Achieving Hormone Balance in Women's Health

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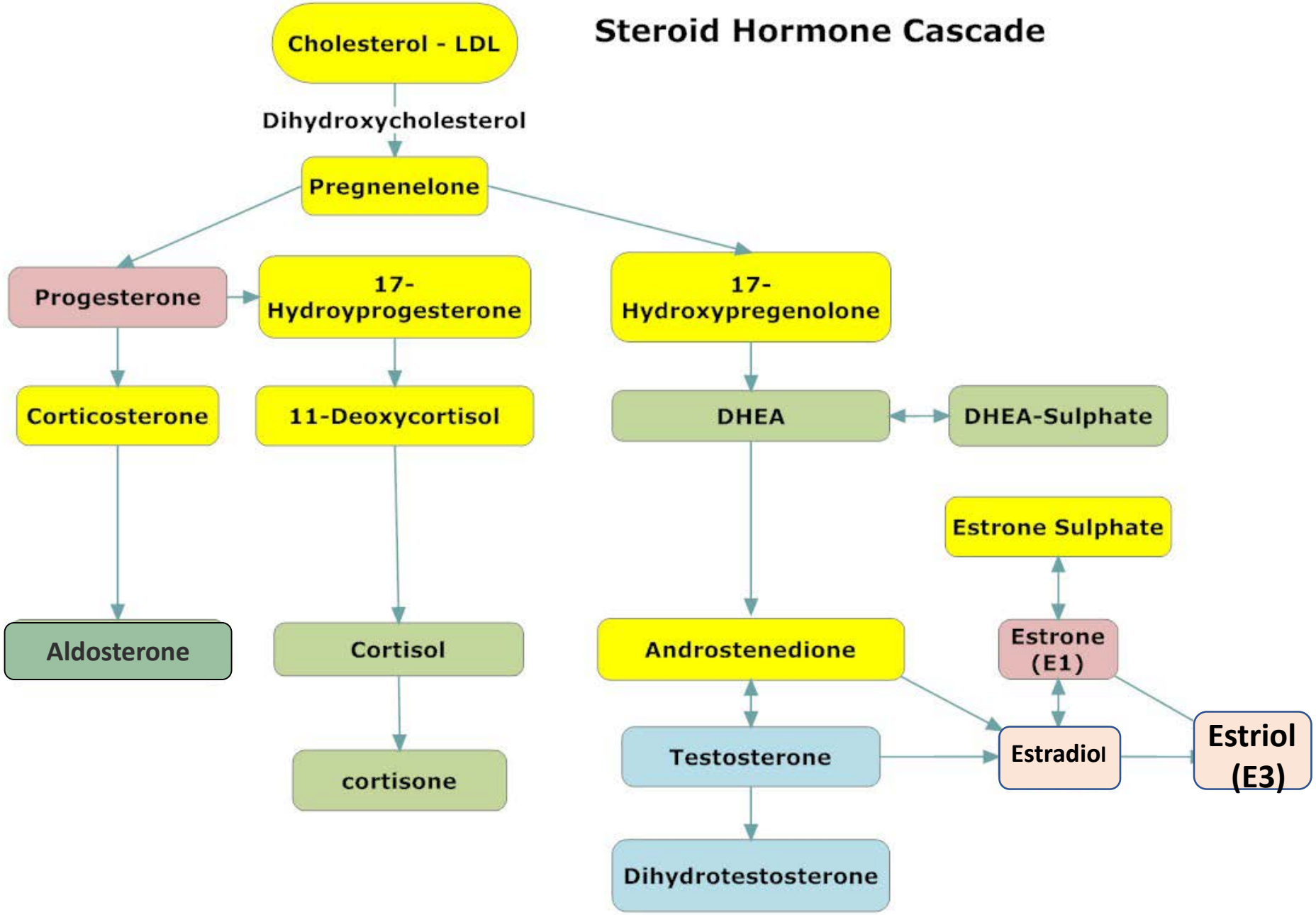
Achieving Hormone Balance in Women's Health
Address your patients' symptoms with
Simple Detox Protocols

Estrogen Dominance and Its Role in Cortisol, Weight Management & Hypothyroidism

- May explain many of the conditions confronting US today
  - Increasingly early menstruation
  - Fibrocystic breasts
  - Cancer
  - PCOS
  - Infertility
- Perimenopausal women especially at risk
  - Progesterone typically declines more rapidly than estrogen
- Increase in younger andropausal men


