Managing Extreme Fatigue

About Me:

Roselle P. O'Brien,

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Education:

- PhD in Psychology specializing in Mast Cell Activation Issues & Disorders---Current Candidate
- MA in Clinical Mental Health Counseling
- MA in Education
- MFA in Creative Writing
- BA in Art/Fine Arts, Education
- Diploma Nursing

Licenses/Certification:

- Licensed Mental Health Counselor (LMHC)
- Licensed Clinical Mental Health Counselor (LCMHC)
- Licensed Nurse
- Licensed Educator
- Intermodal Creative Arts Therapist (ICAT)
- Intermodal Creative Arts Facilitator (ICAF)

About Me: (cont'd)

Licenses/Certification (cont'd):

- Registered Expressive Arts Therapist (REAT)
- Registered Expressive Arts Consultant/Educator (REACE)
- Certified Life Coach
- Certified Health & Nutrition Life Coach
- Certified Therapeutic Arts Life Coach

Certificates:

- Eco-Health Support: Medical Professional
- Eco-Health Support: Therapist

The Eco-Health Certificate Programs are for understanding and working with people who have Mast Cell Disorders (MCD) such as Mast Cell Activation Syndrome (MCAS), Post-/Long-COVID, being sensitive to multiple chemicals, chronic fatigue, brainfog, EDS, fibromyalgia, and more.

For more information: https://celacareonline.us

The Work I Do:

Roselle P. O'Brien,
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Health & Wellness – Therapy – Life Coach
Creative Arts for Health & Healing – Supporting you!

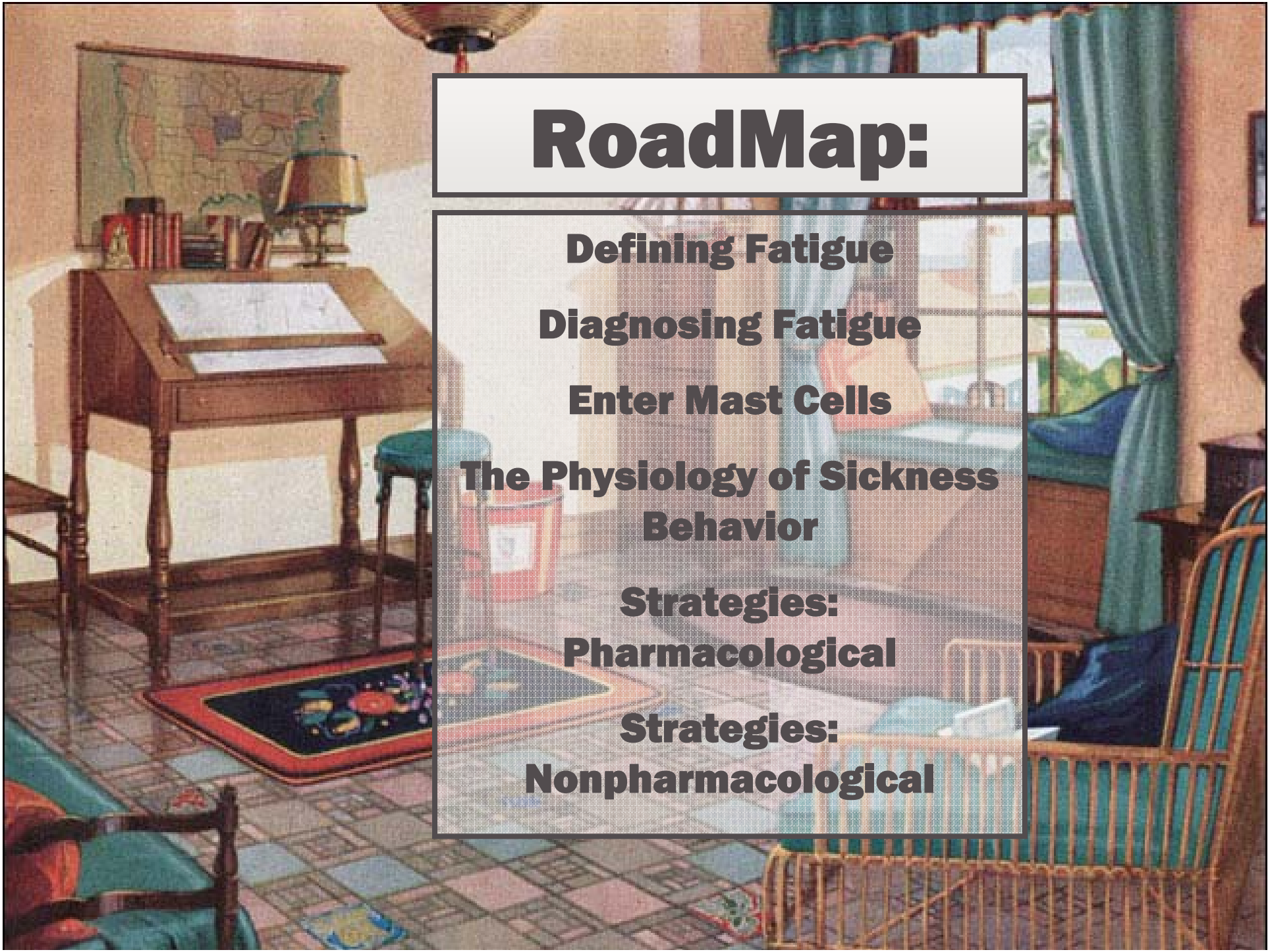
I am a mast cell specialist with over 13 years of experience working with and supporting individuals with MCAS and other mast cell activation related issues and disorders. Visit the website and learn more:

CELACare Eco-Health, Inc.

https://midnightmastcells.com

"Each patient carries his own doctor inside him."

