THE MAAS CLINIC

USING THE FM MODEL IN GENETICS AND PREVENTIVE CARDIOLOGY

CREATING HEALTHSPAN AND LIFESPAN FOR YOUR CLIENTS

LAURENS MAAS

EUROPE'S LEADING DOCTOR OF INTEGRATED MEDICINE

- FATHER TO 3 KIDS
- AUTHOR OF 3 BOOKS
- SURFER (IN WARM WATER)
- OSTEOPATH
- FUNCTIONAL MEDICINE PRACTITIONER
- DR. OF INTEGRATED MEDICINE
- X2 AWARD WINNER OF THE EUROPEAN AWARDS IN MEDICINE

FUNCTIONAL MEDICINE IS A SYSTEMS BIOLOGY-BASED APPROACH THAT FOCUSES ON IDENTIFYING AND ADDRESSING THE ROOT CAUSE OF DISEASE.

THE INSTITUTE FOR FUNCTIONAL MEDICINE

THE FUNCTIONAL MEDICINE TREE

THE FUNDAMENTAL ORGANISING SYSTEMS AND CORE IMBALANCES

ASSIMILATION
DIGESTION, ABSORPTION, RESPIRATION, MICROBIOTA/GL

DEFENCE AND REPAIR
IMMUNE SYSTEM, INFLAMMATORY PROCESS, INFECTION AND MICROBIOTA

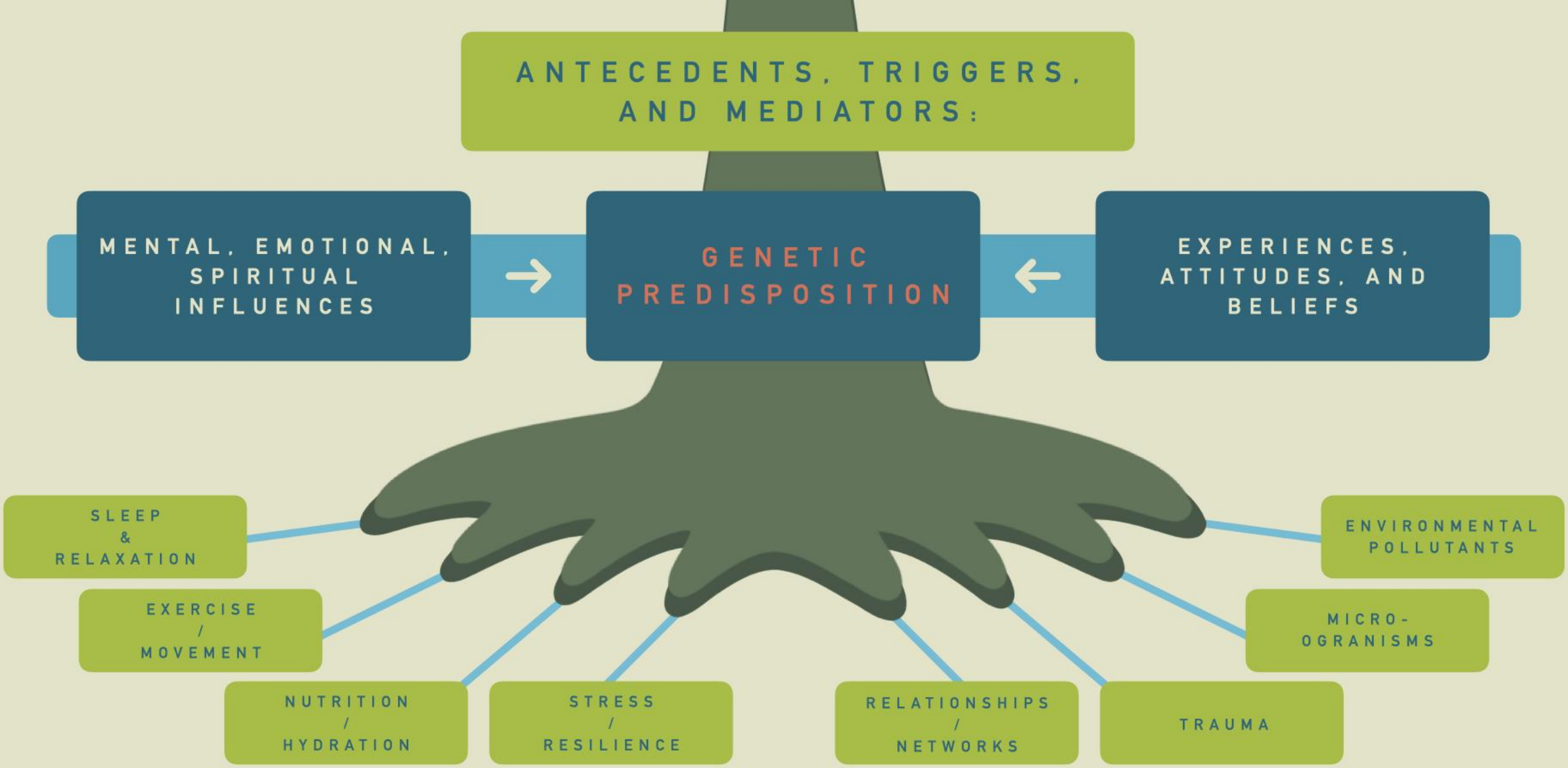
ENERGY
ENERGY REGULATION, MITOCHONDRIAL FUNCTION

BIOTRANSFORMATION AND ELIMINATION
TOXICITY, DETOXIFICATION

COMMUNICATION
ENDOCINE, NEUROTRANSMITTERS, IMMUNE MESSENGERS, COGNITION

TRANSPORT
CARDIOVASCULAR, LYMPHATIC SYSTEMS

STRUCTURAL INTEGRITY
FROM THE SUBCELLULAR MEMBRANES TO THE MUSCULOSKELETAL SYSTEM.



PERSONALISING LIFESTYLE AND ENVIRONMENTAL FACTORS

THE PRACTICAL APPLICATION OF FM IN THE CLINICAL SPACE

EARLY 2000'S

I WAS INITIALLY TRAINED IN THE USA

TRAINED THROUGH FM UNIVERSITY, FM TOWN, KALISH INSTITUTE AND UNIVERSITY OF NATURAL MEDICINE

I DID THIS TRAINING IN AMERICA AS WE LIVED IN BARBADOS AT THE TIME

→ 17 YEARS →

LATE 2017

ENROLLED INTO IFM / AFMCP AND FINISHED THE CERTIFICATION WITHIN 6 YEARS

IFM WAS, AND IS, IN MY OPINION, THE BEST AND MOST THOROUGH FM TRAINING

USING THE IFM APPROACH, - TO TREAT THE UNDERLYING CAUSES OF CARDIO-METABOLIC DISEASE, - MY CLINIC FOLLOWS IFM PROCEDURES

WE ALSO TREAT CLIENTS WITH AUTO-IMMUNE DISEASE, ALLERGIES, CHRONIC HORMONE AND GUT DISORDERS

WE DO IT ALL BY THE BOOK

"GO.TO.IT"

