Back To Chiropractic CE Seminars

Neurology: Chiropractic Treatment of Autonomic Problems ~ 6 Hours

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This course counts toward your California Board of Chiropractic Examiners CE.
(also accepted in other states, check our website or with your Chiropractic State Board)

The California Board requires that you complete all of your CE hours BEFORE the end of your Birthday month. We recommend that you send your chiropractic license renewal form and fee in early to avoid any issues.

Exam Process: Read all instructions before starting!

1. You must register/pay first. If you haven't, please return to: backtochiropractic.net

2. Open a new window or a new internet tab & drag it so it's side-by-side next to this page.

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5. Click on the Exam for the course you want to take. No passwords needed.

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Please retain the certificate for 5 years. DON'T send it to the state board. If you get audited and lose your records, I'll have a copy.

I'm always a phone call away... 707.972.0047 or email: marcusstrutzdc@gmail.com

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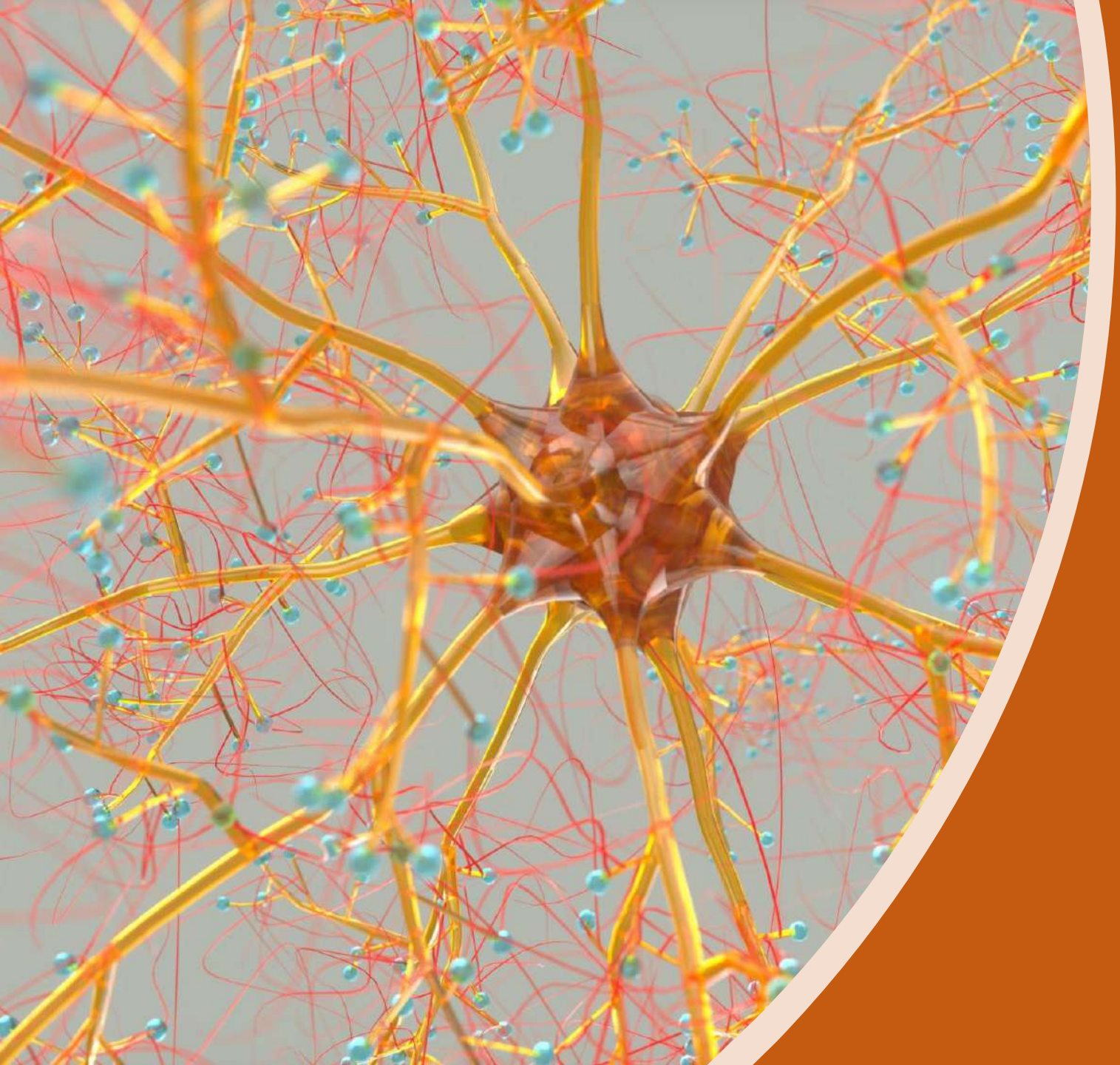


Neurology: Chiropractic Treatment of Autonomic Problems

Michael Pierce, DC, DACNB, QEEG-DL

https://www.youtube.com/c/TheHumanCondition

https://www.youtube.com/watch?v=PRZg0Mw3zQY

Hi, Welcome

- I’m Mike, this is how I can talk to you on this media.
- If you are interested in functional neurology for autonomic symptoms, there is a lot of reward in this oft-rejected set of symptoms by orthodox medicine.
- Sympathetic and parasympathetic disorders are common and range from nuisance to life threatening.

Topics by hour (6 hours CEU)

1. Common functional Autonomic syndromes for chiropractors
2. Root Cause analysis of subtle health issues in Dysautonomia
3. Timeline construction of diagnosis and treatment schedule expectations
4. Simple autonomic rehab concepts and techniques in office and at home
5. Fast, easy documentation
6. Discussing subtle dysautonomias with patients and health professionals

1. Common functional Autonomic syndromes for chiropractors

Scope

- Medicine sees these disorders as mostly neuroautoimmune types, with unclear causation
- Observation may indicate significant contributions from environmental toxins, head injury, nutritional deficiencies, and subluxation complexes.
- Once an autonomic patient is exhausted by orthodox medicine, chiropractic principles often show increased quality of life.

Possible symptoms

Dysautonomias and dysregulations of the autonomic nervous system can appear as any problem with the sympathetic or parasympathetic nervous system. These may include few or many of these:

Sweating, labored or shallow breathing, bowel sounds, gas, bloating, heart arrhythmias, pulse and oxygen saturation changes, cold, white or blue extremities, goosebumps, smelly sweat, nausea, vomiting, diarrhea, belching, headaches, vision or hearing changes, tingling, numbness, muscle spasms, dizziness, falls, PMS, toenail fungus, and more.

Clinical Priorities

- Yes, we want to identify and refer appropriately for medical and pathological dysautonomias.
- However, our goal as chiropractors is to support normal and optimal nervous system function using natural techniques and adjustments.

Homeostasis

- The autonomic system of healthy, adaptive humans at rest will activate appropriately to respond to increased or changing demand.
- Then it should return to or establish new adaptive baseline levels almost as rapidly as the stimulus stabilizes.

Clinical Goals

MOST OF OUR WORK WILL BE TO DRIVE THE CELLS THAT INHIBIT THE SYMPATHETIC NERVOUS SYSTEM AND KEEP IT BALANCED DOWNWARD.

IF WE CAN GENTLY ACTIVATE SPINAL CORD AND BRAIN CELLS TO INHIBIT AND REGULATE THE ESCAPE OF THE AUTONOMICS, WE SUCCEED.

- We will measure and provide low-risk interventions including the chiropractic adjustment and other methods called “trivial stimuli” because they should be of no consequence in normal cases.
- Clinically, such trivial stimuli can work as rehab when tuned properly for the regulatory cells of the nervous system.
- This is like getting the dose of a drug right for a particular patient.

- In fact, the worse the presentation of autonomic dysregulation is, the more dramatic the changes may be seen with the smallest subtle appropriate stimuli.
- This phenomenon is a real gift to us who work with fragile patients.

Goldilocks principle

- First the adjustment or stimulus must reach the target inhibitory cells of the central nervous system pathway that is impaired in your patient.
- The correct frequency of firing (amount or rate of stimulus) FOF, will be required to adequately stimulate these cells to repair (good plasticity). Our goal to achieve a healthy Central Integrative State (resting healthy rate of firing)(CIS) of the target cells.
- If the FOF is too high, the cells may be fatigued, or other cells will alter their activity in a detrimental way (bad plasticity).

- If the correct FOF and CIS is reached for the target inhibitory cells, these neurons can then fire to inhibit runaway sympathetic cells.
- This is the most common scenario of autonomic dysregulation seen in outpatients.
- Sometimes the parasympathetic system can escape too, but you will almost always see some associated sympathetic escape too if you look for it.
- That is because both S and P are linked at the CNS level-not always opposite.

- Those with poor autonomic regulation will be deeply affected by trivial stimuli and can be devastated by activities of daily living and by early neural fatigue.

- However, careful tuning of adjustments and other trivial stimuli can lead to rapid and drastic improvements that were not previously conceived.

Basic approach to Autonomic support

- Applying chiropractic variations and using pre-and post treatment autonomic measures is the goal today.
- With more advanced functional neurology training, more pathways and methods of brain stimulation may be specifically applied for autonomic support.

How can more effective therapeutic stimuli or adjustments be selected over others for a given patient?

If your clinical goal is to increase the regulatory control of the autonomics, knowing neural pathways will help a lot.

If you do not know these pathways or do not want to study neurology, that’s ok, because the autonomic outcomes of your current basket of favorite interventions and clinical competence can be measured with autonomic indicators, observations and measurements presented here in this course.

Just choose which autonomic indicators below that you want to track against your methods and measure the proof of your patient's improvement.

The Autonomic Secret

Most normal patients will not have any variation in pre- to post-adjustment autonomic changes.

Those who do have changing measurements from an adjustment have more sensitive nervous systems or portions of their CNS.

They will be sensitive to subtle modifications in adjustments and stimuli that would not affect normal patients.

Small changes in treatment often make large changes in autonomic output-for better or worse.

Pay Attention to the signs and measures of autonomics!

Autonomic clinical presentations common in Chiropractic:

- Concussion
- mTBI
- post-concussion syndrome
- Spinal cord early myelopathy-cord effacement (disc contacts cord but does not visibly compress cord) from disc bulges
- Peripheral nerve entrapments in 4 extremities due to metabolic imbalances increasing muscle tone and entrapments

Chiropractic adjustment and autonomic indicators

- Measure any autonomic indicator before your adjustment
- See if it it out of range or too variable and unstable
- Decide if it is safe to proceed
- Deliver your adjustment
- Remeasure autonomic indicators

Clinical Scenarios: example with finger oxymeter

Normal autonomic reading before adjustment (98% oxygen)→normal reading after (98%)=typical result

Scenario: improvement

- Start: Out of range or unstable readings before adj (93% ox) or (97 to 93 and back to 97 variable readings fluctuate throughout measure for 2 min) leads to…
- more normal/stable after adjustment (stable at 95%)
- Ends up as improvement-
- keep doing your method and consider adding others as needed.

How long will improvement and stability last?

- Let's say you succeed in seeing a brief normalization of autonomic measures after your treatment. How long will it last?
- Will the patient have stable autonomics after their next treatment?
- Will the patient have a more stable resting state of their autonomics?

Making Lasting Clinical Change

- For the beneficial neurological change to stick, you may need to treat them more than once at the correct frequency of firing.
- They may need to do home stimulations to build plasticity between visits if possible.
- Many people can get back to normal regulation.
- Some people with pathology will find their body needs occasional or regular professional treatment to keep their damaged autonomics regulated and improve their quality of life with less drugs.
- Care and precision must be taken with these cases as their range of adaptation may be limited.

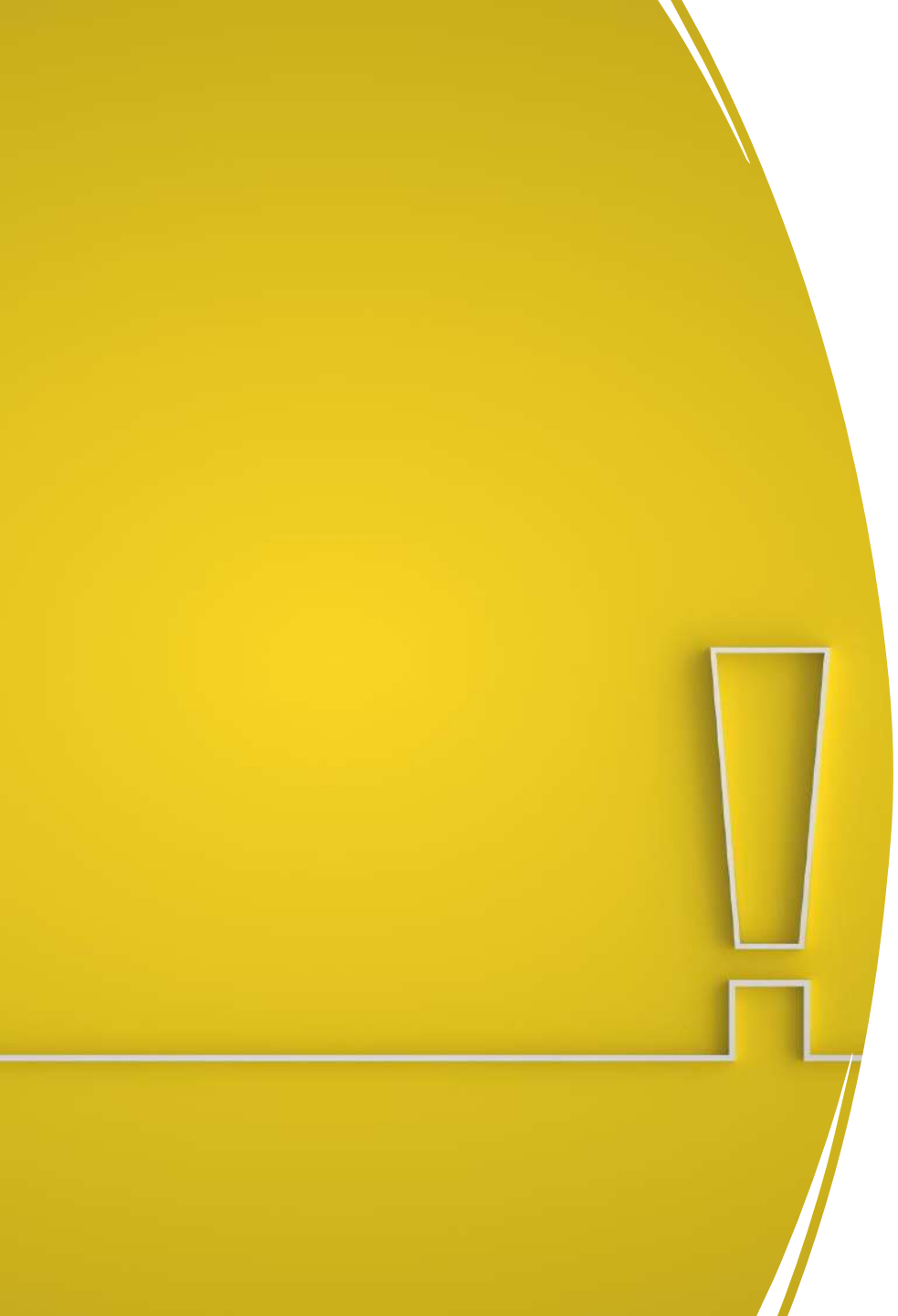
Scenario: poor readings

Normal reading before adj (98% oxygen) or out of range (94%) leads to…

You see worse out of range or more variable readings after adjustment (98% goes to 95, or 94 goes to 92%)

Ends up as a worsening of autonomic regulation…

consider reducing your stimulus and changing your method to be less stimulatory or using a different pathway to stay within their tolerance.



