



# The Lifestyle Factor:

Utilizing Testing to Encourage Behavior Change

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# Technical Issues & Clinical Questions

Please type any technical issue or clinical question into either the “Chat” or “Questions” boxes, making sure to send them to “Organizer” at any time during the webinar.

We will be compiling your clinical questions and answering as many as we can the final 15 minutes of the webinar.





# Need More Resources?

*Ensure you have an account!*



# The Lifestyle Factor:

Utilizing Testing to Encourage Behavior Change

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# Objectives for This Webinar

- Dig into the importance of addressing lifestyle with patients
- Discuss key behavior patterns to be assessed with every patient
- Integrate specialty testing as a window into lifestyle and habits
- Discuss tools to help cultivate positive behavior change for your patients

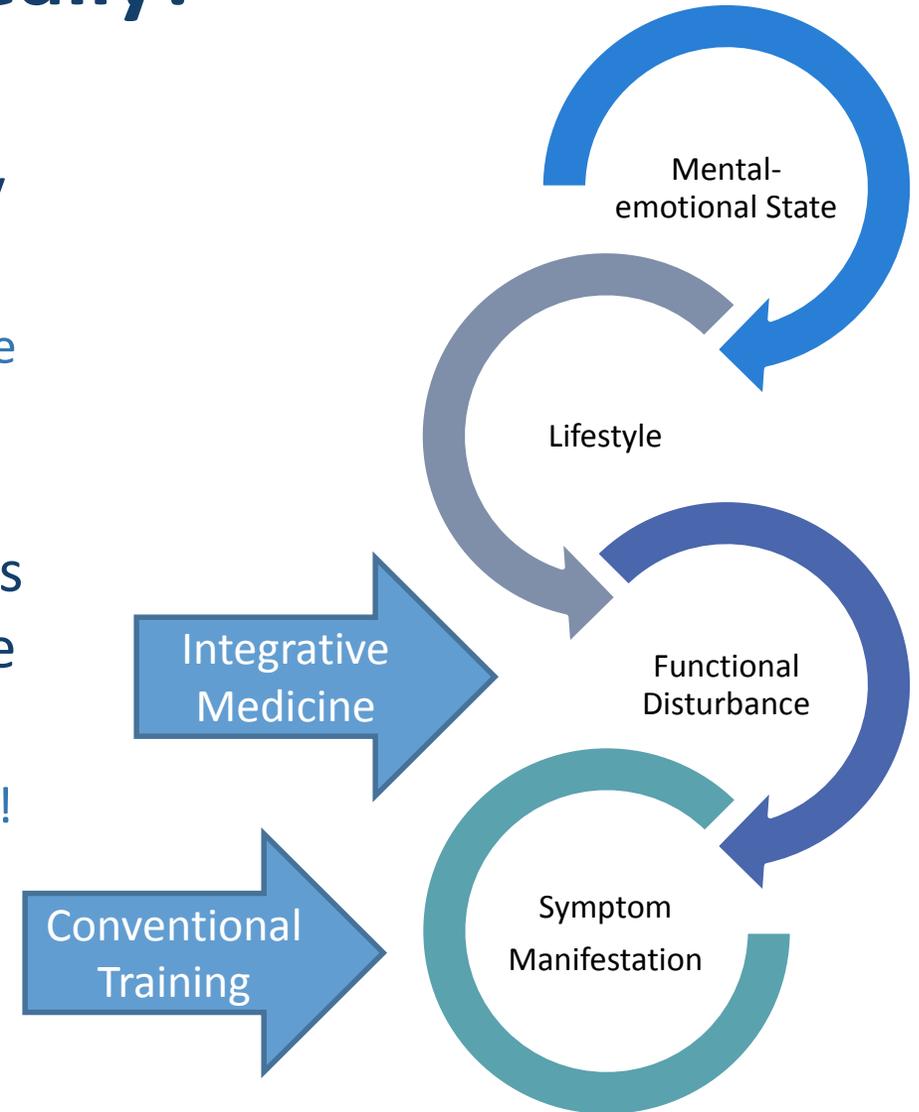
OBJECTIVE





# A Whole Webinar on Lifestyle? Really?

- As conscientious practitioners, we are constantly trying to uncover the “why”
  - But for most of us, where in this graphic did we receive the largest amount of education and experience?
- We are seeing more and more information that is focused on understanding functional disturbance that sets up frank pathology
  - This is where our specialty lab testing can be so useful!

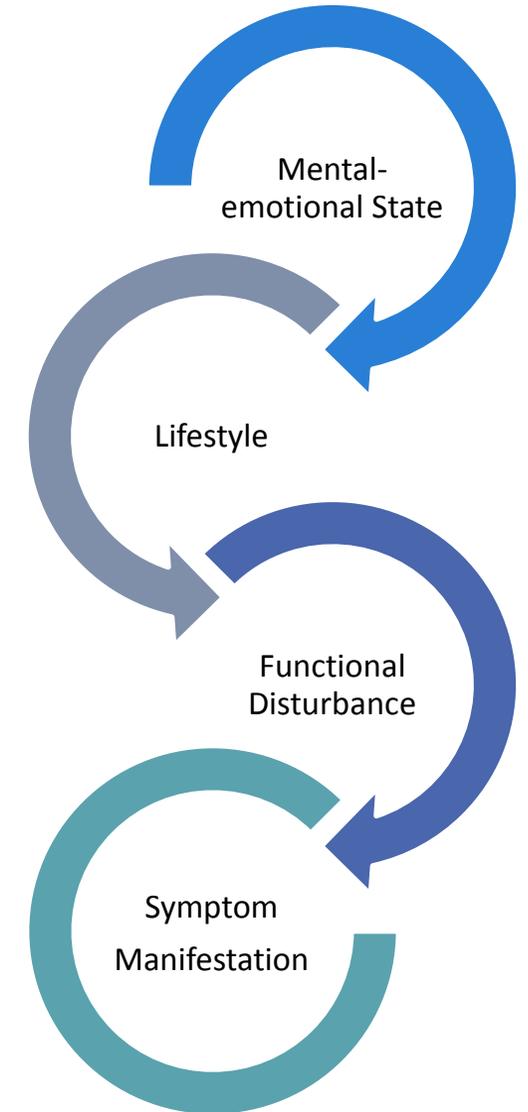


*Disclaimer: I made this up!*



# Examples of Functional Disturbances

- Fatigue
- Irritable Bowel Syndrome
- Hormone Dysfunction
- Neurotransmitter Imbalance
- Altered Cellular Functions
  - Detoxification
  - Replication
  - Energy Production/Mitochondria
- Immune System Dysfunction

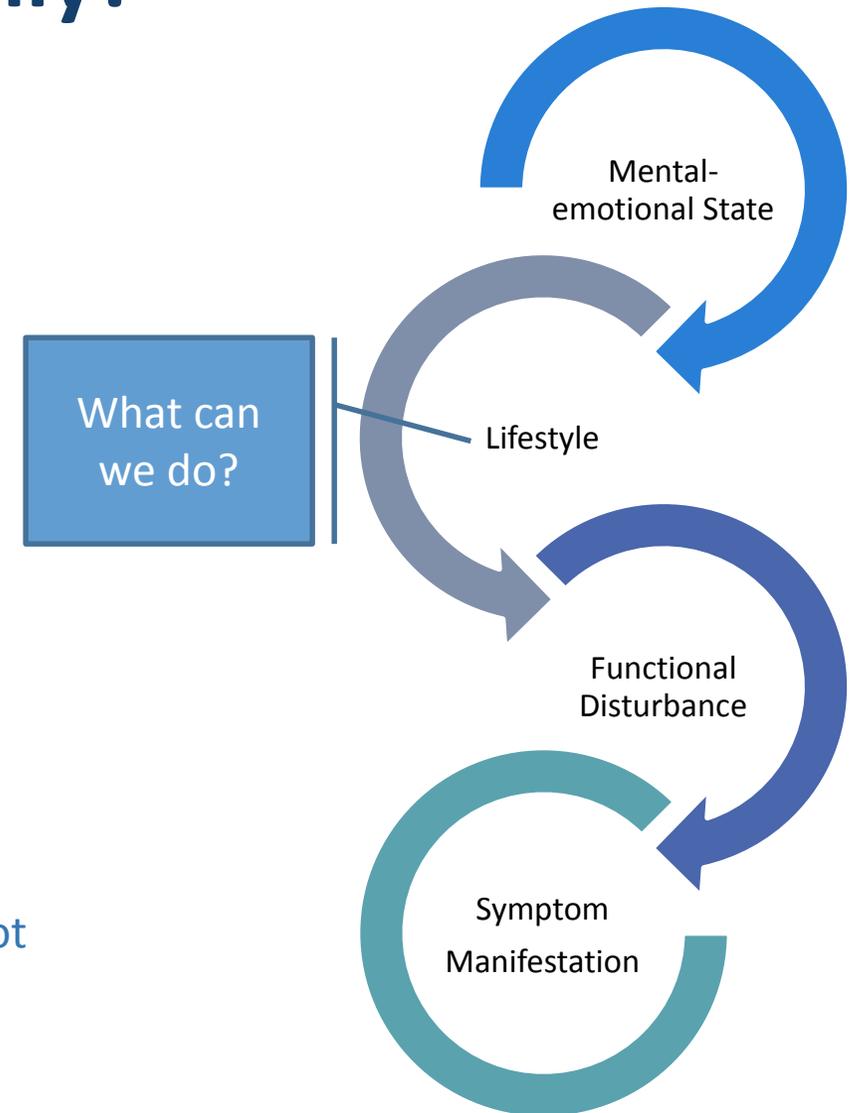


*Disclaimer: I made this up!*



# A Whole Webinar on Lifestyle? Really?

- *HOWEVER*, how much of these functional disturbances originate, at least in part, from poor lifestyle habits?
  - What do we do in our practice to truly affect lifestyle?
    - Patient education?
      - Most of what we offer is information to our patients
      - Is this enough?
    - Many patients know that their behavior and habits are unhealthy yet continue to do them
      - This should clue us in to the fact that knowledge alone is not sufficient for behavior change



*Disclaimer: I made this up!*



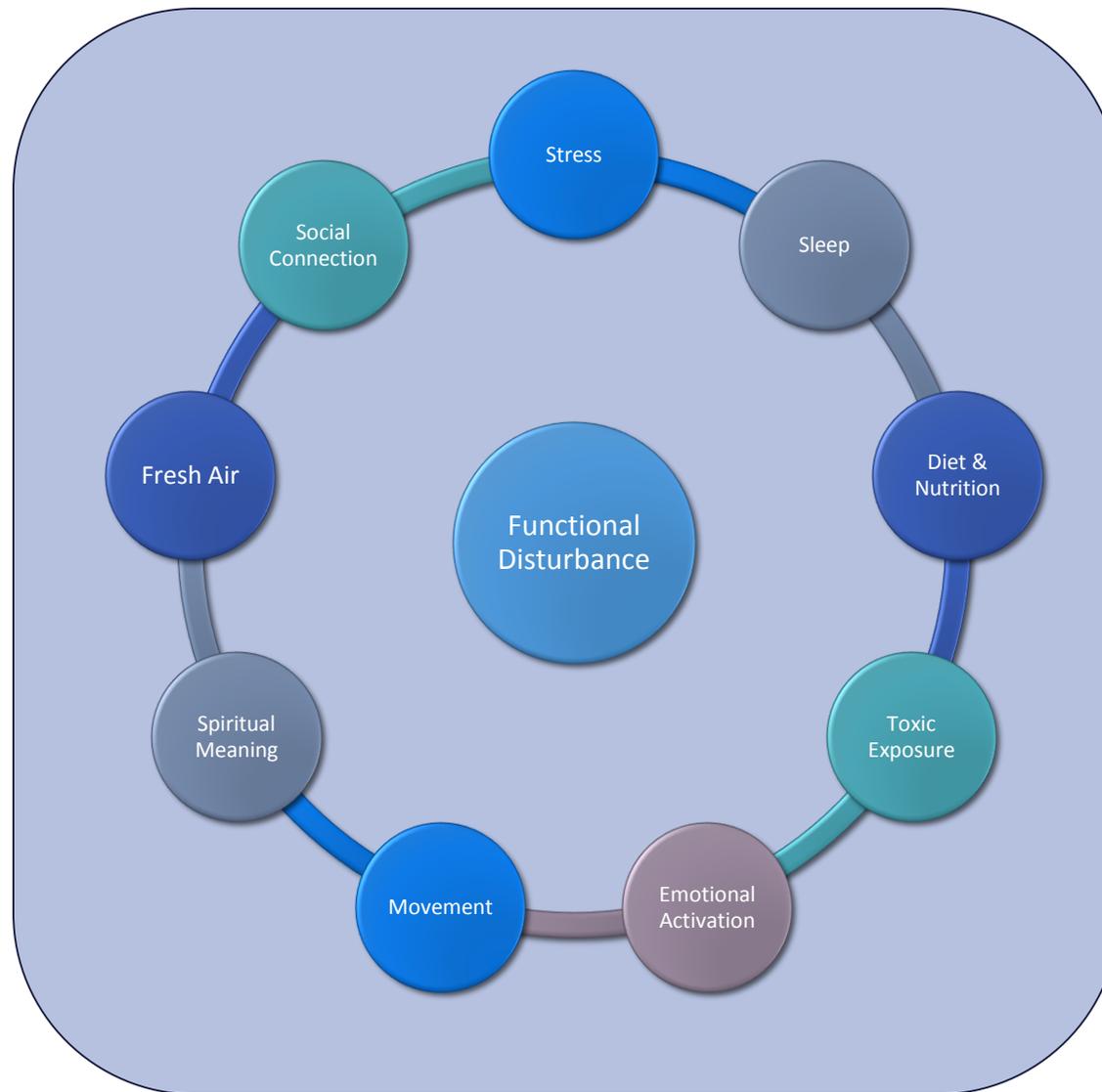
# “The Lifestyle Gripe: A Clinician’s Lament”

- Patient compliance
  - “I have no control over what happens once patients leave my office”
  - “Why don’t patients commit to treatment plan?”
  - “It’s ultimately up to them to ‘do the work’”
  - “Do you like your habits more than you want your symptoms to go away?”