- GATHER
- ORGANISE
- TELL
- ORDER
- INITIATE
- TRACK

GOTOIT SERVES AS AN EDUCATIONAL AID DESIGNED TO ASSIST FM PROFESSIONALS IN COMPLETING THE MATRIX AND TIMELINE

UTILISING THE "GOTOIT" FRAMEWORK ENABLES PRACTITIONERS TO:

- BUILD RAPPORT WITH PATIENTS
- RECOGNISE DETRIMENTAL PATTERNS
- DELVE INTO THE CORE ISSUES BEHIND THEIR CONCERNS
- SUGGEST TAILORED TREATMENTS AND LIFESTYLE ADJUSTMENTS

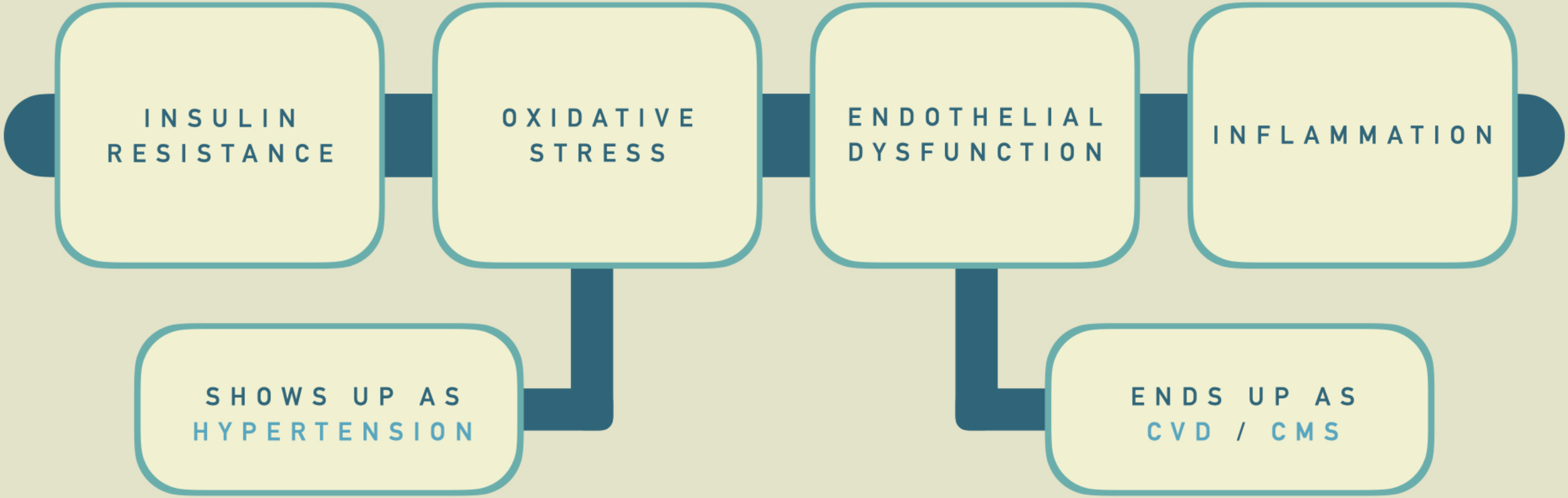
BUILDING THE TIMELINE AND MATRIX ALLOWS US TO SEE AND UNDERSTAND OUR CLIENTS

EVERY ONE OF MY CLIENTS
GOES THROUGH THE
TIMELINE AND MATRIX

IT ALSO ALLOWS FOR PRACTITIONER
AND CLIENT ACCOUNTABILITY

CVD AND CMS

IN THIS SEMINAR, WE WILL EXPLORE THE LINKS BETWEEN..



GLOBAL MORBIDITY

IS PRIMARILY CAUSED BY CARDIOVASCULAR DISEASE AND CARDIOMETABOLIC SYNDROME (CMS)

2 BILLION ARE AFFECTED

CLINICAL EXPERIENCE SHOWS THAT CVD / CMS IS VERY PREVALENT IN MANY CASES

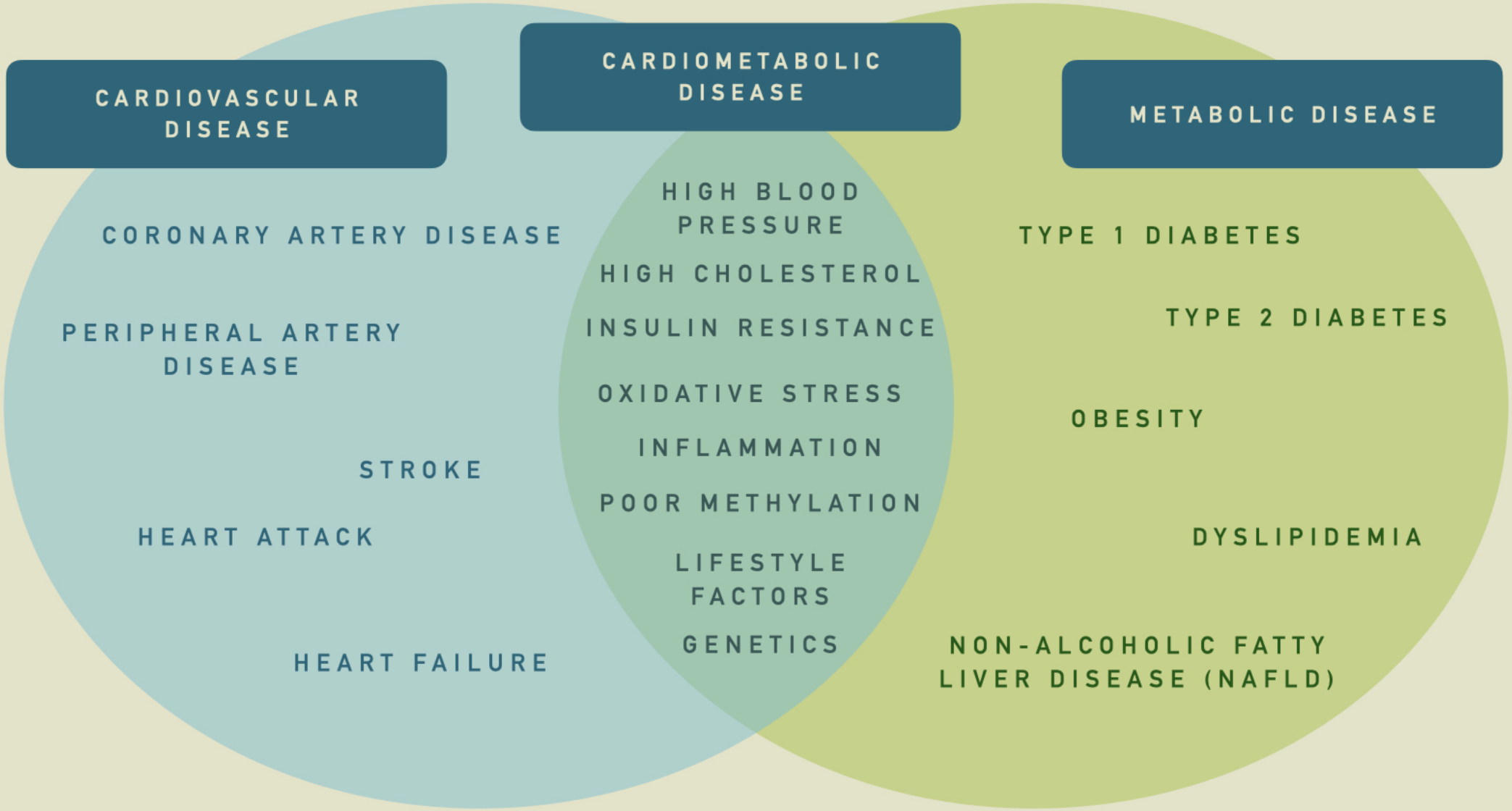
THERE IS A FUNDAMENTAL LINK BETWEEN..

