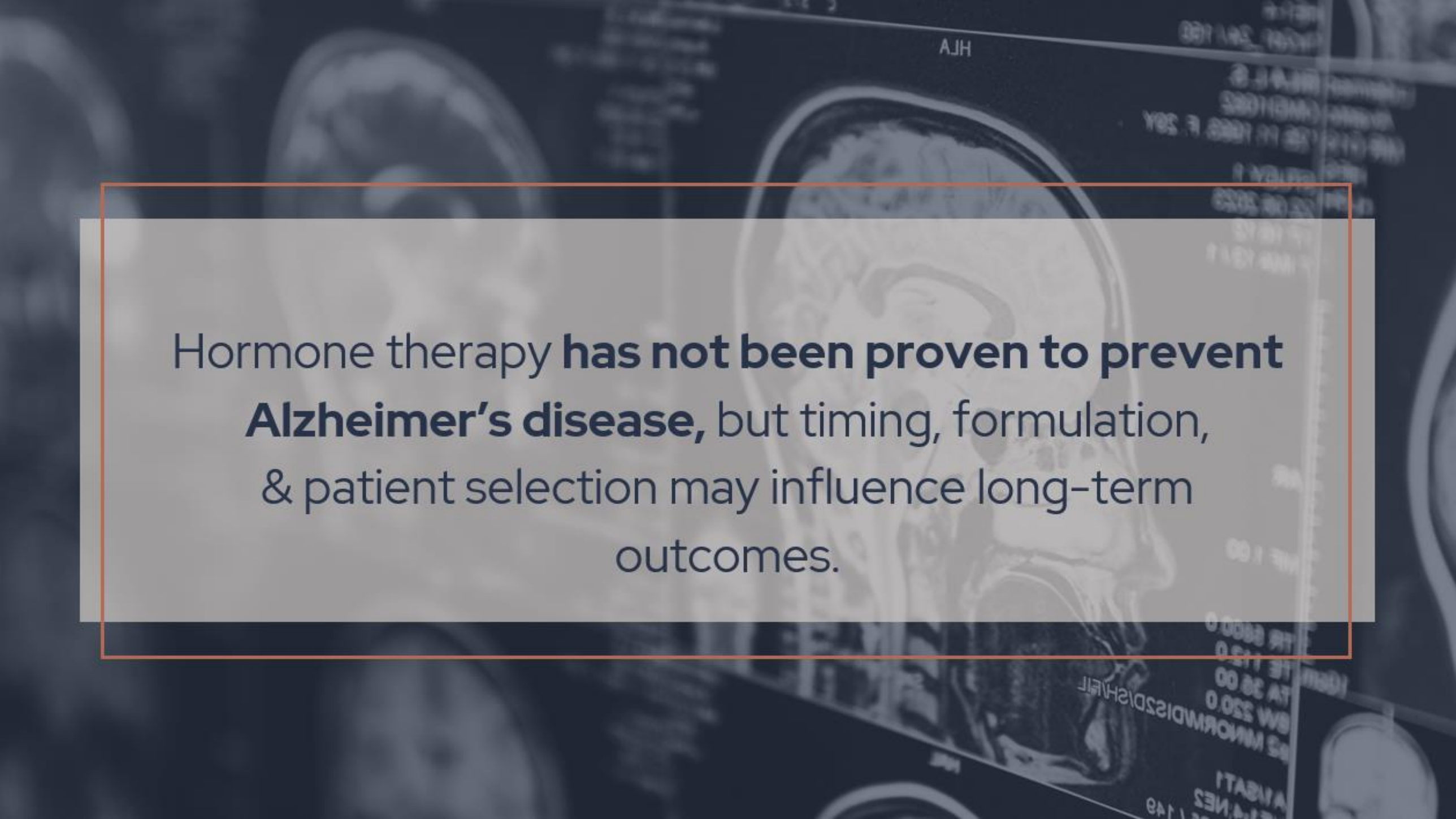
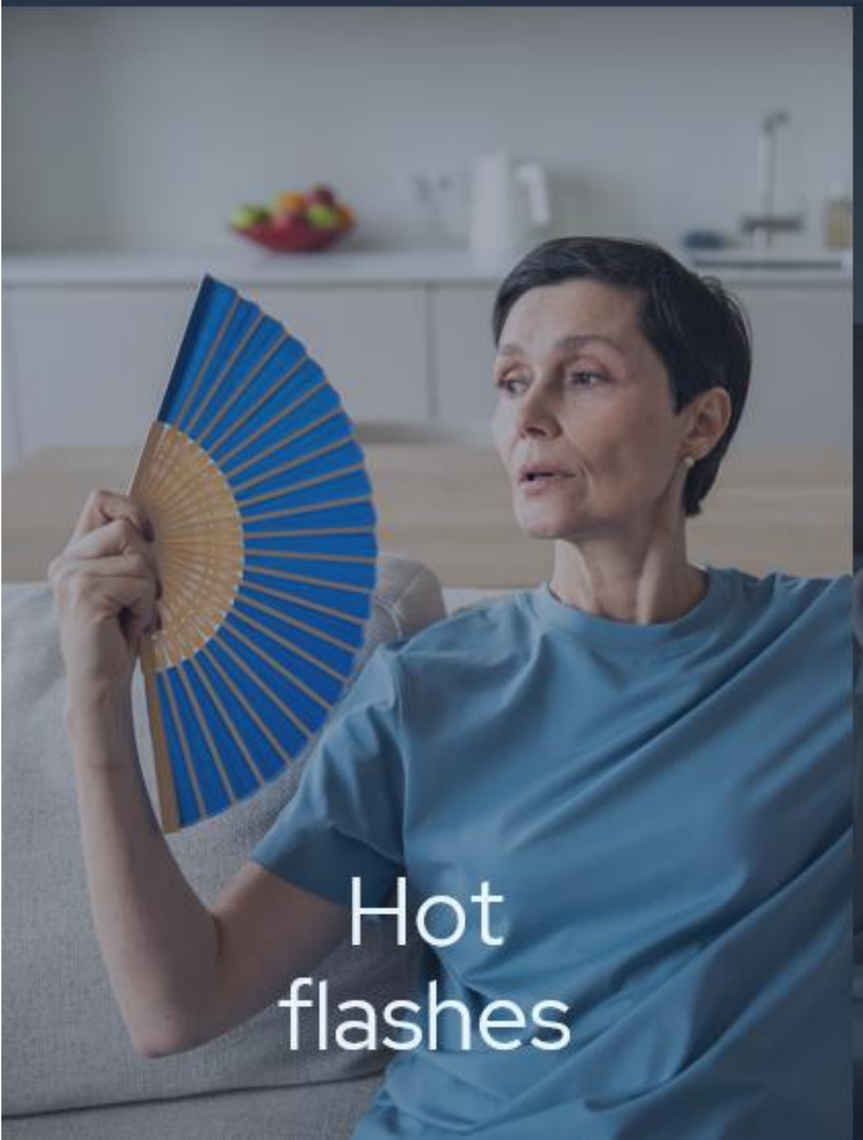
APOE-4 and MHT influences Alzheimer's risk

