

Human Reproduction



Animal Science 434 - John Parrish

Puberty

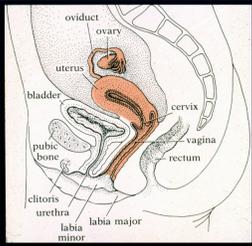
- Female
 - » 11 - 12 years
 - » Influences
 - Nutrition
 - Economic status
 - Trends over last century
- Male
 - » 13 - 14 years
 - » Influences
 - Same as for female
 - Trends over the last century

Sexual Behavior

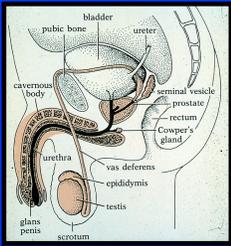


Anatomy

Female



Male



External Cervical Os site of PAP smear

External Genitalia

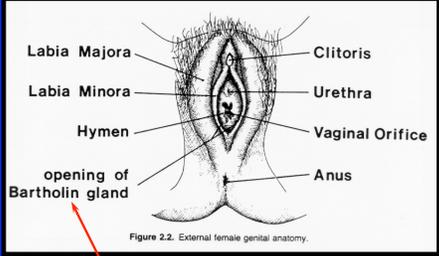


Figure 2.2. External female genital anatomy.

Lubricates Vagina before and during intercourse

- Source of Pheromones
- Dorm effect

Vaginal Environment

- Normally acidic
- Changes from medications, douches, lubricants
 - » Infections
 - Yeast
 - Bacterial

Cervix

- Some think this is a sperm storage site in human
- Sperm survive up to 2 days
- Increase in cervical mucous at time of ovulation
 - » Response to increased estrogen levels

Uterus

- Normal is simplex
- Abnormal
 - » Bicornuate or septae uterus
 - Early delivery or spontaneous abortion
 - Uterus can not enlarge enough
 - » duplex



Ovary

- 400,000 oocytes at birth
- Decrease with age
- Between 40 - 50 years of age enter menopause

Male Facts

- penis is muscular vascular
- ejaculate is approx. 3 ml with 200 million sperm/ml.
- ejaculate coagulates upon ejaculation and then liquifies within 30 minutes

Prostate Gland in Male

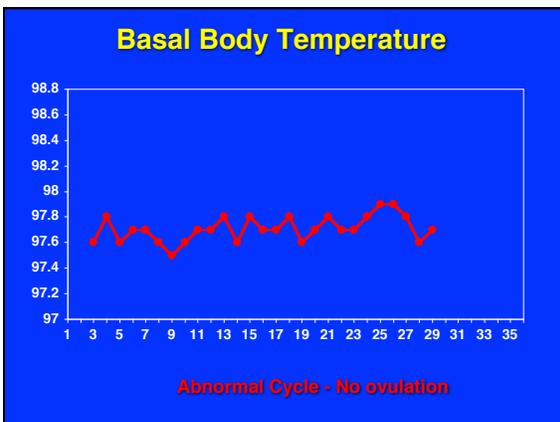
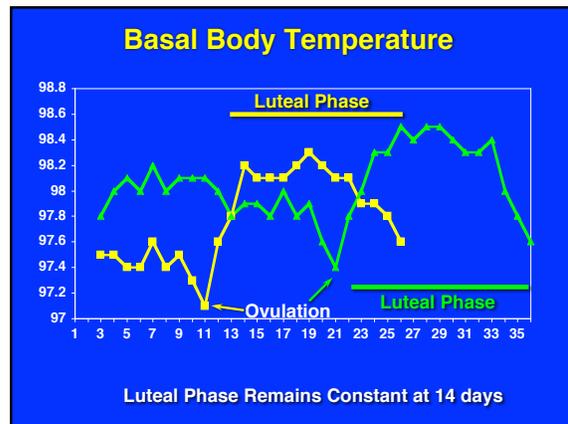
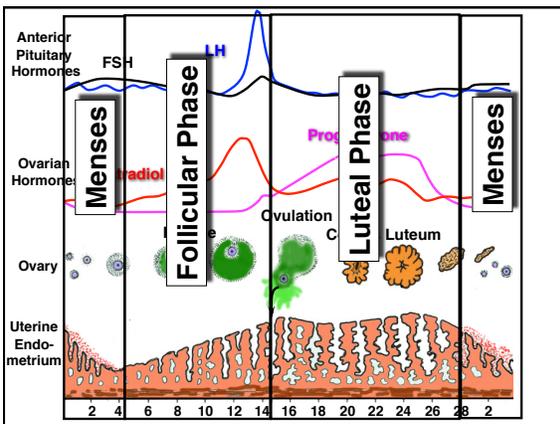
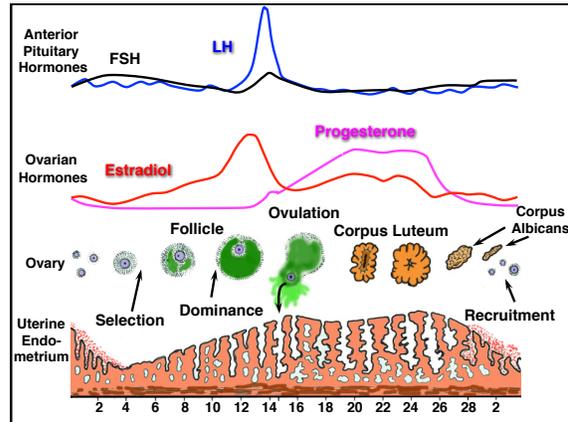
- Prostate gland hyperplasia (BPH)
 - » First growth at puberty
 - » Second growth starts after age 25
 - » Urinary symptoms don't occur before age 40
 - 50% of men at 60 have symptoms
 - 90% of men at 70 - 80 have symptoms
 - » Symptoms
 - a hesitant, interrupted, weak stream
 - urgency and leaking or dribbling
 - more frequent urination, especially at night
 - » Treatment
 - 5 alpha reductase inhibitors
 - Minimal invasive procedures
 - Surgery

