CONTRACEPTION: MODULE I

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METHODS OF CONTRACEPTION:

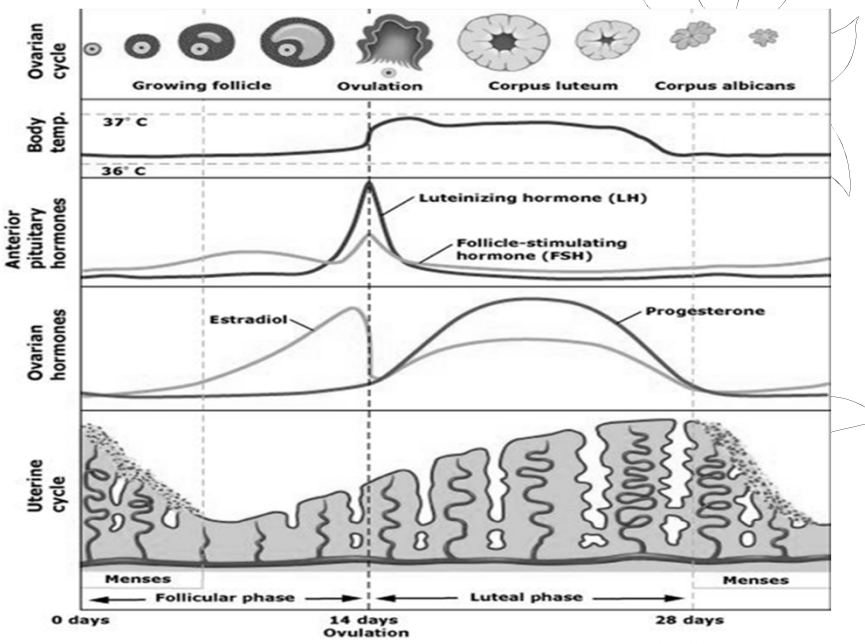
1. ESTROGEN & PROGESTERONE
2. PROGESTERONE ONLY
3. NONHORMONAL

Contraception

Important factors to consider when selecting a contraceptive method:

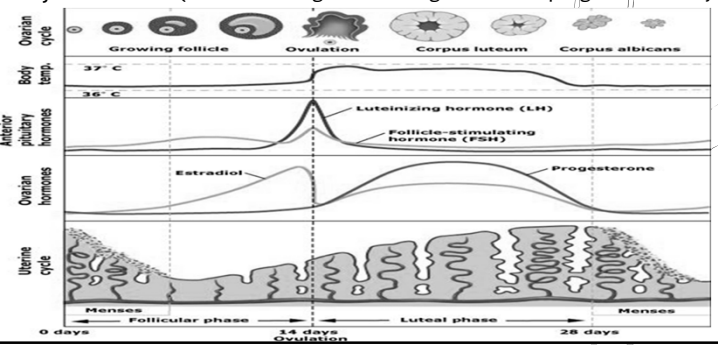
- Patient preferences/previous experiences
- Age
- Health status
- Cost
- Convenience
- Time to return of fertility after cessation
- Efficacy
- Length of protection
- Difficulty of use
- Lack of access to health care
- Safety concerns
- Compliance issues

Menstrual Cycle



MOA of Contraception

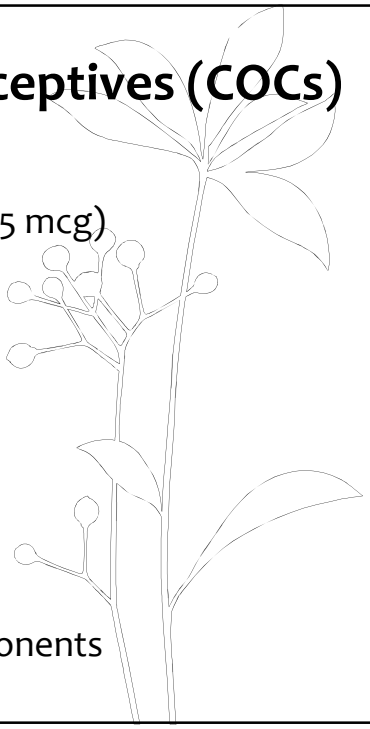
- **Progesterone:**
  - Suppresses LH surge (needed for ovulation)
  - Thickens cervical mucous (impede sperm penetration)
  - Slows tubal motility (delays transport of the ovum & sperm)
  - Causes atrophy of endometrium (prevents implantation)
- **Estrogen:**
  - Suppresses FSH release (suppresses development of dominant follicle)
  - Adds to cycle control (decreases irregular bleeding found with progesterone only methods)