Hidden Advantage!

- The advantage of using measurements of autonomic response is to catch subtle indicators of sensitivity before they become clinically obvious to the patient.
- This lowers risk for everyone.

The patient may not feel any adverse sensation with subtle or early changes!

Do not rely on their lack of complaints if you see ANS instability

Autonomic Syndromes

- Dysautonomia is a broad category of specific failures such as POTS and orthostatic hypotension, and more often involving neuro-autoimmunity to autonomic small fibers.
- Autonomic syndromes are more general, more common and may include functional lesions of:
  - Digestion
  - Dizziness
  - Sweating
  - Breathing
  - Heart rate and blood pressure
  - Anxiety
  - Urinary or sexual
  - visual

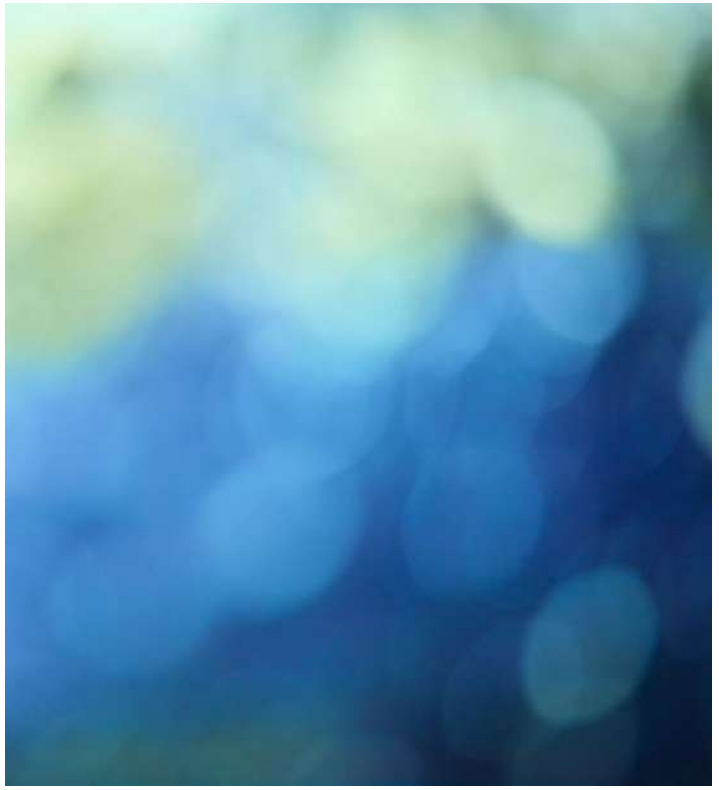
Autonomic control

All autonomic circuits are homologous cells that developed embryologically together and fire together.

This links them in function and activation.

Homologous columns in the brainstem and spinal cord are under the control of the limbic system and cerebellum.

Most of the symptoms we see will be sympathetic escape type problems

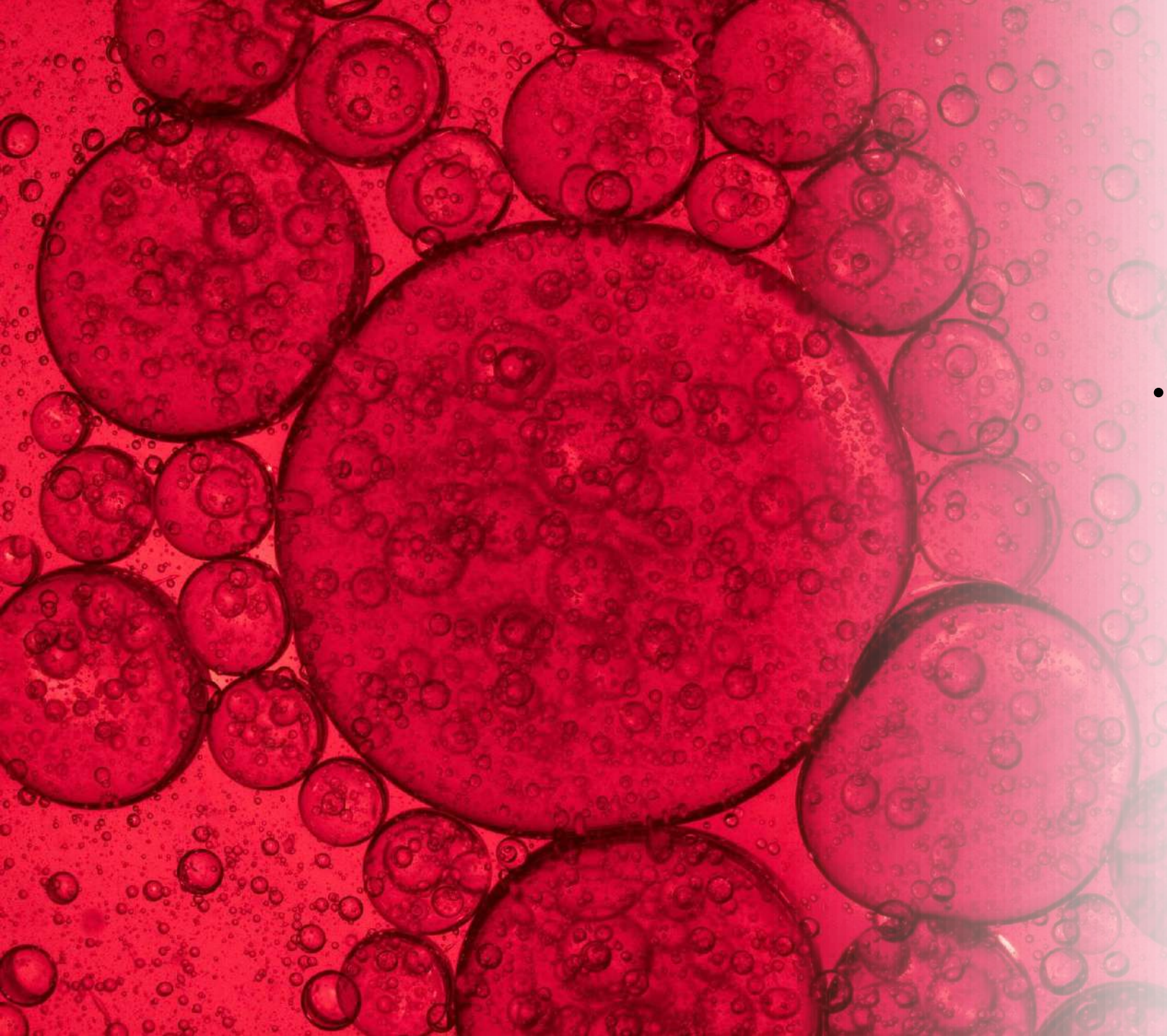


Sympathetic normal activity

Normal simple sensory and motor activity during most of the day and night triggers the sympathetics to provide a small signal of vasoconstriction to shunt blood to the extremities and the area needing more blood.

Sympathetic role most of the time:

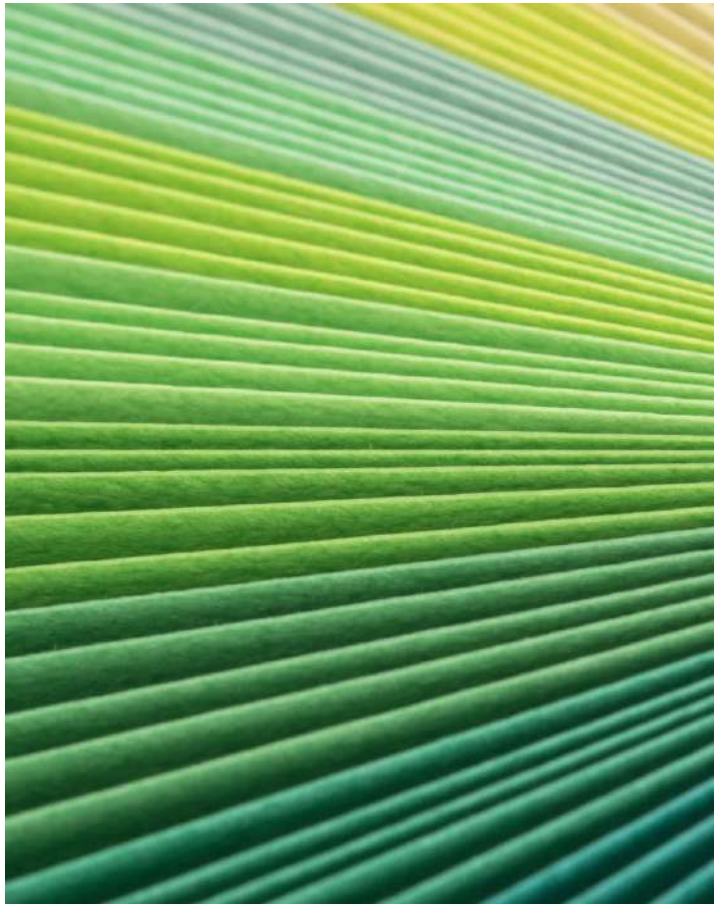
- Most of the time the sympathetics maintain resting vascular tone.
- It is NOT fight, flight, freeze or fawn responses, although this is what they are known for.



- This is usually more proximal, and it sends more blood to active tissues. Most vessels are not constricted. Blood pressure drives more flow too.

The normal effects are appropriate redness, a little more sweating, and increased warmth and blood flow.

The fight or flight or freeze concept is rarely used in daily life, but that is what the sympathetics are known for.

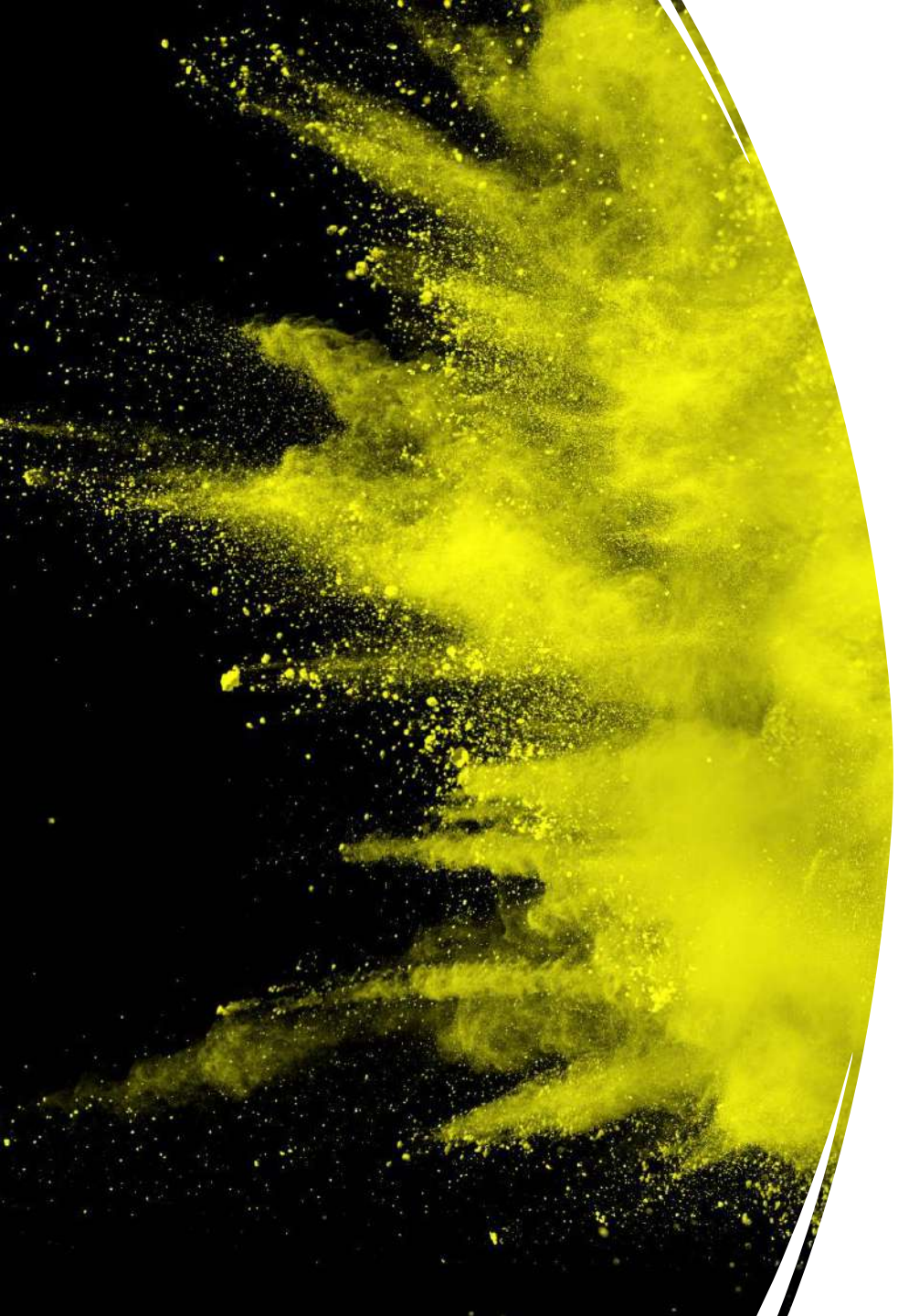


Sympathetic escape

- When abnormal, the autonomics are not braked, so they fire way too hard.
- This causes excess sweating, excess vasoconstriction, and cold, sweaty, blue or white skin and not enough blood flow. Numbness and weakness can follow if the blood flow is massively constricted.