-- Norman Cousins



RoadMap:

Defining Fatigue

Diagnosing Fatigue

Enter Mast Cells

The Physiology of Sickness Behavior

Strategies: Pharmacological

Strategies: Nonpharmacological

The Medical Lens: Defining Fatigue

Taber's Cyclopedic Medical Dictionary
An overwhelming, sustained sense of exhaustion and decreased capacity for physical and mental work at the usual level. It also refers to the condition of an organ or tissue where response to stimulation is reduced or lost due to overactivity.

National Cancer Institute
An extreme sense of tiredness and lack of energy that can interfere with a person's usual daily activities. It is specifically noted to involve feelings of being "worn out," "heavy," or "run down."

Mayo Clinic/Cleveland Clinic
A state of extreme tiredness or exhaustion typically resulting from mental or physical exertion or illness. It is differentiated from simple tiredness by its severity and impact on the ability to function.

Oxford University Hospitals NHS
An abnormal sense of tiredness or lack of energy that is out of proportion to the degree of daily effort or disability.

NHS CKS
An unpleasant physical, cognitive, and emotional symptoms described as tiredness not relieved by common energy-restoring strategies. It varies in intensity and reduces the ability to perform usual daily activities.

NHS Main Website
An overwhelming tiredness that is not relieved by rest and sleep and may indicate an underlying medical condition.

MedicinePlus (NIH)
A feeling of weariness, tiredness, or lack of energy that can be a normal response to physical activity or stress, but is abnormal when it interferes with daily life and is not relieved by sleep.

Defining Fatigue (cont'd)

Core Medical Definitions

- **Symptomatic Definition:** an extreme sense of tiredness and lack of energy that interferes with a person's ability to perform usual daily activities
- **Physiological Definition:** a state where energy expenditure exceeds restorative processes, resulting in a reduced efficiency of accomplishment and a decreased capacity for work
- **Clinical Coding:** under the ICD-10 (R53.83) it is classified as a symptom under "Symptoms, signs, and abnormal clinical findings," and is typically used when the exhaustion is not yet linked to a specific underlying disease

Classification by Duration

- **Acute Fatigue** – temporary and self-limiting, often following an infection (like the flu) or intense exertion
- **Prolonged Fatigue** – persistent fatigue lasting at least one month
- **Chronic Fatigue** – persistent or relapsing exhaustion lasting 6 consecutive months or longer

Defining Fatigue (cont'd)

Key Medical Distinctions

In the UK, Key NHS Distinctions:

Tiredness vs. Fatigue: normal tiredness usually has a clear cause (e.g., late night, hard workout) and is resolved by sleep. Medical fatigue persists even after significant rest

TATT: NHS GPs frequently use the acronym "Tired All The Time" (TATT) to describe patients who present with persistent, unexplained exhaustion that has not yet reached a specific diagnosis

Physical vs. Mental: the NHS defines physical fatigue as a temporary inability of muscles to maintain performance, while mental fatigue is a reduction in cognitive performance (e.g., brain fog)

In the US:

Physiological Fatigue: the temporary inability of a muscle or organ to respond to a stimulus because of overactivity (e.g., muscle fatigue from lactic acid buildup)

Subjective Fatigue: person's reported experience of exhaustion, which is a symptom rather than a measurable biological marker

Chronic vs. Acute: fatigue is typically categorized by duration; acute fatigue is relieved by rest; chronic fatigue persists for 6 months or longer regardless of rest

Diagnosing Fatigue

Fatigue

In medical practice, fatigue is primarily classified as a *symptom* rather than a standalone syndrome. Diagnostic criteria focus on its duration, intensity, and the exclusion of other medical causes. In clinical coding (ICD-10), it is distinguished from normal tiredness by its persistence and impact on a person's ability to function.

Diagnostic Criteria for Fatigue

Primary definition – (subjective experience): an overwhelming, sustained sense of exhaustion and decreased capacity for physical and mental work. It clinically presentations as difficulty or inability to initiate or maintain activity, which is often accompanied by a lack of energy and motivation.

Mandatory criteria – pathological threshold: unlike normal tiredness, fatigue is not proportional to recent activity and is not reliably relieved by rest or sleep. It must interfere with usual functioning and daily life roles.

Duration classifications:

1. **Acute Fatigue** – temporary tiredness with a quick onset and short duration, usually following exertion and relieved by rest
2. **Prolonged Fatigue** – fatigue lasting at least 1 month but less than 6 months
3. **Chronic Fatigue** – persistent or relapsing fatigue lasting 6 consecutive months or longer

Exclusionary Requirements – medical rule-out: to be coded as "Other Fatigue" the exhaustion must not be a direct symptom of another primary medical condition (such as anemia/iron deficiency, thyroid disorders, organ failure (heart, kidney, liver disease), sleep disorders (e.g., sleep apnea), psychiatric disorders (e.g., major depression)

Diagnosing Criteria:

Chronic Fatigue Syndrome

Strict Exclusionary Rule: must rule out all alternative medical/psychiatric causes (e.g., anemia, major depression)

Mandatory Symptoms (Required):

- New onset, persistent/relapsing fatigue for 6 or more months
- Substantial reduction in previous levels of activity

Additional Symptoms:
(Mandatory at least 4 of the 8)

1. Impaired memory or focus
2. Sore throat
3. Tender lymph nodes
4. Muscle pain
5. Multi-joint pain
6. New headaches
7. Unrefreshing sleep
8. Post-exertional malaise (PEM)

Diagnosing Criteria:

Myalgic Encephalomyelitis (ME/CFS)

Standard Exclusionary Rule: must exclude other causes; however, comorbidities (like Fibromyalgia or POTS) are accepted alongside the diagnosis.

