Natural and Integrative Care Approaches to PCOS

PRESENTED BY: ELIZABETH BOARD, MD
FOUNDER OF ATLANTA FUNCTIONAL MEDICINE, INC.
Agenda

- Functional Medicine Principles
- Treatment Plan
- Case Examples
Functional Medicine Principles

- Biochemical individuality based on genetic and environmental uniqueness
- Patient centered versus disease centered
- Dynamic balance of internal and external factors
- Web-like interconnections of physiological factors
- Health as a positive vitality—not merely the absence of disease
- Promotion of organ reserve—health span

- www.functionalmedicine.org
Treatment Plan

- What do these ladies have in common?
They are all DIVAS!
Treatment Plan

D = DIET
I = INTESTINAL HEALTH
V = VEG OUT, VOICE
A = ACTIVITY
S = SUPPLEMENTS
Treatment Plan - DIVAS

- **D = DIET**
  - Elimination diet and REAL Food
  - Eliminate: dairy, gluten, sugar, corn, fruit juice, processed foods, soy
  - Low glycemic load
  - Eat unprocessed foods

*If a machine made it, feed it to a machine!*
Treatment Plan - **DIVAS**

- **Elimination Diet**

![Diagram of Elimination Diet Features](image)

### Comprehensive Elimination Diet Guidelines

**FOODS to INCLUDE**
- Fruits: whole fruits, unsweetened, frozen or water-packed, canned fruits and diluted juices
- Dairy substitutes: rice, oat, and nut milks such as almond milk and coconut milk
- Non-gluten grains and starch: brown rice, oats, millet, quinoa, amaranth, teff, tapioca buckwheat, potato flour
- Animal protein: fresh or water-packed fish, wild game, lamb, duck, organic chicken and turkey
- Vegetable protein: split peas, lentils, and legumes
- Nuts and seeds: walnuts, sesame, pumpkin, and sunflower seeds, hazelnuts, pecans, almonds, cashews, nut butters such as almond or tahini
- Vegetables: all raw, steamed, sautéed, juiced or roasted vegetables
- Oils: cold pressed olive, flax, safflower, sesame, almond, sunflower, walnut, canola, pumpkin
- Drinks: filtered or distilled water, decaffeinated herbal teas, seltzer or mineral water
- Sweeteners: brown rice syrup, stevia, fruit sweetener, blackstrap molasses
- Condiments: vinegar, all spices, including salt, pepper, basil, carob, cinnamon, cumin, dill, garlic, ginger, mustard, oregano, parsley, rosemary, turmeric

**FOODS to EXCLUDE**
- Oranges and orange juice
- Dairy and eggs: milk, cheese, eggs, cottage cheese, cream, yogurt, butter, ice cream, frozen yogurt, non-dairy creamers
- Grains: wheat, corn, barley, spelt, kamut, rye, triticale
- Pork, beef/veal, sausage, cold cuts, canned meats, frankfurters, shellfish
- Soybean products (soy sauce, soybean oil in processed foods; tempeh, tofu, soymilk, soy yogurt, textured vegetable protein)
- Peanuts and peanut butter
- Corn, creamed vegetables, tomatoes, chiles
- Butter, margarine, shortening, processed oils, salad dressings, mayonnaise, and spreads
- Alcohol, coffee and other caffeinated beverages, soda pop or soft drinks
- Refined sugar, white/brown sugars, honey, maple syrup, high fructose corn syrup
- Chocolate, ketchup, relish, chutney, soy sauce, barbecue sauce, teriyaki, and other condiments
Treatment Plan - DIVAS

- D = DIET
- Anti-inflammatory diet
- The Clean 15
- The Dirty Dozen
- “If it comes in a bag or a box, it’ll put you in a bag or a box”.
- Eat Like a Queen, not a pauper. Nutrient Dense

What you put in your body can alter your destiny!
Treatment Plan - DIVAS

- I = INTESTINAL HEALTH
  - Liver – Phase I & Phase II
  - Healthy gut? “Gut Restoration”
  - Hormone reabsorption risk
  - Herbal accelerators: grape skin, Brassica family, garlic, rosemary
  - Hydration to support kidney

Take the garbage out daily!
Treatment Plan - DIVAS
Liver Detoxification

Phase 1
Reactive intermediates

Phase 2

Excretion

Zinc, Vitamins A, B3, B5, B6, B12, C, E, beta-carotene and methylfolate.
L-cysteine, L-glutamine, taurine
N-Acetylcysteine, sodium sulfate, L-glutathione
EGCG: green tea catechins
*ENERGY Dependent: quality carbs and proteins
Treatment Plan – DI\textsc{V}AS

\[ V = \text{VOICE} \]