Parasympathetic role

- Parasympathetics are thought of as the Rest and Digest system.
- This system repairs the body, secretes digestive juices, is involved in reproduction and resting hormone regulation and recovery.



Parasympathetics gone wrong

- Parasympathetic escape appears with symptoms like
  - Diarrhea
  - Vomiting
  - Indigestion
  - Urinating from fear
  - Passing out (vasovagal syncope)
  - Gas, bloating

Deep Central Neural Control of autonomics

- The deep cause for this escape is the local inhibitory interneurons in the cord fails to inhibit the sympathetic cells of that cord level.
- Or it can be a failure of descending control from the brain.

Inhibitory interneuron local control at cord level

In the cord, the inhibitory interneurons are short fibers that block the excessive firing of the sympathetics.

Sympathetic cells are genetically programmed to fire when they receive sensory inputs.

We need our inhibitory interneurons to dampen this.

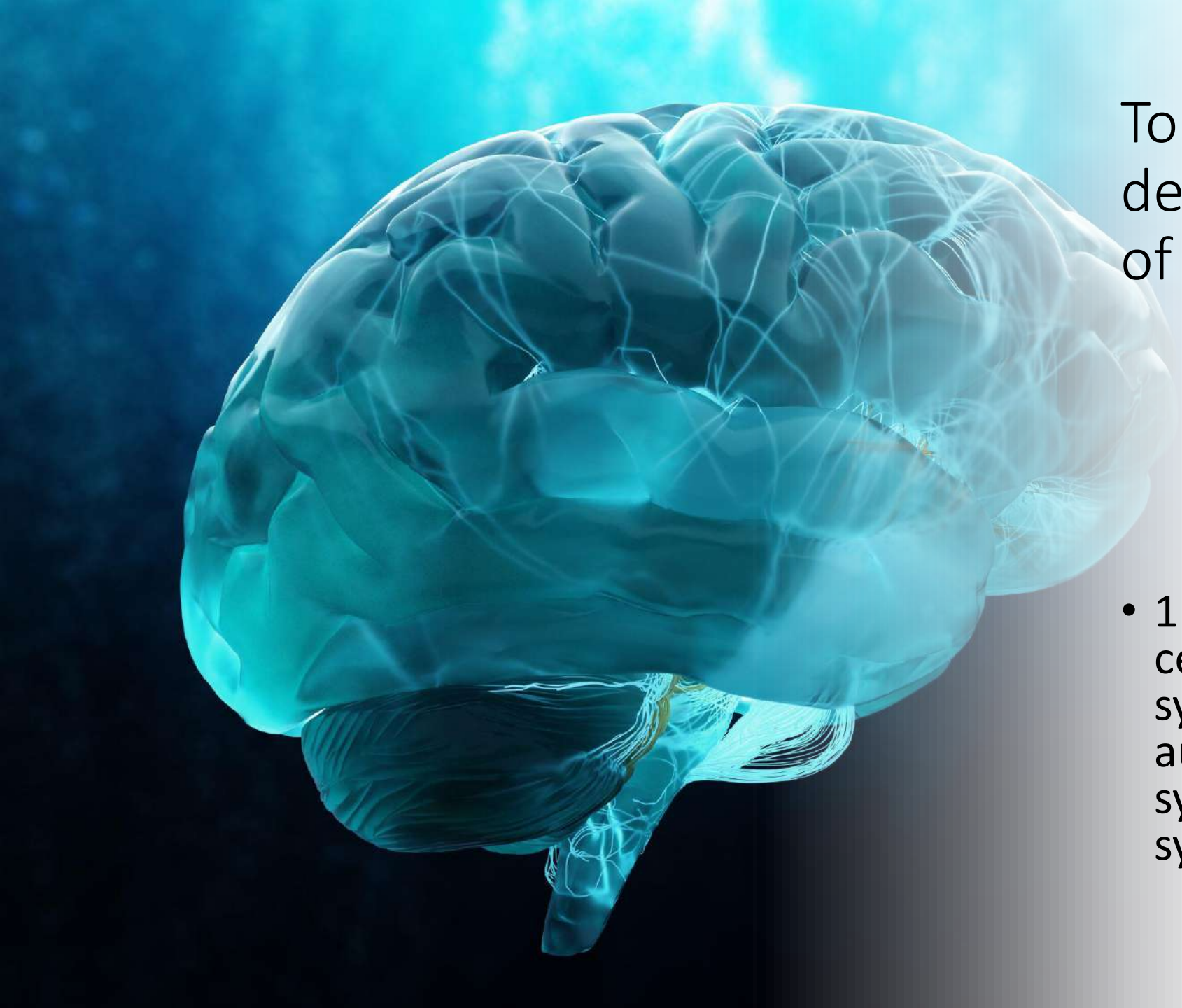
The local spinal cord inhibitory interneurons are injured in many cases and need to be rehabilitated.

Autonomic escape can occur during any exam testing!

- Even if you are not expressly testing the autonomics, you may see autonomic escape
- The test you are doing may be normal and negative and you may miss the ANS escape component unless you are looking for it.
- The test may be positive, and you may still miss seeing the ANS escape.

See my short lecture on the subject:

https://www.youtube.com/watch?v=PRZg0Mw3zQY



Top-down descending controls of autonomics

- 1. The brainstem, cerebellum and limbic system control the autonomics, immune system and endocrine system.

2. Also, when one side of the cortical hemisphere (the lobes) is firing less, it fails to send descending signals to activate inhibitory centers that inhibit the whole ANS (both sympathetic and parasympathetic)

Hemisphericity and autonomics

The same side of the body has excesss sympathetic tone (sweating, vascular tone, temperature) as the side of the weak hemisphere

This is caused by a rare same-side pathway failure

It often is accompanied by subtle soft pyramidal distal extensor paresis. Weakness of finger and toe extensors on the same side without spasticity.

This is not hard pyramidal paresis, which occurs in stroke, is opposite the side of stroke, and is spastic weakness.

Top-down control of ANS

We are taught that either the sympathetics are dominant or the parasympathetics are, and the other is suppressed.

This is true in the healthy nervous system.

However, if the inhibition of the ANS is not working top-down from the brain or locally at a cord level, both can escape.

This feels like both Symp and PARA symptoms at the same time. For example, sweating (Symp) with diarrhea (PARA) can and does occur together.

This is because both Symp and PARA cells in the cord are in continuous homologous columns. They activate together.

Common Dysautonomias

POTS postural orthostatic tachycardia syndrome-tilt test within 10 minutes pulse goes up

- NOTE: POTS often occurs with Ehler's Danlos loose ligaments and Histadelia-high histamine/undermethylation and MCAS mast cell activation syndrome.
- This is NOT mast cell cancer or mastocytosis!

OH orthostatic hypotension or hypertension-BP goes down or up by 20 points either systolic or 10 pts diastolic within 3 minutes after standing or tilting head up

Vasovagal syncope-fainting or passing out after standing or a stressful event, preceded by sweating, nausea, low BP and pulse.

What's the point?

Chiropractors measure autonomics before and after adjustments to identify hidden fragile patients, and to monitor known fragile patients.

When the autonomic symptoms get better, we have documented exactly what improved from our adjustments and therapies.

When the symptoms get worse, we know to back off the "dose" or intensity of the adjustment. The force, depth, level, and visit frequency may have to reduce to match the patient tolerance. This ban help avoid adverse reactions.

Typical Chiropractic presentations of autonomic escape-*if you ask you will uncover these daily*:

- Dripping sweaty hands and or feet-may be cold or hot especially during examination or chiro treatment
- Asthmatic type wheeze or unproductive dry cough when exposed to wind, draft or scents
- Cold fingers, toes, nose and ears with normal core body temperature. Often has palpable cold belly too. They report the groin and underarms remain warm.
- Gooseflesh triggered by drafts, music, temperature, or certain fabrics
- Constipation or diarrhea other wise unexplained
- Difficulty swallowing, especially pills despite being able to chew and eat normally
- Choke on grains of rice or water
- Labored beathing, sweating and elevated pulse with mild exertion or tying shoes, that takes more than minutes to normalize. These are not pink puffers or blue bloaters (types of CH failure)

What to do

- If you see the symptoms on the previous slide, track them as you apply chiropractic adjustments, brain exercises, dietary changes in the macros (protein, fat, carb ratios), detox from metals, liver detox, bile support and others
- You may get changes or improvements in the symptoms.
- You may need to fine tune your treatments up or down in intensity, force, frequency, spinal level, repetitions or other modifications.

Medical cases confirmed

- Medical causes do exist and require workup and sometimes intervention:
  - autoimmune destruction,
  - toxic pesticide, glyphosate,
  - industrial or heavy metal poisoning
  - rare familial inherited syndromes, and
  - unknown causes

Non-medical cases

Often patients will present after medical evaluation an they are ruled normal variants

Their symptoms are significant, yet their imaging and nerve conduction are normal, and there is no evidence of autoimmunity

Chiropractic care, diet and stress management can make large differences if the interventions are subtle and not overwhelming

History taking for autonomics

- Triggers may include weather, humidity, temperature, pressure, altitude, storm fronts
- Psychological stressors and event triggers
- Poor sleep
- Food intolerance triggers
- Also may have Hx of Hashimoto's thyroid, rosacea, Crohn's, IBS, hypertension, OCD, rheumatoid or psoriatic arthritis, celiac,

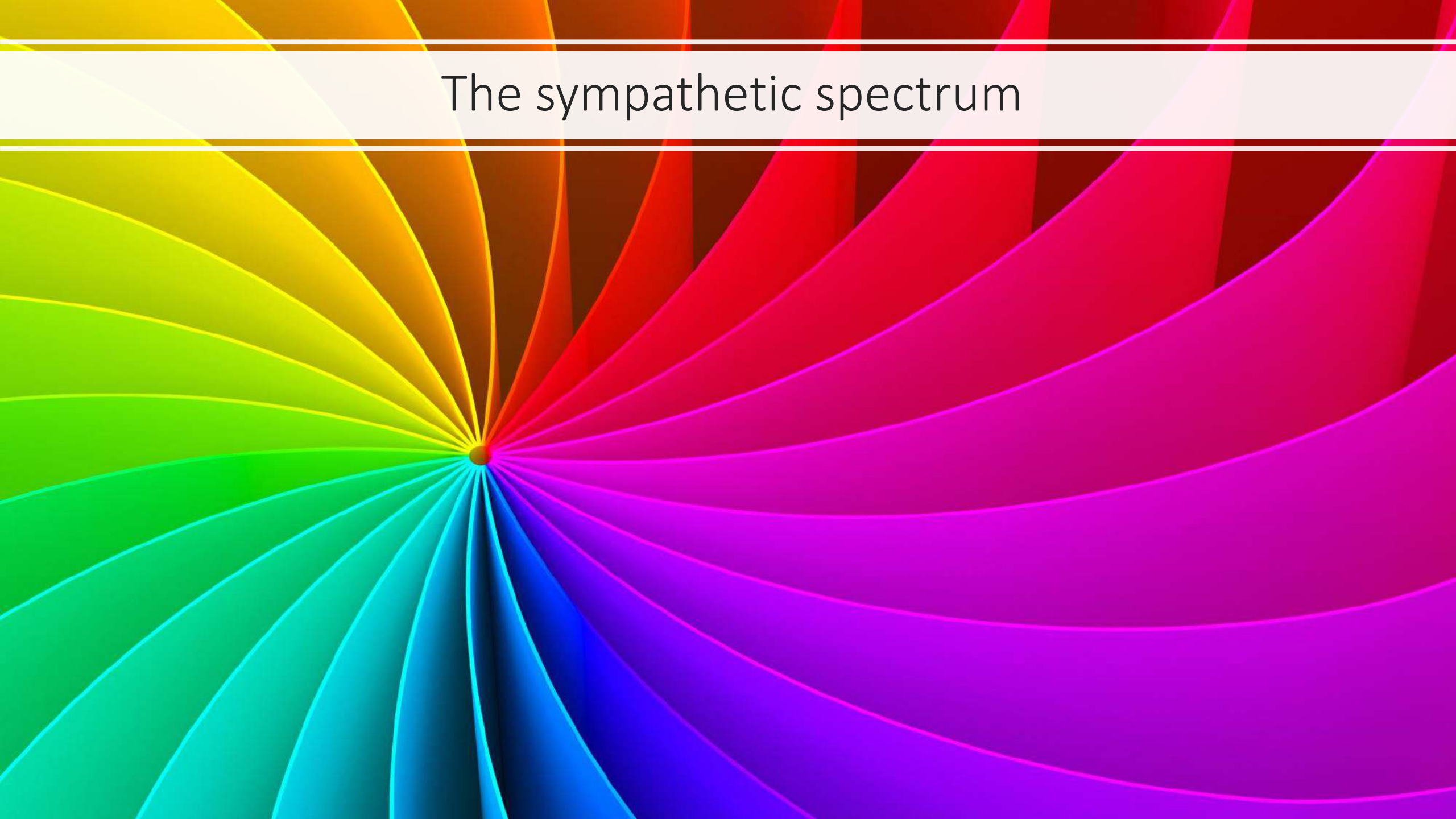
Observation-autonomic signs:

