# *What You Need to Know About Female Hormones*

**William Clearfield D.O.**
**F.M.N.M., A.B.A.A.R.M, F.A.A.M.A. , D.A.B.M.A.**
**Clearfield Medical Group**
**9550 S. McCarran Blvd.**
**Reno, NV 89523**
**doctrbil9@gmail.com**
**775-359-1222**

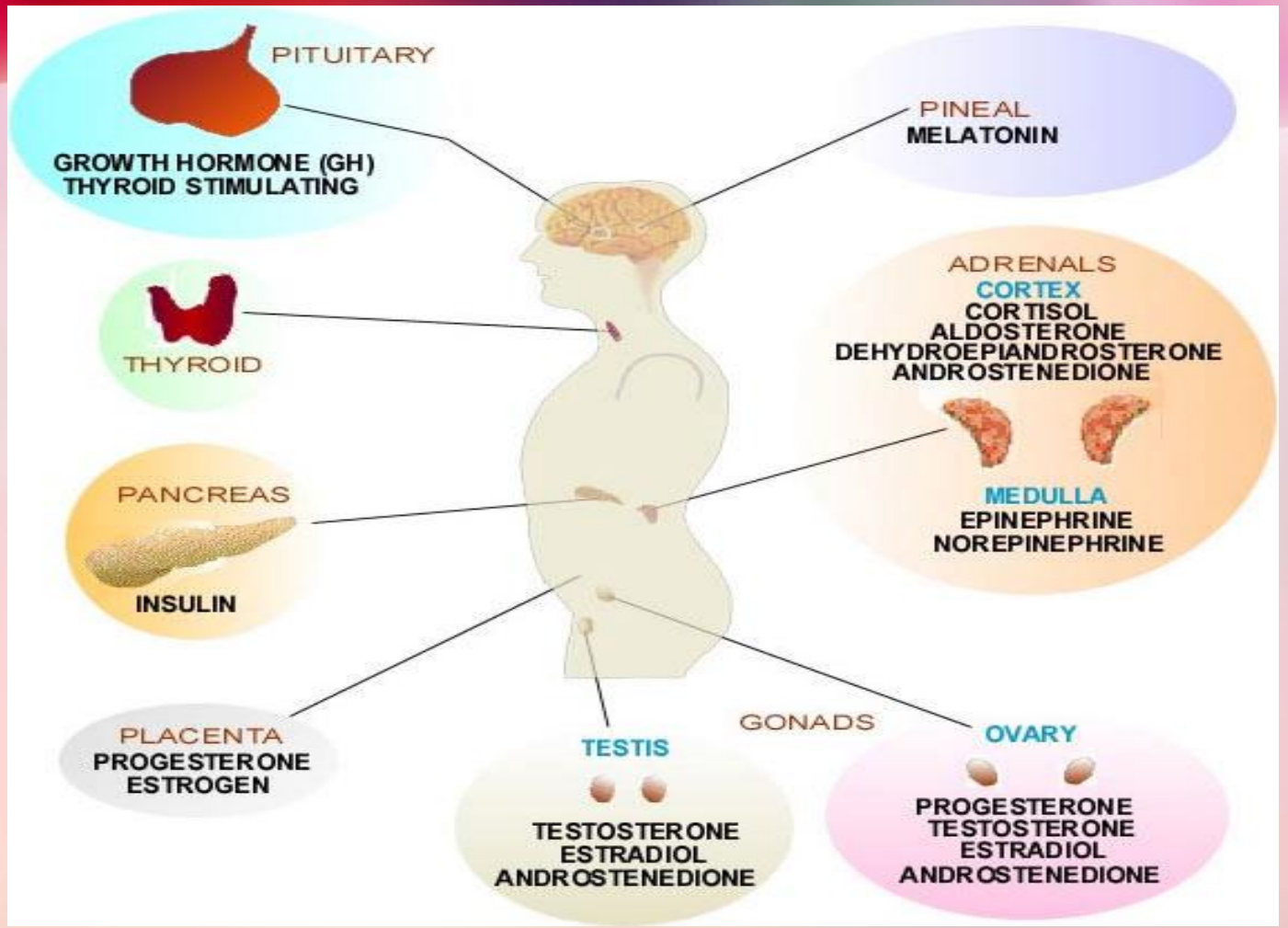
# *Disclosures*

- **The following potential conflict of interest relationships are germane to my presentation:**

**Equipment: None**

- **Speakers Bureau: None**
- **Stock Shareholder: None**
- **Grant/Research Support: None**
- **Consultant: None**
- **Employment: Clearfield Medical Group**
- **Status of FDA devices used for the material being presented: NA/Non-Clinical**
- **Status of off-label use of devices, drugs or other materials that constitute the subject of this presentation: NA/Non-Clinical**

# What is a Hormone?




**Hormones are chemicals produced in the body that carry messages from their organ of origin to specific cells.**

# Everyone Knows Hormones Cause Cancer

So

# Why Fool With Hormones?

**Short Term Symptom Relief**

**Long Term Hormonal Effects**

- **Bone Protection**
- **Memory Preservation**
- **Cardiac Protection**
- **Breast Cancer *Protection***

# 7 Stages Of Menopause

Itchy

Bitchy

Sweaty

Sleepy

Bloated

Forgetful

Psycho

# Why Fool With Hormones?

## Physical Aging

- Upper head (vertex) hair loss
- Thin hair lacking volume

} Sex hormone deficiencies

- Dry eyes — Sex hormone, DHEA deficiencies
- PALE FACE — Sex hormone, oxytocin deficiency
- AGING FACE — IGF-1/GH & Sex hormone deficiencies
- Dry skin — Thyroid, Sex hormone, DHEA, GH deficiencies
- Reduced skin elasticity — Relaxin, GH, Progesterone deficiency

# Which Hormones?

## Major

- Estrogen
- Progesterone
- Testosterone
- Growth Hormone
- Thyroid
- Cortisol
- Insulin

## Minor

- DHEA
- Pregnenolone
- Prolactin

# Which Hormones?

- **Estrogen-**decreases osteoporosis plays a role in protecting the heart, improving memory. Reverses thinning skin and drying membranes (especially vaginal dryness). Treats hot flashes and night sweats.
- **Progesterone-**reverses menopausal symptoms. Aids restful sleep. Protects against traumatic brain injury.
- **Testosterone-**help's maintain muscle and bone strength, restores sex drive and libido. Improves overall feeling of well being, reduces "bad" cholesterol.
- **Thyroid-**Maintains metabolic processes in body. Maintains appropriate levels of blood sugar. Low levels result in high cholesterol and heart disease.

# Which Hormones?

- **Growth Hormone-**reduces body fat, increase muscle mass, prevents cardiovascular disease, improves lung function, and enhances sexual performance, hair re-growth.

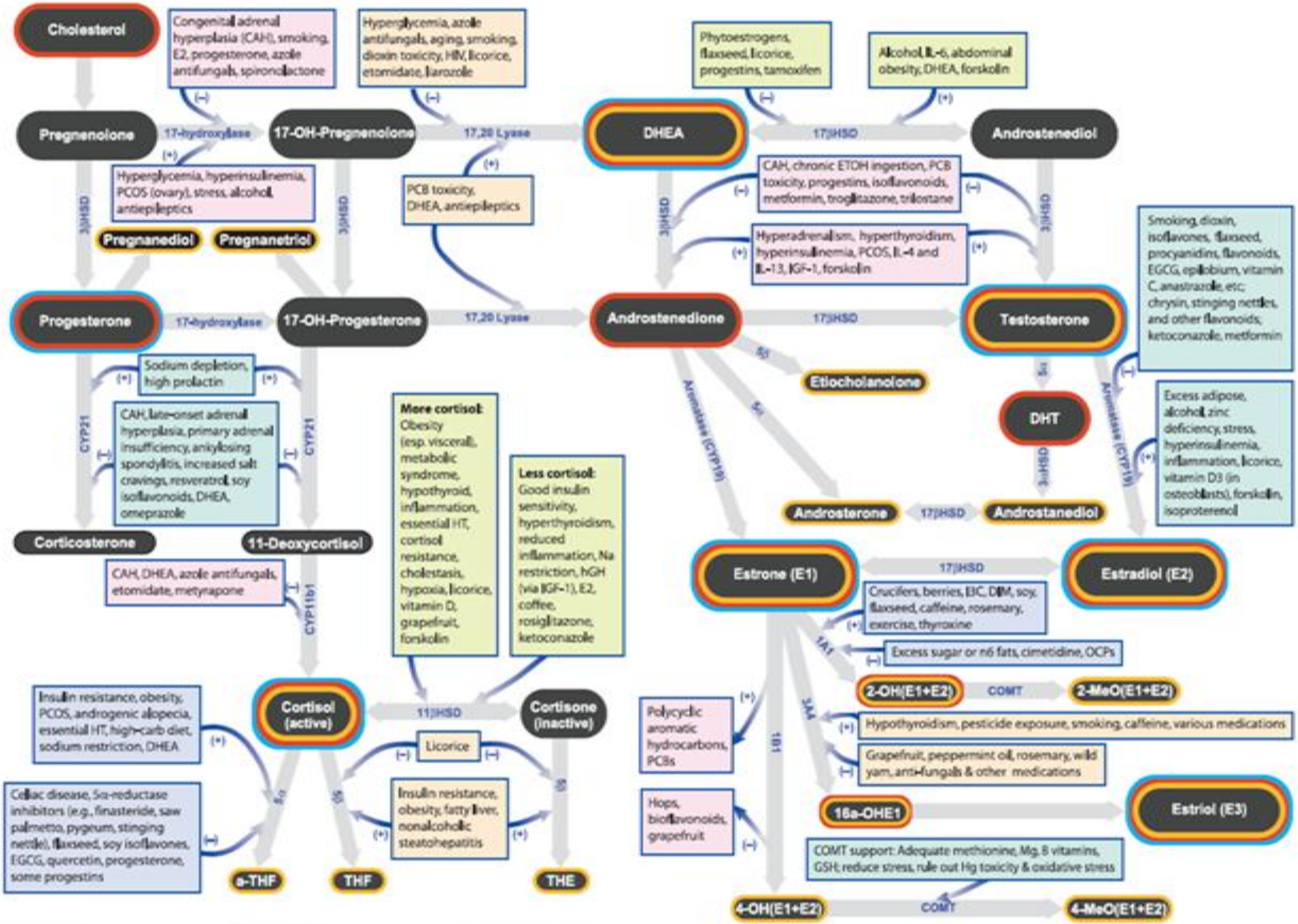
- **Cortisol-**released in response to stress. High stress levels result in chronically high Cortisol levels with significant negative consequences. Frequently abnormal in chronic fatigue states

- **Insulin-**produced in the pancreas, regulates carbohydrate metabolism. Abnormal insulin levels result in blood sugar abnormalities.

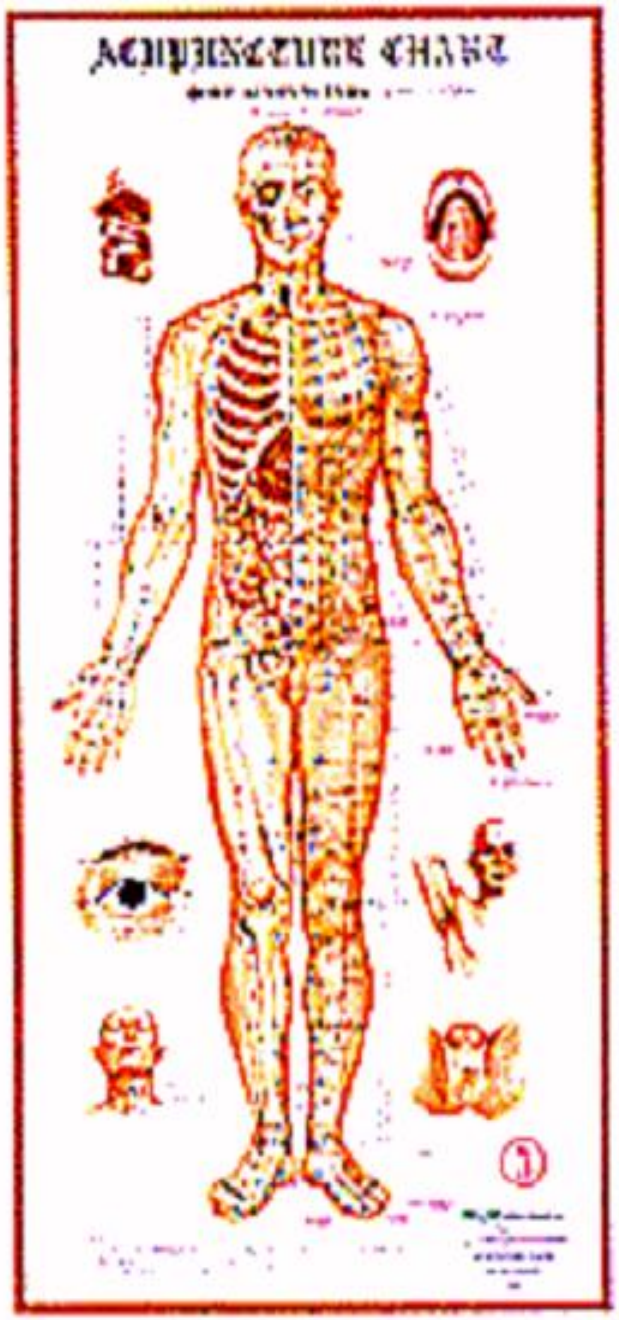
# Which Hormones?

- **DHEA-**regulates estrogen and testosterone, plays a role in bone health and mood disorders. Enhances immune function. Helps prevent diabetes. Facilitates weight loss.
- **Pregnenolone**-aids in stress reduction, memory loss, Alzheimer's disease, fatigue and energy production. Improves immunity.
- **Prolactin-**Milk letdown hormone has 400 functions in body. High levels=Pituitary adenoma until proven otherwise. Low levels=treatment resistant depression/anxiety.

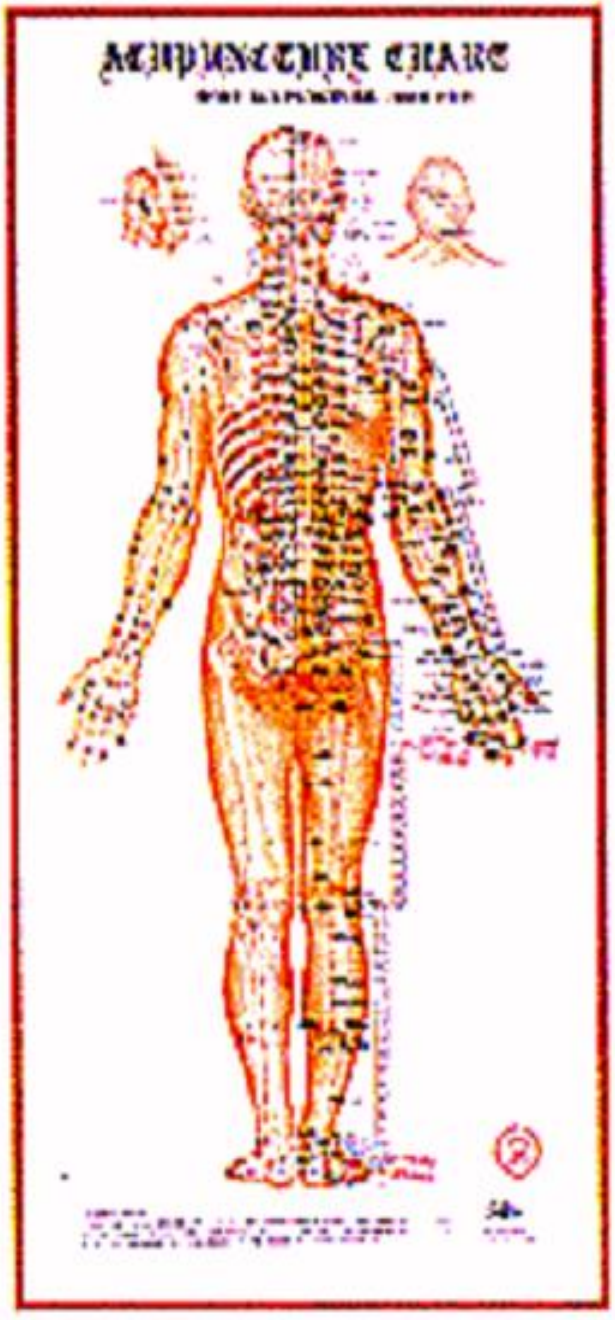
# Steroidogenic Pathways



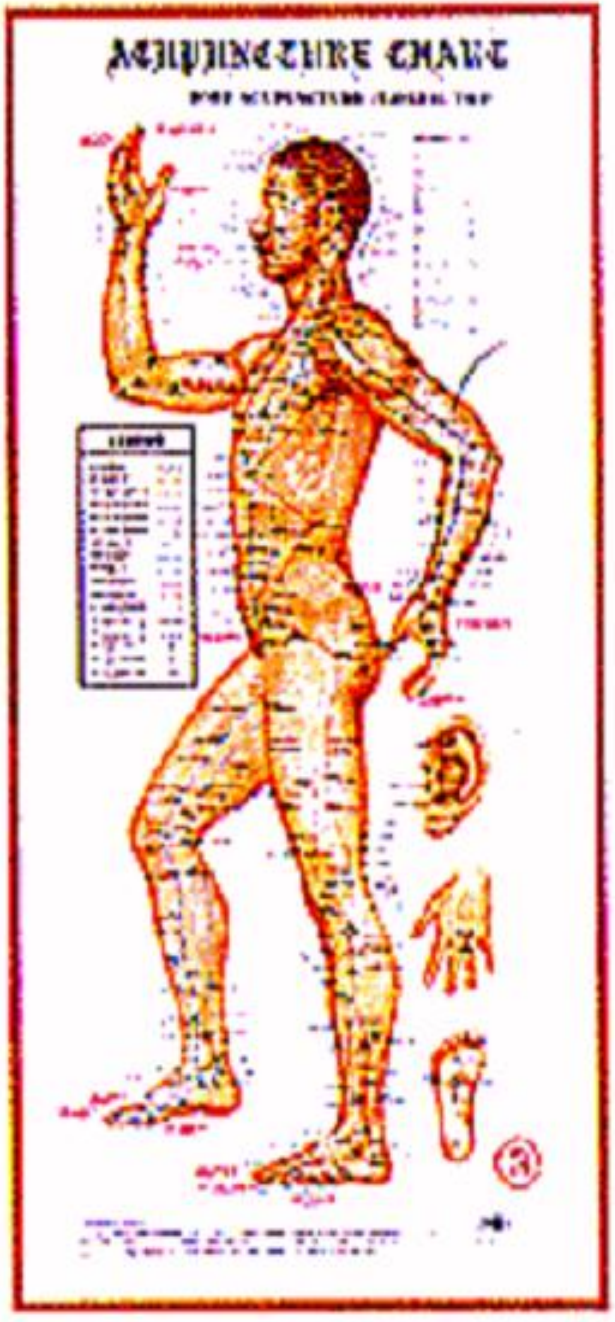
A




B

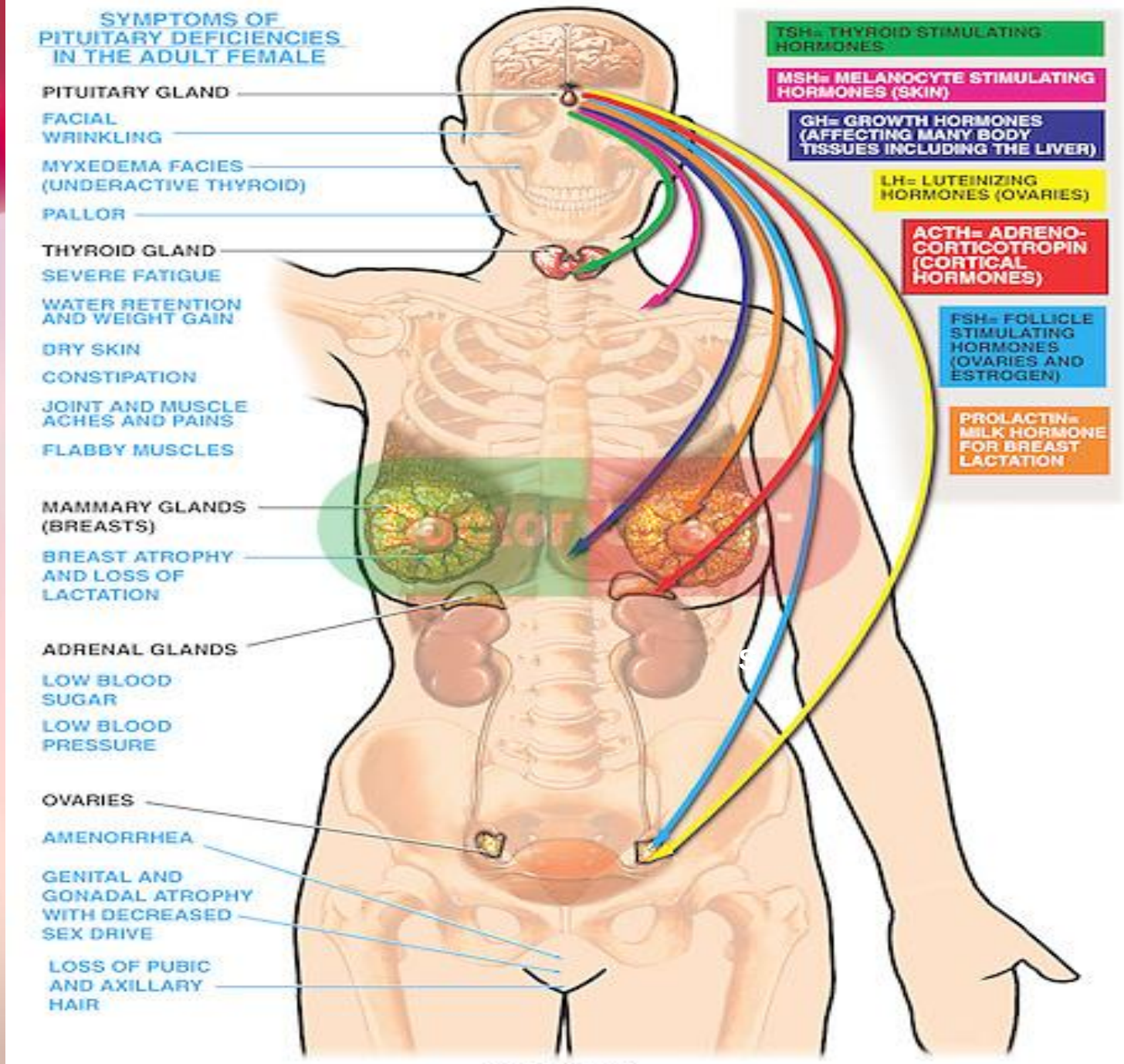



C



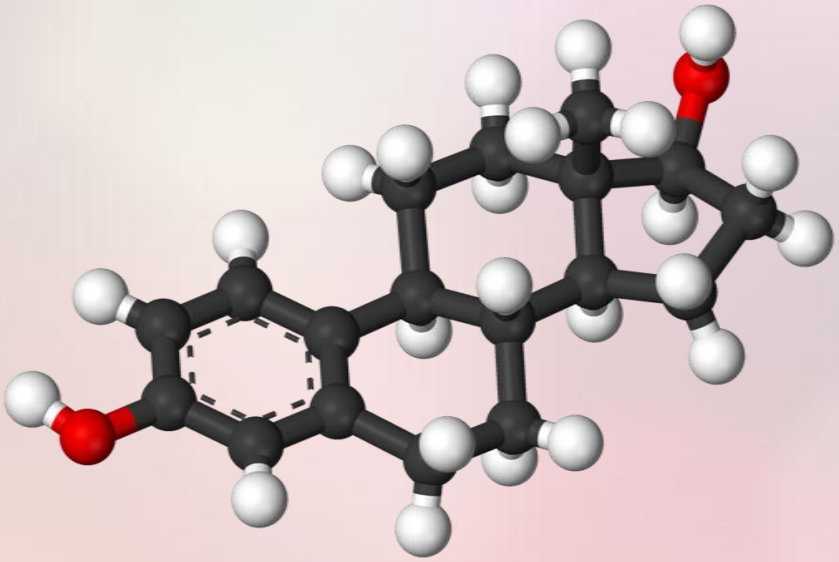
# Short Term Symptom Relief

- Hot Flashes
- Night Sweats
- Brain Fog
- Belly Fat
- Agitation
- Irritability
- Poor Libido
- Headaches
- Insomnia
- Snapping at Others Esp. Close Family Members
- Vaginal Dryness
- Poor Muscle Tone
- Sexual Desire and Fulfillment


