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TREATMENTS:
MEDS,
REACTIONS,
&
BEING BRAVE
TO TRY

About Me:

Roselle P. O'Brien,

LMHC, REAT, REACE, ICAT, LPN

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,

LMHC, REAT, REACE, ICAT, LPN

**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>

RoadMap:

Mast Cells · Triggers &
Reactions · Individuality
of Health · Treatments ·
Medications · Strategies



Mast Cells

Mast cells are:

- White blood cells
- Located in the connective tissue throughout the entire body
- In every organ system including the brain
- Part of the body's immune response
- Part of the body's inflammatory response
- The body's 1st responders to perceived dangers and threats

What they do:

- Body's 1st line of defense against perceived dangers or threats
- Help protect the body against things like bacteria and viruses; adapt to the specific danger they encounter (adaptive immune response)
- Regulate blood pressure, heart function, wound healing
- Regulate the body's inflammatory response
- Regulate most hormones in the GI tract influencing weight gain and loss
- Directly activate pain nerve fibers; induce pain; headache; chronic pain
- & more

Mast Cells

Mast cells live in the body's connective tissues.

Defining tissue:

In the body, “tissue” is a group of cells that share general functions and, together, form organs and other body parts.

The four different types of tissues:

- Epithelial tissue
- Nervous tissue
- Muscle tissue
- Connective tissue

What connective tissues do:

- Support organs and cells
- Transport nutrients and wastes
- Defend against pathogens
- Store fat
- Repair damaged tissue

Mast Cells

“Connective tissue” is the catchall term used for tissues that hold your body together and link its different parts. Connective tissue is essential to maintain the structure of the body. There are different forms of connective tissue nearly everywhere in the body.

Connective tissues:

- Form vital connections, supports, and links that our body systems need to work together
- Are literally what hold the body together
- Take many forms, not always obvious ones, and do jobs you might not expect

Mast Cells

Things we don't think of as tissue or as connective tissue:

Bones

We tend to not think of bones as tissue, but bones are made of hard, strong tissue that gives the body its shape and helps us move. Bones are made out of specialized connective tissue.

Blood

Technically, blood is a fluid connective tissue. Blood links nearly all parts of the body in some way, which means it counts as a connective tissue.

Cartilage

Cartilage is a key connective tissue. It is essential for linking and supporting key parts throughout the body.

Ligaments & Tendons

These are both connective tissues. Ligaments link bones to bones and help stabilize joints. Tendons link muscles to bones.

Sclera

The white of the eye is a type of dense, fibrous connective tissue (that is continuous with the connective tissue of the cornea.)

Triggers & Reactions



Mast Cell Activation

Mast cell activation in 4 steps:

Step 1: Activation

The mast cells have encountered a perceived threat or possible danger. First, they're sensitized (*is there really a danger here?*) then—**bang!**—they're activated;

Step 2: Degranulate

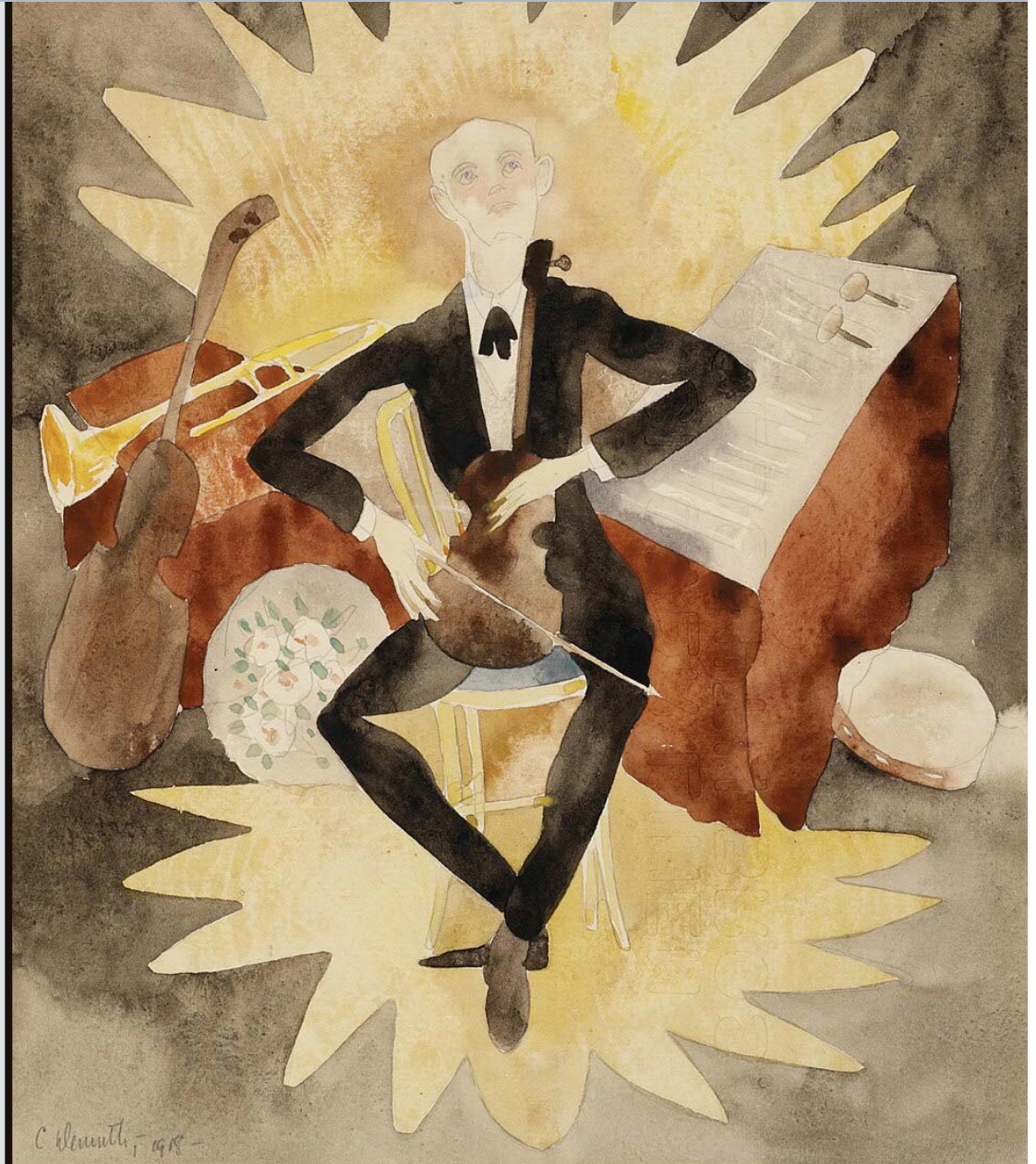
The activated mast cells degranulate, they crumble;

Step 3: Mediators

The degranulating mast cells pump out hundred of mediators (chemicals) into the body. These mediators flood the body;

Step 4: Receptors

When mast cell-specific mediators hit their mast cell receptors ("doors") those substances get in and interact with the body, bringing on reactions.