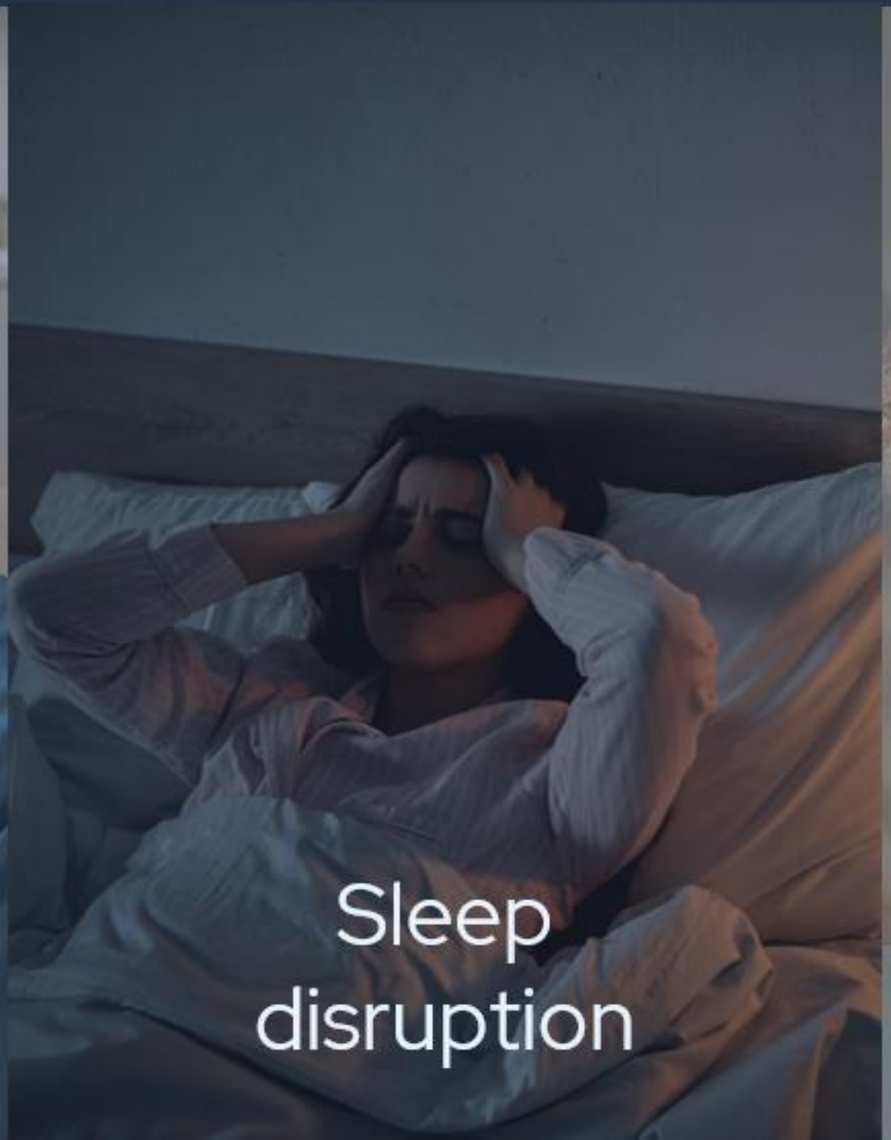
- Women who carry this gene tend to accumulate greater amount of amyloid in midlife
- MHT may protect APOE-4 carriers when started within 5 years of menopause

