True Root Causes of Dis-Ease: Functional Medicine Fundamentals

Part 4 (of 4)
On the Menu for Today

- Quick Reminders
- Hormone Soup: Powerful Interconnectedness
- Toxicity
- Stress
• Each person is **unique**.
• Everything in the body/system is **interconnected**.
• The body's **natural, default state** is one of wellness.
• **Dis-ease precedes disease** and is evidence of imbalance, blockage, and/or impairment in natural functioning.
• The root cause and the complaint may be **distant** from one another (in the body, in time, in the biochemistry).
• The **collection of root causes** of dis-ease in the body is unique for each person. Effective medicine is **customized** for each person.
• Wellness includes the **entire patient experience** (physical, mental, emotional, spiritual).
• The patient's **active participation and belief** in their healing are central to their ability to get (and remain) well.
• **All modalities** that bring greater balance, ease, and flow to the patient are a key part of their unique healing journey and ongoing “health care”.

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Functional Medicine: Making It Simple

ENVIROMENT:
What we Maximize, Minimize, and Prioritize

Interactive Biochemistry
- Endocrine (Hormones)
- Immune (Inflammation)
- Nervous (Neurotransmitters)
- Digestion (Nutrients)
- Metabolism (Energy)
- Detoxification (Clearance)

WELL-NESS
- Choices

ILL-NESS

Choices
All Things are Interconnected

- Oxygen Intake and Spiritual Mindset
- Stress and Stress Management
- Toxins and Detoxification Ability
- Sensitivities and Allergies and Immune Health
- Energy Generation and Circulation
- Nourishment and Absorption Ability
- Genetic Predispositions and Infections
- Expectation, Association, History, Belief
The Difference That Matters Most

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Wildly satisfied patients can fill your practice with their enthusiastic referrals, freeing you to (1) Do what you love the most and (2) Be wildly successful doing it!
Most Common True Root Causes of Dis-ease

- Dis-ease Begins in the Gut
- Insulin Resistance
- Estrogen Dominance
- Toxicity
- Stress
- A failure to Maximize, Minimize, and Prioritize the right elements for a unique individual.
Etiology of Dis-ease in the Gut

- **Deficiency-Driven Dysfunction**
  - e.g. anemia, neuropathy, depression, headache

- **Gastrointestinal Dis-ease**
  - e.g. IBS, constipation, belching, bloating

- **GI-origin Inflammation**
  - e.g. osteoarthritis, asthma, migraine, chronic fatigue, fibromyalgia, eczema, intestinal permeability

- **Autoimmune Dis-ease**
  - Hashimoto's thyroiditis, lupus, multiple sclerosis, Crohn's disease, rheumatoid arthritis
Keepin’ It Simple: Insulin Resistance

Vicious Cycle of Insulin Resistance

- Eat Refined (or an excess of) Carbohydrate Foods
- Feel Hungry, Weak, and Tired
- Make lots of insulin
- Excess sugar gets stored as body fat
- Cells resist the effects of insulin

❖ A Powerful example of where our focus needs to be to give the Greatest Value to our patients and clients: Educate, Educate, Educate!
Dance of the Hormones

Note: this diagram was revised from the original webcast to show more intricate and accurate interconnectedness.
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Better Living Through Chemistry?
Welcome to our Toxic World!
Food? Or Foreign Invader?
Estrogen Mimickers: Everywhere!

- BPA
- Glyphosate
- Oxybenzone
- Triclosan
The Experience of Toxicity is Individual

- What is toxic to one person is fine for another person. Our toxin tolerance is particularly individual.

“Low levels of toxin exposure may initially cause no (or only subtle) effects, but over the long term can lead to frank dysfunction that may be remote in both space and time from the toxin exposure. That is, slow accumulation with delayed expression of toxic effects.”

- Dr. Kenneth Bock, MD
Synergistic Effects of Toxins

- Heavy metals present toxic effects themselves but they can also impair the function of the very same enzymes in the body that we need to detoxify them.

- The administration of an essentially no-response level (LD1) of a mercury salt together with just 1/20th of the LD1 of a lead salt not only “had an effect” but it killed all the animals.

- “Generally, a combination was synergistic when the most toxic member was present at or near its LD1 dose in the presence of a less toxic member.

- And this was only look at 2 metals at once.

- What about the dozens of toxins we are exposed to daily in the typical developed world?

- What toxic synergy is at play in our bodies every day?

Liver detoxification pathways and supportive nutrients

**PHASE I** (cytochrome P450 enzymes)

- **Reactions**
  - Oxidation
  - Reduction
  - Hydrolysis
  - Hydration
  - Dehalogenation

- **Nutrients Used**
  - Riboflavin (Vit A)
  - Niacin (Vit B3)
  - Pyridoxine (Vit B6)
  - Folate
  - Vitamin B12
  - Glutathione
  - Branched-chain amino acids
  - Flavonoids
  - Phospholipids

- **Intermediary metabolites**
  - More polar
  - More water-soluble

- **Antioxidant Protective Nutrients and Plant Derivatives**
  - Carotenoids (Vit A)
  - Ascorbic acid (Vit C)
  - Tocopherols (Vit E)
  - Selenium
  - Copper
  - Zinc
  - Manganese
  - Coenzyme Q10
  - Thiols (found in garlic, onions, cruciferous vegetables)
  - Bioflavonoids
  - Silymarin
  - Pycnogenol

- **Reactive oxygen intermediaries**

- **Secondary tissue damage**

**PHASE II** (conjugation pathways)

- **Reactions**
  - Sulfation
  - Glucuronidation
  - Glutathione conjugation
  - Acetylation
  - Amino acid conjugation
  - Methylation

- **Nutrients Used**
  - Glycine
  - Taurine
  - Glutamine
  - N-acetylcysteine
  - Cysteine
  - Methionine

**Excretory derivatives**

- **(polar : water-soluble)**
  - **Bile**
  - **Serum**
  - **Feces/stool**
  - **Kidneys**
  - **Urine**

**Toxins** (nonpolar : lipid-soluble)

- Lipid-soluble (nonpolar) toxins are stored in adipose (fat) tissue and contribute to increased/mobilized toxin load with weight loss.