Menopause

- Begins at 40 - 55 years of age
- No follicles left to grow
 - » No estrogen - causes symptoms
- Detection
 - » Variable menstrual cycles
 - » Behavior changes and physical changes
 - » FSH increase
 - HMG (human menopausal gonadotropin)
- Hormonal Replacement (estrogen and progesterone)
 - » Relieves behavioral and physical changes
 - » Cardiovascular benefits????
 - » Calcium uptake increases

Andropause

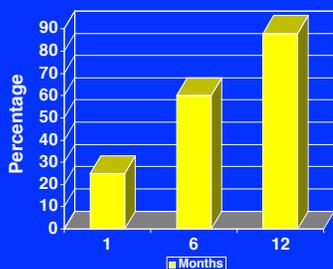
- **Decreased Testosterone Production**
 - » Reduced response to LH
- **Age, 48 -70**
- **Physical Changes**
 - » Loss of muscle mass
 - » Shrinking reproductive organs - penis, testis, accessory glands
 - » Loss of libido, increased stimulus needed for erection, longer refractory period
 - » Osteoporosis
- **Mental Changes**
 - » depression



Ovulatory Pain

- Mittelschmerz (middle pain)
- Day 12 - 16 after start of menstruation
- Lasts 12 to 36 hours

Cumulative Pregnancy Rate



Pregnancy

- Most prolonged cycles are due to spontaneous abortion
- 20% of pregnancies with early pregnancy test spontaneously abort
- Numerous Problems
 - » Time of intercourse - gamete aging
 - » Chromosomal abnormalities

Infertility

- Common definition
 - » Primary Infertility
 - Failure to conceive within 1 year if no previous pregnancy
 - » Secondary infertility
 - Failure to conceive within 6 months if at least one previous normal pregnancy
 - » Assumption
 - Adequate sexual contact or exposure

Adequate Contact or Exposure - Problems

- Male
 - » Hypospadias
 - Urethra opens on bottom of penis
 - » Penis size not important unless both male and female obese. May be a problem in penetration depth.
- Exposure (needed near ovulation)
 - » Average is 2 to 3 times/week
 - » Frequency decreases with length of relationship
 - » Busy schedules
 - If intercourse only on weekends, unlikely to become pregnant
 - Delaying pregnancy into 30s increases problems

Age Associated Problems

- Male
 - » Decreased fertility with age, but can occur into 70s
- Female
 - » Rare if over 50
 - » 10% of women who have conceived can no longer do so by age 35
 - » If over 36 and fail to get pregnant within 6 months should seek evaluation and therapy as time is short.

