Hormones 101
Warrior Wellness Nutrition Series

Sponsored by: Wayne State University

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The information in this presentation can be a valuable addition to your doctor’s advice, but it is not intended to replace the services of your healthcare provider.
Hormones 101

Objectives

Review the complex role of:

• Insulin
• Cortisol
• Gonadal hormones (sex hormones)
• Thyroid
What is Health?
Important Elements to Consider

- Move!
- Boost Nutrition
- Improve Digestion
- Detoxify
- Regulate Hormones

Strategic Wellness, LLC
The Complex Role of Hormones
Risks Associated with Insulin Imbalance

- Heart Health
  - Hypertension
  - Atherosclerosis

- Insulin Resistance
  - Diabetes
  - Obesity

- Cancer
  - Inflammation
  - Weak Immune System
Insulin
Hormonal Imbalance – Excess Insulin

How to Effect Insulin Resistance or Excess Insulin:

• Exercise

• Diet

• Know Your Fasting Glucose and Insulin Levels

• Supplement Options:
  Conjugated linoleic acid (CLA), Holy Basil, Cinnamon, Alpha-Lipoic Acid, Chromium, Magnesium, Biotin, Zinc, and PGX®
Summary of What to Eat

Action Plan:

• Create the perfect plate:
  - ¼, put on low starch veggies (you can refill this side as much as you want – Eat a pound or two of asparagus or broccoli if you like!)
  - ¼, put some lean protein (fish, chicken, shrimp, nuts, beans, meat)
  - ¼, either brown rice/quinoa or sweet potato/squash*

If you are struggling with blood sugar management issues, avoid all grains, starchy vegetables and most fruits until your metabolism resets and you become more insulin-sensitive.

• Eat small frequent meals throughout the day (3 meals and 3-4 snacks)
Biosynthetic Pathway for **Adrenal** and Gonadal Hormones

- **Cholesterol**
- **Pregnenolone**
- **Progesterone** → **Cortisol**
- **Androstenedione** → **Testosterone**
- **Estrone (E1)** ↔ **Estradiol (E2)**
- **Estriol (E3)**
Adrenal Hormones
DHEA and Cortisol

“Fight or Flight”

When the body experiences stress, the adrenals release chemicals that:

• Energize the muscles
• Heighten mental acuity
• Increase the pain threshold
Cortisol
Stress and the Adrenals

Continuous Stress

Left Unchecked…. Adrenal fatigue not only interferes with proper energy production, but also increases risk of:

- Depressed immunity and autoimmune disorders
- Digestive problems
- Cardiac Issues
- Blood-sugar dysregulation
- Thyroid problems
- Hormonal imbalances
- Depressed mood, brain, and libido function
Stress Management

The worst thing you can do is consume caffeine and sugar!
Supporting Optimal *Adrenal Health*

Healthy DHEA and Cortisol Levels

- Fresh Water + Whole Foods
- Vitamins and Minerals
- Healing Herbs for cortisol support
- Get Plenty of Rest
- Exercise Strategically
Biosynthetic Pathway for Adrenal and Gonadal Hormones

- Cholesterol
- Pregnenolone
- DHEA
- Progesterone
- Androstenedione
- Estrone (E1)
- Estriol (E3)
- Cortisol
- Testosterone
- Estradiol (E2)
Estrogens

Estrone – Estradiol - Estriol

**Synthetic**
- Premarin - most commonly prescribed hormone replacement in the US
- Premarin contains horse estrogens (equilin and equilenin) + synthetic additives
- Trouble fitting in human estrogen receptors
- Requires months to be eliminated from the body
- 200 times stronger than natural

**Natural**
- Biologically identical to the same chemical structure of human body hormones
- Three main human estrogens: Estrone (E1), Estradiol (E2), and Estriol (E3)
- Estrogens in balance have over 400 crucial functions in the human body
- The preferred method for the administration of estrogen is transdermally (through the skin)
Estrogens
Estrogen Metabolism

Two major competing pathways:

- 2-hydroxyestrone (anti-cancerous) 😊
- 16-hydroxyestrone (increase risk of cancer) 😞

One minor pathway

- 4-hydroxyestrone (increase risk of cancer) 😞
**How You Metabolize Estrogen is Important**

- **Obesity** decreases “good” and increases “bad” estrogen production
- **Xenoestrogens** (pesticides, synthetic hormones fed to animals, plastics, cosmetics) influence the ratio negatively of good/bad estrogens
- **Foods high in indole-3-carbinol** (cruciferous vegetables, kale, turnip) are one of the best ways to increase good estrogens
- **Moderate exercise** – increase good estrogens
- Long-term use of **antacids** can interfere with the absorption of indole-3-carbinol
- 2-hydroxy and 16-hydroxy estrone levels can be measured
- Estrogens and Progesterone work together to control your body’s processes
Comparison of a Natural Hormone with a Synthetic Hormone (Progestin)

Natural Progesterone

Provera (Synthetic)
**Testosterone**

(Male)

- Anabolic – causing the growth of muscle, bone, and organs
- “Andropause”, a new term characterized by decreased levels of bioavailable testosterone
- Low testosterone levels correlated to various symptoms, including; loss of libido, erectile dysfunction, nervousness, depression, impairment of memory, inability to concentrate, fatigue, insomnia, hot flashes and sweating
- General inflammatory state may produce stiffness and pains

(Female)

- Anabolic – causing the growth of muscle, bone, and organs
- Intermediates in the production of estrogen
- ½ made in the adrenals – ½ made in the ovaries
- Androgen dominance (thinning hair on head, hair growth above the lip, prominent belly); lacking enzymes for conversion to estrogens
- Androgen dominance: chronically raised insulin levels – too much sugar and refined carbs
Thyroid

Thyroid Production

- Pituitary Gland
  - TSH (Thyroid Stimulating Hormone)
    - T4 (Thyroxine)
      - T3 (Triiodothyronine)

Effects on the Body

T4 to T3 Inhibitors

- **Nutrient Deficiencies** (Iodine, Iron, Selenium, Zinc, Vitamin A, B2, B6, B12)
- **Medications** (Beta Blockers, birth control pills, estrogen, iodinated contrast agent, lithium, phenytoin, Theophylline)
- **Diet** (Soy, cruciferous vegetables)
- **Other** (Aging, Alcohol, Alpha-Lipoic Acid, Diabetes, Fluoride, Hormonal Imbalance, Lead, Mercury, Pesticides, Stress, Surgery)
- **Reverse T3** (stress or mineral deficiencies – high levels may indicate low thyroid function)
Resources

Books:
• *Adrenal Fatigue, The 21st Century Stress Syndrome*
  James L. Wilson, N.D., D.C., Ph.D.
• *The Blood Sugar Solution*
  Mark Hyman, M.D.

References:
Available upon request
Evaluations & Future Lunch and Learn Topics

- Know Your Numbers (Blood Pressure/Cholesterol/Blood Sugar)...and How to Change to Them
- Lose Weight as if Your Life Depended on It ... And Understanding the BMI
- Stress Management
- The GUT ... Beginning of All Health (Digestive System)
- How to Maintain Healthy Bones
- Understanding the Food Label
- Hormones 101
- Do I Need Supplements? (2 Parts)
- Eat Your Medicine (3 Parts)
- Performance Health
- Cancer Prevention... A Literature Review
- Upgrade Your Brain – How to Make the Most of Your Gray Matter
- Radical Healing After Injury ... The Necessary Raw Materials