**Endotoxins**
- End products of metabolism
- Bacterial endotoxins

**Exotoxins**
- Drugs (prescriptions, OTC, recreational)
- Chemicals
- Agricultural
  - Food additives
  - Household
  - Pollutants/contaminants
- Microbial
Toxicity Pearls

1. Make sure **excretion routes are running smoothly**. Emphasize hydration with water. Address constipation as a top priority.

2. Enhanced detoxification should always ideally be done **from a place of strength**, not exhaustion or unstable disease.

3. **Phase 1 and Phase 2 imbalance** is common and promotes oxidative stress. Antioxidant boost is important. Increase fruit and vegetable intake.
   - Avoid all charred foods, excessive caffeine and/or alcohol.
   - Curcumin slows important Phase 1 pathways.

4. **Bile is an important toxin escort** out of the body via stool. EVOO stimulates gallbladder contractions. For sluggish bile movement or GB discomfort, consider short-term use of d-limonene.

5. **Sulfur is a powerful chelator** in the body e.g. cruciferous and allium family vegetables. But sulfur tolerance is individual! Other notable chelators: chlorella, pectin, cilantro, alpha lipoic acid, glutathione...

6. Slow start. Monitoring. Gradual increase. Adjustment as needed. There is no benefit of hurrying. Remember: **detoxification tolerance is individual**.
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The Mighty Adrenals and Master Hormones

- **Inner Adrenal Medulla** layer produces the catecholamine hormones: **epinephrine and norepinephrine**. Secretion is directly controlled by the central nervous system. Also called adrenaline and noradrenaline.

- **Outer Adrenal Cortex** layer produces steroid hormones, primarily **corticosteroids and androgens**. Secretion is controlled by releasing hormones from the pituitary gland (which is controlled by the hypothalamus) in response to our environment.

- High levels of cortisol, epinephrine, and norepinephrine secretion work together to trigger **sympathetic nervous system response** in the body.

- Modern western world has an epidemic of **Sympathetic Dominance**?

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Short-term stress reaction

Ongoing stress reaction
Two Nervous System Modes

- **Sympathetic**
  - Fight-or-Flight
  - Increased focus and alertness
  - Increased metabolic activities to prepare body for emergency activity
  - Designed to be short-term exceptions for survival

- **Parasympathetic**
  - Rest-and-Digest
  - Relaxed external muscles. Increased digestive activities to store energy for future use
  - Designed to be our primary state

- Most organs and glands in the body have receptors to receive impulses from *both modes* (either inhibitory to “stop work” or stimulatory to “work harder”)

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[Diagram of the sympathetic and parasympathetic nervous systems]
Thyroid hormone function can be dramatically affected by cortisol levels. In turn, this affects cellular energy production *everywhere* in the body.
Dance of the Hormones

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Three Common Hormone Imbalances

- **High insulin-producing diet** (e.g. refined carbohydrates, sugars) increases testosterone in women and increases estrogen in men
  - Acne, infertility and anovulation (PCOS), excess body hair growth in women (e.g. above lip), excess body fat (especially mid-torso, “apple shape”), head hair loss in women, T2 Diabetes, gynecomastia in men.

- **High estrogen** exposure or absorption overwhelms progesterone (which may also be low). Often a result of “xenoestrogens” overload. Creating “estrogen dominance”.
  - Anxiety, higher body fat (especially in the lower belly, “the pooch”), emotional sensitivity, bad PMS, long and heavy menstrual periods, bloating/cramping, carbohydrate cravings.

- **Chronic stress** increases cortisol which can impair thyroid hormone synthesis (and over time, can deplete cortisol which also impairs thyroid function – *potentially a vicious cycle*).
  - Low energy/stamina, excess body weight, high LDL cholesterol, hair loss on head, dry skin, carbohydrate cravings, constipation and/or GI bloating and impaired nutrient digestion/absorption.
Stress Pearls

1. Stress is usually **multifactorial**. Chronic stress burden on the body can be physiological and/or mental-emotional.

2. For **physiological sources**, consider food sensitivities/allergies, toxicity, and chronic infections (e.g. viral, “simmering” bacterial overgrowths).

3. Consider **simple sources** first! Dehydration? Constipation? Poor Sleep?

4. **Sometimes exercise is part of the problem!** Excessive or overly aggressive exercise is not helpful to someone who already has HPATG suppression. Stressed out people can be just as addicted to exercise as one may be to caffeine.

5. People with low free cortisol are more likely to struggle with **hypoglycemic episodes**. They need to eat frequently for consistent energy. A “low carb” diet is likely not a good fit for them at this stage of their healing.

6. Stress is often a vicious cycle. Educate patients about the power of their mind. Gratitude journaling can be a powerful beginning for mindfulness.

7. Focus on **sound sleep as a top priority** for healing. Teach Sleep Hygiene. For those who sleep poorly, the chocolate they had at noon or the coffee they had at 10am actually *can* be part of the problem.
“I’m learning how to relax, doctor — but I want to relax better and faster! I want to be on the cutting edge of relaxation!”
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