SYMPTOMS OF PITUITARY DEFICIENCIES IN THE ADULT FEMALE
PITUITARY GLAND
FACIAL WRINKLING
MYXEDEMA FACIES (UNDERACTIVE THYROID)
PALLOR
THYROID GLAND
SEVERE FATIGUE
WATER RETENTION AND WEIGHT GAIN
DRY SKIN
CONSTIPATION
JOINT AND MUSCLE ACHES AND PAINS
FLABBY MUSCLES
MAMMARY GLANDS (BREASTS)
BREAST ATROPHY AND LOSS OF LACTATION
ADRENAL GLANDS
LOW BLOOD SUGAR
LOW BLOOD PRESSURE
OVARIES
AMENORRHEA
GENITAL AND GONADAL ATROPHY WITH DECREASED SEX DRIVE
LOSS OF PUBIC AND AXILLARY HAIR
TSH= THYROID STIMULATING HORMONES
MSH= MELANOCYTE STIMULATING HORMONES (SKIN)
GH= GROWTH HORMONES (AFFECTING MANY BODY TISSUES INCLUDING THE LIVER)
LH= LUTEINIZING HORMONES (OVARIES)
ACTH= ADRENO-CORTICOTROPIN (CORTICAL HORMONES)
FSH= FOLLICLE STIMULATING HORMONES (OVARIES AND ESTROGEN)
PROLACTIN= MILK HORMONE FOR BREAST LACTATION

# Estrogen

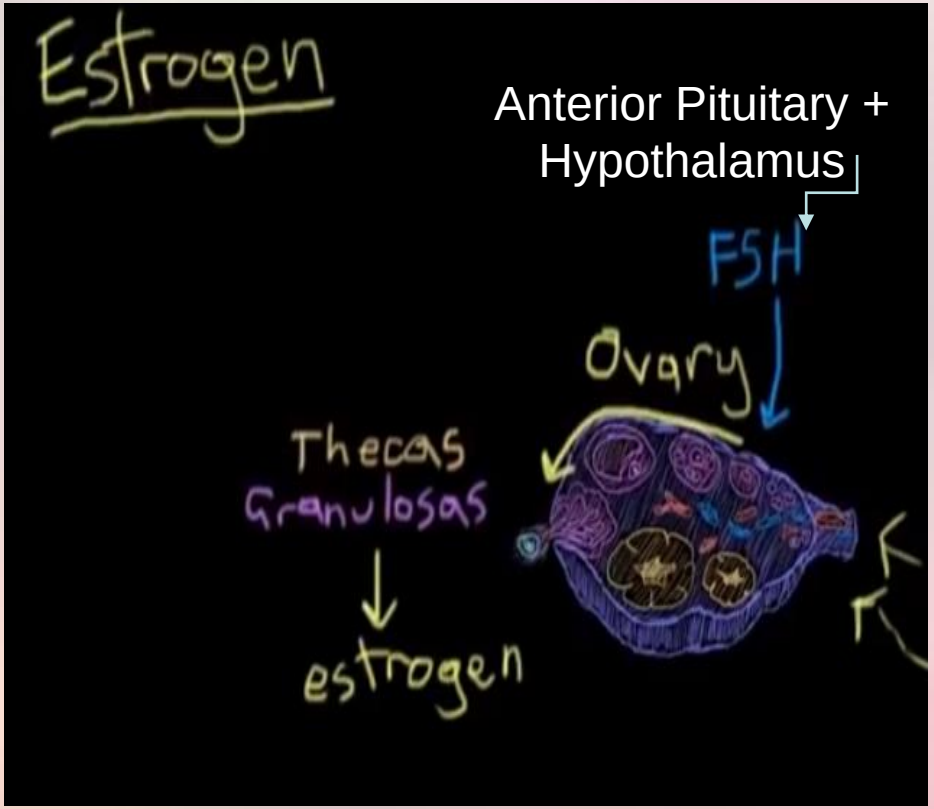
- **Major Female Sex Hormone**
  - **Produced In:**
    - **Ovaries *** (*Majority*)**
    - **Placenta (when Pregnant)**
    - **Adrenal Glands**
    - **Breast**
    - **Fat Cells**



# Estrogen Synthesis

- **Anterior Pituitary**
  - **FSH**
    - **Ovaries**
      - **Theca Cell**
      - **Granulosa Cell**

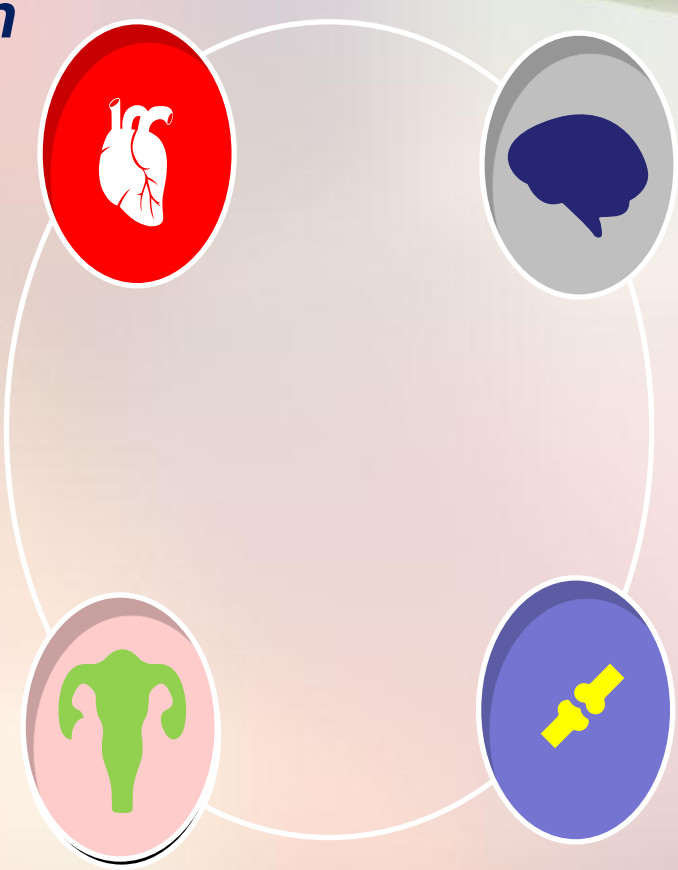
        » **ESTROGEN**



# Estrogen Has 400 Functions Increases:

## Heart/Circulation

- Metabolic Rate
- Artery Size
- Blood Flow to Brain
- HDL



## Neuro Effects

- Mood
- Energy
- Neurotransmitters
- Memory, Cognition
- Reasoning
- Anti-Psychotic
- Protective in TBI

## Reproductive System

- Libido
- Sexual Performance
- Preparation for Pregnancy
- Breast Growth/Density

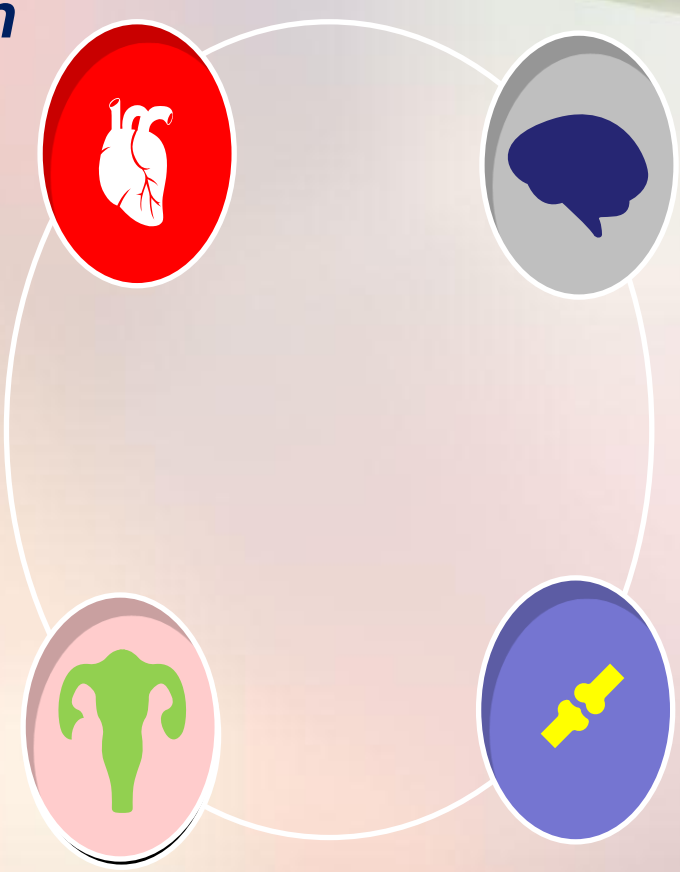
## Miscellaneous

- Bone Density
- Insulin Sensitivity
- Skin Thickness

# Estrogen Has 400 Functions
# Decreases:

## Heart/Circulation

Carotid Arterial Plaque
Blood Pressure
Homocysteine
LDL
Heart Dx Risk 40-50%



## Neuro Effects

Depression
Anxiety
Irritability
Pain Sensitivity
Alzheimer's beta amyloid peptides
Risk of PTSD

## Reproductive System

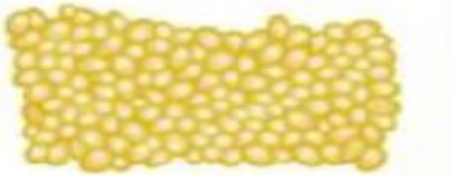
Sexual Dysmorphia
Vaginal Dryness

## Miscellaneous

Tooth Loss
Colon Cancer
Wrinkles

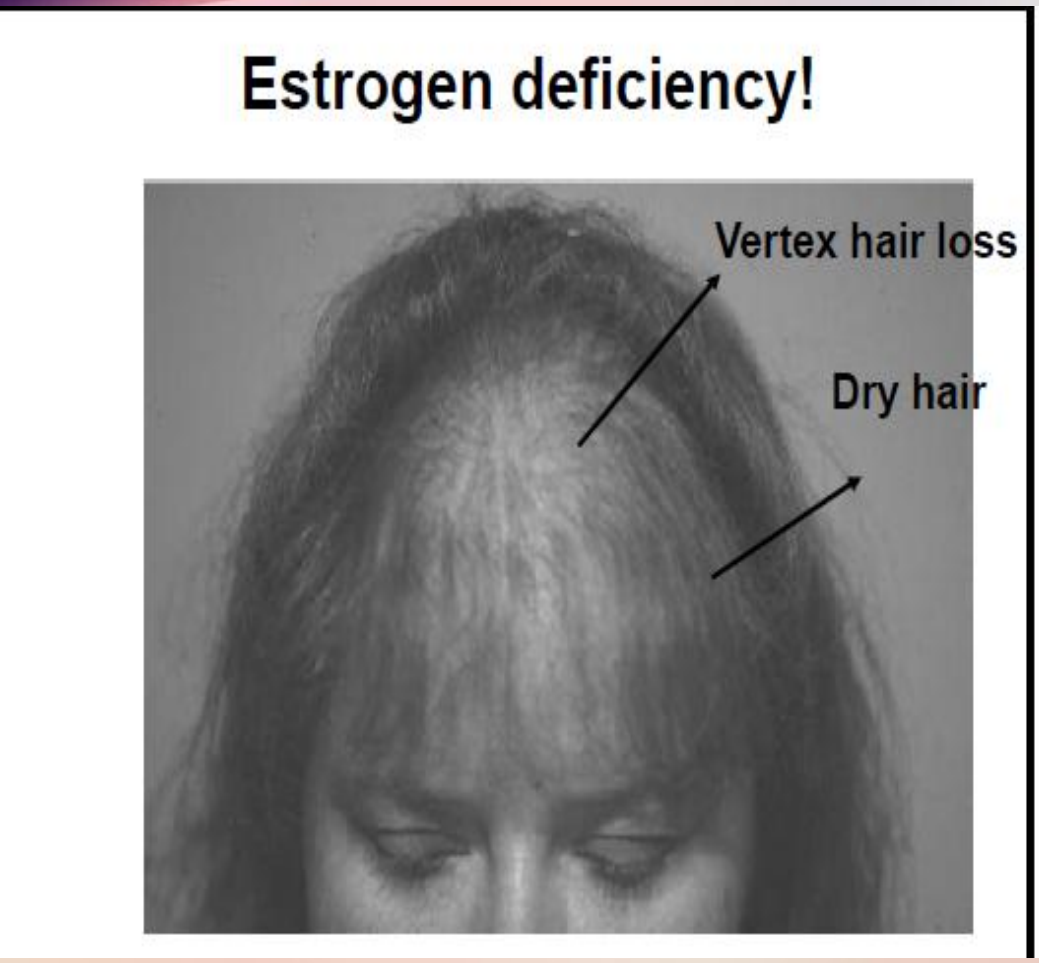
# Symptoms of Low Estrogen

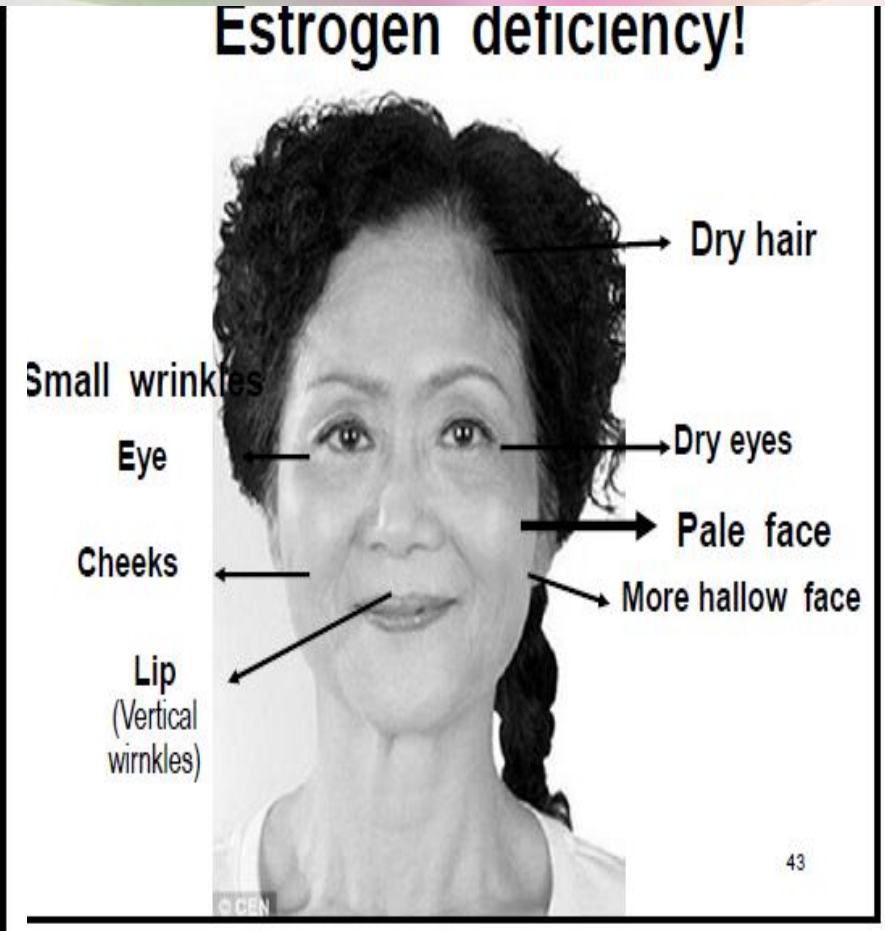
Irregular or missed periods
Mood swings
Hot flashes
Tenderness of breasts
Headaches or worsening of migraines
Depression
Fatigue
Trouble concentrating
Decrease or absence of libido
Pain during intercourse
Lack of vaginal lubrication
Vaginal loosening



| Estrogen action | Estrogen deficiency/resistance |
| --- | --- |
| Energy balance | Obesity |
| Adipose health | Obesity<br>Adipose inflammation<br>Altered secretory profile |
| β-cell function<br>Survival | β-cell dysfunction<br>Type 2 diabetes |
| Insulin sensitivity<br>Lipid homeostasis | Insulin resistance<br>Fatty liver |
| Insulin sensitivity<br>Energy homeostasis | Insulin resistance<br>Impaired glucose homeostasis |
| Macrophage polarization | Inflammation<br>Adiposity<br>Atherosclerosis |

# Estrogen Deficiency: Physical S/S

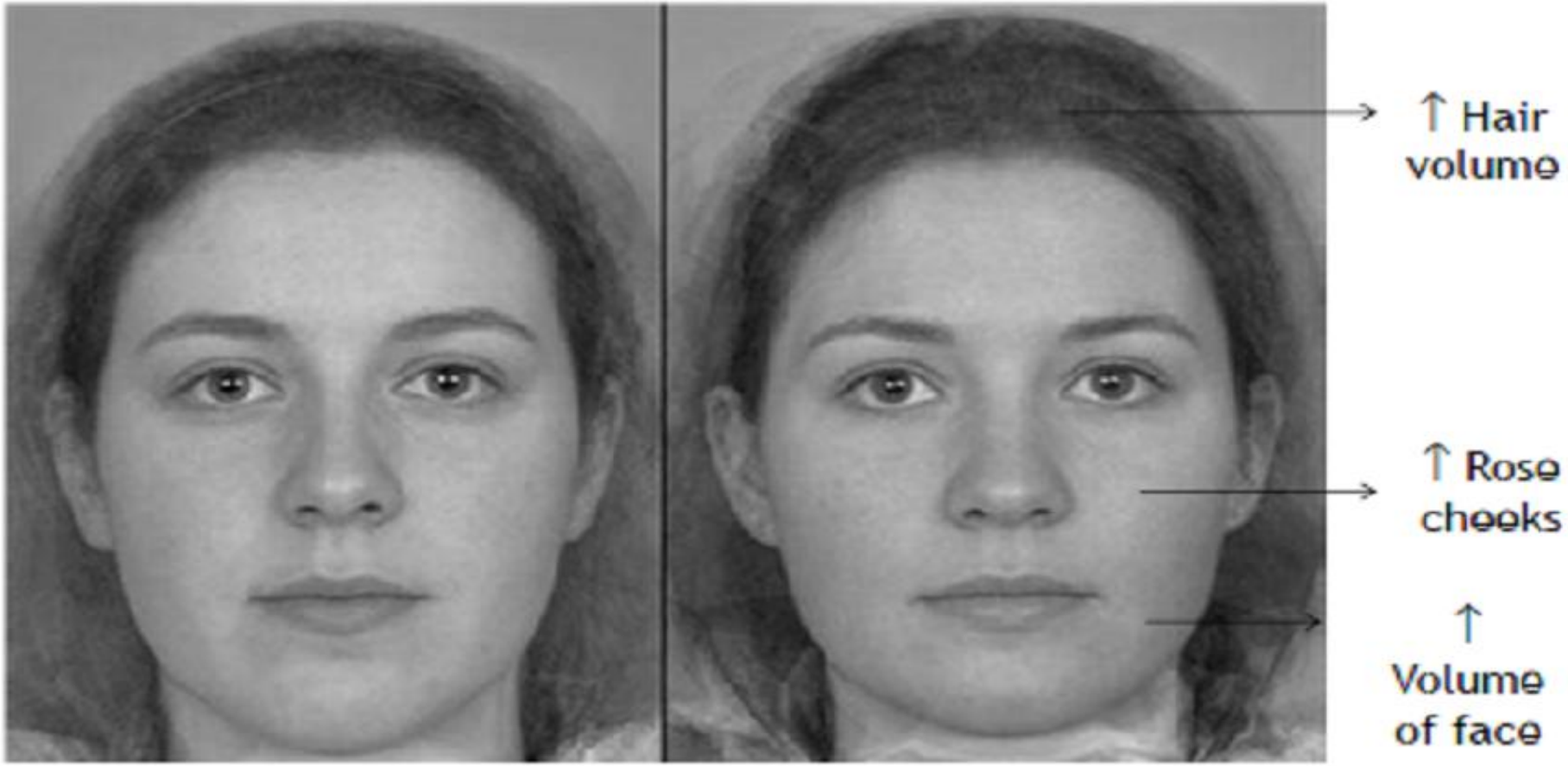


# Estrogen Deficiency: Physical S/S

# Estrogen Replenishment

Research at the University of St. Andrews



# Symptoms of Estrogen Dominance

Endometriosis

PMS

Irregular Periods

Fibroids & Ovarian Cysts

Cellulite

Breast Lumps

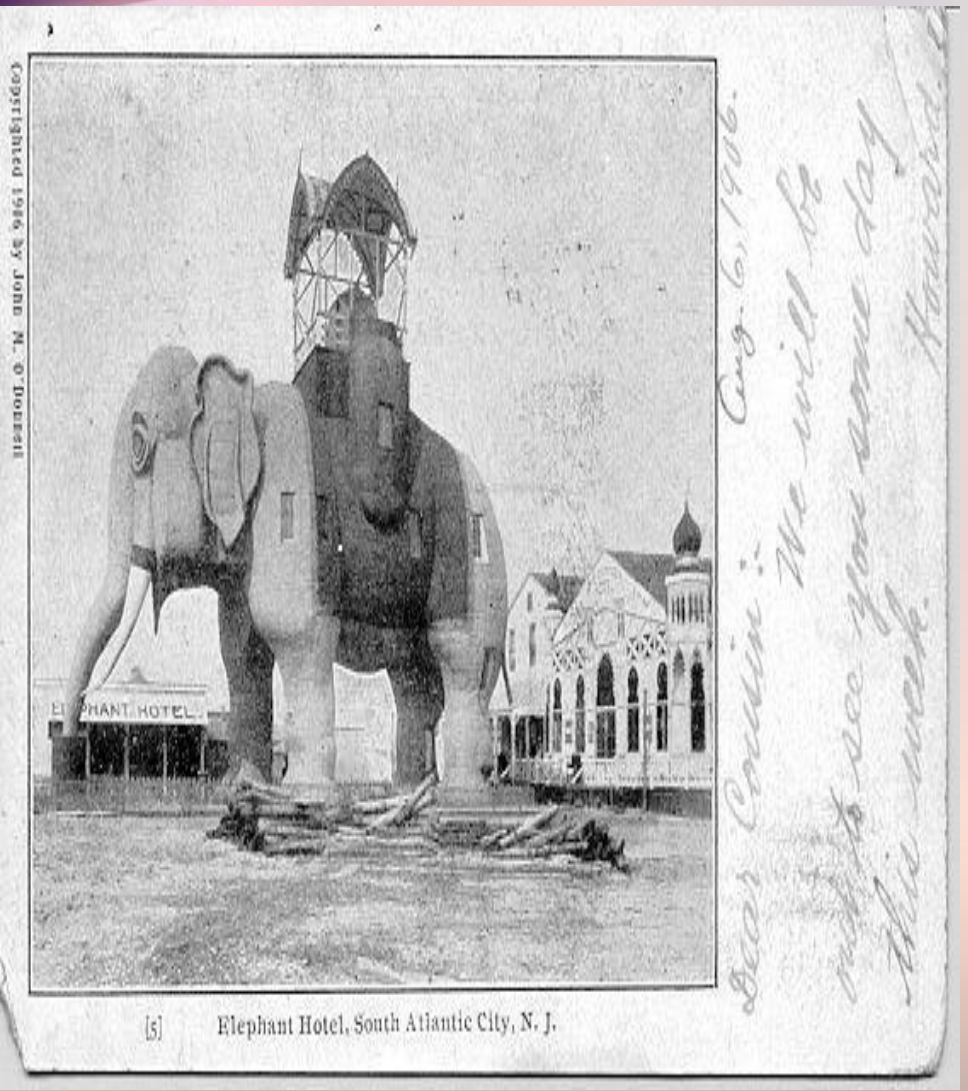
Infertility

Thyroid Nodules

- PMS Symptoms
- Endometriosis
- Infertility
- Hot Flashes
- Fatigue
- Cervical Dysplasia
- Decreased Libido
- Weight Gain
- Menstrual Cramping
- Headaches
- Uterine Fibroids
- Fibrocystic Breasts
- Excessive Menstruation
- Depression
- Thyroid Problems
- Cancer (Breast, Uterine, Ovarian, Prostate & Colon)