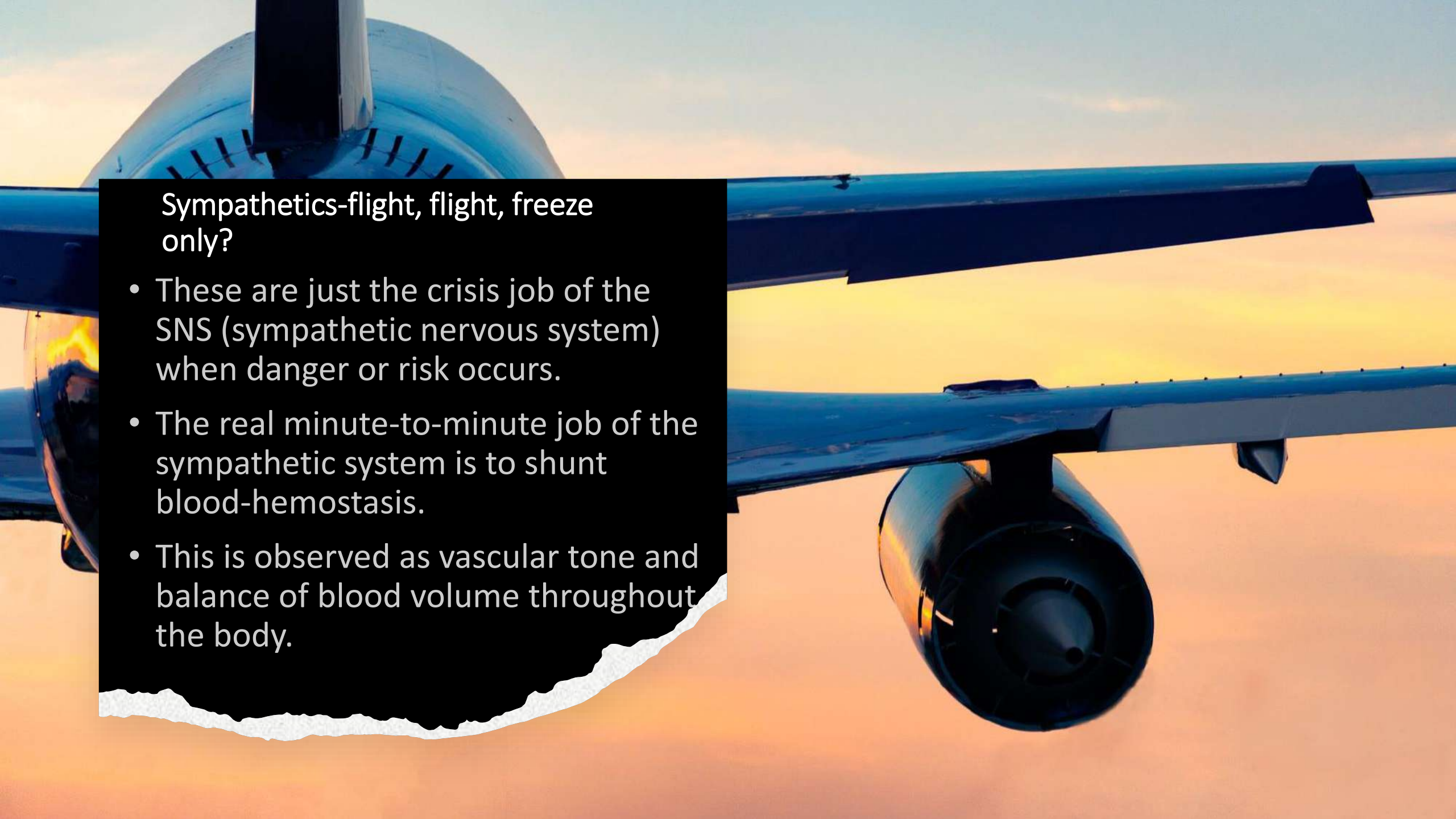
Toenails thickened, yellow, fungus

Foot fungus between toes- dry flaky skin

Ashy white shins, heels

The sympathetic spectrum





Sympathetics-flight, flight, freeze only?

- These are just the crisis job of the SNS (sympathetic nervous system) when danger or risk occurs.
- The real minute-to-minute job of the sympathetic system is to shunt blood-hemostasis.
- This is observed as vascular tone and balance of blood volume throughout the body.

Sympathetic regulation of vascular tone

- The sympathetic centers in the spinal cord fire to the paravertebral chain ganglia
- The sympathetic paravertebral ganglia fire to the smooth muscle walls of arterioles to maintain a resting tone at rest.

Low vascular tone or high vessel tone?

- Vascular tone is never zero, that would be full vasodilation all over the body, or we would pass out due to lack of blood flow to the brain from all these vessels being fully dilated.
- Some marginal level of vasoconstriction is always present, and it varies based on what body areas need more blood flow than others.

You will mostly see high vascular sympathetic tone in autonomic outpatient presentations.

On occasion you will see upregulated parasympathetics in addition to elevated sympathetic tone.

How can Sympathetic and Parasympathetic overfiring occur together?

Weren't we taught that one dominates- sympathetic or parasympathetic? Yes, and that is true generally.

However, when the central control of the Autonomics is dysregulated, both arms (S and P) will overfire.

This looks like sweating, migraine, cold hands and diarrhea or urinating all at once during a fright or as a consequence of brain injury.

Vagal suppression

- Conversely, some concussions will reduce output of the vagus, and we get low stomach acid and gastroparesis symptoms, reduced swallowing, reduced digestive secretions, reduced bowel sounds, constipation, and gas production due to indigestion.

Sympathetic mechanism-normal

The idea of shunting blood to the area of need is based on partial and only proximal vasoconstriction of smooth muscle vessel walls.

The distal vessels are not sent a vasoconstriction signal…

In fact, the blood moves distally with greater velocity and the distal vessels vasodilate naturally due to this local pressure

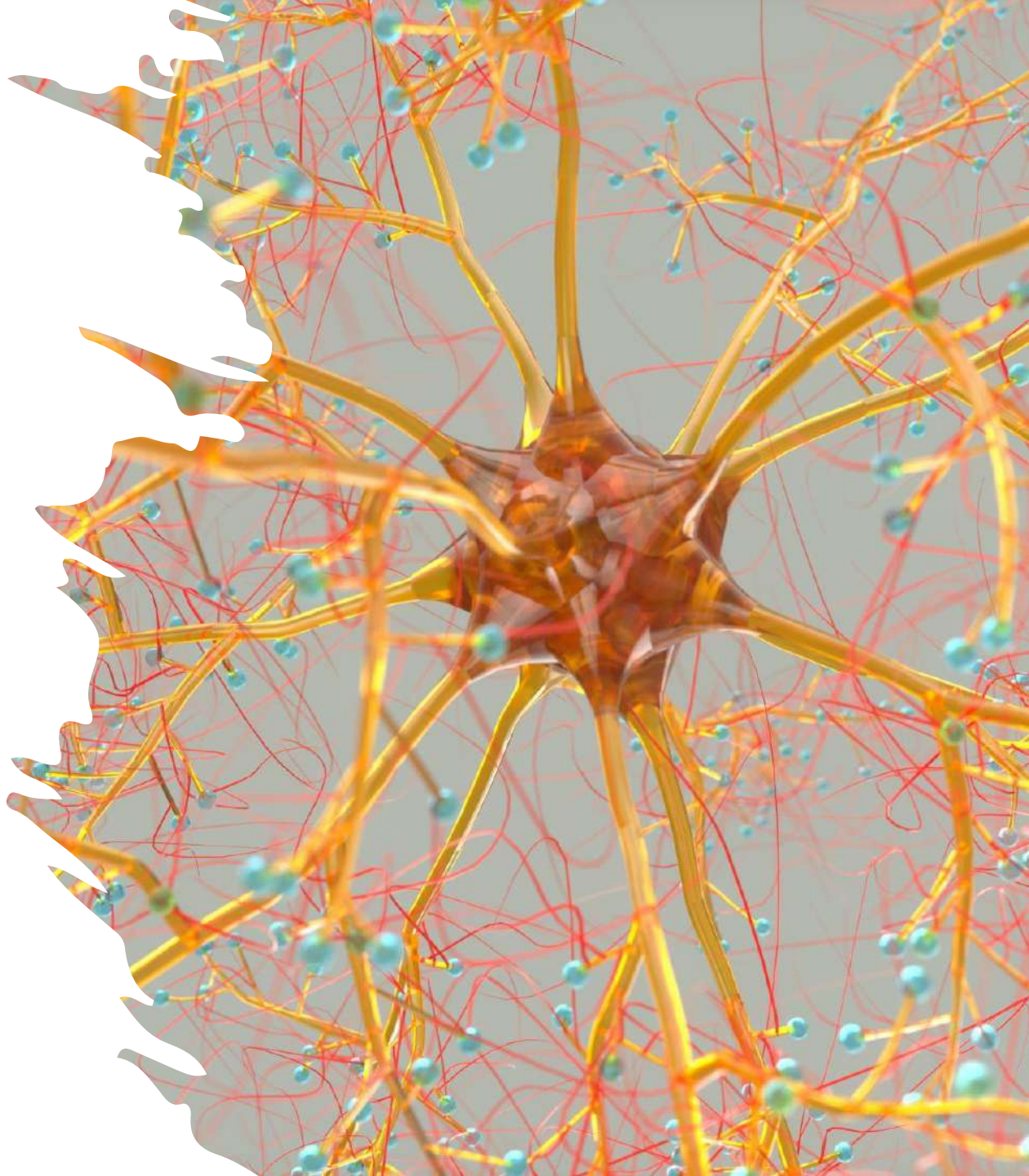
The pressure effect is called Bernoulli's principle like putting your thumb over a low flow hose. Your thumb causes a smaller opening, and that leads to a faster stream of fluid.

Sympathetic normal increase of demand

- When you go from sitting to playing tennis, your hands should get warmer, pinker, and mildly moister than when sitting.
- This represents a proper shunting of blood to the arm and hand required for the increased demand of gripping and swinging a racquet.

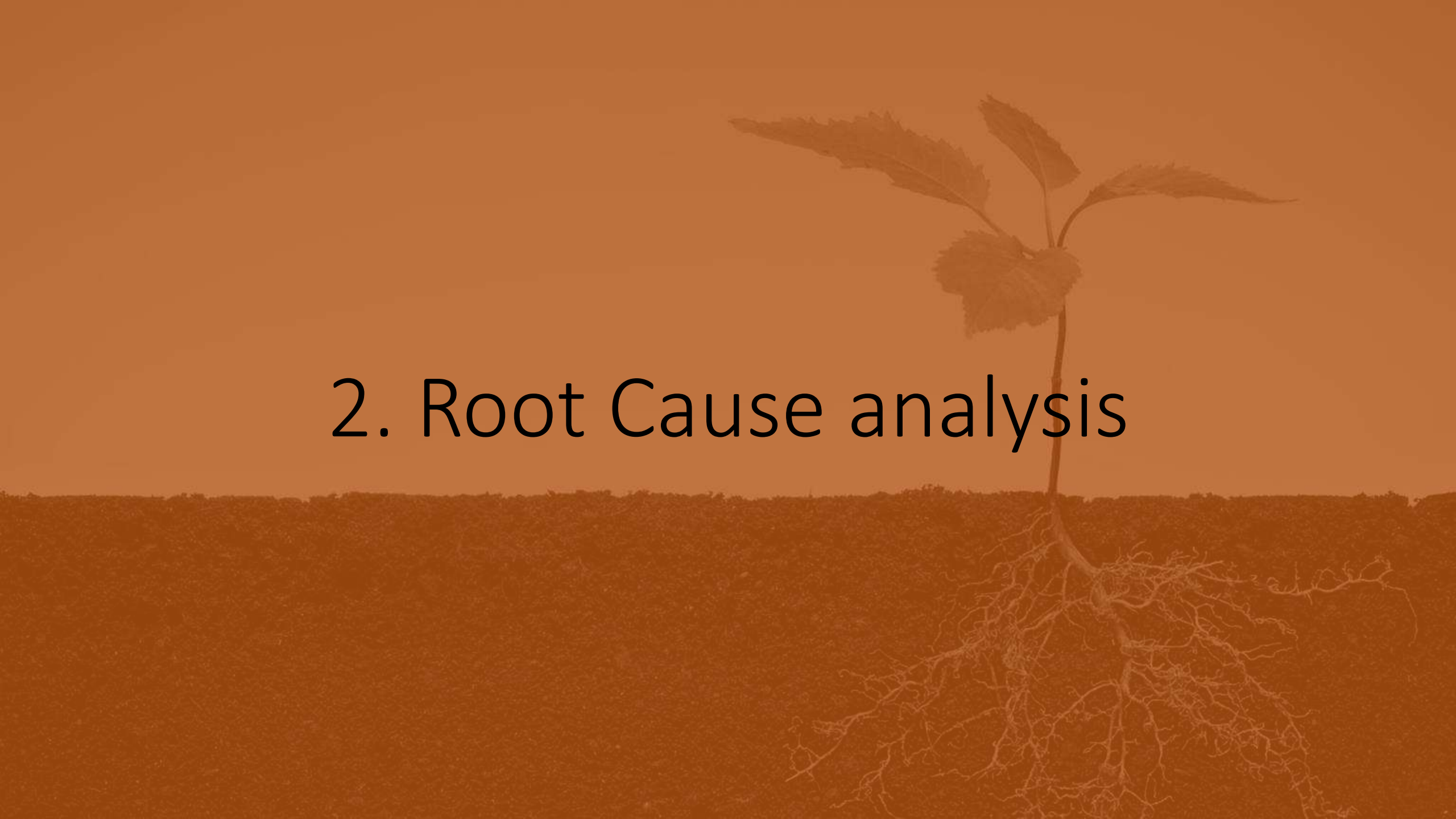
Sympathetic mechanism-excess SNS firing

- When the SNS over-fires or escapes, the proximal vessels and the distal vessels receive too much signal to vasoconstrict from the cord and ganglia.
- This defeats the purpose of shunting blood to the area of need, because vessels are restricted and net flow of blood is reduced to the periphery.



Sympathetic overdrive signs

- white or blue fingers,
- Cold fingers and toes
- sweaty hands and feet
- sensory reduction as paresthesia from low blood flow.



2. Root Cause analysis

Root cause fundamentals

- This is just making a list of questions to help understand the real mechanism, not just a diagnosis code.
- We want to ask about what factors or stressors or life changes happened around the same time as the symptoms, and that may plausibly have contributed to the condition.
- We want to think of mechanisms that are plausible to explain the symptoms and the timing.

Use these slides as a worksheet or template

- Print these slides as a prompt to help you ask deeper questions and expand your clinical thinking rapidly in the clinic.

Root cause thinking ideas template:

- How serious is the symptom? Which symptom is worst or most dangerous/ominous?
- Are the symptoms related or unrelated?
- What is the most likely cause based on probability?
- What other less-likely causes might be underneath?
- How hard have they looked at this problem before coming to you?
- Have many specialists looked at this condition before you?
- Did the obvious healing methods fail and make you question the first diagnosis?