THESE DISORDERS ARE INFLUENCED BY:

- DIET
- EXERCISE
- SMOKING
- GENETICS
- OVERALL LIFESTYLE

EFFECTIVE MANAGEMENT OF THESE CONDITIONS THROUGH LIFESTYLE CHANGES, MEDICATION AND OTHER INTERVENTIONS IS ESSENTIAL FOR REDUCING THEIR PUBLIC HEALTH IMPACT

CARDIOVASCULAR AND METABOLIC DISEASE



CASE STUDY

48 YEAR OLD | MALE | HISTORY OF ARRHYTHMIA..

.. AND HEART DISEASE SO SEVERE THAT A CARDIAC ABLATION WAS BEING CONSIDERED TO STABILISE THE ARRHYTHMIA

48 YEAR OLD | MALE | HISTORY OF ARRHYTHMIA..

HEALTH HISTORY

- FULL TERM VAGINAL BIRTH
- BREAST FED
- WHEAT INTRODUCED, 24 MONTHS
- DAIRY INTRODUCED, 8 MONTHS

ANTECEDENTS

- ARTHRITIS
- ANXIETY AND DEPRESSION
- DEMENTIA
- CANCER
- HEART DISEASE
- SUBSTANCE ABUSE

TRIGGERS

- ALLERGIES
- GINGIVITIS
- ATRIAL FIBRILLATION
- CHANGES IN SEX DRIVE
- LOSS OF PARENT
- STOMACH DYSFUNCTION
- COVID
- ABUSE
- REGULAR ANTIBIOTIC / STEROID USE
- SURGERIES

48 YEAR OLD | MALE | HISTORY OF ARRHYTHMIA..

MEDIATORS

- GENETIC PREDISPOSITIONS
- CHRONIC ADRENAL STRESS (TRAINING AND BUSINESS / ANDROPAUSE)
- CHRONIC GI DYSFUNCTIONS (BLOATING AND IBS)
- HISTAMINE OVERLOAD
- CHRONIC USE OF SYMPTOMATIC MEDS
- INCREASING RESPONSIBILITY AT WORK DUE TO SUCCESSFUL ENTERPRISE

LIFESTYLE

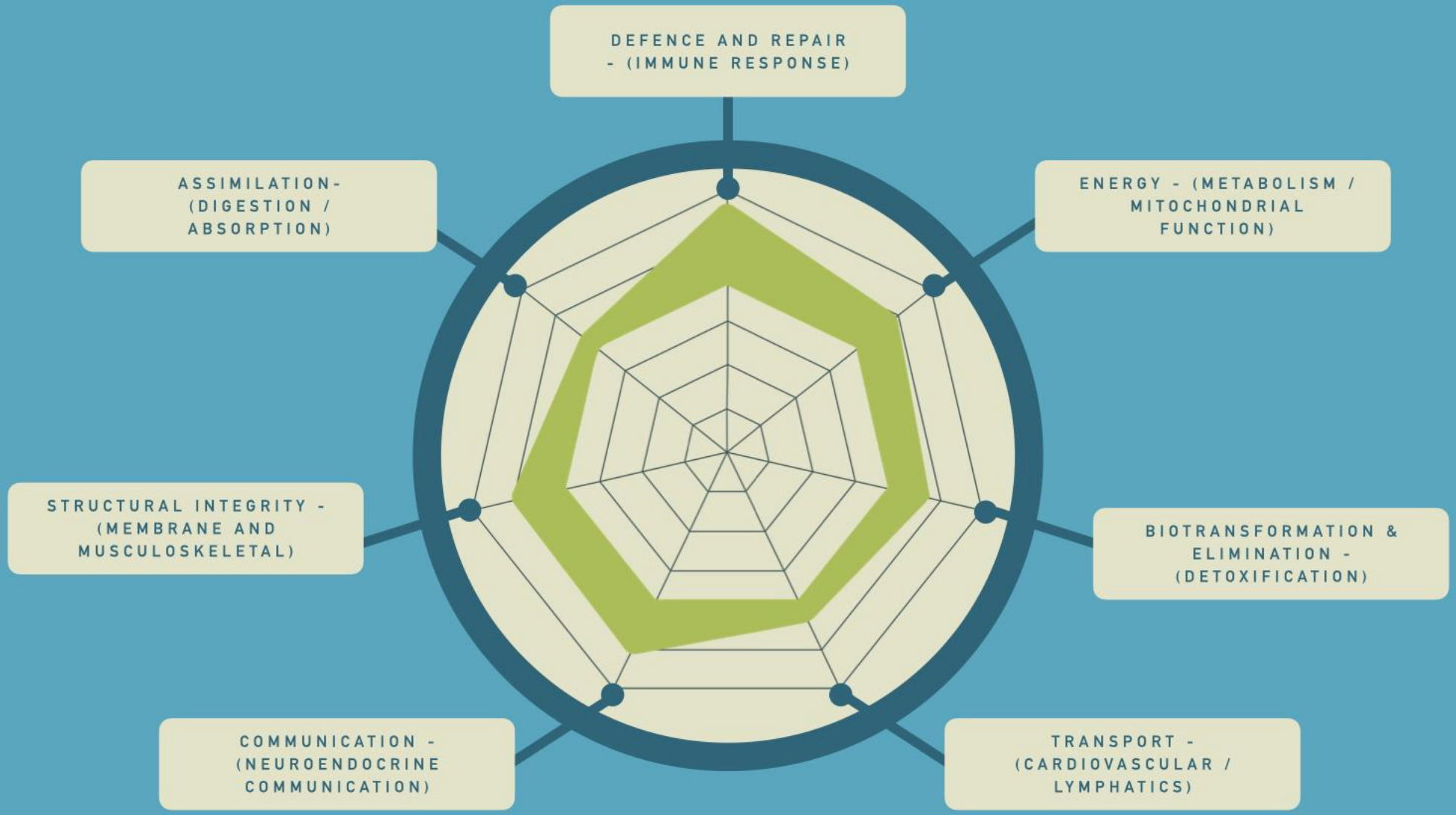
- HIGH EXERCISE LEVEL
- CHALLENGES SLEEPING (6 HOURS PER NIGHT)
- NUTRITION - LOW CARB, HIGH PROTEIN, EATS WHEAT AND DAIRY