“Whether You Make Them Or Take Them, You Must Detox Them” Rakowski

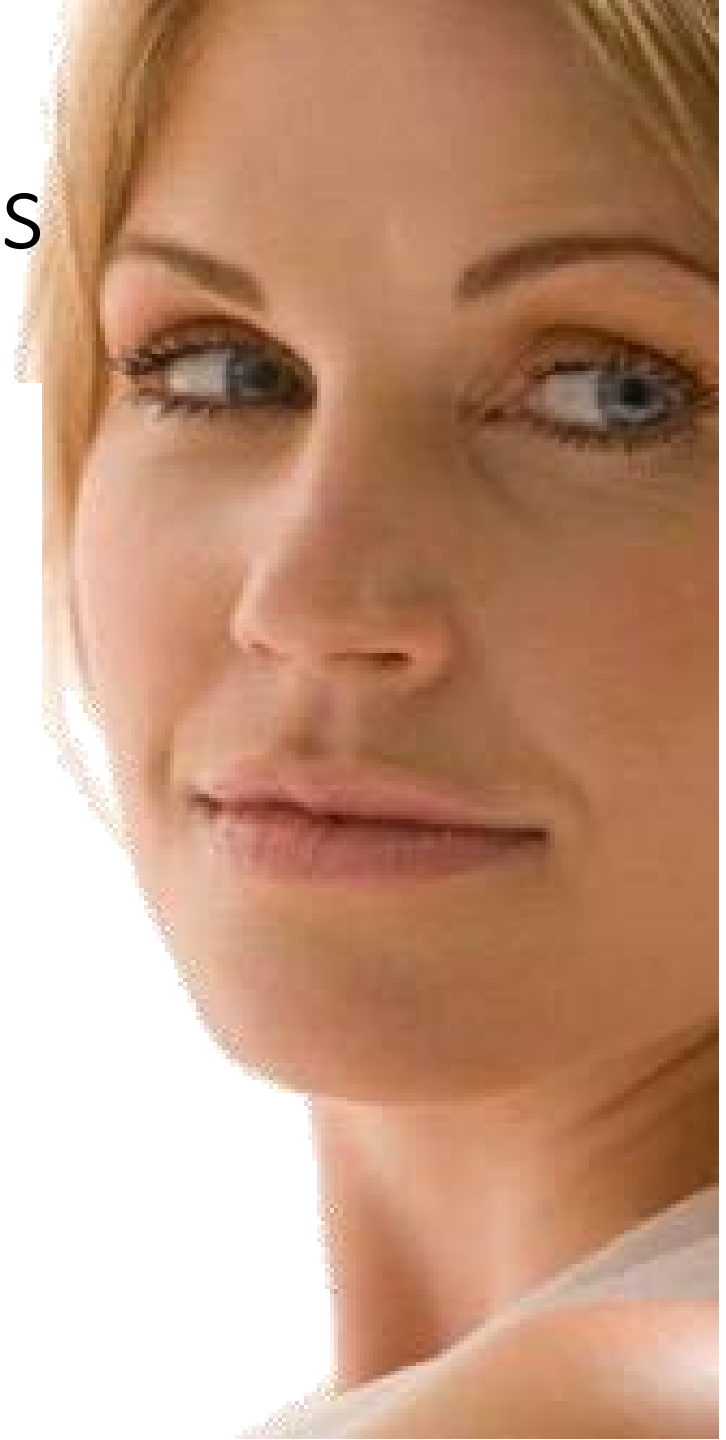

Steroid Hormone Cascade
Cholesterol - LDL
Dihydroxycholesterol
Pregnenelone
Progesterone
17-Hydroyprogesterone
17-Hydroxypregenolone
Corticosterone
11-Deoxycortisol
DHEA
DHEA-Sulphate
Estrone Sulphate
Aldosterone
Cortisol
Androstenedione
Estrone (E1)
cortisone
Testosterone
Estradiol
Estriol (E3)
Dihydrotestosterone