- Overproduction of CRH & Cortisol
- Clinical Depression
- Elevated Adrenal Cortisol
- Elevated Androgen Production
- Elevated Blood Glucose Levels
- Excessive Insulin Secretion
- More Androgen Hormone Production
- Converts Excess Androgen To Estrogen
- Disruption of GnRH
- Excess LH & Insufficient FSH
- Hyperandrogenism
- Normal Menstrual Cycles Cease
- Amenorrhea, Anovulation, Infertility
- Acne, Hirsutism, Clitoral Enlargement, Male Hair Distribution
- Insulin Resistance
- Increased Pancreatic Insulin Production
- Centripetal Obesity
- Metabolic Syndrome
- Overproduction of CRH & Cortisol

Stress

Clinical Depression

Elevated Adrenal Cortisol

Elevated Androgen Production

Elevated Blood Glucose Levels

Excessive Insulin Secretion

More Androgen Hormone Production

Converts Excess Androgen To Estrogen

Disruption of GnRH

Excess LH & Insufficient FSH

Hyperandrogenism

Normal Menstrual Cycles Cease

Amenorrhea, Anovulation, Infertility

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Stress

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Amenorrhea, Anovulation, Infertility

Acne, Hirsutism, Clitoral Enlargement, Male Hair Distribution
Treatment Plan - DIVAS

- V – VOICE
- Throat Chakra: connects the heart to the head
- Difficulty: speaking up, expressing truth, asking for help
  - PCOS challenge
- Trouble connecting inside to outside. Spiritual Bridge
- FOCUS: Alignment with Divine Will through responsibility for actions; creativity
Treatment Plan – V: “Veg out”

- Adequate Sleep (9 hours?)
  - Serotonin made in the gut and requires B6
  - Magnesium glycinate or aspartate
  - Chamomile, Lavender, Valerian
  - Melatonin, Vitamin D
  - Taurine, Theanine, GABA, 5-HTP
  - Meditation

- Mind Body Medicine Classes, Techniques

- Go on a Media Fast

- Flex Your Fun Muscle
Treatment Plan - DIVAS

1. A = ACTIVITY: “MOVEMENT MEDICINE”
   - Increases insulin sensitivity
   - Improves Digestion
   - Increases sensitivity of cells to thyroid hormone
   - Increases Dopamine
   - Releases Muscular Tension
   - Raises HDL
   - Decreases Blood Pressure
Treatment Plan - DIVAS

- Acupuncture
  - Infertility
  - Pelvic Pain
  - Hormone Balancing
  - Stress
  - Constipation
Treatment Plan – DIVAS

S- SUPPLEMENTS

- Ideally: “Food as medicine.”
- Undergo a nutritional evaluation and/or be tested. MTHFR, VDR,

IF YOU USE SUPPLEMENTS:
3rd party tested.
get the recommendation from a licensed experienced professional.

- Vitamin D: 67-85% of women with PCOS <20ng/ml
- Magnesium 60% of us are deficient
- B vitamins, water soluble, methylated
Treatment Plan - DIVAS

- **N-acetyl cysteine**: benefit when used with Clomiphene citrate
- **Licorice**: reduces testosterone by blocking 17-hydroxysteroid DH and 17,20 lyase. Watch BP, watch drug interactions.
- **Flaxseed** reduces androgen levels
- **Saw Palmetto**: anti-androgen effects, reduce hirsutism & hair loss
- **Cinnamon**: potentiates insulin, facilitates weight loss
- **Fenugreek & Gymnema**: improve hyperglycemia and lower cholesterol
- **Chromium** and **vanadium**: improve hyperglycemia,
- **Milk Thistle** used with Metformin -> improved effects. Improves ovulation
- **Dandelion root**: vitamins & minerals great for skin and improves acne
- **Chasteberry**: immediately affects the pituitary, symptomatic relief (caution)
Treatment Plan - DIVAS

S = SUPPLEMENTS

- Treat insulin Resistance
  - Decreases inflammation
  - Decreases estrogen production
  - Improves estrogen metabolism
  - Decreases oxidative stress

Support Insulin Signaling:
Mixed Vit E: alpha, beta, gamma, delta
CLA: conjugated linolenic acid
Lipoic acid, Inositol, Magnesium, Biotin
Treatment Plan - DIVAS