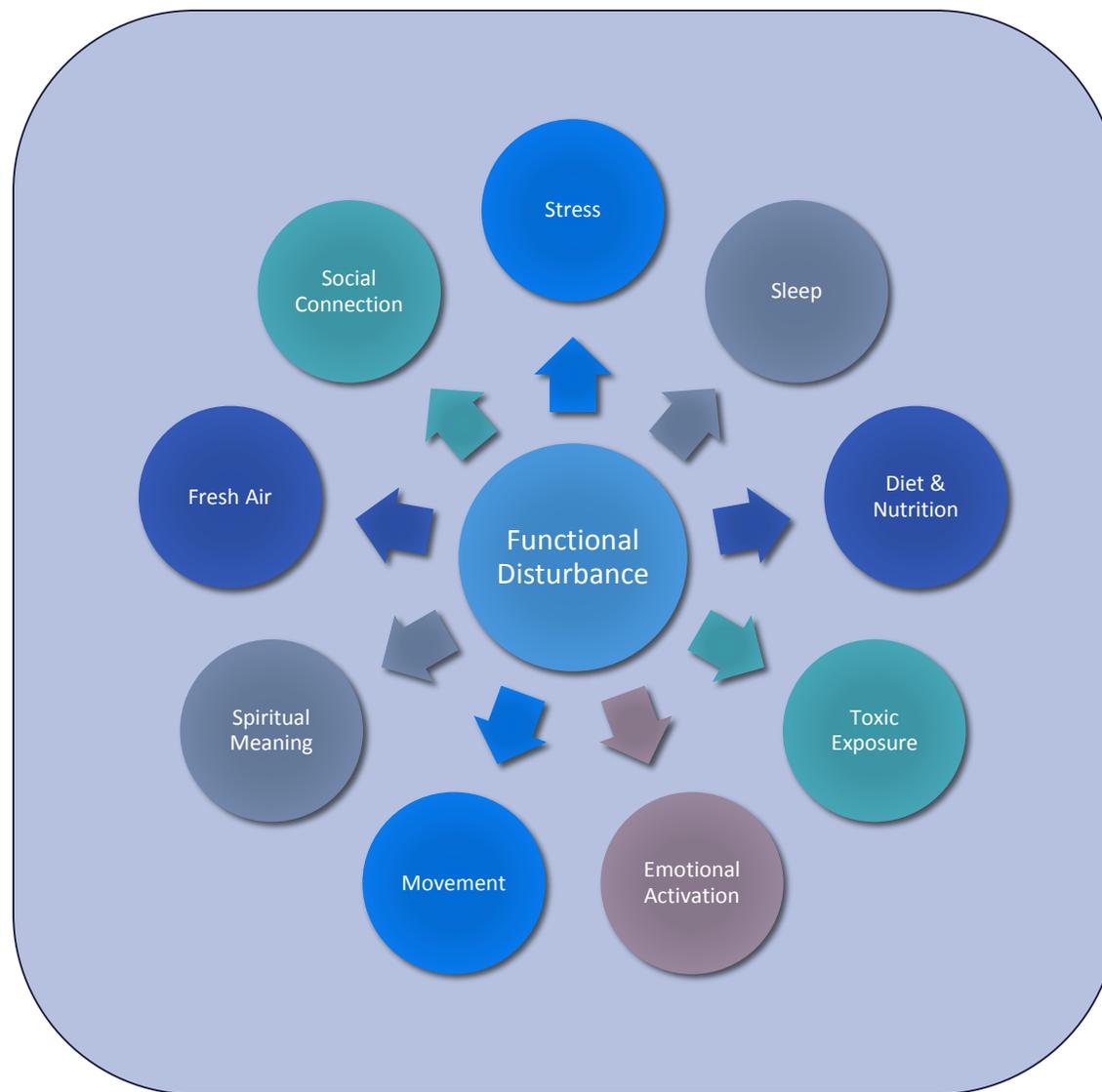
# Let's Dig into the Lifestyle Link



} *Genetic Potential*



# Let's Dig into the Lifestyle Link

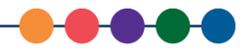


} *Genetic Potential*

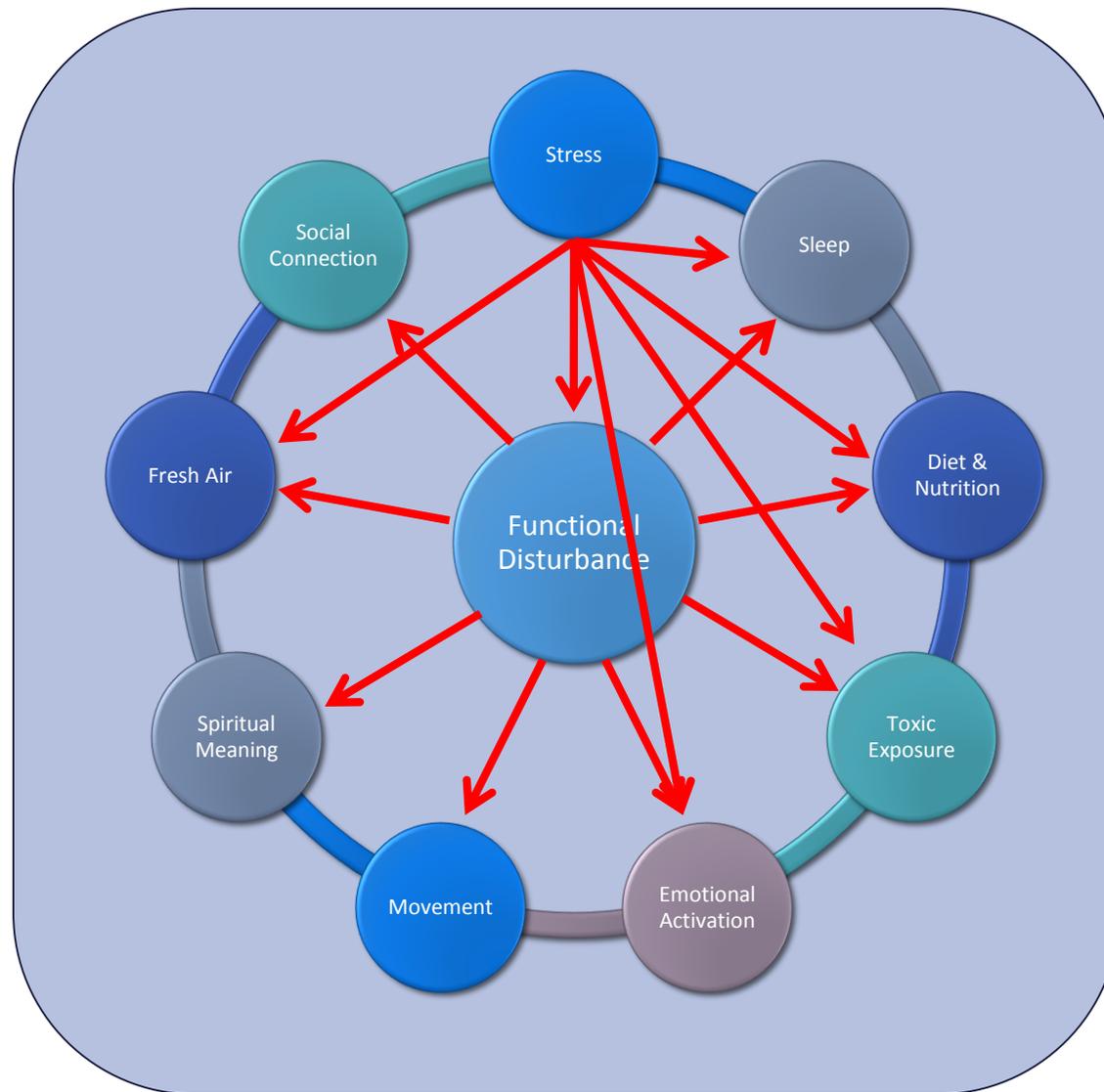


# That's a Lot to Cover in a 15 Minute Intake!

- Patient care as a relationship
  - You will not need to cross every bridge in one visit
  - Patients often need time to open up to you
- Have a great health questionnaire that evaluates lifestyle factors
- Structure your visits
  - Initial Visit: mostly history gathering
    - Determine appropriate labs
    - Compile clinical picture
    - DDX'ing
  - First Follow-up Visit (usually within 4-6 weeks):
    - Review labs and review response to initial treatment plan
    - Discuss KEY lifestyle factors behind current functional disturbance