MEDICATIONS

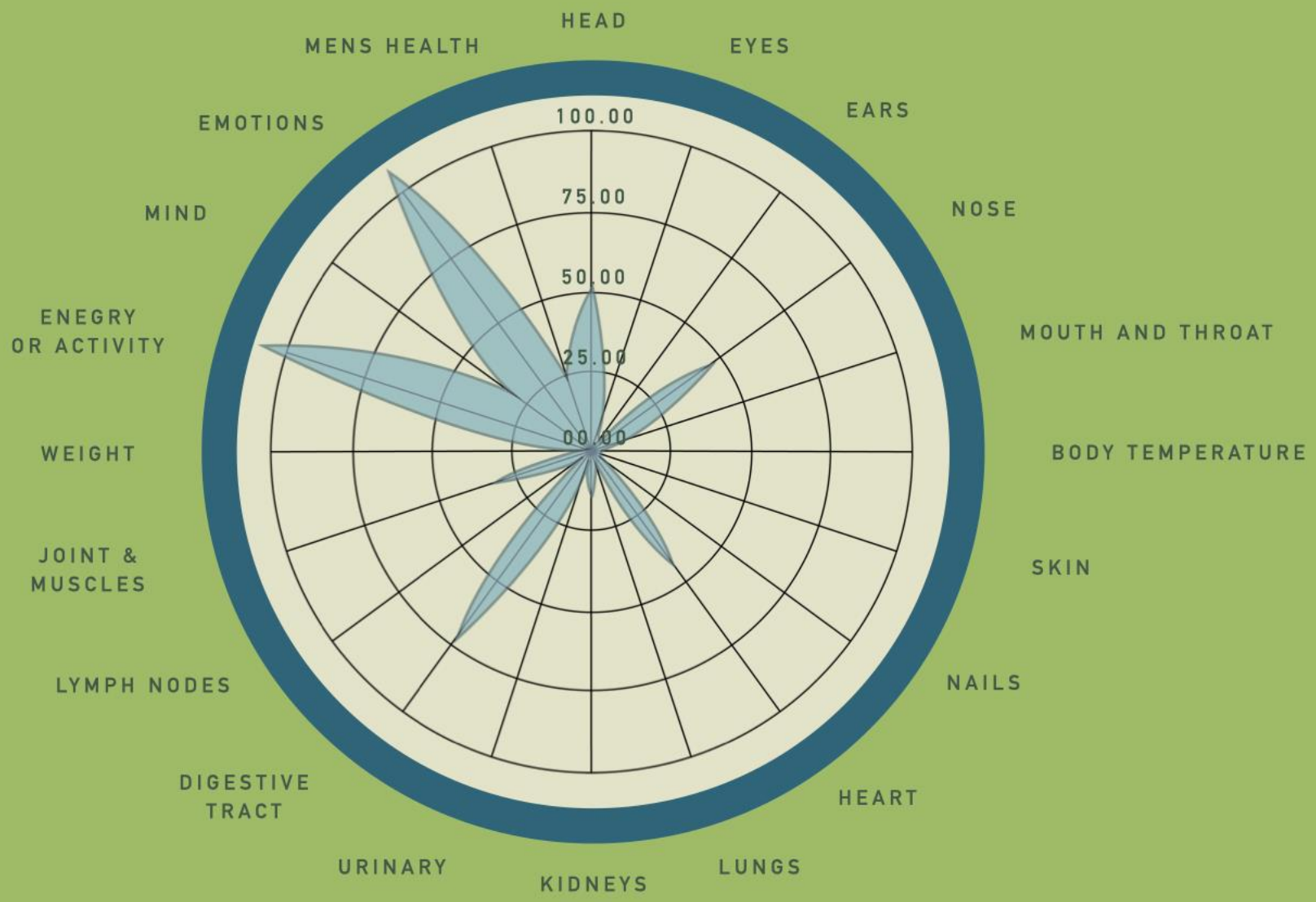
- DRONEDARONE
- BISOPROLOL
- EDOXABAN
- ANTIBIOTICS
- STEROIDS

THE FUNCTIONAL MEDICINE TIMELINE

FUNDAMENTAL ORGANISING SYSTEMS



TOTAL % VS. BODY SYSTEM

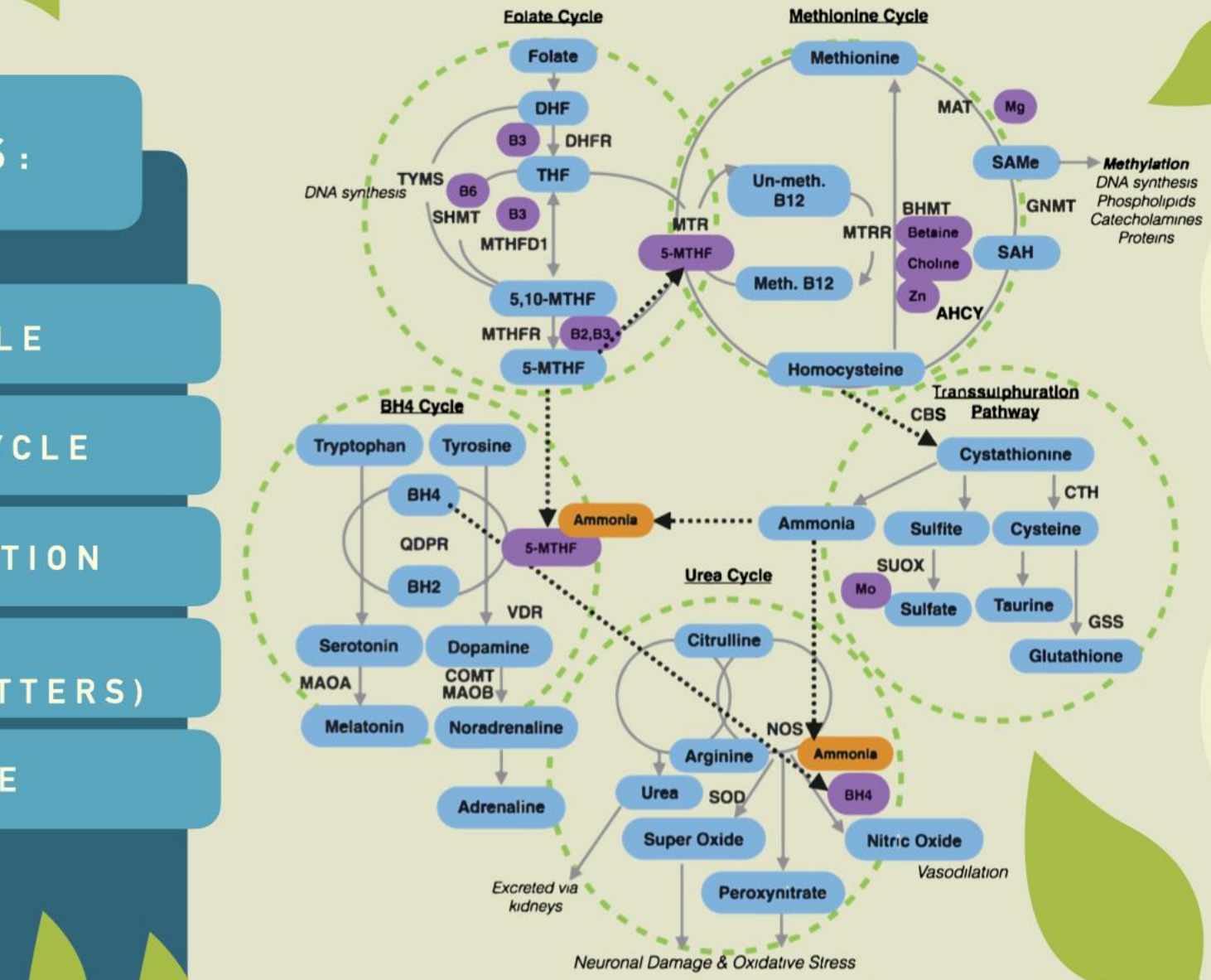


TESTING: GOTOIT

ANTHROPOMETRICS	WEIGHT, MUSCLE, BODY FAT %
PHYSIOLOGY	BLOOD PRESSURE, PULSE, O2, TEMP
DNA METHYLATION	LOOKING FOR SNP'S
BLOOD CHEMISTRY	LIPIDS, PLASMA METHYLATION MARKERS
DUTCH HORMONE (MALE)	HORMONE LEVELS, COMT FUNCTION
GI EFFECTS	CHECK FOR BACTERIA / PARASITES

5 CYCLES:

- FOLATE CYCLE
- METHIONINE CYCLE
- TRANSULPHURATION
- BH4 (NEUROTRANSMITTERS)
- UREA CYCLE



GENETIC FACTORS

MTHFR
(SLOW C677T)

UP TO 70% REDUCTION IN GENE FUNCTION WHICH MAY IMPACT SUPPLY OF METHYLFOLATE

MAT1A

DOWN REGULATION OF MAT ACTIVITY MAY LEAD TO HYPERMETHIONINEMIA, LOW SAMe AND THEREFORE SLOW METHYLATION

CBS
(INCREASED CBS ENZYME ACTIVITY)

THIS MAY PREVENTS HOMOCYSTEINE FROM BEING RECYCLED BACK INTO METHIONINE, DECREASING SYNTHESIS OF THE VITAL MEHTYL DONOR - SAMe AND DEPLETING B6 AND B12. THIS. MAY LEAD TO LOW GLUTATHIONE PRODUCTION AND GENERATE HIGH LEVELS OF AMMONIA

GSS

LOW GSS ENZYME ACTIVITY MAY LEAD TO SLOW GLUTATHIONE SYNTHESIS.

COMT

REDUCED COMT ACTIVITY CAUSING SLOWER BREAKDOWN OF DOPAMINE, ADRENALINE, NON-ADRENALINE AND OESTROGEN. THOSE WITH NORMAL VDR ACTIVITY WILL HAVE HIGHER DOPAMINE LEVELS, WHICH MAY LEAD TO SUSCEPTIBILITY OF MOOD SWINGS. LOW SAMe WILL FURTHER REDUCE COMT ACTIVITY.

PHENOTYPE

HOMOCYSTEINE FOLATE

VITAMIN D

CHOLESTEROL

BLOOD CHEMISTRY

COMPLETE BLOOD COUNT

(WITH 5 PART DIFFERENTIAL..)

HCY & PLASMA METHYLATION MARKERS

