PERQUE INTEGRATIVE HEALTH ACADEMY

A PHYSIOLOGY-FIRST APPROACH TO WOMEN'S HEALTH

A PHYSIOLOGY BEFORE PHARMACOLOGY APPROACH

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MENSTRUAL CONSIDERATIONS

Premenstrual Syndrome
Menorrhagia
Irregular Periods

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PHYSIOLOGY FIRST APPROACH SUMMARY

Step 1	Understanding the various phases of women's lives, knowing what systems tend to break down and what deficiencies are common. Ameliorate those first.
Step 2	Targeted testing with actionable outcomes. Will performing this test change my treatment in any way? If not, go on to next step.
Step 3	Measure, monitor symptom response to trial of care. Take a good baseline and this becomes easy.
Step 4	Adjust. Retest if needed to measure progress. Consider discontinuing interventions if overall health has improved to the point that additional support is no longer needed.

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PREMENSTRUAL SYNDROME

- Collections of symptoms that recur on a monthly basis, just before the menstrual period
- Serotonin levels fell after ovulation in women with PMS (Prozac frequently prescribed)
- Excessive prostaglandin synthesis & C-reactive protein
- PMS symptoms increase with increased consumption of dietary fat, simple carbs/sugars, and decreased protein
- Sodium retention can contribute to physical symptoms
- Nutritional deficiencies

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PREMENSTRUAL DYSPHORIC DISORDER (PMDD)

Five or more of the following and at least 1 of the first 4 symptoms (DSM-IV)

1. Significantly depressed mood, hopelessness, self-defeating thoughts
2. Significant anxiety, tension, feeling irritable, uptight
3. Sudden mood changes of sadness, weepiness, or easily feeling rejected
4. Anger or irritability or increased conflict with others
5. Lack of motivation for usual activities
6. Difficulty Concentrating
7. Lethargy, Easily Fatigued, low energy
8. Changes in appetite, overeating, food cravings
9. Hypersomnia or insomnia
10. Overwhelmed, feeling out of control
11. Additional Physical symptoms: breast tenderness, swelling, headaches, joint or muscle pain, bloating, weight gain

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PMS & PMDD TREATMENTS

Lifestyle

- Whole foods diet with minimal sugar, refined carbs, dairy, caffeine, reduced saturated fats
- Increased dietary fiber
- Increased EFAs from nuts, seeds, & fish
- Stress management
- Exercise
- Weight loss

Supplementation

- EPA/DHA: 1-2g/day
- Evening Primrose oil or other GLA (i.e. black currant oil, borage oil): 3-4g/day
- Magnesium (citrate, malate, fumarate): 300mg+ QD to relax smooth muscle contractions and decreases fluid retention + choline citrate
- B6 (pyridoxine) 50-100mg QD increase synthesis of serotonin, dopamine, and other neurotransmitters
- Vitamin D
- Botanicals: *Vitex, Ginko biloba, Hypericum*

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ABNORMAL UTERINE BLEEDING

- More frequently than every 21 days or less frequently than every 35 days
- Lasts more than 7 days
- Unusually heavy or light
- Occurs after menopause

- FIRST: gynecologic work-up with PAP and transvaginal ultrasound or additional testing if warranted

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DYSMENORRHEA / MENORRHAGIA

Description

- Painful cramps
- Headache
- Excess menstrual bleeding
- INFLAMMATION often increases in the week before period
- Chiropractic adjusting is often helpful

Supplementation

- EPA/DHA: 1000mg+
- Magnesium: 200mg – 400mg + Choline Citrate
- Multi-vitamin with 50-100mg B-complex
- Sublingual B6, B12, Folate
- CoQ10: 100-200mg (for headache)
- Quercetin, OPC & Pomegranate to decrease inflammation
- Capsella- Shepherd's purse tincture for excess bleeding

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PREGNANCY CARE

General Nutrition
Common Conditions

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NUTRITION

- Protein at every meal
  - Whey
  - Eggs (local farm pasture raised)
  - Lean meats- grass fed beef, pastured poultry & pork, wild fish, wild game
- Fruits & Veggies
- Water
- Avoid simple sugars and empty carbohydrates
- Avoid peanut butter (?)