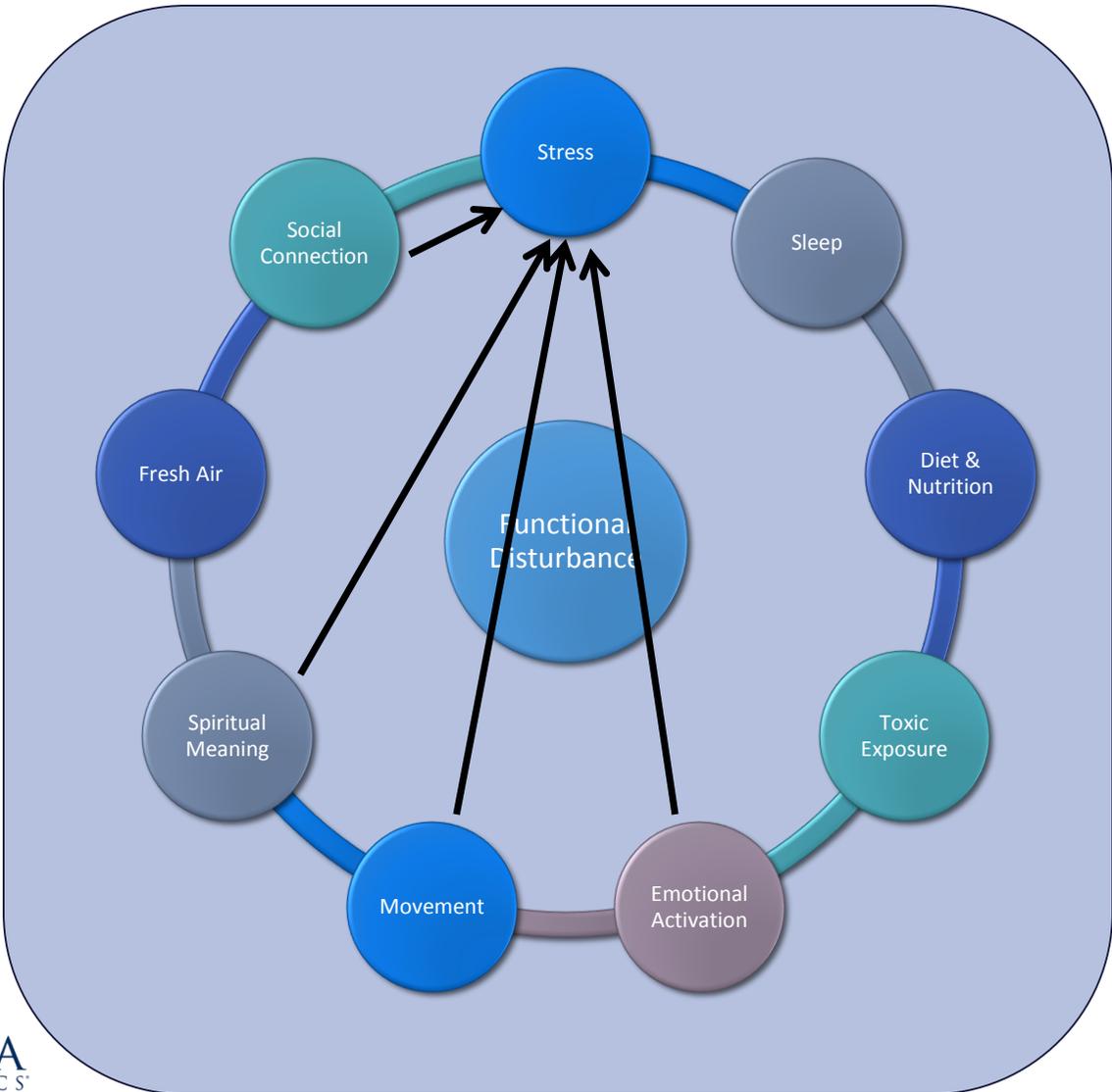
# Stress as a Catalyst



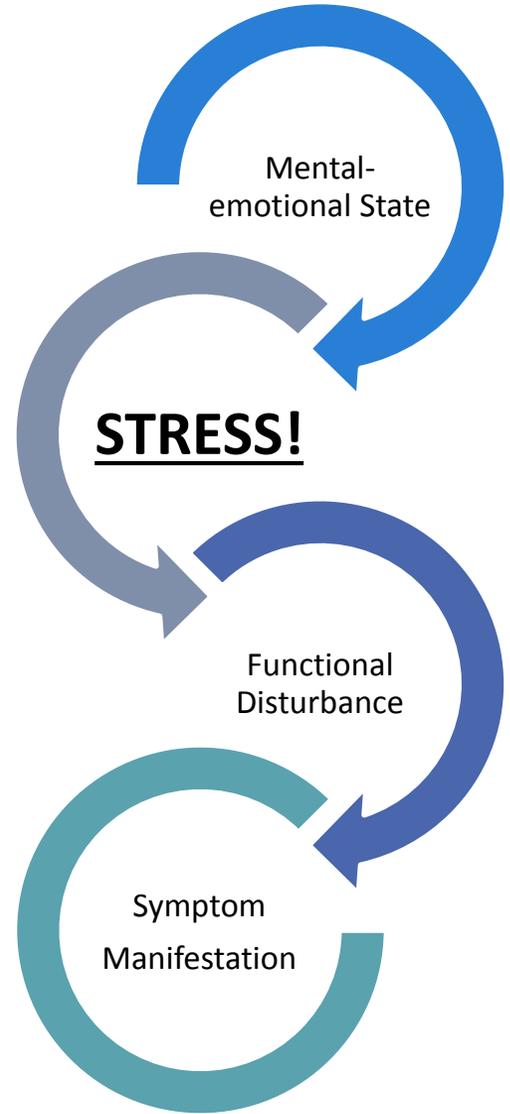
*Genetic Potential*

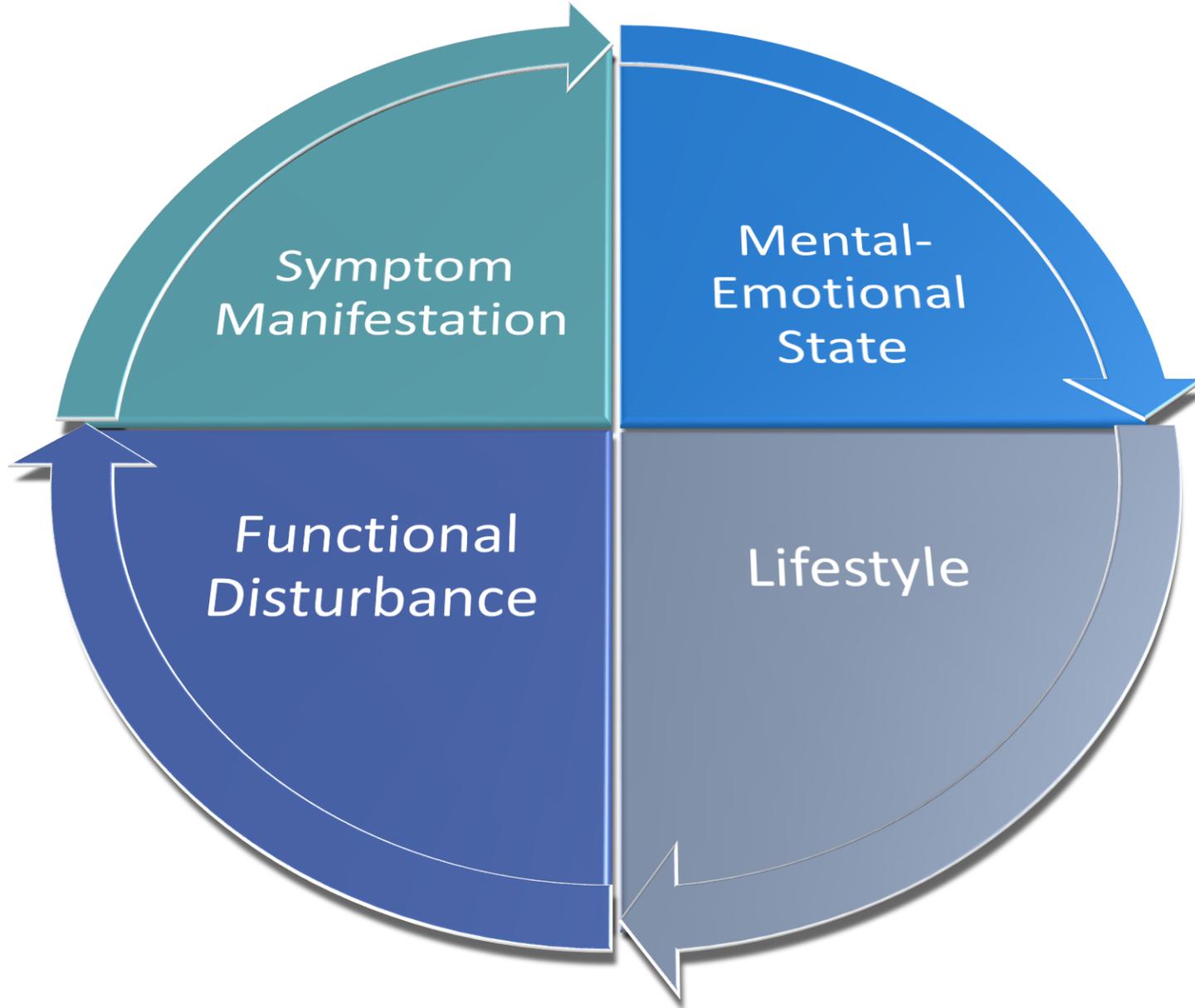


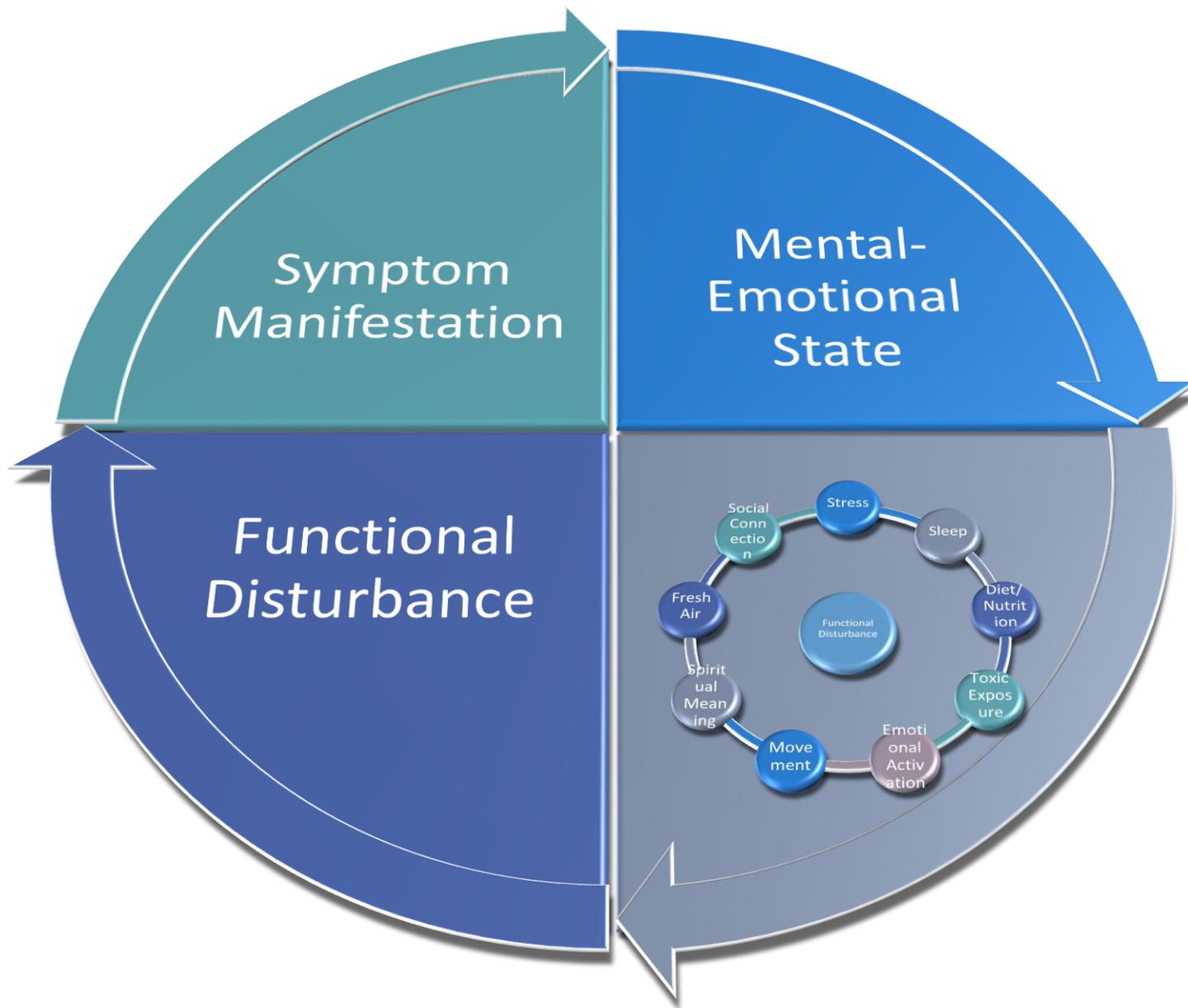
# Stress as a Catalyst

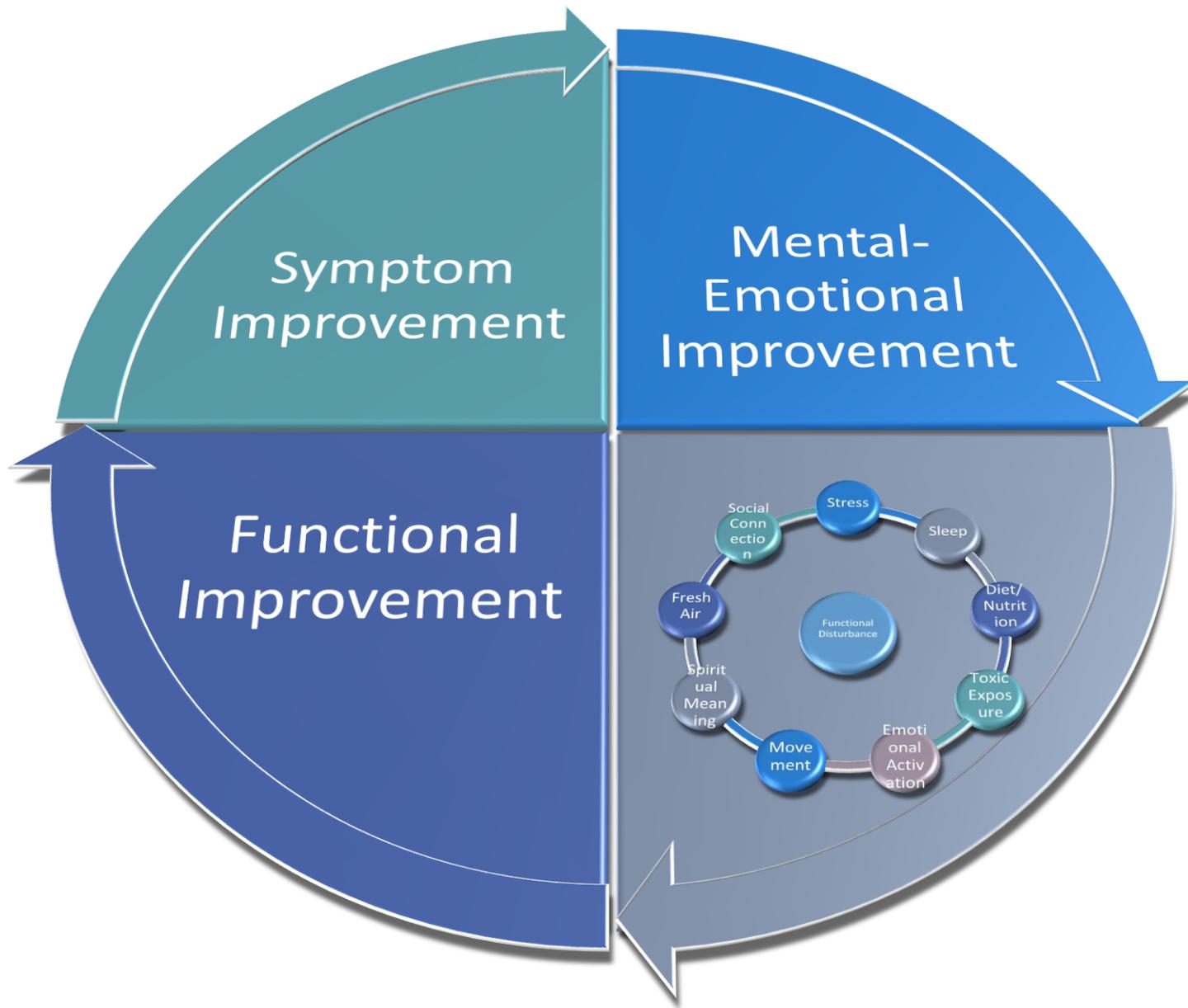


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# Swimming Upstream

- The issues here are fundamental to creating long-lasting outcomes for patients
- Lifestyle change is one of the most difficult things we ask our patients to do
  - What was the most difficult behavior change you have successfully altered as an individual?
    - Is that as difficult as what you are asking of your patient?
  - You must have understanding and compassion
  - You must have the tools to evaluate and treat effectively
- So let's get started...



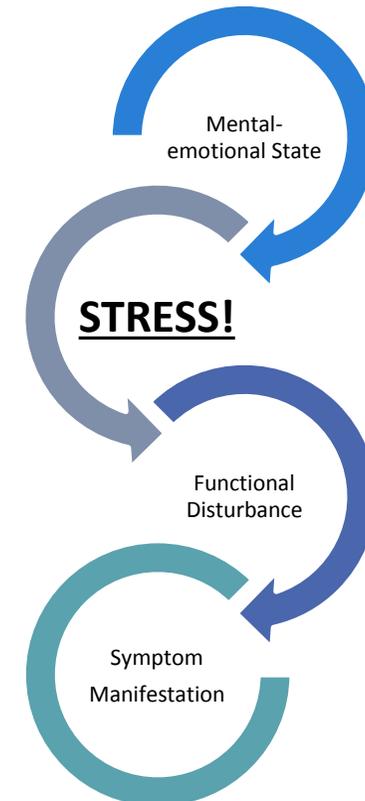
# STRESS!





# Defining Stress...

- Something that is perceived as threatening to the well-being of the individual
  - Physical Threat
    - Attack
    - Heat, Cold
    - Fasting
    - Extremes in noise, light, vibration
    - **Infection**
  - Emotional or Psychological Threat
    - A response to adverse conditions
    - Expectations: Career, Family, Health, Society
- Comes from the “external” environment
  - But is based on “internal” interpretation





# Evaluating Stress Clinically

- Patient history (visit #1)
- ***Patient presentation***
  - This may be an interpretation, but clinical judgment can be another tool
- Signs/Symptoms of Chronic Cortisol Excess
  - May or may not be seen on standard lab workup
    - Depends on severity and chronicity
- Most clinically useful lab test for stress:
  - **Adrenocortex Stress Profile**

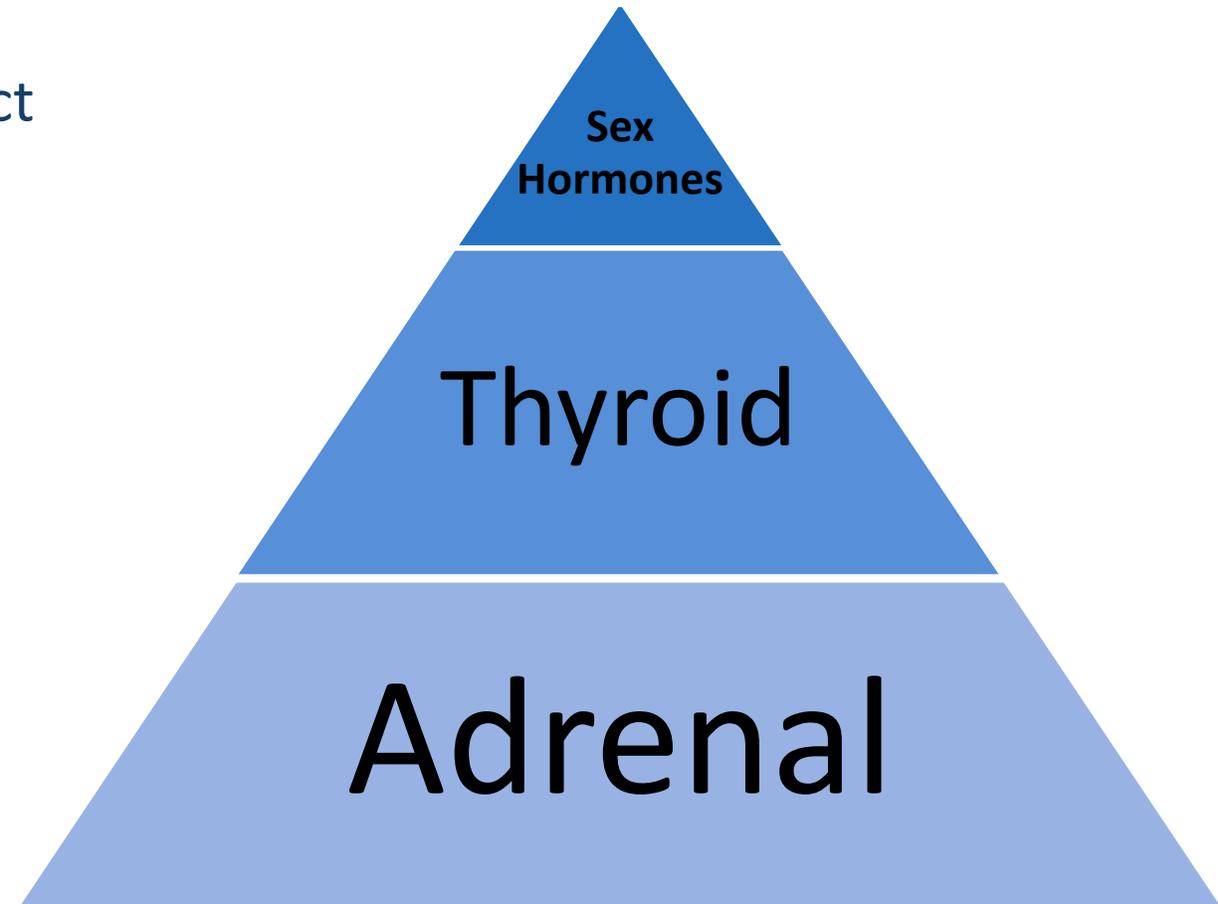
## *Chronic Cortisol Excess Signs*

- *Truncal Obesity*
- *Insulin Resistance/Dysglycemia*
- *Poor immune function*
  - *Chronic infections*
  - *Lack of Infections*
- *Osteopenia/Osteoporosis*
- *Sexual Dysfunction*
- *Mood Imbalance*
- *Poor Memory Retrieval*
- *Fatigue*
- *Menstrual Irregularity*
- *Low Thyroid Function*



# Adrenal Function...The Base of the Pyramid

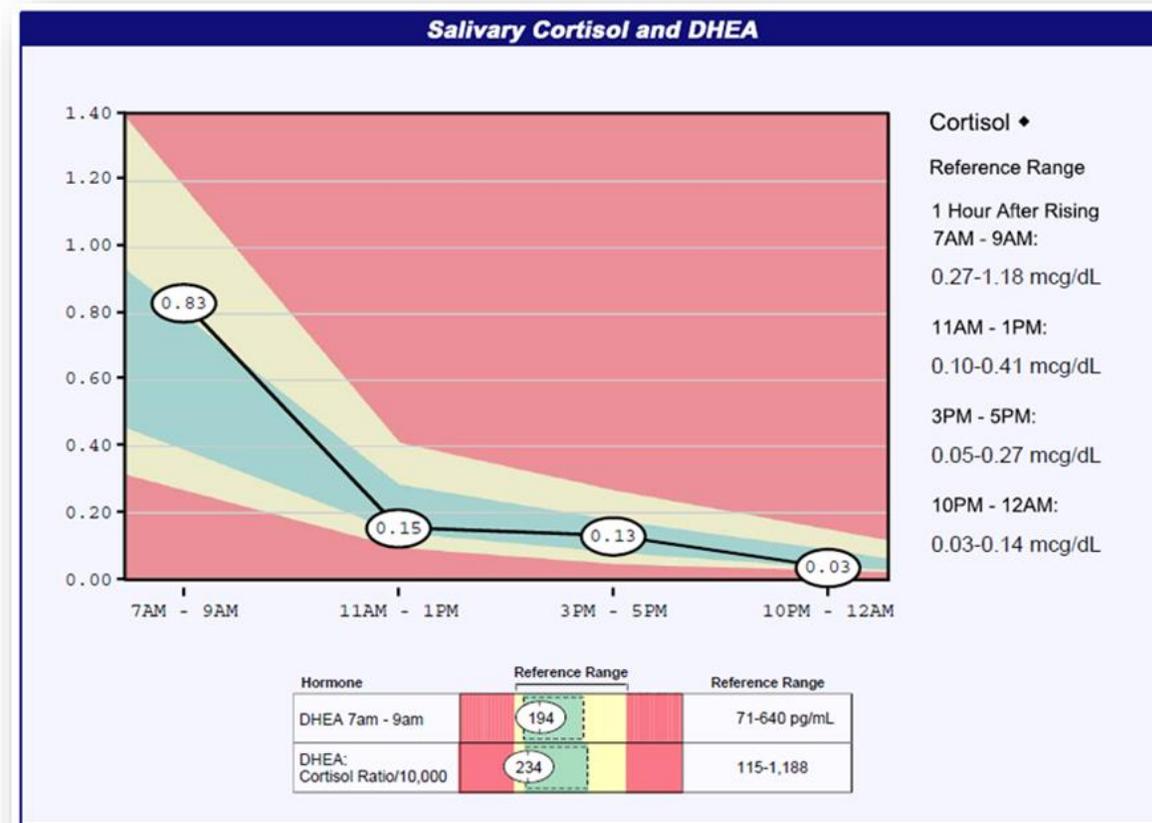
- Adrenal dysfunction can have drastic impact on the rest of the hormones
  - *Which can also impact other systems*
- Understanding adrenal function critical for any hormone assessment





# Evaluating Stress – Adrenocortex Stress Profile

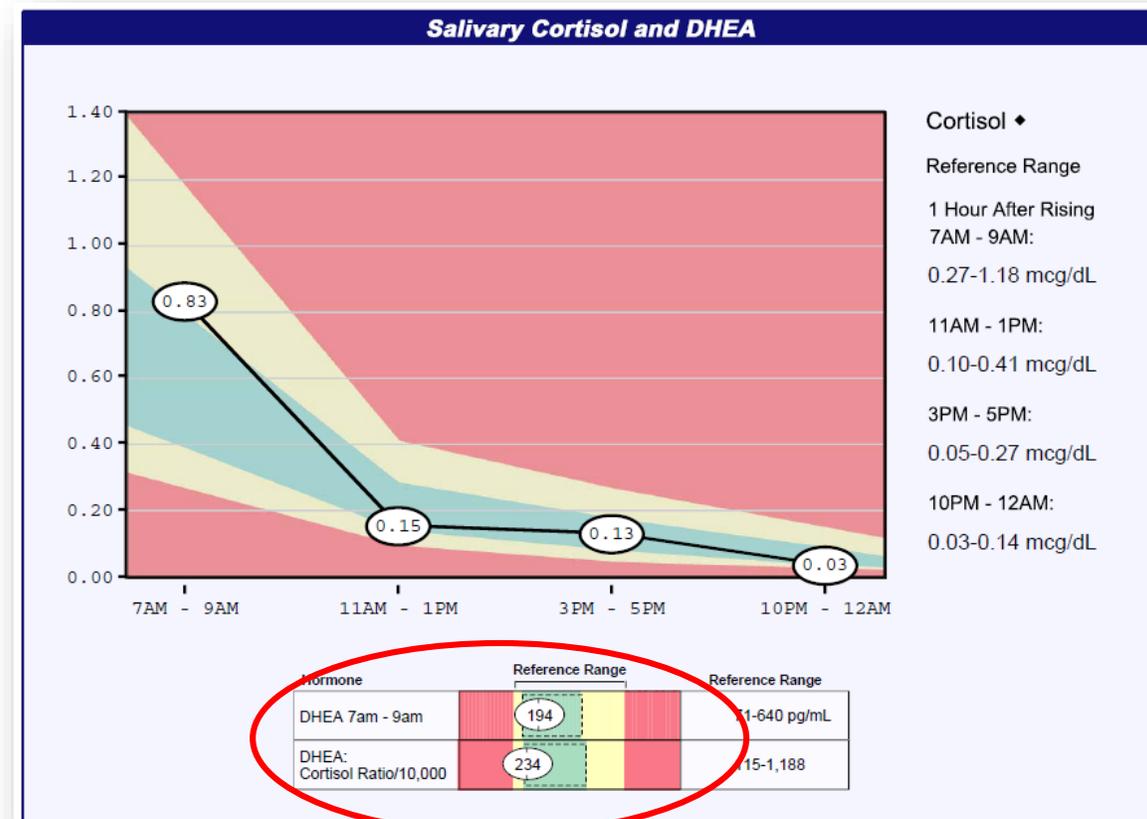
- The Adrenocortex Stress Profile (ASP) is a valuable tool when evaluating stress
- 4-Point Salivary Cortisol
  - Cortisol production follows a diurnal pattern
  - Highest in the morning for “Cortisol Awakening Response”
  - Lowest in evening to prepare for sleep
    - Inversely related to melatonin
  - *If we measure 1 point in time, we might miss other abnormalities at a different time of day*





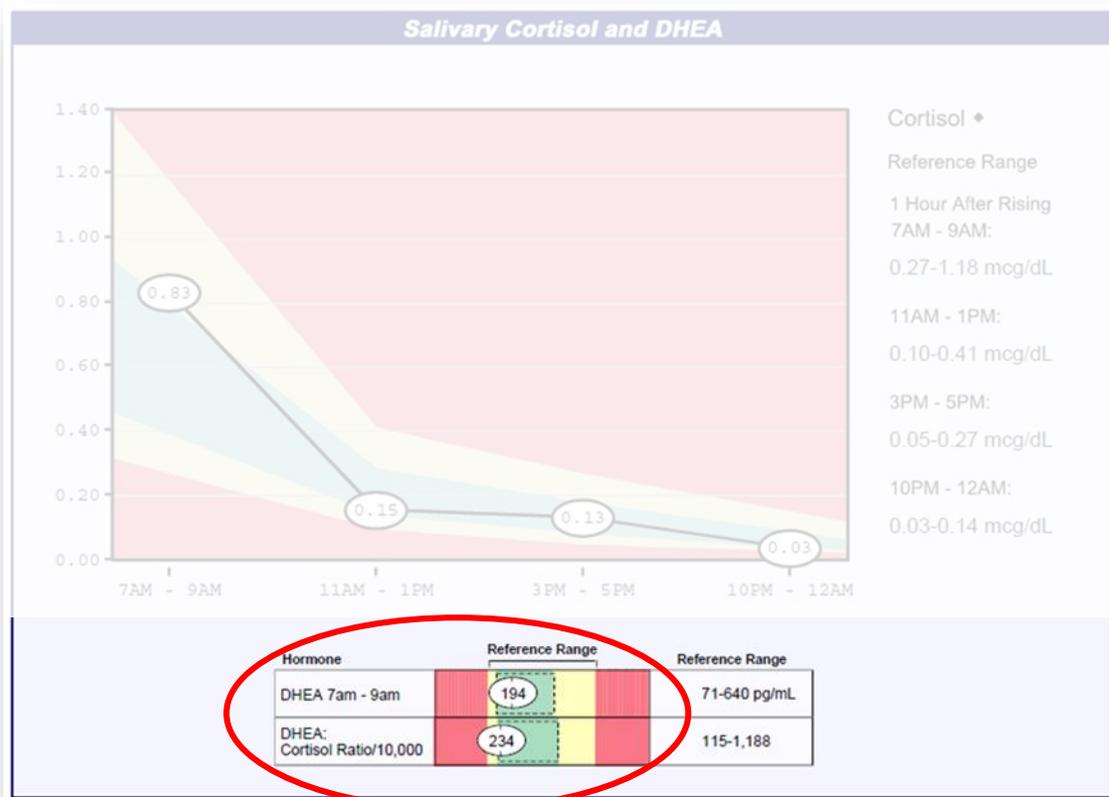
# Dehydroepiandrosterone (DHEA)