Biomarker	Sep 10 2021	Jan 14 2022	Mar 23 2022	Apr 08 2022	Sep 29 2022	Jan 10 2023	Jan 08 2024
CARDIOMETABOLIC							
Homocysteine 	24.37 ↑ ↑ •	10.54 ↑ •			9.43 ↑ •		6.03
Vitamin D (25-OH) 	90.00 ↓			122.00 ↓			221.00
Vitamin B12 	132.00 ▲ •			907.00 ↑ •			803.00
Folate - Serum 	15.60 ↓ •			14.96 ↓ •			45.00
Active B12							150.00

OPTIMAL ABOVE/BELOW OP ABOVE/BELOW STA. ALARM HIGH/LOW

COMPREHENSIVE LIPIDS

Biomarker	Sep 10 2021	Jan 14 2022	Mar 23 2022	Apr 08 2022	Sep 29 2022	Jan 10 2023	Jan 08 2024
Cholesterol - Total	3.70 ↓ •	4.40 •	4.30 •	4.15 •	4.20 •	4.60 •	5.00
Triglycerides	0.69 ↓ •	0.72 ↓ •	0.72 ↓ •	1.00 ↑ •	0.56 ↓ •	0.82 •	0.89
LDL Cholesterol	2.40 •	2.70 ↑↑ •	2.60 ↑↑ •	2.07 •	2.50 •	2.80 ↑↑ •	2.25
HDL Cholesterol	1.04 ↓ •	1.36 ↓ •	1.33 ↓ •	1.40 ↓ •	1.52 •	1.40 ↓ •	2.40
Non-HDL Cholesterol	2.66 ↑	3.04 ↑	2.97 ↑	126.84 ▲	2.68 ↑	3.20 ↑	1.91
VLDL Cholesterol	0.31 •	0.32 •	0.32 •	0.42 ↑ •	0.25 •	0.37 •	0.38
LDL : HDL - Male	2.31 ↑	1.99	1.95	0.07	1.64	2.00	0.94
Triglyceride:HDL	0.66	0.53	0.54	0.71	0.37	0.59	0.37
Cholesterol : HDL	3.56 ↑ •	3.24 ↑ •	3.23 ↑ •	4.12 ↑ •	2.76 •	3.29 ↑ •	2.08

OPTIMAL ABOVE/BELOW OP ABOVE/BELOW STA. ALARM HIGH/LOW

LIVER FUNCTION TESTS

Biomarker		Sep 10 2021	Jan 14 2022	Mar 23 2022	Apr 08 2022	Sep 29 2022	Jan 10 2023	Jan 08 2024
LIVER AND GB								
Alk Phos		58.00 •	56.00 •	63.00 •	61.00 •	66.00 •	54.00 •	64.00
AST		31.00 ↑ •	48.00 ↑↑ •	34.00 ↑ •		43.00 ↑↑ •	37.00 ↑ •	25.00
ALT		31.00 ↑ •	46.00 ↑↑ •	31.00 ↑ •	34.00 ↑ •	35.00 ↑ •	31.00 ↑ •	24.00
Bilirubin - Total		15.00 •	16.00 ↑ •	22.00 ↑↑ •	5.50 ↓ •	10.00 •	15.00 •	10.10
GGT					20.00 ↑ •			
AST : ALT		1.00	1.04 ↑↑	1.10 ↑↑		1.23 ↑↑	1.19 ↑↑	1.04 ↑↑