**Cysts!**

# The Elephant In the Room: Estrogen Causes Cancer




# Conclusion: Hormones Increase Cancer Risk!

**Hormone Related Cancer Occurs Mostly After The Age of 5O**

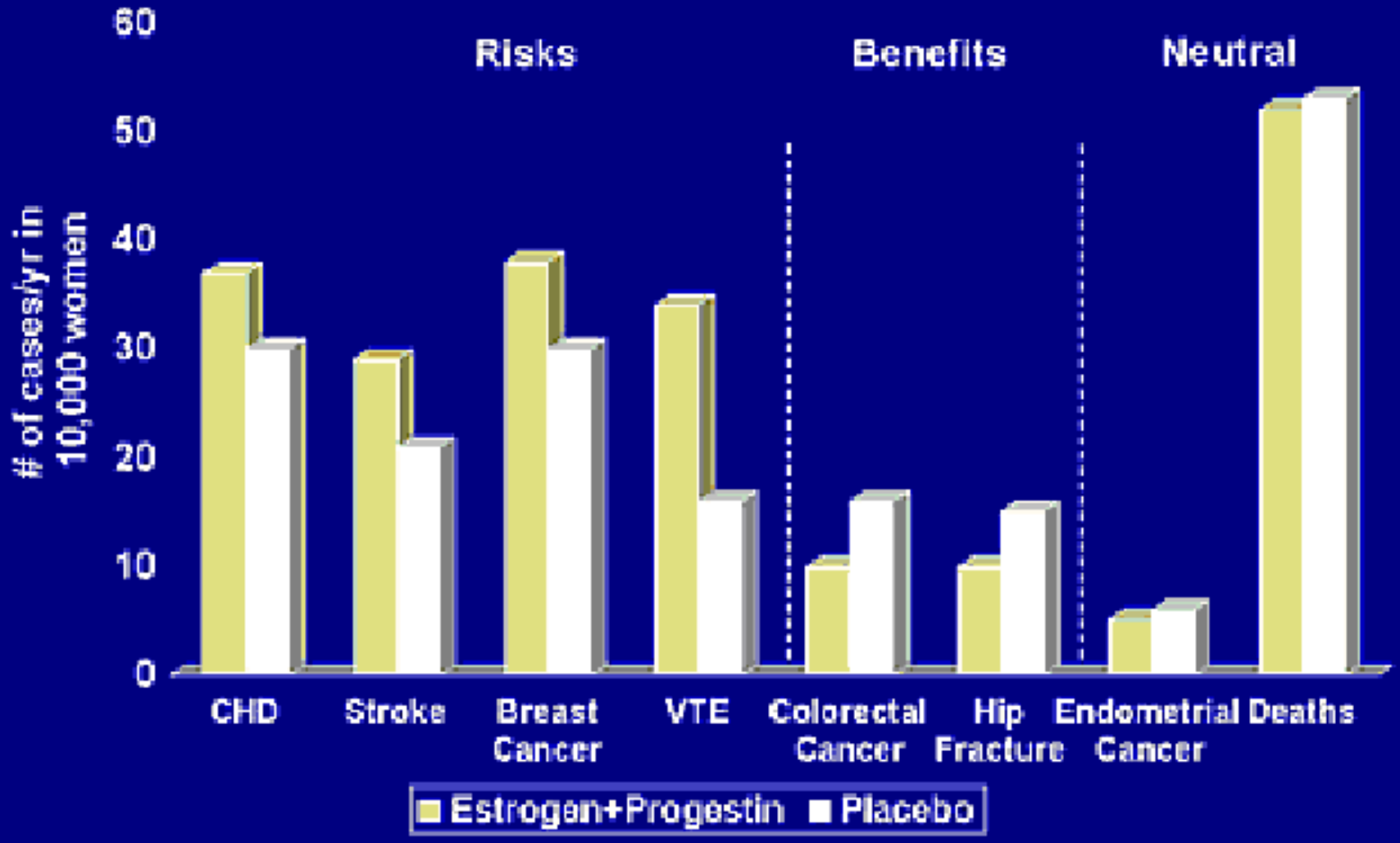
**If Hormones Case Cancer, Why Don't Young Women Who Produce Large Quantities of Estrogen and Progesterone,**

**On Average, Get Cancer?**

# 2002 WHI Study—"HRT" is Dangerous!

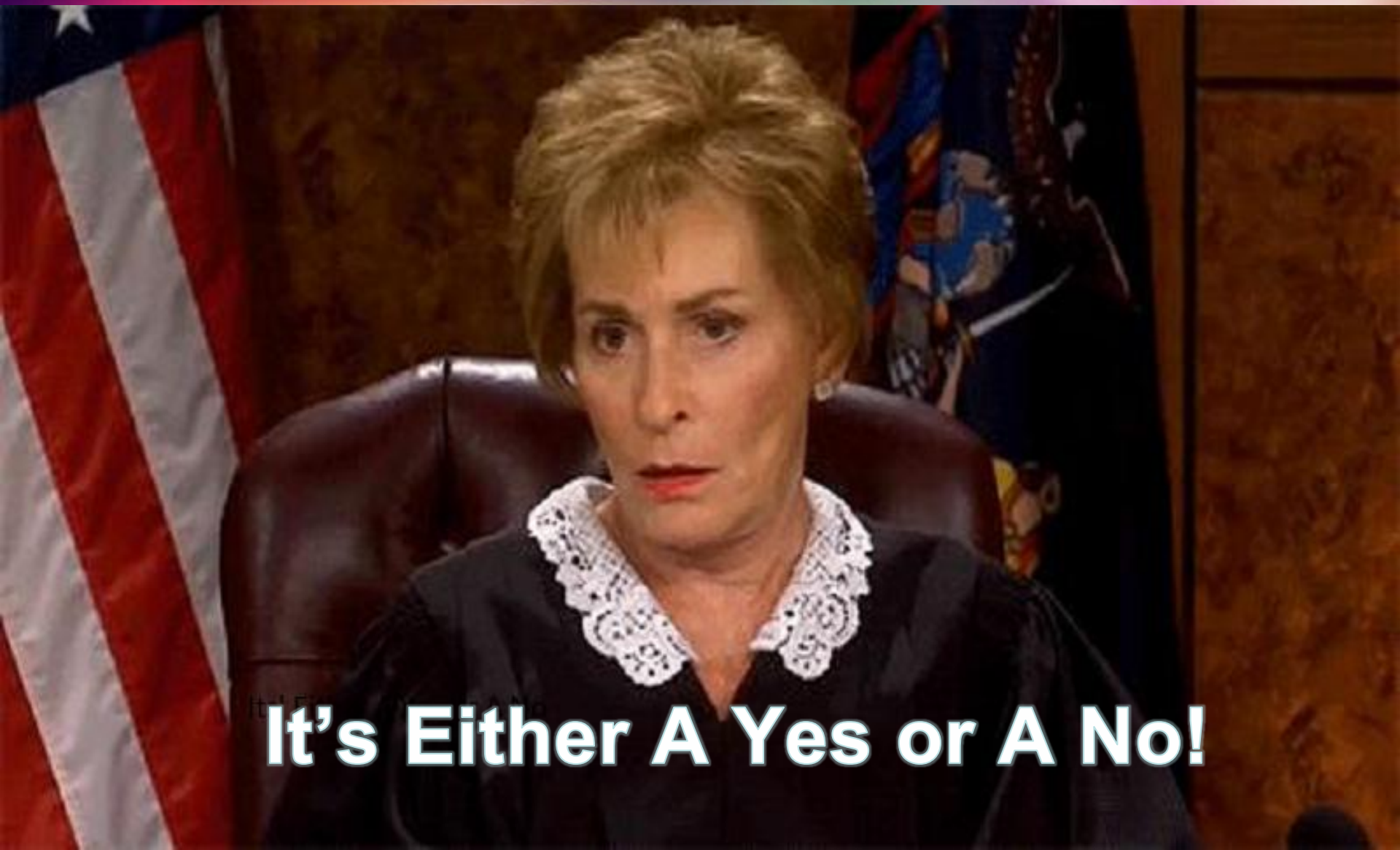
- Premarin® alone given to older postmenopausal women caused adverse effects in the **first year** (strokes, blood clots)
  - Oral estrogens cause blood clots, transdermal estradiol does not
- Adding Provera® (Prempro®) caused more adverse effects (breast cancers, heart attacks, dementia)
  - Provera increases breast cancer and vascular inflammation. Progesterone does neither.
- Thousands of lawsuits pending; drug companies running a legal-protection propaganda campaign to paint all "hormones" as equally dangerous!

# WHI Estrogen+Progestin Trial Summary of Disease Rates



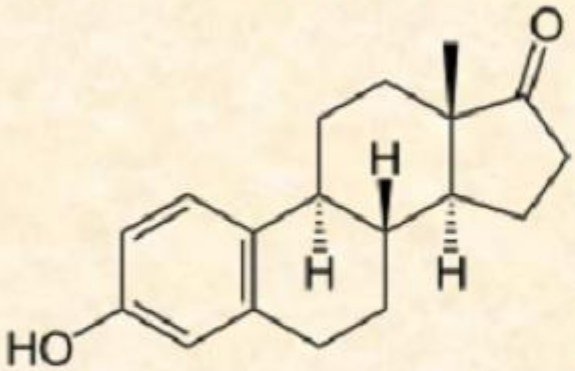

Writing Group for the Women's Health Initiative. *JAMA*. 2002;288:321-333.

# Conclusion: Hormones Increase Cancer Risk!



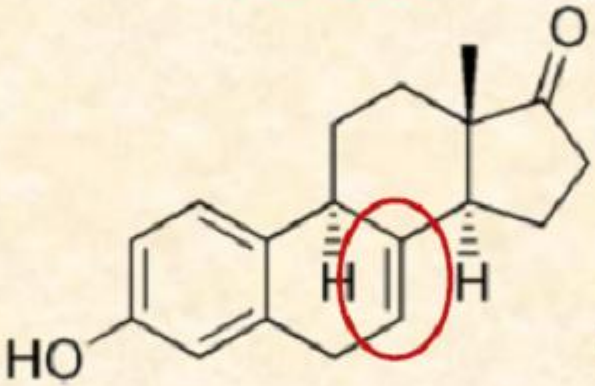
# Premarin®
## Conjugated Equine Estrogens

Human



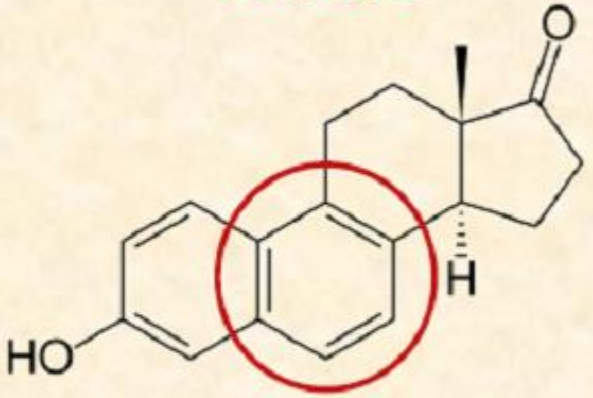

Estrone

Horse




Equilin

Horse

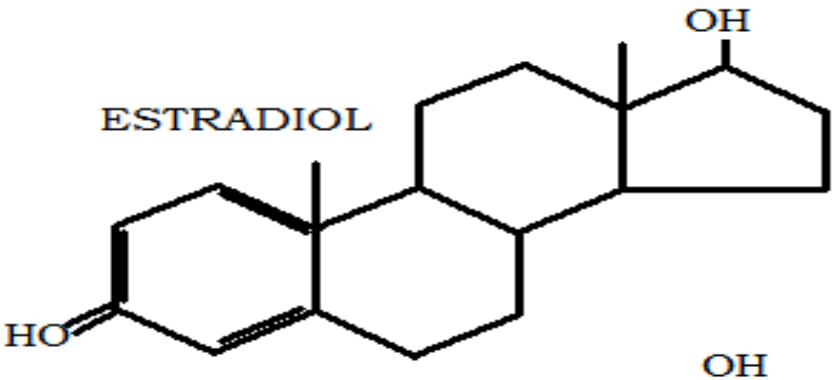


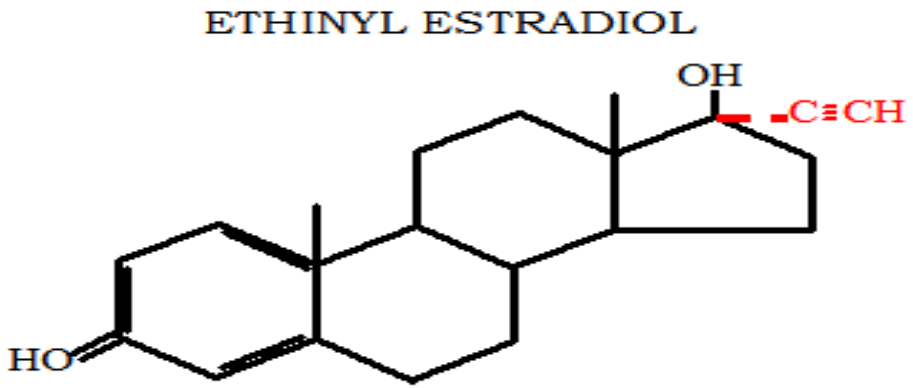

Equilenin

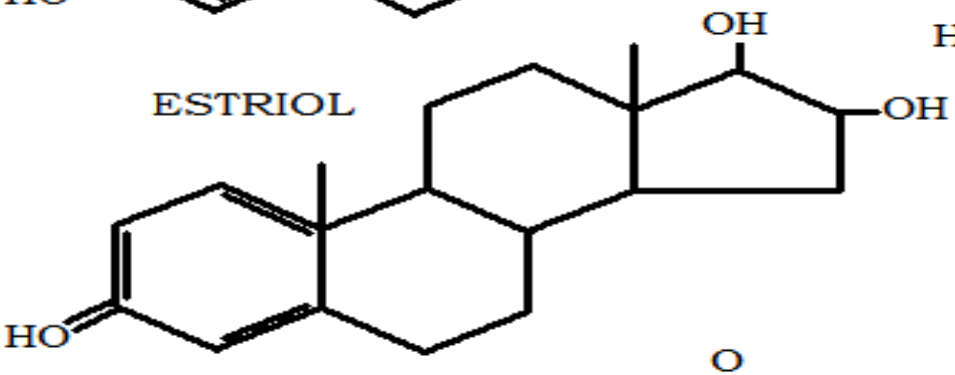
CEE contains at least 10 estrogens, only 3 are human; also contains horse androgens and progestins.

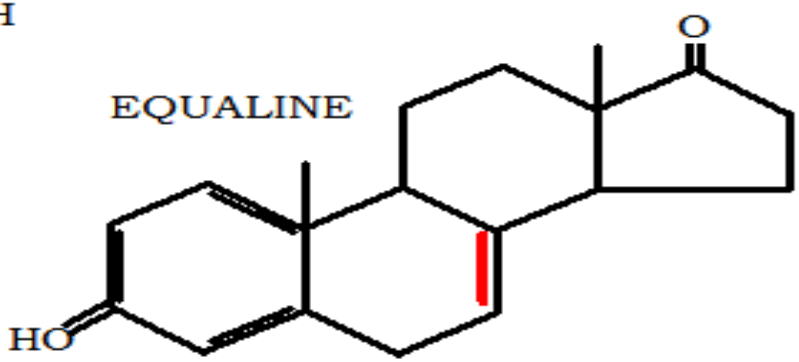
Klein R The Composition of Premarin. 1998 Int J Fertil 43:223

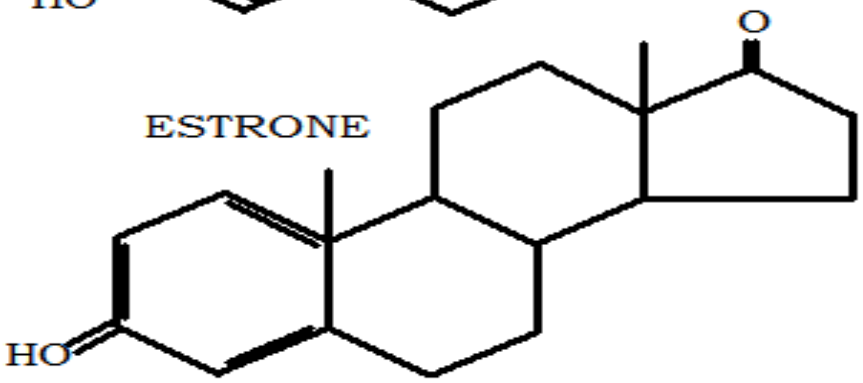
# Estrogen(s)


ESTRADIOL
OH
HO


ETHINYL ESTRADIOL
OH
-C≡CH
HO


ESTRIOL
OH
OH
HO


EQUALINE
O
HO


ESTRONE
O
HO

# Natural Vs. Synthetic Estrogen

## “Natural” Estrogen

- **Defined as the same chemical structure that the patient is born with.**
- **It may or may not come from a plant.**
- **Natural estrogen helps to protect against endothelial dysfunction by increasing endothelial nitric oxide.**
- **Protects against heart disease, dementia, osteoporosis**
- **Improves insulin sensitivity**

# Natural Vs. Synthetic Estrogen

## “Natural” Estrogen

- **Eliminates hot flashes**
- **Restores mood**
- **Maintains thickness, fullness of skin and hair**
- **Maintains genital/pelvic health**
- **Protects against colon cancer and macular degeneration**

# Natural Vs. Synthetic Estrogen

**“Natural” Estrogen**

- **Transdermal E2 does not increase risk of VTE like oral E2**
- **Cardioprotective, decreased risk of AMI**
- **Decreased risk of T2DM**
- **Internal Carotid Artery lumen widens by 224% when patient administered Estradiol > 6 months.**

Jonas HA et al, Ann Epidemiol, 1996, 6 (4) : 314-23

Mueck AO. Et al. Postmenopausal hormone replacement therapy and cardiovascular disease: the value of transdermal estradiol and micronized progesterone. Climacteric. 2012 Apr;15 Suppl 1:11-7

# Natural Vs. Synthetic Estrogen

## Synthetic Estrogen

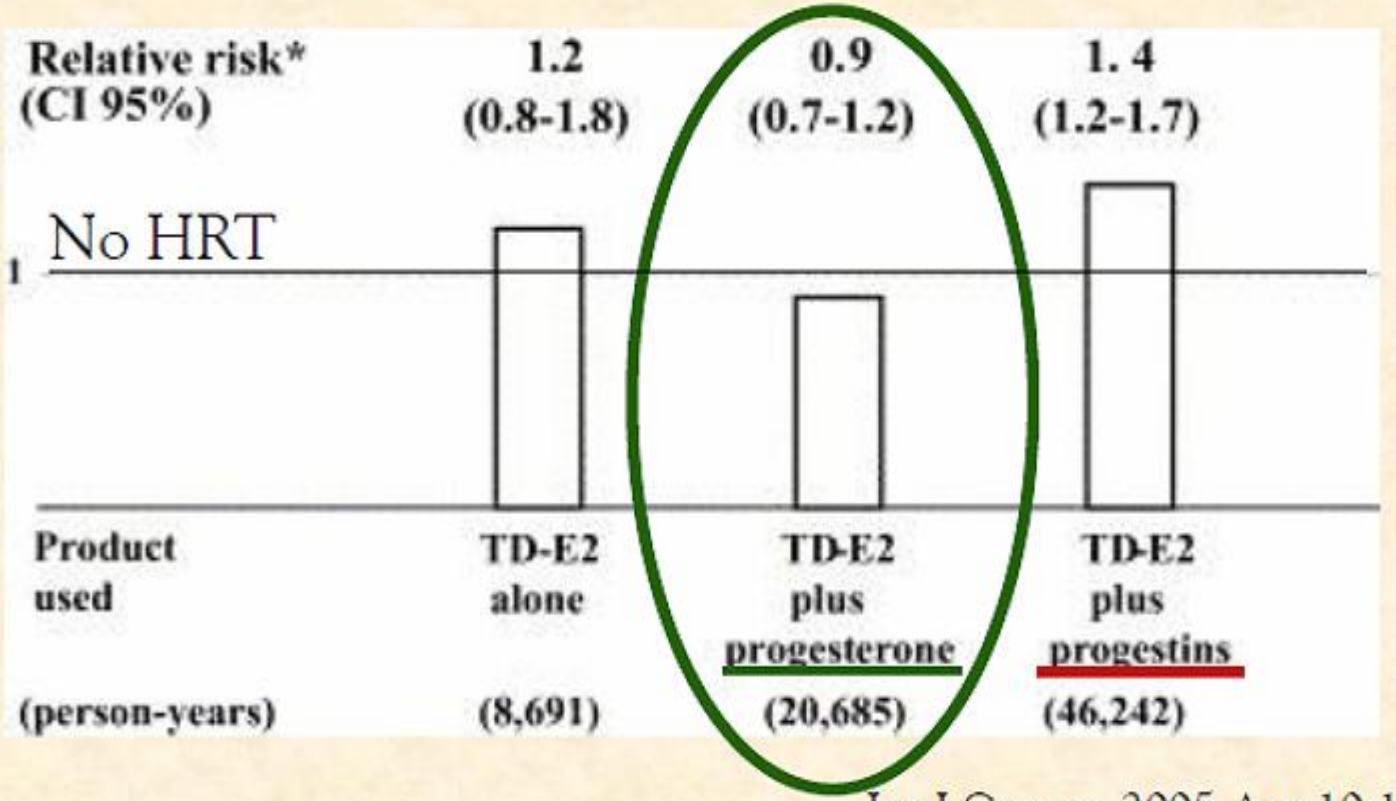
- **Synthetic estrogen increases blood pressure, triglycerides**