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PRENATAL SUPPLEMENTATION

- Prenatal Vitamins
  - Folic Acid 800mcg minimum
    - 2mg if neural tube defects
  - Iron 27mg
  - Limited Vitamin A
    - Less than 10,000 IU per day from all sources
- Calcium/Magnesium
  - 500mg/500mg
- EPA/DHA 1000mg
- Vitamin D
  - Optimum serum levels 50-100ng/dL
  - Vitamin D3 5000-10,000IU / day

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MORNING SICKNESS

Causes

- Nausea, vomiting, food aversions
- Glucose variability
- Likely due to increased levels of HCG
  - 50% of pregnancies
  - Increases with multiple pregnancies
  - Typically gone by week 12-15

Treatment

- Eat multiple small meals
- Eat protein before bed
- Consume carbs before rising
- Teas (Ginger, peppermint)
- Maintain electrolytes after vomiting
- CMT thoracic extension
- Acupuncture/pressure: Pericardium 6

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CONSTIPATION

Causes

- Constipation is anything less than 1-2 DAILY bowel movements or any BM that requires straining or results in incomplete emptying.
  - Check for pelvic floor TrP/hypertonicity
- Progesterone and relaxing decrease peristalsis
- Iron exacerbates or causes
  - Absorbable form: ionized ferrous aspartate
  - Vit C
- Poor digestion- especially of starches

Treatment

- Increase water
- Fresh fruits and veg
- Soluble fiber (oat fiber, acacia gum)
- Buffered Vitamin C powder
- Magnesium + Choline Citrate
- Chiropractic adjusting- thoracolumbar, sacrum
- Exercise

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HEARTBURN/GERD

Causes

- Decreased HCl and pepsin
- Increased transit time (progesterone)
- Relaxed cardiac sphincter
- Increased intra-abdominal pressure by enlarged uterus
- Poor diaphragmatic activation to close sphincter

Treatment

- Avoid antacids and proton pump inhibitors
- Eat smaller meals
- Probiotics & Magnesium + Choline Citrate
- Treat diaphragm & breathing
- Symptom relief:
  - Handful of almonds, well chewed
  - Avoid eating right before bed

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VARICOSITIES

- Best to prevent through awareness of family history or previous personal history
- Periodic rests with legs elevated
- Exercise, especially walking
- Retrograde massage of legs (gently)
- Support stockings- Jobst
- Buffered Vitamin C to support vascular collagen production

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HEMORRHOIDS

- Avoid constipation and/or straining
  - Promote 1-2 DAILY bowel movements
  - Buffered vitamin C powder and Magnesium to soften stools
- Herbal Sitz Baths
- Epsom salt baths
- Cat/Cow exercise
- Avoid lounging semi-supine (stay off your sacrum)

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UPPER RESPIRATORY INFECTIONS

- Chiropractic adjusting
- Lymphatic massage to cervical lymph chains
- Vaporizer
- Epsom salt & soda baths
- Neti pot
- Supplementation
  - Quercetin, OPC & Pomegranate concentrate
  - Vitamin D
  - Zinc lozenges
  - Buffered Vitamin C (powder)

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RESPIRATORY ALLERGIES

- Quercetin (2000mg 2-4 times per day)
- Buffered Vitamin C (C cleanse)
- Elimination diet
- Delayed sensitivity allergy testing

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GESTATIONAL HYPERTENSION

- Treat for stress
- Avoid excessive weight gain
- Exercise
- Check for drugs, stimulants
- Check meds depletions/interactions
- Check salt intake, SUGAR, inadequate protein
- Supplementation
  - Magnesium 220mg + Choline Citrate liquid
  - CoQ10 – 200mg QD
  - Buffered Vitamin C – 3000mg +
  - Vitamin D + K2
    - Aiming for serum Vit D to 60-80ng/mL

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HEADACHE

- Check blood sugar levels and hydration
- Check blood pressure
- Check usual musculoskeletal causes
- Digestion / auto-intoxication
- Diet and increased chemical sensitivities
- Supplementation
  - Sublingual B6, B12, folate
  - Magnesium 220mg + Choline Citrate
  - CoQ10 100-200mg QD

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CARPAL TUNNEL

Causes

- Fairly common in pregnancy due to increased fluid retention
- If B/L symmetrical, look for a systemic cause rather than a biomechanical one
- Check salt, protein, preservative intake
- Inflammatory conditions

Treatment

- Increase water intake or protein
- Chiropractic Adjusting
  - Opponens roll
  - Proximal radial head supination
  - Distal radioulnar spread
- Stretch pec major & minor
- Natural anti-inflammatories
  - EPA/DHA 1100mg
  - Quercetin