Triggers



Individuals with MCAS or other mast cell activation related issue or disorder can experience mild to severe reactions from being exposed to often very small amounts of chemicals and other substances or environments.

These chemicals and substances are referred to as triggers. They “trigger” and/or bring on mast cell activation and the release of mast cell mediators, which lead to the reactions that people experience.

The chemicals and substances to which a person can react vary from person to person, as do the specific reactions. However, each person will react consistently to their triggers.

Triggers

A partial list of triggers includes but is not limited to:

Chemicals and substances	Shampoos and conditioners	Physical activity/exertion
Plastics	Hair sprays/gel/mousse	Stress (physical/emotional/cognitive)
Metals	Soaps, lotions, bath gels	Intense emotions (positive/negative)
Wood	Personal care products	Temperatures (hot/cold)
Paint, finishes, shellac	Make-up and cosmetics	Biological substances (e.g., mold)
Inks and dyes	The chemicals that make the scents	Preservatives in food
Exhaust fumes (car/truck/machinery)	in products	Preservatives in medications
Cigarette/cigar smoke	Air fresheners, room deodorizers	Additives in food
Detergents (household & laundry)	Carpet refreshers	Additives in medications
Fabric softeners & dryer sheets	Car trees	Flame retardant chemicals (found
Disinfectants	Air conditioners	on bedding, mattresses, clothing,
Hand sanitizer	Gas and oil heating systems	furniture, carpeting)
Petroleum products	HVAC systems that recirculate air	New clothing
Carpet refreshers	Electrical items being on	New bedding
Adhesives/glue/solvents	Electromagnetic fields (e.g., power	Carpet (especially new)
Cooking spices	lines, cell phones, machinery,	Dry cleaning chemicals
Things being cooked	electric generators, electrical	Items that have been dry cleaned
Fruits ripening	appliances)	Getting sick (cold, flu, COVID, etc.)
Fermented foods	Renovation work (interior/exterior)	Having medical procedures
Yeast	Fires burning in people's fireplaces	Having dental procedures
Alcohol	Particle board & bldg materials	Having surgery
Individual food intolerances	Public places (library, stores, offices)	& more

See <https://midnightmastcells.com/what-are-triggers-reactions/>



Reactions

Reactions are the symptoms a person with MCAS or other mast cell activation related issue or disorder can experience after they've been exposed to a chemical, substance, or to an environment to which they react.

Reactions can be mild to severe and life-threatening. They can move incredibly fast and in fractions of seconds be life-threatening anaphylaxis.

Reactions can also be delayed and can happen and intensify hours, days, or even weeks after an exposure to a trigger.

Reactions can last for weeks or longer, leaving the person dizzy, exhausted, in pain, with varying degrees of cognitive impairment, varying degrees of food intolerance, unable to work, and often with lingering GI distress.

Reactions

A partial list of reactions includes but is not limited to:

Nausea, vomiting, diarrhea
Stomach & abdominal pain and cramping
Increased need to urinate/move bowels
Food intolerance
Dizziness
Cognitive impairment
Confusion, disorientation, forgetting
Difficulty concentrating
Brainfog
Not understanding what is being said to you
Not understanding what you read
Problems with breathing
Nasal congestion, runny nose
Tongue swelling, airway swelling
Swelling of feet, hands, legs, arms, fingers
Swelling of face, lips, mouth, roof of mouth
Irregular heartbeat
Rapid heartbeat (tachycardia)
Chest pressure, chest pain
Elevated blood pressure
Low or sudden drops in blood pressure
Ringing in ears (tinnitus)
Anxiety

Panic
Feeling that something is terribly wrong
Feeling of impending doom
Agitation, irritability
Anger
Rage/rages
Weeping
Emotionality
Depression
Feelings of despair, often deep despair
Suicidal ideation
Fainting/blacking out (syncope)
Fatigue (can be intense and incapacitating)
Numbness and tingling to skin & extremities
Joint/muscle/bone pain
Neurological pain
Rashes, hives (with and without itching)
Skin eruptions (with and without itching)
Migraines, headaches
Fever, flu-like symptoms, swollen glands/lymphs
Blurred vision, double vision, watery eyes
Uterine cramping, bleeding
& more

See <https://midnightmastcells.com/what-are-triggers-reactions/>

Issues & Disorders

A partial list of issues and disorders involving or having a basis in mast cell activation includes but is not limited to:

Dermatitis, eczema	Restless Legs Syndrome (also called Willis-Ekbom Disease)
Hives (urticaria), rashes	Cardiovascular disease
Dermatographia	Kounis Syndrome
Desquamation in the epidermis	COVID-19, Long COVID
Fibromyalgia	Inflammation
Migraines, headache	Multiple Sclerosis
Stress	Autism Spectrum Disorder
Neurological pain	Parkinson's Disease
Neuropathy	Alzheimer's Disease
Arthritis	Huntington's Disease
Allergy	Endometriosis
Asthma	Crohn's Disease
Irritable bowel	Celiac disorders and disease
Acid reflux	Sjogren's Syndrome
GERD	Ehlers-Danlos Syndrome (EDS)
Interstitial cystitis/Bladder Pain Syndrome	Autoimmune disorders
Uterine fibroids	Thyroid disorders
Diabetes	Age-related macular degeneration
High cholesterol	Glaucoma
Osteoporosis	& more
Cystic fibrosis	

See <https://midnightmastcells.com/illnesses-associated-with-mast-cell-activation/>

“Every person is
a world to
explore.”

-- *Thich Nhat Hanh*



Challenges for the Medical Field

Non-mastocytosis mast cell activation related issues and disorders (e.g., MCAS, being sensitive to multiple chemicals, long COVID, chronic fatigue, fibromyalgia, EDS, and more):

- Don't conform to traditional approach of patient goes to healthcare provider with complaint of symptoms, assessments and tests are done, diagnosis based on assessment/test results which, in turn, informs treatment, person expected to follow treatment instructions and—cured!
- Large number of diagnoses have success with a one-size-fits-all curative approach (e.g., broken leg, sinus infection, ring worm, pneumonia) >> chronic illnesses don't fit this template >> chronic mast cell activation issues and disorders—which are chronic illnesses—absolutely do not fit this template
- Our current most frequently used medical approach is acute care based and acute care focused
- There's no place for any chronic illness within the acute care focus model
- There's no place for mast cell activation related issues and disorders within the acute care focus model
- Many healthcare providers seem unable to step away from the acute care focused model