- Precursor to testosterone and estrogen
- Also has it's own biological activity
  - Androgenic activity
  - Balances stress response
    - Immune function
    - Bone Density
    - Insulin sensitivity
    - Body composition/Obesity
    - CNS function/GABA receptor modulation





# Cortisol/DHEA balance



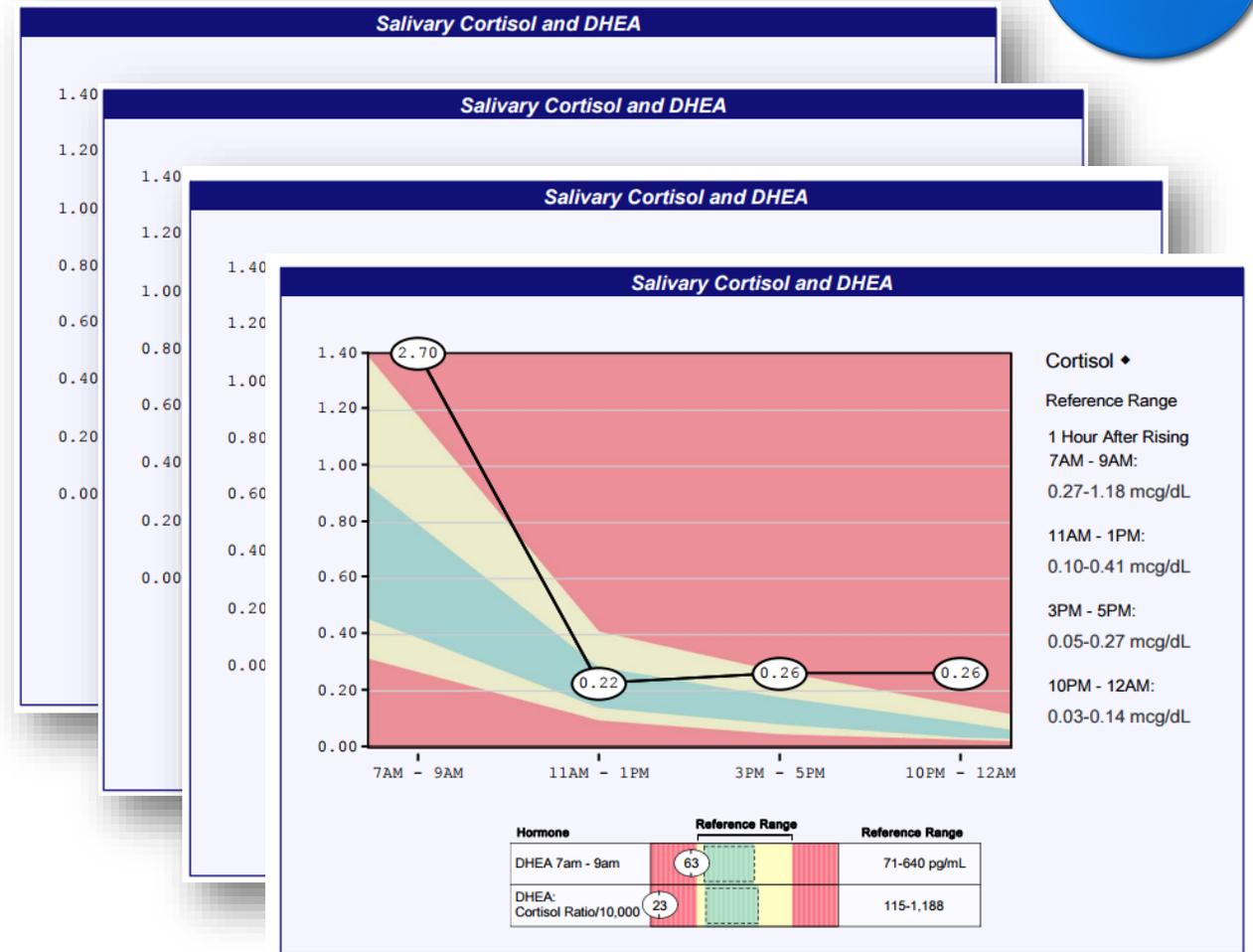
- What does this ratio tell us?
  - Because the adrenal gland secretes both, it provides information about shifts in the pathway
  - A low ratio indicates long-term glucocorticoid shift and high cortisol excretion
    - Chronic Stress
    - Dysglycemia
    - Impaired Immunity
    - Osteoporosis



# What Else Can the ASP Tell Us about Lifestyle?



- Chronic Stress
- Dysglycemia
  - Often reflecting need for more complex vs simple carbs
  - Use of protein to stabilize blood sugar
- Daily acute stressors
  - Place work/life stress that may be symptomatically ambiguous
  - Reflection of physiologic response to patient
  - Exercise?
- Nighttime routine
  - Sleep hygiene

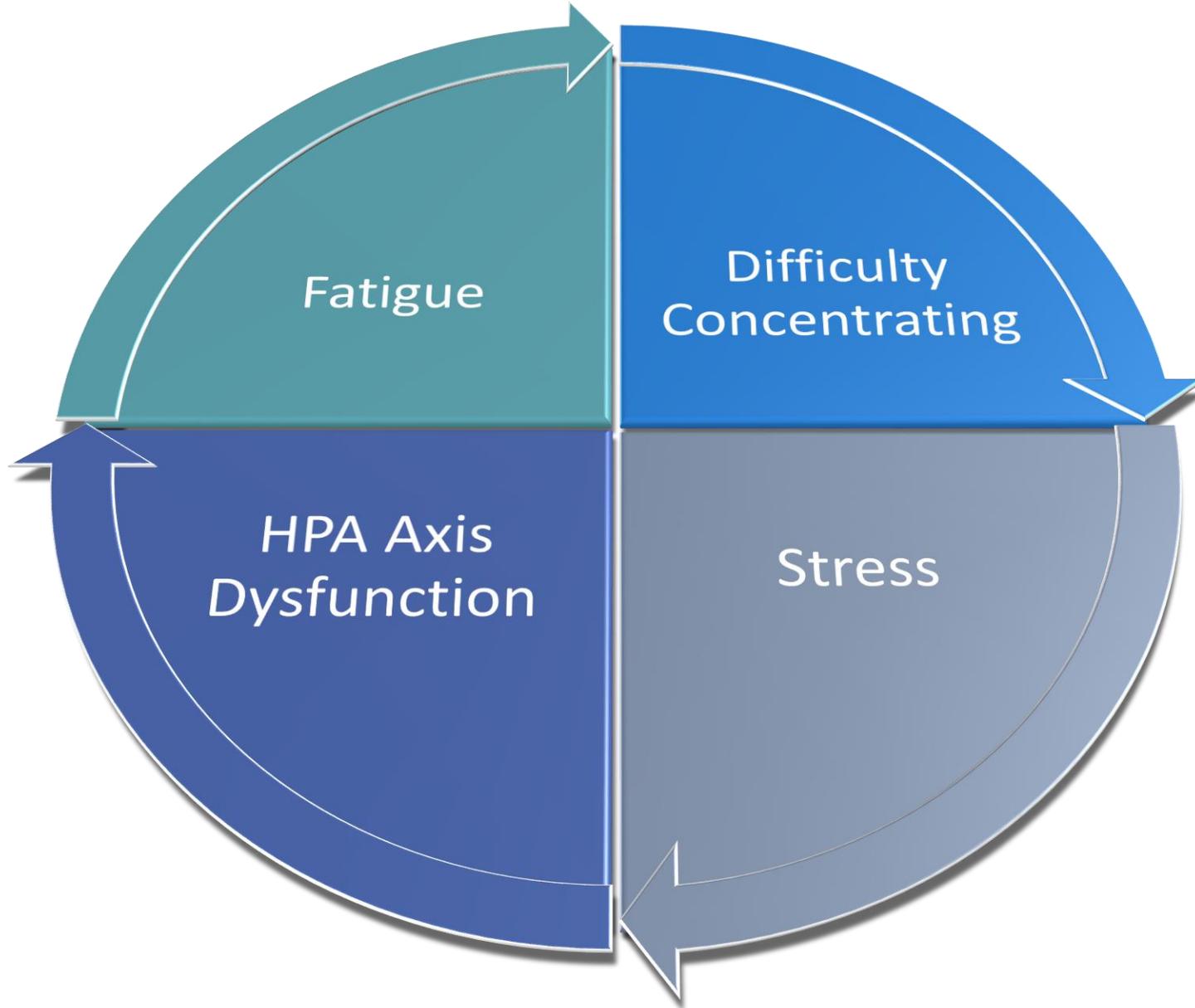




# What about Coffee????

- Research has shown complicated results around coffee's effects on salivary cortisol measurements
  - Appears to have an additive effect on cortisol when combined with stress
  - Also appears to interfere with restitution of cortisol release
  - Adaptation occurs with habitual use, but effects are not eliminated entirely
    - » Harris et al. 2007

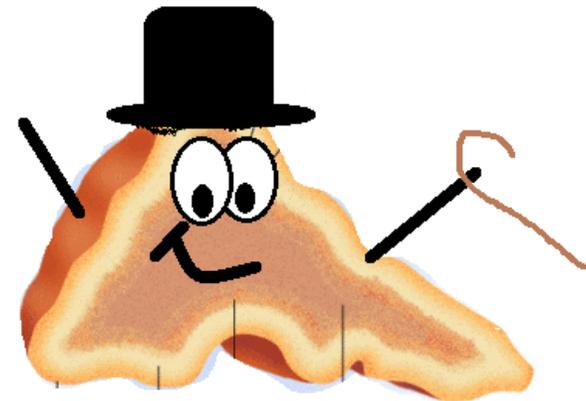






# Stress and Adrenal Dysfunction– Address the cause!

- What is the cause?
  - Stress
  - Dysglycemia
    - High simple carbohydrate intake?
  - High Adrenaline
- How do we fix it?
  - Stress Reduction Techniques
  - Blood Sugar Stabilization
    - High protein, with complex carbs
  - Autonomic Rebalancing





# Stress Reduction Techniques

- Meditation/Mindfulness
- Biofeedback Training
  - Heart Rate Variability
  - Progressive Muscle Relaxation
- Qigong, Tai Chi, Yoga
- Massage Therapy

[Complement Ther Clin Pract](#). 2013 Nov;19(4):179-83. doi: 10.1016/j.ctcp.2013.08.001. Epub 2013 Aug 30.

[Int J Neurosci](#). 2005 Oct;115(10):1397-413.

## Cortisol decreases and serotonin and dopamine increase following massage therapy.

Field T<sup>1</sup>, [Hernandez-Reif M](#), [Diego M](#), [Schanberg S](#), [Kuhn C](#).

### Author information

### Abstract

In this article the positive effects of massage therapy on biochemistry are reviewed including decreased levels of cortisol and increased levels of serotonin and dopamine. The research reviewed includes studies on depression (including sex abuse and eating disorder studies), pain syndrome studies, research on auto-immune conditions (including asthma and chronic fatigue), immune studies (including HIV and breast cancer), and studies on the reduction of stress on the job, the stress of aging, and pregnancy stress. In studies in which cortisol was assayed either in saliva or in urine, significant decreases were noted in cortisol levels (averaging decreases 31%). In studies in which the activating neurotransmitters (serotonin and dopamine) were assayed in urine, an average increase of 28% was noted for serotonin and an average increase of 31% was noted for dopamine. These studies combined suggest the stress-alleviating effects (decreased cortisol) and the activating effects (increased serotonin and dopamine) of massage therapy on a variety of medical conditions and stressful experiences.

PMID: 161624

CONCLUS

biochemica

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CONCLU

“These studies combined suggest the stress-alleviating effects (decreased cortisol) and the activating effects (increased serotonin and dopamine) of massage therapy on a variety of medical conditions and stressful experiences.”



# Stress Reduction Techniques

- Pet Therapy
- Music Therapy
- Exercise?
  - Cortisol elevation during exercise
  - Long-term: lowered response to stress related to physical fitness
    - Improved DHEA/Cortisol Ratios
      - Bouget et al. 2006



Psychoneuroendocrinology

Volume 35, Issue 8, September 2010, Pages 1187–1193



Effect of service dogs on salivary cortisol secretion in autistic children

Robert Viau<sup>a</sup>, Geneviève Arsenault-Lapierre<sup>b</sup>, Stéphanie Fecteau<sup>a</sup>, Noël Champagne<sup>a</sup>, Claire-Dominique Walker<sup>c</sup>, Sonia Lupien<sup>b</sup>  

“ In response to the stressor, cortisol levels and heart rate were significantly increased in both groups, without any baseline differences between groups. However, trained men exhibited significantly lower cortisol and heart rate responses to the stressor compared with untrained men.”



# Demystifying Mind-Body Therapies

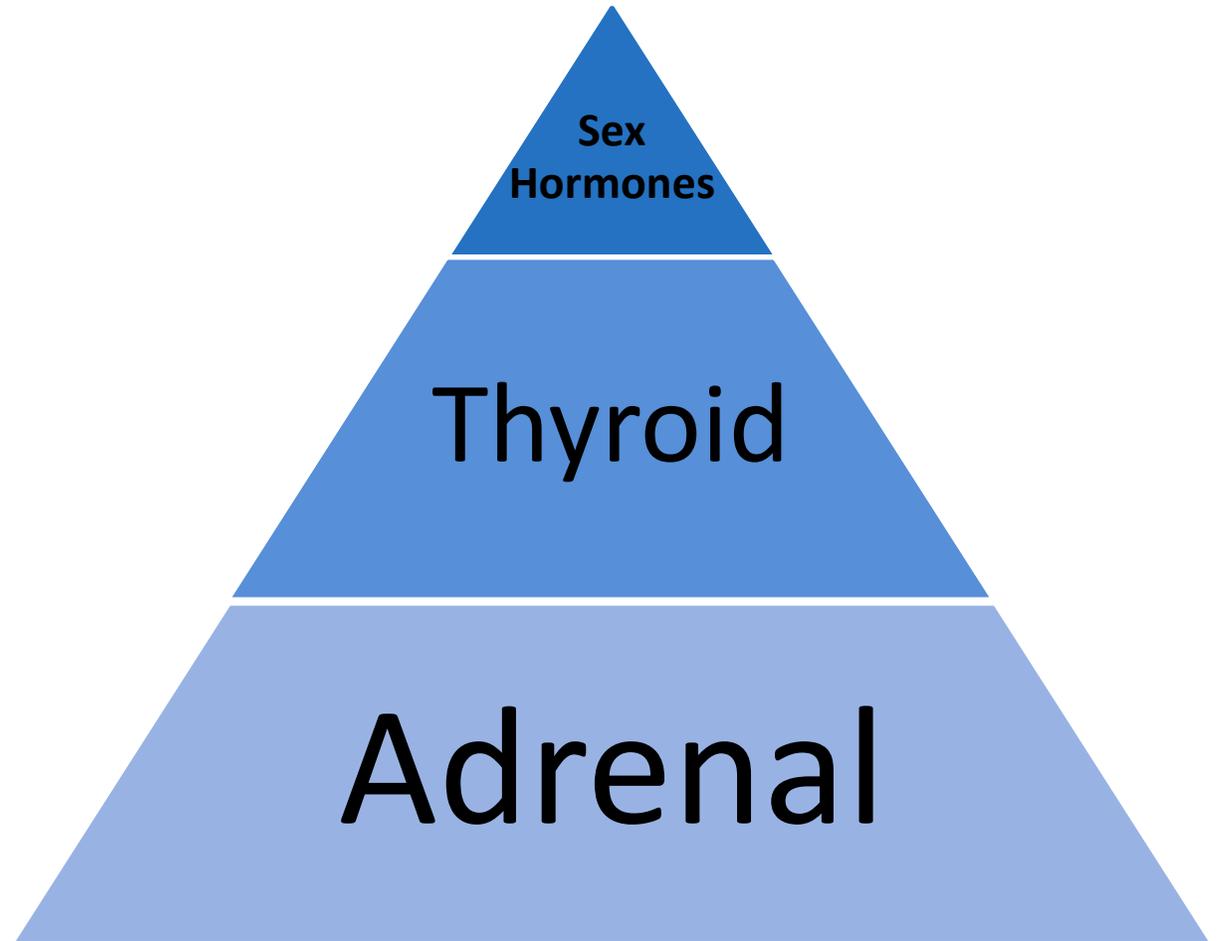
- Ample peer-reviewed literature
- Accessible technology to support these therapies
  - HeartMath emWave2<sup>®</sup>
  - Breathwork Training Phone Apps
  - [www.thebreathspace.com](http://www.thebreathspace.com)
    - Guided Meditations
    - Breathwork Questionnaire & Future Webinars
- Most gyms/YMCAs have Yoga, Qigong, or Tai Chi classes





# Hormone Imbalance

- Remember that chronic HPA axis dysfunction leads to deficient DHEA
  - DHEA -> Androgens/Estrogens
- This is why you always need to look at stress when assessing:
  - Menstrual Irregularity
  - Menopause
  - Androgen Deficiency