Ask basic root cause questions such as:

- Is this autonomic symptom caused by:
  - Local spinal reflexes are one limb or region
  - Top-down brain reflexes affect the whole body or one whole side?
  - Toxin exposure such as heavy metals, pesticides, polypharmacy or drug side effects? Chemotherapy?
  - Poor sleep, stress, PTSD or other psychological roots?
  - Deficient nutrients, bad diet macros (protein:fat:carb ratios), or insulin resistance?
  - Inflammation or oxidative stress?
  - Is it hormone imbalance?
  - Could it be autoimmune reaction?
  - Are they mouth-breathing at rest or have airway problems, snoring, apnea?

Root cause analysis of diagnosis

- Record What is the complaint or symptom
- Record-Do you know what drives it?
- Do you need a referral or more testing, labs or imaging to understand?
- Was the treatment expected to work?
- Is the mechanism clear?
- Do you need more diagnostics?

“Root cause analysis” comes from science and engineering disciplines: Check out the biochemical engineer Ivor Cummins on YouTube-The Fat Emperor- for more on this.

Root cause analysis of treatment

- **Sometimes you have the diagnosis correct, but the treatment needs to be modified.**
- Did they get a little better, then it wore off?
- Did they get worse and then better?
- Did you dose the intensity of the treatment too high or low?
  - was the adjustment or brain exercise too forceful/light?
  - Should the adjustment or exercise be closer to atlas or farther distal?
- Do you have an adverse reaction-(worsening or new symptoms) to the treatment or just a non-response with more of the same symptoms?

Toxicology and autonomic signs

- Sometimes an aluminum toxicity can stop the sweating process
- Sometimes a zinc deficiency can also stop the sweating process.
- Sometimes an aluminum excess can cause the opposite-excessive sweating hyperhidrosis.

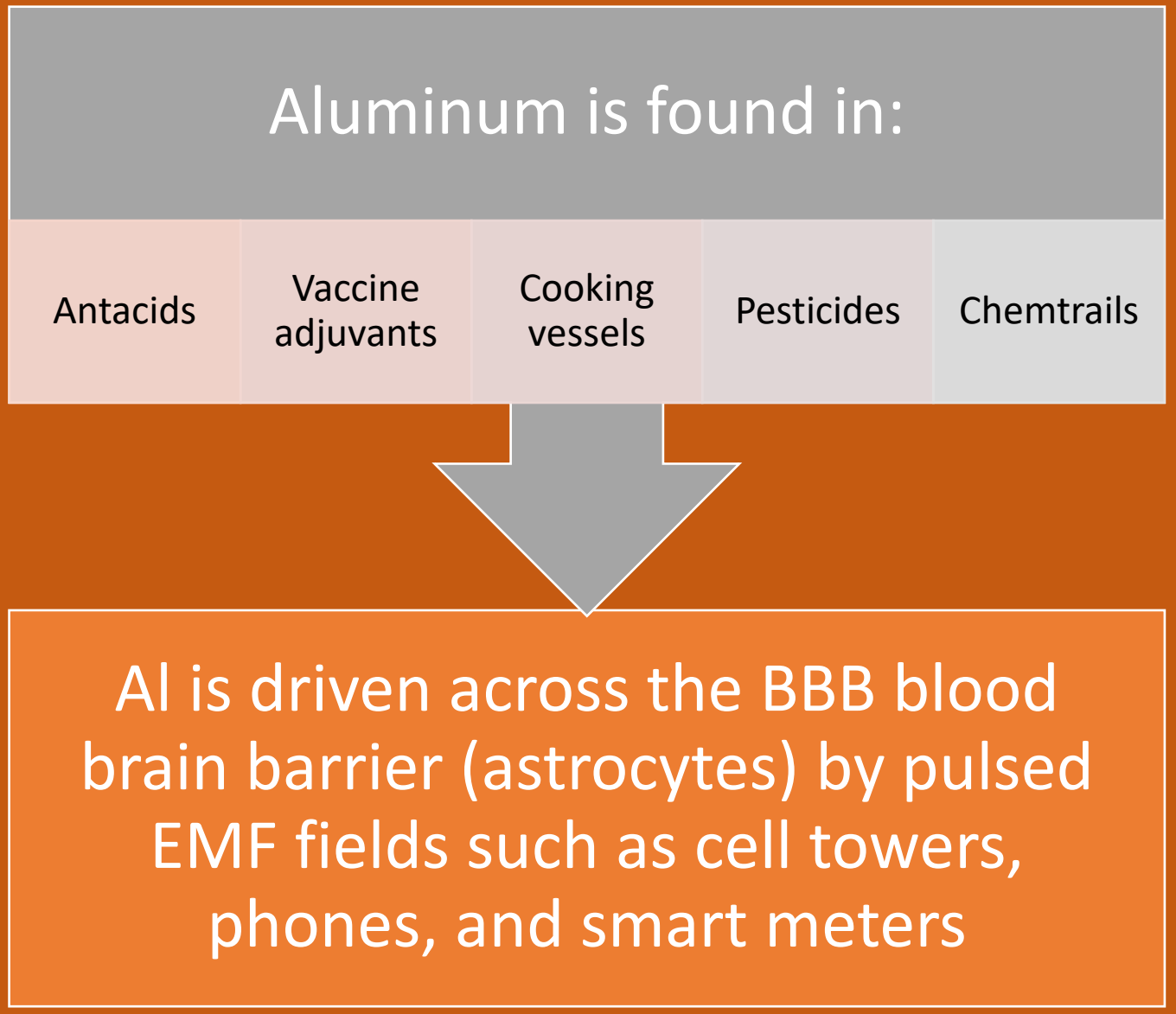
Smelly Foot Syndrome

- Sometimes this appears in pre-pubescent children before any underarm hair or odor has developed
- The feet smell and sweat with great odor, but no underarm or other body odor is present.
- Shoes and socks become fouls smelling rapidly.
- This can be caused by a zinc deficit that affects the sweat glands, detoxification and sulfur balance process.

Sympathetic sweat smell

- Sympathetic firing drives more oily, smelly sweat
- Educating the patient to identify and associate sweat conditions that stimulate their sympathetics such as low blood sugar can help them avoid overfiring

Aluminum toxicity



Aluminum testing

- Hair heavy metals are a good standard for chronic metal exposure
- This hair test is not great for aluminum, and there is no good test for Al in living patients yet.
- Chris Exley, Ph.D. is an aluminum biologist who studies Al toxicity (look for him on YouTube)
- He shows there is no good test for aluminum in the living patient
- However, he proved good correlation of Al in the brains of autopsied autistic and Alzheimer's human patients!
- ***He used silicic acid drinking water to remove aluminum from the living (not silicon dioxide)***

Covid-19 research

The autonomic nervous system reacts to vaccines and infections-see the study on the next slide:

nature cardiovascular research

- Article Published: 12 December 2022
- **Apparent risks of postural orthostatic tachycardia syndrome diagnoses after COVID-19 vaccination and SARS-Cov-2 Infection**
- Alan C. Kwan, Joseph E. Ebinger, Janet Wei, Catherine N. Le, Jillian R. Oft, Rachel Zabner, Debbie Teodorescu, Patrick G. Botting, Jesse Navarrette, David Ouyang, Matthew Driver, Brian Claggett, Brittany N. Weber, Peng-Sheng Chen & Susan Cheng
- Nature Cardiovascular Research volume 1, pages1187–1194 (2022)
- https://www.nature.com/articles/s44161-022-00177-8

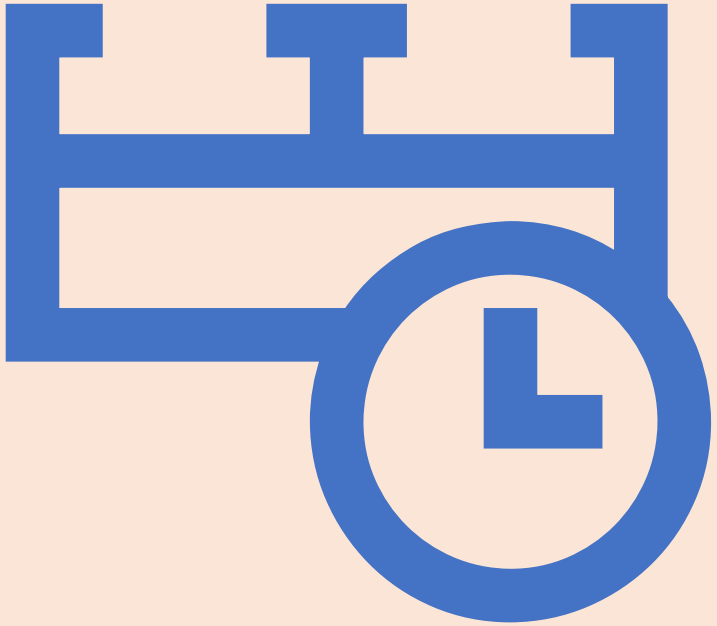
Clinical reasonableness

If your diagnosis and treatment do not change over multiple visits, the general trend in the literature is that 3 months should be the end of your experiment.

Once 3 months of unchanging diagnosis and treatment have passed without clinical changes, or worsening, the diagnosis or treatment should be reevaluated and changed.

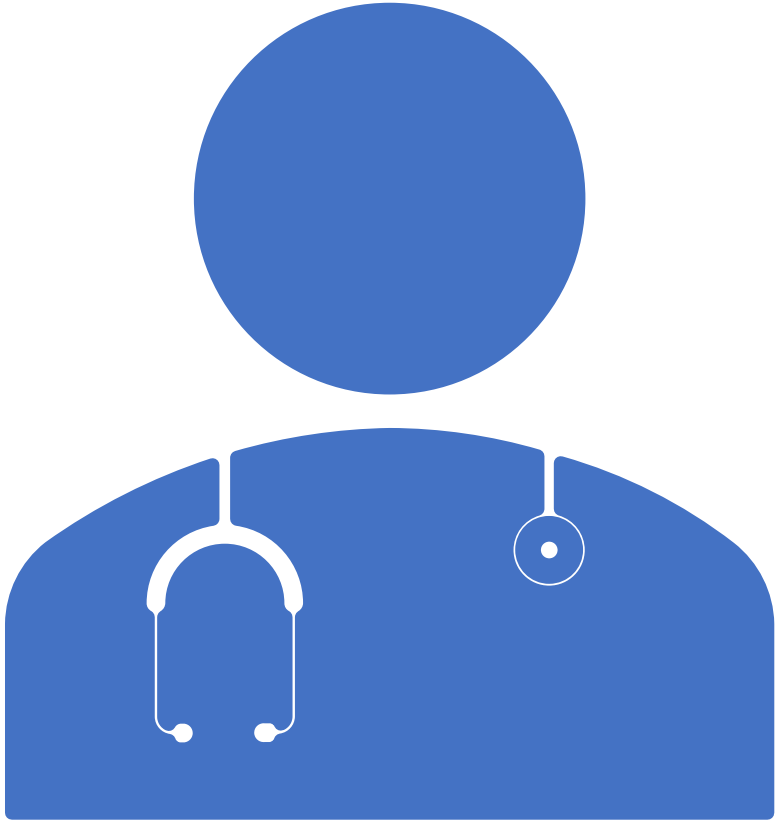
There are exceptions for terminal care, incurable disease palliative care and other conditions. This should be documented as a conscious choice with informed consent.

3. Timeline construction of diagnosis and treatment schedule expectations



Timeline and prognosis

- Once you think you have determined a diagnosis and a cause, there should be a reasonable expectation of time to improvement.
- Significant improvement in most cases should take days to weeks for significant improvement.
- More degenerative or traumatic conditions may take months or longer to improve.
- If you notice it takes a lot longer to improve than you predicted, think about a different root cause.



Timeline rules of thumb:

- Expectation of noticeable results
  - A few days-electrolytes, inflammation, B-complex vitamins, vitamin C, pain mitigation
  - A few weeks-carbs and blood sugar changes, basic food sensitivity, infection, basic gut repair, basic sleep balance, early brain plasticity begins
  - Many weeks to 4 months-lectin sensitivity, bile support, thyroid balance, adrenal restoration, fat adaptation in keto. Nerve healing begins. Brain plasticity starts to last.
  - Many Months-heavy metal, solvent and pesticide detox, hormone balancing, organ repair. More complete peripheral nerve healing.

Protein in Humans

- The half life of protein is 7 to 14 days in biological systems
- That means protein-based brain, ligament and organ healing may take several doublings or several weeks to see changes clinically as we heal and form new protein.
- It also means that dietary lectins and gut lining may require several weeks to fully heal and turn over.

Prognosing: how long should healing take?

- Re-adjusting your timeline of healing helps understand the mechanism under the complaints.
- Describe how long it should take to heal generally if possible
- Or describe how long it should take for them to feel meaningful difference, about 15% better. 3 days? 12 weeks? Longer?
- Break down chronic multiple health issues into phases of care.
  - Inflammation and pain control
  - Elimination diet
  - Detox phase
  - Repair and rebuild
  - Maintain and avoid flares

Patient Goals vs. Doctor's Goals-patient education, expectation and consent:

Ask patient their goals and the priorities of those goals in order

Record your priorities for the patient based on your experience and training in triage

Compare these lists with the patient to set combined clinical goals

Place the goals on a timeline of expectation for prognosis to reach them. Discuss the realities of their life and barriers to success.

Prognosis

- Discuss reasonable time frames for each condition with the patient
  - record these for future planning
- Describe contingent work that has to be done first, such as weight loss, strengthening, sleep program, stress management implementation.
- Autonomics cannot improve under an ongoing stressful burden

Discuss the categories of stress with the patient

- This is not psychological counseling
- It is assessment of stress pathways. Ask them about stress from:
  - Financial stress
  - Health stress, scary diagnosis, chronic illness, Chemical or toxic exposure stress
  - Fulfilment/career/occupation/life meaning stress
  - Spiritual conflict or unresolved religious issue, guilt or shame
  - Relationship stress-romantic in nature
  - Family stress from blood relatives or adopted/stepfamily members or living situation

Timeline planning

Lay out

Lay out phases of care for them to reasonable reach each goal

Ask

Ask if they have events coming up that may stall your plan-such as long vacation, wedding plans, job change, or other interruption in care that can be foreseen.