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VAGINAL INFECTIONS

- Causes
  - Loss of vaginal acidity (loss of normal lactobacillus)
  - Check digestive capacity- cross contamination from dysbiosis
- Dx- Vaginal culture
  - If chronic or recurrent, check microbiology profile (stool)
- Probiotic vaginal suppositories
  - Lactobacillus

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MUSCULOSKELETAL INTERVENTIONS

- Preventative care (even before conception)
  - Move well. Move often. Then add load.
- Adjustments when/where/in the direction restrictions are present
- Pre and post-natal exercises
- Balance and neuromuscular re-education
- Soft tissue techniques- gentle myofascial release and stretching or PIR, especially for piriformis or iliopsoas m.
- Nutritional support for tissue tolerance and healing

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LOW BACK PAIN PREVENTION IN PREGNANCY

- Prophylactic instructions:
  - Avoid prolonged sitting, bending, stooping and squatting
  - Interrupt static posture every thirty minutes before you develop any discomfort
  - Maintain lumbar lordosis (hollow in the low back) in sitting and other postures
  - Use supportive roll/cushion placed in the hollow of the back in sitting position
  - Avoid sitting on low chairs, stool and soft couch with deep seat as much as possible
  - Use a firm, high chair with a good comfortable back support
  - Consciously control and maintain good upright posture when sitting on a seat without backrest or support
  - Avoid lifting of heavy loads as much as possible - when you have to lift, carry only a moderate load
- Carry out your back exercises daily – five repetitions, every two hours

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PREGNANCY LOW BACK PAIN

- Almost 75% of women undergoing chiropractic manipulation report significant pain reduction and clinically significant improvements in disability.
  - Murphy DR, Hurwitz EL, McGovern EE. Outcome of pregnancy-related lumbopelvic pain treated according to a diagnosis-based decision rule: a prospective observational cohort study. J Manipulative Physiol Ther 2009;32:616-24.
- Women who seek chiropractic care throughout pregnancy may have an added benefit of shorter labor times.

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POST-PARTUM RECOVERY

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IMMEDIATELY POST-PARTUM

- ALLOW THE BODY TO HEAL for the first 6-8 weeks
- Rest & bond with baby, establish breastfeeding, process emotions
- Quit worrying about everyone
  - "Five days in the bed, five days on the bed, five days around the bed."
- Abdominal breathing- find your full diaphragm again and learn how to expand all the way around the lower rib cage
- Abdominal massage
- Check for diastasis recti
- Relax the abs- don't suck in the belly

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PERINEAL TEARS OR EPISIOTOMY

- Prevention: perineal massage, warm compresses during labor, water birth
- Ice after birth
- Sits baths (WONDEFUL!!!)
  - Anti-inflammatory, anti-microbial herbs
  - Epsom salts & baking soda
  - Shepherd's purse, comfrey, uva ursi, garlic, myrrh, sage, lavender
- Calendula cream or fresh aloe vera
- Decreased activity

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POSTPARTUM DEPRESSION/PSYCHOSIS

- Treat the blues with conservative care
- Depression may or may not endanger the baby- strongly consider co-management with a psychologist and/or doc with prescription rights
- Psychosis is rare
  - Loss of touch with reality
  - Emergency
- Emotionally strained:
  - Post-excitement
  - Fear
  - Discomfort / pain of post-delivery
  - Fatigue
  - Anxiety
  - Isolation, lack of support system, undue pressure on self

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POSTPARTUM DEPRESSION

- Inflammatory Condition: check for organic causes too (not just emotional)
  - Anemia and/or iron deficiency
    - CBC w/diff (IDA pattern: HgB <13, RDW 15-16), ferritin (40-70 optimal)
  - Nutrition
    - Whey protein- amino acids are precursors to neurotransmitters
    - B6- helps with production of serotonin
      - Sublingual B6, B12, folate for increased absorption
    - Free methionine, glycine and magnesium aspartate
  - Hydration
  - Vitamin D deficiency
  - Buffered vitamin C (C cleanse)
  - Fish oils

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Menopause

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MENOPAUSE OVERVIEW

- Menopause designates the time in a woman's life when she ceases to have a menstrual period.
- Spontaneous or natural menopause is the permanent cessation of menstruation following the loss of ovarian activity.
- Defined as the point after 12 consecutive months of no menses following the final menstrual period
- Average age is estimated at 50-52 with a range of age 40-58
- Considered a normal process unless induced by surgery, medications, or radiation