1. ESTROGEN & PROGESTERONE METHODS

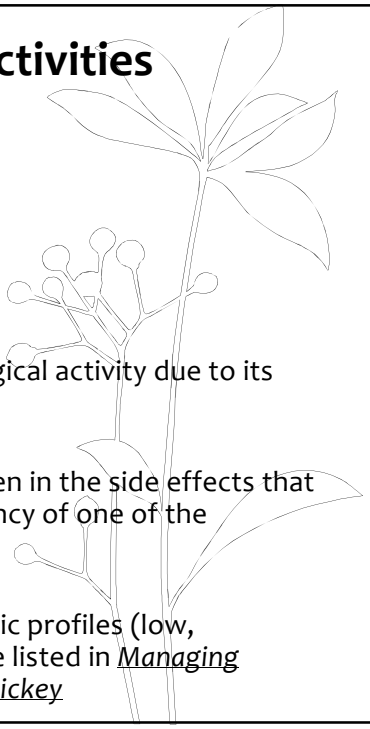
Combined Oral Contraceptives (COCs)

- Contain:
  - 1. **ethinyl estradiol** (EE) (20 - 35 mcg)
    - 20 mcg = Alesse
    - 25 mcg = Ortho-Tricyclen Lo
    - 30 mcg = Desogen
    - 35 mcg = Ortho-Cyclen
  - **AND**
  - 2. a variety of **progestin** components



OCs Biological Activities

- Biological Activities:
  - 1. estrogenic activity
  - 2. progestational activity
  - 3. androgenic activity
  - 4. endometrial activity
  - 5. effect on serum lipoproteins
- Each OC has a different pattern of biological activity due to its individual steroid components
- The results of these activities may be seen in the side effects that occur when there is an excess or deficiency of one of the components.
- Endometrial, progestational & androgenic profiles (low, intermediate, high) of individual OCs are listed in *Managing Contraceptive Pill Patients by Richard P. Dickey*



Progestins

- **Androgenic activity**
  - **First generation**: norethindrone
    - Spotting; break through bleeding (BTB)
  - **Second generation:** norgestrel, levonorgestrel
    - Increased androgenic activity:
      - Decrease BTB
      - Increase acne, hirsutism, dyslipidemia

Progestins

- **Androgenic activity**
  - **Third generation:** desogestrel, norgestimate
    - Decreased androgenicity
      - Lessened acne & hirsutism
      - Lessened adverse effects on carbohydrate & lipid metabolism
  - **Fourth generation:** drosperinone (Yaz) – derivative of spironolactone
    - Low androgenicity (help with acne & hirsutism)
    - Mild diuretic & antimineralocorticoid effects (may cause hyperkalemia)
  - **Third & Fourth generations:**
    - Improved complexion
    - Less weight changes
    - Reduced mood swings
    - ***increased risk of venous thrombosis (greater estrogenic activity)

Combined Oral Contraceptives (COCs)

- **Monophasic**
  - Same dose in each active pill
    - Ex: OrthoCyclen

- **Triphasic**
  - Dose of estrogen, progesterone or both changes
    - Ex: Ortho-Tricyclen (prog changes)
    - Ex: Estrostep (estrogen changes)

- **Extended cycle**
  - 84 active pills with 7 days off
    - Ex: Seasonique (EE 30 mcg/10 mcg)
    - Ex: Amethyst (EE 20 mcg/levonorgestrel x 28 days)

Combined Oral Contraceptives (COCs)

- **MOA:**
  - Inhibits ovulation, thickens cervical mucus, thins endometrial lining, alters tubal transport
- **Failure Rate:**
  - Less than 0.3% -3% with perfect use
- **Advantages:**
  - May improve dysmenorrhea, metrorrhagia, premenstrual syndrome, hirsutism, acne, endometriosis
  - Correct menstrual irregularity
  - May manipulate cycle to avoid menses by skipping placebo week
  - May help prevent benign breast disease
  - Fewer ovarian cysts
  - Reduction/elimination of ovulation associated pain (mittelschmerz)
  - Reduces risk of ovarian & endometrial cancer
  - Fertility immediately reestablished after cessation of use