Ask

Ask what the hardest part of all in your phases will be for them to do.

Discuss

Discuss how they can find support through the hardest part-

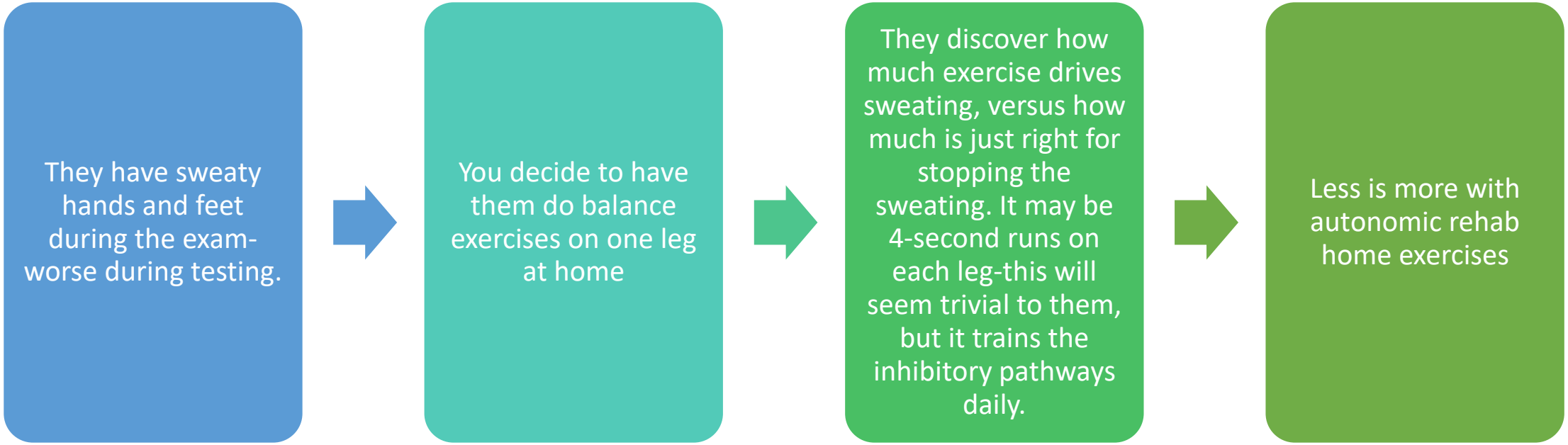
- Do they need education?
- Coaching and encouragement?
- Help with fear or counseling for trauma?
- Another professional like a PT, trainer or dentist?
- New mattress or shoes?

4. Simple autonomic rehab concepts and techniques in office and at home

Autonomic control is inhibitory

- Inhibition of excess autonomic firing (but not zero firing) while under some demand is the fundamental concept of neuro autonomic rehab.
- Help the patient find their threshold of autonimic escape-their triggers.
- These may change based on time of day, stress level, and other factors they must discover.
- Empower them to report to you for expert help with interpretation
- Do not expect to know how they will respond before they try a rehab
- Help them discover their moving tolerances of activation.

Example:


They have sweaty hands and feet during the exam- worse during testing.
You decide to have them do balance exercises on one leg at home
They discover how much exercise drives sweating, versus how much is just right for stopping the sweating. It may be 4-second runs on each leg-this will seem trivial to them, but it trains the inhibitory pathways daily.
Less is more with autonomic rehab home exercises

How does this look in practice?

The doctor measures some autonomic markers before the treatment.

The doctor decides to adjust in the neck.

The doctor remeasures the autonomic markers and keeps a lookout for other changes after the adjustment.

If the autonomics normalize=success!

If the autonomics worsen=wait for them to stabilize before the patient leaves and make a note to reduce the intensity or adjust lower on the spine or the extremities next visit.

Chiropractic interventions to train autonomic regulation

Chiropractic-sample exam cluster for autonomics-consider these rapid assessments and more:

- Exam-
  - vitals pulse, BP, temp,
  - Rate and depth of respirations
  - Pulse oxygenation %
  - Pupil direct and consensual light reflex
  - HRV testing
  - Thermography including orbits
  - Sweaty, cold or warm, red or blue hands and feet
  - Extremity swelling-edema
  - Face tacky to touch=sweating difference left to right
  - Auscultation of bowel sounds,
  - heart, lung sounds

Vitals: pulse

- Pulse/oxygenation finger devices are available for under $20 USD. Do not let the patient have lotion on their fingers or toes.
- Consider 2 AA or 2 AAA batteries instead of the button batteries as the buttons wear out much faster and can be more expensive.
- Consider one with a graph of the pulse wave called plethysmography-it shows the pulse wave on the little screen.
- The pulse should be 60-72 or lower in healthy resting adults,
- Oxygen should be 98% or higher. Most doctors consider 92% or below to be problematic, although optimal is 98 or above, and functional losses or a variable oxygen level are therapeutic targets. At rest the oxygen should be consistent over time.

Sympathetic tone

- If sympathetic tone is excess, the vessels will constrict too much
- The oxygen percent will reduce from ideal (99%)
- The pulse will rise above ideal

Interpreting Pulse-oxygenation %

- Often the pulse goes up and the oxygen goes down during sympathetic escape or dysregulation.
- Medicine views ox meters as indicative of lung issues, and chiropractors often add vascular sympathetic tone to the clinical interpretation.
- Compare right to left hands, right to left toes, and pre and post adjustment or brain therapy. Sometimes I place these during the history or at periodic interviews to assess emotional autonomic changes in the periphery from central sources.

Pulse-oxygenation

Normal resting is about 60 to 72 pulse

Normal resting is 98-99% oxygen

Autonomic sympathetic escape usually shows an elevated pulse (typically several beats above 72 bpm-often in the 80s or 90s)

And a lowered oxygen (for example 93%)

Blood pressures

Bilateral blood pressures can reveal sympathetic changes in vascular tone, if they are not plaque related.

Consider referral for vessel ultrasound if there is a difference, then pursue functional neurology mechanisms.

The higher side tends to have the sympathetic escape from a lack of descending control from the same side cortex and brainstem pathways. These pathways do not cross.

Blood pressure differences side to side- interventions

The brain weakness is usually on the same side as the high BP (control of the autonomic vascular tone is ipsilateral descending pathways).

Chiros and acupuncturists and massage therapists usually attempt to treat the body on the side opposite the higher blood pressure, for the sensory signal to cross to the side of involvement and bring up the cortical cells so they regain control of the autonomics.

Differences side to side

Sometimes a one-sided symptom of sweating or lower oxygenation is due to a one-sided autonomic dysfunction

That could be in the brain (hemisphericity usually)

Or it could be in the cord on one side- usually on the same side as the escape

Bilateral temperatures

Infrared thermometers are used to compare the skin temperature along the spine, and from side to side. These are used for touchless forehead fever detection and are below $50. Any bilateral structure can be compared pre and post.

The eyes and ears and styloid fossa under the earlobes are also useful to compare subtle differences in vascular regulation.

Have patient close eyes and inhale slowly during readings to avoid hot breath confounding your eye readings.

If you have a laser pointer on your touchless thermometer-ENSURE it is turned off before measuring eye temperatures!

Rate and depth of respirations

This is not a bilateral indicator, but shallow or rapid respirations can indicate sympathetic overdrive.

Chest heaving versus belly expansion is a sign of clinical hyperventilation and can lead to blowing off too much CO2. Look for waist restriction in belts and garments especially in female attire.

Check for those who wear neckties or buttoned up shirt collars too.

Respirations in resting adults should be 12-20 breaths per minute.

Healthy Patients should recover from brief exertion in less than a few minutes.

Pre and post palpation and adjustment and some postures can reveal sympathetic stress.

Pupil direct and consensual light reflex

Have patient look at a stationary target more than arms length away to avoid the convergence accommodation reflex- pupil constriction which is a parasympathetic function. Don't let them fixate their eyes on you or the flashlight.

Shine the light from a lateral field (from off to the side of the head) into one eye and watch both pupils. Do the other eye too.

We call the reaction of the same eye that the light shines on to be the direct pupil reflex.

We call the response of the eye on the other side of the light the consensual reflex.

Pupil light reflexes

- Both eyes should start the same size,
- Both eyes should respond the same in 2 phases
  - Phase 1-time to constriction-usually both pupils will constrict (parasympathetic response) to light within about 2 seconds. Hold the light on the one eye
  - Phase 2- hold time:
    - How long does each pupil hold as small before getting large again under the light.
    - They should not fluctuate large and small, large and small.

Hippus-2 types:

- If they open and close back and forth while a light shines on an eye, we call this functional or light induced hippus. It is a functional subtle but not pathological sign.
- One side may have more hippus than the other.

Pathological Hippus-ambient light

- Pupil hippus (large and small open and closing rapidly) at rest without a light shining is clinical hippus and is often a pathological sign that needs investigation.

HRV testing

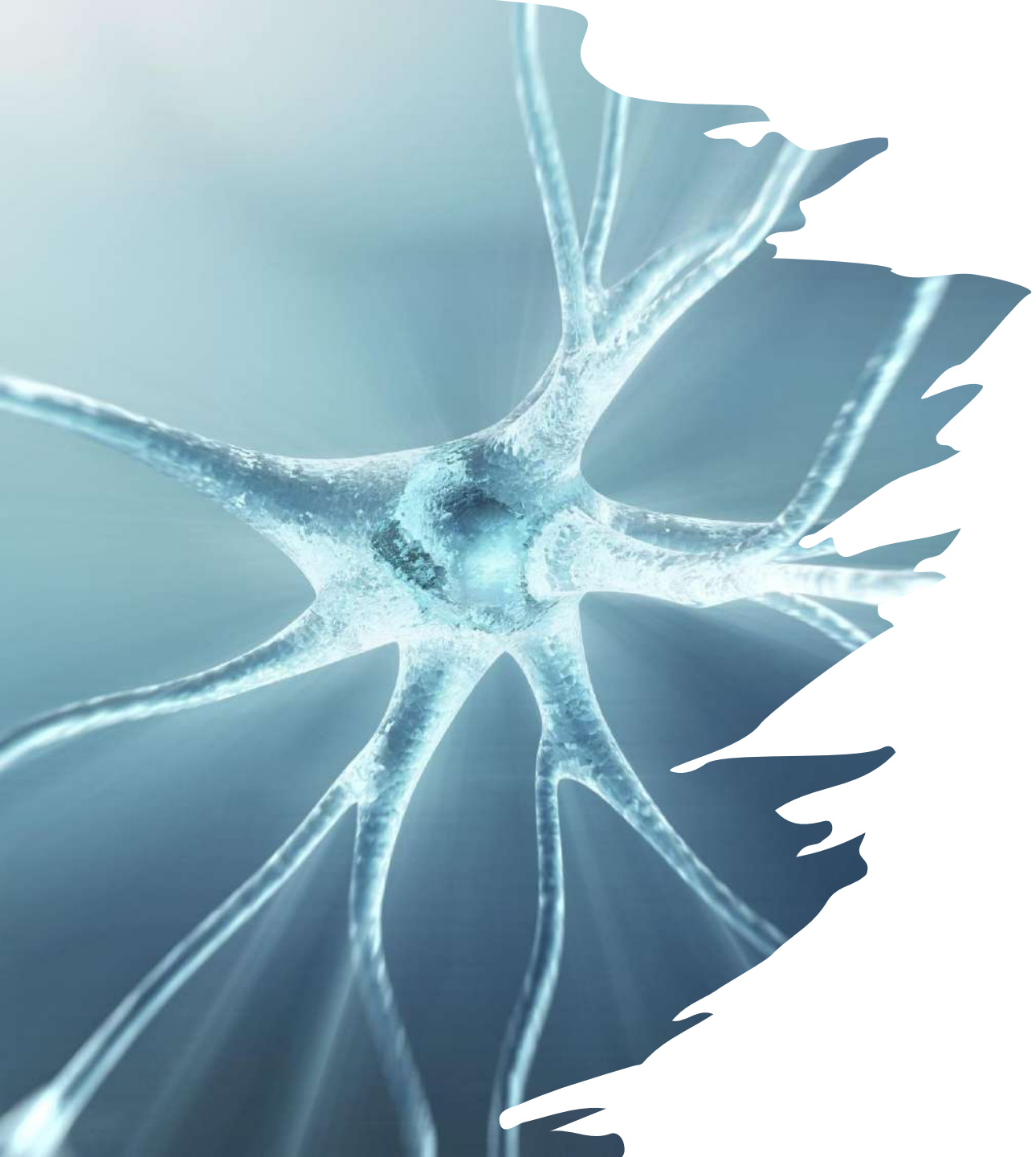
- Heart rate variability devices are under $200, and some are free or paid apps on smartphones. Some require a Bluetooth sensor for the chest or finger.
- These measure the time between heartbeats.
- Too consistent a time span is less healthy regulation. Too mechanical or consistent a gap is maladaptive.
- Somewhat mildly variable times between each beat is healthier. (not arrythmia, however)
- Some devices interpret a stress level, and others give breathing instructions to restore healthy balance.

Thermography

- Many contract thermographers travel to offices to run scans. The patient must take off clothes to expose the skin for this temperature scan of the skin.
- Often the face, back, trunk, and extremities are scanned for bilateral comparison and color coded for temperature zones.
- Some do ambient temperature scans
- Some do cooled-down scans where the room is cold.
- Often they have an interpretation report provided to discuss the subtle changes found

Sweaty hands and feet

- Often pateints will have sudden sweaty cold hands and feet from an adjustment, or from a sudden stressor.
- Many call all cold, blue extremities Raynaud's syndrome-which is classivally triggered by an emotional stressor like sudden bad news or a fright. It can be autoimmune small fiber sympathetic neuropathy.
- Sometimes it is just a circulatory problem such as a niacin or thyrid problem.
- Sometimes it is sympathetic escape.



How Sympathetic vascular tone works

- Vasoconstriction is caused directly by sympathetic fibers firing to smooth muscle vessels.
- **Vasodilation is not caused by parasympathetic firing!**

Vasodilation

- Vasodilation is usually driven by the STOPPING of firing of the local sympathetic fibers.
- The smooth muscles let go
- The ambient blood pressure causes the vessels to re-expand to resting state.

Extremity swelling-edema

Look for pitting edema, especially below the knees, sock line and feet.

Press into the skin with your finger and pull back to see if your finger leaves a depression that persists.