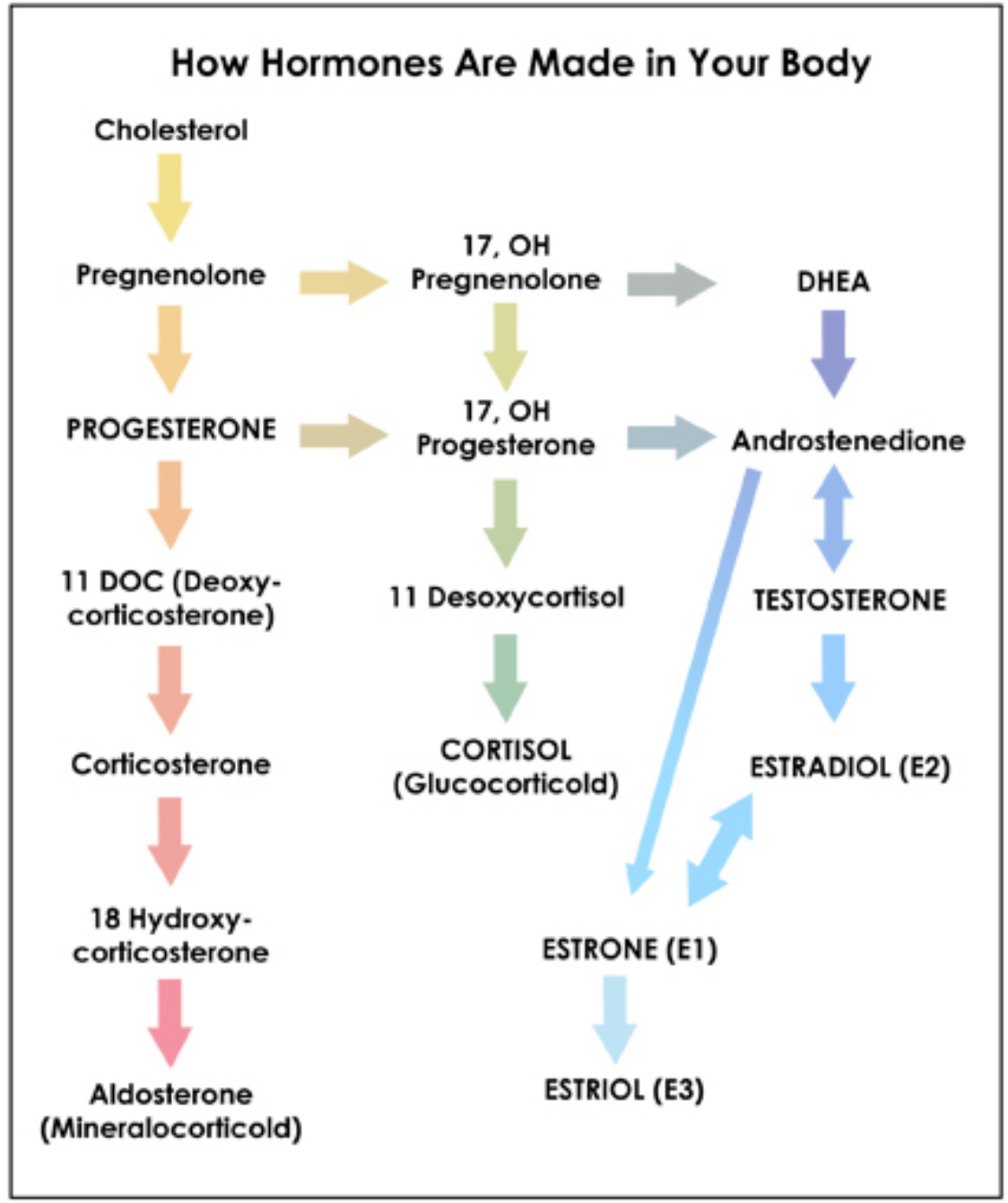
Natural Estrogens: Three Forms

Natural Estrogen: Three Forms

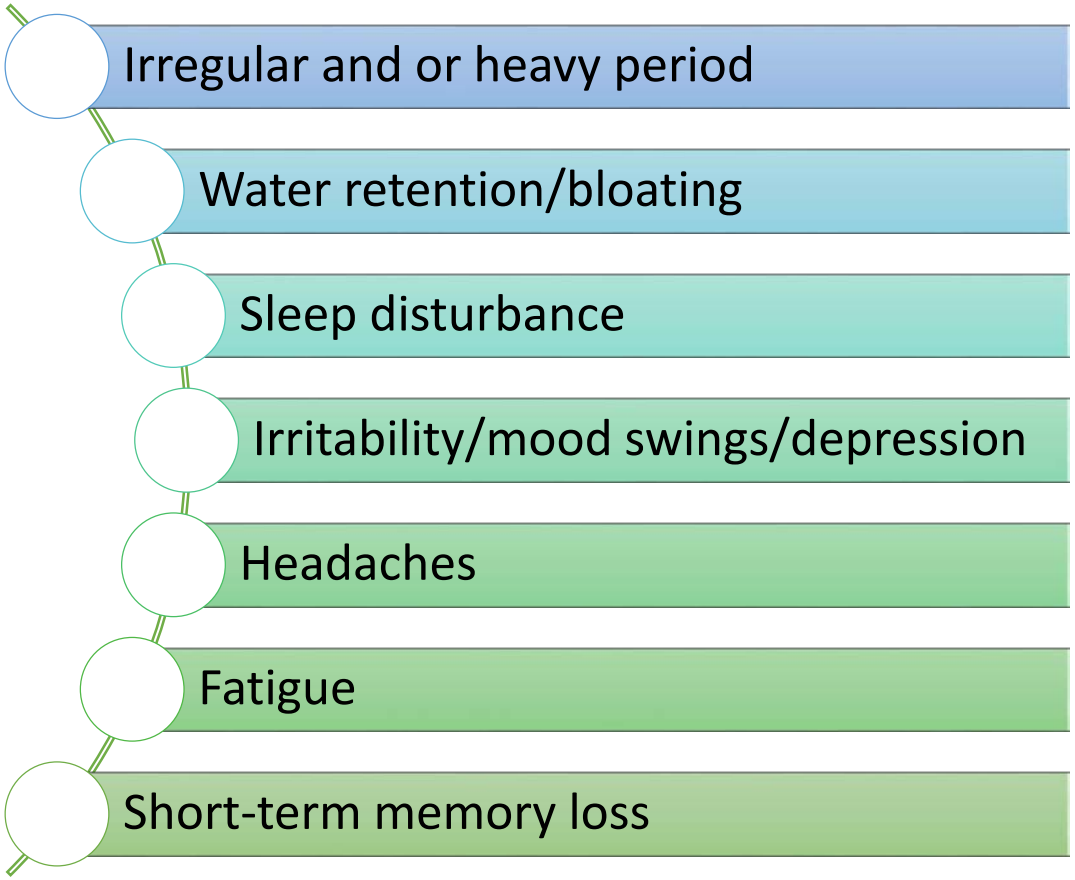
E1: Estrone E2: Estradiol E3: Estriol

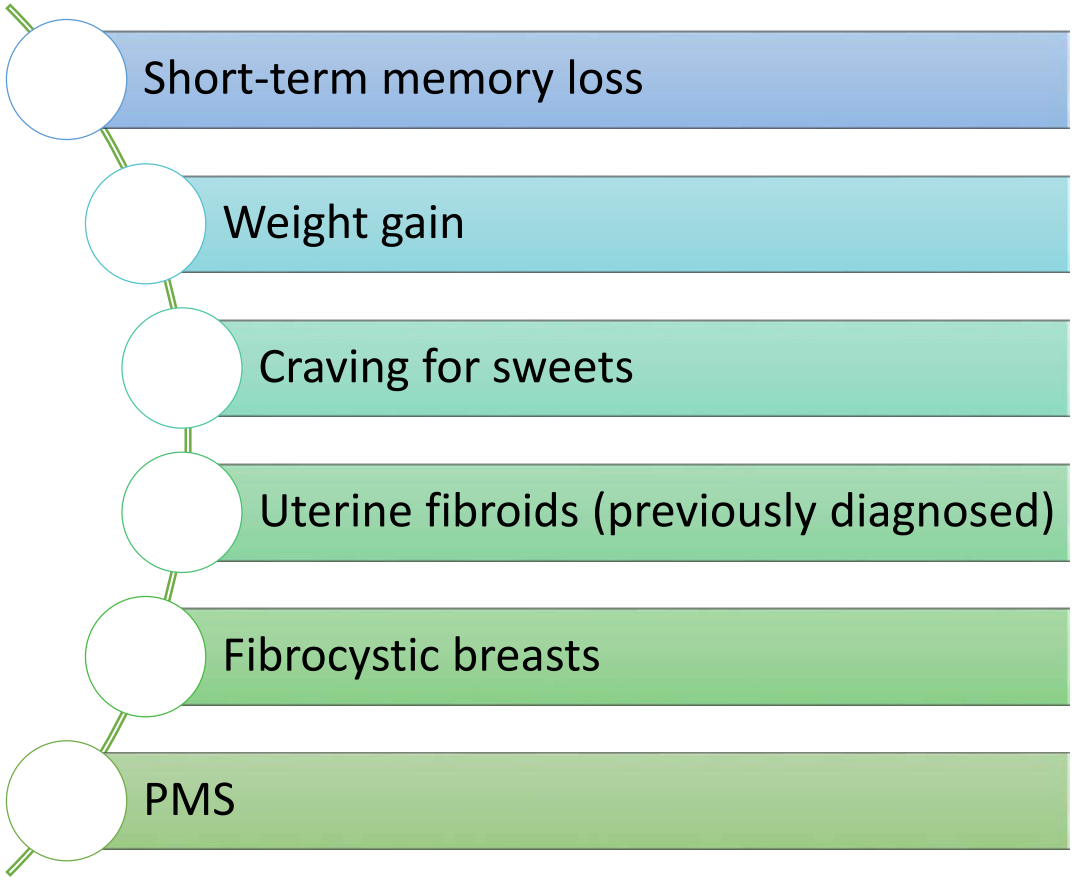
- Different properties and amounts that vary by age
- Estradiol: Most active and powerful
  - Convertible to estrone and vice versa
    - Both promote cell division, which may create risk of endometrial, ovarian and breast cancer
  - 1000 times more stimulating to cell growth in the breast compared to estriol
- Estrone: Most common circulating hormone postmenopause
  - Converted from body fat
- Estriol: Made in large quantities in placenta during pregnancy
  - Largest circulating estrogen in average women's body
  - Converted from estradiol and estrone




How Hormones Are Made in Your Body
Cholesterol
Pregnenolone
17, OH Pregnenolone
DHEA
PROGESTERONE
17, OH Progesterone
Androstenedione
11 DOC (Deoxy-corticosterone)
11 Desoxycortisol
TESTOSTERONE
Corticosterone
CORTISOL (Glucocorticold)
ESTRADIOL (E2)
18 Hydroxy-corticosterone
ESTRONE (E1)
Aldosterone (Mineralocorticold)
ESTRIOL (E3)