Combined Oral Contraceptives (COCs)

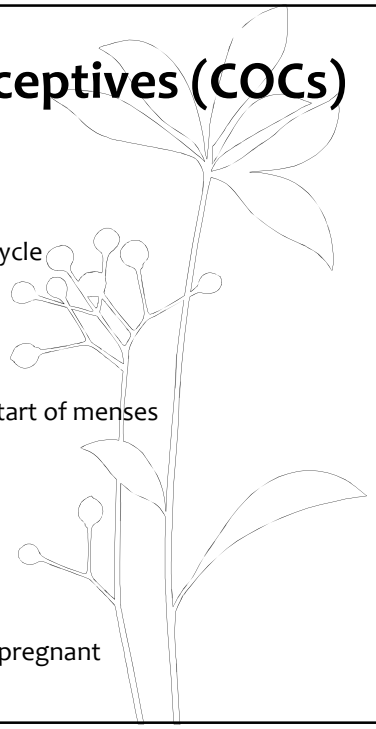
- **Disadvantages:**
  - **Adverse effects:** nausea, breast tenderness, bloating, breakthrough bleeding (BTB), amenorrhea, headaches, decreased libido
  - No protection from STDs
  - Decreased milk production in breastfeeding mothers
  - Risk of venous thromboembolic (VTE) disease
  - Cigarette smoking increases risk of CV adverse effects

Combined Oral Contraceptives (COCs)

- **Contraindications: WHO Category 4 Unacceptable Risk**
  - **Age > 35 yr & smoker** > 15 cigarettes/day
  - **Hypertension, not controlled** or with vascular disease
    - Systolic ≥ 160 or diastolic ≥ 100
  - Current or hx of **DVT/PE**
  - Major surgery with prolonged immobilization
  - Known **thrombogenic mutations**
  - Current or hx of **ischemic heart disease**
  - Current or hx of **stroke**
  - **Valvular heart disease, complicated**
  - **Migraine with neurologic aura**
  - **SLE** with +or unknown antiphospholipid antibodies
  - Current **breast cancer**
  - Active viral **hepatitis**
  - **Cirrhosis,** severe/decompensated
  - Benign hepatocellular adenoma or malignant **liver tumor**

Combined Oral Contraceptives (COCs)

- **How to Start COCs:**
  - 1. **First Day Start**
    - 1st pill is taken on first day of menstrual cycle
    - No BUM needed
  - 2. **Sunday Start**
    - 1st pill is taken on Sunday following the start of menses
    - BUM x 7 days
  - 3. **Quick Start**
    - 1st pill is taken on day of the office visit
    - BUM x 7 days
    - Reasonably sure patient is not currently pregnant



Combined Oral Contraceptives (COCs)

- **Missed COCs:**
  - **Missed 1 active pill**
    - Take as soon as you remember (2 pills in 1 day)
    - BUM x 7 days
  - **Missed 2-4 active pills**
    - Take 2 pills/day for 2-3 days
    - BUM x 7 days
  - **Missed ≥ 5 active pills**
    - SCREAM… just forget it! Got to start over! Start new pack on next start day!
    - BUM until 7 days of active pills
  - **IF IN DOUBT, TAKE ACTIVE PILLS FOR 7 CONSECUTIVE DAYS AND USE BUM!**

Combined Oral Contraceptives (COCs)

- **F/U:**
  - **3 month** after initiation assess:
    - BP
    - Adverse effects
    - Compliance
  - Then, assess annually if no problems
  - Need to switch doses/brands?