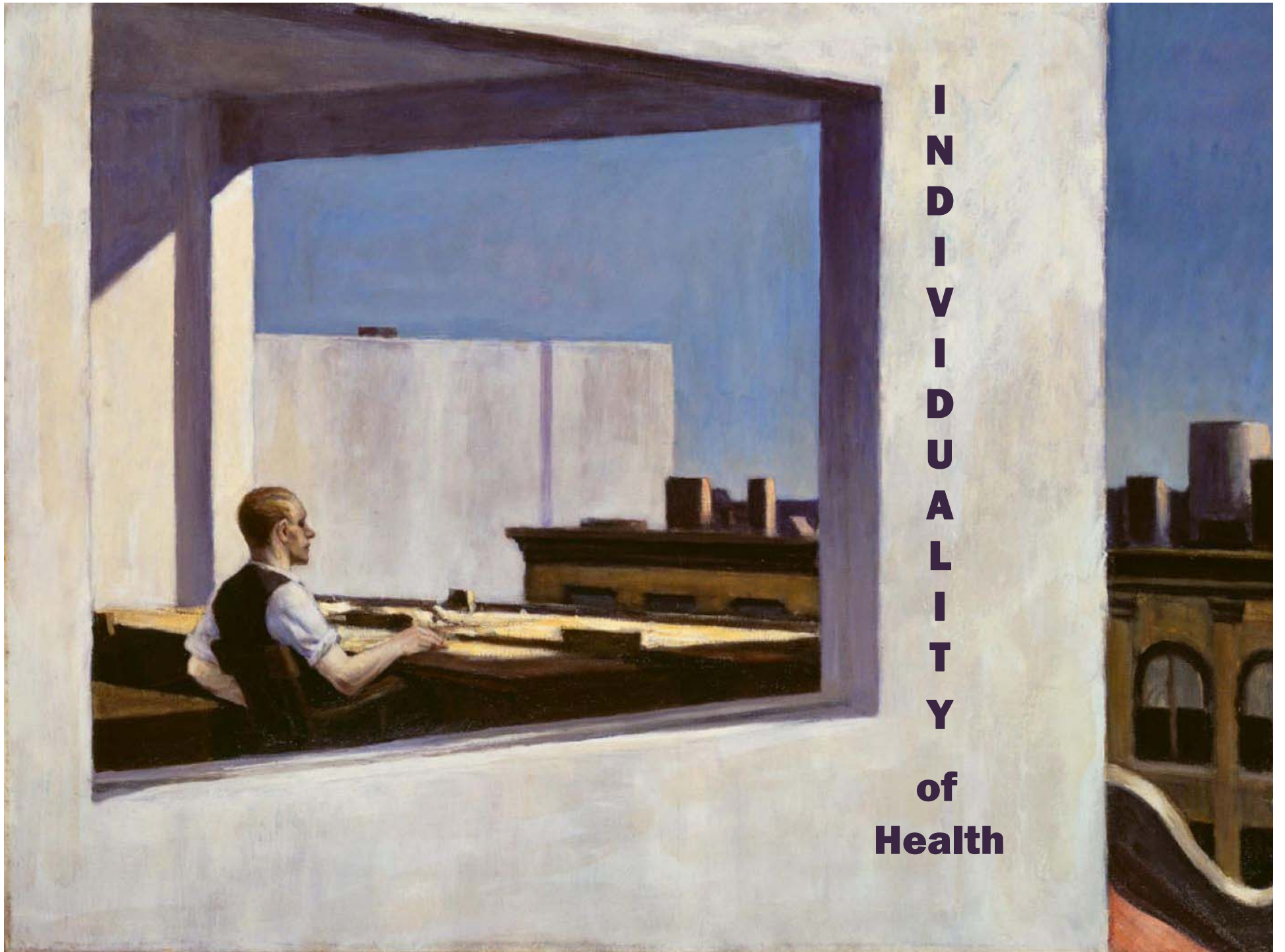
Challenges for Medical Practitioners

- Typically, the training about mast cells that medical students receive over all of their combined years of schooling is about 1 minute, according to Dr. Lawrence Afrin, mast cell specialist
- Compartmentalized thinking and training with each illness in its own box, separate from the other illnesses
- Their perceived “unknowing” about mast cells and it being a specialty area and outside the generalist’s/primary care provider’s scope of practice as the reason for reluctance to diagnose and reluctance to prescribe, when they regularly diagnose and treat conditions such as allergies, eczema, hives, acid reflux, celiac, Crohn’s, Alzheimer’s, Parkinson’s, arthritis (to name a few) which all have a basis in and/or involve mast cell activation
- Many if not most healthcare providers follow a managed care approach or a continuum of care approach. In both of these approaches the generalist/primary care provider is in charge of care and makes the decisions regarding care, often not in true partnership with the patient
- Mast cell activation related issues and disorders, such as MCAS, cannot be managed from the outside and don’t fit with the managed care model or the continuum of care model for the provision of services

Challenges for Mental Health Practitioners

- Symptoms of mast cell activation are not recognized by primary healthcare providers and are often mistakenly (based many times on lab results coming back within normal ranges) thought to be psychological and people are referred to a therapist
- Therapists are not trained to understand or recognize mast cell activation symptoms as being psychiatric-seeming, meaning they may appear psychiatric symptoms but are actually the physiological symptoms related to a mast cell activation issue or disorder
- Anxiety (as well as depression) is a common symptom when mast cells are activated and degranulating. But when mast cell activation isn't recognized and the symptoms are attributed to psychological issues, people are often prescribed, to use anxiety as the example, an anti-anxiety medication. Many anti-anxiety medications are antihistamines or have antihistamine-like qualities. The person with the unrecognized mast cell issue can exhibit an improvement in their symptoms because of the histamine blocking properties of the medication. Uninformed prescribers will think it's helping a psychological issue. Many patients, who have been given a right-acting medication for the wrong reason, also may remain unaware of mast cell activation and believe what they're experiencing is all psychological---and not understand why they're still not really feeling better and still feel sick

NOTE: having a mast cell activation related issue or disorder (like MCAS) and experiencing anxiety or depression as a mast cell activation reaction doesn't mean that a person can't additionally experience emotionally-based anxiety and depression.



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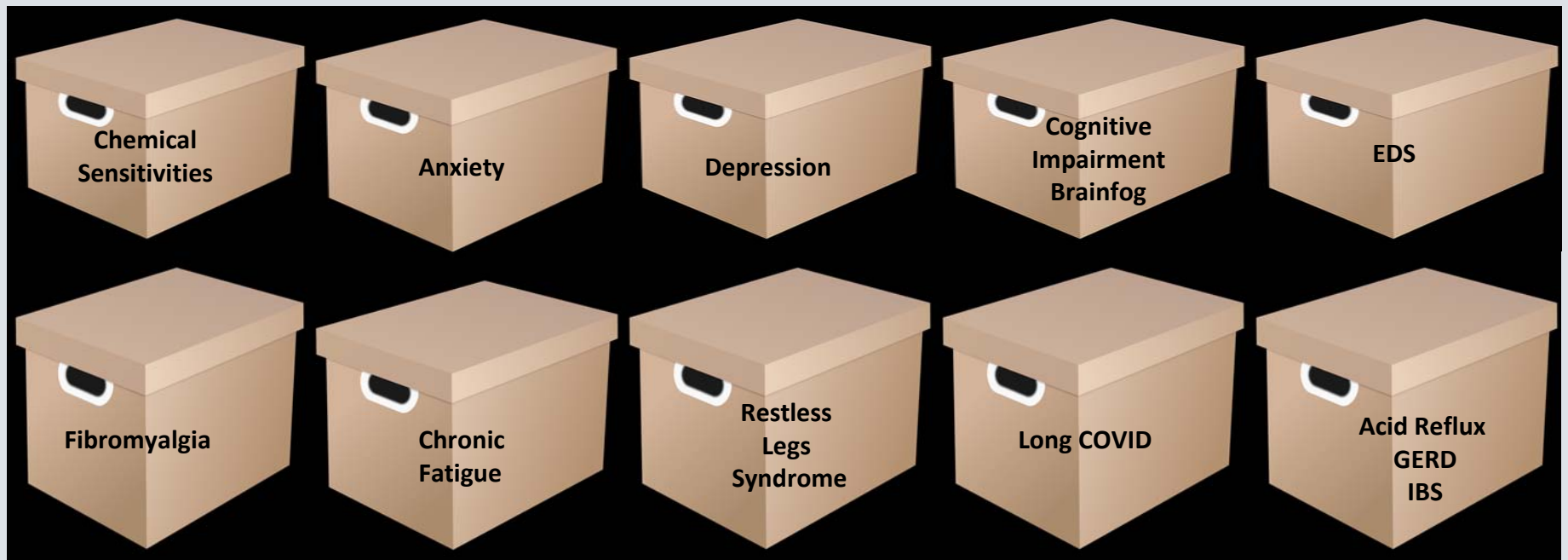
of
Health**

