FAMILY PLANNING AND CONTRACEPTION

Methods of birth control:

- Cervical cap
- Male condom
- Diaphragm
- Birth control pills
- Spermicides
- Lubricant
- Female condom

Ina S. Irapon, MD, FPOGS, FPSRM, FPSGE
References:

- Comprehensive Gynecology, 2012
- Handbook on Reproductive Endocrinology and Infertility, 2012
- Medical Eligibility Criteria for contraceptive use (WHO, 4th ed)
Terms used in birth control methods

- “Pearl Index”
  - Used for reporting the effectiveness of a birth control method;
  - used as a statistical estimation of the number of unintended pregnancies in 100 woman-years of exposure
  - a lower Pearl index represents a lower chance of getting unintentionally pregnant;

- “Perfect Use”
- “Actual Use”
Coitus-related methods have higher pearl index than non-coitus related methods:

<table>
<thead>
<tr>
<th>COITUS-RELATED METHODS</th>
<th>NON-COITUS RELATED METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom</td>
<td>OCPS</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>Injectables</td>
</tr>
<tr>
<td>Spermicides/Nonoxynol-9</td>
<td>Patches</td>
</tr>
<tr>
<td>sponge</td>
<td>IUDS</td>
</tr>
<tr>
<td>withdrawal</td>
<td>Vaginal rings</td>
</tr>
</tbody>
</table>
I. Natural Family Planning (NFP)

“Periodic abstinence methods”
“fertility awareness-based methods”
1. Standard Days Method

- 33 colored beads with a movable rubber ring on a string.

- Can only be used if:
  a. Your cycle is regular.
  b. Your cycle is never shorter than 26 days.
  c. Your cycle is never longer than 32 days.
  d. The couple will not have intercourse from day 8 through day 19 of each cycle (white beads)
1. Standard Days Method

Example:
2. Calendar Rhythm Method

- rationale rests on **3 assumptions:**

1. Human ovum is capable of being fertilized for only about 24h after ovulation
2. Spermatozoa retain their fertilizing ability for only about 48h after coitus
3. Ovulation usually occurs 12 to 16 days before the onset of subsequent menses
2. Calendar Rhythm Method

- Formula for Fertile period:
  - Shortest cycle minus 18 days
  - Longest cycle minus 11 days
2. Calendar Rhythm Method

Example:
A woman was instructed to record her menstrual cycle lengths for a period of 6 months.

1\textsuperscript{st} cycle: 31 days  
2\textsuperscript{nd} cycle: 26 days  
3\textsuperscript{rd} cycle: 24 days  
4\textsuperscript{th} cycle: 35 days  
5\textsuperscript{th} cycle: 28 days  
6\textsuperscript{th} cycle: 28 days

Calculate the woman’s fertile period (days to abstain from intercourse)

Answer: fertile period is from day 6 to 24
3. Temperature/ “BBT” method

- The woman is required to abstain from intercourse from the onset of the menses until the 3rd consecutive day of elevated body temperature.
  1. The temperature is taken and recorded every morning before getting out of bed.
  2. The temperature will rise by 0.4 degrees F around the time of ovulation and remains elevated until the start of the next cycle.
  3. If there are 3 days of continuous temperature rise following 6 lower temperatures, ovulation has occurred.
3. Temperature/ “BBT” method

- The woman is required to abstain from intercourse from the onset of the menses until the 3rd consecutive day of elevated body temperature.
4. Cervical Mucus/ "Ovulation" Method

- Abstinence is required during the menses and every other day after the menses ends until the first day that copious slippery mucus is observed.
- Abstinence is observed everyday thereafter until 4 days after the slippery mucus is present.

![Fertility Level: Low, High, Peak, High](image)
5. Symptothermal method

- Cervical mucus and basal body temperature (BBT) are used to identify the fertile period.
- Rely on cervical change to signal the start of the fertile period and use the BBT chart to identify the end of the fertile period.
6. Two-day Method

- simpler form of the ovulation method
- Two questions are asked by the woman:
  1. Do I have secretions today?
  2. Did I have secretions yesterday?
  3. If she has secretions of any type today or yesterday, she should consider herself fertile.
- If no secretions are felt for two consecutive days, pregnancy is unlikely even with unprotected intercourse.
7. Lactation Amenorrhea Method (LAM)

- All postpartum women who wishes to use LAM should satisfy the following criteria:
  1. Menstrual period has not resumed.
  2. The infant is fully or nearly fully breastfed frequently, day and night.
  3. The infant is under six months of age

- The suckling of the infant stimulates the release of prolactin.
- Prolactin disrupts the pulsatile secretion of gonadotropin releasing hormones (GnRH), which averts the natural pulsatility of LH secretion needed for follicular development.
- Ovulation is prevented by inhibiting the LH surge.
2. Artificial Contraception
Artificial Contraception

- Hormonal
- Surgical
- IUD
- Barrier
Artificial Contraception

- Artificial contraception can either be:
  a. Reversible/temporary/ “active methods”
  b. Permanent/”terminal” method
Hormonal Contraception

Forms: injections, implants, patches, pills, and a hormone-releasing intrauterine system (Mirena).
Oral Contraceptive Pills

three major types of OC formulations:

1. Combination fixed-dose /monophasic
   ex. Althea, Diane, Trust

2. Combination multiphasic
   ex. Gracial, Qlaira

3. Progestin-only pills (POPs)
   ex. Daphne, Cerazette
Withdrawal vs Breakthrough bleeding

- bleeding during the hormone-free interval is called **withdrawal bleeding**, as it occurs upon cessation of the progestin component of the pill.