Mandatory Symptoms (Required):

- Debilitating new onset fatigue for 6 months or more [US] / 3 months or more [UK]
- Substantial impairment in ability to engage in pre-illness activity levels
- Prolonged worsening of symptoms after physical, mental, or emotional effort (hallmark feature)
- Unrefreshing or non-restorative sleep despite a full night's rest

Mandatory (at least one):

- Cognitive impairment (e.g., memory issues, brainfog)
- Orthostatic intolerance (symptoms worsen when upright)

Diagnosing Criteria:

Chronic Fatigue

Duration: the fatigue must be persistent or relapsing for at least 6 consecutive months. Fatigue lasting less than 6 months is classified as "Prolonged Fatigue" rather than Chronic Fatigue.

Physical & Mental Quality: (Nature) an overwhelming sense of tiredness, lack of energy, and a decreased capacity for mental and physical work. Unlike "tiredness," it is not typically resolved by a single period of rest.

Exclusionary Rule: Clinical evaluation – the fatigue must be "unexplained" by any currently identified and treated medical or psychiatric condition. This requires a standard medical workup to rule out:

- Anemia or iron deficiency
- Endocrine disorders (e.g., hypothyroidism, Addison's Disease)
- Chronic infections (e.g., hepatitis, HIV, occult TB)
- Organ failure (e.g., chronic kidney disease, congestive heart failure)
- Autoimmune diseases (e.g., lupus, rheumatoid arthritis)
- Sleep disorders (e.g., obstructive sleep apnea)

Functional Threshold: while it often impairs a person's life, Chronic Fatigue does not strictly require the "Substantial reduction in activity" (e.g., greater than 50% loss of function) that is mandatory for a diagnosis of a syndrome like CFS or ME/CFS.

Differential Requirement: to remain categorized as Chronic Fatigue (and not progress to an ME/CFS diagnosis,) the patient typically lacks the specific neurological hallmarks of PEM and orthostatic intolerance.

Fatigue & its Human Experience

- It's a universal
- It involves a lack of motivation and a lack of energy, sometimes so profoundly experienced that it interferes with a person's ability to do even the simplest tasks that can include personal hygiene tasks such as brushing teeth, bathing, washing your hair
- Brainfog can accompany the fatigue
- Emotional weariness and/or feeling emotionally spent can be a part of the fatigue
- Having a reduced stress threshold which can lead to irritability and impatience
- Many times people experiencing fatigue no longer feel interest or have the energy/ability to engage in hobbies
- Many times people can experience the same lack of interest and/or not having the energy to engage in social situations and social interactions
- And there's **moral fatigue** – exhaustion from the constant, high-stakes, sheer *work* of defending your reality and then always having to "prove it" ("But you don't *look* sick…")
- You just don't have the bandwidth for anything


"For things to
reveal themselves
to us, we need to be
ready to abandon
our views about them."
--- Thich Nhat Hanh

The Roles of Illness

Information from the book, Understanding and Applying Medical Anthropology, by Brown & Barrett (2010)

Every society provides specific "scripts" or social roles for those who are sick and/or involved in a health crisis:

The Sick Person/The Sick Role

The Healer

The Supportive Friend/Family

The Roles of Illness

Information from the book, Understanding and Applying Medical Anthropology, by Brown & Barrett (2010)

The Sick Person/The Sick Role – "sick" is a socially recognized status with specific rights and obligations. The person is temporarily excused from normal responsibilities, such as work or household chores. The person is generally not held responsible for their condition. In exchange for these privileges, the sick person is expected to view their state as undesirable and must actively "try to get well." The person is obligated to seek technically competent assistance and cooperate with the prescribed treatment.

The Healer – the healer's role is defined by social contract with the community and with the patient. Healers are granted the authority to diagnose and treat based on their mastery of a specific system and understanding of health, illness, healing shaped by its traditions, beliefs, and environmental contexts. Society expects the healer to use their skills to return the patient to a "normal" productive state. Healers often navigate different cultural meanings of illness to provide care that makes sense to the patient.

The Supportive Friend/Family – illness is rarely and individual event; it involves a therapeutic process that includes the patient's social network. Family members often act as the first line of diagnosis, helping to decide if person is legitimately sick enough to adopt the sick role. Friends and family provide the social support system offering advice on what healers to visit. They take on the responsibilities the sick person can't perform such as household chores or caregiving.

The Roles of Illness

Information from the book, Understanding and Applying Medical Anthropology, by Brown & Barrett (2010)

The healer and/or the supportive friend or family member, if it's after the acceptable time-limit set by society for the sick person to get well, can decide that the sick person is malingering and remove their support.

The sick role is a temporary, conditional social contract.

When a person exceeds the socially allotted time for recovery, the dynamics of the relationship shift from empathy to suspicion.

Malingering – faking or exaggerating illness to avoid social responsibility.

Social punishment: once labeled a malingerer, the person loses the "exemption" privilege.

Moral judgment: the condition shifts from being a biological misfortune to a moral failing. The person is no longer sick. They are "lazy" or "manipulative."

Healer's dilemma: they rely on objective data to validate the sick role. If a healer cannot find a biological cause (like in Chronic Fatigue Syndrome or fibromyalgia) they may feel their professional authority is being challenged. To protect the boundaries of "true" illness, a healer may discharge the patient or suggest the issue is "all in their heads," effectively withdrawing the social legitimacy required for the sick role.