Compartmentalization: Medical

Compartmentalization, in medicine, refers to understanding health and diseases through a lens of separation, as if each diagnosis that a person may carry is in a separate box or a separate compartment from the others. It represents a fragmentation – of knowledge and of understanding. It also represents a fragmentation in the provision of care.

Through focusing closely on each “compartment” or specialty area, we lose the broader picture, dot’s aren’t connected, and, ultimately, people suffer.

How can doctors and medical professionals correctly diagnose and appropriately treat something they haven’t been trained to recognize and they don’t fully understand?



Compartmentalization: Health

The 3 roles of ill health - (1) the role of the “sick” person; (2) the role of the healer; and (3) the role of the support person:

- a. The role of sick person is to **get well**
- b. The role of healer is to diagnose and treat the sick person so that they **get well**
- c. The role of the support person is to support the sick person and to help them as they **get well**

- We have all internalized these roles; they are familiar and understood
- The healer is all-knowing, has all the answers, and will instruct as to what we’re supposed to do to get well
- There is a timeline, often unspoken, for getting well that the sick person is expected to adhere to
- If the sick person doesn’t get well in a timely manner (following that timeline) then they’re malingering
- The support person will withdraw support if the sick person fails to get well in a timely manner (following that timeline)
- No chronic illness conforms to this getting well template yet people with chronic illness are, nevertheless, expected to follow and adhere to it
- We carry these understandings within us and have the “must get well” expectation of ourselves



“Highly Individualized”

- Can sometimes feel like the equivalent of being told, “There’s nothing I can do for you.”
- Often it means that something doesn’t fit the established model for diagnosis, treatment, or care (leaving you feeling, “There’s nothing I can do for you.”)
- Many times it means to go see a specialist (once more leaving you feeling, “There’s nothing I can do for you.”)

Commonalities

Within the context of “highly individualized” there are still recognizable signs and symptoms of apparent mast cell activation, and even commonalities:

- Symptoms of mast cell activation are recognizable
- Individuals may have a different array in their presentation of symptoms when reacting
- Each person will react to their triggers according to their particular array of presentation of symptoms when experiencing mast cell activation
- Three people who all have been correctly diagnosed with a mast cell activation disorder: Person A might react to a particular laundry detergent with intense cognitive issues like brainfog, and dizziness, migraine symptoms. Person B might react to the same laundry detergent after being exposed to it with extreme fatigue, bone-muscle-joint pain, heart palpitations and heart skipping beats, extreme emotionality. Person C, when exposed to the same laundry detergent, might not react at all
- “Highly individualized” doesn’t necessarily mean unrecognizable or undiagnosable

Being Brave

Being Brave

In the mast cell universe (where time moves so much more slowly):

- *Education is key*
- Learn about mast cells
- Learn & listen to your body
- Learn your reactions
- Learn your triggers
- Learn your protocols & strategies
- Know who is on your health team
- Know who is on your support team
- Learn & know who you trust

Communication

Understanding communication:

Communication in our body happens at multiple levels through various routes: through our auditory senses (hearing); through our vision; through cell-to-cell communication; through touch and taste.

Our brain is the processing hub. It is in a constant state of reception; receiving information from inside our bodies, from all of our senses, and from our external environment.

It is a vastly complex system of meaning-making that involves in-the-moment data as well as memories and associations.

Communication

How our brain talks to our body (and vice versa):

Information comes from our sensory neurons, to the spinal cord, up through the spinal cord, to the brain. The brain receives these signals and interprets them which allows for our perceptions and our responses to those perceptions.

The brain communicates with nerve endings to process and respond to emotions through a highly complex network that involves sensory input, specific regions of the brain, and bidirectional signaling.

Communication

12 Pairs of Cranial Nerves:

- Play a vital role in the nervous system and orchestrate many functions of the body that are vital for our everyday life
- Cranial nerves communicate directly with the brain and do not send information through the spinal cord
- The Vagus nerves are cranial nerves that are involved in multiple body activities including respiratory, heart, GI. The Vagus nerve is associated with mood regulation and our stress response, the fight-flight-freeze response, and is crucial in maintaining the body's overall physiological balance (homeostasis)

See <https://pmc.ncbi.nlm.nih.gov/articles/PMC11523702/>

Communication

Our brain learns:

- The brain learns and remembers in order to communicate successfully
- The brain learns through our language
- Language is a multifaceted tool. It is used to communicate, to make meaning, and to understand – everything
- Language relies on memory for the storage and retrieval of vocabulary, grammar, and syntax. Memory benefits from language as a tool for organizing and recalling information
- The brain learns through our emotions
- Emotional states significantly influence the encoding, storage, and retrieval of memories
- Strong emotions enhance the consolidation of long-term memories
- The brain's amygdala processes emotional significance and interacts with the hippocampus to prioritize and strengthen memories based on emotional relevance

Communicate

Mast cells communicate:

- Mast cells are sensitive to what's going on outside and inside the body.
- Mast cells are present in the tissues exposed to the outside world.
- Mast cells are present in the meninges that cover the brain and in the central part of the brain, especially the hypothalamus that regulates homeostasis and the amygdala that regulates behavior.
- Mast cells communicate with the hypothalamus. The hypothalamus communicates with the pituitary (that makes all the hormones) via a small bridge called the median eminence. The median eminence is a small stalk but the number of mast cells that it has per unit of volume is more than what we have on our skin.

See Dr. Theoharides: <https://www.youtube.com/watch?v=u1pxvAzXh7M>

Communication

We have a direct role in our brain's communication with our body:

We train our brains—plasticity—in what our experiences mean, about our emotional landscape, how to understand the sensory input regarding our external environment, and to assign, understand, and make-meaning regarding all aspects of our internal world of health, wellness, illness, and change.