- **Increased risk of breast cancer by 8 per 10,000 cases per year**

# E3N-EPIC Study

Cohort study
55,000 women
8 years f/u
c/w WHI--
16,000, 6 yr. f/u

TD-E2 = transdermal estradiol



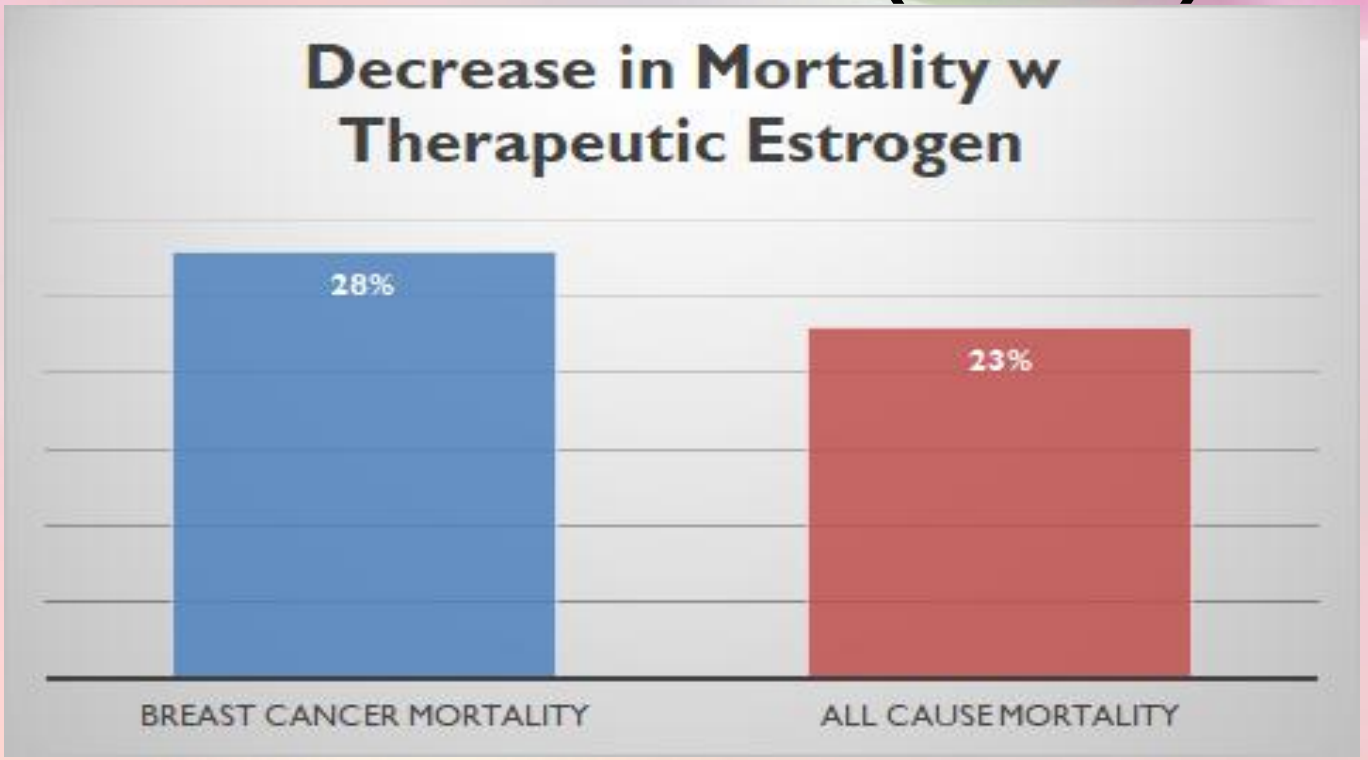

Int J Cancer. 2005 Apr 10;114(3):448-54

**E2 plus progesterone: no increased risk of breast cancer!**

*Similar study: estradiol + progesterone 0.4; estradiol + synthetic progestin 0.94*
Espié, Gynecol Endocrinol. 2007 Jul;23(7):391-7.

# Natural Vs. Synthetic Estrogen

## 23, 000 women treated with (Natural) E2/E3



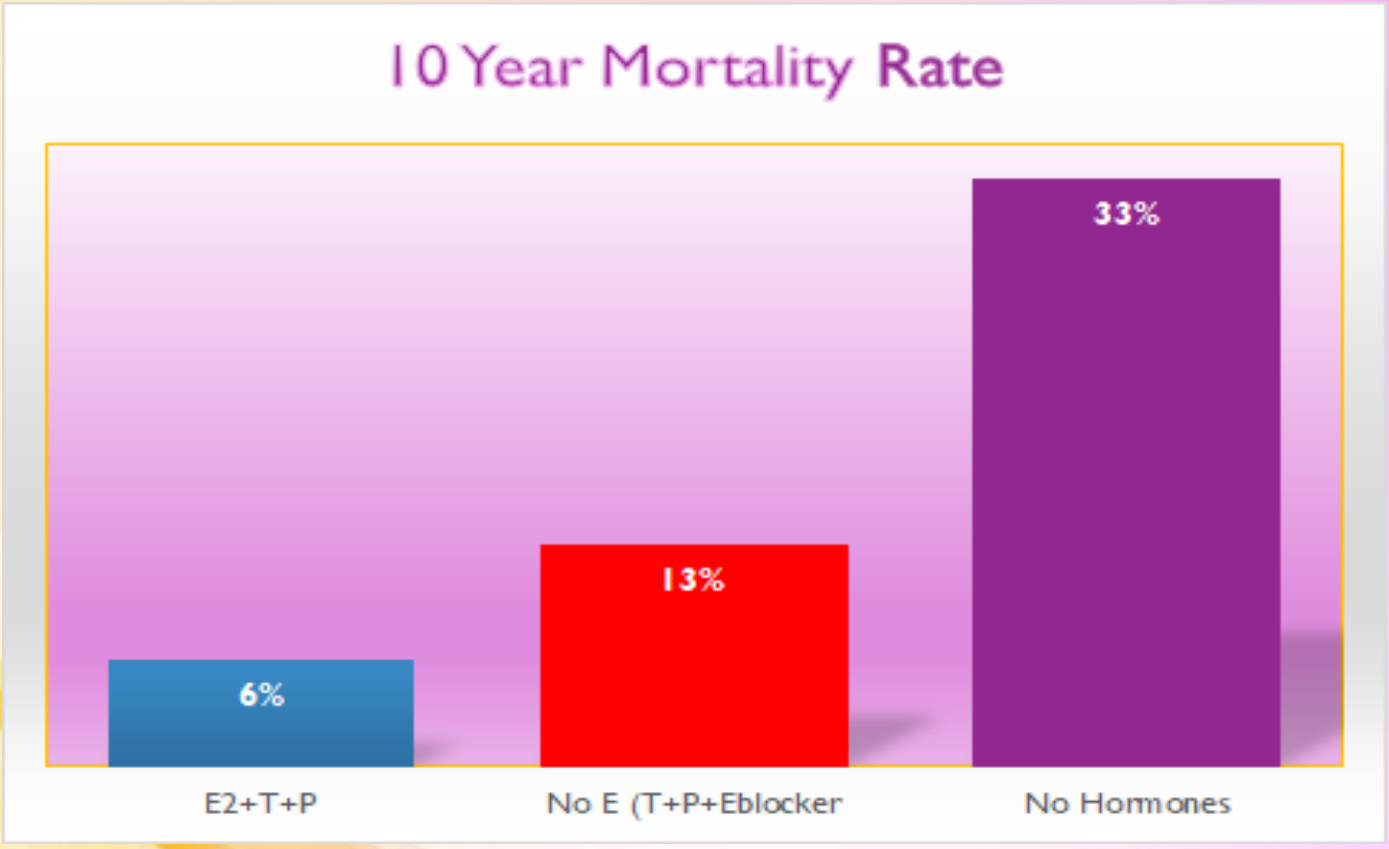

(1) Schairer C et al. Epidemiology, Jan 1997, Volume 8 Number 1

(2) Batur, P et al. Menopausal Hormone Therapy in Women with Breast CA. Maturitas 53(2006)123-132

(3) Durna, E et al. Breast Cancer in Premenopausal Women: recurrence and survival rates and relationship to hormone replacement therapy. Climacteric 2004;7:284-291.

# Hormone Replacement After Breast CA

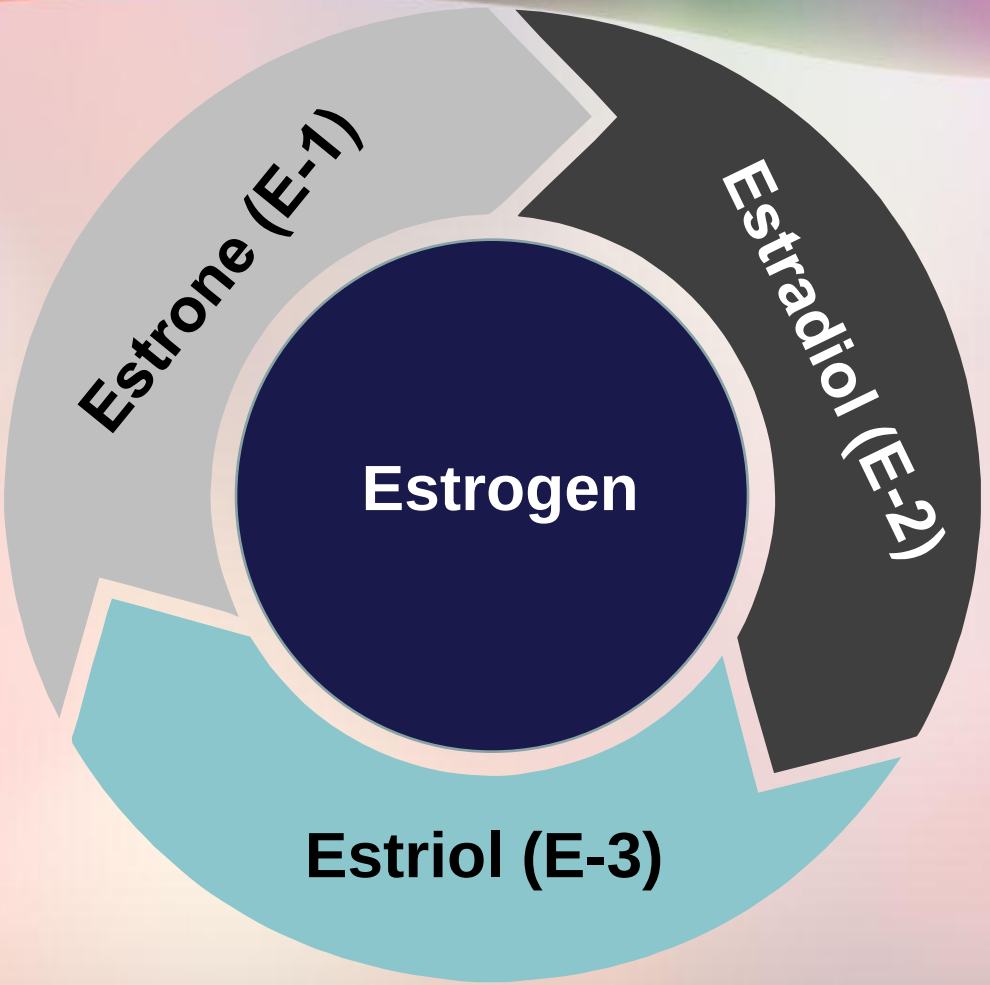
**Long Term (Avg 11.6 yr.) Survival Rate In Patients Taking Bioidentical E2 Post Breast Cancer**




**Estrogen replacement does not increase recurrence or mortality. Adding progesterone decreases recurrences.**

*Natrajan, PK, Soumakis, K., Gambrell, RD Jr. Estrogen replacement in women with previous breast cancer. Am J. Obstet Gynecol. 1999 Aug;181(2):288-95. Atlanta, GA.*

# “Natural” Estrogen



# *"Natural" Estrogen*

## ESTRONE

- The main estrogen the body makes postmenopausal
  - Produced by adrenal glands and fat tissue
- High levels increase risk of breast cancer
  - Increases:
    - AMI, Stroke, Breast Cancer, Prostate Cancer
    - Thrombogenic,
    - Acne

# *"Natural" Estrogen Estrone (E1)*

- **Causes:**
  - **Gallstones**
  - **Elevated liver enzymes**
  - **Elevated SHBG (decreases testosterone)**
  - **Interrupts tryptophan and consequently serotonin metabolism**
    - **Leads to brain fog and depression**
    - **Lower growth hormone**
    - **Increases prothrombotic effects,**
    - **Increases CRP**
    - **Increases carbohydrate cravings.**
  - **Goal: < 100**
  - **Lower w 7 Keto DHEA**

# “Natural” Estrogen

## *Estradiol*

- Increases HDL
- Decreases LDL and total cholesterol
- Decreases triglycerides
- Helps maintain bone structure
- Increases serotonin
- Decreases fatigue
- Works as an antioxidant
- Helps maintain memory
- Helps absorption of calcium, magnesium, zinc

# *"Natural" Estrogen*

## Estriol (E–3)

- Less stimulatory- 80 times weaker than E2
- Protects against breast cancer
- Has no bone, heart, or brain protection of estradiol.

# *"Natural" Estrogen*

## Estriol (E–3)

- Maintains pregnancy
- Maintains vaginal lining
- Occupies the estrogen receptor sites in breast tissue blocking E1
- Controls menopause symptoms
- Increases HDL, Decreases LDL

# Estrogen Metabolism

## *Raising "Good" Estrogen*

- Moderate exercise
- Cruciferous vegetables
- Flax
- Soy
- Kudzu
- Broccoli derivatives
  - indole-3-carbinol 200 to 300 mg/day
  - DIM
  - Sulforaphane

# Estrogen Metabolism

## *Raising Good Estrogen Levels*

- Omega-3-fatty acids
- B6, B12, and folate
- MTHF
- TMG
- Rosemary, turmeric
- Weight loss
- High protein diet

# Estrogen Therapy

## Prescribe Oral Estrogen Under Duress Only

**Oral Estrogen Increases:**

- **Blood Pressure**
- **Triglycerides**
- **E-1**
- **Liver Enzymes**
- **SHBG**
- **Prothrombotic Effects**
- **CHO Cravings**
- **CRP**

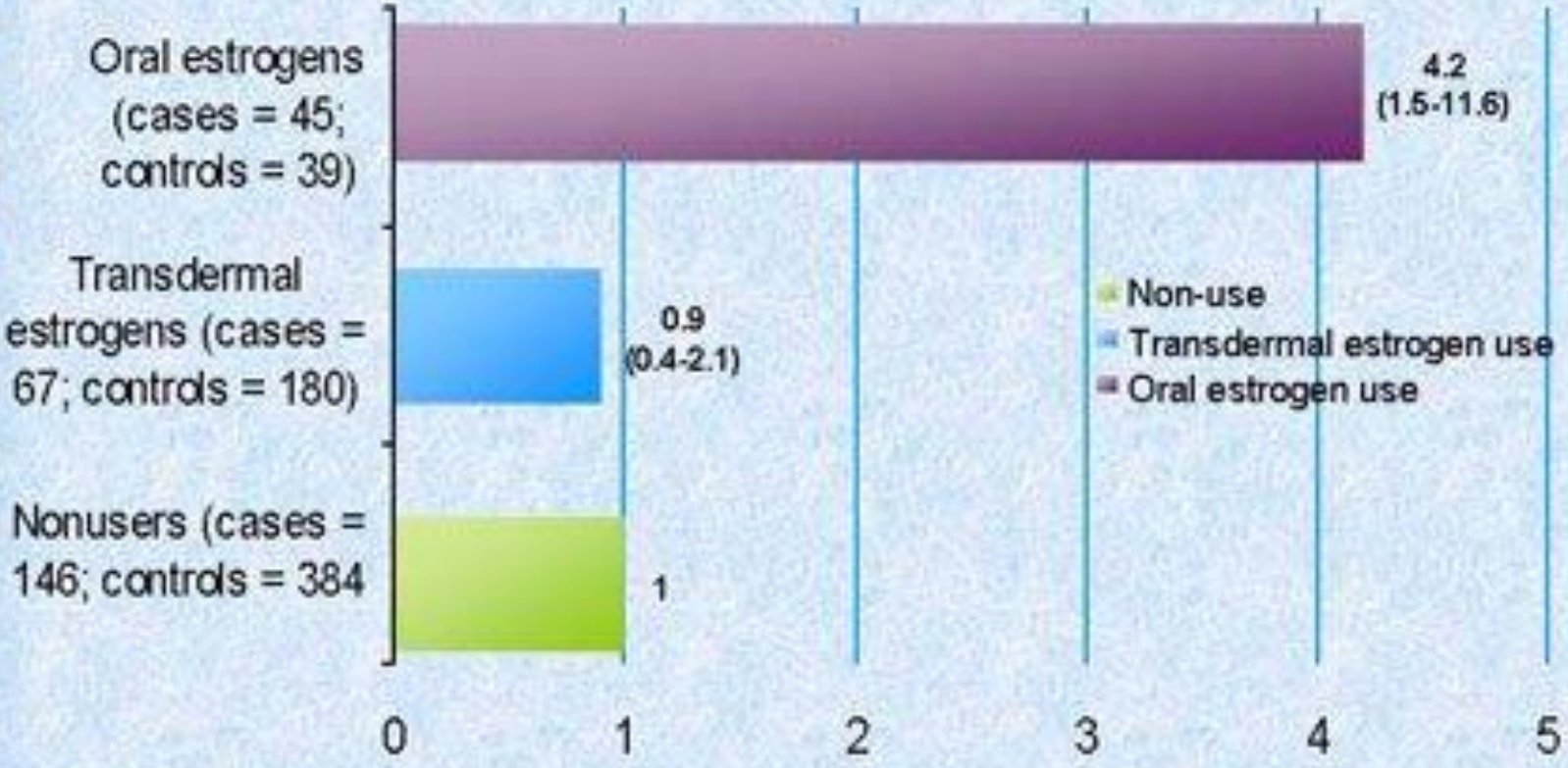
**Decreases: Testosterone**

- **Growth Hormone**
- **Tryptophan metabolism and Serotonin metabolism**

**Cause gallstones**

# VTE: Oral vs Transdermal ESTHER Study (Cont'd)

**Adjusted for obesity status, family history of VTE, history of varicose veins, education, age at menopause, hysterectomy, and cigarette smoking*




vertical line indicates the OR of VTE associated with oral estrogen use in the whole population (OR, 4.3; 95% CI, 2.6-7.2)

*Factor V Leiden or prothrombin G20210A mutation.

Straczek C, et al. *Circulation*. 2005; 112: 3495-3500.

# Estrogen Dominance Rx.

1. Progesterone Days 14-25

2. Lifestyle Changes
    1. Avoid EDC's
    2. Paleo, Anti-inflammatory Diet
    3. Exercise

3. Green Tea

4. Aromatase Inhibition
    1. Quercetin
    2. Glycyrrhiza – licorice
    3. Grape seed extracts
    4. Resveratrol
    5. Anastrozole 1 mg/d x 12 weeks
        1. Reduced fibroid, uterine size, endometriosis 32% in 12 weeks
            1. Hilario et al. Fertil Steril Jan 2009.
            2. Verma and Konje. Eur J Obstet Gynecol Reprod Biol. April 2009

# Estrogen Dominance Rx.

5. Cruciferous Vegetables
6. I3C 200mg/ DIM 100 mg 2x/d
7. Omega 3 FA 1000 mg bid
8. Curcumin 500 mg 1-4x/d
9. Moderate EtOH, Caffeine consumption
10. Evening Primrose Oil

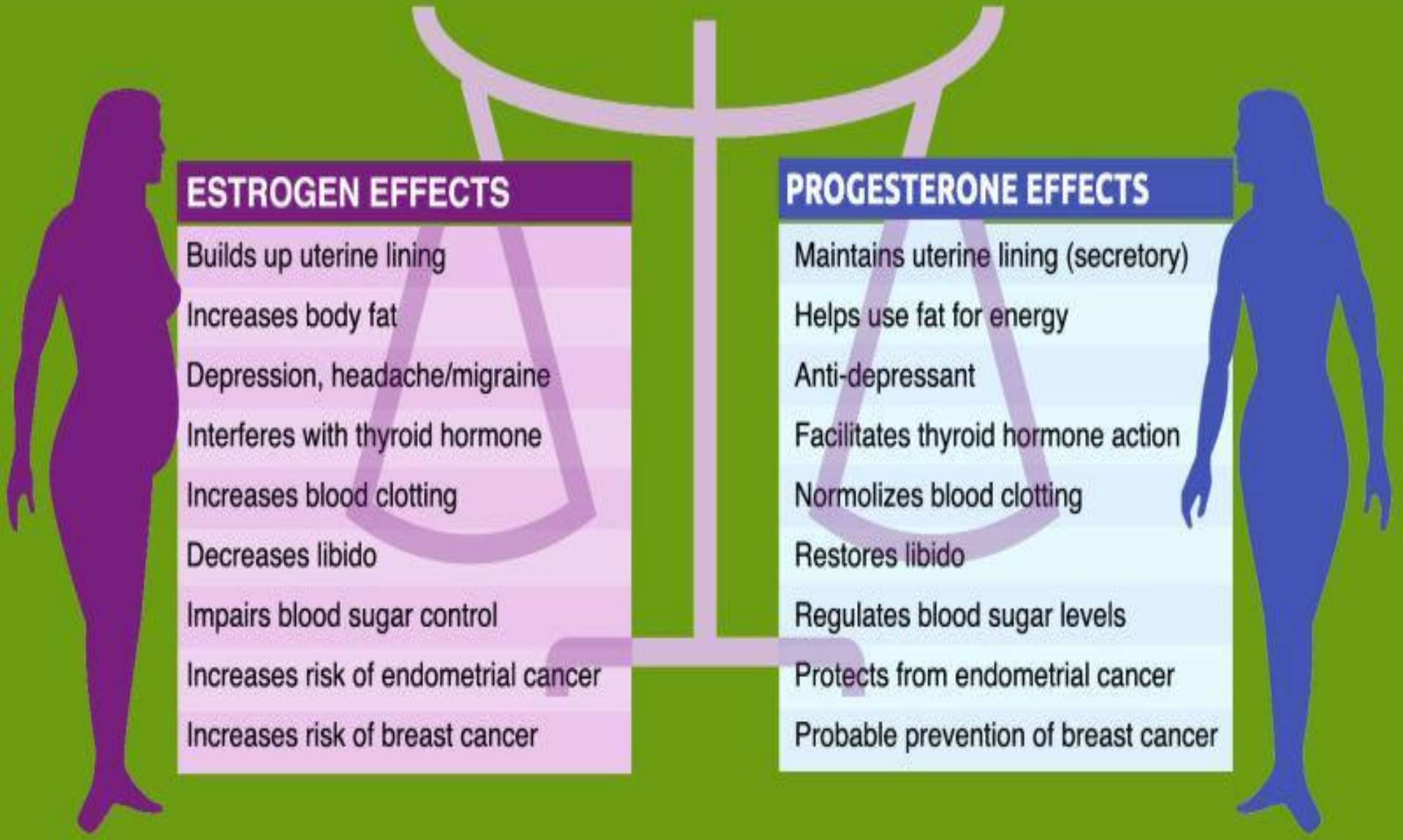
# Progesterone =Estrogen's Ralph Kramden

# Progesterone

- **Dominates hormone in the second half of cycle.**
- **The equivalent of the “behind the scenes” political operative.**
- **“Cleans” up whatever “mess” estrogen creates.**

