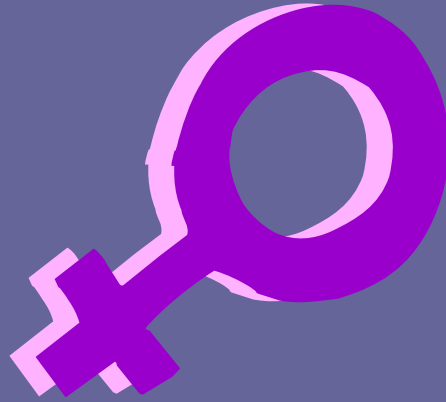
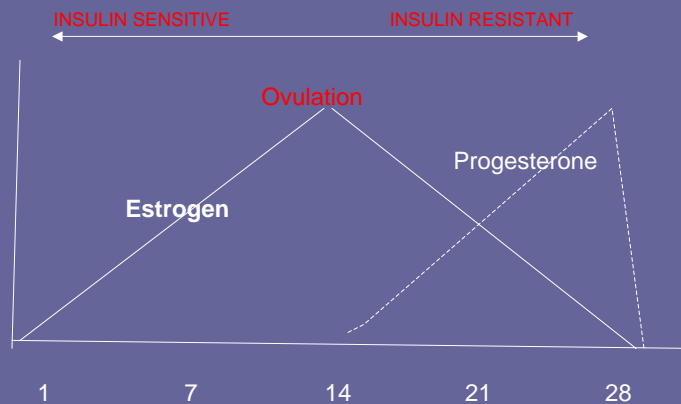


## When Diabetes is a 'She'



Sugars as Barometers in a Woman's Life

## The Menstrual Cycle --a brain-driven mystery



## The Feminine Duo ( +1 )

- Estradiol
  - Responsible for 2° sex traits (breast, vaginal, body fat, skin)
  - Endometrial proliferation
  - Neurocognitive function
  - Salt/water retention
  - Bone density
  - Insulin resistance at high levels
- Progesterone
  - Anabolic (muscle mass)
  - Androgen-like effects
  - Endometrial stabilization
  - Early pregnancy stabilization
  - Pubertal breast formation
  - Insulin resistance
  - Mood

### Testosterone

Directly from ovaries; indirectly from adrenal DHEA

Secondary bone protection

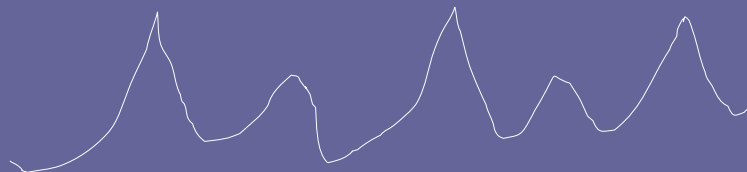
Anabolic: muscle mass enhanced

? Heightened well being and stamina

? Increased libido

## The Mirror's Image: Puberty and Perimenopause

- Estrogen is made in the ovaries
- Young and aging ovaries both are unpredictable



- Estrogen levels are a roller coaster—with overall estrogen levels in early puberty and mid-perimenopause being higher than any other time of life except pregnancy.

## What About Progesterone ?

Progesterone made when we ovulate.

A poorly understood player in 'PMS'

Production diminished/erratic as ovaries mature and/or age.

Increases insulin resistance

Increases hunger

May act in nervous system to cause depression



## And What About Blood Sugars?

Consequences of that estrogen roller coaster

### INCREASE SENSITIVITIES:

- Epinephrine ('adrenaline')
- Cortisol

### DIRECT EFFECTS:

- Estrogens (estradiol, estriol, estrone) increase insulin resistance
- Fluid retention and increase in BP
- Elevation of triglycerides, possible cholesterol changes

### INDIRECT EFFECTS:

Increased 'dawn phenomenon'  
Sleep deprivation with fatigue  
Autoimmune disorders may flare  
Mood: agitation/anxiety/depression



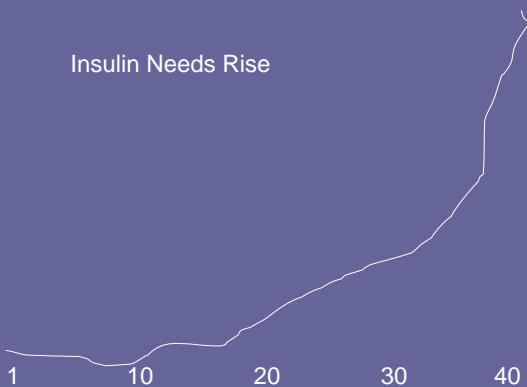
## And What About Blood Sugars?

Consequences of that erratic progesterone

- More PMS
- Increased appetite with weight gain
- Dysfunction bleeding with anovulation
- Remarkable insulin resistance
- Depression/PMS

## PREGNANCY The 40 week Journey

Insulin Needs Rise



## Autoimmunity

- Women are more prone to all autoimmune disorders than men.
- Thyroiditis is the most common human autoimmune disorder
- 50% (at minimum) of patients with T1 or T 1 ½ diabetes have AT
- B12 deficiency
- Celiac disease
- Addison's Disease

## What About HRT?

- Best for helping all E flux symptoms
- Bone protection
  
- Clot Risk
- Breast Risk
- Endometrial Risk

## Alternatives

- Herbals: black cohosh; evening primrose oil;
- Phytoestrogens
- Exercise
- Hydration
- Acupuncture

None of these help the glycemic control problems  
but may help symptoms

## NOW WHAT ?



## A Rough Ride.....



Hang on to your paddle !!!!! (GLUCOSE MONITOR!)

## .....Becomes Eventually Calm