The Roles of Illness

Information from the book, Understanding and Applying Medical Anthropology, by Brown & Barrett (2010)

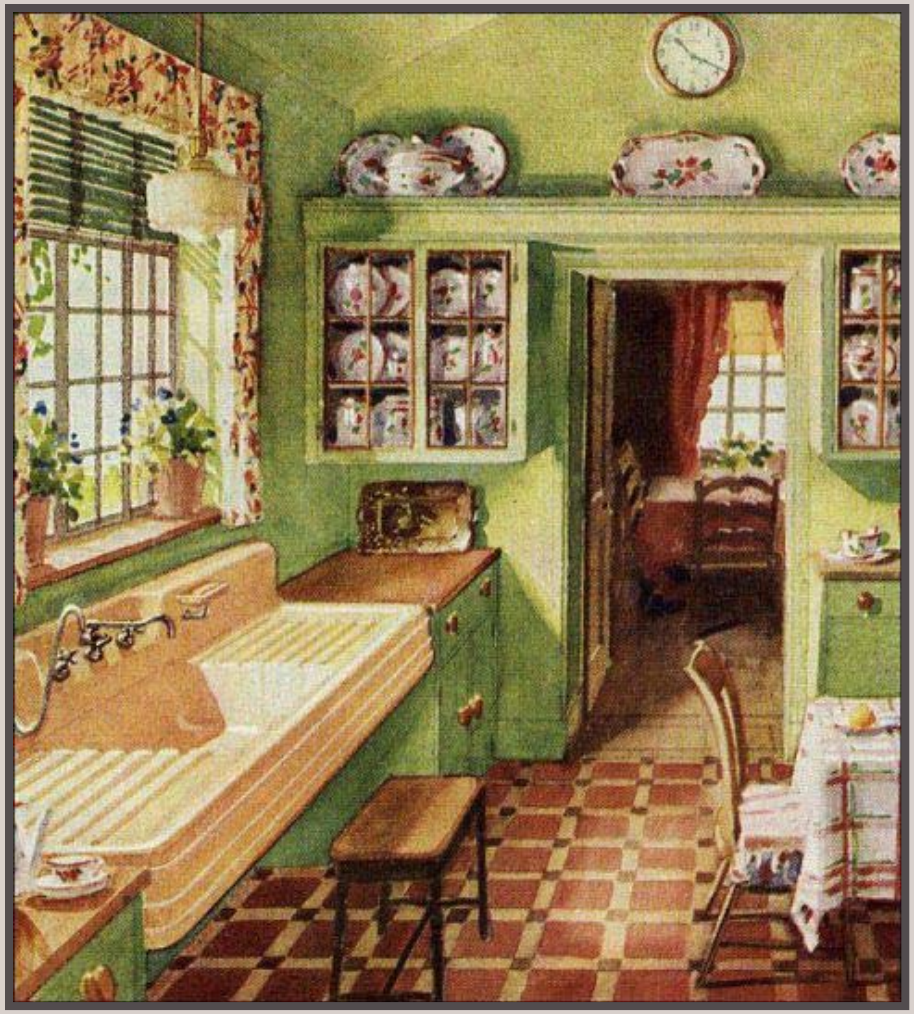
Chronic illness creates a "structural misfit" by rendering the traditional "sick role" obsolete due to the condition's permanence Patients become "permanent deviants" who fail to "get well," while healers face frustration in managing conditions they cannot cure, and caregivers endure burnout as temporary support becomes a permanent, taxing role.

The Sick Person – enters a state betwixt and between where they are neither healthy nor "temporarily sick." Because they can't return to their normal, productive roles, they often face a "diminished self" and must navigate long-term social stigma.

The Healer – their role shifts from "curer" to "manager." If the healer can't provide a definitive cure or even a clear diagnosis (as in cases of chronic pain or fatigue) they may withdraw legitimacy leading to the malingering label.

Family and Friends – because the time-limit for temporary exemption from chores or work is exceeded, Family members may eventually resent the patient, viewing the illness as a permanent drain on the group's resources.

Enter Mast Cells



Mast Cells & Fatigue

When looking through a medical lens, (that aligns with consensus-2,) fatigue is no longer tiredness. It becomes a systemic neuro-inflammatory event. In the world of non-mastocytosis mast cell activation related disorders, fatigue is often the primary symptom of an acute mast cell activation flare. Mast cell activation related issues and disorders (like MCAS, long COVID, POTS, EDS, fibromyalgia) uniquely intensify and alter the experience of fatigue.

- The hundreds of mediators mast cells dump into the body when they degranulate creates a massive inflammatory load that the body has to process. People can experience this as a sudden shutdown where the brain feels like it is being drugged or sedated after exposure to a trigger

- Chronic activation means the immune system is essentially running a marathon while sitting still, creating a state of cellular energy depletion that regular sleep can’t repair

- The fatigue people with MCAS or other mast cell activation disorder experience is rarely from a single source. It is the result of multiple systems simultaneously failing to regulate.

Mast Cells & Fatigue

Examples of the Multiplier Effect:

Fatigue & POTS
It augments fatigue through the heart overworking to maintain blood flow to the brain against gravity. The person can experience this as physical gravity feeling 3x stronger than normal.

Fatigue & hEDS
It augments fatigue through muscles being constantly guarded and working overtime to stabilize loose Joints. The person can experience this as waking up feeling like they've been hit by a truck.