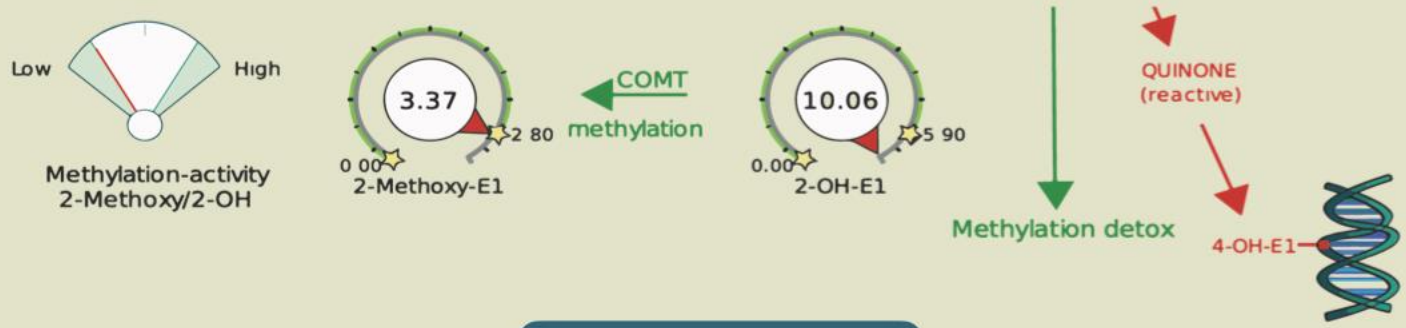
OPTIMAL ABOVE/BELOW OP ABOVE/BELOW STA. ALARM HIGH/LOW

CBC IMMUNE

Biomarker	Sep 10 2021	Jan 14 2022	Mar 23 2022	Apr 08 2022	Sep 29 2022	Jan 10 2023	Jan 08 2024
Total WBCs 	4.90 •	8.40 ↑ •	4.60 •	4.60 •	4.40 •	5.30 •	5.30
Neutrophils - % 	45.50 ↓	47.90 ↓	56.90		46.40 ↓	36.10 ↓↓	55.00
Lymphocytes - % 	41.70 ↑	42.20 ↑	33.10		44.00 ↑	46.30 ↑↑	37.00 ↑
Monocytes - % 	8.10 ↑	6.40	6.60	13.04 ↑↑	6.80	5.10	4.80
Eosinophils - % 	4.40 ↑↑	3.60 ↑↑	3.20 ↑↑	0.16	2.70	12.20 ↑↑	2.80
Basophils - % 	0.20	0.00	0.20	0.50	0.20	0.30	0.00

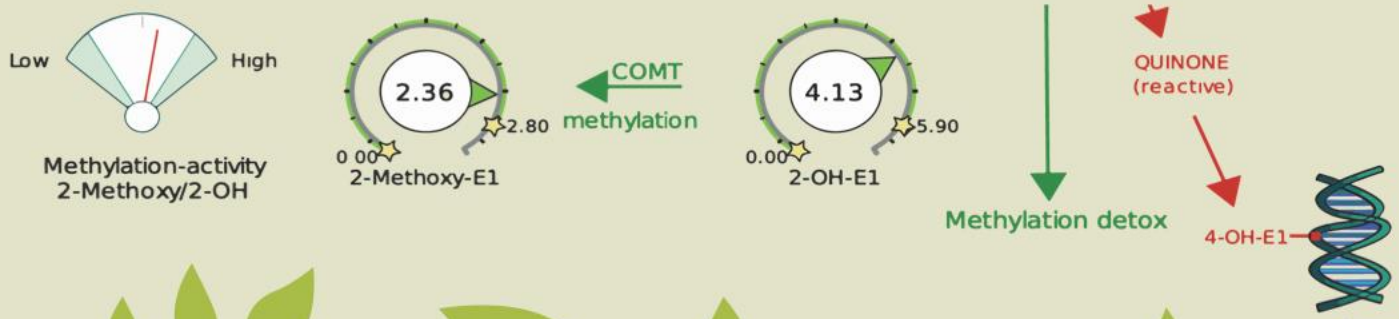
OPTIMAL ABOVE/BELOW OP ABOVE/BELOW STA. ALARM HIGH/LOW

COMT - METHYLATION COMPARRISON



2021

2023

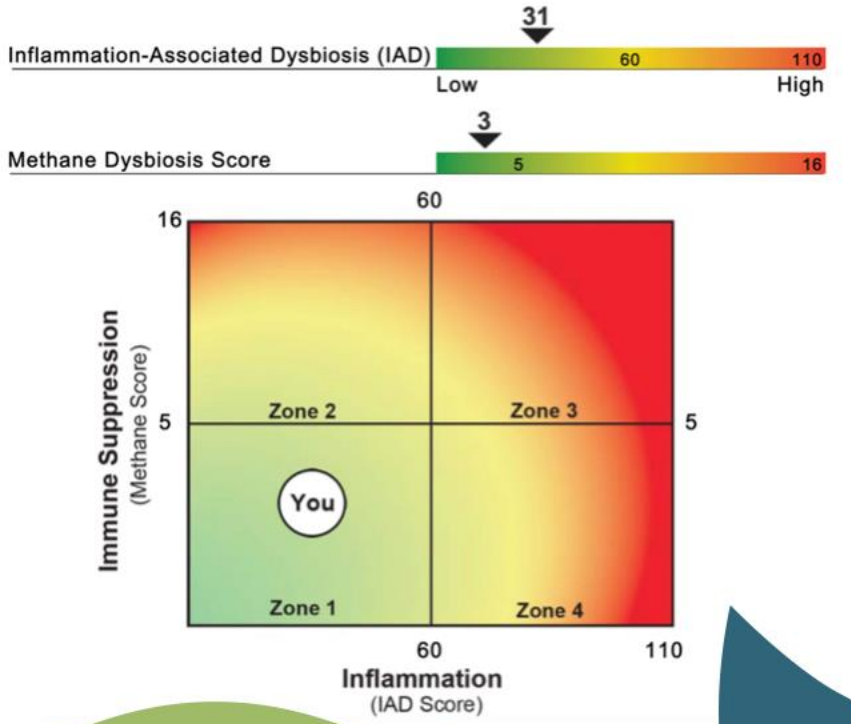


Functional Imbalance Scores

Key (< 2) : Low Need for Support (2-3) : Optional Need for Support (4-6) : Moderate Need for Support (7-10) : High Need for Support