This is usually a bilateral cardiac or renal sign, but can be asymmetric due to vascular differences or lymphatic drainage issues, or autonomic tone imbalance.

Face tacky to touch=sweating difference left to right

- Look for reflection of the cheeks to be equal
- Touching the cheeks should feel equally hydrated-not tacky on one side from sweat, or drier than the other side.
- Look for one side to have excess sweating to indicate sympathetic escape when both sides have moisture
- Look for a dry side as an indicator of a loss of sweating due to a loss of sympathetic fibers. This could be more serious.
  - Look for a large pupil or droopy eyelid on the dry side to correlate and refer for deeper evaluation.

Sympathetic chain ganglia

- The neck can have a one sided or both sided problem of entrapment.
- Anterior neck muscles can compress the sympathetic chain ganglia
- Partial compression of peripheral nerves causes ischemia-poor blood flow.
- Ischemic depolarization is when nerve cells fire more because they have less blood and less oxygen.
- Higher, not less sympathetic output is generated; therefore, the face could sweat more, not less.
- This can affect the inner ear, eye or brain circulation
- This is an attempt to survive and reperfuse tissue.
- It can happen intermittently and is related to posture.
- Treat the muscles gently to release the entrapment
- It can be metabolic (pH, magnesium)

Auscultation of bowel sounds,

- Listen to all 4 abdominal quadrants with the large side of the stethoscope with patient supine.
- Add palpation and wait up to 30 seconds to hear a sound of intestinal response
- Listen for normal bowel sounds
- All locations should normally have small, short, frequent low pitch sounds
- or their absence, excessive sounds called borborygmi
- Loss of sounds is a parasympathetic loss
- Enhanced sounds is excess parasympathetic tone.

Other examples of Chiropractic tests for autonomics:

- “Poor man’s” tilt test or supine-to-standing BP/pulse difference
- Ophthalmic exam-V/A ratio of vessels
- Otoscopic exam-drum redness reflex and pinna blush reflex
- Light touch or cold on forearms and face-look for erector pili response=goosebumps
- In lumbar stenosis/neurogenic or pseudo-claudication-downward dog posture relieves dural venous congestion and pain.

Poor man's" tilt test or supine-to-standing BP/pulse difference

- Record the patient blood pressure seated on the left side or both arms.
- Lie the patient down and take the supine BP 3 times or until consistent.
- (If not consistent readings, we have a dysregulation to investigate)
- Instruct the patient that when you say go, they will stand up as fast as possible normally and smoothly without holding their breath or grunting.
- You pump up the cuff (this does not work with automatic cuffs!! They are not fast enough) and ask the patient to stand when you have the pressure over 20 points higher than their resting systolic BP.
- Do not use wrist cuffs-they are also automatic
- Follow them to a standing position, keep the cuff/arm at their heart level. And immediately let pressure out slowly to grab the blood pressure.

Orthostatic blood pressure changes (not POTS)

- Patients can have higher or lower pressures when comparing supine to sudden standing. Have them keep eyes open and don’t hold their breath.
- Be ready to catch them suddenly, and record if they feel dizzy or faint, or if they wobble. Normal should be not much change and quick recovery in just a few heartbeats.
- They can also have either systolic or diastolic changes or both, and even in opposite directions up or down from lying!
- Sources differ on levels: usually 10 to 20 points in difference higher or lower of either systolic or diastolic from lying to standing can be considered clinically significant or functional.
- When pressure rises significantly, its called orthostatic hypertension
- When pressure falls significantly, its called orthostatic hypotension

POTS postural orthostatic tachycardia syndrome

- A hospital or neurology clinic may run a tilt table test where they tilt the patient and measure the pulse over more minutes to look for a persistent raised pulse that does not correct well or rapidly.
- This can be autonomic escape from autoimmune brain problems, excess histamine, mast cell activation syndrome MCAS, or Ehlers-Danlos syndrome complications
- Some sources have implicated undermethylation also.

Ophthalmic exam-V/A ratio of vessels

- When examining the retina with an ophthalmoscope, we can see the veins and arteries on the retina. Both eyes should match.
- They look like small roads or rivers seen on the ground from high up in a plane
- The diameter or width of the vessels should be roughly equal-they run together and often cross each other like an X.
- When the Vein-to-artery thickness appears obvious that the veins are twice the thickness of the arteries or more, we imply that there is vasoconstriction of arterioles, and stasis in the venules.
- This is sympathetic escape to some degree
- This can be more in one eye than the other in some unilateral sympathetic escapes.

Otoscopic exam-drum redness reflex and pinna blush reflex

- Using an otoscope, you may see the ear canal and drum vessels flush with blood on one or both sides. This is not common if you see a lot of ears, but take care not to pull too hard on the ear when placing the otoscope
- This is not swollen canal tissue; it is just flushed pink tissue. It is not an ear infection and pus is not seen.
- One side can be worse.

Light touch or cold on forearms and face-look for erector pili response=goosebumps

- Some patients will present with random gooseflesh signs or cold extremities, or paresthesias due to sympathetic escape.
- This can be one-side more than the other or both sides equal.
- We tend to stimulate the side opposite this symptom to see if the cortical cells can control the sympathetics.
- This is the opposite of most therapies that aim to treat the affected limb directly, and sometimes this makes the sympathetic tone worse.

In lumbar stenosis/neurogenic or pseudo-claudication-downward dog posture relieves dural venous congestion and pain.

- Sometimes the veins of the lumbar spinal cord swell during claudication or stenosis.
- Have the patient get down to their knees with their pelvis up in the air, and their chest and head on the floor if possible
- This should somewhat drain the lumbar venous plexus and reduce the claudication if it is spinal venous in origin.

Rapid headache screenings

- Throbbing, nausea, more unilateral, food related (migraine-type)
- Palpation of scalp muscles, chewing muscles and TMJ above atlas (scalp or TMD HA)
- Posterior scalenes and SCM palpation and referral to temple (neck referral pain)
- Palpation of C2 posterior complexus muscles refers to eye and cheek with eye watering (classic cluster HA)
- Breath holding=aggravated HA (vascular HA)

Throbbing, nausea, more unilateral, food related (migraine-type

- Headaches that are not symmetric, throbbing, or accompanied by visual auras are more likely to be migraine/vascular type.
- Some sources claim these are digestive or electrolyte related to sodium balance.

Temporal arteritis

Palpation of the temples should be done carefully at first in case of arterial inflammation

Palpation of scalp muscles, chewing muscles and TMJ above atlas (scalp or TMD HA)

- Palpate the entire occipitalis, temporalis, masseter, SCM and all 3 scalene muscles on each side
- Look for referral pain to the temples or eyes or head, or down the arm
- Look for tender nodules, scar tissue, tender points, and asymmetry.
- Chiropractors often palpate atlas and suboccipital muscles and may miss the scalp muscles.

Palpation of C2 posterior complexus muscles refers to eye and cheek with eye watering (classic cluster HA)

Palpation of the posterior C2 can drive a watery eye on the same side with orbit pain

This can be cluster headache.

Breath holding=aggravated HA (vascular HA)

- Holding the breath or increasing intracranial pressure with Valsalva's test can increase headache.
- Asymmetries could be more significant and should be investigated further

5. Fast, easy documentation

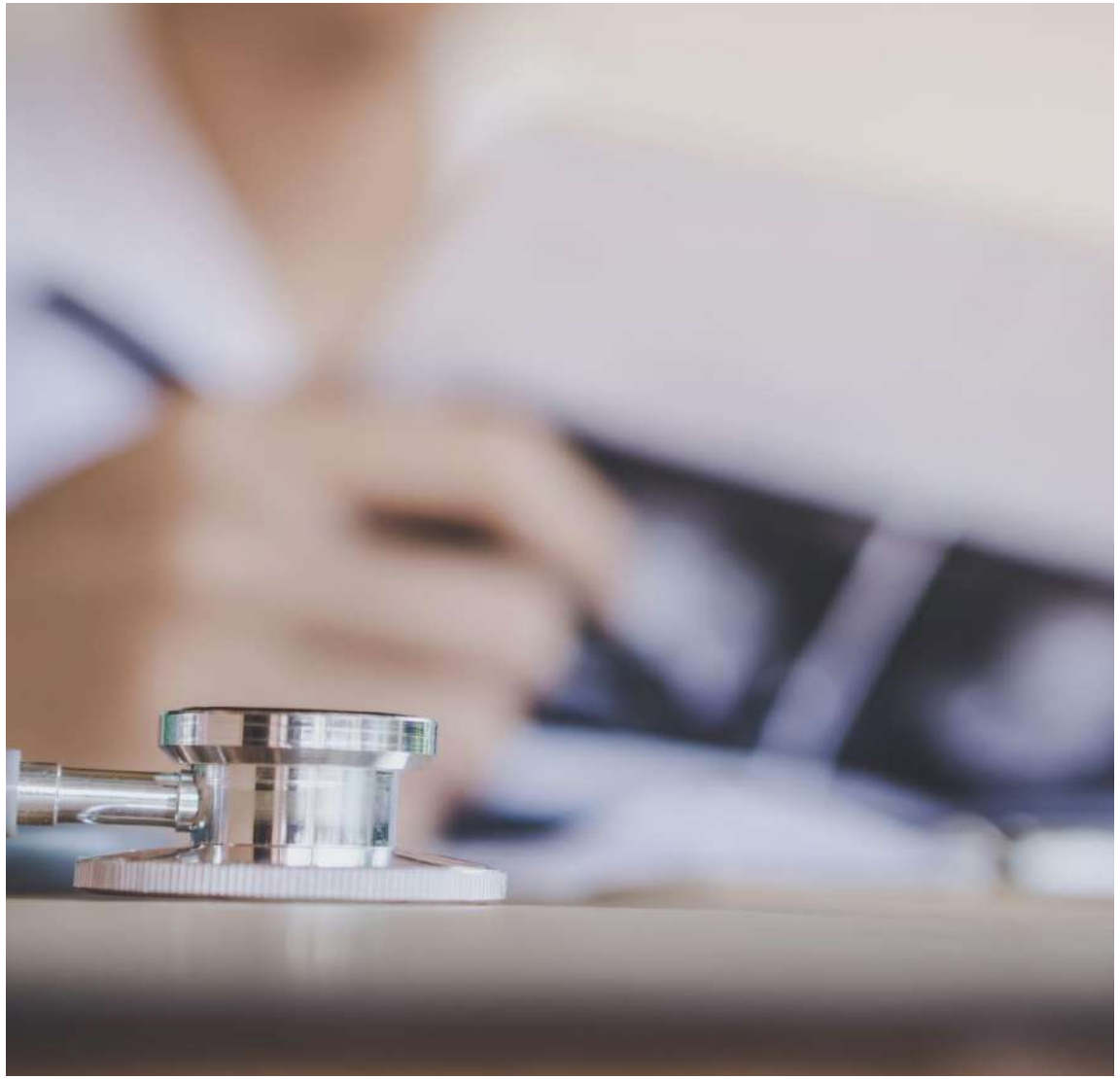
SOAP note example:

- S: Pt states her sweaty palms have reduced 20% since last visit and total of 30% since starting care. She feels this may be related to her anxiety attacks.
- O: pulse ox is 85 p and 96% bilateral hands before trx. 5 min. After adjustment she is at 80 pulse and 98% ox. Supine leg check is even-was short left.
- A: Neck adjustments are well tolerated and reduce her sympathetic tone and possibly anxiety.
- P: Today adjusted coupled motion C5 R lateral flexion supine. Patient does home exercises for C-spine and pursuit eye movements as described Day 2. She will observe the anxiety connection and use her $15 home pulse-ox meter randomly to track.

See the history forms my interns and I produced

- The forms are broken into short checklist sections to avoid fatigue and allow a patient to rest between sections when they fatigue.

- The sections are designed to help clinicians easily and visually scan, spot and sort symptoms by body system.



History Forms

- Link to my history forms refined by all my interns:

https://chiropierce-my.sharepoint.com/:f:/g/personal/chiropierce_chiropierce_onmicrosoft_com/EpPanrhGBchJs3cFfnFk8KQBCi4yRFOPgbIhmEv467DCew?e=lOkzmt

Write what you see

- Write what you see
- Write what you measure
- Correlate it with symptoms if possible
- Propose your method or adjustment to calm the autonomics
- Measure and record the outcomes
- Use failure or worsening as a method of proving the cause or ruling in or out other causes.

SOAP notes secrets- Subjective

- Ask the % improvement since the start of care for each condition-super fast notes
- Ask the percent improvement (or worsening-it happens) since the last visit. Do this for each complaint or issue you are treating or tracking.
- Record even the issues you are not treating
- For example, a huge toothache can affect low back pain even though you don’t treat the teeth!!

SOAP notes secrets-Objective

- Whatever you see or palpate or measure that can be verified by others is objective
- You do not need to do a complete exam when you decide to check something.
- You are entitled to just check one or a few things visit to visit
- No need to bill for an exam, just part of the visit takes a few seconds

SOAP notes secrets-Assessment

1

Write any factors you think may be complicating or delaying their progress in their life such as work stress, money, family, car repairs, weather, economy, elections- anything they say is on their mind is relevant to healing.

2

Write what they are doing to get well-such as home exercises, diet, ice, sleep or naps, PT, massage, meditation, prayer, medications and even schedule changes to manage stress.

3

Record the quality of their sleep- falling asleep, staying asleep, number of hours, waking rested or tired, etc.

Assessment

- The assessment section allows you to record your thoughts and clinical reasoning.
- If you have an idea you are pursuing, you can describe it here, and be wrong later.
- That is the normal clinical reasoning process and is expected from professional clinicians.

SOAP notes secrets-Plan

- In the plan section, write
  - What you did today
  - What you plan to work on later and why, with phases of care
  - What homework you gave them to do
  - Who else you want them to see like eye doctor, or get audiology exam, or go see their dentist.

Subjective notes

Examples:

- Ask 1 general question relating to their condition such as “how is the sweating since the last visit?”
- Ask 1 specific question based on their answer such as “how is it better?”