- ***Relieves estrogen dominance.***
  - **Headaches, breast, uterine and ovarian cysts, moodiness, abdominal cramps and PMS.**

# The Role of Estrogen and Progesterone



| ESTROGEN EFFECTS | PROGESTERONE EFFECTS |
| --- | --- |
| Builds up uterine lining | Maintains uterine lining (secretory) |
| Increases body fat | Helps use fat for energy |
| Depression, headache/migraine | Anti-depressant |
| Interferes with thyroid hormone | Facilitates thyroid hormone action |
| Increases blood clotting | Normolizes blood clotting |
| Decreases libido | Restores libido |
| Impairs blood sugar control | Regulates blood sugar levels |
| Increases risk of endometrial cancer | Protects from endometrial cancer |
| Increases risk of breast cancer | Probable prevention of breast cancer |

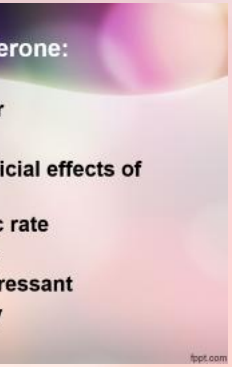
# Progesterone:

- Balances Estrogen
- Improves sleep
- Has a Natural Calming Effect
- Lowers high blood pressure
- Helps the body use and eliminate fats
- Lowers cholesterol

# Progesterone:

- Increases scalp hair
- Balances fluids
- Increases the beneficial effects of estrogen on BV
- Increases metabolic rate
- Is a Natural diuretic
- Is a Natural antidepressant
- Is anti-inflammatory

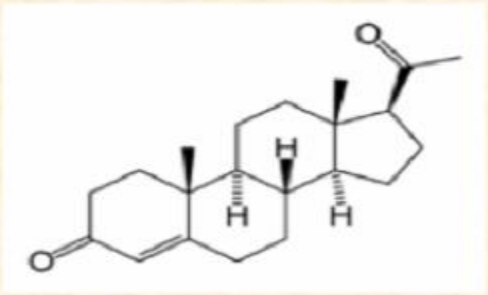
# Progesterone Is Not A Progestin



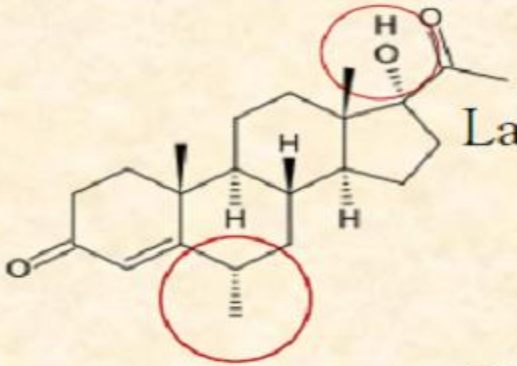

# Progesterone Is Not A Progestin

## Progestins ≠ Progesterone

Progesterone ≠ Medroxyprogesterone Drospirenone

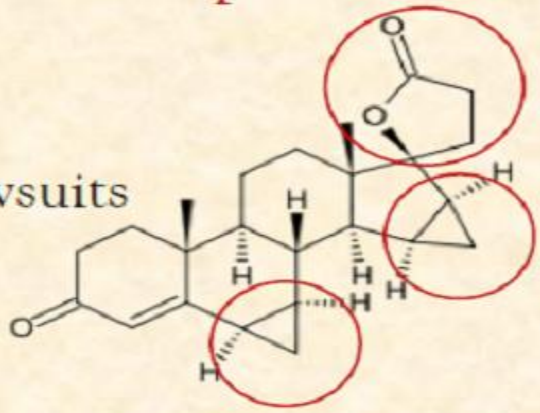


≠



Provera® Prempro®

Lawsuits



Yasmin®

**Confusion:**

Progestins are often called "progesterone", in the media and in scientific papers!

# Synthetic Vs. Natural Progesterone

Scientific studies show that:

| Provera® | ≠ | Progesterone |
|---|---|---|
| • Causes birth defects | | • Maintains pregnancy |
| • Can cause depression | | • Improves mood |
| • Insomnia, irritability | | • Improves sleep |
| • Fluid retention | | • Diuretic |
| • Raises blood sugar | | • No effect on blood sugar |
| • Counteracts estrogen-induced arterial dilation | | • Maintains estrogen-induced arterial dilation |
| • Worsens lipid profile | | • Improves lipid profile |
| • Causes heart attacks | | • No evidence of ↑ CVD |
| • Increases estrogenic stimulation of breasts | | • Reduces estrogenic stimulation of breasts |
| • Causes breast cancer | | • Prevents breast cancer |

# Progesterone Is Not A Progestin

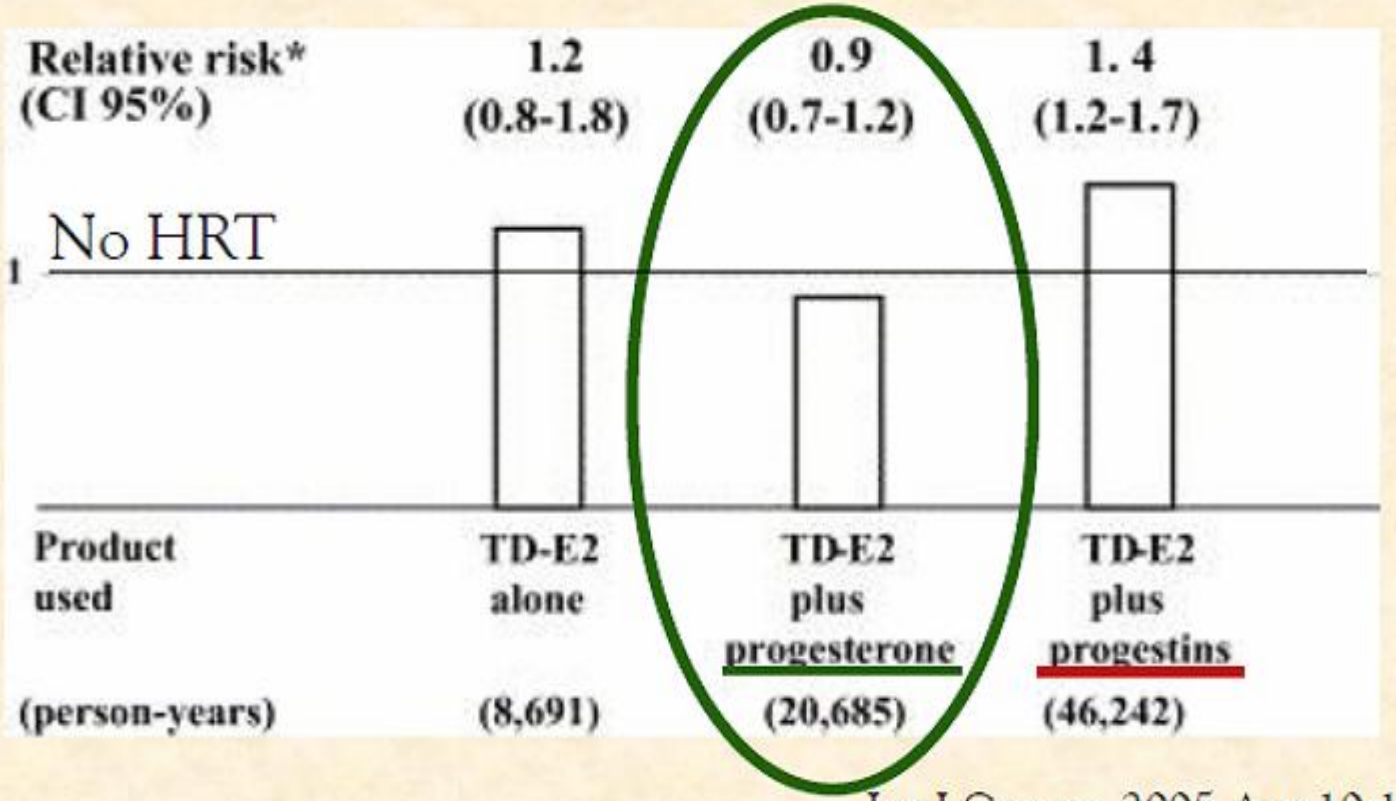
- Stimulates new bone production
- Enhances thyroid function
- Improves libido
- Restores cell oxygen levels
- Induces conversion of E1 to inactive E1S form
- Promotes Th2 immunity
- Is neuroprotective, promotes myelination
- Does NOT induce Estrogen Stimulated Breast Proliferation

Stein, D., et al., “Does progesterone have neuroprotective properties?” Ann Emer Med 2008; 51(2):164-72.

# E3N-EPIC Study

Cohort study
55,000 women
8 years f/u
c/w WHI--
16,000, 6 yr. f/u

TD-E2 = transdermal estradiol




Int J Cancer. 2005 Apr 10;114(3):448-54

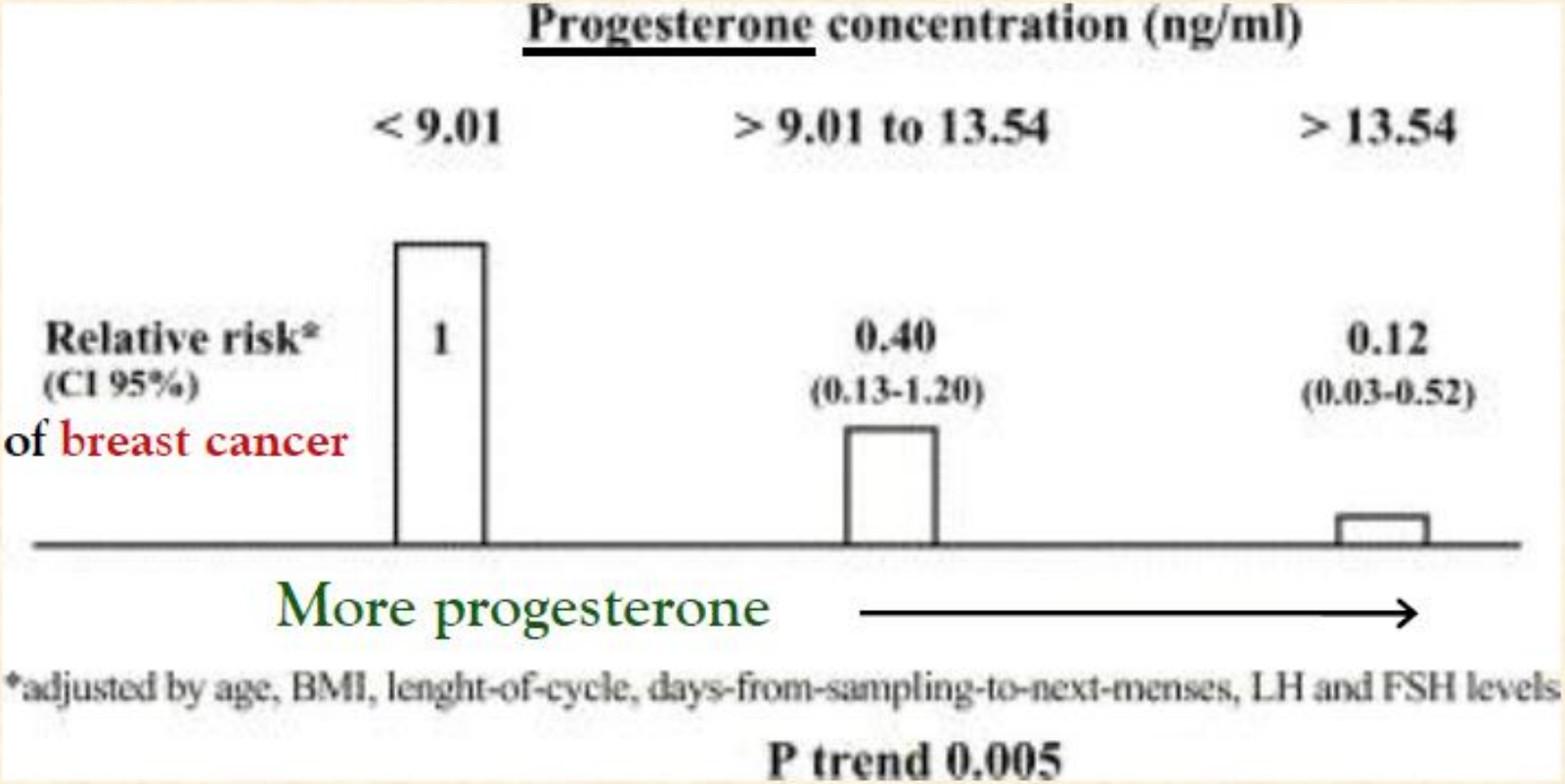
**E2 plus progesterone: no increased risk of breast cancer!**

*Similar study: estradiol + progesterone 0.4; estradiol + synthetic progestin 0.94*
Espié, Gynecol Endocrinol. 2007 Jul;23(7):391-7.

Ordet Study: Int. J. Cancer **112** (2004) (2), pp. 312–318.

# Progesterone vs. Breast Cancer in menstruating women

6,000 women
5 yr. F/U



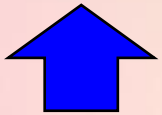

Higher progesterone=lower risk of breast cancer

# Low Progesterone=  Cancer

**722 Patients, 33 year follow up**

**Dx: Infertility w luteal phase defect and Progesterone Deficiency**

**10 X**  **death from all cancer**

**5.4 X**  **premenopausal breast cancer**


***Cowan LD, et al Breast Cancer incidence in women with a history of progesterone deficiency. Am J. Epidemiol. 1981 Aug:114(2);209-17.***

***Formby B, Wiley TS. Progesterone inhibits growth and induces apoptosis in breast cancer cells: inverse effects on BCl=2 and p53. Am Clin Lab Sci. 1998:28(6)360***

# Intracranially Produced Hormones: Etiology of Hormone Deficiency in TBI

**Progesterone, allo-progesterone, and DHEA protect neurons in TBI and cerebrovascular events.**

- **Protects nerves from oxidative stress**
- **Promotes neuroregeneration**
- **Regenerates myelin**
- **Reduces inflammatory cytokines**
- **Reduces interleukins**

**Ant-anxiety, antidepressant, anti-aggressive, anti-stress, anti-convulsant behavior effects**

**Alzheimer's and TBI Victims both exhibit a deficiency in allopregnanolone in their frontal lobes**

# Progesterone and TBI

Prevents neuronal loss in CNS

Reduces age related myelin loss in peripheral nerves

- Takes 6 mo. to see improvement

Attenuates cerebral cytokines IL-1B/ TNF-alpha (Inflammatory)

- TBI = IL-1B and TNF-alpha release in bloodstream → cerebral edema
- Permanent neuron loss

# Psychopathology and Neuroactive Steroids in TBI

- **Balancing GH, Thyroid Hormone and LH/FSH Axis Hormones in the immediate post trauma (within 48 hours) time frame decreased mortality by 50%.**

**Wright, D.W., Randomized Clinical Trial of Progesterone for Acute Brain Injury,; Annals of Emergency Medicine; 2006 07; 932**

# *Dementia*

**Restored Hormone Levels to Physiologic Mean=**

**Improved Energy, Decreased Tremor and Gait Stabilization in 1-6 weeks.**

- **Elderly women +/- AD > 80 yrs. significantly lower E2 and Testosterone in AD**
- **Women age 60-79 No difference in normal vs. AD**
- **Low progesterone levels in frontal lobe in PD**

Brain levels of sex steroid hormones in normal aging and Alzheimer's Disease Rosario, E., Chang, E., *Neurobiology of Aging* 32 (2011) 604-613

- **Males-Normal and AD=decreased androgens; estrogens remain steady at all ages.**
- **Males low testosterone and frontal lobe dysfunction is "Double Whammy" in PD**

Plasma testosterone levels in Alzheimer's and Parkinson Diseases Neurology. 2004; (62(3):411-3 Okun, MS;, Delong, MR, Hanfelt, J. et al. Gainesville, Fl.

# Novel Use of Progesterone: CVA, DM, BP and TBI

- **Progesterone inhibits ischemic brain injury**
- **Progesterone reduces infarct volume/improves functional deficits following CVA**
- **Micronized P4 reduces risk of T2DM, does not increase risk of VTE, reduces BP**

**Dose: 8 mg/kg Progesterone best clinical results**


• Sayeed I et al. Progesterone inhibits ischemic brain injury in a rat model of permanent middle cerebral artery occlusion. Restor Neurol Neurosci. 2007;25(2):151-9

• Ishrat T et al. Effects of progesterone administration on infarct volume and functional deficits following permanent focal cerebral ischemia in rats. Brain Res. 2009 Feb 27;1257:94-101

Yousuf S et al. Progesterone in transient ischemic stroke: a dose response study. Psychopharmacology (Berl). 2014 Sep;231(17):3313-23

# Estrogen, Progesterone and Breast Cancer

**Never, Ever, Never, Ever Use Estrogen without Progesterone**

**Never, Ever**

**You All Have to Pinky Swear**

# Estrogen/Progesterone Balance

# Laboratory Tests

- **Hormone ranges are based upon pooled data.**
- **Usually a two standard deviations a randomized mean defines the range.**
- **Hormone levels should be centered around the median level of its acceptable range.**
- **The ideal net effect is that the levels are close to the median of the range**
- **Ranges may be narrow; i.e.**
  - **Post-menopausal Progesterone (0.1-0.8 ng/ml)**

# Laboratory Target Ranges

| Hormone | Median Male | Median Female | Range |
|---|---|---|---|
| Estrone | <30 pg/mL | <100 pg/mL | M (<60)<br>F (<100) |
| Estradiol | <25 pg/ml | 90 pg/ml | M (7.6-42.6)<br>F (<54)<br>Postmenopausal |
| Progesterone | 0.8ng/ml | 5-7 ng/m | M (0.2-1.4)<br>F (0.1-0.8)<br>postmeno. |
| Pregnenolone | <194 ng/dL | <205 ng/dL | M (38-350)<br>F (250-500) |
| Vitamin D 3 | >60 ng/ml | >60 ng/dL | M (30-100)<br>F (30-100) |

# Laboratory Target Ranges

| Hormone | Median Male | Median Female | Range |
|---|---|---|---|
| LH | 5.1 mIU/mL | 6.2 mIU/ml (Day 21 or postmenopausal) | M (1.7-8.6)<br>F (Phase Dependent) |
| FSH | 6.95 mIU/ml | 8.6 mIU/ml | M (1.5-12.4 mIU/ml)<br>F (Phase dependent) |
| Prolactin | 11.25 ng/ml | 13.75 ng/ml | M (2.5-19)<br>F (2.5-19) |

# Disease Risk within E2 Reference Range

| Serum E2 | Lab Values | Disease Risk |
|---|---|---|
| Pre-menopause-"normal" | 100-110 | Osteoporosis |
| E2 (Day 7 of Cycle) | <97 | Cardiovasc. Dx. |
| | <81 | Dec. Bone Density<br>Cyclical Migraine |
| | <60 | Coronary artery constriction |
| Menopausal | <54 | Psychosis |
| | <50 | Postpartum Depression |
| | <38 pg/ml | Ischemic Heart Dx |

# *Estrogen/Progesterone Ratio*

- **Optimal time to perform lab testing is days 19-21**

- **Measuring both Estrone (E1) and Estradiol (E2) with progesterone (PROG) will allow for the calculation of the EP Ratio.**

***E1+E2/P=E/P Ratio***

- **Estrogen Dominance as a comorbid factor to TBI can cause greater disturbance in neurochemistry especially with GABA.**

- **If E1 is elevated, control w 7 Keto-DHEA**

**Gordon, M., Traumatic Brain Injury, Millennium Health Centers, 2015, San Diego, CA. 143-144**

# Estrogen/Progesterone Ratio

(Gordon, M. TBI, San Diego, 2015)

| *Symptoms* | *<250* | *250-1000* | *1000-5000* | *>5000* |
|---|---|---|---|---|
| Headaches | Intermittent | Mild | Moderate | Severe |
| Sleep Issues | Intermittent | Mild | Moderate | Severe |
| Sleep Deprivation | NP | Intermittent | Mild | Moderate |
| Bloating | NP | NP | Mild | Moderate |
| Mood Swings | NP | Mild | Moderate | Severe |
| Anxiety | NP | Intermittent | Mild | Severe |
| Depression | NP | Intermittent | Mild | Severe |
| Panic Attacks | NP | Intermittent | Mild | Severe |
| Mastalgia | Intermittent | Mild | Severe | Severe |

# Lab Studies

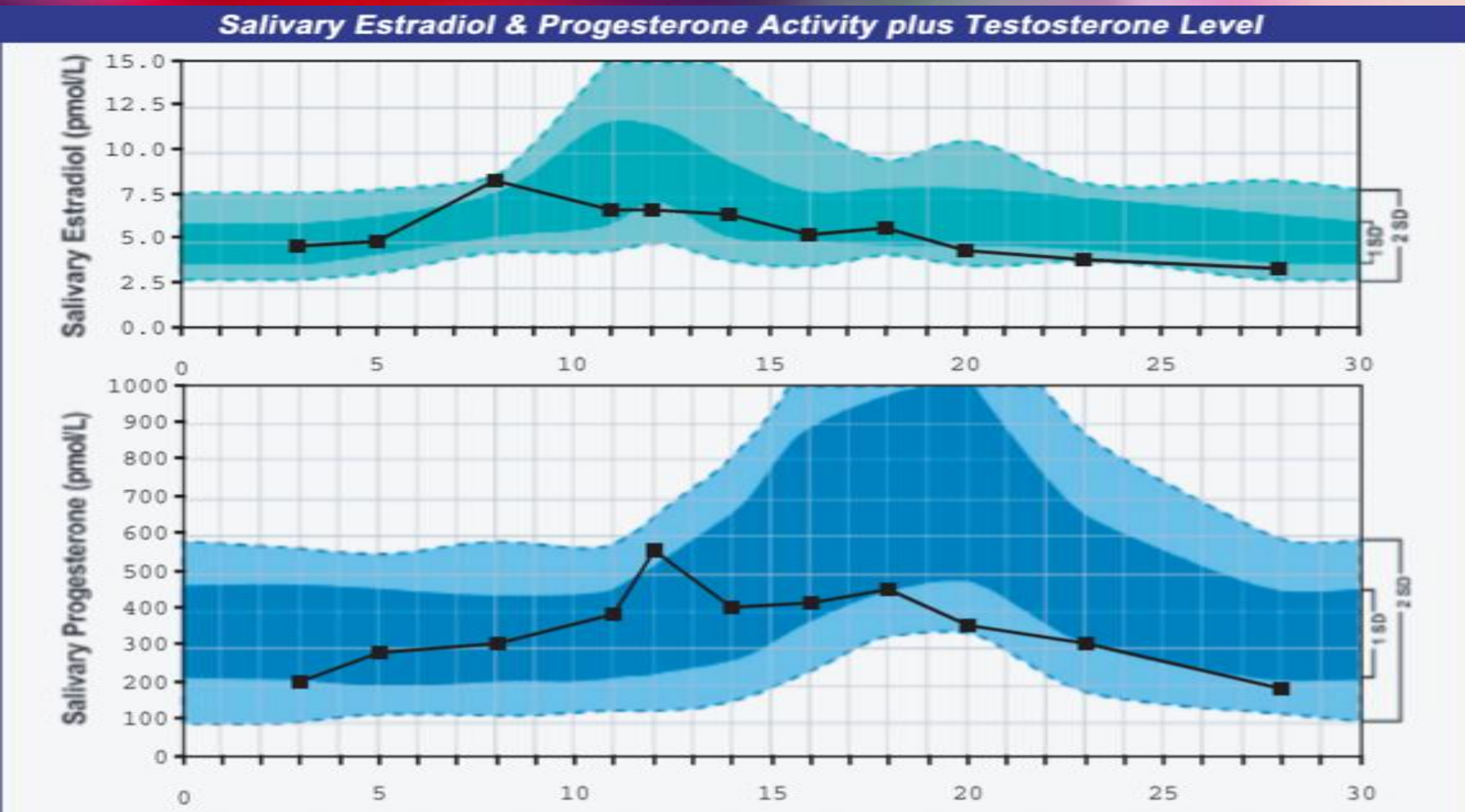
| *Central* | *Peripheral* |
|---|---|
| **TSH** | **free T3, free T4, reverse T3, TPO, anti thyroglobulin** |
| **GH** | **IGF-1, IGFBP3** |
| **LH/FSH** | **Testosterone, (free, total), DHEA-S**<br>**Male-DHT, Estradiol**<br>**Female-Estrone, Estradiol, Progesterone** |
| **ACTH** | **Cortisol A.M. and P.M. or 4 Point Cortisol Saliva Test** |
| **Others** | **CBC, Chem Profile, Lipid Profile, cRP, Homocysteine, Insulin, 25-OH Vit D, Pregnenolone, PSA (Total and fractionated), Zinc, Prolactin** |
| | |