Fatigue & Fibromyalgia
It augments fatigue through central sensitization keeping the nervous system in a state of high alert. The person can experience this as feeling as if every nerve ending is shouting and draining their battery.

Fatigue & Interstitial Cystitis
It augments fatigue through chronic pelvic inflammation and disrupted sleep cycles. The person can experience this as having fragmented sleep combined with baseline internal burning.

https://pmc.ncbi.nlm.nih.gov/articles/PMC11367101/

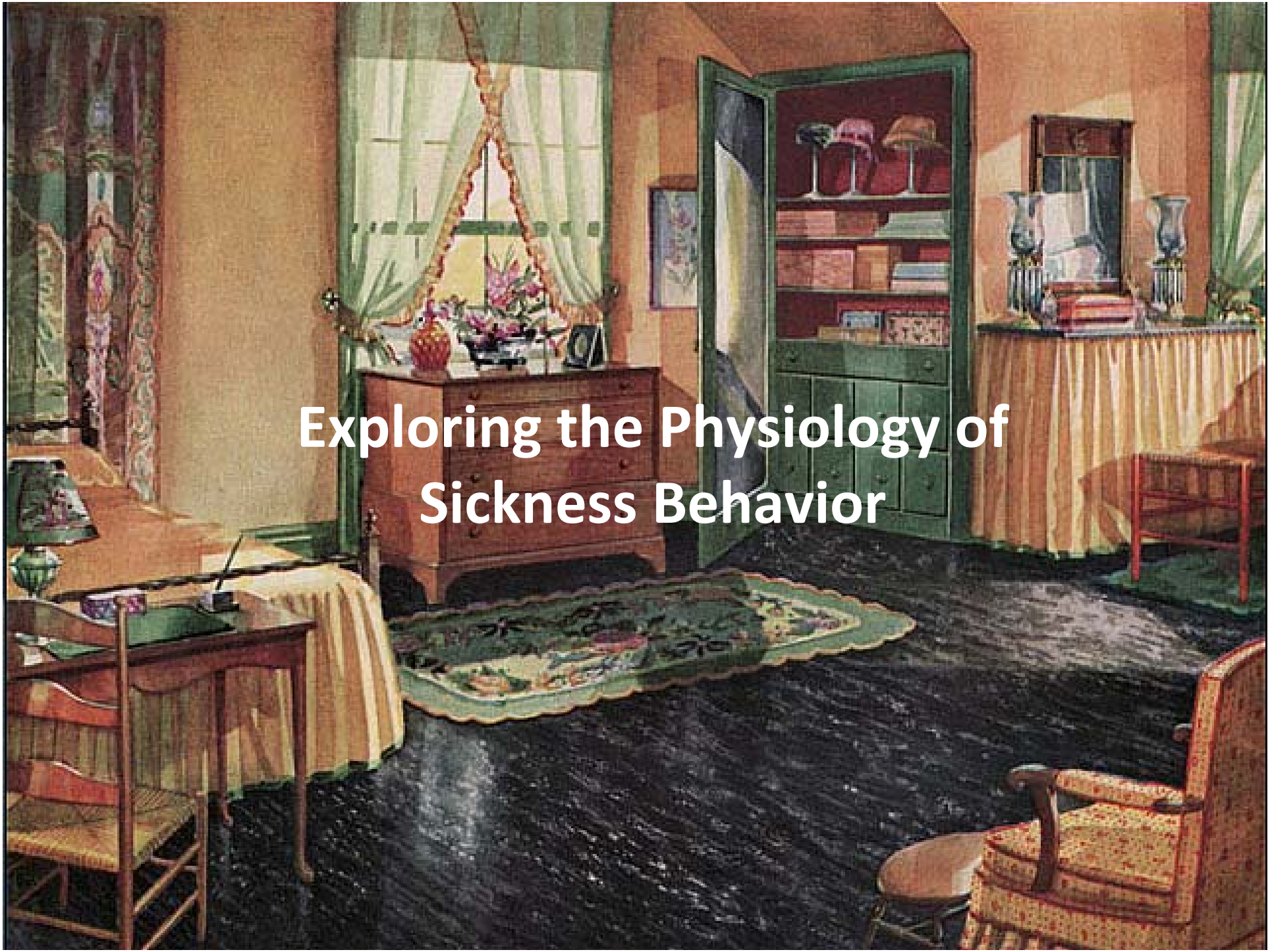
Mast Cells & Fatigue

The System Load Narrative Summaries:

"I am experiencing a multisystemic inflammatory flare characteristic of my Mast Cell Activation Syndrome (MCAS). This is not "tiredness" in the traditional sense; it is a biochemical shutdown caused by massive release of inflammatory mediators into my bloodstream and nervous system."

"My battery is not just low; the charging mechanism is temporarily broken. Pushing through this isn't a matter of will power—doing so causes further mediator release which will extend the duration of this crash. I need a period of metabolic rest to allow these chemicals to clear my system so I can return to my baseline."

But that's just one take on it and only part of what's happening....


Exploring the Physiology of
Sickness Behavior

What is Sickness Behavior?

Sickness behavior is a coordinated set of adaptive behavioral changes that includes extreme fatigue, decrease in appetite, and social withdrawal that occur during an infection or inflammatory state.

It is a survival strategy designed to conserve energy and redirect it toward the immune system to fight off pathogens.

It is an ancient whole body response--think of it as an ancient software program—that humans share with almost all vertebrates (with birds, fish, mammals.) It's not a new human behavior. It's a strategy that 's been refined over eons.

Its roots are prehistoric. It is the "stay still and rest" strategy that has become hardwired into the brain.

