Contraception and Abortion

Foundations of MCH

Contraception

- The intentional prevention of pregnancy
  - Birth control - the device or practice to decrease risk of conceiving
  - Family planning - conscious decision on when to conceive
- More than half of pregnancies each year are unintended in women under 20 years
- Risk of pregnancy with contraception
  - Using an imperfect method of contraception
  - Using a method of contraception incorrectly
- Decreasing the risk of pregnancy
  - Providing adequate instruction about how to use contraceptive methods, when to use a backup method, & when to use emergency contraception

Contraceptive failure

- The percentage of contraceptive users expected to have an accidental pregnancy during the first year, even when use of methods is consistent and correct
- Effectiveness varies from couple to couple
  - Properties of the method
  - Characteristics of the user
- Failure rates decrease over time
  - Users gain experience
  - Users use methods more appropriately
  - Less effective users stop using the methods

Methods of Contraception

- Coitus Interruptus
- Natural Family Planning & Fertility Awareness Methods
- Barrier Methods
- Hormonal Methods
- Emergency Contraception
- Intrauterine Devices
- Sterilization
- Future Trends

Natural Family Planning & Fertility Awareness Methods

- Knowledge of the menstrual cycle is basic to the practice of NFP
  - Human ovum can be fertilized no later than 16-24 hours after ovulation
  - Motile sperm have the ability to fertilize the ovum no longer than 24-48 hours
  - Ovulation usually occurs about 14 days before the onset of menstruation
- Pregnancy is unlikely to occur of a couple abstains from intercourse for 4 days before & 3-4 days after ovulation (fertile period)
  - It may be difficult to abstain during this period
  - Women with irregular menstrual periods have the greatest risk of failure

Coitus Interruptus (Withdrawal)

- Involves the male partner withdrawing the penis from the woman’s vagina before he ejaculates
- Criticized as an ineffective method
  - Effectiveness is similar to barrier methods & depends on the man’s ability to withdraw his penis before ejaculation
  - Failure rate = 19%
  - Does not protect against STIs or HIV
Natural Family Planning & Fertility Awareness Methods

- **Natural family planning (NFP)/ Periodic Abstinence**
  - Provides contraception by using methods that rely on avoidance of intercourse during fertile periods
  - The only method of contraception acceptable to the Roman Catholic Church

- **Fertility awareness methods (FAMs)**
  - Combine the charting of signs & symptoms of the menstrual cycle with the use of avoidance or other contraceptive methods during fertile periods
  - Includes the calendar method, the cervical mucus ovulation-detection method, the basal body temperature (BBT) method, the postovulation method, & the symptothermal method
  - Failure rate = 25%
  - Do not protect against HIV and STIs

- **Calendar Method (rhythm method)**
  - Based on the number of days in each cycle counting from the first day of menses
  - Fertile period is determined after accurately recording the lengths of menstrual cycles for 6 months
  - Beginning of the fertile period is estimated by subtracting 18 days from the length of the shortest cycle
  - End of fertile period is estimated by subtracting 11 days from the length of the longest cycle
  - Abstain during the fertile period (unpredictable)
  - Most useful as an adjunct to the basal body temperature

- **Basal body temperature (BBT) method**
  - The lowest body temperature of a healthy person, taken immediately after waking & before getting out of bed
  - **Thermal shift:**
    - Around ovulation = slight decrease in temperature may occur
    - After ovulation = BBT increases slightly
    - Before menstruation = temperature remains on an elevated plateau
  - If pregnancy occurs = the temperature remains elevated
  - Day-to-day variations are difficult to perceive without the entire picture (graphed patterns)
  - BBT alone is not a reliable method of predicting ovulation

- **Cervical mucus ovulation-detection method**
  - Requires that the woman recognize & interpret the characteristic cyclic changes in the amount & consistency of their cervical mucus
  - Some women may be uncomfortable with touching their genitals
  - Can be highly accurate & diagnostically useful
    - To alert a couple to the reestablishment of ovulation
    - To note anovulatory cycles & commencement of menopause
    - To assist couples in planning a pregnancy

- **Symptothermal method**
  - Combines the BBT & cervical mucus methods with awareness of secondary, cycle phase-related symptoms
  - Woman is taught to palpate the cervix to assess for changes indicating ovulation
  - Woman notes days on which coitus, changes in routine, illness, & so on have occurred