# Progesterone/Estradiol Ratio

- **Alternative Measurement**
  - ***Serum: Pg x 1000/$E_2$=P/$E_2$ Ratio***
  - ***Saliva: Pg/$E_2$=Pg/$E_2$ Ratio***
- **Results**

| | | |
|---|---|---|
| **<100** | **=** | **Estrogen Dominant** |
| **100-500** | **=** | **Normal Ratio** |
| **>500** | **=** | **Progesterone Dominant** |

# Normal 28 Day Saliva Test-Perimenopause




| Day of Cycle | 3 | 5 | 8 | 11 | 12 | 14 | 16 | 18 | 20 | 23 | 28 | Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Estradiol | 4.5 | 4.8 | 8.2 | 6.5 | 6.5 | 6.3 | 5.2 | 5.5 | 4.3 | 3.8 | 3.2 | 5 |
| Progesterone | 200 | 280 | 300 | 380 | 550 | 398 | 412 | 450 | 350 | 300 | 180 | 345 |
| P/E2 Ratio | 44 | 58 | 37 | 58 | 85 | 63 | 79 | 82 | 81 | 79 | 56 | 66 |

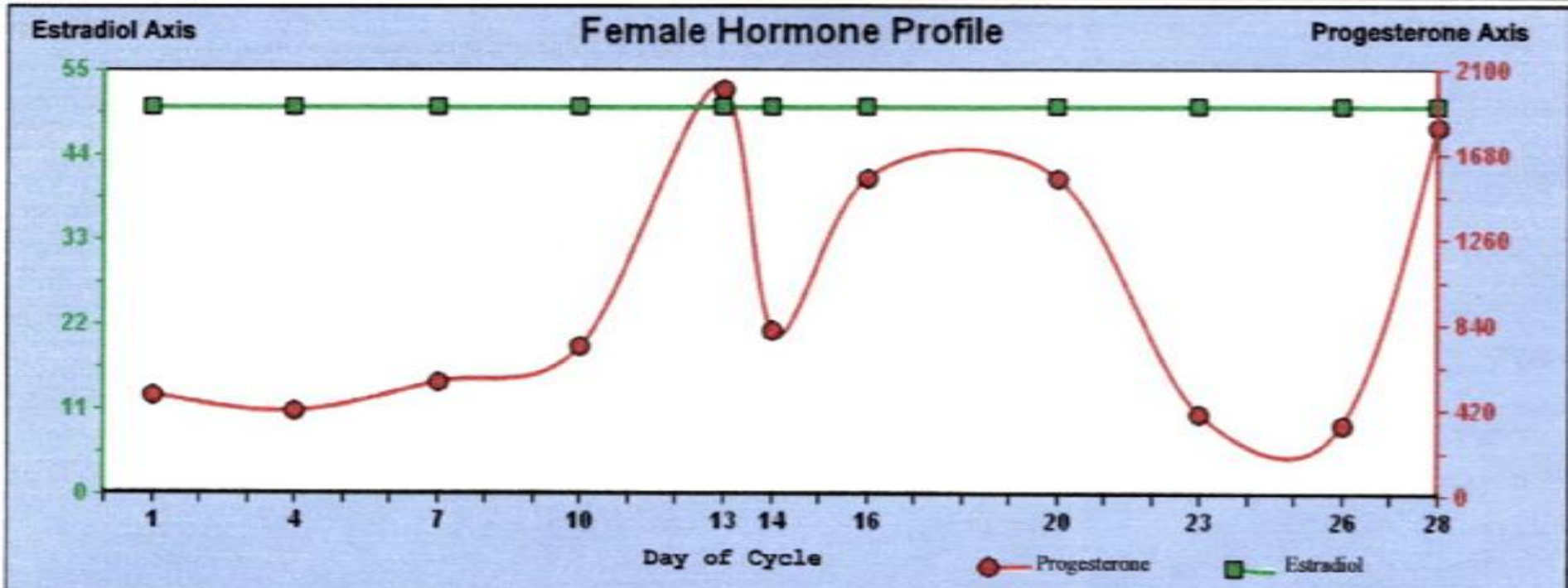
# Julie's 28 Day Saliva Test-Perimenopause

**FHP** **Pre Menopause Female Hormone Panel - Saliva**

| *Day of Cycle* | Day | 1 | 4 | 7 | 10 | 13 | 14 | 16 | 20 | 23 | 26 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Estradiol* | pg/ml | >50 | >50 | >50 | >50 | >50 | >50 | >50 | >50 | >50 | >50 | >50 |
| *Progesterone* | pg/ml | 491 | 409 | 553 | 728 | >2000 | 809 | 1557 | 1557 | 394 | 348 | 1814 |

| *Cycle Information* | | |
|---|---|---|
| | Start | 12/20/2017 |
| | End | 01/16/2018 |
| | Length | 27 |

| *Ranges* | *Phase* | *Estradiol* | *Progesterone* |
|---|---|---|---|
| | Follicular | 2 - 10 pg/ml | 20 - 100 pg/ml |
| | **Preovulatory** | **7 - 25 pg/ml** | |
| | Luteal | 3 - 16 pg/ml | 65 - 500 pg/ml |




William Clearfield D.O.
F.A.A.F.R.M, F.A.A.M.A. , D.A.B.M.A.

April 26, 2018

# Second Elephant In The Room: Is Testosterone FDA Approved for Women?

# 10 Most Common Off Label Use Drugs in USA

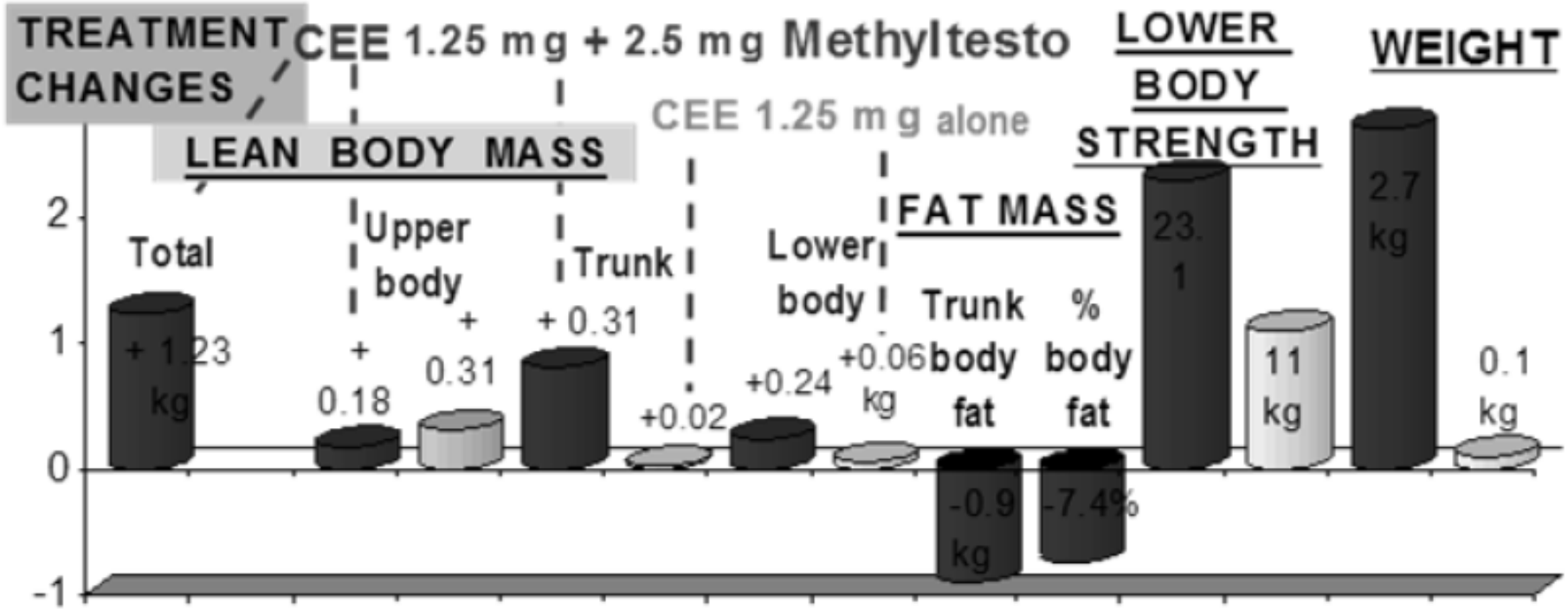
- ***SSRIs*** — **Premature ejaculation, hot flashes, tinnitus (ringing in the ears)**
- ***Prazosin*** — **Post Traumatic Stress Disorder**
- ***Amitriptyline*** — **Fibromyalgia, migraines, eating disorders, post-herpetic pain**
- ***Statins*** — **Rheumatoid arthritis**
- ***Clonidine*** — **Smoking cessation, hot flashes, (ADHD), Tourette's, RLS**
- ***Aripiprazole*** — **Dementia, Alzheimer's Dx.**
- ***Gabapentin*** ***(antiseizure)*** ***DM*** **Neuropathy, Migraines, Hot Flashes**
- ***Topiramate*** ***(antiseizure)*** **Bipolar, depression, weight, alcohol dependence**
- ***Risperidone*** — **Alzheimer's disease, dementia, eating disorders, PTSD**
- ***Trazodone*** — **Insomnia, anxiety, bipolar dx.**
- **Propranolol** — **Stage Fright**

# Testosterone in Women

- Maintains Bone Strength,  Bone Density
- Improves Muscle Tone
- Increases Energy and Endurance
- Improves Body Composition
- Maintains Skin Turgor, Collagen Production, Texture
- Restores and Reinvigorates Sexual Desire
- Stabilizes Emotional Well Being

# Oral estrogens vs oral estrogen- testosterone

## => Body composition in women




*n = 40 postmenopausal women (mean age, 57 yr); study = 16-week, double-blind, randomized clinical trial*

**Figure:** Combined conjugated estrogens & methyltestosterone therapy improved better body composition, lower-body muscle strength, quality of life, & sexual functioning in postmenopausal women when compared with patients receiving estrogen alone.

*Dobs AS, Nguyen T, et al. Differential effects of oral estrogen versus oral estrogen-androgen replacement therapy on body composition in postmenopausal women. J Clin Endocrinol Metab. 2002 Apr;87(4):1509-16.*

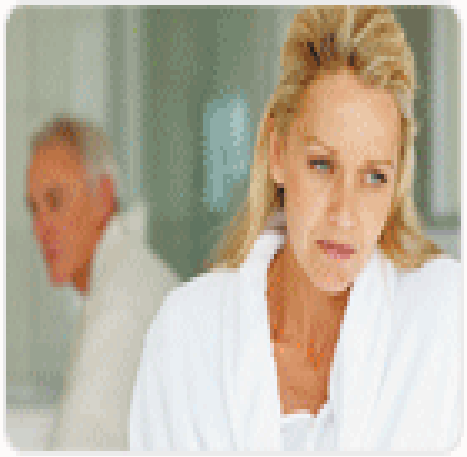
# Testosterone Reduces:

- Visceral Fat
- Fat Deposition
- Cellulite and Wrinkles
- Mental Fatigue
- Depression
- “Sore-Body” Syndrome
- Vaginal Dryness
- Moodiness/Irritability
- Vertigo, Lightheaded
- LDL Cholesterol

# S/S Low T in Women

## Sexual symptoms

- Loss of sexual desire
- Lack of sexual responsiveness
- Weaker orgasms

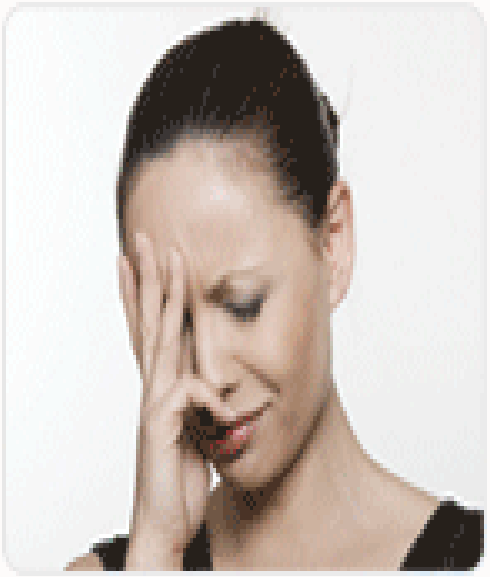


## Physical symptoms

- Lack of energy
- Decrease in strength/ endurance
- Weak bones and muscles
- Increased fat storage

## Emotional symptoms

- Depression
- Mood changes



# S/S Testosterone Deficiency:

- Chronic Fatigue
- Memory Issues
- Decreased Libido
- Muscle Weakness
- Heart Palpitations
- Bone Loss
- Incontinence
- Fibromyalgia
- Aches and Pains
- Brain Fog
- Depression
- Blunted Motivation
- Diminished Sense of Well Being
- Thinned Skin
- Vaginal Dryness

# Effects of Testosterone Replacement

**Physiologic Testosterone Levels improve BMI & leg press strength >/= 48.7%**

Hogervorst E, Williams J, Budge M, Barnetson L, Combrinck M, Smith AD. Serum total testosterone is lower in men with Alzheimer's disease. Neuro Endocrinol Lett. 2001 Jun;22(3):163-8.

**Lean Body Mass BMI, Body Fat, & Fat Mass**

**Direct Positive Association With Serum T Level**

Sowers MF, Beebe JL, McConnell D, Randolph J, Jannausch M. Testosterone concentrations in women aged 25-50 years: associations with lifestyle, body composition, and ovarian status. Am J Epidemiol. 2001 Feb 1;153(3):256-64. Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, MI, USA. mfsowers@umich.edu .

**Significant Reductions in :**

- **Weight (5.4%)**
- **Abdominal Fat (2.2%)**
- **Gluteal-femoral Fat (0.9%)**
- **Total Body Fat (2.1%)**
- **BMI (4.6%)**

# Positive Effects of Testosterone Replacement

**Breast Cancer Risk (Decreased by 50%)**

**Urine Incontinence**

**Dysfunctional Uterine Bleeding**

**Lichen Sclerosis**

**Abnormal Uterine Bleeding**

**Rheumatoid Arthritis**

**Joint, especially knee pain**

**Bone Density**

**CAD**

**Lipid Metabolism**

**Mood**

# Testosterone and Cellulite

***Testosterone*** **(1.42-2.85 mg/d)=40-90 mg/Month**

**(May increase to 150 mg/mo. if severe.)**

**+**

**Finasteride: 2.5-10 mg/day**

**+**

**Daily thigh exercises**

***Or***

***Testosterone*** **Cream 1% + Cellulite Day Gel/Cellulite Night Gel**

# Testosterone and Cellulite

***Cellulite Day Gel***

***Glycolic Acid 10% (W/W)/Lactic Acid 8% (W/W) Topical Day Gel***

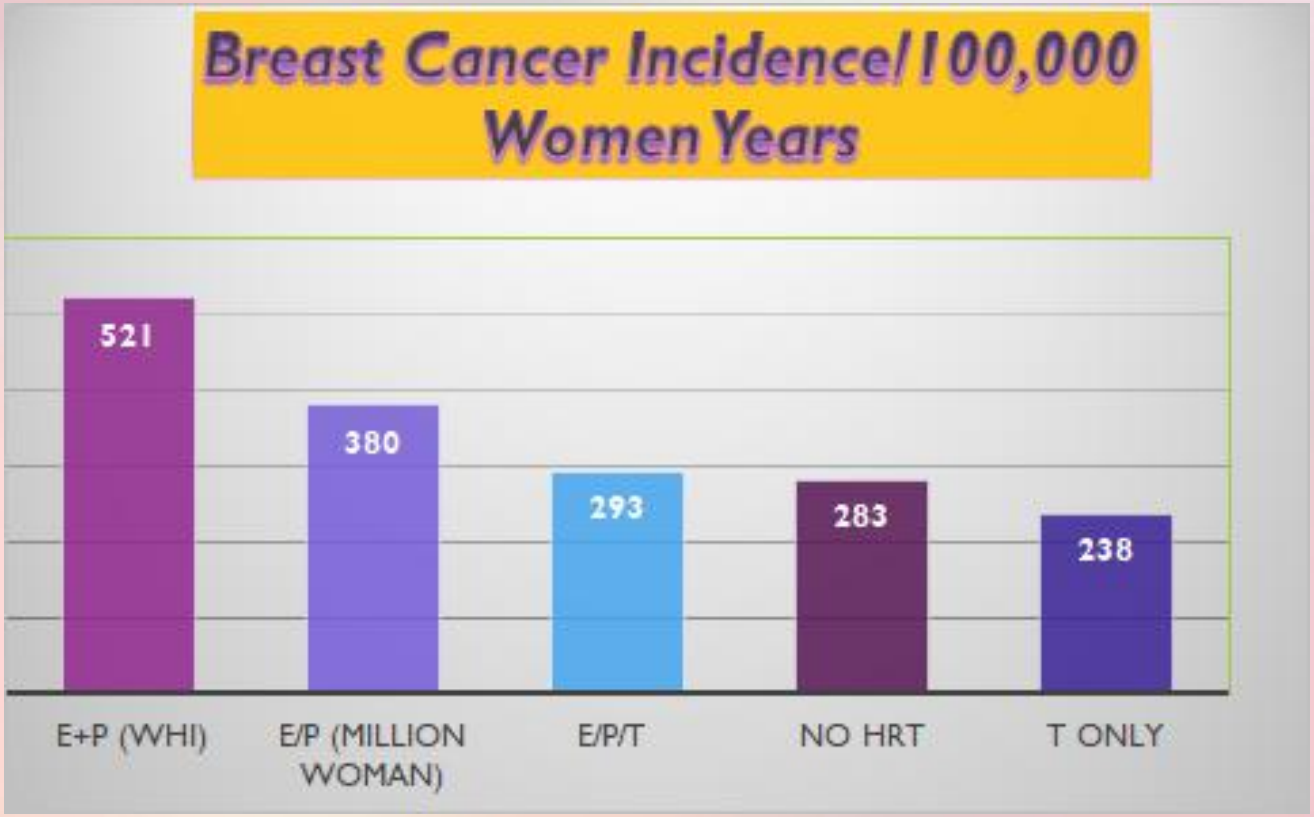
***Apply to area in am (240g compounded blend)***

***Cellulite Night Gel***

***Ginkgo Biloba 0.024%/Green Tea Extract 0.2%/Lipoic Acid 3% Topical Cream***

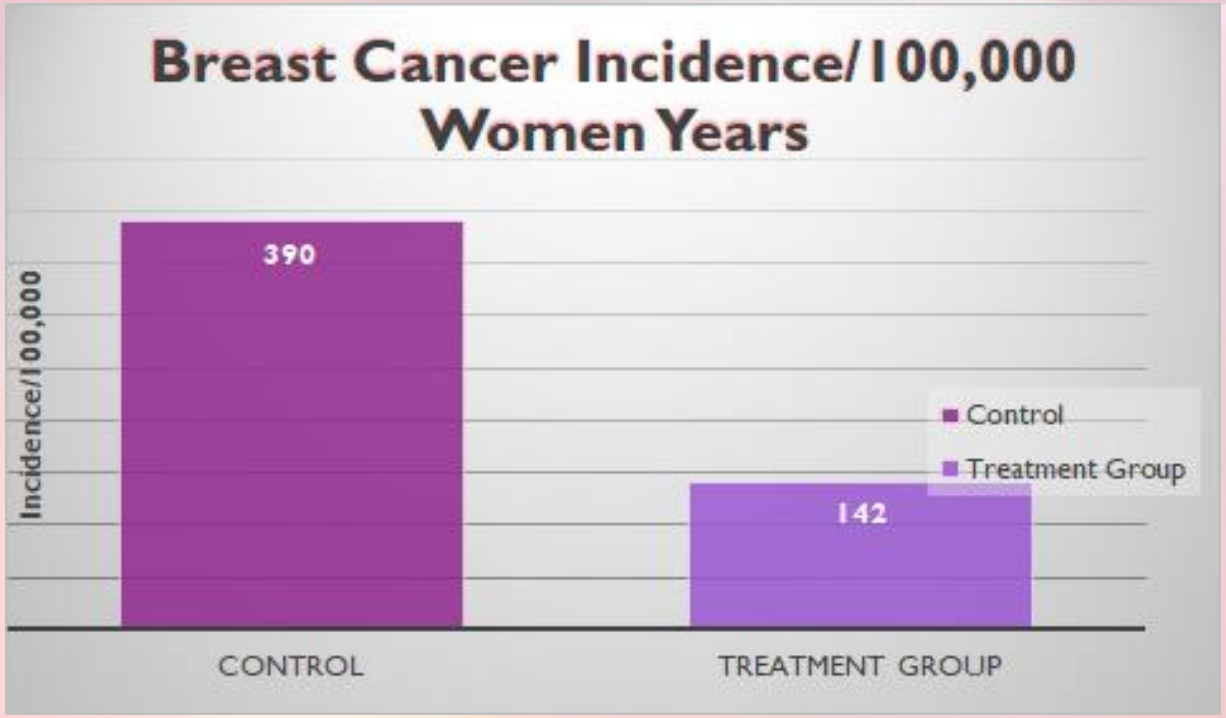
***Apply to area in pm (240g compounded blend)***

# Lowest Risk of Breast Cancer is in T Treated Patients




Dimitrakakis C, Jones RA, Liu A, Bondy CA. Breast cancer incidence in postmenopausal women using testosterone in addition to usual hormone therapy. Menopause. 2004 Sep-Oct;11(5):531-535.