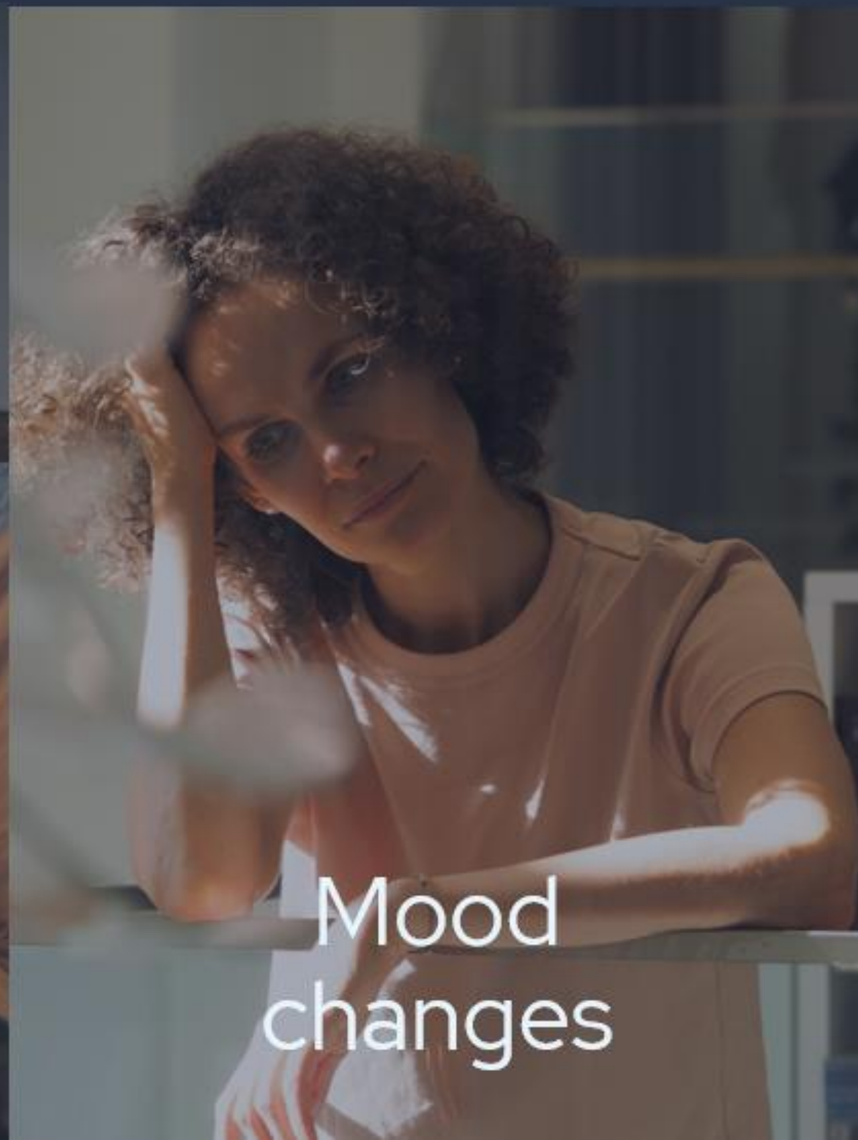


Hormone therapy **has not been proven to prevent Alzheimer's disease,** but timing, formulation, & patient selection may influence long-term outcomes.