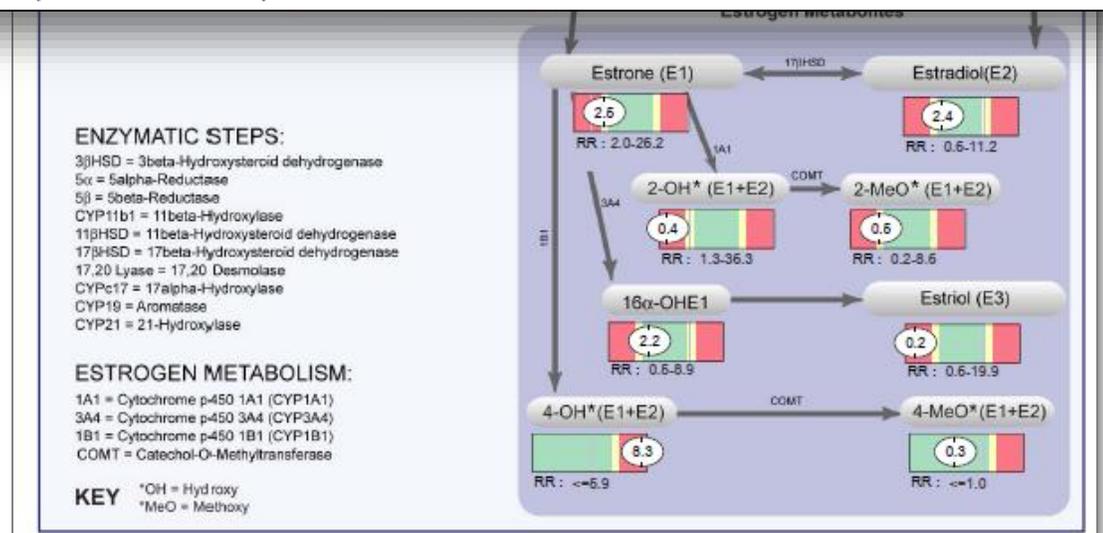
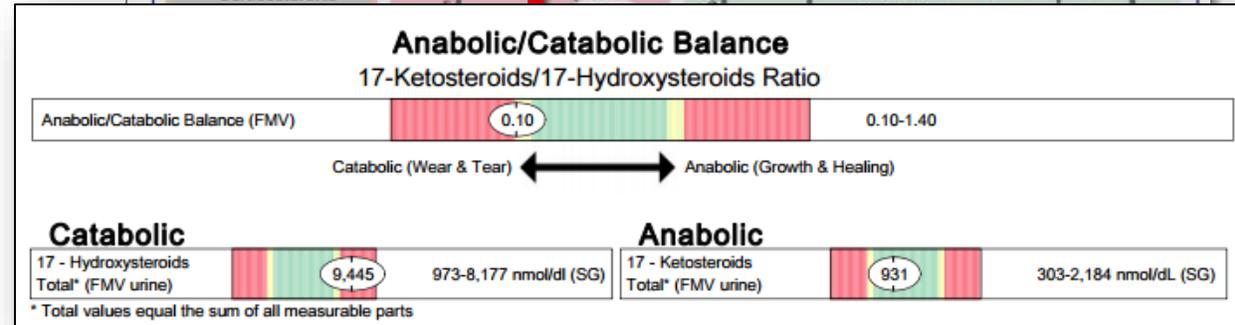
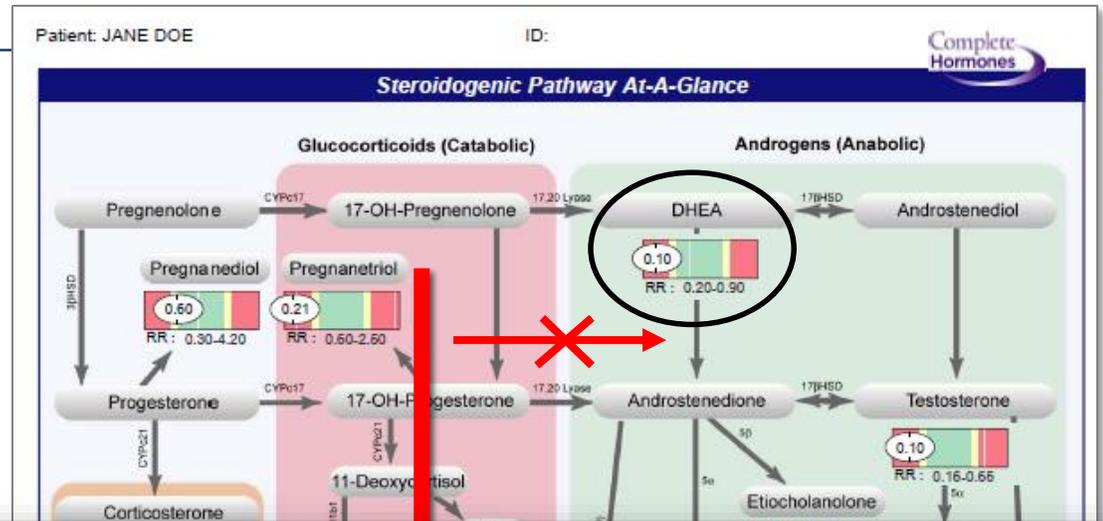


# Not Suspecting Stress Problem?

- Hormone Dysfunction

- Excessive glucocorticoid production
- May lead to downstream androgen and estrogen dysfunction
- Anabolic/Catabolic Balance

- In this case it's always pertinent to follow up with ASP to evaluate diurnal cortisol and DHEA



# Casting A Wide Net for Hormone Imbalance

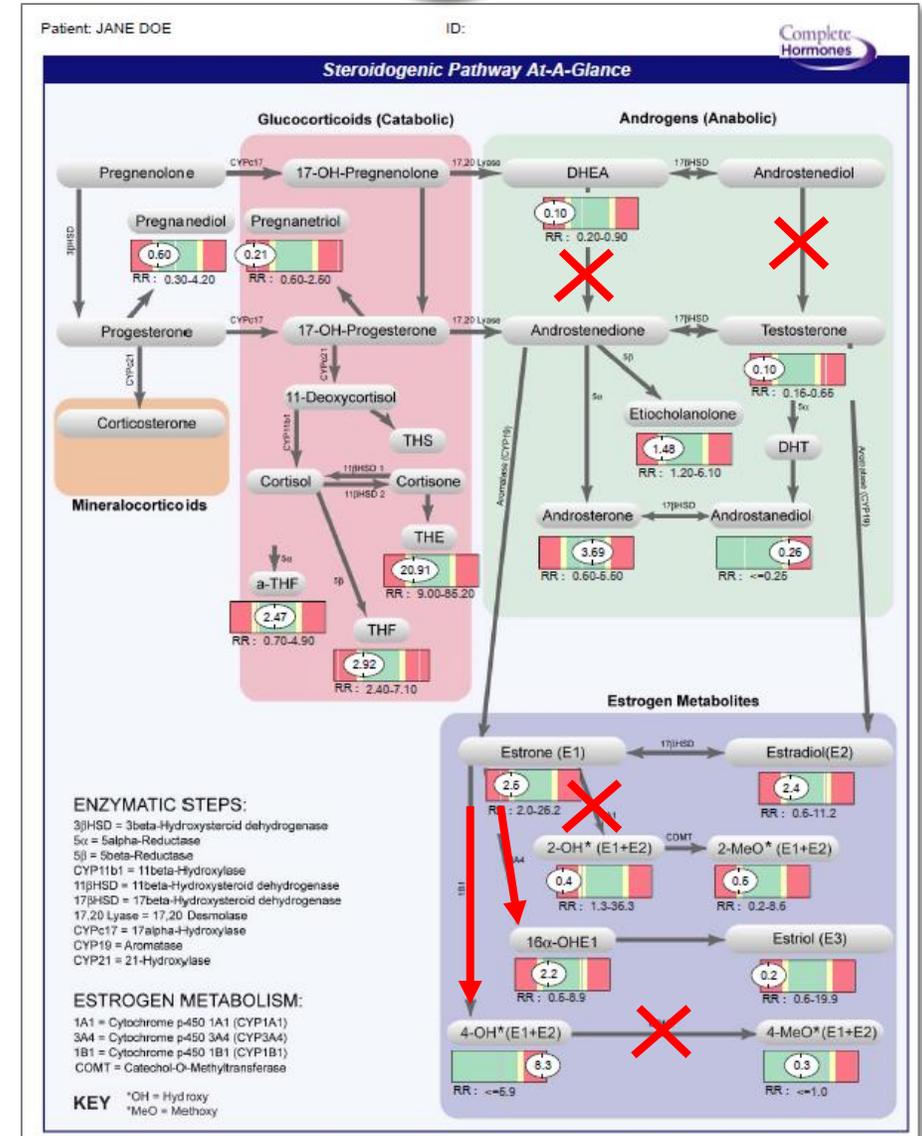
Toxic Exposure

- **Complete Hormones Profile**

- Assesses Parent Hormones
- Assesses Glucocorticoid/Adrenal Metabolites
- Assesses Androgens
- Assesses Estrogen Metabolites

- What other lifestyle factors are hidden?

- Environmental exposures
  - PCBs
  - Mercury
  - Pesticides
  - Trans-fat
  - Other plastics



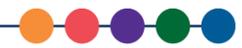




# With Me So Far???

- So far we have looked at how stress and other lifestyle factors can impact hormones
- Diet & nutrition management is one of the biggest challenges when it comes to patient care
  - It also can often have the MOST SIGNIFICANT results
- Because this is such a big topic, we will focus mainly on identifying common lifestyle issues on lab tests
  - We will touch later on behavior change tools for patient care





# Diet & Nutrition: Another KEY Lifestyle Factor

- A great place to start with every patient is dietary assessment
  - *You are what you eat, literally*
- The NutrEval is the most comprehensive nutritional analysis available
  - First 2 pages gives assessment of functional need for nutrients

Physician Copy

**NutrEval**  
FMV amino acids

GENOVA DIAGNOSTICS  
63 Zillicoa Street  
Asheville, NC 28801  
© Genova Diagnostics

Patient: **SAMPLE PATIENT** ID: \_\_\_\_\_ Page 2

DOB: \_\_\_\_\_  
Sex: \_\_\_\_\_  
MRN: \_\_\_\_\_

**SUGGESTED SUPPLEMENT SCHEDULE**

Supplements	Daily Recommended Intake (DRI)	Patient's Daily Recommendations	Provider Daily Recommendations
<b>Antioxidants</b>			
Vitamin A / Carotenoids	3,000 IU	5,000 IU	
Vitamin C	90 mg	250 mg	
Vitamin E / Tocopherols	22 IU	200 IU	
α-Lipoic Acid		50 mg	
CoQ10		30 mg	
<b>B-Vitamins</b>			
Thiamin - B1	1.2 mg	25 mg	
Riboflavin - B2	1.3 mg	10 mg	
Niacin - B3	16 mg	20 mg	
Pyridoxine - B6	1.7 mg	10 mg	
Biotin - B7	30 mcg	100 mcg	
Folic Acid - B9	400 mcg	1,200 mcg	
Cobalamin - B12	2.4 mcg	500 mcg	
<b>Minerals</b>			
Magnesium	420 mg	400 mg	
Manganese	2.3 mg	3.0 mg	
Molybdenum	45 mcg	75 mcg	
Zinc	11 mg	10 mg	
<b>Essential Fatty Acids</b>			
Omega-3 Oils	500 mg	1,000 mg	
<b>Digestive Support</b>			
Probiotics		50 billion CFU	
Pancreatic Enzymes		10,000 IU	
<b>Other Vitamins</b>			
Vitamin D	600 IU	4,000 IU	
<b>Amino Acid mg/day</b>			
Arginine	0	Methionine	0
Asparagine	0	Phenylalanine	0
Cysteine	0	Serine	0
Glutamine	0	Taurine	0
Glycine	0	Threonine	0
Histidine	0	Tryptophan	0
Isoleucine	0	Tyrosine	0
Leucine	0	Valine	0
Lysine	0		

Recommendations for age and gender-specific supplementation are set by comparing levels of nutrient functional need to optimal levels as described in the peer-reviewed literature. They are provided as guidance for short-term support of nutritional deficiencies only.

The Suggested Supplemental Schedule is provided at the request of the ordering practitioner. Any application of it as a therapeutic intervention is to be determined by the ordering practitioner.

Key: Normal Borderline High Need





## Let's Take a Closer Look...

- The first portion of the test provides the main headlines of the test results
- However, let's look at some common patterns I speak to when looking at the individual biomarker pages that suggest lifestyle concerns



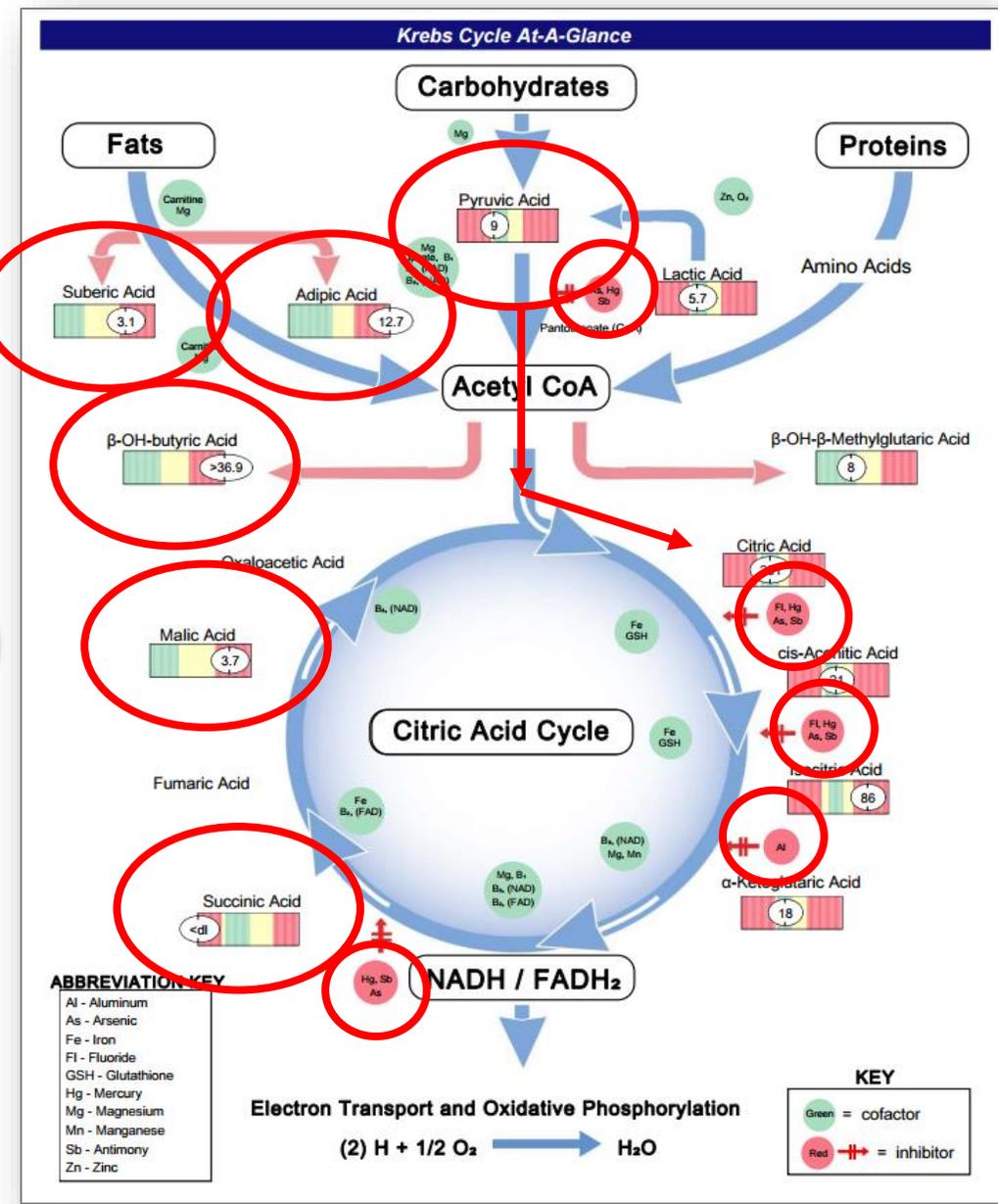


# Don't Get Scared Now!

- Dysglycemia/Insulin Resistance
  - Simple Carbohydrate intake
  - Poor utilization of glucose
    - Elevated Fat metabolites may also be seen
- Poor protein intake/digestion
- Toxic Exposure

Diet & Nutrition

Toxic Exposure





# Where Else Do We Look for Patterns?

## • Toxic Exposures

- Styrene: Plastics, Varnishings, fiberglass, etc.
- MTBE: Banned gas additives
- Orotic acid: Marker for liver detoxification
- Pyroglutamic acid: Glutathione recycling
  - Compare alongside Glutathione value

Toxin & Detoxification Markers		Reference Range
α-Ketophenylacetic Acid (from Styrene)	0.50	≤ 0.46
α-Hydroxyisobutyric Acid (from MTBE)	5.7	≤ 6.7
Orotic Acid	1.06	0.33-1.01
Pyroglutamic Acid	35	16-34

- Oxidative Stress
- Toxic metals

## • Toxic Exposure



Toxic Elements		
Element	Reference Range	Reference Range
Lead	0.025	≤ 0.048 mcg/g
Mercury	0.0219	≤ 0.0039 mcg/g
Antimony	0.001	≤ 0.002 mcg/g
Arsenic	0.030	≤ 0.071 mcg/g
Cadmium	0.000	≤ 0.001 mcg/g
Tin	<dl	≤ 0.0009 mcg/g

Oxidative Stress Markers		Reference Range
Glutathione (whole blood)	647	≥ 669 micromol/L
Lipid Peroxides (urine)	4.9	≤ 10.0 micromol/g Creat.
8-OHdG (urine)	8	≤ 16 mcg/g Creat.
Coenzyme Q10, Ubiquinone (plasma)	1.50	0.43-1.49 mcg/mL



Toxic Exposure

# Essential and Metabolic Fatty Acids

## • Potentially Toxic Exposures

- Trans fats
- Hydrogenated fats
- Animal fats
  - Exposure to hormones/antibiotics
    - Dairy
    - Meat
- Benzoic Acid
  - Liquid preservative

Essential and Metabolic Fatty Acids Markers (RBCs)

Omega 3 Fatty Acids		
Analyte	(cold water fish, flax, walnut)	Reference Range
α-Linolenic (ALA) 18:3 n3	0.49	>= 0.09 wt %
Eicosapentaenoic (EPA) 20:5 n3	0.56	>= 0.16 wt %
Docosapentaenoic (DPA) 22:5 n3	1.54	>= 1.14 wt %
Docosahexaenoic (DHA) 22:6 n3	2.9	>= 2.1 wt %