# Testosterone and Breast Cancer Risk



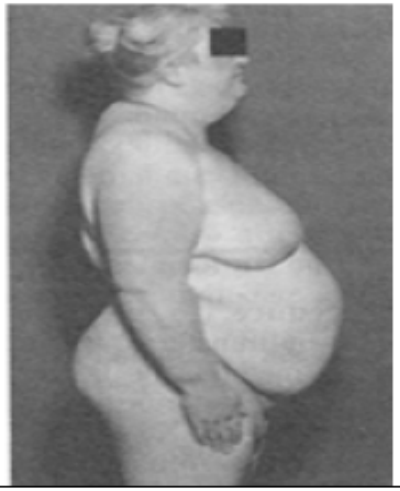

**More than double the Risk of Breast Cancer Without Testosterone** $P < 0.00$

- *Glaser and Dimitrakakis. Reduced Breast cancer incidence in women treated with subcutaneous testosterone, or testosterone with anastrozole: a prospective, observational study. Maturitas 2013 Dec;76(4): 342-9*
- *Dimitrakakis C, Jones RA, Liu A, Bondy CA. Breast cancer incidence in postmenopausal women using testosterone in addition to usual hormone therapy. Menopause. 2004 Sep-Oct;11(5):531-535*

# Serum Lab Values w Medians

| Hormone | Median Female | Range |
|---|---|---|
| DHEA-S | 277 ug/dL | F (30-260) |
| Total Testosterone | 44 ng/ml | F (15-70) |
| Free Testosterone | 2-4 ng/m | F (0.2-2.6) |
| DHT | <15 ng/dL | F (<30) |
| SHBG | <75 ng/dL | F (20-130) |

# TEST : Is there an androgen deficiency in this woman?



## Case 4: female, muscle wasting

- Serum total testosterone: 90 pg/ml
- Serum SHBG: 75 mg/l; free testo: 1

⇒ **Serum total testosterone/SHBG = 1.2**

- Serum androstanediol glucuronide: 2.5 ng/ml

| Serum levels | Optimal Women | Testo.sterone deficit: Women | Ref. range for young men |
|---|---|---|---|
| Total testosterone | 350 | < 250 | 200-450 pg/ml |
| SHBG | 65 | < 60 | 45-75 mg/l |
| Total testost./SHBG | 8 | < 6 | |
| Free testosterone | 8 | < 6 | 2-15 pg/ml |
| Androstanediol glucuronide | 3 | < 2 | 1-6 ng/ml |

**Total Testo/SHBG < 6 + Testosterone deficient**

# Reversal of Physical Aging

## By Testosterone treatment

- ↓ Upper head (vertex) hair loss
- Thicker hair , more hair volume
- Thicker eyebrows (*inner*)

- ↑ humid eyes
- ↑ color in the FACE
- Younger, firmer FACE
- ↓ Dry skin
- ↑ firmer muscles

# Androgen Therapy

- Oral
- Transdermal or Transvaginal
- IM
- SQ Pellets
- Hormone Precursors
  - DHEA
  - Pregnenolone
-

# Androgen Therapy

- ***Oral  NEVER***
- **Oral testosterone is routed entirely to the liver**
- **Hepatotoxic, contraindicated**
- **Associated with worsening lipids (Transdermal = Lipid Neutral)**
- **Ask (Bodybuilder) Patients About "Stacking 'Roids" in Their Teens and Twenties**
  - **Never Say "Always" but >90% (Closer to 100%) Experience Liver Damage 20 years post "Rx."**
-

# Androgen Therapy

- ***Transdermal***
- **Compounded cream (0.5-2.0 mg/gm)**
- **Dose 1.25- 10 mg per day q AM**
  - **Starter Dose, Breast Tenderness, Fatigue 1.0 mg/d**
  - **Breast Cancer, Fatigue 1-2 mg/d**
  - **Fatigue, Libido 2.0 mg/d**

# Transdermal Combinations (Gordon, M. TBI, San Diego, 2015)

| | Estradiol | Estriol | Progesterone | Testosterone | Application |
|---|---|---|---|---|---|
| Starter | 0.2mg | 2.0 mg | 100 mg | 1 mg | Vaginal |
| Breast Tender | 0.1 mg | 2.0 mg | 100 mg. | 1 mg | Vaginal |
| Fatigue | 0.2 mg | 2.0 mg | 50 mg. | 1 mg | Vaginal |
| Libido | 0.2 mg | 2.0 mg | 100 mg. | 2 mg | Transdermal |
| Basic | 0.2 mg | 2.0 mg | 100 mg. | No | Transdermal |
| Breast | 0.1 mg | 2.0 mg | 100 mg. | No | Vaginal |
| Cancer | none | 2.0 mg | 100 mg. | 1-2 mg. | Vaginal |

# Androgen Therapy

- ***Intramuscular***

- ***T. cypionate injections 2.5-10 mg q. 1-2 weeks***

- ***T. cyp. 100mg/ml= 0.25-0.1 ml/wk.***

# Androgen Therapy

**"Kibbles and Bits:" Dr. C's Favorite Method for Delivering Androgens**

- ***You Call Them "Pellets"***
- ***Advantages:***
  - **Quickest Onset of Action-4-7 days**
    - **Creams-4-8 weeks. Injections 4 weeks**
  - **Convenient**
    - **Rx. 2-3 times per year.**
  - **Safety**
    - **No transference**
  - **(Testosterone) Symptom Relief**
    - ***Superior* in relieving menopause symptoms, maintaining bone density, restoring sleep patterns, and improving sex drive, libido, sexual energy, response and performance. (1)**
  - **Other Indications**
    - **Migraine and menstrual headaches, vaginal dryness, urinary incontinence, urgency.**
    - **Increases energy, lean body mass, strength, bone density, a sense of well-being, improves memory and concentration.**
- Handelsman, DJ, Mackey, MA, Howe, C, et al.; An analysis of testosterone implants for androgen replacement therapy; Clinical Endocrinology: **Volume 47, Issue 3,** pages 311–316, September 199, http://onlinelibrary.wiley.com/wol1/doi/10.1046/j.1365-2265.1997.2521050.x/abstract

# BHRT Pellets

- Long acting, 3-5 months for women and 4-6 months for men
- FDA approved 75-mg testosterone pellet in 1972.
- Avoids fluctuations in hormone levels
- Shortest onset of action of all HRT (4-7 days)
- No increase the risk of blood clots
- Superior in relieving menopause symptoms
- Maintains bone density, restoring sleep patterns
- Improved sex drive, libido, sexual energy, response, performance.
- Rx:
  - Migraine, menstrual headaches, vaginal dryness, urinary incontinence, urgency and frequency


- Handelsman, DJ, Mackey, MA, Howe, C, et al.; An analysis of testosterone implants for androgen replacement therapy; Clinical Endocrinology: **Volume 47, Issue 3,** pages 311–316, September 199, http://onlinelibrary.wiley.com/wol1/doi/10.1046/j.1365-2265.1997.2521050.x/abstract

# BHRT Pellets

- **“Complications”**
- ***Procedural Issues***
  - ***Infection (Never in 15 years and counting)***
  - ***Extrusion (3 cases, all in same week. Had to use a “foreign” instrument set due to supply)***
  - ***Bleeding, bruising (Apply pressure after insertion for 1 minute by the clock. If more than oozing remains, place 1-3 4-0 Vicryl, absorbable sutures)***
    - ***Post care instructions include:***
      - ***“No Pole Dancing, No Dance Contests x 48 Hours.***
-

# BHRT Pellet "Complications"

- **Breast Tenderness=Estrogen Excess or "Surge"**
  - **Rx: Double Progesterone Dose (P.O.) till relieved (5-10 days) &/or**
  - **Progesterone Cream 2-5% ½ gram to each beast nightly**
  - **Reishi mushrooms, Red clover, Black cohosh,**
  - **Chasteberry, Maca root**
- **Vaginal Bleeding**
  - **Rx: Micronized Progesterone 200 mg @ hs until bleeding stopped then:**
  - **Resume Pre-bleeding dose**
  - **Ultrasound Pelvis to R/O Endometrial Pathology**
- **Acne, Oily Skin and Hair, Chin Hair**
  - **Rx: Testosterone Excess- Spironolactone, Saw Palmetto, Metformin**

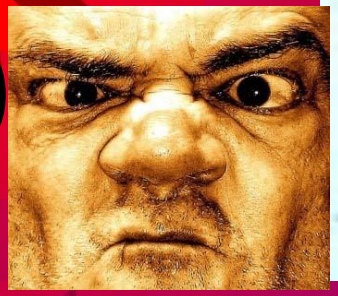
# To Complete the Picture

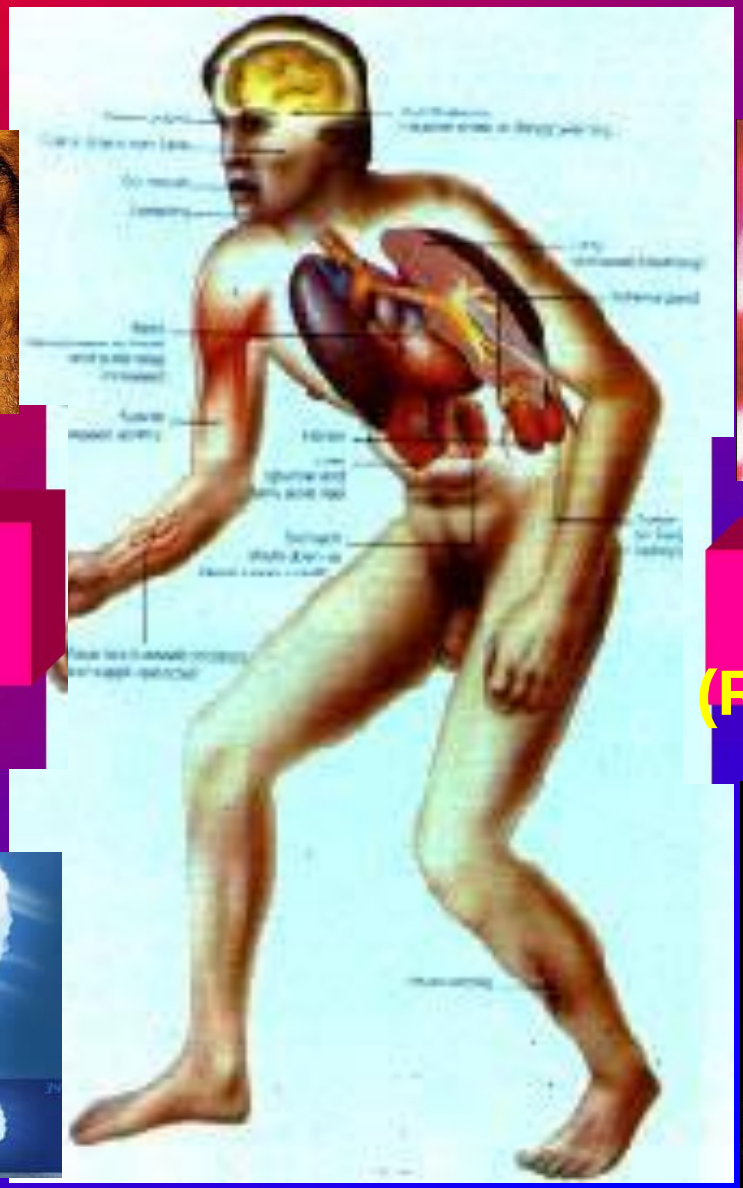
## Hormones

- ***Pregnenolone***
  - **Memory, Neuroprotective**
- ***DHEA***
  - **Regenerates myelin, antidepressant, regulates mood, ⇩ inflammatory cytokines and interleukins**
- ***Cortisol***
  - **Stress, ⇧ rT3**
- ***Melatonin***
  - **Antioxidant, Resets Daily Rhythm, Antineoplastic**
- ***Prolactin***
  - **High-Pituitary Tumor *(Adenoma)***
  - **Low-Treatment Resistant *Anxiety***

Cortisol in all conditions

Stress
(Danger)





FIGHT
(Attacks)

FLEA
(Runs away)

Normal

Stress
(Pleasure)

# Clinical Perles

**Estrogen**

- Progesterone Offset
- Weight Loss
- Liver Detox
- U.S. Pelvis Re: Fibroids, Tumor
- If Estrone ↑ 7 keto DHEA (25-50 mg.)

**Progesterone**

- Chasteberry
- Swedish Pollen Extract

**Testosterone**

- Saw Palmetto 240-260 mg 1-2 x/d
- Metformin 500 mg/d + Coenzyme Q10 100 mg +B Complex 100 1-2/d
- Spironolactone 100 mg BID If DHEA is too high, this can be due to stress,

# Clinical Perles

## *Vaginal Dryness*

**Estriol vaginal cream 0.5 mg to 2 mg.**

**RX: Estriol Vaginal Cream (or suppository) 1 mg in 50% Versa Base® and 50% Mumolo™**

**Sig: Insert vaginally nightly for two weeks, then**

**Monday, Wednesday, Friday X 2 weeks, then PRN.**

# Fixing Marie

## 2/26/17

| 2/26/17 | *Marie* | *Median* |
|---|---|---|
| Testosterone Free | 1.3 pg/ml | 2-4 pg/ml* |
| Testosterone Total | 19.0 ng/ml | <44 ng/ml* |
| DHEA-S | 77 ug/dl | 195 ug/dl* |
| Estrone (E1) | 42 pg/ml | < 200 pg/ml* |
| Estradiol (E2) | <0.5 pg/ml | 90 pg/ml* |
| Progesterone | 0.12 ng/ml | 5-7 ng/ml* |
| Pregnenolone | 108 ng/dl | 100 ng/dl* |
| EP Ratio | 420 | < 250 |

25 OH D 41 (50-80)

Homocysteine 14.2 (<10)

Hct 37.5

cRP 2.07 (<1.0)

## 5/1/2017

| 5/1/17 | *Marie* | *Median* |
|---|---|---|
| Testosterone Free | 2.8 pg/ml | 2-4 pg/ml* |
| Testosterone Total | 32.1 ng/ml | <44 ng/ml* |
| DHEA-S | 152 ug/dl | 195 ug/dl* |
| Estrone (E1) | 78 pg/ml | < 200 pg/ml* |
| Estradiol (E2) | <0.5 pg/ml | 90 pg/ml* |
| Progesterone | 2.1 ng/ml | 5-7 ng/ml* |
| Pregnenolone | 103 ng/dl | 100 ng/dl* |
| EP Ratio | 38 | < 250 |

25 OH D 58

Homocysteine 12.5

Hct 39.5

cRP 1.47

# Marie

***Sleep*** ***(2 hours before bedtime)***

**Vitamin D3 2000 IU 2 hours bedtime- (25 OH D 41)**

**Magnesium Tourat 100 mg 1-2 2 hours before bedtime**

**Melatonin 0.5 mg 1 2 before bedtime**

**L-Threanine 200 mg 0.5-2 hours before bedtime**

***CV, Nutritional Marker*****-Homocysteine 14.2**

**Rx. Methylated B6, B12, Folic Acid, TMG, Betaine 1 in am, 1 in pm**

***Thyroid Antibodies*** **TPO, TAG**

**Rx. Plant Sterolins 1 in am, 1 in Pm**

***Inflammation***

**cRP 2.07 (normal, not optimal)**

**Rx Omega-3 Fatty Acids (Fish Oil) 1000 MG Oral Capsule BID**

**Curcumin 500 mg 1-2 in am , 1-2 in pm**

***GI*****-Digestive Enzymes**

**Probiotic, L-Glutamine**

# Fixing Marie

***Plan:*** **AIP Diet, Aerobic, Anaerobic Exercise 5x/wk. 45 min/session**

***Hormones***: ***Bi-est 2.2 mg/Progesterone 100 mg/Testosterone 1mg/gm***
***1 gm daily to inner thigh or inner arm***

***E/T Precursors*** **(DHEA-s 77 + Memory loss)**
**DHEA 10 mg 1/ day + 25 mg Pregnenolone**

***Insulin Resistance*** **(IR = 3.75)**
**Ceylon Cinnamon, 1 tsp/d**
**Berberine 1/d**

***Urinary Incontinence-*** **(Pt. Stopped after 2 weeks on Testosterone)**
**Cranberry 1/d**
**Berberis vulgaris (10 drops in 4 oz. water 2x/d)**

***Thyroid***
**Levothyroxine Sodium 125 MCG 1 in am on an empty stomach**
**Liothyronine 5 MCG 1 in am, 1 @ noon empty stomach**

# Marie Goes to the Endocrinologist

Ms. nas Hashimotos. She also probably has untreated OSA, which is likely the driver of her sympto complex. Overall, I feel Dr. Clearfield is a shaman, preying on the placebo effect and some modest clinica side effects from drugs like T3 to "help" patients. In my opinion, its a shame he is a DO and he disgraces degree.

We reviewed there is NO legitimate peer reviewed literature supporting the use of androgens in women for any reason. She is only increasing her risk of hirsutism, and likely deriving no benefit.

# Several Dozen  Non Existent Peer Reviewed Literature


- 1.  Debing, E., Peeters, E., Duquet, W., Poppe, K., Velkeniers, B.,  and Van den Brande, P., *Endogenous sex hormone levels in postmenopausal women undergoing carotid artery endarterectomy; European Journal of Endocrinology* 156 687–693
- 2.  Alber, J., et al., "Reduction of lecithin-cholesterol acyltransferase, apolipoprotein D and the Lp(a) lipoprotein with the anabolic steroid stanozolol," *Biochim Biophys Acta 1984;* 795:293-303.
- 3.  Sarrel, P., Cardiovascular aspects of androgens in women," *Semin Reprod Endocrinol* 1998; 16(2):1221-28.
- 4.  Yue, P., t al., "Testosterone relaxes rabbit coronary arteries and aorta," *Circulation* 1995; 91(4):1154-60.
- 5. C. Dimitrakakis, J. Zhou, C.A. Bondy, Androgens and mammary growth and neoplasia, *Fertility and Sterility,* 77 (2002), pp. 26–33
- 6.  C.J. Wolf, A. Hotchkiss, J.S. Ostby, G.A. LeBlanc, L.E. Gray, Effects of prenatal testosterone propionate on the sexual development of male and female rats: a dose–response study, *Toxicological Sciences,* 65 (2002), pp. 71–86
- 7. F. Nordenskjöld, S. Fex, Vocal effects of danazol therapy, Acta Obstetricia et Gynecologica Scandinavica, 63 (1984), pp. 131–132
- 8. V. Matilainen, M. Laakso, P. Hirsso, P. Koskela, U. Rajala, S. Keinänen-Kiukaanniemi, Hair loss, insulin resistance, and heredity in middle-aged women. A population-based study, *European Journal of Cardiovascular Risk*, 10 (2003), pp. 227–231
- 9. D.J. Handelsman, A.J. Conway, C.J. Howe, L. Turner, M.A. Mackey, Establishing the minimum effective dose and additive effects of depot progestin in suppression of human spermatogenesis by a testosterone depot, *Journal of Clinical Endocrinology & Metabolism,* 81 (1996), pp. 4113–4121
- 10. Glaser and Dimitrakakis. Reduced Breast cancer incidence in women treated with subcutaneous testosterone, or testosterone with anastrozole: a prospective, observational study

# Several Dozen  Non Existent Peer Reviewed Literature


11. Shifren JL, Braunstein GD, Simon JA, et al. Transdermal testosterone treatment in women with impaired sexual functioning after oophorectomy. *N Engl J Med*. 2000 Sep 7;343(10):682-8.

12. Davis S. Androgen replacement in women: a commentary. *J Clin Endocrinol Metab.* 1999 Jun;84(6):1886-91.

- 13. Davis SR. Androgens and female sexuality. *J Gend Specif Med*. 2000 Jan-Feb;3(1):36-40.
- 14. Davis SR, McCloud P, Strauss BJ, Burger H. Testosterone enhances estradiol effects on postmenopausal bone density and sexuality. *Maturitas*. 1995 Apr;21(3):227-36.
- 15. Lovejoy JC, Bray GA, Bourgeois MO, et al. Exogenous androgens influence body composition and regional body fat distribution in obese postmenopausal women—a clinical research center study. *J Clin Endocrinol Metab.* 1996 Jun;81(6):2198-203.
- 16. Rako S. Testosterone deficiency: a key factor in the increased cardiovascular risk to women following hysterectomy or with natural aging? *J Womens Health.* 1998 Sep;7(7):825-9.
- 17. Berrino F, Muti P, Micheli A, et al. Serum sex hormone levels after menopause and subsequent breast cancer. *J Natl Cancer Inst.* 1996 Mar 6;88(5):291-6.
- 18. Zhou J, Ng S, Adesanya-Famuiya O, Anderson K, Bondy CA. Testosterone inhibits estrogen-induced mammary epithelial proliferation and suppresses estrogen receptor expression. *FASEB J*. 2000 Sep;14(12):1725-30.
- 19. Dimitrakakis C, Zhou J, Wang J, et al. A physiologic role for testosterone in limiting estrogenic stimulation of the breast. Menopause. 2003 Jul-Aug;10(4):292-8.
- 20. Elbers JM, Asscheman H, Seidell JC, Gooren LJ. Effects of sex steroid hormones on regional fat depots as assessed by magnetic resonance imaging in transsexuals. *Am J Physiol.* 1999 Feb;276(2 Pt 1):E317-25
- 21.  van Geel TA, Geusens PP, Winkens B, Sels JP, Dinant GJ. Measures of bioavailable serum testosterone and estradiol and their relationships with muscle mass, muscle strength and bone mineral density in postmenopausal women: a cross-sectional study. *Eur J Endocrinol.* 2009 Apr;160(4):681-7
- 22. Davis SR, McCloud P, Strauss BJ, Burger H. Testosterone enhances estradiol effects on
- postmenopausal bone density and sexuality. *Maturitas.* 2008 Sep-Oct;61(1-2):17-26
- 23. Dobs AS, Nguyen T, Pace C, Roberts CP. Differential effects of oral estrogen versus oral estrogen and androgen replacement therapy on body composition in postmenopausal women. *J Clin Endocrinol Metab*. 2002 Apr;87(4):1509-16
- 23. Davis SR, Walker KZ, Strauss BJ. Effects of estradiol with and without testosterone on body composition and relationships with lipids in postmenopausal women. *Menopause.* 2000 Nov-Dec;7(6):395-401

# Several Dozen  Non Existent Peer Reviewed Literature


24. Floter A, Nathorst-Boos J, Carlstrom K, Ohlsson C, Ringertz H, Schoultz B. Effects of combined estrogen/testosterone therapy on bone and body composition in oophorectomized women. *Gynecol Endocrinol*. 2005 Mar;20(3):155-60

25. Douchi T, Yoshimitsu N, Nagata Y. Relationships among serum testosterone levels,

body fat and muscle mass distribution in women with polycystic ovary syndrome.

*Endocr J.* 2001 Dec;48(6):685-9

26. Sowers MF, Beebe JL, McConnell D, Randolph J, Jannausch M. Testosterone concentrations in women aged 25-50 years: associations with lifestyle, body composition, and ovarian status. *Am J Epidemiol.* 2001 Feb 1;153(3):256-64. Department of Epidemiology, School of Public Health,  University of Michigan, Ann Arbor, MI, USA. mfsowers@umich.edu .