Need for Digestive Support	Need for Inflammation Modulation	Need for Microbiome Support	Need for Prebiotic Support	Need for Antimicrobial Support
MALDIGESTION	INFLAMMATION	DYSBIOSIS	METABOLIC IMBALANCE	INFECTION
0	0	3	0	8
Pancreatic Elastase ●	Calprotectin ●	PP Bacteria/Yeast △	Total SCFA's ●	Parasitic Infection △
Products of Protein Breakdown ●	Eosinophil Protein X ●	IAD/Methane Score ●	n-Butyrate Conc. ●	PP Bacteria/Yeast △
Fecal Fats ●	Secretory IgA ●	Reference Variance ●	SCFA (%) ●	Pathogenic Bacteria ●
	Occult Blood ●	Total Abundance ●	Beta-glucuronidase ●	Total Abundance ●
• Digestive Enzymes • Betaine HCl • Bile Salts • Apple Cider Vinegar • Mindful Eating Habits • Digestive Bitters	• Elimination Diet/ Food Sensitivity Testing • Mucosa Support: Slippery Elm, Althea, Aloe, DGL, etc. • Zinc Carnosine • L-Glutamine • Quercetin	• Pre-/Probiotics • Increase Dietary Fiber Intake • Consider SIBO Testing • Increase Resistant Starches • Increase Fermented Foods	• Pre-/Probiotics • Increased Dietary Fiber Intake • Increase Resistant Starches • Increase Fermented Foods	• Antibiotics (if warranted) • Antimicrobial Herbal Therapy • Antiparasitic Herbal Therapy (if warranted) • Saccharomyces

Dysbiosis Patterns



Additional Bacteria

Salmonella spp.	NG	
Shigella spp.	NG	
Klebsiella ornithinolytica	4+ NP	
gamma haemolytic Streptococcus	4+ NP	
Enterobacter cloacae	4+ PP	

Protozoa

Balantidium coli	Not Detected
Blastocystis spp.	Moderate Detected
Chilomastix mesnili	Not Detected
Cryptosporidium spp.	Not Detected
Cyclospora cayetanensis	Not Detected
Dientamoeba fragilis	Not Detected
Entamoeba coli	Not Detected
Entamoeba histolytica/dispar	Not Detected
Entamoeba hartmanii	Rare Cyst(s) Detected
Entamoeba polecki	Not Detected
Endolimax nana	Not Detected
Giardia	Not Detected
Iodamoeba buetschlii	Not Detected
Cystoisospora spp.	Not Detected
Trichomonads (e.g. *Pentatrichomonas*)	Not Detected

Digestion and Absorption

Pancreatic Elastase 1 †	379	100 200	>200 mcg/g
Products of Protein Breakdown (Total*) (Valerate, Isobutyrate, Isovalerate)	4.3		1.8-9.9 micromol/g
Fecal Fat (Total*)	11.2		3.2-38.6 mg/g
Triglycerides	0.5		0.3-2.8 mg/g
Long-Chain Fatty Acids	8.9		1.2-29.1 mg/g
Cholesterol	0.4		0.4-4.8 mg/g
Phospholipids	1.4		0.2-6.9 mg/g

Inflammation and Immunology

Calprotectin † ◆	< 11	50 100	<50 mcg/g
Eosinophil Protein X (EPX) †	<DL	0.5 2.7	<=2.7 mcg/g
Fecal secretory IgA	151	680 2040	<=2,040 mcg/mL

Gut Microbiome Metabolites

Metabolic

Short-Chain Fatty Acids (SCFA) (Total*) (Acetate, n-Butyrate, Propionate)	58.4		>=23.3 micromol/g
n-Butyrate Concentration	12.6		>=3.6 micromol/g

TREATMENT PROTOCOL

SUPPLEMENTATION

- VITAMINS - OMEGA OILS, VITAMIN C, D, A AND COQ10
- METHYLATION SUPPORT - METHYL COMPLEX, METHYL B9, METHYLCOBALAMIN, B12
- MINERALS - ZINC AND MAGNESIUM
- HERBS - DANDELION AND GREEN TEA
- LIVER SUPPORT - GLUTATHIONE PATCH AND SAMe
- ANTI-VIRAL - MONOLAURIN OR COCONUT OIL, DAILY
- ANTI-MICROBIAL - X2 KIB 500, OREGANO OIL, RESEEDED WITH MICROBIA