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PERIMENOPAUSE

- Perimenopause: the period immediately before menopause
- Starts with changes in the menstrual cycle and ends 12 months after the final menstrual period
- Early perimenopause: cycle length varies from a 28-day cycle, often shortening to 20-21 days per cycle.
- Later stages: 2 or more missed menses in a year with cycles lasting 60 days or longer
- The transition lasts about 4 years!!
- Most experience irregular pattern of bleeding

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PREMATURE MENOPAUSE

- Premature Ovarian Failure (POF) characterized by
  - Secondary amenorrhea
  - Menopausal symptoms
  - Persistent elevation of FSH, levels >20 IU/L before 40 years of age.
  - 2/3 are idiopathic
  - 1/3 metabolic and systemic disease, chromosomal abnormalities, immunologic disorders, infection, lack of blood supply to the ovaries, cigarette smoking, ovariectomy or bilateral ophrectomy, pelvic irradiation, and chemotherapy

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MEDICAL MENOPAUSE

- Induced menopause: surgical removal of both ovaries, typically along with hysterectomy
- Oophorectomy increases rick of osteoporosis, coronary artery disease, and/or atrophy of the genital area at a younger age
- Onset is immediate with side effects including
  - **Hot flashes**
  - **Mood changes**
  - **Sleep disturbances**
  - **Loss of sexual arousal**
  - Fatigue
  - Headaches
  - Dry skin
  - Bone and joint pain
  - Loss of vaginal lubrication
  - Painful vaginal sex
- Sudden drop in estrogen, progesterone, and testosterone

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WHAT'S REALLY HAPPENING?

- Number of ovarian eggs reaches very low levels
- The absence of follicles results in loss of luteal phase and lower progesterone levels
  - Ovarian production of estradiol, progesterone, and testosterone decreases with the onset of true menopause
  - Lower estrogen levels aren't experienced until 6-12mo. After last menses
- Menstrual cycle begins to vary, usually shortening from one menses to the next
- The pituitary gland responds to this drop in estrogen by increasing its secretion of FSH and LH.
  - (think of the feedback loop of TSH…)
- FSH levels increase
  - **First sign of an aging reproductive system
  - Often used to determine if one's symptoms are related to menopause
  - BUT patterns vary and FSH may be normal in a perimenopausal woman

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FERTILITY CHANGES

- Rising FSH levels
- **Blood level of FSH on day 3 of the menstrual cycle** is a good indicator of infertility related to aging ovaries
- Don't be mistaken by irregular ovulation vs. lack of ovulation!
- Unplanned pregnancy is common in the late 40's to 50's!
- Contraception must be used until menses has been absent for 12 consecutive months or until levels of FSH are consistently above 30 IU/L

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WHAT NOW?? WE NEED HORMONES!

- Not all is lost! 50% of testosterone comes from the ovaries and adrenal glands; 50% from liver, skin and brain
- LH and FSH cause the ovaries and the adrenal glands to secrete increased amounts of androgens (androstenedione) which is converted to estrone by body fat
- This conversion accounts for most of a woman's estrogen after menopause, but the total estrogen levels are far below the levels she experienced during her reproductive years.

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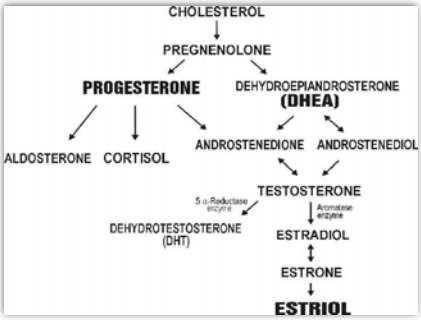

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HOT FLASHES

- About 75% of women in the US experience hot flashes and 15% are severely affected
- Highest incidence in the first 2 years of menopause
- Hot flashes are a result of peripheral vasodilatation that leads to a rise in the skin temperature and resultant flushing of the skin.
- During the typical hot flash, the skin of the head and neck become red and warm for anywhere from a few seconds to two minutes. This is usually followed by cold chills.
- Whole foods diet with minimal sugar, refined carbs, dairy, caffeine, reduced saturated fats
- Increased dietary fiber
- Increased EFAs from nuts, seeds, & fish
- Alcohol avoidance

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HOT FLASHES

- Bioflavonoids: antioxidant and anti-inflammatory
  - Quercetin + Vitamin C to relieve hot flashes
    - Quercetin 1000-6000mg/day + Vitamin C to bowel tolerance (start with 1000-3000mg/day)
- Vitamin B6 (pyridoxine): helps with serotonin synthesis
  - HRT like Premarin depletes B6- may cause insomnia and irritability
  - Dose: 50-200mg / day (watch for toxicity at high end)
- Evening Primrose Oil: effective in relieving breast pain 1500-3000mg / day
- Mixed tocopherols & milk thistle to support liver's break down of hormones
- Adrenal support – Rhodiola, Magnolia Officinalis+ Phellodendron Amurense micellized in perilla oil