Signs of Estrogen Dominance With High Total Serum Estrogen





Signs of Estrogen Dominance With Low Total Serum Estrogen and Progesterone

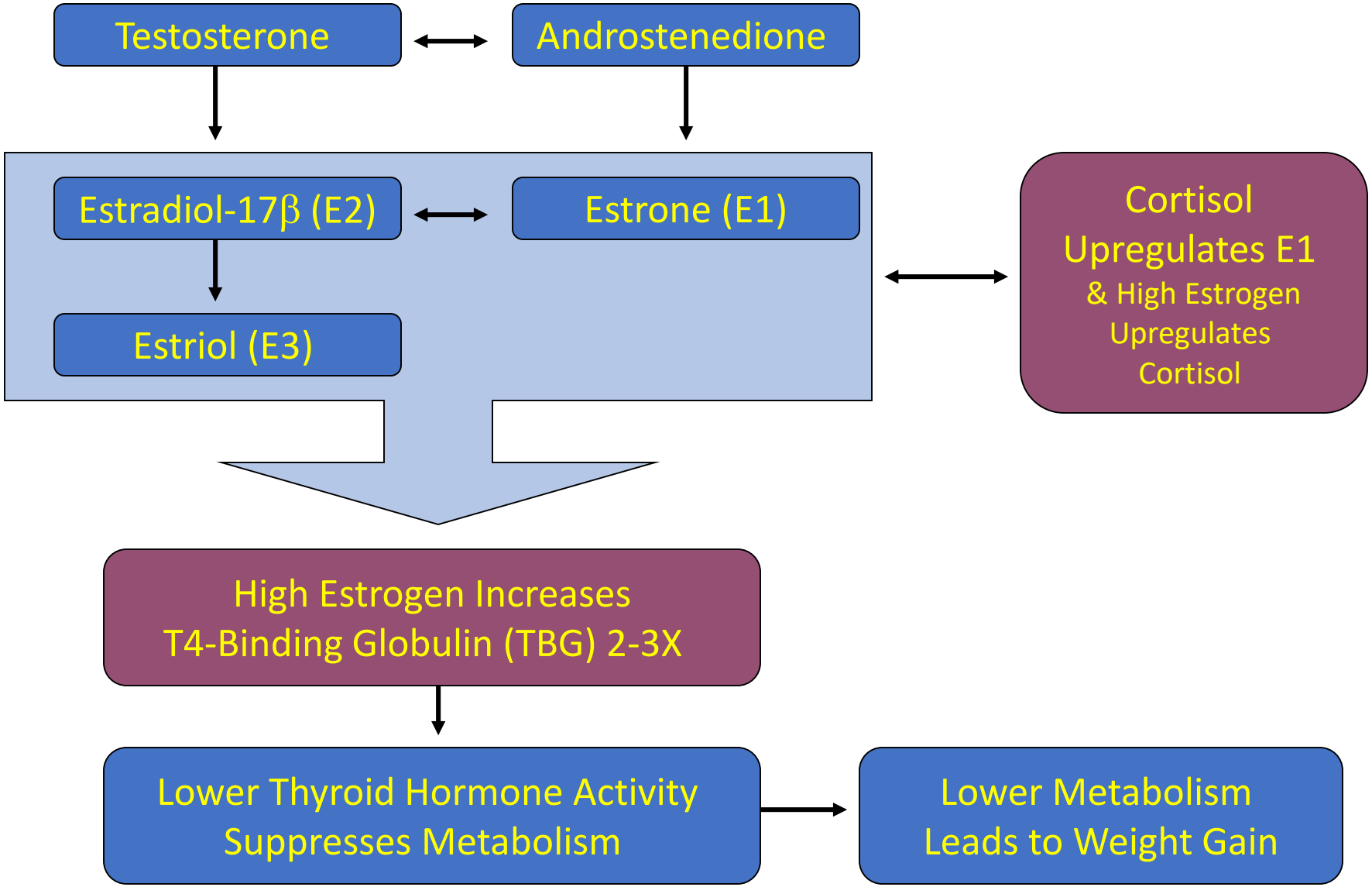
- Salt and fluid retention
- Low blood sugar levels
- Interference with thyroid hormone function
- Increased cholesterol and triglyceride levels
- Allergic reaction
- Increased production of body fat
- Food cravings

- Fatigue
- Hot flashes
- Mood swings
- Breast pain
- Symptoms reminiscent of premenstrual syndrome
- Vaginal dryness/chronic UTIs
- Insomnia

Causes of Estrogen Dominance

- Insulin resistance
- Trans-fatty acid intake
- Chronic stress
- Sleep deprivation
- Fluoridated water
- Environmental xenoestrogens
- Cigarette smoking
- Zinc deficiency
- Progesterone deficiency
- Sedentary lifestyle
- Cadmium toxicity
- Lack of sulfur-containing amino acids
- Lack of good exercise
- Magnesium deficiency
- Hypothyroidism
- Testosterone deficiency

Estrogen Dominance & Cortisol



Adapted from: Ain KB, et al. *Mol Endocrinol.*1988;2(4):313-323.

Progesterone

- Regulates blood sugar
- Reduces insulin levels
- Supplementation restores hormonal balance
- Helps use fat for energy
- Facilitates thyroid hormone function
- Increases sensitivity of estrogen receptors

Low Progesterone Symptoms

- Headaches
- Anxiety
- Cramping
- Infertility
- Acne
- Joint pain
- PMS
- Depression
- Low libido
- Weight gain

What to do…
What to eat…
What supplements to take and why!

Increased Fiber – Increased Binding and Excretion of Estrogens

- Fecal excretion of estrogen in 10 vegetarian and 10 omnivorous menstruating women was performed
  - The omnivorous women consumed an average of 12 g fiber/day while the vegetarian women consumed an average of 29 g/day

- Findings link fiber to estrogen clearance
  - Positive correlation between fecal estrogen and fiber intake
  - Inverse relationship between blood estrogen levels and fiber intake

Goldin BR, et al. *NEJM.* 1982;307(25):1542-1547.

To Lower Estrogen

- Decrease consumption of saturated fats
  - Especially from red meats and dairy products
- Arachidonic acid from animal fats is a precursor of PGF2, which is luteolytic in women (decreases progesterone secretion)
- Animal fat stimulates the growth of certain intestinal bacteria, which can hydrolyze conjugated estrogen thus rendering them active again
- Decrease consumption of arachidonic acid
  - Avoid animal fats. Remember safflower, corn and sunflower oils may possibly get converted to arachidonic acid in times of stress. It is best to stick with the omega-3 EPA.

Dennefors B, et al. *J Clin Endocrinol Metab.* 1982;55(1):102-107.