Omega 6 Fatty Acids		
Analyte	(vegetable oil, grains, most meats, dairy)	Reference Range
Linoleic (LA) 18:2 n6	20.6	10.5-16.9 wt %
γ-Linolenic (GLA) 18:3 n6	0.08	0.03-0.13 wt %
Dihomo-γ-linolenic (DGLA) 20:3 n6	3.44	>= 1.19 wt %
Arachidonic (AA) 20:4 n6	11	15-21 wt %

Malabsorption and Dysbiosis Markers

Malabsorption Markers		Reference Range
Indoleacetic Acid (IAA)	1.0	<= 4.2
Phenylacetic Acid (PAA)	0.15	<= 0.12

Bacterial Dysbiosis Markers		Reference Range
Dihydroxyphenylpropionic Acid (DHPPA)	0.6	<= 5.3
3-Hydroxyphenylacetic Acid	0.8	<= 8.1
4-Hydroxyphenylacetic Acid	10	<= 29
Benzoic Acid	0.10	<= 0.05
Hippuric Acid	<dl	<= 603

Yeast / Fungal Dysbiosis Markers		Reference Range
Arabinose	53	<= 96
Citramalic Acid	3.8	<= 5.8
Tartaric Acid	<dl	<= 15

Isotetraenoic 22:4 n6	1.21	1.50-4.20 wt %
Sialenoic	0.81	<= 0.26 wt %
Omega 6s	37.5	30.5-39.7

Monounsaturated Fats

Omega 7 Fats		Reference Range
Stearoleic	0.27	<= 0.64 wt %
Heptenic	1.14	<= 1.13 wt %
Other Fat	0.16	<= 0.59 wt %

Delta - 6 Desaturase Activity

Upregulated	Functional	Impaired	Reference Range
GLA / DGLA / 20:3 n6	6.0		6.0-12.3

Cardiovascular Risk

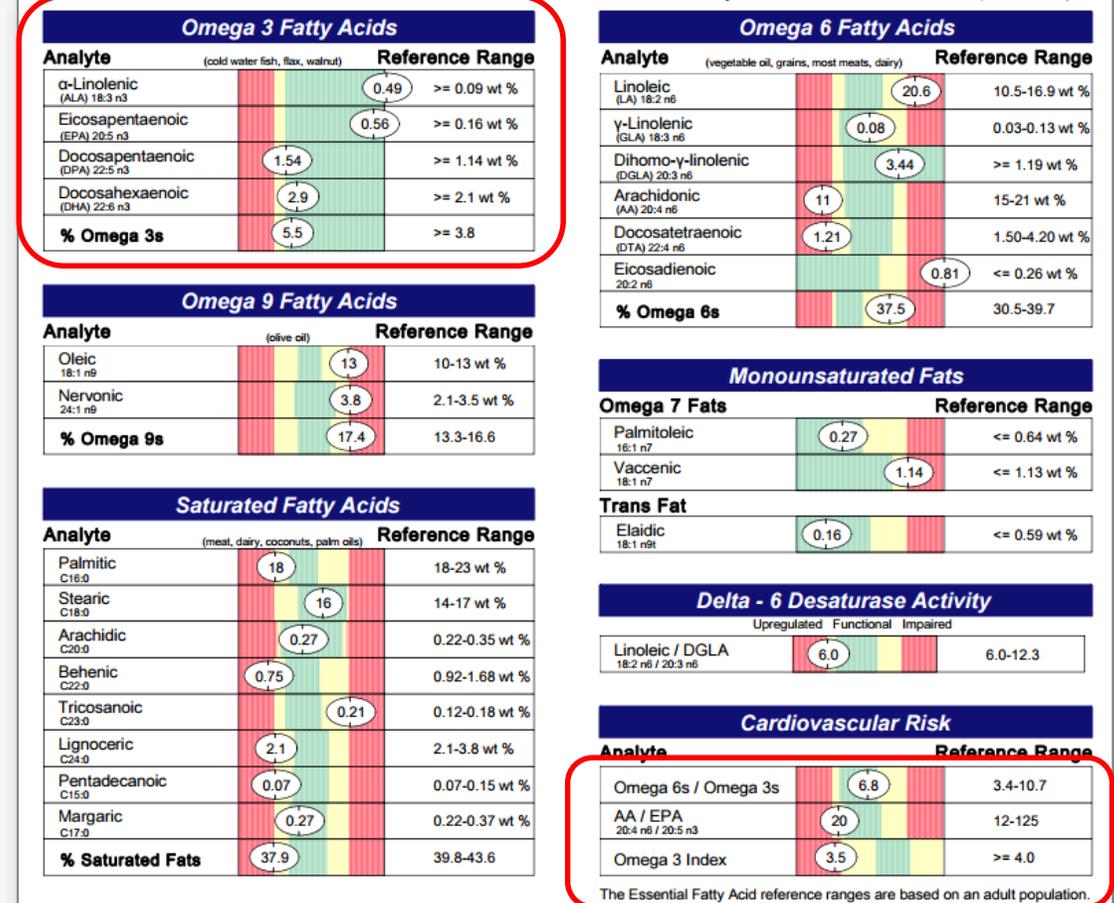
Cardiovascular Risk		Reference Range
Omega 6s / Omega 3s	6.8	3.4-10.7
EPA / 20:5 n3	20	12-125
Omega 3 Index	3.5	>= 4.0

Essential Fatty Acid reference ranges are based on an adult population.

# Glorious Fats: A Window into What You Are Eating

- **Nutritional Fat Balance**
  - Adequate Omega-3 intake
    - Nuts, fish, seeds, grass-fed meat
  - Omega-3/Omega-6 balance
  - Processed foods may not be reported on your patient, but they will make their way on the report
    - Also dairy...

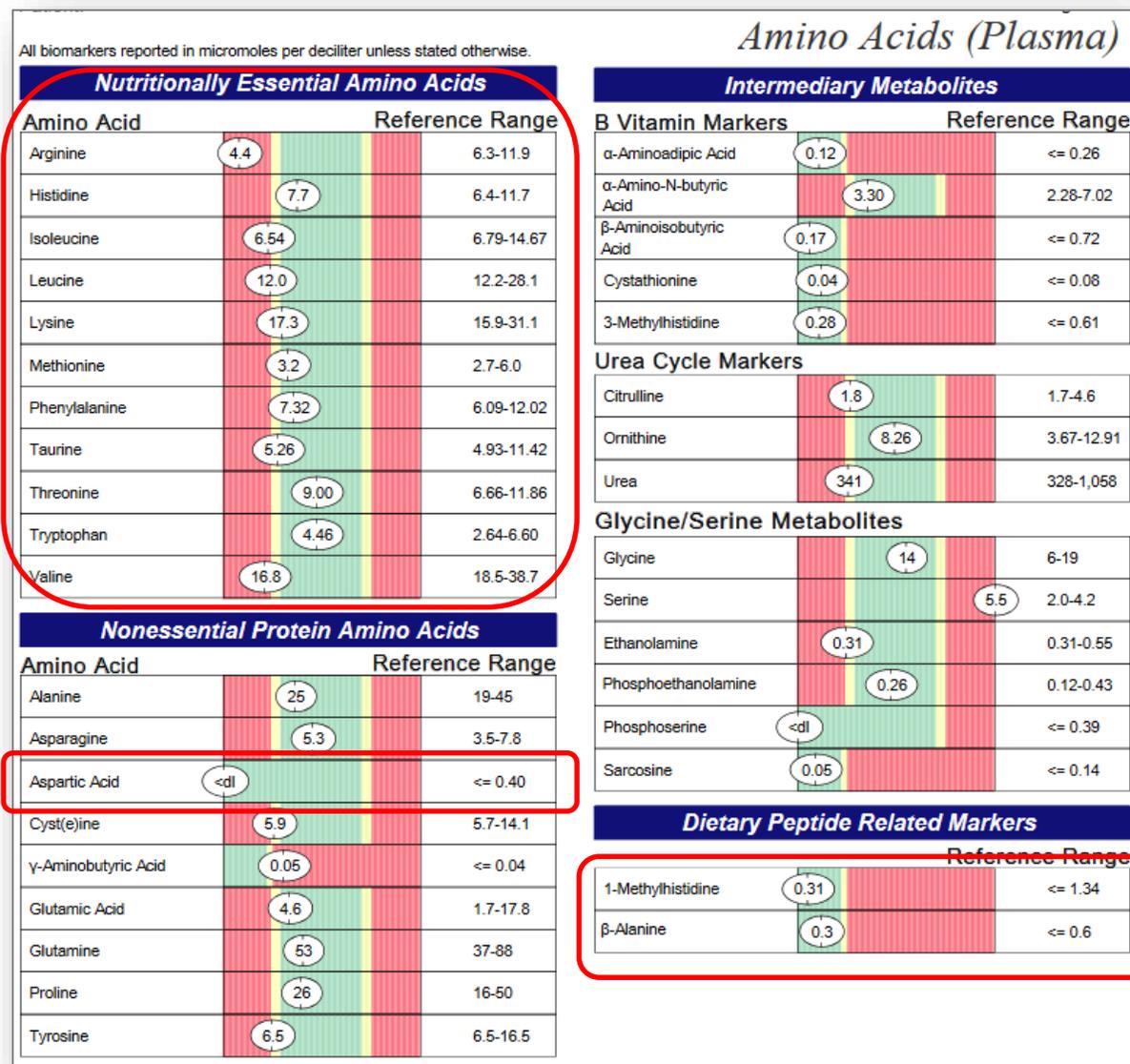
Essential and Metabolic Fatty Acids Markers (RBCs)





# What's Left? Protein!

- Amino Acids
  - Building blocks of life
  - Often see issues around amino acids status
  - Aspartame -> Aspartic acid
- Vegetarianism/Veganism
  - Be careful of absolutism
- Protein Intake vs Metabolic Need



# Time-Restricted Feeding without Reducing Caloric Intake Prevents Metabolic Diseases in Mice Fed a High-Fat Diet

Hatori et al., Cell Metabolism, 2012, 15(6): p848-860

## Summary

While diet-induced obesity has been exclusively attributed to increased caloric intake from fat, animals fed a high-fat diet (HFD) *ad libitum* (*ad lib*) eat frequently throughout day and night, disrupting the normal feeding cycle. To test whether obesity and metabolic diseases result from HFD or disruption of metabolic cycles, we subjected mice to either *ad lib* or time-restricted feeding (tRF) of a HFD for 8 hr per day. Mice under tRF consume equivalent calories from HFD as those with *ad lib* access yet are protected against obesity, hyperinsulinemia, hepatic steatosis, and inflammation and have improved motor coordination. The tRF regimen improved CREB, mTOR, and AMPK pathway function and oscillations of the circadian clock and their target genes' expression. These changes in catabolic and anabolic pathways altered liver metabolome and improved nutrient utilization and energy expenditure. We demonstrate in mice that tRF regimen is a nonpharmacological strategy against obesity and associated diseases.



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**Time restricted feeding without reducing caloric intake prevents metabolic diseases in mice fed a high fat diet**

**Megumi Hatori<sup>1,\*</sup>, Christopher Vollmers<sup>1,\*</sup>, Amir Zarrinpar<sup>1,2,\*</sup>, Luciano DiTacchio<sup>1,\*</sup>, Eric A. Bushong<sup>3</sup>, Shubhroz Gill<sup>1</sup>, Mathias Leblanc<sup>1</sup>, Amandine Chaix<sup>1</sup>, Matthew Joens<sup>1</sup>, James A. J. Fitzpatrick<sup>1</sup>, Mark H. Ellisman<sup>3</sup>, and Satchidananda Panda<sup>1,4</sup>**

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<sup>3</sup> National Center for Microscopy and Imaging Research, University of California, San Diego, La Jolla, CA 92093, USA

**SUMMARY**

While diet-induced obesity has been exclusively attributed to increased caloric intake from fat, animals fed high fat diet (HFD) *ad libitum* (*ad lib*) eat frequently throughout day and night disrupting the normal feeding cycle. To test whether obesity and metabolic diseases result from HFD or disruption of metabolic cycles, we subjected mice to either *ad lib* or time restricted feeding (tRF) of a HFD for 8 h/day. Mice under tRF consume equivalent calories from HFD as those with *ad lib* access, yet are protected against obesity, hyperinsulinemia, hepatic steatosis, inflammation, and have improved motor coordination. The tRF regimen improved CREB, mTOR and AMPK pathway function and oscillations of the circadian clock and their target genes' expression. These changes in catabolic and anabolic pathways altered liver metabolome, improved nutrient utilization and energy expenditure. We demonstrate in mice that tRF regimen is a non-pharmacological strategy against obesity and associated diseases.

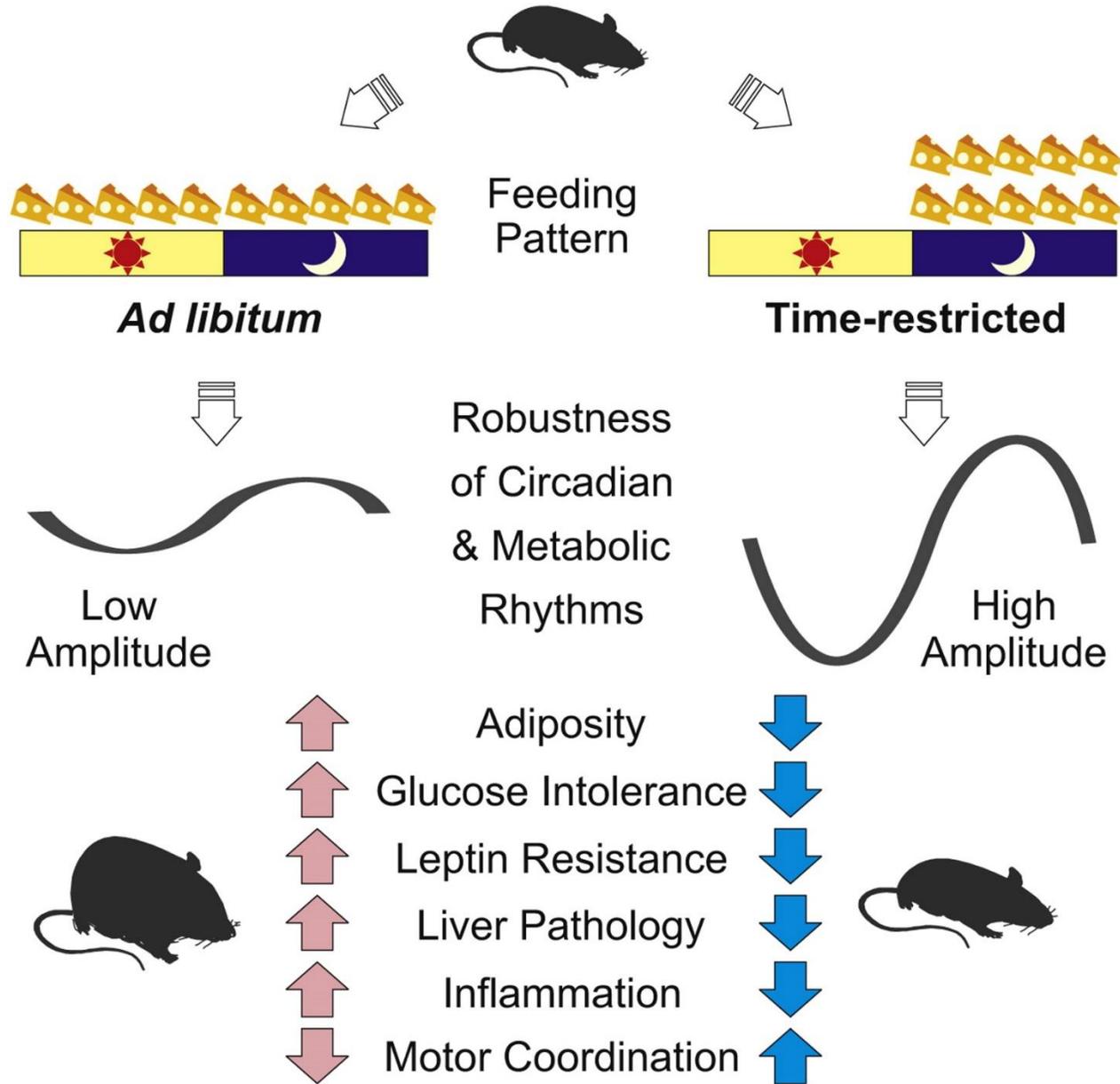
**INTRODUCTION**

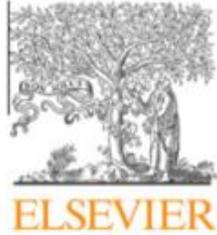
In order to adapt to the daily cycles of nutrient availability, energy metabolism in animals has evolved to be cyclical. These metabolic cycles arise from cell autonomous circadian rhythms and the feeding-fasting cycle which drive genomic programs (Vollmers et al., 2009). At the molecular level, cell autonomous circadian rhythms are based on interlocked negative feedback circuits in which bHLH-PAS transcription factors BMAL1, CLOCK, NPAS2 and ROR proteins act as transcriptional activators and PER, CRY and REV-ERB function as inhibitors to produce ~24 h self-sustained rhythmic transcription of their own and target genes (reviewed in (Reddy and O'Neill, 2010)).

Feeding and fasting also drive daily rhythms in the activities of key regulators of nutrient homeostasis including AMPK, CREB and AKT (Vollmers et al., 2009). There is extensive

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<sup>\*</sup> These authors contributed equally to this work.