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MENOPAUSE INSOMNIA

- Insomnia & Sleep Disturbances
  - Common- increasing after 40, plateauing by age 50
  - Contributes to fatigue, poor concentration, low motivation, irritability, depression, anxiety
  - Awaken due to night sweats
- Interventions
  - Alcohol avoidance
  - Magnesium at bedtime
  - Combination of the following (250-500mg each before bed and upon rising):
    - l-methionine (free)- aids detoxification
    - glycine (free)- acts as calming neurotransmitters,
    - l-aspartate- assists with production of energy within the brain via NADH
  - Restore normal cortisol rhythm / adrenal support

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MENOPAUSE MOOD SWINGS

- Mood swings, depression, & anxiety
  - Inconsistent relationship between menopause & depression
  - Mood changes may include irritability, melancholy, weepiness, short temper, feeling overwhelmed, lower tolerance of stressors
- Interventions
  - EPA/DHA- 2000mg
  - Magnesium
  - Combination of the following (250-500mg each before bed and upon rising):
    - l-methionine (free)- aids detoxification
    - glycine (free)- acts as calming neurotransmitters,
    - l-aspartate- assists with production of energy within the brain via NADH

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OTHER MENOPAUSE SYMPTOMS

- Vaginal Dryness and thinning
  - Vulva loses collagen, fat, and water-retaining ability (estrogen loss)
- Urinary Problems
  - Incontinence
  - Recurring UTI's
  - Urgency
  - Stress incontinence- refer for pelvic PT
- Changes in sexual response and sex drive
  - Low libido
  - Inability to attain or maintain sexual excitement and lack of response to sexual simulation such as lubrication
  - Orgasmic disorders- delayed, difficult, or absent orgasm
  - Sexual pain, vaginismus

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OTHER SYMPTOMS (CONT.)

- Weight Gain
  - Sarcopenia and loss of lean body mass, metabolic rate decrease with age = fewer calories burned
  - Increase insulin resistance → increased fat storage, increased abdominal fat, and weight gain
- Headaches
  - Hormone changes
- Heart Palpitations
  - Rapid heart rate, missed heartbeats, or irregular heart beats
  - Some are related to decreased estrogen, but consider anxiety, panic disorder, fears, or depression
  - Evaluate further if symptoms occur with exercise, concomitant SOB or chest pain, or a family hx of early heart disease or MI (men less than age 50, women less than age 60)

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OSTEOPOROSIS

- Osteoporosis –
  - T-score: bone mineral density -2.5 standard deviations below mean peak value
    - Osteopenia: -1 to -2.5 T-score
  - Can dramatically alter or even shorten one's life
  - Most common fx sites: spine, hip, forearm, ribs
  - Estrogen inhibits bone resorption (osteoclasts)
  - Steroid use & immobilization also decrease trabecular bone
  - BMI less than 21 is at greater risk
- Supplementation
  - HRT
  - Osteoblast stimulators?
  - Weight bearing exercise, resistance exercise
  - Vitamin D
  - MAGNESIUM and Calcium supplementation in a 1:1 ratio with Vit. K and other co-factors

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ADRENAL SUPPORT

- **Rhodiola rosea calus / roseroot rhizome:**
  - Popular plant in ***traditional medical systems*** in Eastern Europe and Asia
    - **Evidence benefit in…*Decreasing depression***
    - ***Eliminating fatigue, Mood regulation***
    - ***Restoring healthy sleep rhythms***
    - ***Improving irritability***
    - ***Concentration***

1. Kelly, Gregory S. Rhodiola rosea: A Possible Plant Adaptogen. Altern Med Rev 2001;6(3):293-302.
2. Experimental analysis of therapeutic properties of Rhodiola rosea herb and its possible application in medicine. Medicina (Kaunas) 2004; 40(7): 614-9.