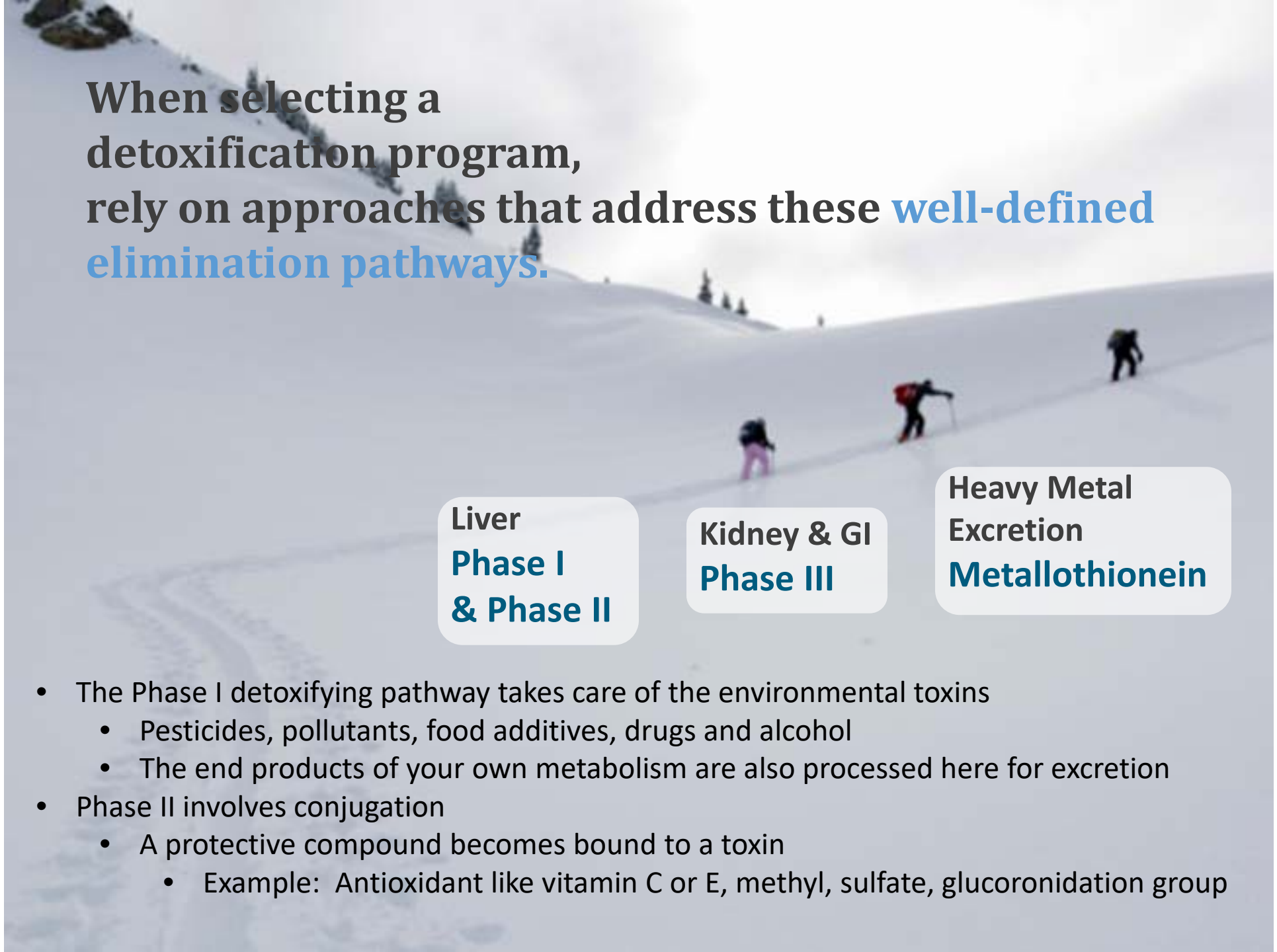
Lower E2 Dominance with Essential Fatty Acids

- Fish oils can directly supply two important omega-3 fatty acids:
  - EPA (eicosapentanoic acid), may have heart-protective effects
  - DHA (docosahexaenoic acid), may benefit the nervous system
  - 2-4 grams of EPA/DHA daily may reduce high triglycerides by 20-40%

McCarty, 1994; Storlien et al. 1986, 1987, 1996; Borkman et al. 1993; Vessby et al. 1994; Pan et al. 1995

Guidance for Detox

STOP	External supply of toxins
SUPPORT	Organs of detoxification and drainage
STIMULATE	Elimination of toxins
SENSITIZE	Patient for further detoxification and lifestyle changes



When selecting a detoxification program, rely on approaches that address these well-defined elimination pathways.

Liver
Phase I & Phase II

Kidney & GI
Phase III

Heavy Metal Excretion
Metallothionein

- The Phase I detoxifying pathway takes care of the environmental toxins
  - Pesticides, pollutants, food additives, drugs and alcohol
  - The end products of your own metabolism are also processed here for excretion
- Phase II involves conjugation
  - A protective compound becomes bound to a toxin
    - Example: Antioxidant like vitamin C or E, methyl, sulfate, glucoronidation group

Phase I

- The phase I enzymes include the P450 enzyme system
  - A collection of mixed function oxidases
- Fat-soluble toxins are changed by way of oxidation, reduction and hydrolysis to make them more water soluble for excretion via the bile and the kidney

Phase II Pathways

- Amino acid conjugation
- Methylation
- Sulfation
- Sulfoxidation
- Acetylation
- Glucoronidation

Need nutrients and metabolic energy to metabolize toxins

Phase II Detox Nutrients

- Minerals (zinc, selenium, magnesium, molybdenum, manganese)
- Amino acid replacement
- Flavonoids
  - Ellagic acid
  - Green tea catechins
- Glucosinolates
  - Crucifers: Phase II can be augmented by eating cruciferous vegetables and alliums
- Monoterpenes (citrus peel, cherries)
- Silymarin (milk thistle)
- MethylBs, TMG, Choline
- NAC
- I3C, DIM, Flax, Rosemary, Kudzu

Who Needs Genomic Testing?