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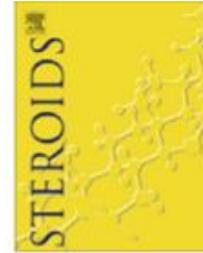




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## Steroids

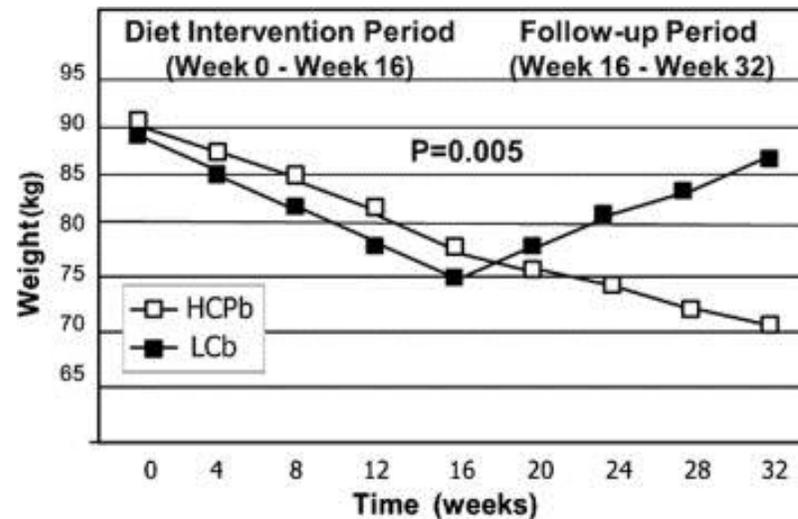
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### Review

## Meal timing and composition influence ghrelin levels, appetite scores and weight loss maintenance in overweight and obese adults

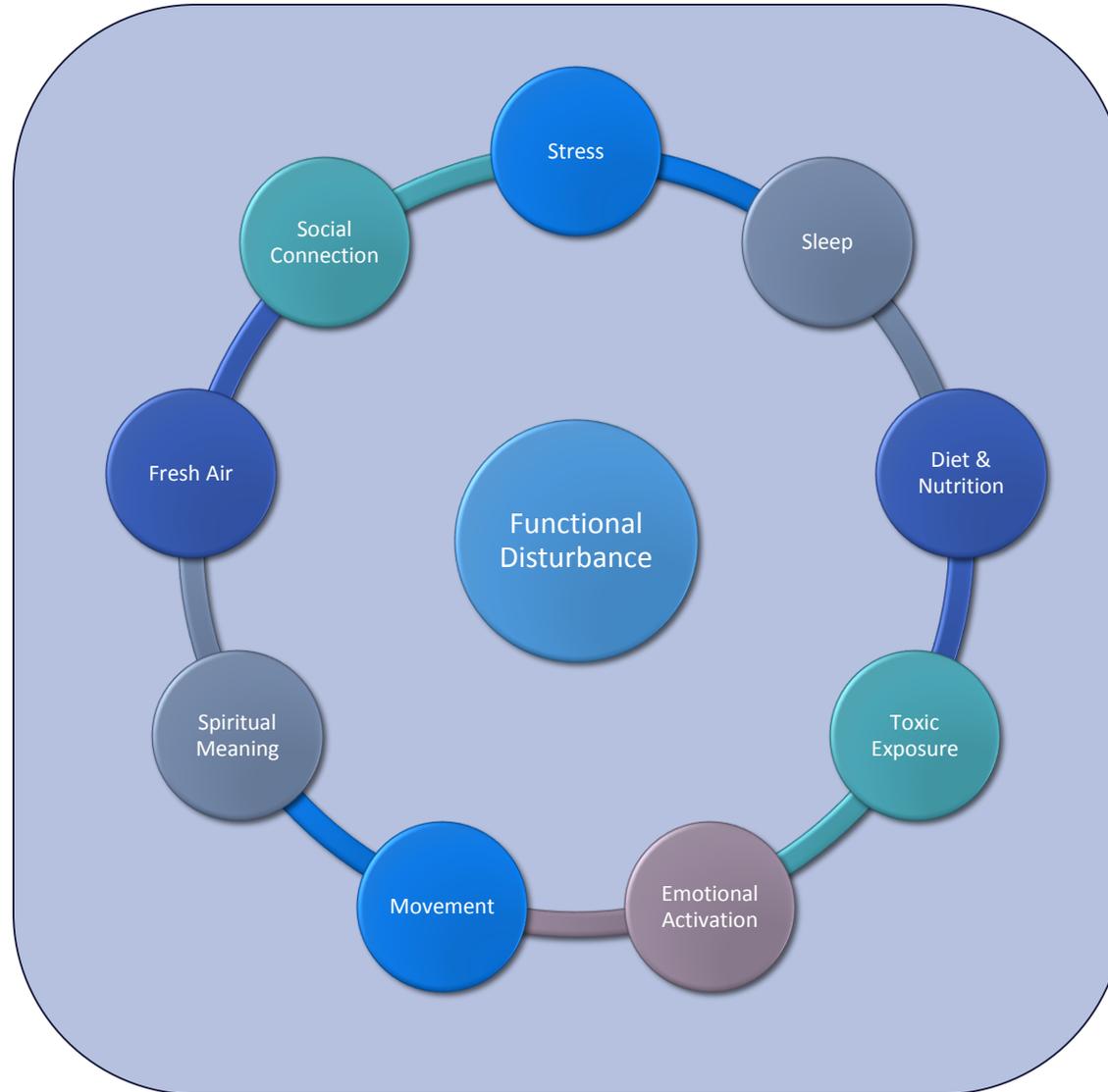
Daniela Jakubowicz<sup>a,\*</sup>, Oren Froy<sup>b</sup>, Julio Wainstein<sup>a</sup>, Mona Boaz<sup>c,d</sup>



CRAVING SCORES		baseline	week 16	week 32
Sweets	HCPb	12.9 ± 1.9	9.7 ± 3.7	8.4 ± 4.3
	LCb	12.78 ± 2.3	15.4 ± 1.8	17.1 ± 1.8
	p-value	0.34	<0.001	<0.001
Fats	HCPb	10.1 ± 1.8	9.2 ± 2.6	8.1 ± 2.9
	LCb	9.8 ± 1.9	11.3 ± 1.7	12.3 ± 1.9
	p-value	0.14	<0.001	<0.001
Carb/starch	HCPb	12.6 ± 1.5	8.8 ± 3.8	8.2 ± 4.1
	LCb	12.6 ± 1.6	15.7 ± 1.9	16.6 ± 1.9
	p-value	0.85	<0.001	<0.001
Fast foods	HCPb	12.8 ± 1.6	9.2 ± 3.6	8.5 ± 3.9
	LCb	13.2 ± 1.6	15.9 ± 1.9	16.6 ± 2.0
	p-value	0.15	<0.001	<0.001
General craving	HCPb	48.6 ± 4.7	37.1 ± 12.9	33.2 ± 14.7
	LCb	48.5 ± 4.8	58.4 ± 5.7	62.7 ± 6.1
	p-value	0.57	<0.001	<0.001



# Let's Talk about a Couple of These Others...

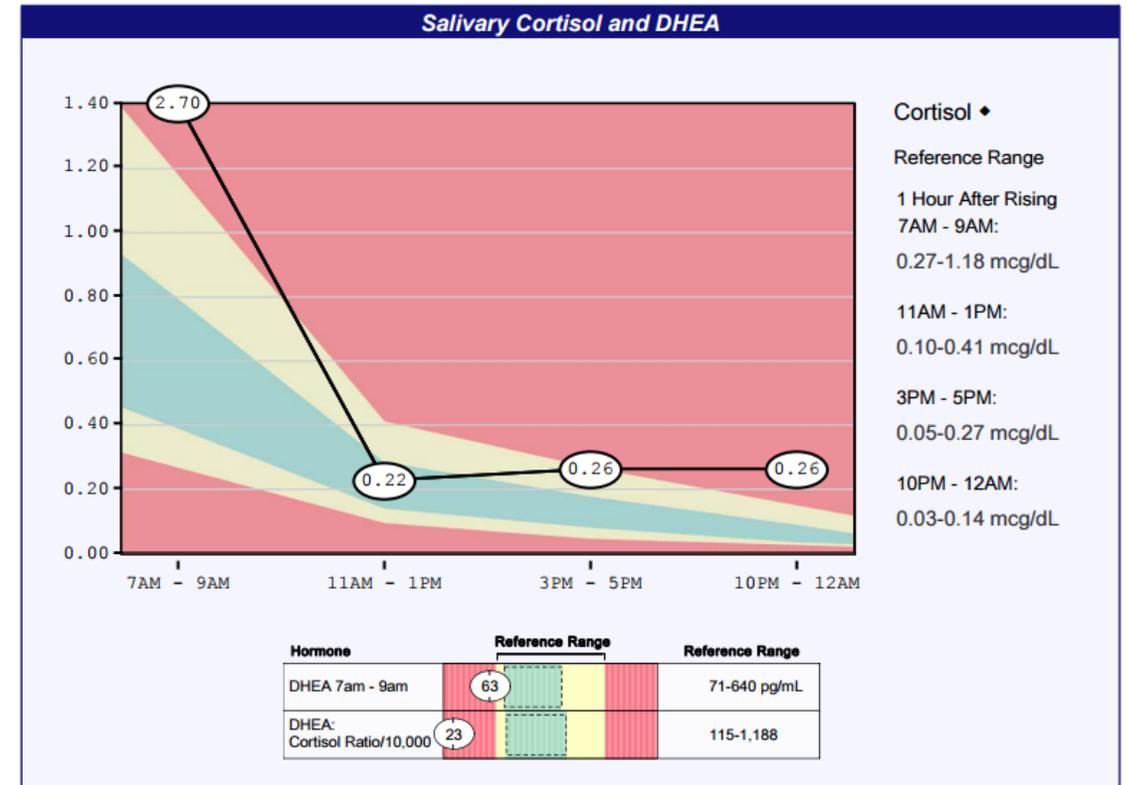


} *Genetic Potential*



# Sleep and Sleep Hygiene

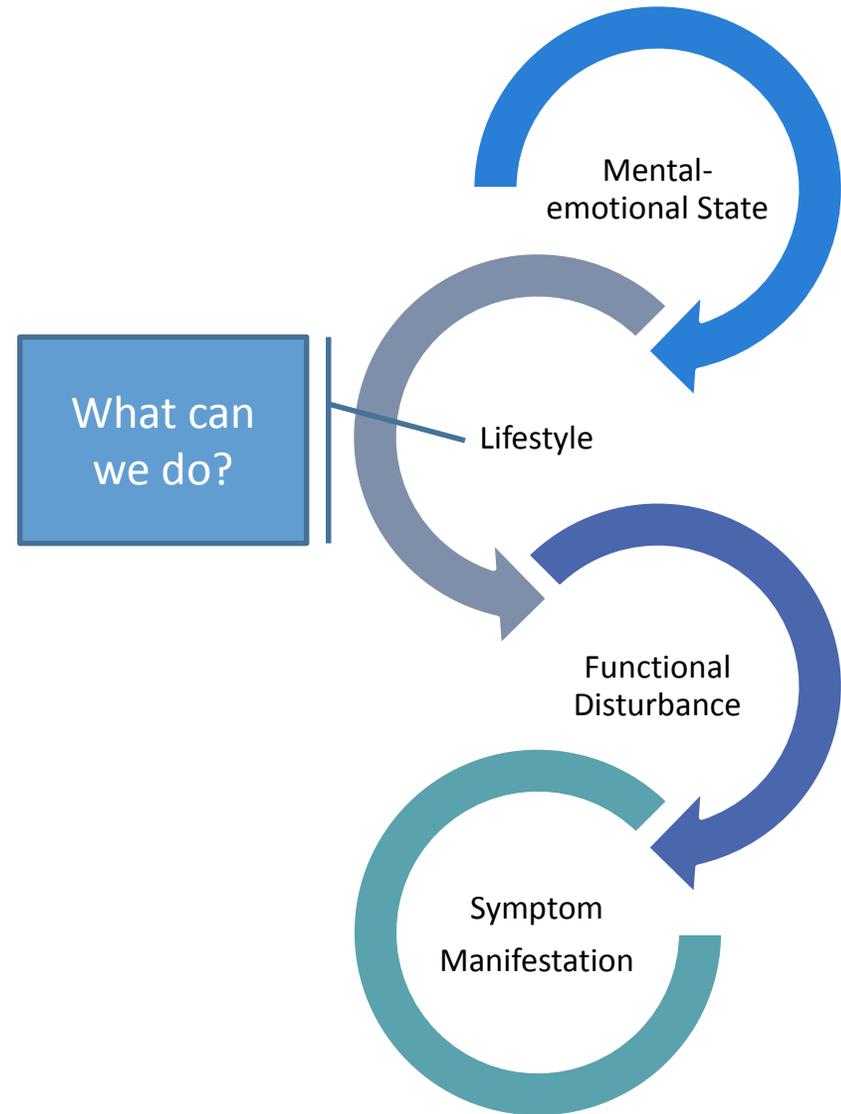
- Decrease stimulation at night
  - 30-60 minutes prior to bedtime
    - Television
    - Phones/Tablets
- Avoid eating before bed
- Avoid LED and bright light at night
  - Make bedroom a low-stim place
- Do not exercise in evening
- Develop comfortable pre-bed routine
  - Baths, reading, breathwork/meditation





# The Anti-New-Year's Approach

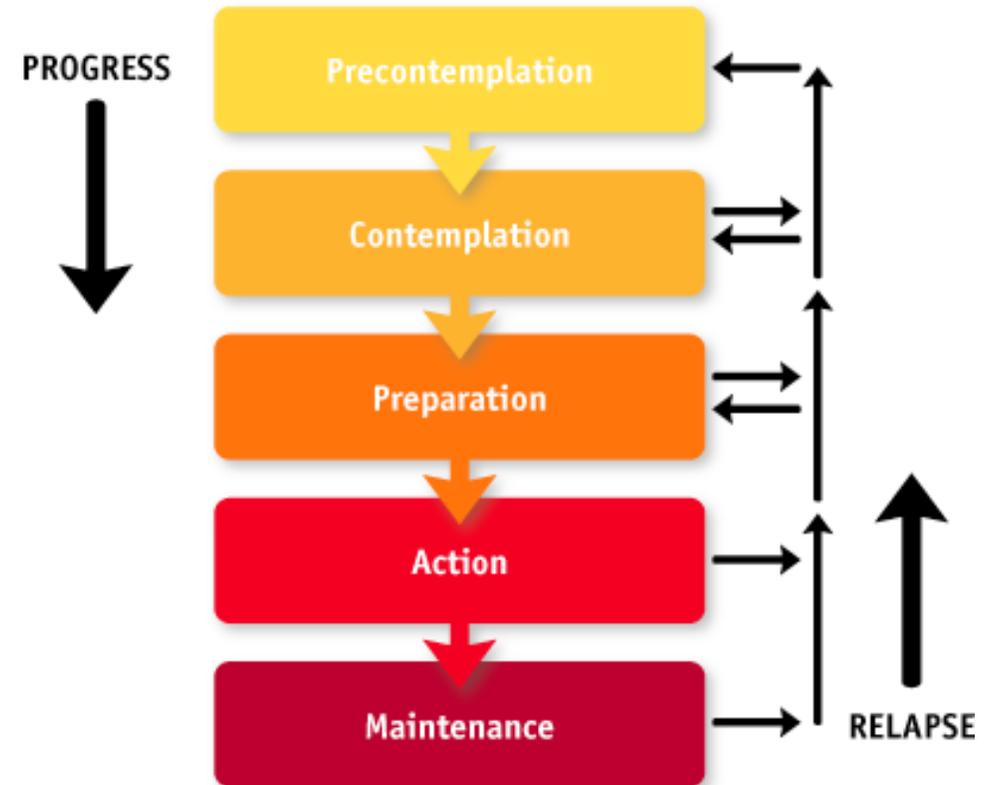
- Behavior change that is long lasting is not a resolution...
  - It's a process that ebbs and flows
- Behavior change is not an on/off switch
- We must take responsibility for assessment and management of our patients' stage of change
  - Instead of just educating them, and expecting them to change themselves





# Stages of Behavior Change – What to Do

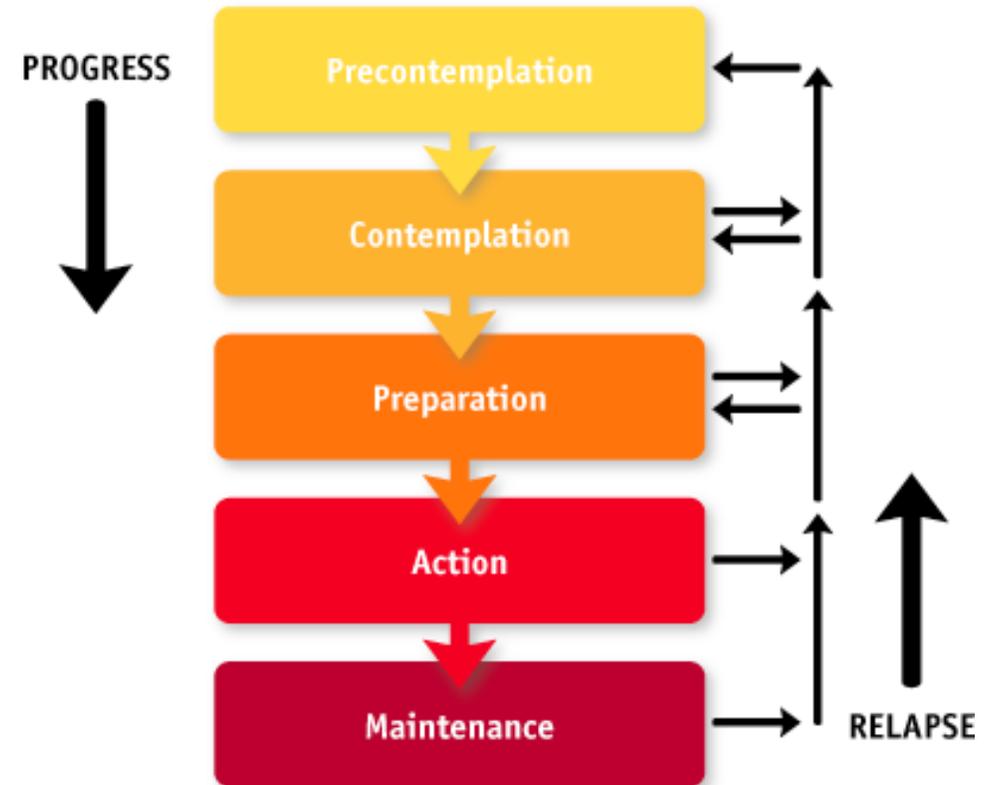
- **Pre-Contemplation:**  
Not currently thinking about or rejects change
  - Address by raising doubt
    - “What do you think needs changing about this behavior?”
    - “If nothing, why do feel that way?”
    - “If you were to change anything about this behavior what would it be?”
- **Result:** Raise awareness through feedback
  - *Do not give advice at this stage!*





