

Human Reproduction



Animal Science 434 - John Parrish

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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

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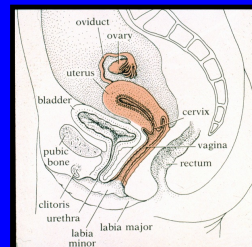
Sexual Behavior



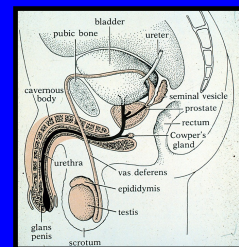
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Anatomy

Female



Male



External Cervical Os site
of PAP smear

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External Genitalia

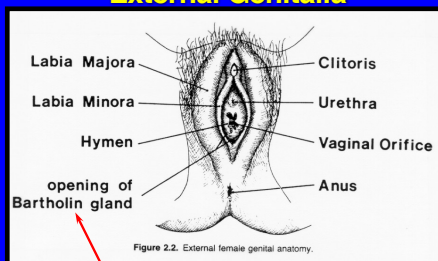


Figure 2.2. External female genital anatomy.

Lubricates Vagina before and during intercourse

- Source of Pheromones
- Dorn effect

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Vaginal Environment

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

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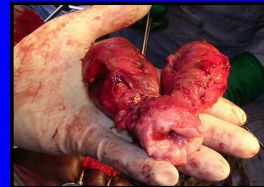
Cervix

- 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

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Uterus

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



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Ovary

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

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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

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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

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Menopause

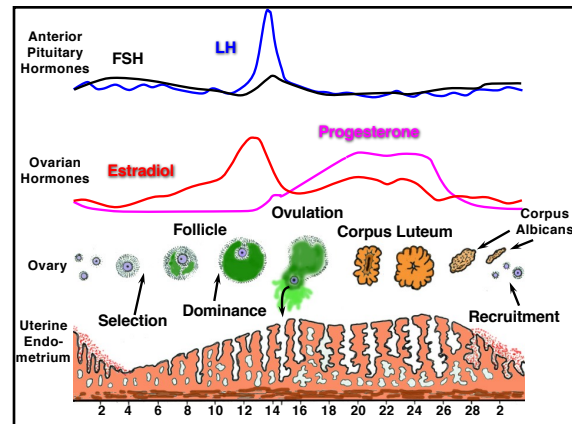
- Begins at 40 - 55 years of age
- No follicles left to grow
 - » No estrogen - causes symptoms
- Detection
 - » Variable menstrual cycles
 - » Behavior changes and physical changes
 - » FSH increase
 - HMG (human menopausal gonadotropin)
- Hormonal Replacement (estrogen and progesterone)
 - » Relieves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

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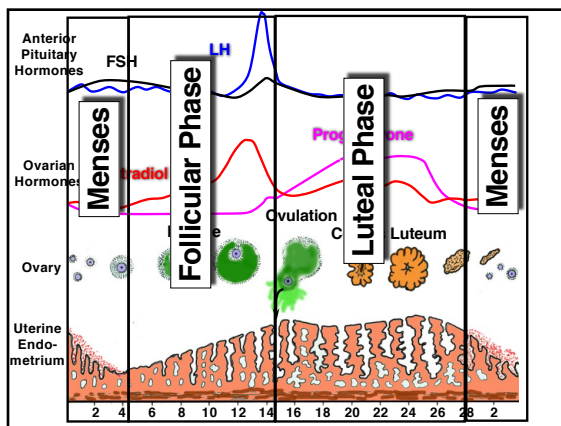
Andropause

- **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

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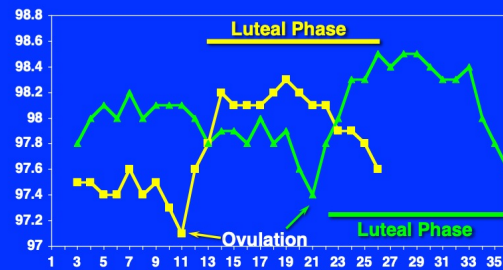


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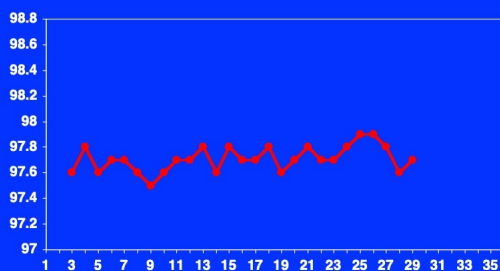
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Basal Body Temperature



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Basal Body Temperature



Abnormal Cycle - No ovulation

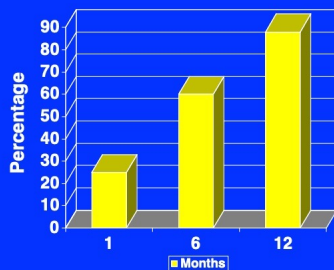
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Ovulatory Pain

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

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Cumulative Pregnancy Rate



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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

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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

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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

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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.

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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

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Female Infertility

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

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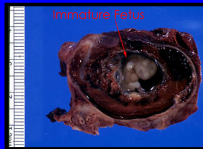
Stimulating Follicular Growth and Ovulation

- 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

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Tubal Disease

- DES exposure
- Infections - blocked oviducts
 - » Pelvic inflammatory 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



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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

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Sterilization

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

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Birth Control

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



- » Spermicides, Diaphrams

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Birth Control

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

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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

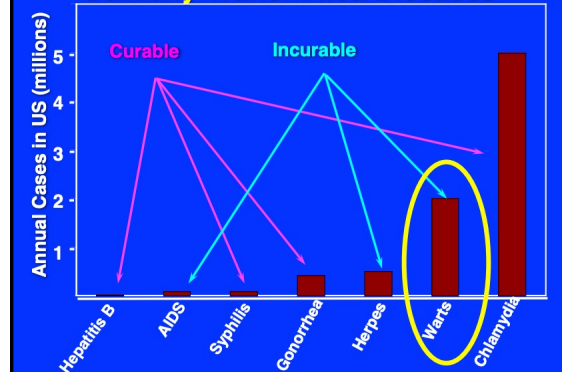
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Erythroblastosis Fetalis (cont.)

- » 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

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Sexually Transmitted Diseases



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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

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