- **Predictor Test for Ovulation**
  - Major addition to the NFP & fertility awareness methods to help women who want to plan the time of their pregnancies & those who are trying to conceive
  - Detects the sudden surge of luteinizing hormone (LH) that occurs approximately 12-24 hours before ovulation (home test is available)

- **Barrier Methods: Spermicide**
  - Vaginal spermicide is a physical barrier to sperm penetration that also has a chemical action on sperm
    - Ex. Nonoxynol-9 (a surfactant that destroys the sperm cell membrane)
  - Intravaginal spermicides are sold without prescriptions as aerosol foams, foaming tablets, suppositories, creams, films, sponges, & gels
  - Effectiveness depends on consistent & accurate use
    - Should be inserted no longer than 1 hour before coitus
    - Failure rate = 29%
Barrier Methods: Condoms

- Male condom = a thin, stretchable sheath that covers the penis before genital contact
  - Made of latex rubber, polyurethane, or natural membranes
  - Most condoms will break down with oil-based lubricants (use water-based lubricant)
  - Failure rate = 15%
- Female condom = made of polyurethane & has flexible rings at both end
  - The closed end of the pouch is inserted into the vagina & is anchored around the cervix, & the open ring covers the labia
  - Can be inserted up to 8 hours before coitus & is intended for one-time use
  - Failure rate = 21%
- Protect against pregnancy, as well as STIs and HIV
  - Natural skin condoms do not provide the same protection against STIs & HIV infection

Barrier Methods: Diaphragm

- A shallow, dome-shaped rubber device with a flexible rim that covers the cervix & serves as a mechanical barrier preventing the meeting of the sperm & ovum
- Should be fitted (largest size the woman can wear without being aware of its presence)
  - Replacement should occur every 2 years
  - Refit after weight loss/gain, term birth, or second trimester abortion
- Failure rate = 16%
- More effective if used with spermicidal gel or cream
- Backup method is recommended for initial uses (if used incorrectly)

Barrier Methods: Diaphragm

- Can be inserted as long as 6 hours before coitus
  - Spermicide must be inserted into the vagina each time intercourse is repeated
  - Must be left in place for at least 6 hours after the last intercourse
- Advantages
  - Decrease incidence of vaginitis, cervicitis, & PID for women who use creams, foams, & gels with a diaphragm
  - Reduced risk of cervical dysplasia
- Disadvantages
  - Reluctance of some women to insert & remove diaphragm
  - Possible reduction of vaginal response to sexual stimulation
  - Irritation of tissues due to contact with spermicide
  - Urethritis and recurrent cystitis
- Toxic Shock Syndrome - characterized by sudden onset of fever, chills, vomiting, diarrhea, muscle aches and rash

Barrier Methods: Cervical Cap

- A soft natural rubber dome with a firm but pliable rim that fits snugly around the base of the cervix close to the junction of the cervix & vaginal fornices (physical barrier)
- Recommended that the cap remain in place no less than 8 hours & not more than 48 hours at a time (extended wear convenience)
- Advantages
  - Can be inserted hours before sexual intercourse without a need for additional spermicide later
  - No additional spermicide is required for repeated acts of intercourse
  - Requires less spermicide
- Disadvantages
  - Bad candidates: Women...
    - with an abnormal Pap result, who cannot be fitted properly with existing sizes, who find insertion/removal too difficult, with a history of TSS, with vaginal or cervical infections, or with allergic responses
- Failure rate = 32% parous women; 16% nulliparous women

Barrier Methods: Contraceptive sponge

- A small round polyurethane sponge that contains spermicide designed to fit over the cervix
- Taken off the market in the U.S. in 1995 because of production problems of the manufacturer
- Should be moistened with water before it is inserted into the vagina to cover the cervix
- Provides up to 24 hours of protection for numerous instances of sexual intercourse
- Should be left in place for at least 6 hours after the last act of sexual intercourse before removal
  - Long wearing time (longer than 24-30 hours) is not recommended because of risk for TSS

Hormonal Methods

- Combined Estrogen-Progestin Contraceptives: Oral Contraceptives
  - Regular ingestion of combined oral contraceptive pills (COCs) has the following effects:
    - Suppress the action of the hypothalamus & anterior pituitary
    - Lead to inappropriate secretion of follicle-stimulating hormone (FSH) & LH
    - Inhibit maturation and ovulation of follicles
    - Maturation of the endometrium is altered (less favorable for implantation)
  - From 1-4 days after the last COC is taken, the endometrium sloughs & bleeds as a result of hormone withdrawal
  - Withdrawal bleeding - less profuse than that of normal menstruation & may last only 2-3 days
  - Cervical mucus remains thick
Hormonal Methods