HORMONE THERAPY BENEFITS







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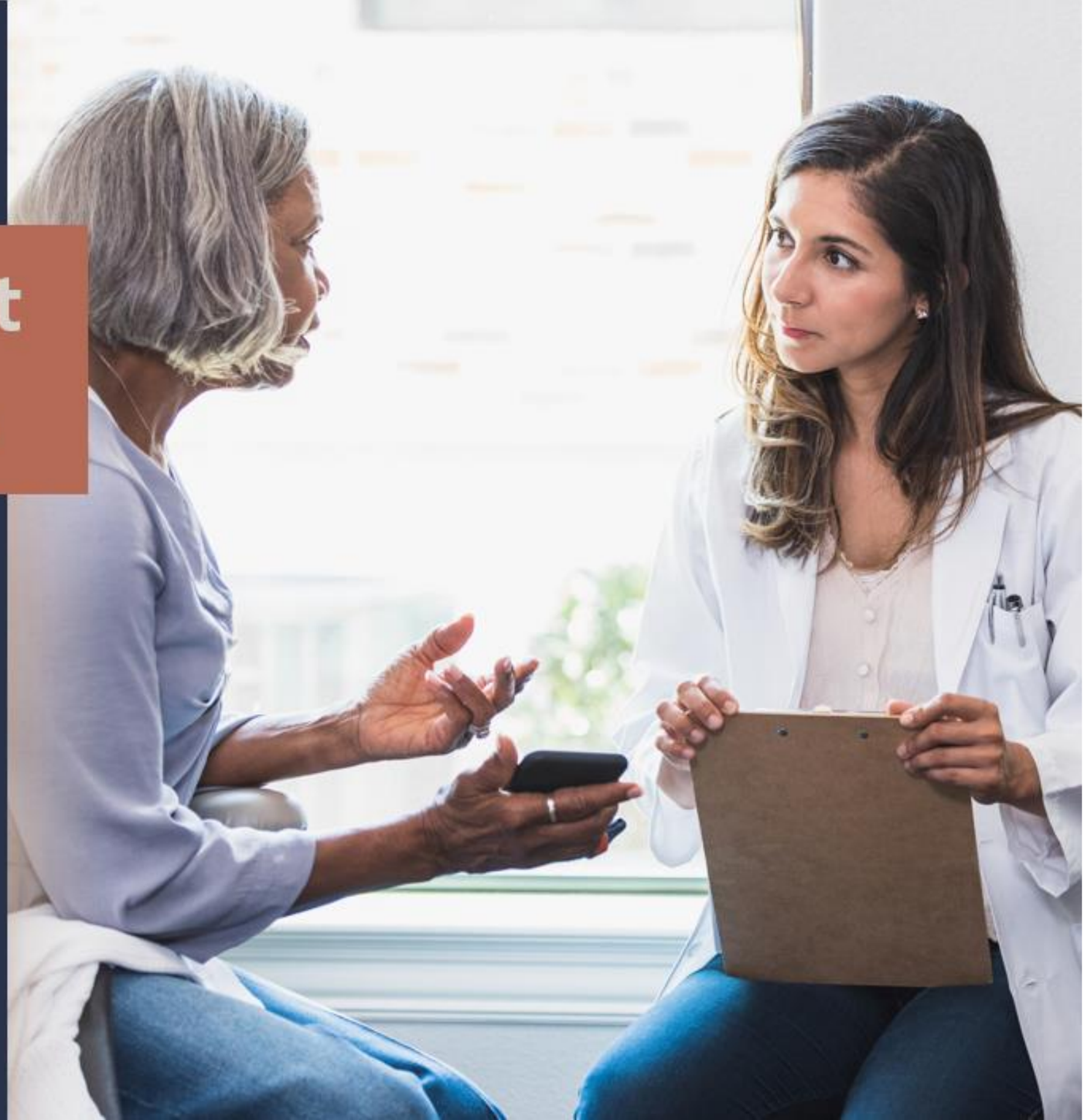
Hormone therapy is not right for every patient.