MTHFR

SULT2A1

MTRR

CYP 3A4

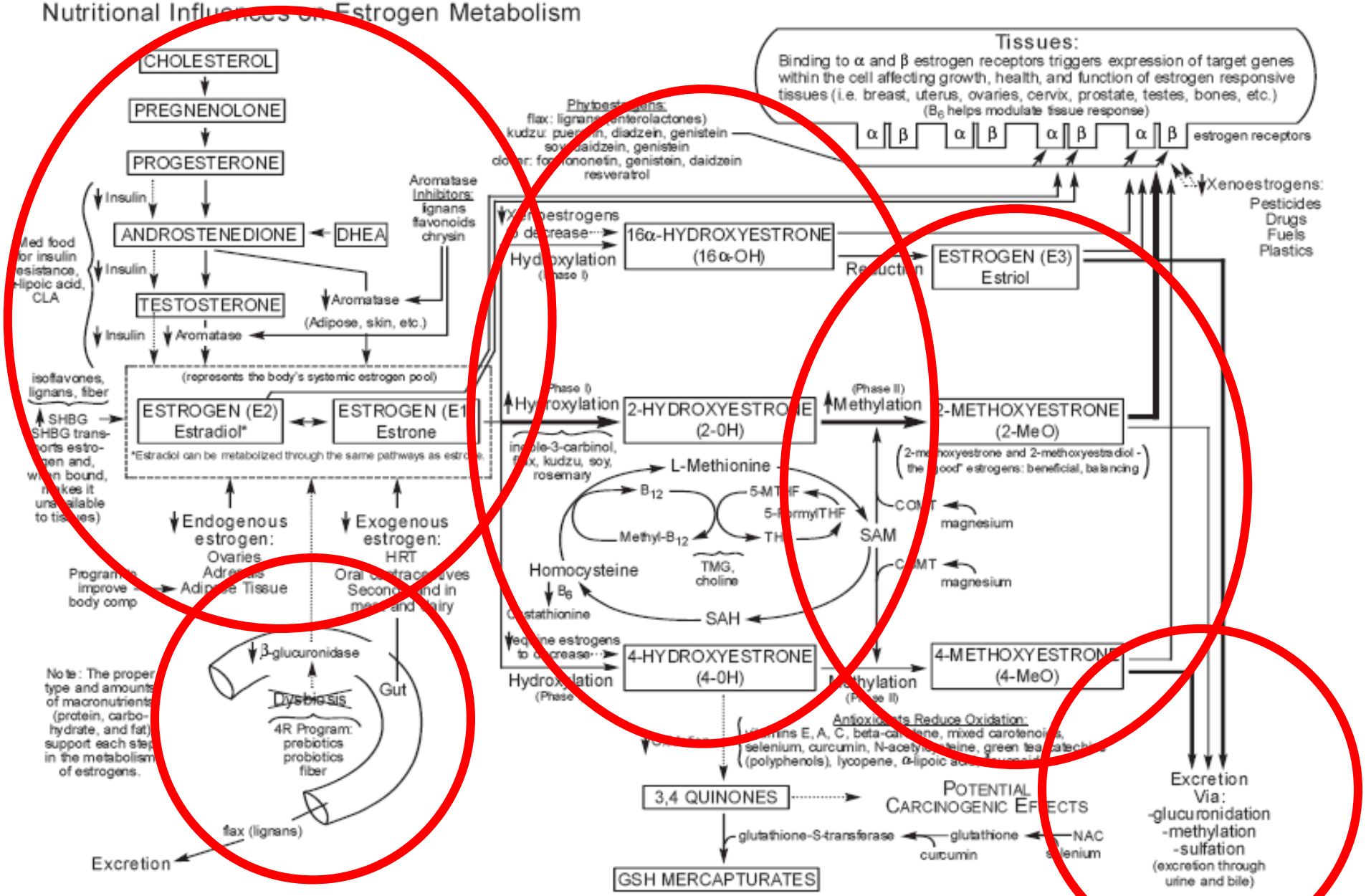
MTR

CYP 1A1

CYP1B1

COMT

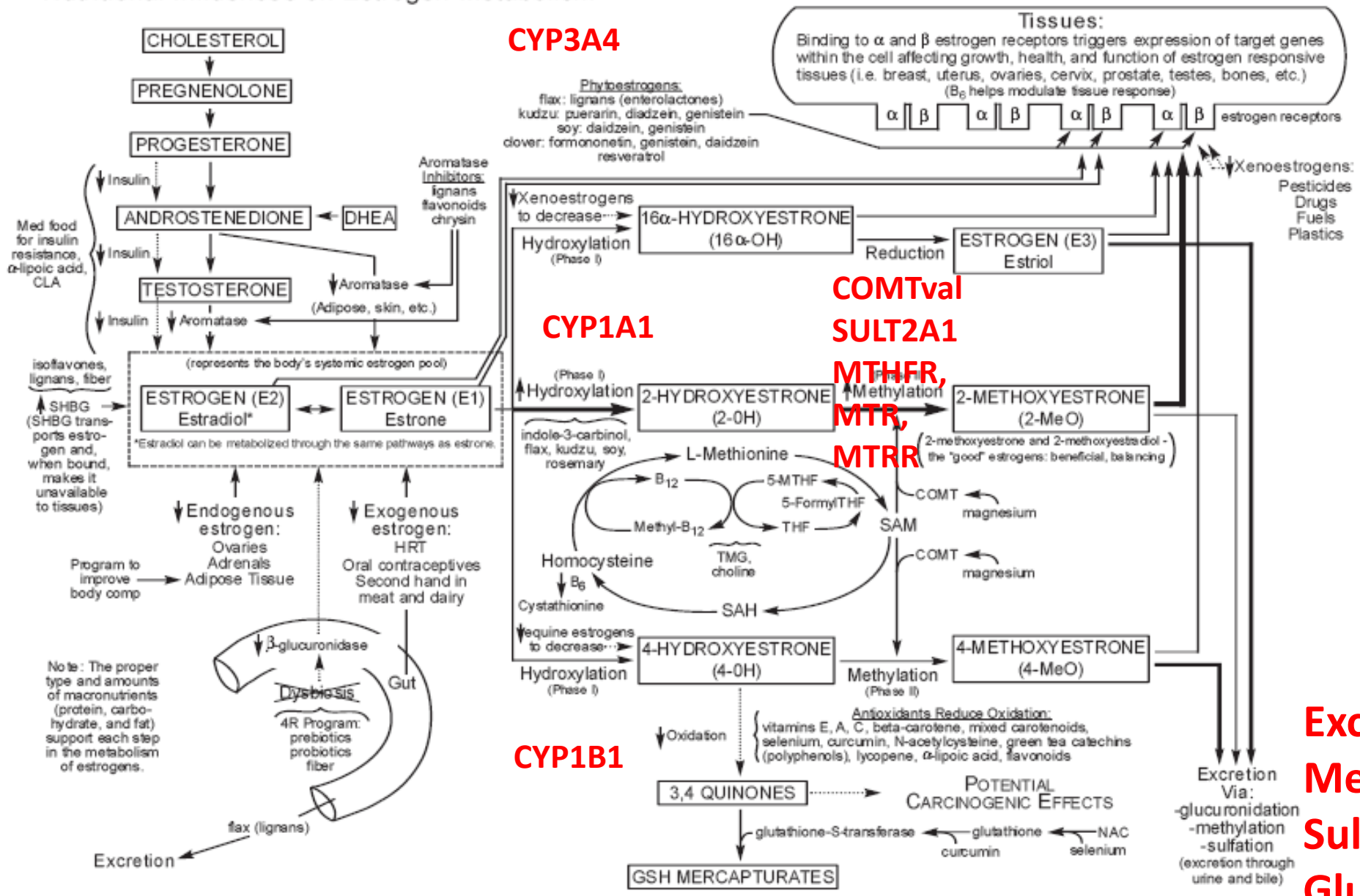
Figure 1.



Acronym Key: CLA: conjugated linoleic acid, COMT: catechol-O-methyltransferase, DHEA: dehydroepiandrosterone, 5-FormylTHF: 5-formyltetrahydrofolate, HRT: hormone replacement therapy, 5-MTHF: 5-methyltetrahydrofolate, NAC: N-acetylcysteine, SAM: S-adenosylmethionine, SAH: S-adenosylhomocysteine, SHBG: sex hormone binding globulin, THF: tetrahydrofolate, TMG: trimethylglycine, GSH: glutathione

Figure 1.