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ADRENAL SUPPORT

- **Magnolia and Phellodendron extracts**
  - ***Patented extracts of Magnolia officianalis and Phellodendron amurense.***
  - Magnolia officianalis - tree native to the rain forests of China. Bark long used for ***stress and anxiety control***.
  - ***Magnolia and phellodendron work together by binding to stress hormone receptors in the nervous system (3)***
    - Support or restore levels of the cortisol and DHEA hormones in the body.
    - Promote relaxation and feelings of well-being
    - Do not cause sedation*
    - Promote reduced stress-related eating(4)
- **Perilla Oil and MCTs**
  - Help micellize the above ingredients for maximum absorption and efficiency.*
  - Perilla Oil itself is rich in Omega 3 fatty acids and stimulates repair*
  - MCTs reduce acid load and are easy to assimilate and metabolize.*

3. Sufka KJ, et al. Anxiolytic properties of botanical extracts in the chick social separation-stress procedure. Psychopharmacology (Berl). 2001 Jan 1;153(2):219-24.
4. Living Longer Clinic Study by Dr. Lavalle

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SELECTED TESTING

- Saliva Hormone Testing
  - Endocrine Health: DHEA, Dihydrotestosterone, Testosterone, Progesterone, Estrone (E1), Estradiol (E2), Estriol (E3), Cortisol x4, Melatonin
- Saliva vs. Serum
  - Saliva is free hormone (unbound), readily used
  - Serum is a total of free and bound (unless you order free, but it's more expensive)
  - Saliva- more varriation in readings
  - Serum- Requires venipuncture, amounts may vary depending on time of day
  - Neither is perfect.

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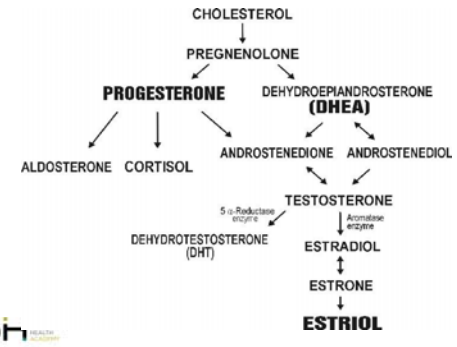

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DHEA

- Androgen precursor to testosterone
- Side effects include facial hair growth and acne
- Dose of 3-25mg per day in women who are low in DHEA on test results or women with fatigue, loss of vitality, and/or low sex drive

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PHYTOESTROGENS

- Plant-derived substances that are able to activate the estrogen receptors in mammals
- Significantly weaker than the body's estrogen
- Possibly antiestrogenic- they occupy estrogen receptor sites
- Found in medicinal herbs
- No association with increased breast CA risk has been found
  - Inhibit mammary tumors in animal models
  - Isoflavones have similar structure to sex hormones
- Anti-neoplastic effects
- *Angelica Sinensis* (Dong Quai), *Ginko Biloba, Panax Ginseng, Glycyrrhiza Glabra (licorice), Trifolium Praetense (Red Clover)*

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PANAX GINSENG (KOREAN)

- Panax (Korean) ginseng administered on days 1 – 21 of the month may stimulate the secretory cells of the vagina. Improves lubrication and elasticity of the vaginal tissue
- Used for weakness, loss of muscle tone, low endurance, and decreased sexual function
- Improves energy, decreases insomnia and depression
- Reduces mental or physical fatigue, enhanced coping by supporting the adrenal glands
- Dose: Standardized extract capsules 200mg 5% ginsenosides or 100 mg 10% sponin ginsenoside per day

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CIMICIFUGA RACEMOSA (BLACK COHOSH)

- Well studied
- Decreases hot flash frequency and intensity in many women
- Mechanism is unclear
- Dose: Standardized extract capsules – 40mg per capsule, 1-2 capsules twice per day
  - Standardized liquid extracts: ½-1 tsp. twice daily

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VITEX AGNUS CASTUS (CHASTE TREE)

- Increases secretion of LH an has a progesterone-like effect
- Best used to treat irregular bleeding
- Used to normalize and regulate the menstrual cycle
- Not a fast acting herb- results ma not be achieved until after 3-6 months
- Dose: Standardized extract capsules (175 mg of 75% agnuside) 1 capsule daily

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MENOPAUSE RESOURCES

- Lecture and personal conversations with the late Frank Strehl, DC, DABCI
- Hudson, Tori, ND. *Women's Encyclopedia of Natural Medicine.* McGraw Hill: New York, 2008. ISBN: 978-0-07-146473-4

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PHYSIOLOGY FIRST APPROACH SUMMARY

Step 1	Understanding the various phases of women's lives, knowing what systems tend to break down and what deficiencies are common. Ameliorate those first.
Step 2	Targeted testing with actionable outcomes. **Will performing this test change my treatment in any way?** If not, go on to next step.
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