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

<table>
<thead>
<tr>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Diagram: Female reproductive system]</td>
<td>[Diagram: Male reproductive system]</td>
</tr>
</tbody>
</table>

External Genitalia

- 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
  - 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

Basal Body Temperature

Ovarian Hormones
- Follicle
- Ovulation
- Corpus Luteum
- Corpus Albicans

Luteal Phase Remains Constant at 14 days

Abnormal Cycle - No ovulation

Menses

Mittelschmerz (middle pain)
- Day 12-16 after start of menstration
- 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
  - 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.
  - 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.

- **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.
  - Female
    - Average is 2 to 3 times per 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
- Clomiphene 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 inflammatory disease
    - Chlamydia, Gonorrhea, Strep, and Staph, bacteria, mycoplasma, tuberculosis
  - Stop infection, tubal 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
  - Spermacides
Birth Control

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

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

- Hepatitis B: Curable
- AIDS: Curable
- Syphilis: Curable
- Gonorrhea: Curable
- Herpes: Incurable
- Warts: Incurable
- Chlamydia: Incurable