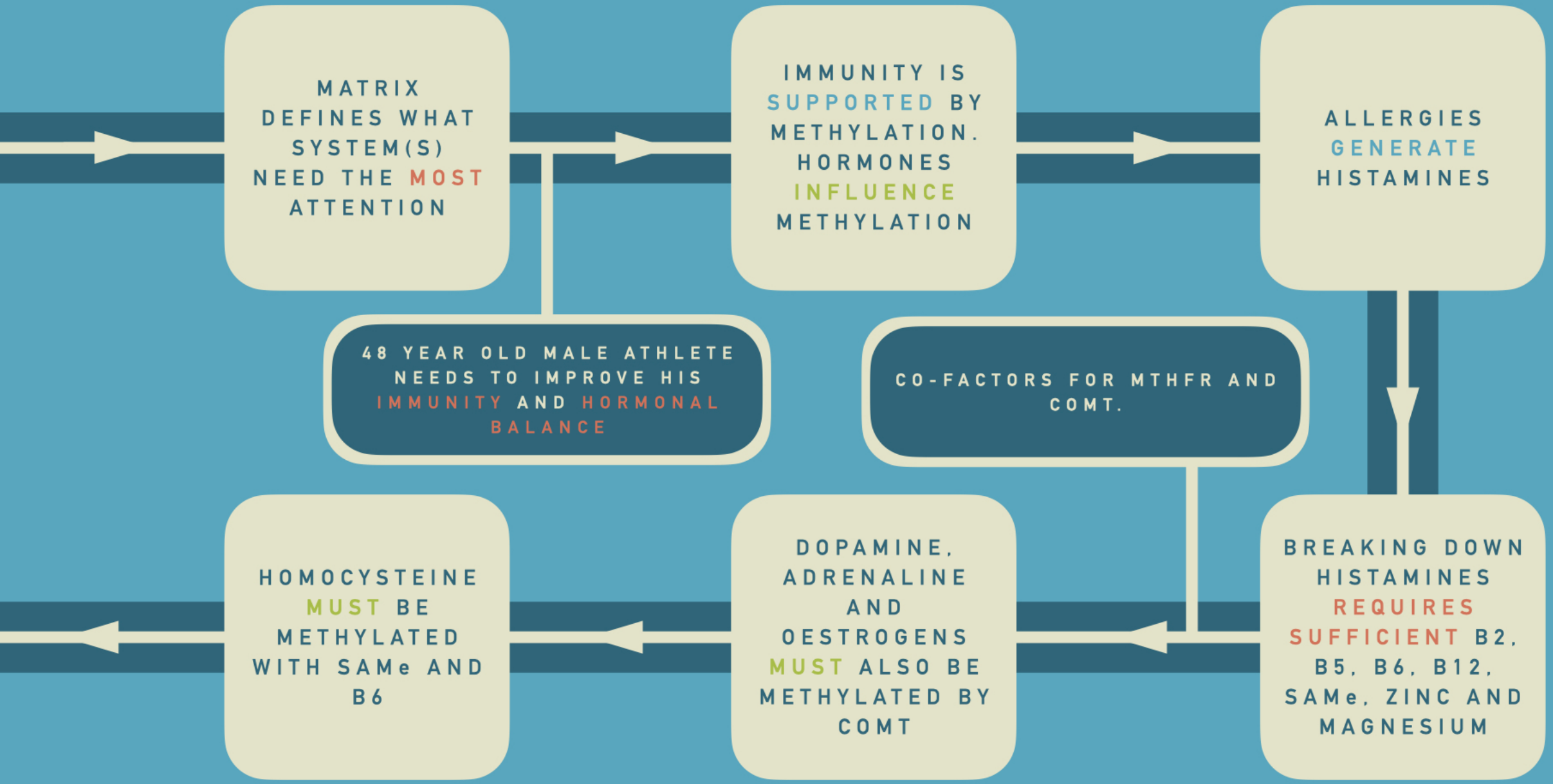
NUTRITION

- CARDIOMETABOLIC FOOD PLAN - 2400 CALORIES
- PESCATARIAN EMPHASIS
- LEAN ORGANIC MEATS
- PLENTY OF OLIVE OIL, NUTS AND SEEDS
- PLENTY OF BENEFICIAL VEGETABLES / RAINBOW
- SUPPORT LIVER WITH CRUCIFEROUS VEGETABLES
- AVOID SULPHITES AND HIGH HISTAMINE FOODS (AGED FOODS)

LIFESTYLE

- IMPLEMENTING CONSCIOUS MINDFULNESS PRACTICES - BREATHING AND MEDITATION
- REGULAR ONDAMED AND INFRARED SESSIONS
- ROUTINE OSTEOPATHIC APPOINTMENTS
- REGULAR EXERCISE AND ACTIVITY

HOW DID USING THE MATRIX BENEFIT THIS CASE?


MATRIX DEFINES WHAT SYSTEM(S) NEED THE MOST ATTENTION
IMMUNITY IS SUPPORTED BY METHYLATION. HORMONES INFLUENCE METHYLATION
ALLERGIES GENERATE HISTAMINES
48 YEAR OLD MALE ATHLETE NEEDS TO IMPROVE HIS IMMUNITY AND HORMONAL BALANCE
CO-FACTORS FOR MTHFR AND COMT.
HOMOCYSTEINE MUST BE METHYLATED WITH SAMe AND B6
DOPAMINE, ADRENALINE AND OESTROGENS MUST ALSO BE METHYLATED BY COMT
BREAKING DOWN HISTAMINES REQUIRES SUFFICIENT B2, B5, B6, B12, SAMe, ZINC AND MAGNESIUM

FULL CASE SUMMARY

- PHENO/GENOTYPE NUGGETS (MTHFR/MAT1A/COMT)
- CHRONICITY OF CVD ISSUES SINCE 2003 (AGED 31)
- MATRIX - IMMUNE AND HORMONE ISSUES (BURN OUT) ARE HUGE CLUES
- COULDN'T BREAK DOWN HOMOCYSTEINE, HISTAMINES, ADRENALINE, OESTROGEN AND DOPAMINE
- WORK TURNED OUT TO BE A MAJOR STRESSOR. (ENTREPRENEUR BURN OUT)
- TIME-MANAGED HIS WORK LIFE BETTER: WORK/LIFE BALANCE RESTORED
- RESPONDED WELL TO CARDIO-METABOLIC PROGRAM + KEY METHYLATION SUPPORT
- CURRENTLY TAKES NO MEDICATION AND HAS NOT REQUIRED CARDIAC ABLATION
- NO BLOATING, REGULAR AND RELIABLE BOWELS

FUNCTIONAL MEDICINE MATRIX

Retelling the Patient's Story

Antecedents
(Predisposing factors)

- **Inherited (examples):** family history, genetics, maternal preconception, pregnancy environment/experience
- **Acquired (examples):** birth history, infant nutrition, ACEs, antibiotics, diet, lifestyle, SDOH, stress, environment

Triggering Events
(Activation)

- **Description:** significant event with distinct start/end; onset of effect within seconds to days; transient or permanent effect; health never the same since
- **Examples:** injury, trauma, procedure, biochemical exposure

Mediators/Perpetuators
(Contributors to dysfunction)

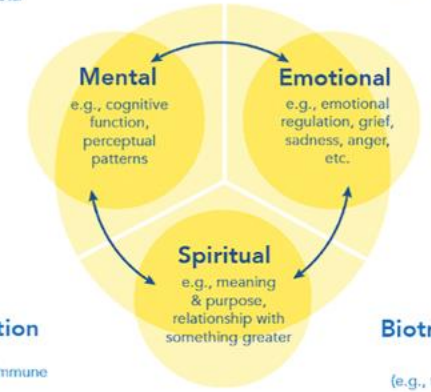
- **Description:** current factors that perpetuate dysfunction/effects of disease; may be ongoing or recurring
- **Examples:** lifestyle, dietary pattern, medication, environmental exposure, stressful event, emotional state

Physiology and Function: Organizing the Patient's Clinical Imbalances

Assimilation
(e.g., digestion, absorption, microbiota/GI, respiration)

Defense & Repair
(e.g., immune, inflammation, infection/microbiota)

Structural Integrity
(e.g., from subcellular membranes to musculoskeletal structure)



Energy
(e.g., energy regulation, mitochondrial function)

Communication
(e.g., endocrine, neurotransmitters, immune messengers)

Biotransformation & Elimination
(e.g., toxicity, detoxification)

Transport
(e.g., cardiovascular, lymphatic system)

Modifiable Personal Lifestyle Factors (With Examples)

Sleep & Relaxation

- **Sleep quality:** time it takes to fall asleep; snoring/sleep disruption; wake up feeling rested?
- **Sleep quantity**
- **Sleep hygiene**
- **Sleep disorders:** insomnia, OSA, RLS, etc.

Exercise & Movement

- **Goals for movement**
- **Obstacles for movement:** environment, pain, time, etc.
- **FITT:** main types include cardio, strength, flexibility, balance

Nutrition

- **When you eat**
- **How you eat:** family meals, mindful eating, overeating, undereating
- **What you eat:** pattern, nutrients, phytonutrients, probiotics, fiber, processed foods, eliminated foods

Stress

- **Stressors:** money, work, family, etc.
- **Coping methods:** self-care, nature, deep breathing, visualization, meditation, journaling, spiritual or religious practice

Relationships

- **Support system:** loving, supportive friends and family
- **Communication:** ability to say no? ask for help?
- **Community:** social time, group activities, loneliness

Unlock Your Potential with a Functional Medicine Scholarship Opportunity (worth $10, 250)

At Clinical Education, we believe in shaping the future of healthcare by empowering professionals with the latest advancements in Functional Medicine. That's why we're thrilled to introduce the Functional Medicine Scholarship Opportunity, designed to support passionate individuals on their journey towards becoming Certified Practitioners of Functional Medicine.

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