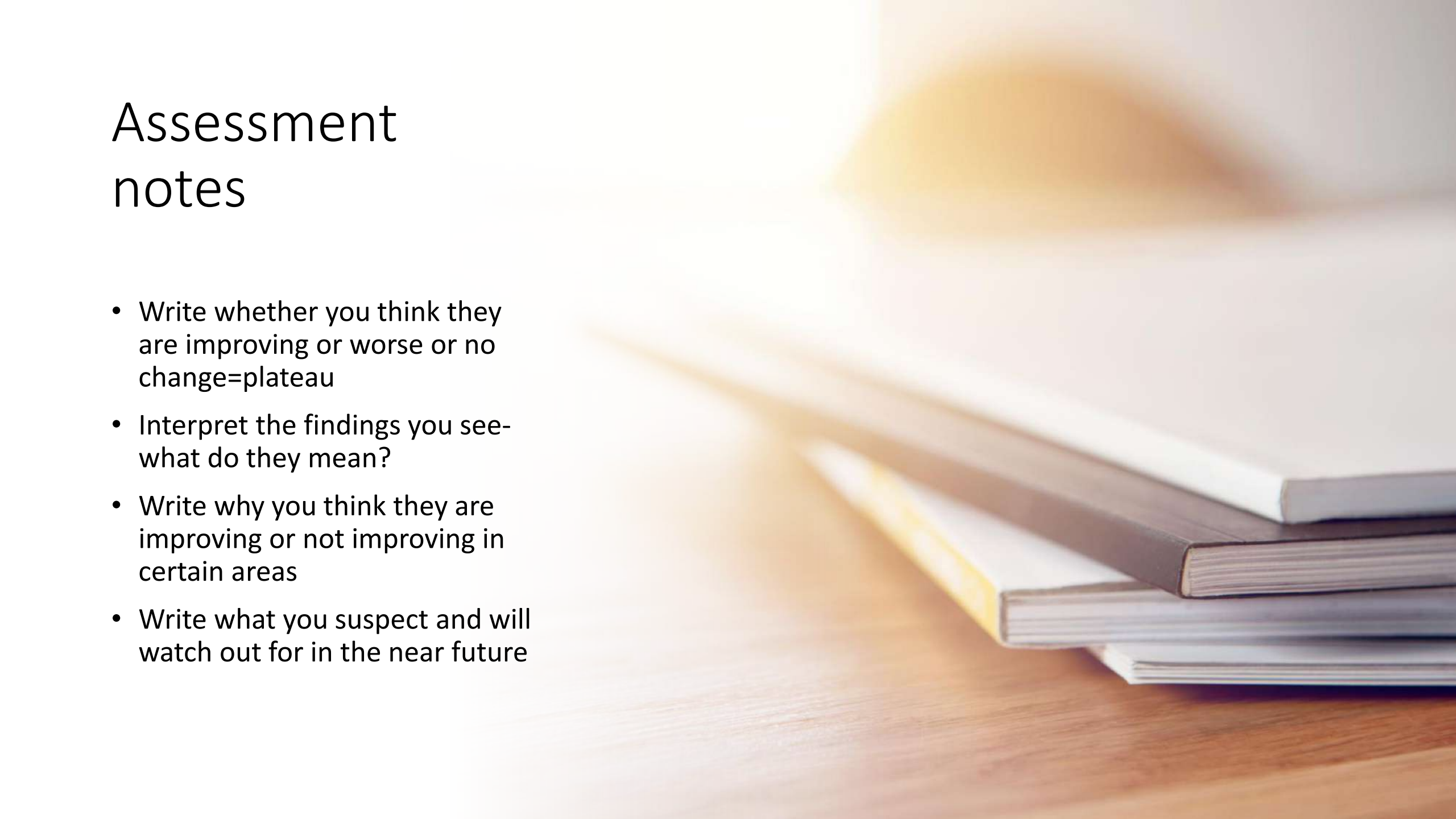
Objective notes

Examples:

- Record the pre adjustment and post adjustment reading you choose, such as pulse-ox on both hands
- Record the type and level of adjustment

Assessment notes

- Write whether you think they are improving or worse or no change=plateau
- Interpret the findings you see- what do they mean?
- Write why you think they are improving or not improving in certain areas
- Write what you suspect and will watch out for in the near future



ANS Variablility at rest=instability

if it was initially a variable reading and became steadier, you could call it more stable post treatment, even if the number settles but not in an optimal range.

Resting Autonomics should be stable minute to minute and visit to visit. Stability is often better clinically than just being in a normal range.

Instability

- Fluctuating autonomics at rest signify poor central integrative state of the inhibitory cells that regulate the autonomic columns in the cord (IML).

Plan notes

- Record what you did today,
- Record any homework exercises you gave them or told them to avoid.
- Write what you plan to try next time –more or less stimulation, and why based on their data.

Timeline of etiology

I like to draw out a timeline of their life and their issues on a whiteboard from birth to today.

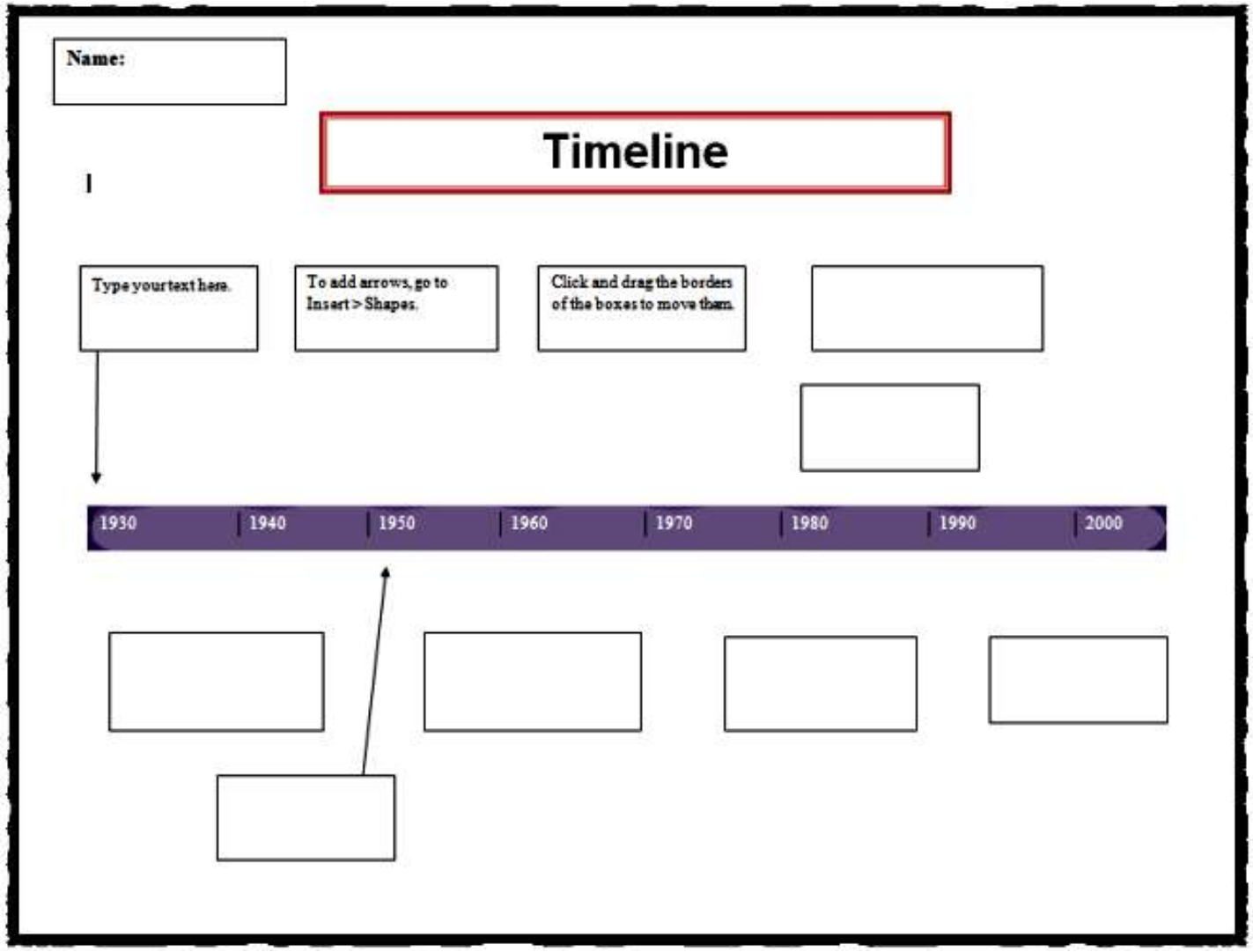
On it I write when ailments began or changed, and any significant treatments or surgeries.

I also add life events like pregnancies, mold exposures, divorces, loss of job, or other life events

This helps with the causation of each issue, and how they are related

I like to take a photo of the final product for their file

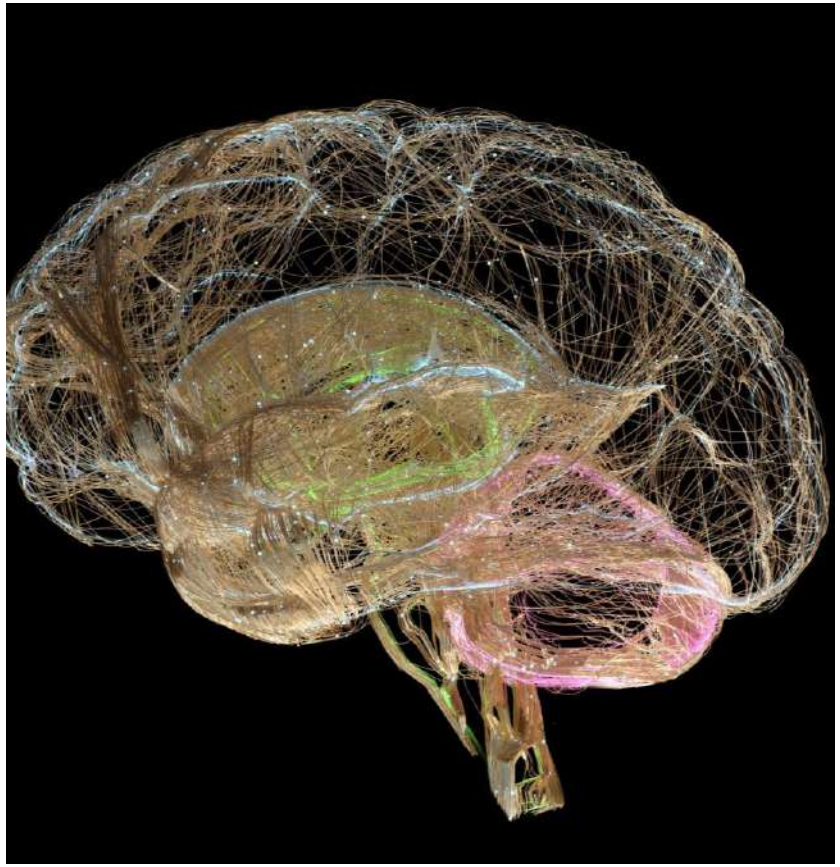
Simple timeline example:



6. Discussing subtle dysautonomias with patients and health professionals

Talking with laypersons

- No need for complex pathways and anatomy
- Plastic brain models help
- Showing which areas that you are targeting helps



Clinical Goals

Most of our work will be to drive the cells that inhibit the sympathetic nervous system and keep it balanced downward.

If we can gently activate spinal cord and brain cells to inhibit and regulate the escape of the autonomics, we succeed.

What does it look like? Example-Skin Brushing:

- When you brush the skin lightly, you may activate the inhibitory interneurons to control the excess sympathetic output at the cord level.
- If you get it right, the sympathetics are more controlled.
- If you overstim, the sympathetics will overfire more due to inhibitory failure.
- If you understimulate, nothing changes.

Talking with professionals

- Most professionals have a cursory knowledge of the autonomics.
- Start with your patient's symptoms
- Then consider discussing the trophic needs of the tissue affected. This means how does the tissue generating the symptom get its blood supply?
- Review the anatomy briefly of the symp and para system for that patient
- Explain how we intervene in the ANS by microstimulating local tissue demand for blood.
- This stimulates the regulatory mechanisms of the nervous system and exercises the inhibitory system to control sympathetic escape.
- Ask for questions. Get back to them if you don't know the answer.

Clinical Goals

MOST OF OUR WORK WILL BE TO DRIVE THE CELLS THAT INHIBIT THE SYMPATHETIC NERVOUS SYSTEM AND KEEP IT BALANCED DOWNWARD.

IF WE CAN GENTLY ACTIVATE SPINAL CORD AND BRAIN CELLS TO INHIBIT AND REGULATE THE ESCAPE OF THE AUTONOMICS, WE SUCCEED.

Explaining the cord regulation of the ANS

- In the cord
  - we first explain that all vascular control of blood flow is controlled by the spinal cord intermedio-lateral cell columns (IML) that largely fire to sympathetic blood vessels and sweat glands.
  - Then we explain the spinal cord “brake” action on these blood vessel nerves is by local inhibitory interneurons in the cord.
  - Stimulating these control cells makes them stronger
  - We use sensory and motor activation below threshold of sympathetic activation to retrain these inhibitory cells.
  - Humans are warm-blooded species that are better than dogs and cats at inhibiting their autonomics

Describe a treatment for the ANS to a health professional- Example:

The patient presents with cold hands and feet with activity. There are no sensory or motor changes. The patient has a pulse ox of 93% on both hands. Temperature is normal. Hands and feet are pale, cool and wet to touch. Capillary refill is poor as the fingers are already white.

DC adjusts the cervical and thoracic spine.

After adjustment, the pulse ox is 99% and the hands and feet have good color and capillary refill is 1 second. Hands and feet and are warm, pink and dry to palpation.

This regresses by the next visit 1 week later back to pale, cold and wet with 93-94 pulse ox bilateral.

Repeat chiropractic care provides lasting ANS correction after 5 visits.

Video

- Recording Video of a consenting patient in your office pre and post adjustment, to include changing autonomic signs or measurements, will go a long way to help educate both doctors and laypersons about the regulatory component of chiropractic in autonomic conditions.

Teaching neuro-regulation:

In all autonomic Neuroregulation, we aim to stimulate pools of cortical or inhibitory neurons to become stronger and more stable in regulating other pools of autonomic cells.

Sometimes we aim to strengthen cerebellar cells with our stimulus and adjustments.

Value of Instruments

- If we can use instruments to identify autonomic imbalances early, we can pre-empt many adverse events via early detection.
- People will often not be aware of imbalance or disturbance with subtle autonomic changes that instruments, or keen clinical observation can pick up.

Thank You!

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