27. Douchi T, Yamamoto S, Oki T, Maruta K, Kuwahata R, Nagata Y. Serum androgen levels and muscle mass in women with polycystic ovary syndrome. *Obstet Gynecol.* 1999

Sep;94(3):337-40

28. Dimitrakakis, C., Zhou, J., and Bondy, C.A. **Androgens and mammary growth and neoplasia.** *Fertility and Sterility*. 2002; 77: 26–33

29. Salmon, U.J. **Effect of testosterone propionate upon gonadotropic hormone excretion and vaginal smears of human female castrate. Proceedings of the Society for Experimental Biology and Medicine**. *Society for Experimental Biology and Medicine (New York, NY)*. 1937; 3: 488–491

30. Takeda, H., Chodak, G., Mutchnik, S., Nakamoto, T., and Chang, C. **Immunohistochemical localization of androgen receptors with mono-and polyclonal antibodies to androgen receptor.** *Journal of Endocrinology*. 1990; 126: 17–25

31. Wilson, C.M. and McPhaul, M.J. **A and B forms of the androgen receptor are expressed in a variety of human tissues.** *Molecular and Cellular Endocrinology*. 1996; 120: 51–57

32. Glaser, R., York, A.E., and Dimitrakakis, C. **Beneficial effects of testosterone therapy in women measured by the validated Menopause Rating Scale (MRS).** *Maturitas*. 2011; 68: 355–361

33. Maclaran, K. and Panay, N. **The safety of postmenopausal testosterone therapy.** *Women's Health*. 2012; 8: 263–275

34. Davey, D.A. **Androgens in women before and after the menopause and post bilateral oophorectomy: clinical effects and indications for testosterone therapy.** *Women's Health*. 2012; 8: 437–446

35. Loeser, A.A. **Male hormone in gynaecology and obstetrics and in cancer of the female breast.***Obstetrical & Gynecological Survey*. 1948; 3: 363–381

36. Glaser, R., Kalantaridou, S., and Dimitrakakis, C. **Testosterone implants in women: pharmacological dosing for a physiologic effect.** *Maturitas*. 2013; 74: 179–184

37. Glaser, R.L., Dimitrakakis, C., and Messenger, A.G. **Improvement in scalp hair growth in androgen-deficient women treated with testosterone: a questionnaire study.** *British Journal of Dermatology*. 2012;166: 274–27

38. Brunskill, P.J. **The effects of fetal exposure to danazol.** *BJOG: An International Journal of Obstetrics and Gynaecology*. 1992; 99: 212–215

39. Tarttelin, M.F. **Early prenatal treatment of ewes with testosterone completely masculinized external genitalia of female offspring but has no effects on early body weight changes.** *Acta Endocrinologica*. 1986; 113: 153–160

40. Wolf, C.J., Hotchkiss, A., Ostby, J.S., LeBlanc, G.A., and Gray, L.E. **Effects of prenatal testosterone propionate on the sexual development of male and female rats: a dose–response study.** *Toxicological Sciences*. 2002; 65: 71–86

41. Hotchkiss, A.K., Lambright, C.S., Ostby, J.S., Parks-Saldutti, L., Vandenbergh, J.G., and Gray, L.E.**Prenatal testosterone exposure permanently masculinizes anogenital distance, nipple development, and reproductive tract morphology in female Sprague-Dawley rats.** *Toxicological Sciences*. 2007; 96: 335–345

42. Mizuno, M., Lobotsky, J., Lloyd, C.W., Kobayashi, T., and Murasawa, Y. **Plasma androstenedione and testosterone during pregnancy and in the newborn.** *Journal of Clinical Endocrinology & Metabolism*. 1968; 28: 1133–1142

43. Syme, M.R., Paxton, J.W., and Keelan, J.A. **Drug transfer and metabolism by the human placenta.***Clinical Pharmacokinetics*. 2004; 43: 487–514

44. Schwartz, S.R., Cohen, S.M., Dailey, S.H. et al. **Clinical practice guideline: hoarseness (dysphonia).***Otolaryngology-Head and Neck Surgery*. 2009; 141: S1–S31

# Google Scholar Non Existent Peer Reviewed Literature

**“Testosterone in Women”= 591,000 Articles**

**“Testosterone in Women, 2018”= 10,700 Articles**

# S/S Testosterone Excess

- Acne
- Deepening Voice
- Irritability/Moodiness/Anger
- Loss of Hair or Unwanted Hair Growth
- Irregular menses
- Decreased HDL
- Anxiety
- Depression
- Fatigue
- Hypoglycemia
- Salt and sugar cravings
- Facial hair
- Insulin resistance
- Weight gain
- Increased risk of heart disease

# Polycystic Ovary Disease

- Most common endocrine disorder in women of reproductive age.
- Affects 4-10% of the women in the U.S.
- Accounts for 75% of the women with amenorrhea.
- Accounts for 85% of women with androgen excess and hirsutism
- Treatable, but not curable
- Etiology: Chronic anovulation. Genetic Markers are Common.
-  LH,  FSH   Testosterone, Androstenedione
-
-

# UNDERSTANDING PCOS

## SIGNS AND SYMPTOMS

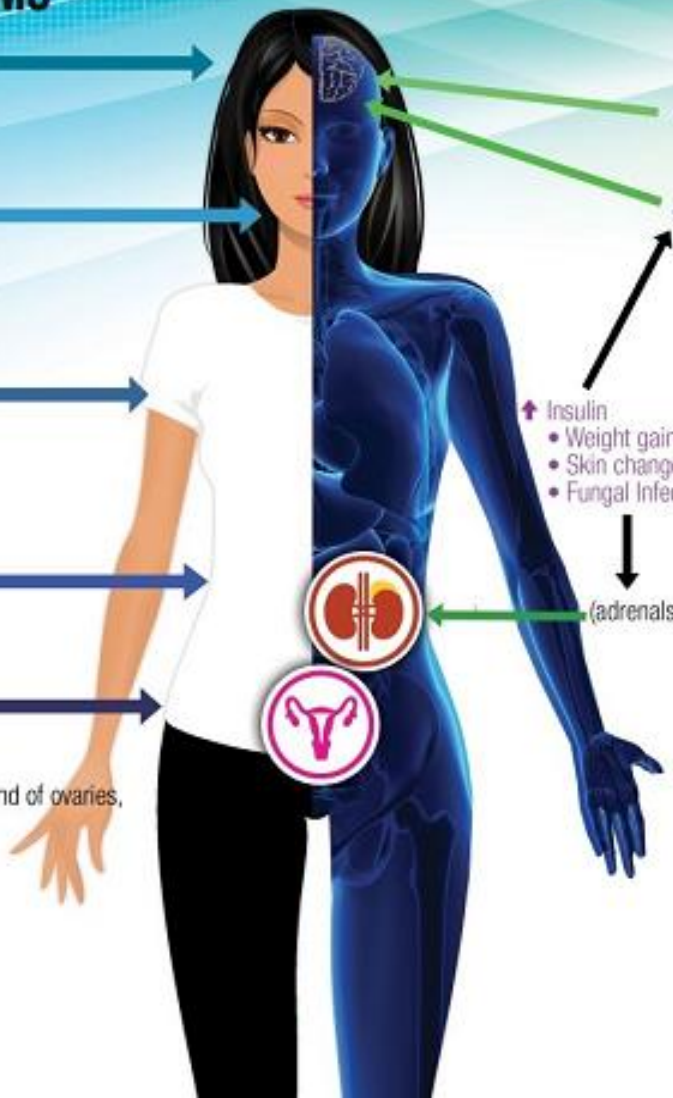
### HEAD
- Dandruff
- Male pattern baldness
- Depression

### FACE
- Excessive hair growth
- Coarse hair growth
- Masculine features

### SKIN
- Dark patches
- Cystic acne

### ABDOMEN
- Weight gain

### PELVIS
- Thickening of wall of uterus
- Polycystic ovaries :
  - Multiple cysts can be seen on ultrasound of ovaries, may cause pelvic pain if large enough.
- Irregular menses
- Infertility



## CAUSES

↑ GnRH (hypothalamus)

↓

↑ LH:FSH (pituitary)

↑ Insulin
- Weight gain
- Skin changes
- Fungal Infection

(ovaries)

Follicles do not mature = Ø ovulation
= Ø menstruation

(adrenals)

↑ estrogen (fat) testosterone
- Acne
- Facial hair
- Male pattern baldness
- Masculine features

# Polycystic Ovary Syndrome

***Diagnosis (must have 2 of 3)***

- **Clinical or biochemical signs of excess androgen activity**
- **Oligoovulation and/or anovulation**
- **Polycystic ovaries on ultrasound (> or equal 12 follicles 2-9mm or vol > 10 ml)**

**Alexander, C., "Polycystic ovary syndrome: a major unrecognized cardiovascular risk factor in women," Rev Obstet Gynecol 2009; 2(4):232-39.**

# Metabolic Profile in POCS

- ↑ Estrogen = ↑ Cortisol =

↓ Thyroid

- Diabetes ( 7x Increase Incidence)
- Heart Disease (Increase PAI-1 = Inc. risk, AMI, HBP)
- Infertility
- Hormonally Related Cancers
- Obesity
  - ↑ Homocysteine, cRP
  - ↓ Antioxidants leading to heart dx.

# RX. PCOS

- Spironolactone
- Cimetidine
- Ketoconazole
- Leuprolide
- Finasteride
- Progesterone
- Low GI Diet
- Estrogenic BCP
- Fiber
- HCG
- Surgery
- Ovarian wedge resection
- Laparoscopic ovarian drilling

# RX. PCOS

- Reduce Stress
- EFA/DHAs
- Hydrate
- Adaptogenic Herbs
- Vitamin D3 (50-80 serum)
- D-chiro-inositol (1200 mg/d)
- Spearmint Tea
- N-acetyl cysteine
- Black Cohosh
- Chasteberry
- Saw Palmetto
- Nettle Root
- Green Tea
- Licorice Root
- Maitake Mushrooms
- Inositol

# Insulin Resistance
# (FBS x Fasting Insulin)/405

- Berberine (200 mg BID)
- Chromium picolinate (600-1200 micrograms)
- Lipoic acid (200-600 mg)
- CLA (1,000-3,000 mg)
- Zinc (25-50 mg)
- Taurine (1,000-3,000 mg)
- Magnesium (400-800 mg)
- Biotin (4-8 mg)
- Vanadium (20-50 mg)
- Vitamin D (Lab 50-80)

# Insulin Resistance
# (FBS x Fasting Insulin)/405

- Co-enzyme Q-10 (30-300 mg)
- B complex (50-100 mg)
- Vitamin C (1,000-3,000 mg)
- Manganese (5-10 mg)
- Inositol (d-chiro-inositol or d-pinitol)
- N-acetylcysteine (NAC)
- GABA
- Lentils, chickpeas, broccoli decrease insulin
- Fenugreek
- Cinnamon
- Gymnemma Sylvestre
- Detox
- Weight Loss Surgery

# Treating Testosterone Excess

- Acne
  - Saw Palmetto-240-260 mg. BID
  - Metformin- 250-1000 mg/d
  - Spironolactone-100 mg 1-2x/d
  - Spearmint Tea
- Acne
  - Etio: Imbalance Between Androgens and E and P
  - Rx:  Premenstrual Acne: Progesterone Alone
  - Continuous Acne: E (Days 1-25) and P (Nights 14-25)
-

# Treating Testosterone Excess

- Hair Loss
  - Reduce T 50%
  - Increase Estradiol, Progesterone
  - Finasteride 2.5 mg/d if T and DHEA are low
  - Platelet Rich Plasma
  - Melatonin 1% Cream to Scalp Nightly x 6 mo.

- Excess Hair Growth
  - Etio: Conversion of Testosterone to DHT
  - Rx: If E and P deficient-Replace
  - If E and P are adequate- Add Finasteride 2.5 mg/d

# Treating Testosterone Excess

- Oily Skin and Scalp
  - Etio: Excess Sebum
  - Rx: Diet: Low glycemic, alkaline diet
- Limit Sugar, Limit Dairy
- Hormone RX:
- ⬆ Female Hormones (Estrogen and Prog.)
- ⬇ Male Hormones (Testo and DHEA)

# Treating Testosterone Excess

## Acid/Alkaline Food Chart

| Most Acidic | Acidic | Acidic | Alkaline | Alkaline | Most Alkaline |
|---|---|---|---|---|---|
| Artificial sweeteners | Wheat | Oysters | Almonds | Kiwi | Lemons |
| Alcohol | Whole wheat | Shrimp | Amaranth | Lettuce | Limes |
| Beef | Barley | Salmon | Apples | Millet | Watermelon |
| Hot dogs | Oat bran | Sardines | Apricots | Molasses | Grapefruit |
| Bacon | Chicken | Yogurt | Avocados | Musk Melon | Asparagus |
| Milk | Turkey | Peanut butter | Bananas | Oranges | Broccoli |
| Cheese | Cod | Pecans | Beets | Peaches | Garlic |
| Ice cream | Haddock | Pinto beans | Cabbage | Pears | Onions |
| White flour | Eggs | Spelt | Carrots | Pineapples | Mangoes |
| White sugar | Butter | Kamut | Cauliflower | Sweet Potatoes | Papaya |
| White pasta | Corn | Peas | Celery | Squash | Parsely |
| Soft drinks | Corn oil | Pumpkin seeds | Cherries | Zucchini | Spinach |
| Box cereal | Currants | | Cucumbers | Quinoa | Dandelion |
| | | | Parsnips | Okra | Kale |
| | | | Dates | Radishes | Swiss chard |
| | | | Flax seeds | Berries | Umeboshi plums |
| | | | Grapes | Sauerkraut | |
| | | | Green beans | Coconut Sugar | |
| | | | Mushrooms | Green tea | |
| | | | Tofu | | |
| | | | Wild rice | | |
| | | | Green tea | | |
| | | | Maple Syrup | | |
| | | | Raw honey | | |
| | | | Ginger tea | | |

# Pre-menopause Remedies

***High Estrogen=PCOS (Check FBS, HbA1c, Insulin, Testosterone)***

1. ***Diet***
    a. ***Low GI, Minifast w Bone Broth, HFLC, Low Fodmaps***
2. ***Insulin Sensitization***
    a. ***Cinnamon-500 mg/d***
    b. ***Chromium picolinate-1200-1600 mcg/d***
    c. ***Alpha lipoic acid 300 mg 1/d (2x/d w neuropathy)***
    d. ***Berberine 200 mg 2x/d (Effective w ⇧ lipids)***
3. ***High Testosterone***
    a. ***Saw Palmetto 240-260 mg/d***
    b. ***Metformin 500 mg 1-4x/d***
    c. ***Spironolactone 50-100 mg/d***

# 11 Home Remedies For Polycystic Ovary

## Flax Seeds

Flax seeds are said to help in treating PCOS as it decreases androgen levels. It also contains lignans that binds the testosterone hormone and prevents it from creating an imbalance in the bod.

## Saw Palmetto

It is often seen that women affected by PCOS also have excess levels of testosterone, which is essentially a male hormone. They can benefit from taking an herb named as Saw Palmetto.

## Chasteberry

Chasteberry, which is also called Angus Cactus and Vitex is also useful for treating symptoms of PCOS.
It regulates the activities of the pituitary gland and thus balances hormonal activities.

## Evening Primrose

Evening Primrose is useful to treat the skin anomalies caused by PCOS in women. It also helps decrease the high cholesterol level in the body.

## Black Cohosh

Black Cohosh is another herb that can be useful to treat symptoms of PCOS. It helps women cope with abnormal periods.

## Give Cinnamon A Try

Cinnamon is an herb that is used widely in kitchens. It is known to increase insulin sensitivity and boost calorie burning. You can include it in your diet to prevent PCOS.

## Spearmint Tea

Yet another great way to deal with PCOS is to consume a glass of spearmint tea for a few weeks. Research suggests that it will help reduce the testosterone level in the body.

## Fenugreek

A commonly used Indian spice, the fenugreek is another sure shot remedy to reduce the effects of PCOS. This spice promotes glucose metabolism that in turn helps regulate the hormones in your body.

# Fixing Julie's Cysts

1. Diet
    1. Moderate Caffeine, Alcohol
    2. No white flour, white sugar

2. Estrogen Dominance
    1. Progesterone 5 % Cream 1 gm daily or
    2. Progesterone Micronized 100-200 mg @ bedtime
       Nights 14-25 of cycle for 3 cycles, the reassess
    3. 7 Keto DHEA 25 mg
    4. DIM 1 gm/d Inc.. by 1 gm/d to 3 gm/d if tolerated
    5. Berberine 1/d
    6. Fish Oil 1000 mg 2/d

Other

| | | | |
|---|---|---|---|
| cRP | 5.71 | (normal 0-3, goal <1.0); | Fish Oil 1000 mg bid; Curcumin 500 mg 1-2 bid |
| 25 OH D3 | 17 | (normal 30-100, goal 50-80) | Vitamin D3 6000 IU @ bedtime |
| Homocysteine | 10.8 | (normal <11, goal <10) | Methylated, B12, Folic Acid |
| IGF-1 | 128 | (Goal 200-250) | Secretagogue @ hs or Semorelean 0.2 cc sq. |

# Is it... HORMONES?

## Ask Your Doctor

## Symptom Chart

Caused by: ↑ Dominate Levels ↓ Submissive Levels

↑↓ Fluctuating Levels ↑ + ↓ High & Low Levels

| | Adrenals | ESTROGEN | PROGESTERONE | TESTOSTERONE | THYROID |
|---|---|---|---|---|---|
| Anxiety | | | ↑+↓ | ↓ | |
| Arthritis | | | | ↓ | ↓ | |
| Bladder Symptoms | | | ↓ | | ↓ | |
| Breakthrough Bleeding | | | ↑ | ↓ | | |
| Breast Tenderness | | | ↑ | ↓+↑ | ↑ | |
| Cramps | | | ↑ | ↓ | | |
| Decreased Sex Drive | | ↓ | ↑ | | ↓ | ↓ |
| Depression | | ↑ | ↓ | ↓ | ↓ | ↓ |
| Dry Skin/Hair | | ↓ | ↓ | | | ↓ |
| Fatigue | | ↓ | | ↑ | ↓ | ↓ |
| Fibrocystic Breast | | | ↑ | ↓ | | |
| Fluid Retention | | | ↑ | ↓ | | |
| Hair Loss | | | ↓ ↑ | ↓ ↑ | ↑ | ↓ ↑ |
| Harder to Reach Climax | | | ↓ | ↓ | ↓ | ↓ |
| Headaches | | | ↓ ↑ | ↓ ↑ | ↓+↑ | ↓+↑ |
| Heavy / Irregular Menses | | | ↑ | ↓ | | |
| Hot Flashes | | ↓ ↑ | ↓ | ↓ | | ↓ |
| Irritability | | | ↑ | ↓ ↑ | | |
| Loss of Memory | | | ↓ | ↓ | ↓ | |
| Mood Swings | | | ↑ | ↓ | | |
| Night Sweats | | ↓ ↑ | ↓ | ↓ | | ↓ |
| Insomnia | | | ↓ | ↓ | ↑ | |
| Vaginal Dryness | | | ↓ | | ↓ | |
| Weight Gain | | | ↑ | ↓ | ↓ | |

# From the "North American Menopause Society"

- **BHRT-**NAMS Endorses Endocrine Society Statement Little or no scientific or medical evidence supports claims that bioidentical hormones are safer or more effective than more traditional FDA-approved therapies. In addition, many custom-compounded "bioidentical hormone" formulations are not subject to FDA oversight and can be inconsistent in dose and purity. (2006, re-released in 2009)
- **Saliva Testing-** Compounders often rely on salivary and blood tests to "assess" your hormone levels to mix their recipes, but these tests are meaningless for midlife women because hormone levels vary from day to day and even from hour to hour. (http://www.menopause.org/publications/clinical-practice-materials/bioidentical-hormone-therapy)
- **Androgens-***There is evidence to support the use of testosterone therapy* in carefully selected postmenopausal women with female sexual interest/arousal disorder (previously known as hypoactive sexual desire disorder) and no other identified etiology for their sexual problem.
- ***There is no evidence to support the use of dehydroepiandrosterone (DHEA) for the management of female sexual interest/arousal disorder.***
- There are currently no androgen-containing prescription products government-approved for the treatment of female sexual interest/arousal disorder in the United States or Canada.
- http://www.menopause.org/publications/clinical-care-recommendations/chapter-8-prescription-therapies

# From the "North American Menopause Society"

- **BHRT-**NAMS Endorses Endocrine Society Statement Little or no scientific or medical evidence supports claims that bioidentical hormones are safer or more effective than more traditional FDA-approved therapies. In addition, many custom-compounded "bioidentical hormone" formulations are not subject to FDA oversight and can be inconsistent in dose and purity. (2006, re-released in 2009)
- http://www.menopause.org/publications/clinical-care-recommendations/chapter-8-prescription-therapies
- **Therapeutics MD Announces FDA Approval of BIJUVA™ (Estradiol and Progesterone) Capsules for the Treatment of Moderate to Severe Vasomotor Symptoms Due to Menopause**

- ***BIJUVA is the First and Only FDA-Approved Hormone Therapy of Bio-Identical Estradiol in Combination with Bio-Identical Progesterone***

# What the Heck Web MD?
# Confusion Abounds

This medication contains 2 female hormones: an estrogen (such as conjugated estrogen, estradiol) and a progestin (such as medroxyprogesterone, norethindrone, norgestimate). It is used by women to help reduce symptoms of menopause (such as hot flashes, vaginal dryness).

https://www.webmd.com › drugs › drug-176851 › bijuva-oral › details

# From the “North American Menopause Society”

- There is no evidence to support the use of dehydroepiandrosterone (DHEA) for the management of female sexual interest/arousal disorder.

- **Nov, 2016**
  - **FDA approves Intrarosa for postmenopausal women experiencing pain during sex**

**INTRAROSA is a steroid indicated for the treatment of moderate to severe dyspareunia, a symptom of vulvar and vaginal atrophy, due to menopause.**

# Estrogen Self Assessment

| S/S Estrogen Deficiency | S/S Estrogen Excess |
|---|---|
| Poor /Non existent libido | Fluid Retention |
| Drooping Breasts | Cervical Dysplasia/Fibroids |
| Vaginal Dryness | Hypothyroidism |
| Urinary incontinence/Infections | Fatigue |
| Hot Flashes | Insomnia/Poor Sleep |
| Night Sweats | Bloating |
| Brain Fog | Anxiety/Fear |
| Memory Issues | Breast Swelling/Tenderness |
| Irregular Menstrual Cycles | Severe Headaches |
| Amenorrhea | Excess Menstrual Bleeding |
| Thinning Skin | Weight Gain |
| Wrinkles Especially Around Mouth | Increased Breast Cancer Incidence In Men |
| Increased Insulin Resistance | Breast Enlargement |
| Osteoporosis | Prostate Enlargement |
| Diabetes | Difficulty Urinating |
| Elevated Lipids | Increased Emotional Lability |
| Heart Disease | Tearfulness |

# Progesterone Self Assessment

**S/S Progesterone Deficiency**

- PMS
- Depression/Mood Swings
- Anxiety/Irritability/Nervousness
- Breast Swelling
- Bloating/Water Retention
- Bone Loss/Osteoporosis
- Uterine Fibroids
- Excessive Menstrual Bleeding
- Decreased HDL
- Insomnia

**S/S Progesterone Excess**

- Worsening Hot Flashes
- Increased Cortisol
- Decreased Glucose Tolerance
- Increased Fat Storage
- Increased Appetite/Carb Cravings
- Depression
- Feeling “Drunk” or “Hungover”
- Water Retention
- Drowsiness

# Testosterone Self Assessment

| S/S Testosterone Deficiency | S/S Testosterone Excess |
| --- | --- |
| Weak, flabby muscles<br>Low Self Esteem<br>Loss of Muscle Mass<br>Lack of Energy/Stamina<br>Loss of Coordination and Balance<br>Loss of Confidence<br>Fatigue<br>Inc.. Mental Fatigue<br>Decreased Libido<br>Lack of Sex Drive/Orgasm<br>Weight Gain<br>Depression<br>Thinned Hair<br>Dry Skin-Poor Elasticity | Aggressiveness<br>Agitated/Irritable<br>Oily Skin/Oily Hair<br>Overconfidence<br>Acne<br>Increased Facial Hair<br>Decreased HDL |