Communication

How mast cells are involved:

Mast cells are key intermediaries between the nervous system and the fear response. They communicate with nerve endings both in the brain and throughout the body, helping to initiate and amplify what happens in the body associated with stress and fear.

The Fear Response

What it is:

The brain gets information about fear when sensory input (like through sight or sound) is processed by the amygdala. The amygdala acts like the brain's threat detector.

The amygdala triggers the fight-flight response and it happens very, very quickly (in fractions of seconds). It is the alarm system for fear.

Mast cells communicate with the amygdala.

The amygdala can directly influence the sympathetic nervous system which controls the fight-flight response.

The stress of the event combined with the norepinephrine that the body releases in the moment can help to "sear" the fear into our memory, making it easier for our brain, cells, and bodies to remember the sensory data as a threat and respond accordingly.

Mast cells remember.

When mast cells encounter something they perceive as a threat, and if they remember a previous encounter, they will respond in the way that they did before and hit even harder.

The Fear Response

The fear threshold:

The point at which a stimulus is intense enough to cause a fearful or anxious reaction.

The fear threshold and mast cells:

The fear threshold is linked to mast cells, which can be stimulated by stress and environmental triggers. This stimulation can cause mast cells in the brain, especially in the amygdala (the region of the brain responsible for fear processing), to release inflammatory mediators that disrupt neuronal connectivity, potentially altering the normal fear response.

Stress & exhaustion:

Chronic stress and sleep deprivation can exhaust the nervous system which can lower the fear threshold and make a person more vulnerable to anxiety, panic, and fear.

The Fear Response

Memory, mast cells, and the fear response:

- Memory and the fear response are deeply interconnected
- The brain uses past experiences to inform its reaction to perceived threats in the present
- There is a strong bidirectional link between associative fear memory and mast cells.
- Stress from fear conditioning activates mast cells
- The activated mast cells, through the mediators they release (chemical signals), can alter brain function and regulate the strength of fear memories

See <https://www.frontiersin.org/journals/neuroscience/articles/10.3389/fnins.2017.00703/full>

See <https://pmc.ncbi.nlm.nih.gov/articles/PMC6389675/>

See <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1346-8138.2010.01045.x>

The Fear Response

Fear conditioning:

- Associative learning and associative memory
- Establishes a powerful link between previously neutral stimulus leading to a negative outcome
- Neural circuitry, mostly in the amygdala, can be strengthened through repeated experiences, learned cues, and even observed reactions

Example:

- An initially neutral image is paired with a negative stimulus, like a loud noise
- The amygdala in the brain, key area for emotion, is activated by the loud noise
- When the two (the image and the loud noise) are repeatedly presented together, the pathways in the brain connecting the two are strengthened
- After repeated pairings, that image all by itself without the sound can trigger the fear response. The brain had been conditioned—trained—to respond with fear

Communication

We teach our brains what meaning to make of our experiences.

We teach our brains how to respond and react.

We communicate with our body at the cellular level.

All cells in the body communicate.

Mast cells communicate.

Being Brave

In the mast cell universe (where time moves so much more slowly):

- Brave isn't an absence of fear
- Brave is feeling the fear
- Brave is moving forward in spite of it
- Brave is equipping and arming yourself with knowledge to support your health
- Brave is coping ahead and preparing in advance
- Brave is understanding that many times repetition is essential in retraining mast cells and in managing symptoms
- Brave is believing in yourself, even through the storms



Treatments:
Tools
for
the
Toolbox

Treatments (mini roadmap)



- *Your Toolbox*
- *Medications*
- *Emergency protocols*
- *Food as medicine*

Your Toolbox

What goes in the toolbox?

- Medications – maintenance (regular, daily) protocols
- Medications – emergency (e.g., benadryl, epinephrine auto injector) protocols
- Emergency room protocols (e.g., what you need to have happen and how to best support your health—a letter signed by your doctor stating specifics and addressed to all ED and 1st responders that you carry with you and present when needed to expedite treatment
- Food as medicine (options, what helps with what reaction)
- Vagus nerves informed strategies (e.g., breathing)
- Circadian rhythm (nutrition, sleep, exercise routines)
- Stress management strategies (e.g., mindfulness, visualizations)
- Exercise (always as tolerated, specific routines)
- All the things that work for ***you***

Medications

The first line treatment medications for the symptoms of mast cell activation include:

- Histamine 1 (H1) receptor blockers
- Histamine 2 (H2) receptor blockers
- Cromolyn sodium (brand name Gastrocrom) – mast cell stabilizer
- Ketotifen – mast cell stabilizer
- Aspirin – has been found to be a mast cell stabilizer
- Prednisone – corticosteroid that relieves mast cell activation reaction symptoms
- Epinephrine auto injector (such as EpiPen)

See <https://midnightmastcells.com/medication/>

Medications (cont'd)

Specific medications:

First generation H1 receptor blockers

- Diphenhydramine (Benadryl)
- Levocetirizine (Xyzal)
- Hydroxyzine (Vistaril, Atarax)

Second generation H1 receptor blockers

- Loratadine (Claritin)
- Cetirizine (Zyrtec)
- Desloratadine (Clarinex)
- Fexofenadine (Allegra)

H2 receptor blockers

- Famotidine (Pepcid, Zantac)
- Cimetidine (Tagamet)
- Nizatidine (Axid)—prescription only

See <https://midnightmastcells.com/medication>

Medications (cont'd)

Specific medications:

Mast cell stabilizers

- Cromolyn Sodium (Sodium Cromoglicate in the UK; oral brand name Gastrocrom in US; available as oral and nasal spray in US; available as eye drops in UK; can be compounded with prescription)
- Ketotifen (available as oral and eye drops)
- Prednisone – can reduce mast cell degranulation and ease multiple mast cell activation related symptoms but is not formally classified as a mast cell stabilizer
- Aspirin – commonly used to inhibit prostaglandin production in mast cells and has been found to be a mast cell stabilizer. Can be prescribed in small doses up to 325mg daily, if tolerated, and/or in combination with histamine blockers to help manage symptoms of mast cell activation
- Montelukast (Singulair) is a leukotriene inhibitor and blocks the action of leukotrienes. Leukotrienes are released from mast cells and other cells in the body. Blocking the action of leukotrienes helps to reduce mast cell activation symptoms especially inflammation

See <https://midnightmastcells.com/medication>

Vitamins, Minerals, Spices, Supplements

Vitamin C (ascorbic acid) – inhibits histamine release and helps to stabilize mast cells. Typical dose is approximately 2000mg daily and is dependent on each person's tolerance

Vitamin D – mast cell stabilizer. Research has shown that in a vitamin D deficient environment, mast cells degranulate automatically even in the absence of specific triggers. Vitamin D has been shown to inhibit histamine release from mast cell activation including IgE-mediated activation. Typical dose is 3000U daily

Vitamin E – has been shown to have inhibitory effect on the proliferation, secretion, and survival of mast cells; studies have shown that vitamin E affects mast cell activation resulting in decreased release of proinflammatory mediators including histamine

Zinc – zinc deficiency has been demonstrated to affect the function of various types of immune cells including mast cells and seems to be essential for mast cell activation with a study showing the release of histamine from basophils and lung mast cells was inhibited from physiological concentrations of zinc