S = SUPPLEMENTS

- Progestin with androgenic properties (NETA) increased insulin resistance, progesterone does not
- Vitamin D improves insulin resistance and decreases inflammation

Get your DETOX ON with these foods:

Artichoke: 6 oz whole artichoke or 150-600 mg of leaf extract
- Pomegranate: 6 oz of juice, 1 fruit, 30-100 mg of ellagic acid
- Watercress: 6 oz or 125 -500 mg of whole plant extract
- Green tea: 2-4 cups or 50-150 mg catechins
Treatment Plan – DIVAS

- Metformin use during pregnancy in women w/ PCOS decreased the rate of gestational DM by ~27%, whereas lifestyle modification reduced the risk of gestational DM by ~58%.

- MITOCHONDRIAL HEALTH
  - CoQ10: ubiquinone or ubiquinol
  - L-Carnitine: transports free fatty acids into the mitochondria -> energy
  - B-2 and B-3

- DECREASE INFLAMMATION
  - Turmeric (mix with ghee, black pepper or phosphatidylcholine
  - Boswellia
  - EPA-DHA
  - GLA , but always take with twice as much EPA
  - Pineapple, Tart Cherries, Almonds
Case Studies

- 30 years old, dx’d with PCOS, NASH, married and wants children
- Treated at Atlanta Functional Medicine for 8 months

<table>
<thead>
<tr>
<th>PCOS SYMPTOMS</th>
<th>BEFORE TREATMENT</th>
<th>AFTER TREATMENT</th>
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<tbody>
<tr>
<td>Amenorrhea(no menstruation)</td>
<td>3 months into treatment, normal 28 day cycle</td>
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<tr>
<td>Was told couldn’t have children</td>
<td>Chance to have children</td>
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<tr>
<td>Fatigue</td>
<td>Began walking, then jogging</td>
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<tr>
<td>Morbidly Obese</td>
<td>Lost 60 pounds</td>
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<tr>
<td>On liver transplant list</td>
<td>No longer necessary</td>
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<tr>
<td>On Metformin in past</td>
<td>Off Metformin throughout her tx</td>
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## Case Studies

### Vitals and Lab Results

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<thead>
<tr>
<th>Vitals</th>
<th>BEFORE</th>
<th>DURING</th>
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<tbody>
<tr>
<td>Weight</td>
<td>298</td>
<td>254</td>
<td>238</td>
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<tr>
<td>Blood Pressure</td>
<td>145/105</td>
<td>132/89</td>
<td>122/78</td>
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<tr>
<td>BMI</td>
<td>42.3</td>
<td>36</td>
<td>34.2</td>
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<td>Multi-Symptom Questionnaire Score</td>
<td>177</td>
<td>128</td>
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<tr>
<th>Labs</th>
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<tr>
<td>ALT</td>
<td>172</td>
<td>24</td>
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<td>AST</td>
<td>230</td>
<td>25</td>
<td>21</td>
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<tr>
<td>Cholesterol</td>
<td>203</td>
<td>153</td>
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<td>Triglycerides</td>
<td>227</td>
<td>155</td>
<td>128</td>
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<tr>
<td>HDL</td>
<td>32</td>
<td>37</td>
<td>38</td>
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<tr>
<td>Estrogen</td>
<td>36.5</td>
<td>152</td>
<td>113</td>
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<tr>
<td>Fasting Insulin</td>
<td>nc</td>
<td>22</td>
<td>18</td>
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<tr>
<td>Hgb A1C</td>
<td>5.9</td>
<td>5.3</td>
<td>5.1</td>
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<tr>
<td>Progesterone</td>
<td>&lt; 0.1</td>
<td>1.64</td>
<td>2.4</td>
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<tr>
<td>Vitamin D</td>
<td>30</td>
<td>109</td>
<td>51</td>
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## Case Studies

<table>
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<tr>
<th>METRIC</th>
<th>1-7-14</th>
<th>2-21-14</th>
<th>6-23-14</th>
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<tr>
<td>waist</td>
<td>44.0</td>
<td>41.5</td>
<td>39.75</td>
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<td>hips</td>
<td>49.5</td>
<td>47.75</td>
<td>45</td>
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<td>WHR</td>
<td>0.88</td>
<td>0.87</td>
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<td>Testosterone</td>
<td>nc</td>
<td>29</td>
<td>28</td>
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<tr>
<td>FSH/LH</td>
<td>4.4/15.7</td>
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</tbody>
</table>

Update: latest weight: 238

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**Notes:**

*nc* indicates not sufficient information.
15 yo female oligomenorrhea, acne, moodiness, back pain, weight gain.
Treated w acupuncture, back pain resolved.
Placed on Elimination Diet.