The vagus nerve, which runs between the GI tract/immune system and the brain, is one of the oldest parts of our anatomy and relays sickness behavior response signals.

When you feel the extreme fatigue, it's your ancient survival software trying to save your life. Your brain thinks there's a prehistoric threat it needs to fight, and it's locking you onto the couch (or bed) to save power.

Mast cells are key players in the cell to cell communication that triggers the sickness behavior response...

Sickness Behavior Triggers

Pro-inflammatory cytokines – (interleukins such s IL-1beta, IL-6, TNF-alpha) that are produced by the immune system.

Pro-inflammatory cytokines are signaling proteins released by different immune cells (e.g., microphages, dendritic cells, and T cells.) They act as critical messengers in the immune system, initiating and amplifying the inflammatory response to help eliminate threats. They communicate with the brain to alter central nervous system (CNS) functions, specifically affecting areas involved in motivation and effort.

It is usually a short-term response.

Becomes chronic and maladaptive with certain conditions such as:

- ME/CFS
- Autoimmune diseases (e.g., arthritis, lupus, rheumatoid arthritis)
- Ongoing inflammatory conditions
- Long COVID

Mast Cells & Sickness Behavior Response

Mast cells are central amplifiers of the sickness behavior response. They act as both a sensor and a source of the inflammation that triggers extreme fatigue. Mast cells are uniquely hard wired into the nervous system.

Mast cells reside in the brain so they don't have to travel to get there. They are strategically located in areas that control sleep and energy and that process pain.

Peripheral mast cells get triggered (by stress, toxins, a virus) and release mediators like VEGF which can make the blood-brain-barrier (BBB) "leaky." This allows inflammatory signals to flood into the brain easily, turning on the sickness behavior response.

Of the hundreds of mast cell mediators that are released when mast cells become activated and degranulate, several are direct triggers for the sickness behavior response: pro-inflammatory cytokines; histamine; prostaglandins (specifically PGE2 and PGD2) which act as a bridge between the immune system and the brain.

PGE2 is considered primary driver of fever and anorexia, and can cross the BBB to directly flip the sickness behavior "switch" on.

PGD2 is known as a major sleep-promoting factor. High levels are linked to irresistible , heavy sleepiness that defines the sick behavior response.

Mast Cells Mediators & Sickness Behavior Response

More mast cell mediators & sickness behavior response:

Leukotrienes
Research suggests leukotrienes are tied to chronic neuroinflammation, cognitive impairment, and profound fatigue.

Tryptase
Creates a cycle that maintains extreme fatigue.

Serotonin
Sudden bursts of serotonin in wrong places can disrupt mood and motivation as part of the sickness behavior response.

Neuropeptides
Like corticotropin-releasing hormone (CRH) can disrupt the body's stress response system leading to feelings of exhaustion and burnout even when a person's not physically active.

Things to Remember:

Mast cells are found in all vascularized tissue (tissues that contain a network of blood vessels used to transport things like oxygen), especially at the boundaries of the human body and the environment (the skin, GI tract and stomach/digestive system, respiratory system, central nervous system (the brain) which is why mast cell activation symptoms appear to be happening everywhere and all at once.

Vagus nerve connection – mast cells sit directly next to nerve endings. When mast cells misfire, the send their signals up the vagus nerve to the brain, triggering the sickness behavior response—fatigue and brainfog—linking body symptoms with brain symptoms.

Fatigue – it's **not** a breakdown or lack of energy. It's an active, resource-intensive physiological state. The brain is deliberately locking the body into low-power mode to prioritize immune survival. It's an investment not a deficit.

Mast cells are the only immune cells hardwired into the vagus nerve.


Strategies: Pharmacological

Strategies: Pharmacological

To address fatigue in Sickness Behavior Response, pharmacological interventions focus on stabilizing mast cells and blocking the inflammatory mediators they release when activated.

H1 & H2 receptor blockers –such as fexofenadine (Allegra), diphenhydramine, Zyrtec, famotidine, Zantac/Pepcid, block receptors to reduce symptoms. Second generation H1 receptor blockers are often preferred over first generation to avoid adding to the fatigue as many first generation H1 choices make you drowsy and add to the fatigue.

Mast cell stabilizers – such as cromolyn sodium/sodium cromolgate, ketotifen

Leukotriene inhibiters – such as montelukast (Singulair) which block specific inflammatory pathways

Low-dose naltrexone (LDN) – prescribed by some doctors; modulates immune activity potentially improving fatigue and cognition

Aspirin – under medical supervision, low doses can block prostaglandin D2 (PGD2)

NOTE: above medication information provided for educational purposes only. It is not in any way medical advice and should not be taken as such. Please see a doctor or other qualified healthcare professional to discuss your needs and if you desire medications to help manage your symptoms.


Strategies:
Non-Pharmacological

Strategies: Non-Pharmacological

NOTE: *the non-pharmacological information provided is for educational purposes only. It is not in any way medical advice and should not be taken as such. Please see a doctor or other qualified healthcare professional to discuss your health needs and if you desire using any of these strategies.*

Vagus Nerve Focused

Scientists have identified specific neural circuit called the Cholinergic Anti-inflammatory Pathway (CAP). When the vagus nerve is active, it releases acetylcholine which directly binds to receptors on immune cells—including mast cells—to inhibit the release of the very mediators that drive Fatigue.