See <https://midnightmastcells.com/medication>

Vitamins, Minerals, Spices, Supplements

Quercetin – a flavonoid that inhibits mast cell activation and histamine release

Luteolin – a flavonoid that inhibits mast cell activation and histamine release

Curcumin (turmeric) – has anti-inflammatory effects; has been reported to inhibit mast cell degranulation

Cinnamon – extract obtained from cinnamon bark can have anti-inflammatory effects on mast cells; cinnamaldehyde is the main mediator of cinnamon extract in mast cell inhibition

Fatty acids – specifically ones found in fatty fish such as salmon or herring can influence the production and secretion of mediators by mast cells

See <https://midnightmastcells.com/medication>

Vitamins, Minerals, Spices, Supplements

Amino acids – glutamine, arginine, and glycine have immunomodulatory and anti-inflammatory properties

Carotenoids – such as dark green leafy vegetables, tomatoes, carrots, seaweed, and shellfish can inhibit mast cell degranulation

Supplements – as tolerated by each person and always in consultation with your primary healthcare provider and/or mast cell specialist

Amino acids – glutamine, arginine, and glycine have immunomodulatory and anti-inflammatory properties

Food as Medicine!

See <https://midnightmastcells.com/medication>

Emergency Protocols

Important:

- Mast cell activation symptoms can quickly disintegrate into anaphylaxis
- Simple symptoms should never be overlooked nor treatment delayed
- Additional doses of H1 and H2 antihistamines may be needed to control symptoms—even after acute reaction and/or anaphylaxis has responded to treatment
- Control the person's environmental temperature and stress to avoid setting off a mast cell reaction again
- Check all medications including parenteral to make sure that none of them contain alcohol or preservatives
- Standardized emergency protocols should be personalized as needed

See <https://midnightmastcells.com/medication>

Food as Medicine

The role that food and food choices play in the health and wellness of a person who may have MCAS or other mast cell activation related issue or disorder is enormous.

Making informed food choices that focus on supporting areas of health and wellness specific to mast cells is a vital tool for each person's mast cell activation aware toolbox of supports and strategies.

Through informed food choices, people can improve their health, decrease reactions, and raise their baseline of wellness in their day-to-day lives.

See <https://midnightmastcells.com/food-as-medicine/>

Strategies

Strategies (mini roadmap)



- *Communicating with your body & your mast cells*
- *Vagus nerves informed breathing*
- *Oxytocin aware strategies*
- *Mammalian dive response strategies*
- *Bilateral stimulation/Binaural music*
- *Stress management*
- *All the things that work for you!*



“Invite your fear into
consciousness,
and smile through it;
every time you
smile through your
fear, it will
lose some of its
strength.”

---Thich Nhat Hanh

Strategies: Fear, Anxiety, Panic

Vagus Nerve Informed Breathing

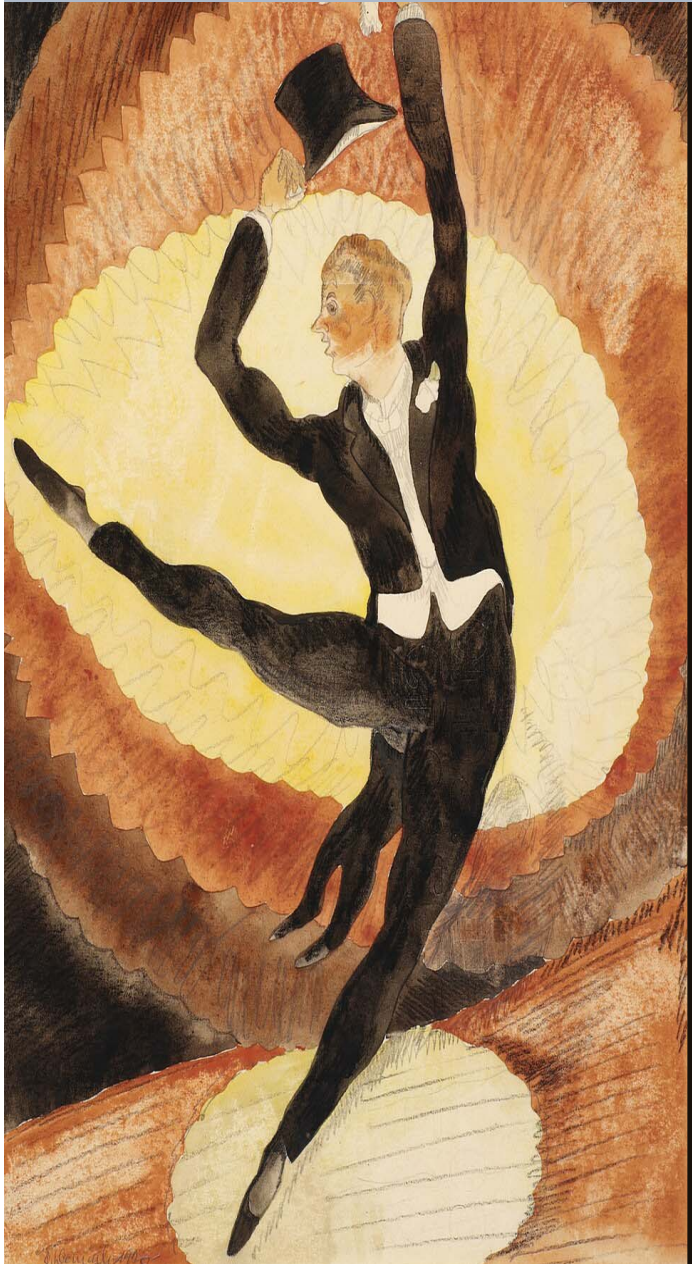
Vagus nerves are cranial nerves—specifically cranial nerve X--which means they are in direct communication with the brain. They are in charge of turning on and shutting down the body's fight-flight response.

Research has found that breathing in a particular way over-rides the fight-flight message and sends the exact opposite message directly to the brain.

The Breathing:

1. Inhale;
2. Exhale and emphasize the exhalation;
3. Simultaneously, when exhaling with emphasis, add a vocalization;
4. Repeat.

Strategies: Fear, Anxiety, Panic



Humming, Gargling, Singing

The vagus nerves pass by the vocal cords. Humming, gargling, or singing can stimulate the vagus nerves and induce a calming effect.

Strategies: Fear, Anxiety, Panic

Smiling

Facial nerves are cranial nerves, as well. The primary cranial nerve involved in smiling is called cranial nerve VII. It controls the muscles that are a part of the facial expression of smiling and include raising the corners of your mouth, wrinkling your forehead, closing your eyes, and puffing out your cheeks. Cranial nerve VII is in direct communication with the brain.

The vagus nerves turn on the fight-flight response (a response primarily controlled by the sympathetic nervous system.) The facial nerves—cranial nerve VII—are part of the body's parasympathetic nervous system which promotes the rest-digest function that shuts down the fight-flight response. When we smile, the message we're telling our brain is that everything is okay.