<table>
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<th>October 2013</th>
<th>December 2014</th>
<th>February 2014</th>
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<tbody>
<tr>
<td>Testosterone</td>
<td>69.6</td>
<td>54.4</td>
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<tr>
<td>Estradiol</td>
<td>90</td>
<td>102.5</td>
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<tr>
<td>FSH/LH</td>
<td>8.4/16.9</td>
<td>2.3/9</td>
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<tr>
<td>weight</td>
<td>136.2</td>
<td>132</td>
<td>135.2</td>
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<tr>
<td>cycles</td>
<td>-0-</td>
<td>regular</td>
<td>skipped</td>
</tr>
<tr>
<td>skin</td>
<td>acne</td>
<td>improved</td>
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<tr>
<td>MSQ</td>
<td>58</td>
<td>27</td>
<td>15</td>
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<tr>
<td>attitude</td>
<td>moody</td>
<td>improved</td>
<td>Missed S.A.D.</td>
</tr>
</tbody>
</table>
Case Studies

- Major factor that impacts outcome – COMPLIANCE!
Thank you

For additional questions or comments, please contact Dr. Elizabeth Board at:

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Contactus@Atlantafunctionalmedicine.com
www.atlantafunctionalmedicine.com
References


## Appendix

<table>
<thead>
<tr>
<th>Physical Hunger</th>
<th>Emotional Hunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comes on gradually &amp; can be postponed</td>
<td>Comes on suddenly &amp; feels urgent</td>
</tr>
<tr>
<td>Can be satisfied with any type of food</td>
<td>Causes specific cravings (candy, pizza, ice cream)</td>
</tr>
<tr>
<td>Once you’re full, you stop eating</td>
<td>Eat until you feel uncomfortable / sick</td>
</tr>
<tr>
<td>Feel satisfied, not guilty</td>
<td>Feel guilty and ashamed</td>
</tr>
</tbody>
</table>
## Appendix – MSQ

<table>
<thead>
<tr>
<th>AREA</th>
<th>SYMPTOM</th>
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<tbody>
<tr>
<td>HEAD</td>
<td>Headaches</td>
</tr>
<tr>
<td></td>
<td>Faintness</td>
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<tr>
<td></td>
<td>Dizziness</td>
</tr>
<tr>
<td></td>
<td>Insomnia</td>
</tr>
<tr>
<td>EYES</td>
<td>Watery or itchy eyes</td>
</tr>
<tr>
<td></td>
<td>Swollen, reddened or sticky eyelids</td>
</tr>
<tr>
<td></td>
<td>Bags or dark circles under eyes</td>
</tr>
<tr>
<td></td>
<td>Blurred or tunnel vision (does not include near or far-sightedness)</td>
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<tr>
<td>EARS</td>
<td>Itchy ears</td>
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<td></td>
<td>Earaches, ear infections</td>
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<tr>
<td></td>
<td>Drainage from ear</td>
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<td></td>
<td>Ringing in ears, hearing loss</td>
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<tr>
<td>NOSE</td>
<td>Stuffy nose</td>
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<td></td>
<td>Sinus problems</td>
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<td></td>
<td>Hay fever</td>
</tr>
<tr>
<td></td>
<td>Sneezing attacks</td>
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<tr>
<td></td>
<td>Excessive mucus formation</td>
</tr>
<tr>
<td>MOUTH/THROAT</td>
<td>Chronic coughing</td>
</tr>
<tr>
<td></td>
<td>Gagging, frequent need to clear throat</td>
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<tr>
<td></td>
<td>Sore throat, hoarseness, loss of voice</td>
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<tr>
<td></td>
<td>Swollen or discolored tongue, gums, lips</td>
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<tr>
<td></td>
<td>Canker sores</td>
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<td>DIGESTIVE TRACT</td>
<td>Nausea, vomiting</td>
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<td></td>
<td>Diarrhea</td>
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<td>JOINTS/MUSCLE</td>
<td>Constipation</td>
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<tr>
<td></td>
<td>Bloating feeling</td>
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<tr>
<td></td>
<td>Belching, passing gas</td>
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<tr>
<td></td>
<td>Heartburn</td>
</tr>
<tr>
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<td>Intestinal/stomach pain</td>
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<tr>
<td>WEIGHT</td>
<td>Pain or aches in joints</td>
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<tr>
<td></td>
<td>Arthritis</td>
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<tr>
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<td>Stiffness or limitation of movement</td>
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<td>Pain or aches in muscles</td>
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<td></td>
<td>Feeling of weakness or tiredness</td>
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<tr>
<td>ENERGY/ACTIVITY</td>
<td>Binge eating/drinking</td>
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<td>Craving certain foods</td>
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<td>Excessive weight</td>
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<td>Compulsive eating</td>
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<td>Water retention</td>
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<td>Underweight</td>
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<td></td>
<td>Fatigue, sluggishness</td>
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<td></td>
<td>Apathy, lethargy</td>
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<tr>
<td></td>
<td>Hyperactivity</td>
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<tr>
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<td>Restlessness</td>
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# Appendix – MSQ