• **COCs (continued)**
  - Failure rate = 8%
  - Monophasic pills provide fixed dosages of estrogen & progestin
  - Multiphasic pills alter the amount of progestin & sometimes the amount of estrogen within each cycle
  - Decreased effectiveness when combined with certain medication (vice-versa)
  - Breast cancer risk in COC users has not been found to be significant

• **Advantages**
  - Increased acceptability
  - Improved sexual response
  - Convenience of predictable menstrual flow
  - Decreased menstrual blood loss & decreased iron-deficiency anemia
  - Regulation of menorrhagia & irregular cycles
  - Reduced incidence of dysmenorrhea & PMS
  - Protection against endometrial & ovarian cancer
  - Reduced incidence of benign breast disease
  - Improved acne
  - Protects against development of functional ovarian cysts & salpingitis
  - Decreases the risk of ectopic pregnancy

• **Contraindications:**
  - History of thromboembolic disorders
  - Cerebrovascular or coronary artery disease
  - Breast cancer
  - Estrogen-dependent tumors
  - Pregnancy
  - Impaired liver function
  - Liver tumor
  - Lactation less than 6 weeks postpartum
  - Smoking if older than 35 years
  - Headaches with focal neurologic symptoms
  - Surgery with prolonged immobilization or any surgery on the legs
  - Hypertension
  - Diabetes mellitus with vascular diseases

• **Side effects:**
  - Stroke, myocardial infarction, thromboembolism, hypertension, gallbladder disease, liver tumors
  - Excess estrogen: breast tenderness, nausea, fluid retention, dysmenorrhea
  - Estrogen deficient: early spotting, hypomenorrhea, nervousness, & atrophic vaginitis
  - Excess progestin: increased appetite, tiredness, depression, breast tenderness, vaginal yeast infection, oily skin & scalp, hirsutism, postpill amenorrhea
  - Progestin deficient: late spotting, breakthrough bleeding, heavy flow with clots, decreased breast size

• **OC 91 Day Regimen**
  - Extended oral contraceptive (Seasonale) approved in 2003
  - Contains estrogen and progestin and is taken in 3 month cycles (12 weeks) followed by 1 week of inactive pills
  - Typical failure rate 2%

• **Transdermal Contraceptive System**
  - Contraceptive patch delivers continuous levels of norelgestromin & ethynl estradiol
  - Can be applied to lower abdomen, upper outer arm, buttock, or upper torso
  - Application is on the same day once a week for 3 weeks, then one week without (withdrawal bleeding occurs)
  - Mechanism of action, efficacy, contraindications & side effects are similar to those of COCs

• **Progestin-Only Contraception**
  - Impair fertility by:
    - Inhibiting ovulations
    - Thickening & decreasing the amount of cervical mucus
    - Thickening the endometrium
    - Altering cilia in the uterine tubes
Hormonal Methods

- **Oral Progestins (Minipill)**
  - Low dose of progestin
  - Failure rate = 8%
  - Effectiveness increases if taken correctly
  - Must be taken at the same time each day
  - Users complain of irregular vaginal bleeding

- **Injectable Progestins (Depo-Provera)**
  - Given intramuscularly in the deltoid or gluteus maximus muscle
  - Should be initiated during the first 5 days of the menstrual cycle & administered every 11-13 weeks
  - Failure rate = 3%
  - Advantages: highly effective, long-lasting effects, the requirement of injections only 4 times/year, lactation not likely to be impaired
  - Disadvantages: prolonged amenorrhea or uterine bleeding, increased risk of various thrombosis & thromboembolism & no protection against STIs

Emergency Contraception (EC)

- EC is available in over 100 countries (1/3 without a prescription)
-Plan B approved for over-the-counter sales to women 18 and older
  - Contains 2 doses of levonorgestrel
  - Used within 120 hours of unprotected intercourse to prevent pregnancy
  - Ineffective if already pregnant
  - Pregnancy rates are reduced by 75-89%
- Contraindications: pregnancy & undiagnosed abnormal vaginal bleeding
- Over-the-counter antinausea 1 hour before each dose can minimize side effect of nausea
- Evaluation for pregnancy is necessary if menstruation does not begin within 21 days after taking the pills
- Other types of EC (by prescription only) - High doses of oral progestins or COCs & insertion of the copper IUD