Individualized decision making is **essential** as all medications have risk and benefits



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LIFESTYLE MATTERS

SLEEP QUALITY

PHYSICAL ACTIVITY

NUTRITION

STRESS RESILIENCE

SOCIAL CONNECTION

Up to

40% of dementia cases

may be preventable through lifestyle & health interventions

8 PILLARS OF BRAIN PROTECTION

Midlife is an Opportunity: Prevention Window

Menopause occurs at the same time cardiometabolic risk factors accelerate:

- insulin resistance
- visceral fat accumulation
- sleep disruption
- vascular changes

KEY TAKEAWAYS

Midlife is an Opportunity: Prevention Window

- Menopause is a neurological transition
- Estrogen plays an important role in brain function
- Timing of hormone therapy matters and should be personalized
- Lifestyle interventions in midlife may be one of the most powerful tools we have to protect long-term brain health

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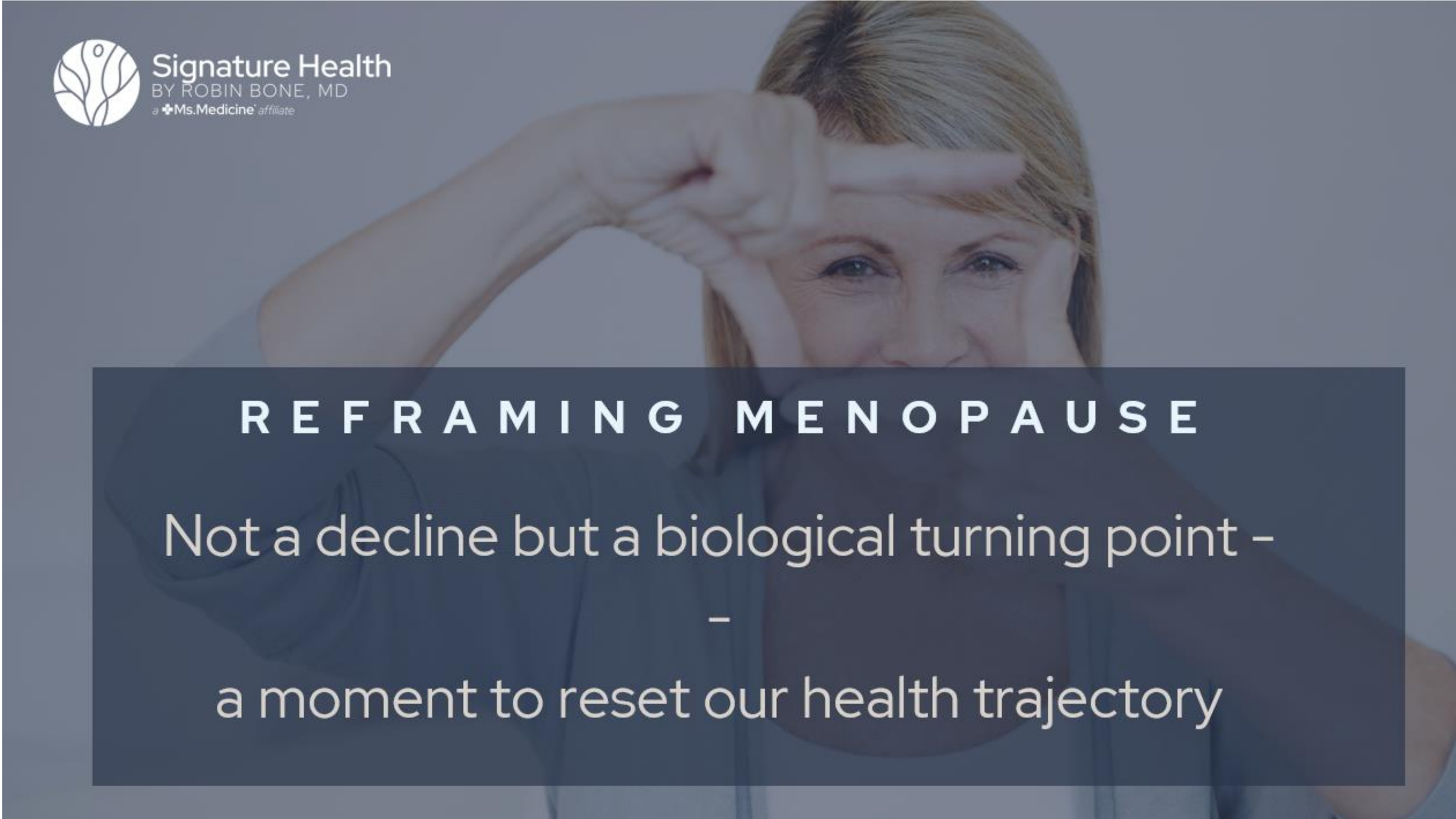
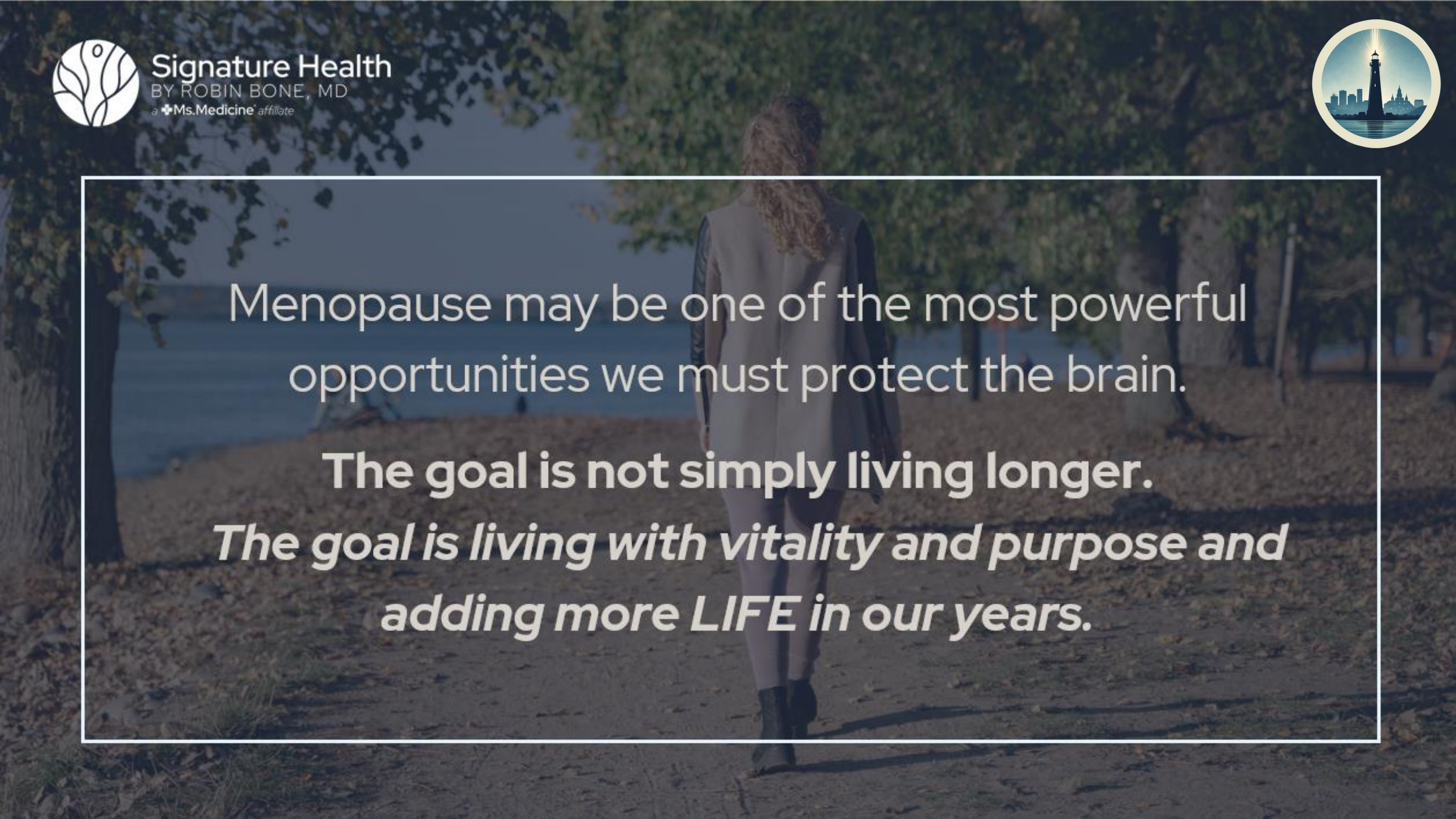


REFRAMING MENOPAUSE

Not a decline but a biological turning point –

–

a moment to reset our health trajectory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Menopause may be one of the most powerful opportunities we must protect the brain.
The goal is not simply living longer.
The goal is living with vitality and purpose and adding more LIFE in our years.

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