Vagal Tone Strategies

- **Slow, resonant breathing** – at a rate roughly 5.5 breaths per minute increases heart rate variability (HRV) and stimulates vagal efferent fibers which can lower circulating cytokine levels over time
- **Yoga & Meditation** – have been shown to increase vagal tone and inhibit the production of pro-inflammatory cytokines, acting as a biological “reset” for the sickness behavior response
- **Respiratory vagus nerve stimulation** – inhale for 4 seconds, exhale for 6-8 seconds. This extended exhale signals the brain that the perceived danger is gone, shifting the body from the sickness behavior response/defense (sympathetic nervous system) to the “repair” mode (parasympathetic nervous system) effectively shutting the “switch” off

Strategies: Non-Pharmacological (cont'd)

Somatic Movement (Non-Exertional Model)

These are not "fitness exercises" but rather neurological signaling designed to shift the body out of sickness behavior response mode. These are movements with the goal of providing enough sensory input to calm the nervous system without crossing the threshold into mast cell activation and/or post-exertion malaise. Somatic work is manually inputting "safety" signals into the nervous system without triggering/retriggering mast cells.

These focus on proprioception (knowing where your body is in space) which provides safety signals to the brain:

- **Restorative Yoga with Props** – hold poses for 5 to 20 minutes to trigger the parasympathetic nervous system (rest & digest mode)

- **The Somatic Shake** – very gently, rhythmic shaking of the limbs while seated or lying down. This mimics the natural tremoring animals do after a threat. It helps discharge Substance P and adrenal buildup without the metabolic cost of a workout

Proprioceptive Input – The Safety Signal (can lower cortisol, the stress hormone, & histamine)

- Weighted blankets
- Compression

Strategies: Non-Pharmacological (cont'd)

The Ocular-Vagal Reset (Standard Variation)

Lie comfortably on your back or sit upright. Interlace your fingers and place your hands behind the base of your skull. Keep your head perfectly still, facing forward. Without moving your head, shift your eyes as far to the **right** as is comfortable. Maintain this position for **30 to 60 seconds**. Look for a physical sign of a "reset," such as a spontaneous yawn, sigh, or swallow. Return your eyes to the center for a moment, then repeat the process by looking to the **left**. This forces the muscles at the base of the skull to relax, which sit directly over the exit point of the vagus nerve.

Convergence & Divergence (The Visual Reset)

Hold a pen or your finger at arm's length. Slowly bring the object toward the bridge of your nose while keeping it in sharp focus. Stop 4–6 inches from your nose—or just before the image doubles—and hold for **10–30 seconds**. Look for the "reset sign" (yawn or sigh) while maintaining the close focus.

Gargle & Hum

Gargling water vigorously or humming a low, vibrant tone in the back of the throat. The vagus nerve control the muscles of the larynx and pharynx. Manual vibration of these muscles sends a direct “all-clear” signal to the brainstem to inhibit mast cell degranulation.

Strategies: Non-Pharmacological (cont'd)

Singing

Singing is a high-output vagal stimulant that is technically superior to humming in several physiological ways. It is a dual action somatic intervention because it combines mechanical vibration with forced respiratory regulation.

When you sing, the vocal cords vibrate at specific frequencies which creates a mechanical oscillation that travels up the vagus nerve to the brainstem. The resulting signals that get sent back to the brain informs that the airway is open and the organism is safe enough to produce complex sound, which inhibits the sickness behavior response.

In the sickness behavior state, the body is in Defense/Isolation mode. Singing, especially melodic singing, requires coordination of the middle ear muscles, face muscles, and the vagus nerve.

By engaging these muscles, you are sending an override message to the brain that says, "We are in social engagement mode not survival mode. This can override the sickness behavior signals driven by mast cell cytokines.

Strategies: Non-Pharmacological (cont'd)

Foods

To ease the extreme fatigue of the sickness behavior response, you should prioritize foods that target microglial activation (brain inflammation) and provide sustained mitochondrial fuel.

Neuro-Anti-Inflammatory
Sickness behavior is driven by pro-inflammatory cytokines that "inflame" the brain. These specific foods help dampen that response:

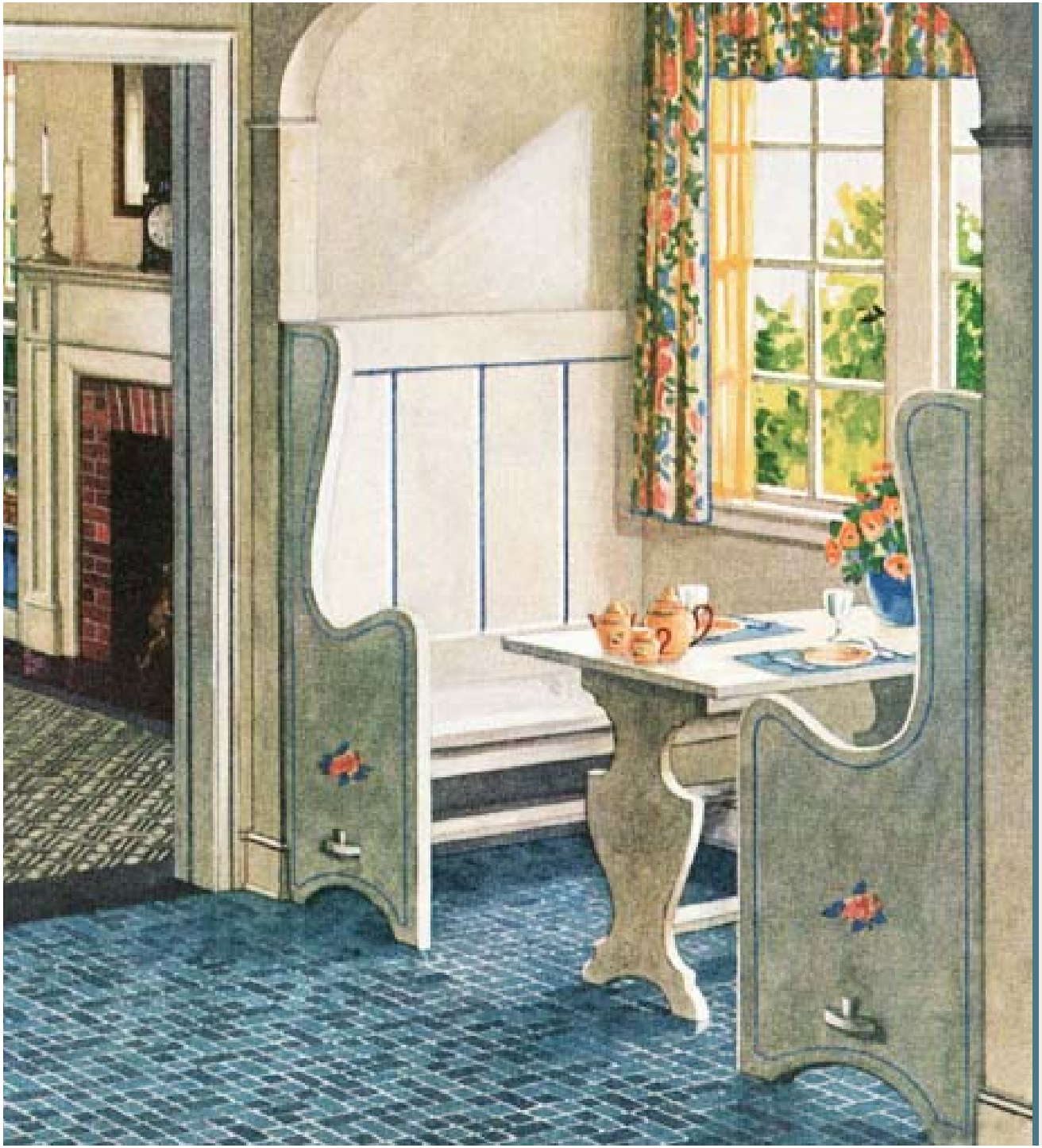
- **Berries (Blueberries, Cherries)**: Contain high levels of polyphenols and anthocyanins that cross the blood-brain barrier to reduce the neuroinflammation causing "brain fog" and lethargy.
- **Fatty Fish (Salmon, Sardines, Mackerel)**: Rich in Omega-3 fatty acids (EPA/DHA), which directly compete with the pro-inflammatory omega-6 fats that often exacerbate fatigue in conditions like ME/CFS.
- **Turmeric + Black Pepper**: Curcumin is a potent inhibitor of the pathways that trigger sickness behaviors.
- **Extra Virgin Olive Oil**: Provides oleocanthal, which acts similarly to anti-inflammatory medication to "cool" systemic inflammation.

Strategies: Non-Pharmacological (cont'd)

Foods (cont'd)

Mitochondrial & Energy Support
When you feel "weighted down" by fatigue, your cells struggle to produce ATP (energy).

- **Chia Seeds & Flaxseeds:** Provide a steady release of energy and are excellent plant sources of Omega-3s.
- **Dark Leafy Greens (Spinach, Kale):** High in lutein and iron, which help fight fatigue by improving blood flow and protecting brain cells from oxidative stress.
- **Magnesium-Rich Foods (Almonds, Pumpkin Seeds, Legumes):** Magnesium is essential for converting glucose into energy; a deficiency often mimics the "heavy" feeling of sickness.
- **Bananas:** Offer a quick but balanced hit of potassium and complex carbohydrates to support muscle and heart energy.



"Suppose you are drinking a cup of tea. When you hold your cup, you may like to breathe in, to bring your mind back to your body, and you become fully present. And when you are truly there, something else is also there - life, represented by the cup of tea.

In that moment you are real, and the cup of tea is real. You are not lost in the past, in the future, in your projects, in your worries. You are free from all these afflictions. And in that state of being free, you enjoy your tea.

This is the moment of happiness, and of peace."

--- Thich Nhat Hanh

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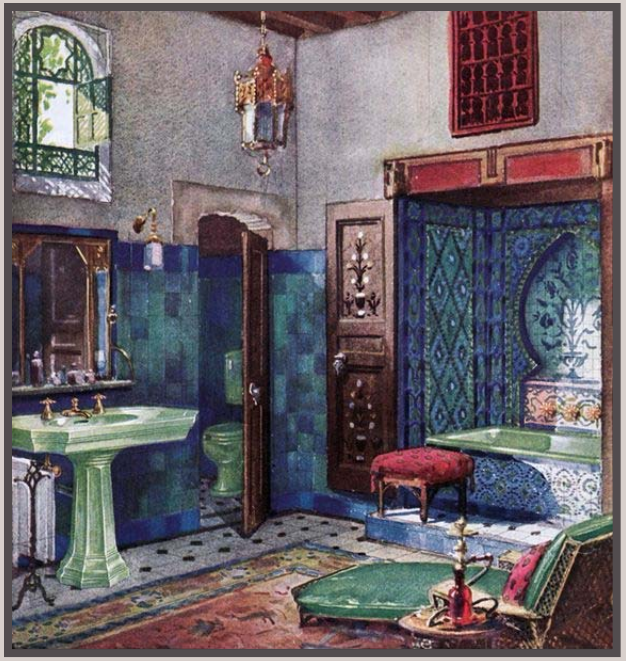

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