COCs: Common Adverse Effects

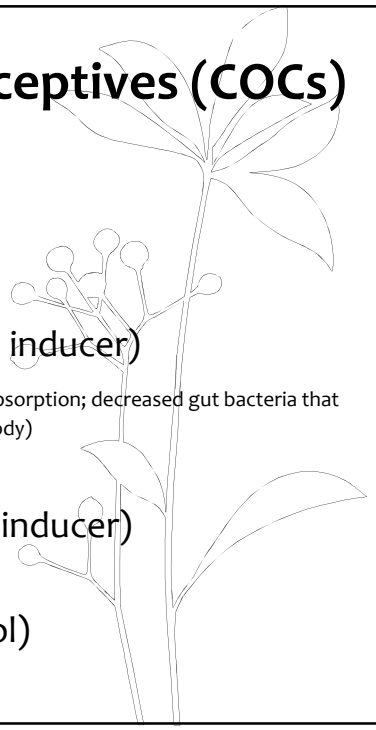
- 1. **Nausea**
  - If initially, may go away
  - Take with food
  - Take at bedtime
  - May be estrogen excess
- 2. **Breakthrough Bleeding (BTB)**
  - If initially, may go away
  - More frequent with progestin only methods
    - May try short course of anti-inflammatory
    - May be estrogen deficiency especially if:
      - Continuous BTB or BTB early in cycle
      - (BTB later in cycle = progestin deficiency)
- 3. **Mood Swings**
  - Progesterone related
  - May be with all hormonal methods; antidepressant?

COCs: Common Adverse Effects

- 4. **Decreased libido**
  - Need more androgenic progesterone
- 5. **Breast enlargement/tenderness**
  - If initially, may go away
  - May be estrogen excess
- 6. **Headache**
  - If initially, may go away
  - May be estrogen excess
- 7. **Weight Gain**
  - Not research supported with COCs
    - Bloating, fluid retention
  - More related to progestin only methods

Combined Oral Contraceptives (COCs)

- **<u>Decreased effectiveness with:</u>**
  - Obesity (>200 lbs)
  - Antimicrobials (Rifampin - 3A4 inducer)
    - PCN & tetracycline (enterohepatic reabsorption; decreased gut bacteria that liberates the drug reabsorbed into bloodstream/body)
  - Antifungal (griseofulvin – 3A4 inducer)
  - Antiepileptic (Dilantin, Tegretol)
    - ok with Neurontin, Lamictal



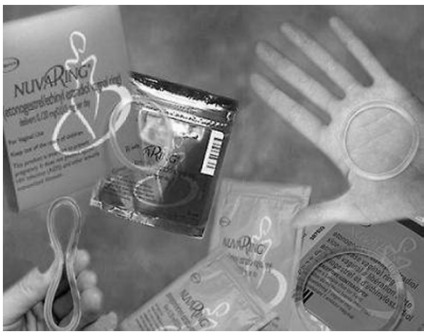
Combination Contraceptive Vaginal Ring: NuvaRing

- Flexible, transparent vaginal ring

Dose:
- Ethinyl estradiol 15 ug
- Etonorgestrel 120 ug

- Remains in vagina for 3 weeks & then removed by the patient to induce menstruation; new ring inserted after 1 full week

- **Efficacy** similar to COCs
  - If ring falls out, efficacy is not diminished if it is reinserted within 3 hours



Combination Contraceptive Vaginal Ring: NuvaRing

- **Advantages:**
  - Once a month administration increases compliance
  - Provides steady, lower systemic hormone levels, thereby diminishing adverse effects from hormone level variation (eg, headache)

- **Disadvantages:**
  - Increased rates of vaginal discharge
  - Possibility of ring dislodgment during intercourse

- **Major Complications:**
  - Same as COCs

Combination Contraceptive Patch: Ortho-Evra Patch

- A patch applied weekly for 3 weeks, followed by a fourth week patch free, during which withdrawal bleeding is expected
- **Efficacy:** 0.3% correct use; 8% typical use
  - Efficacy may be diminished if patient weighs more than 200 lbs
- **Dose:** delivers every 24 hours -
  - Ethinyl estradiol 20 ug
  - Norelgestromin 150 ug
- **First Time Application:**
  - First 24 hrs of menstruation (no BUM needed)
  - First Sunday after initiation of menstruation (BUM x 7 days)

Combination Contraceptive Patch: Ortho-Evra Patch

- **Advantages:**
  - Once-a-week regimen may be easier to remember than daily pills
  - Easy to apply
  - May not have as many drug interactions
- **Disadvantages:**
  - Visible (abdomen, upper torso, outer arm, buttock)
  - May fall off
  - May irritate skin
  - Adverse Effects: similar to COCs
    - Controversy regarding whether the 60% higher estradiol concentration of the patch translate into a higher risk of VTE
- **Major Contraindications:**
  - Same as COCs