If we, for example, smile while also doing vagus nerve aware breathing strategies, it enhances the message being sent to the brain that everything is alright and to shut down the fight-flight response.

It changes the fear message to a calm message to rest.

Strategies: Fear, Anxiety, Panic

Oxytocin

Oxytocin is a hormone associated with, among other things, bonding and attachment within social relationships.

The fight-flight response is driven by stress hormones like adrenaline and cortisol. Oxytocin is released as part of the “tend-and-befriend” response. In stressful situations, it can promote affiliative behaviors and reduce the fight-flight response.

Tending involves nurturing, calming, and protecting (one’s children or other vulnerable individuals in times of stress.)

Befriending refers to the creation and maintenance of social networks to provide protection and support during a threat.

Engaging in social and physical activities can naturally boost your body’s oxytocin levels:

- Hugging: a 20-second hug can significantly increase oxytocin levels and lower cortisol levels
- Cuddling: with loved one, child, or pet promotes feelings of affection and safety
- Getting a massage: the soothing touch activates neural pathways that signal oxytocin release
- Petting a pet: the mutual gaze between humans and their pets stimulates oxytocin
- Physical contact

Strategies: Fear, Anxiety, Panic

Cold Exposure (also called Mammalian Diving Reflex):

In addition to vagus nerve stimulation through breathing, another technique that can help shut down the fight-flight response by activating the body's parasympathetic rest-digest is cold exposure.

IMPORTANT: individuals with a mast cell disorder who are sensitive to temperatures, especially cold, should use this technique with caution, if at all, and only after consulting with their physician.

Short exposure to cold can trigger the mammalian diving reflex which slows heart rate and promotes a sense of calm:

- Splash face with cold water
- Hold an ice pack or ice cube in hand briefly
- Finish a warm shower with 20 seconds of cold water
- Apply ice pack, bag of frozen veggies, or cold, wet towel to face especially area around the eyes and cheeks

Why it works:

Reflex is triggered by contact with cold water on face especially around eyes and cheeks. This stimulates the vagus nerve. The physiological calming effect of slowing the heart rate can help “reset” the body's stress response.

Remember: cold exposure can either trigger mast cell activation or inhibit it, depending on the individual. Always check with your healthcare provider before trying.

Strategies: Fear, Anxiety, Panic

Binaural Music

Binaural (also called bilateral) music is music with a beat that pans between left and right to relieve anxiety, stress, insomnia, etc. as well as depression.

Remember: you **must** listen to this type of music wearing headphones or earbuds—or else it won't work!

See <https://midnightmastcells.com/ambient/> to access binaural music tracks & additional bilateral stimulation information and resources

Strategies: Overriding the Message

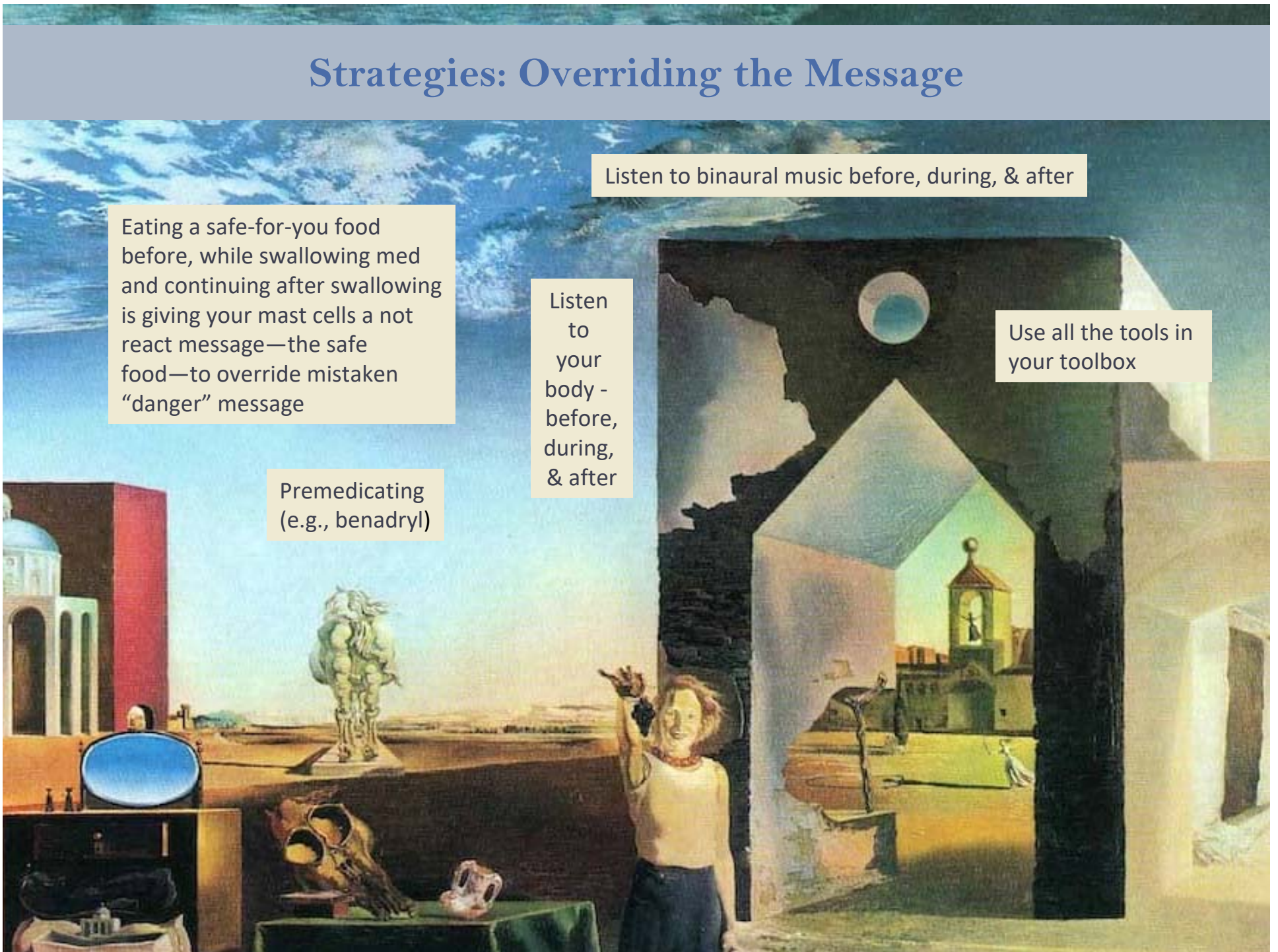
Listen to binaural music before, during, & after

Eating a safe-for-you food before, while swallowing med and continuing after swallowing is giving your mast cells a not react message—the safe food—to override mistaken “danger” message

Listen to your body - before, during, & after

Use all the tools in your toolbox

Premedicating (e.g., benadryl)



Strategies

Talk to your Body

Our body reads our emotions and is constantly relaying information to the brain.

Our cells remember – past experiences and our body's past responses to those experiences.

Mast cells remember.

Repetition of new thinking and new behaviors creates new neural pathways and puts those new neural pathways into a dominant place.