# Stages of Behavior Change – What to Do

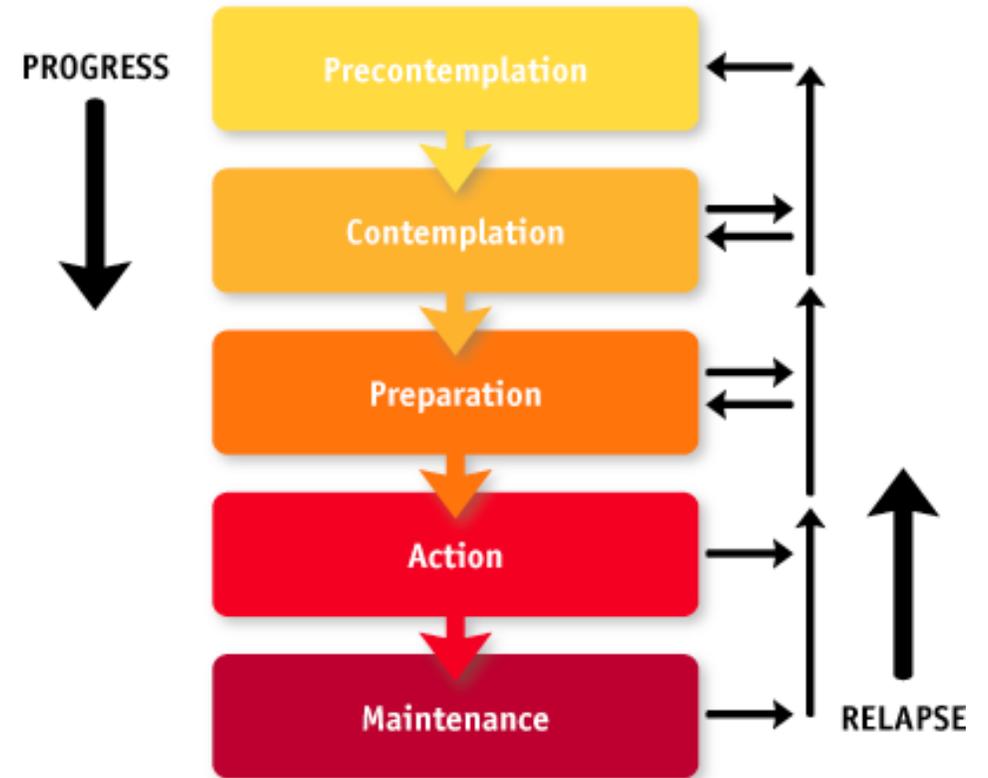
- **Contemplation:**  
Thinking about changing
  - Continue to raise doubt in a more formal way
    - “If you could change the behavior, how would you do it?”
    - “What would be a better behavior?”
    - “How much do you enjoy your current behavior compared to this other behavior”
- **Result:** Tip the balance in favor of change and help patient see consequence of not changing





# Stages of Behavior Change – What to Do

- **Planning:**  
Actively engaging in steps toward change
  - Elicit pros and cons
  - Assess strength of commitment
  - Examine barriers and elicit solutions
  - Build coping behaviors
- **Result:** Help patient devise strategy that is realistic, appropriate, and effective





# Other Resources for Supporting Behavior Change

- Decisional Balance Sheet
- Importance and Confidence Ruler
- Change Plan Worksheet
- Diet Diary
- Nutrition Tracking App

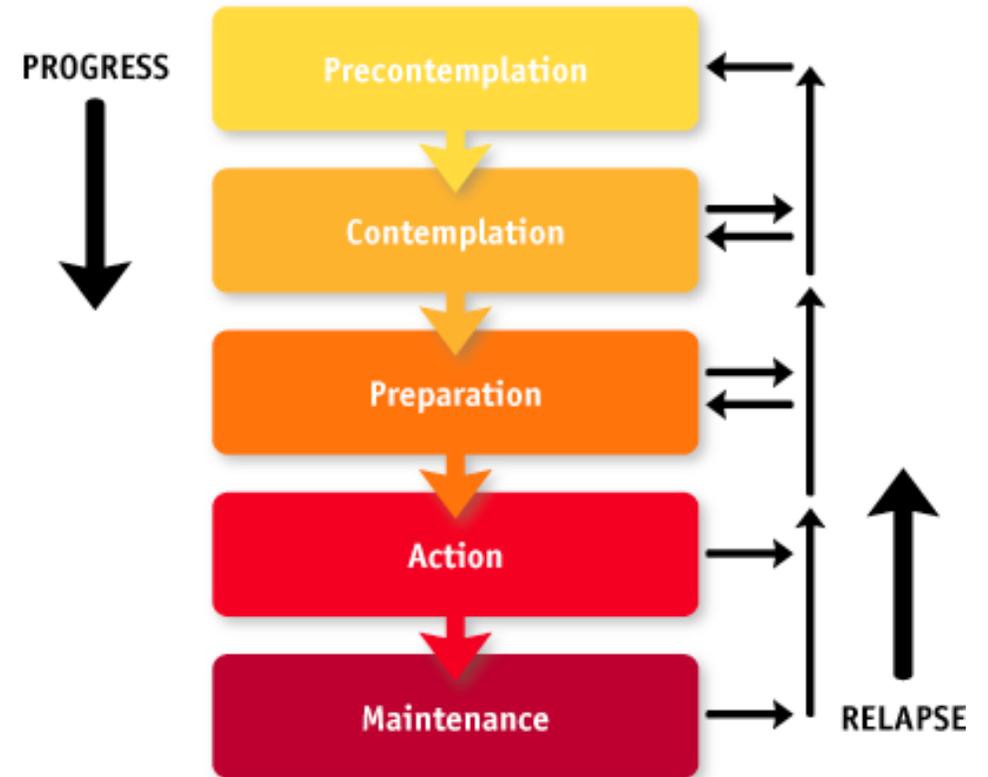
	<h2 style="text-align: center;">Change Plan Worksheet</h2>															
<p><b>THE TOOL:</b></p> <p><b>EFFECTIVELY USED FOR WHICH OF THE 4 POINTS?</b>  <input checked="" type="checkbox"/> <b>Building Motivation</b>   <input type="checkbox"/> Coping with Urges   <input type="checkbox"/> Problem Solving   <input type="checkbox"/> Lifestyle Balance</p>																
<p><b>EQUIPMENT REQUIRED:</b> Distribute a copy of this sheet to group members to help them to document their personal change plan.</p>																
<ol style="list-style-type: none"> <li>The changes I want to make are:</li> <li>The most important reasons why I want to make these changes are:</li> <li>The steps I plan to take in changing are:</li> <li>The ways other people can help me are:  <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><u>Person</u></td> <td style="width: 50%;"><u>Possible ways to help me</u></td> </tr> </table> </li> <li>I will know that my plan is working if:</li> <li>Some things that could interfere with my plans are:</li> <li>How important is it that you make this change:  <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;"><u>Not at all Important</u></td> <td style="text-align: right;"><u>Most Important</u></td> </tr> <tr> <td style="text-align: center;">0</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">6</td><td style="text-align: center;">7</td><td style="text-align: center;">8</td><td style="text-align: center;">9</td><td style="text-align: center;">10</td> </tr> </table> </li> <li>How confident are you that you can make this change?</li> </ol>		<u>Person</u>	<u>Possible ways to help me</u>	<u>Not at all Important</u>	<u>Most Important</u>	0	1	2	3	4	5	6	7	8	9	10
<u>Person</u>	<u>Possible ways to help me</u>															
<u>Not at all Important</u>	<u>Most Important</u>															
0	1	2	3	4	5	6	7	8	9	10						

Acknowledgement: Thanks to team member Dr. Henry Steinberger



# Stages of Behavior Change – What to Do

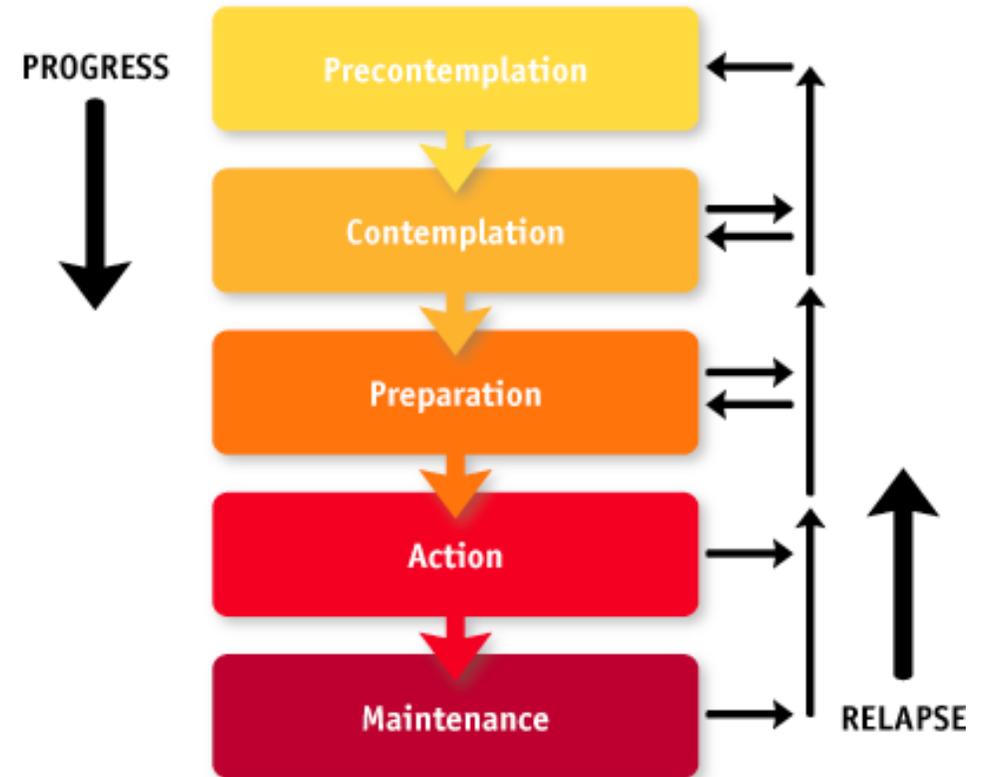
- **Action:**  
Actively engaging in behavior change
  - Revisit and reevaluation of plan
  - Plan for minor lapses
  - Reaffirmation and focus on success
    - “How are you doing with this change?”
    - “What things about this change are easy, and what things are difficult?”
- **Result:** Patient is supported, feels like she/he has advocate, and is being held accountable





# Stages of Behavior Change – What to Do

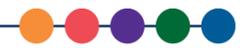
- **Maintenance:**  
New behavior replaced by old
  - Unusual to see patients in this stage
  - Revisit and reevaluate plan
- **Relapse:**
  - Empathy
  - Explore factors leading to relapse
  - Feedback about plans



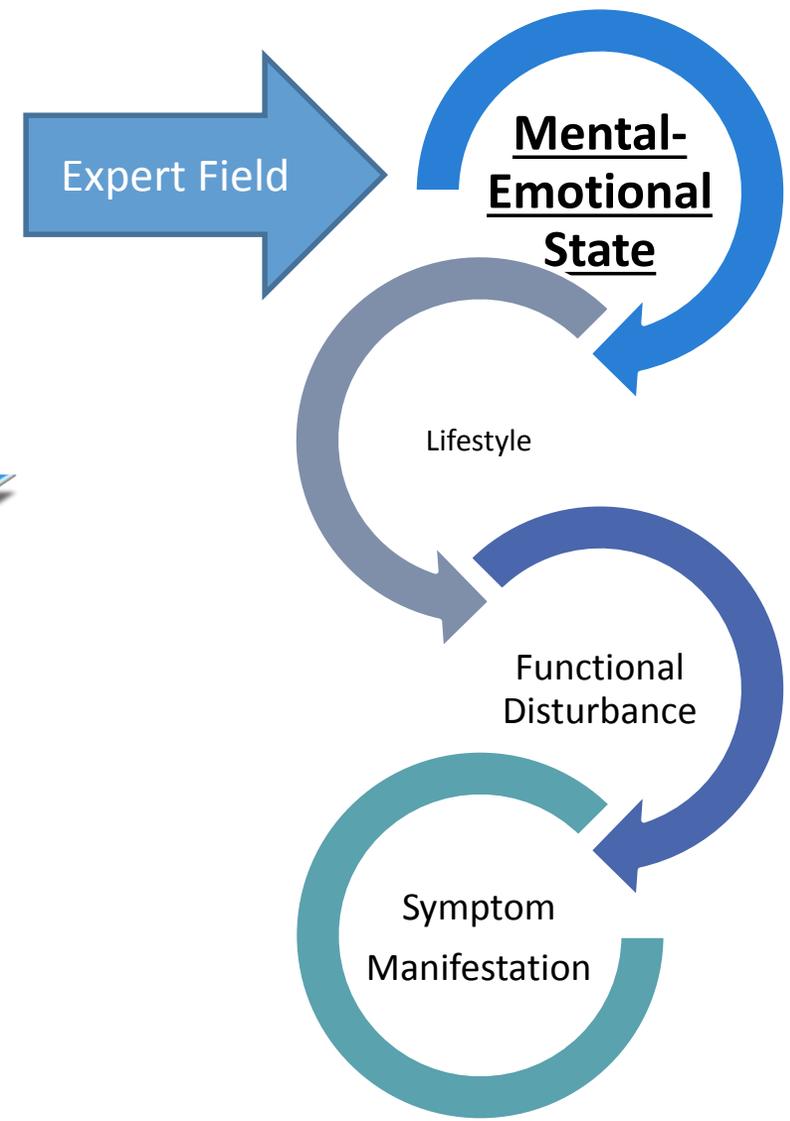
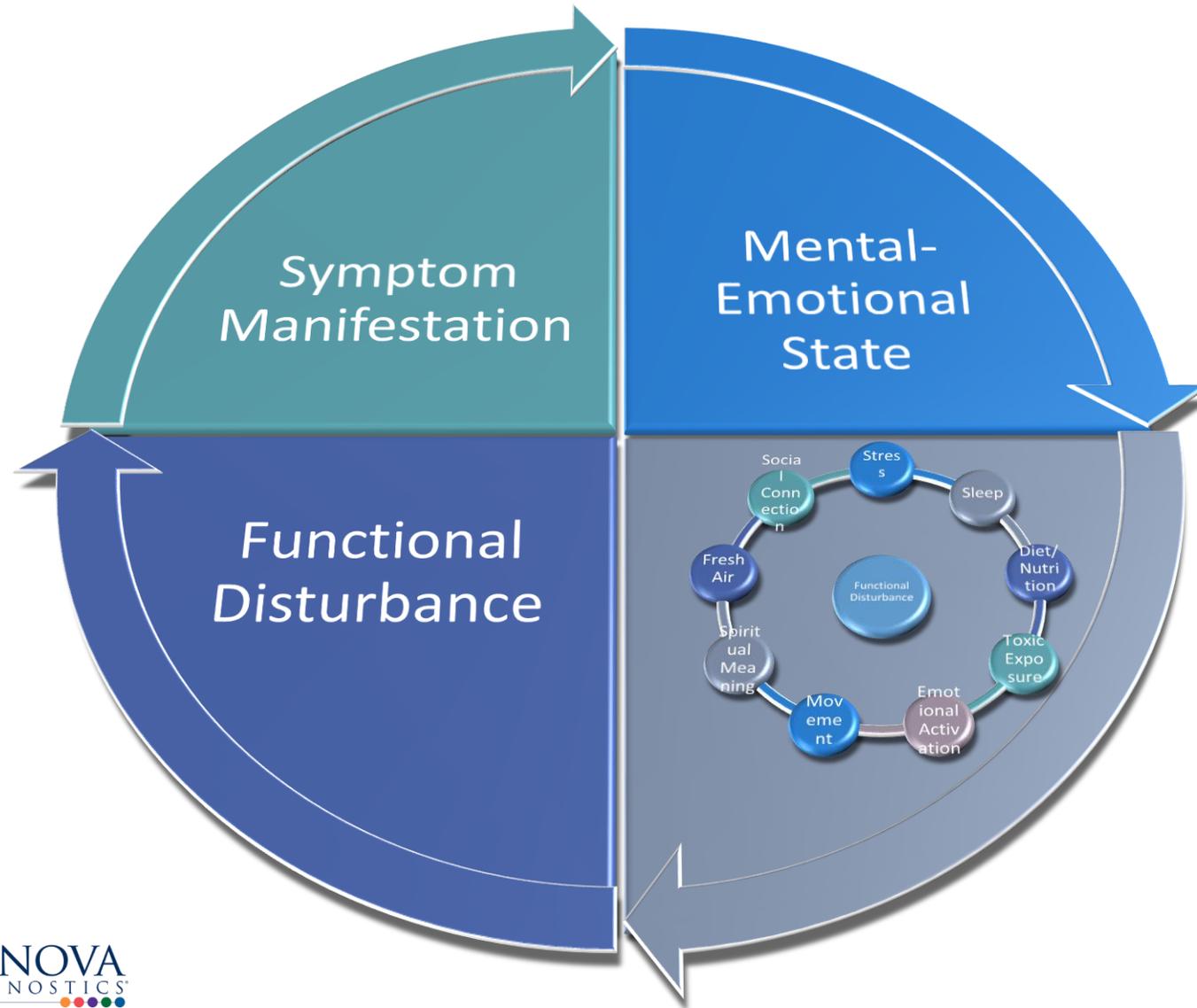


# Final Thoughts...

- With regard to substance abuse...
  - Patients use things like nicotine/alcohol/etc. for a reason
  - Unless you understand the role of this medication in their life...
    - ...And are able to replace it with an effective, but healthier, substitute...
  - You cannot simply remove or replace someone's medication without understanding it's role in their life
    - If you do, be prepared for either aggravation or relapse and loss of stability
  - You wouldn't take away an inhaler from an asthmatic, would you?
- Stop Smoking/Stop Drinking questionnaires



# Final Thoughts...





# It's Over!

- Dug in to the importance of addressing lifestyle with patients
- Discussed key behavior patterns to be assessed with every patient
- Integrated specialty testing as a window into lifestyle and habits
- Discussed tools to help cultivate positive behavior change for your patients
- Never have to look at these wheel and circle graphs ever again!





**Presenter:**  
**Michael Chapman, ND**

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# *Questions?*



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# The Lifestyle Factor:

## Utilizing Testing to Encourage Behavior Change

Michael Chapman, ND  
Medical Education Specialist



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