Nutritional Influences on Estrogen Metabolism



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Support Estrogen Detox

Phase I

- Upregulate Cyp1A1 using I3C/DIM
- Flax
- Rosemary
- Kudzu
- Lignans

Phase II

- Support Methylation

1. Methyl Bs with B complex
2. TMG, choline, Mag Glycinate

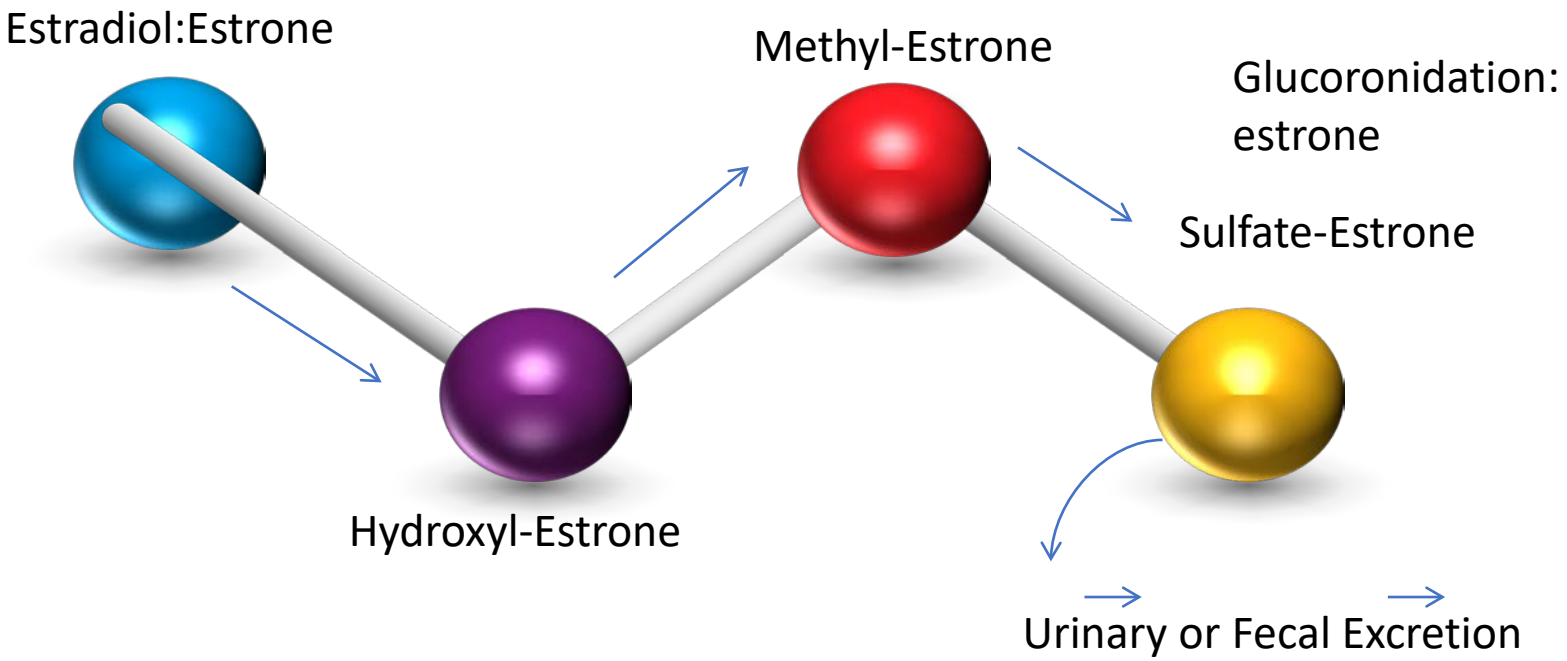
- Support Sulfation

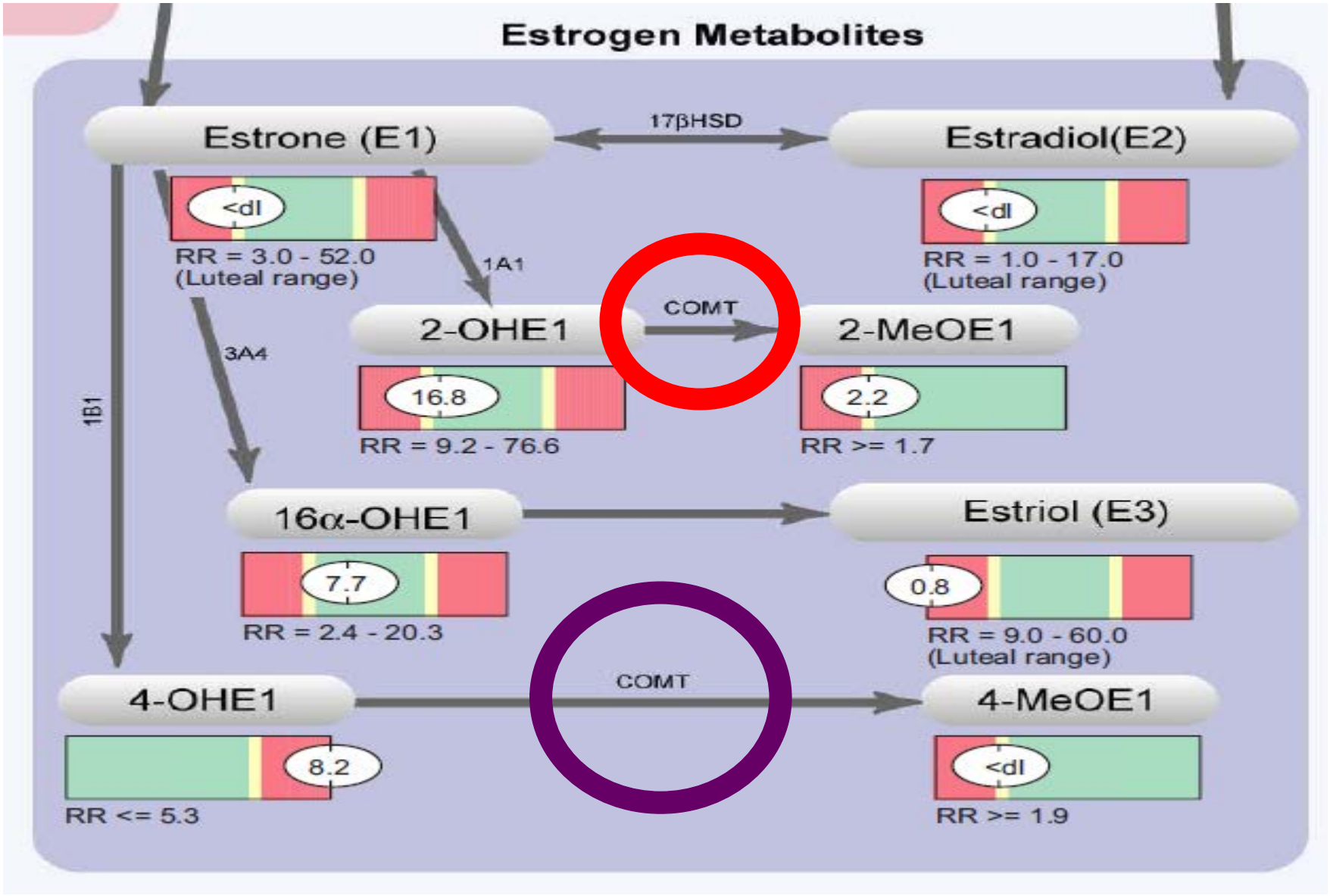
1. Molybdenum, Manganese
2. NAC, B6 as P5P, alkaline H20