Strategies: Stress Management

Talk to your Body

Our body reads our emotions and is constantly relaying information to the brain.

Our cells remember – past experiences and our body's past responses to those experiences.

Repetition of new thinking and new behaviors creates new neural pathways and puts those new neural pathways into a dominant place.

One of the strongest ways we can talk to our bodies—and this is at a cellular level—is through the creative arts:

- Visual arts
- Music, Sound, & Soundscapes
- Writing
- Dance and movement

Strategies: Stress Management

Visual Arts & Visualizations

What we see, visually, can alter and influence what our brain is perceiving and processing.

When we're anxious, our brain's attention processes are more strongly influenced by emotional cues which can enhance our perceived contrast and clarity of visual information. The heightened attention to visual details can be harnessed to focus on calming images and scenes, reducing anxiety. Stress in all its shapes and forms can bring on and intensify mast cell activation and reactions.

Whether we're completely absorbed by an artwork, a film, or a vividly recalled visualization, our brain thinks that's what is happening to us in the moment, in real time, and responds accordingly.

Even when our visualization is a memory, if it's an intense memory with vivid detail, our brain thinks that's what is happening right then. It can't tell the difference between yesterday and now and responds as if it's happening in the current moment.

Strategies: Stress Management

ASMR

Autonomous Sensory Meridian Response—ASMR—is often used as an aid to help with relaxation, stress and anxiety reduction, pain reduction, and sleep.

Recent research has shown that engaging with and watching ASMR videos and media can bring about physical sensations of tingling accompanied by feelings of relaxation, calm, and well-being.

ASMR uses sound as well as visual situationals (such as the point of view of “close proximity” to the viewer; the use of role play to simulate an aspect of grooming, e.g., getting a facial or having one’s hair done; speaking in a whispering, quiet tone; the use of objects) to help improve sleep, ease feelings of stress and anxiety, and manage chronic pain. The use of sound, however, is the ASMR trigger most frequently reported with beneficial effects.

See <https://midnightmastcells.com/ambient/> to access ASMR tracks & additional information and resources

Strategies

Creating New Neural Pathways

- Be mindful and take in all the good things. Don't rush. It takes time to build, so enjoy the process.
- Think of positive emotions that are connected with the new habit.
- Thinking of the future outcome helps the mind build willpower, reinforcing the habit.
- Repeat it until it becomes a habit. The key here is to create new neural pathways that will be strong enough to turn into superhighways.
- Visualize what your optimal outcome looks like, feels like, and what you would be doing if you achieved it.
- Focus on the good for 10-20 seconds, really absorbing and storing the experience in your long-term memory. This can help change your brain and what it focuses on and the meaning that it makes and gives to sensory input and of our experiences.

“When we recognize that we have a habit of replaying old events and reacting to new events as if they were the old ones, we can begin to notice when that habit energy comes up. We can then gently remind ourselves that we have another choice.”

— *Thích Nhất Hạnh*



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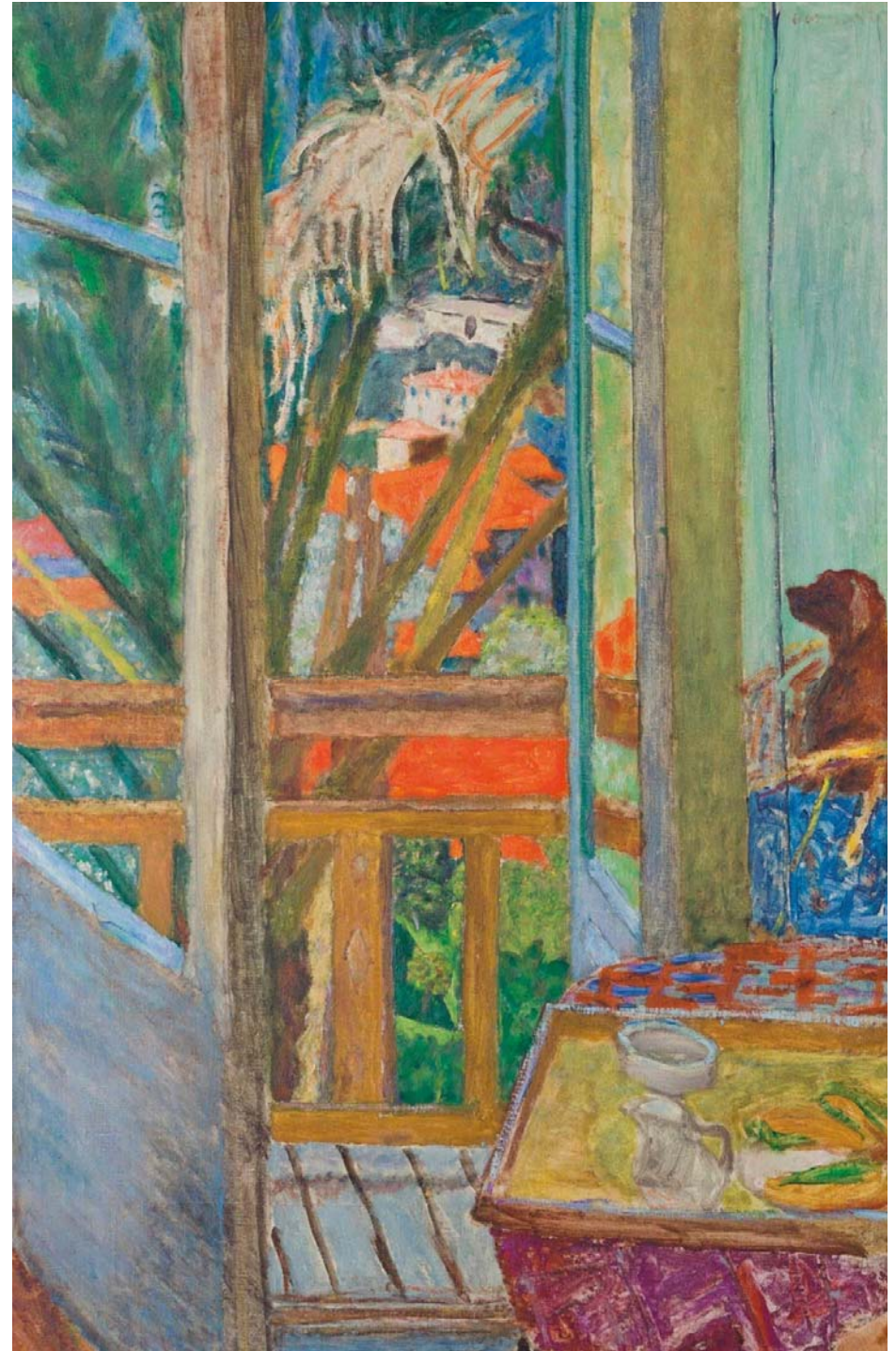
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Edward Hopper – slides 5, 10, 21, 70

Charles Demuth – slides 11, 41, 56

Charles Sheeler – slides 14, 42, 43, 53, 68

Pierre Bonnard – slides 54, 67, 69

John Sloan – slide 17