Intrauterine Devices

- A small, T-shaped device loaded with either copper or a progestational agent that is inserted into the uterine cavity
- Failure rate: less then 1%
- Advantages:
  - Constant contraception without having to take pills, reversibility, may be inserted at any time during menstrual cycle, less blood loss during menstruation, decreased primary dysmenorrhea
- Contraindications in women with a history of PID, pregnancy, undiagnosed genital bleeding, suspected genital malignancy, distorted intrauterine cavity
- Disadvantages:
  - Increased risk of PID in the first 20 days after insertion, risk of bacterial vaginosis, uterine perforation, no protection against STIs or HIV

Sterilization

- Surgical procedures intended to render a person infertile
- Occlusion of the passageways for the ova & sperm
  - Women: oviducts (uterine tubes) are occluded
  - Men: sperm ducts (vas deferens) are occluded
- Only surgical removal of the ovaries (oophorectomy) or uterus (hysterectomy) or both will result in absolute sterility for women

Female Sterilization

- **Bilateral tubal ligation (BTL)**
  - May be done immediately after childbirth, concomitant with abortion, or as an interval procedure
  - Half of BTLs are done immediately after a pregnancy
  - Outpatient basis
  - Failure rate = 0.5%
- **Tubal Occlusion**
  - A laparoscopic approach or a minilaparotomy may be used for tubal ligation, tubal electrocautery, or the application of bands or clips
- **Transcervical Sterilization**
  - Experimental technique to inject occlusion agents into the uterine tubes
Male Sterilization

- **Vasectomy** - sealing, cutting or tying of man’s vas deferens so that the sperm cannot travel from the testes to the penis
  - easiest & most commonly used operation for male sterilization
  - Outpatient basis & local anesthesia
  - Sterility is not immediate:
    - ducts must be cleared of remaining sperm (~20 ejaculations)
    - No effect on potency (ability to achieve erection) or volume of ejaculate
  - Failure rate = 0.15%

- **Tubal reconstruction**
  - Reanastomose of the sperm ducts can be accomplished successfully in more than 90% of cases

Sterilization

- **Laws & Regulations**
  - Strict laws for informed consent
  - Laws restrict sterilization of minors & mentally incompetent individuals
  - Many states permit voluntary sterilization of any mature, rational woman without reference to her marital or pregnancy status
  - Discussion of procedure with partner is recommended

- **Future trends in Contraception**
  - Existing methods are being improved & new methods are being developed
  - Ex. New female barrier methods, male hormonal methods, etc.
  - Overcoming barriers: lack of funding for research, governmental regulations, conflicting values about contraception, & high costs of liability coverage for contraception

Abortion

- **Induced abortion**
  - Purposeful interruption of a pregnancy before 20 weeks’ gestation
  - *Elective abortion* - if performed at the woman’s request
  - *Therapeutic abortion* - if performed for reasons of maternal or fetal health or disease

- Factors contributing to decision:
  - Preservation of the life or health of the mother
  - Genetic disorders of the fetus
  - Rape or incest
  - Pregnant woman’s request

- U.S. Supreme Court - first trimester abortion is permissible, risk of death in the mortality rate from interruption of early gestation is less than the mortality rate after normal term birth:
  - About 88% of abortions are performed during first trimester (60% in the first 8 weeks)
  - Second trimester abortion is left up to individual states

- Biological complications after abortion are low & psychologic sequelae is uncommon

First Trimester Abortion Methods

- **Vacuum Aspiration**
  - The most common procedure with about 95% being carried out by suction curettage
  - Early abortions can be done with a small flexible plastic cannula without cervical dilation or anesthesia

- **Mifepristone (RU 486)**
  - a synthetic steroid with antiprogestational effects

- **Methotrexate & Misoprostol**
  - Methotrexate – a cytotoxic drug that causes early abortion by blocking folic acid in fetal cells so they cannot divide
  - Misoprostol – prostaglandin analogue inserted into the vagina
  - Nausea, vomiting, & cramping are common after insertion

Second Trimester Abortion Methods

- **Dilation & Evacuation**
  - Performed at up to 20 weeks of gestation, but is more appropriate for 13-16 weeks
  - May have long-term harmful effects on the cervix
  - Accounts for almost all second trimester abortions

- Induction of uterine contractions with hypertonic solutions and uterotonic agents account for only 0.8% of all abortions