<table>
<thead>
<tr>
<th>AREA</th>
<th>SYMPTOM</th>
<th>AREA</th>
<th>SYMPTOM</th>
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<tr>
<td>SKIN</td>
<td>Acne</td>
<td>MIND</td>
<td>Poor memory</td>
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<tr>
<td></td>
<td>Hives, rashes, dry skin</td>
<td></td>
<td>Confusion, poor comprehension</td>
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<tr>
<td></td>
<td>Hair loss</td>
<td></td>
<td>Poor concentration</td>
</tr>
<tr>
<td></td>
<td>Flushing, hot flashes</td>
<td></td>
<td>Poor physical coordination</td>
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<tr>
<td></td>
<td>Excessive sweating</td>
<td></td>
<td>Difficulty in making decisions</td>
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<td>HEART</td>
<td>Irregular or skipped heartbeat</td>
<td></td>
<td>Stuttering or stammering</td>
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<tr>
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<td>Rapid or pounding heartbeat</td>
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<td>Slurred speech</td>
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<td></td>
<td>Chest pain</td>
<td></td>
<td>Learning disabilities</td>
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<tr>
<td>LUNGS</td>
<td>Chest congestion</td>
<td></td>
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<tr>
<td></td>
<td>Asthma, bronchitis</td>
<td>EMOTIONS</td>
<td>Mood swings</td>
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<tr>
<td></td>
<td>Shortness of breath</td>
<td></td>
<td>Anxiety, fear, nervousness</td>
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<tr>
<td></td>
<td>Difficulty breathing</td>
<td></td>
<td>Anger, irritability, aggressiveness</td>
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<td></td>
<td>Depression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OTHER</td>
<td>Frequent illness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Frequent or urgent urination</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Genital itch or discharge</td>
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Appendix
EXTRA SLIDES – DELETE IF NOT NEEDED
Treatment Plan - DIVAS

V = VOICE
- Talk vs. stuffing
- Emotional Hunger

EXTRA
- Decreasing Estrogen Production
  - Minimize VAT since VAT has aromatase
  - Address hyperinsulinemia because insulin stimulates aromatase
  - Achieve Ideal Body Weight

- The adipocyte produces adiponectin to increase insulin sensitivity, burn fatty acids, and reduce triglycerides and inflammation. If the adipocyte is too full of fat, it makes less adiponectin which DECREASES insulin sensitivity and leads to more insulin and more estrogen.
Look at all the connections in fibroids and endometriosis tissue: • Estrogen causes more inflammation. • Inflammation causes more estrogen. • Inflammation causes more insulin. • Insulin causes more total and free estrogen. • Visceral fat causes more estrogen. • Visceral fat causes more inflammation. • So in order to reduce fibroids and endometriosis we need to normalize insulin levels and reduce inflammation and visceral adipose tissue.

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Estrogen Elimination • Ensure Gut Health – Proper flora to reduce Beta-glucuronidase and enterohepatic recirculation. – Eliminate constipation.

• Ensure healthy detoxification – Correct functional testing abnormalities. – Compensate for SNP’s.

PS TD

• A healthy gut will decrease estrogen levels: – Decrease beta glucuronidase through diet (plant based) and supplements (Cal D Glucarate, Probiotic) – Avoid constipation with flax (decreases estrogen levels) – Phipps et al., J Clin Endocrinol Metab. 1993 Nov;77(5):1215-
Look at all the connections in fibroids and endometriosis tissue:
• Estrogen causes more inflammation.
• Inflammation causes more estrogen.
• Inflammation causes more insulin.
• Insulin causes more total and free estrogen.
• Visceral fat causes more estrogen.
• Visceral fat causes more inflammation.
• So in order to reduce fibroids and endometriosis we need to normalize insulin levels and reduce inflammation and visceral adipose tissue.

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PS TD

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