Misconceptions and Considerations

- Coital position
 - » Does not matter
- Laying in bed for 30 minutes
 - » No scientific merit
- Douching after intercourse will not work as a contraceptive scheme
- Birth control pills
 - » Long term exposure does not effect fertility
 - » First cycle after going off pill, there is a slight increase of double ovulations
- Adoption - anxiety can effect ovulation

Female Infertility

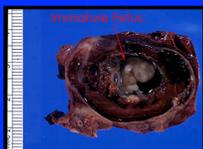
- Failure of follicular development or ovulation
- Tubal blockages and ectopic pregnancies
- Spontaneous abortion
 - » Uterine or CL problems

Stimulating Follicular Growth and Ovulation

- Low dose estrogen
 - » Don't produce enough estrogen for GnRH surge
- HCG
 - » Inadequate LH surge
- Clomaphine Citrate - antiestrogen
 - » Hypothalamus precieves low estrogen so GnRH increases
 - » FSH and LH increase stimulating follicular growth
- Pergonal (HMG - FSH activity)
 - » Stimulates more follicular development

Tubal Disease

- DES exposure
- Infections - blocked oviducts
 - » Pelvic inflamatory disease
 - Chlamydia, Gonorrhea, Strep. and Staph. bacteria, mycoplasma, tuberculosis
 - » Stop infection, tubual surgery or IVF
- Ectopic pregnancies
 - » 1 in 90 - 120
 - » In DES exposure, 1 in 20
 - » Dangerous!!!
 - Pain
 - Spotting or discharge from vagina



Male Infertility

- Low sperm count
 - » Normal 200 million/ml, 2-3 ml
 - » Abnormal <20 million in ejaculate
 - Treatment
 - Scrotal temperature control
 - In vitro fertilization (IVF)
 - Intracytoplasmic Sperm Injection (ICSI)
 - » Sperm or round spermatid
- Abnormal sperm
 - » Treatment
 - Temperature control, IVF, ICSI

Sterilization

- Female
 - » Tubal ligation
- Male
 - » Vasectomy
- Reversal are now possible in some cases

Birth Control

- Female
 - » "The Pill" - progesterone + estrogen
 - » Patches or vaginal Rings
 - » Long term progesterone
 - » IUD



- » Spermicides, Diaphragms

Birth Control

- Male
 - » Condom
 - » New and in some countries
 - Testosterone
 - GnRH agonist
 - Progesterone + Testosterone
 - 5 alpha reductase insensitive testosterone
 - Stimulation of premature spermiation

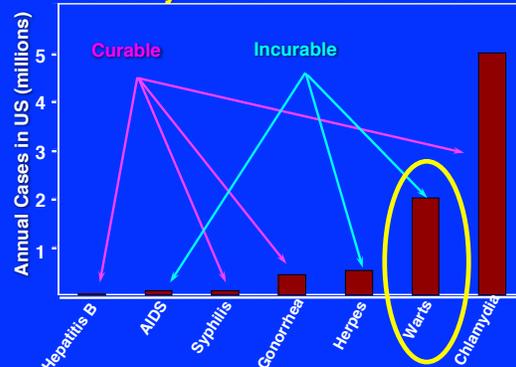
Erythroblastosis Fetalis

- Isoimmunization of mother with foreign red blood cell (RBC) antigens
 - » Human placenta is permeable to some proteins such as antibodies
 - » The anti-red blood cell antibody crosses placenta and destroy fetal RBCs
 - » RBC antigens
 - RH factor
 - Other minor RBC antigens

Erythroblastosis Fetalis (cont.)

- » Conditions for isoimmunization
 - Fetus must have foreign RBC antigen
 - Mother must be negative for this antigen
 - Fetomaternal hemorrhage occurs at birth or spontaneous abortion (miscarriage)
 - From 0.1 to 30 ml of fetal blood enters maternal circulation
- Treatment
 - » Test at first prenatal visit for Rh antibodies
 - » If RH negative and Father Rh positive or unknown
 - Retest at 28 weeks (don't see isoimmunization before this time)
 - Administer Rh-immune globulin
 - At birth if fetus Rh-positive also give it Rh-immune globulin

Sexually Transmitted Diseases



Human Papillomavirus

- 40 types
- Genital Warts – treated by wart removal
- Recurrent respiratory papillomatosis (RRP) – warts in throat
- Cervical Cancer
- Other Cancers which may be due to HPV
 - » Vulva, vagina, penis, anus
 - » Head and neck cancer
- HPV – vaccine
 - » Girls and boys age 11 – 12
 - » Gay and bisexual males through age 26