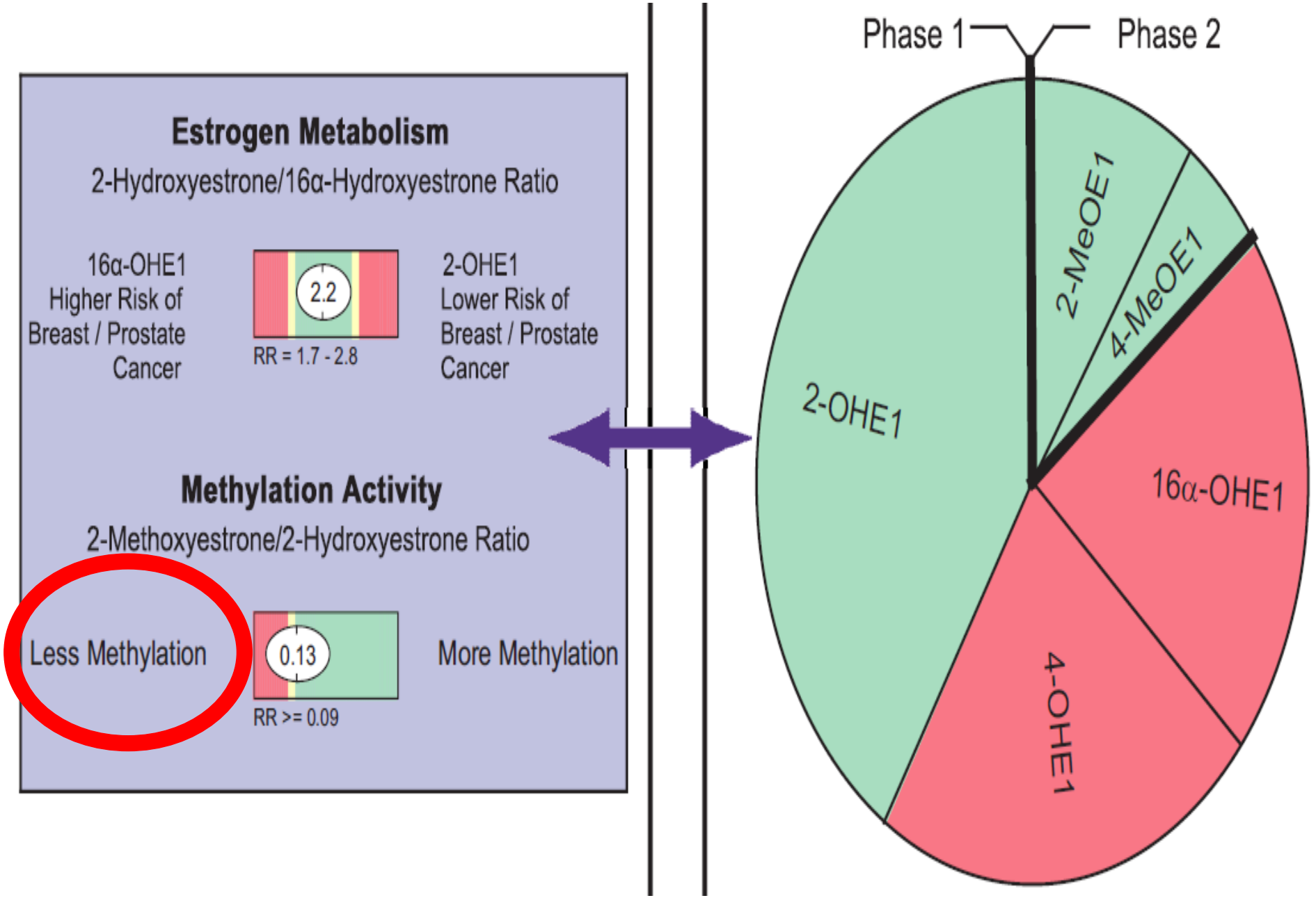
- Support Glucoronidation

1. Calcium D Glucarate

Flow of Estradiol Detoxification:




Estrogen Metabolites
Estrone (E1)
17βHSD
Estradiol(E2)
<dl
RR = 3.0 - 52.0
(Luteal range)
1A1
<dl
RR = 1.0 - 17.0
(Luteal range)
COMT
2-OHE1
2-MeOE1
3A4
16.8
RR = 9.2 - 76.6
2.2
RR >= 1.7
1B1
16α-OHE1
Estriol (E3)
7.7
RR = 2.4 - 20.3
0.8
RR = 9.0 - 60.0
(Luteal range)
COMT
4-OHE1
4-MeOE1
8.2
RR <= 5.3
<dl
RR >= 1.9


Estrogen Metabolism
2-Hydroxyestrone/16α-Hydroxyestrone Ratio
16α-OHE1
Higher Risk of
Breast / Prostate
Cancer
2.2
RR = 1.7 - 2.8
2-OHE1
Lower Risk of
Breast / Prostate
Cancer
Methylation Activity
2-Methoxyestrone/2-Hydroxyestrone Ratio
Less Methylation
0.13
RR >= 0.09
More Methylation
Phase 1
Phase 2
2-MeOE1
4-MeOE1
2-OHE1
16α-OHE1
4-OHE1

Serum Tests to Assess Estrogen Dominance

Baseline Labs Day 21

- Total Estrogen
- Estradiol
- Estrone
- Estrone Sulfate
- Progesterone
- DHEAS
- Total and Free Testosterone
- Thyroid Profile
- AM Cortisol

28 Days Later Comparison Labs

- Total Estrogen
- Estradiol
- Estrone
- Estrone Sulfate
- Progesterone
- DHEAS
- Total and Free Testosterone
- Thyroid Profile
- AM Cortisol


Diet and lifestyle have a *direct impact* on rates of detoxification and hormone balance.