- Bleeding that occurs during the time that active pills are ingested is called **unscheduled, intracyclic, or breakthrough bleeding.**
The estrogen component manifests its contraceptive action through the following mechanisms:

- It inhibits release of FSH from the anterior pituitary, preventing selection of a dominant follicle.

- It provides stability to the endometrium, decreases the rate of breakthrough bleeding, and thins out the cervical mucus.

- It increases the concentration of progestin receptors, thus allowing for decreased dosage.
The progestin component has the following actions:

- It inhibits release of LH from the anterior pituitary, thus preventing ovulation.
- Its main effect is on the endometrium, leading to decidualized lining and atrophied glands unreceptive to implantation.
- It increases viscosity of the cervical mucus, making sperm penetration more difficult.
- It may influence secretion and peristalsis within the fallopian tubes, thus providing additional contraceptive effects.
# OCPs: Combined Oral Contraceptives (COCs)

<table>
<thead>
<tr>
<th>Type</th>
<th>Formulation</th>
</tr>
</thead>
</table>
| **First-Generation/”high dose” Oral Contraceptives** | Products containing $\geq 50$ ug ethinyl estradiol (EE)  
Example: FEMENAL                                                                                           |
| **Low-Dose Oral Contraceptives**         | Products containing $<50$ ug EE                                                                                                             |
| **Second-Generation Oral Contraceptives** | Ethinyl estradiol component: 20, 30, or 35 ug  
Progestin: levonorgestrel and other members of norethindrone family                                                                 |
| **Third-Generation Oral Contraceptives** | Ethinyl estradiol: 20, 30, or 35 ug  
Progestin: **desogestrel, gestodene, norgestimate**                                                                                     |
| **Fourth-Generation Oral Contraceptives** | Products containing drospirenone, dienogest, or nomegaretrol acetate                                                                       |
## Monophasic COCs

Same dose combination of an estrogen and progestin each day.

<table>
<thead>
<tr>
<th>Monophasic OCP</th>
<th>Ethinyl estradiol</th>
<th>Progestin Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second-Generation OCP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charlize (DKT)</td>
<td>30 mcg</td>
<td>Levonorgestrel 150 mcg Ferrous fumarate 75 mg</td>
</tr>
<tr>
<td>Lady (DKT)</td>
<td>30 mcg</td>
<td>Levonorgestrel 150 mcg Ferrous fumarate 75 mg</td>
</tr>
<tr>
<td>Nordette (Wyeth)</td>
<td>30 mcg</td>
<td>Levonorgestrel 150 mcg Ferrous fumarate 75 mg</td>
</tr>
<tr>
<td>SEIF (Bayer)</td>
<td>30 mcg</td>
<td>Levonorgestrel 150 mcg Ferrous fumarate 75 mg</td>
</tr>
<tr>
<td>Trust Pill (DKT)</td>
<td>30 mcg</td>
<td>Levonorgestrel 150 mcg Ferrous fumarate 75 mg</td>
</tr>
<tr>
<td>Micropil (Dyna Drug)</td>
<td>35 mcg</td>
<td>Levonorgestrel 150 mcg Ferrous fumarate 75 mg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Norethisterone 400 mcg</td>
</tr>
<tr>
<td>Third-Generation OCP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercilon (MSD)</td>
<td>20 mcg</td>
<td>Desogestrel 150 mcg</td>
</tr>
<tr>
<td>Meliane (Bayer)</td>
<td>20 mcg</td>
<td>Gestodene 75 mcg</td>
</tr>
<tr>
<td>Gynera (Bayer)</td>
<td>30 mcg</td>
<td>Gestodene 75 mcg</td>
</tr>
<tr>
<td>Marvelon-28 (MSD)</td>
<td>30 mcg</td>
<td>Desogestrel 150 mcg</td>
</tr>
<tr>
<td>Yasmin (Bayer)</td>
<td>30 mcg</td>
<td>Drosiprenone 3 mg</td>
</tr>
<tr>
<td>Fourth-Generation OCP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yaz (Bayer)</td>
<td>20 mcg</td>
<td></td>
</tr>
<tr>
<td>Althea (DKT)</td>
<td>35 mcg</td>
<td></td>
</tr>
<tr>
<td>Diane-35 (Bayer)</td>
<td>35 mcg</td>
<td></td>
</tr>
</tbody>
</table>
**Multiphasic COCs**

Pills containing several different dose combinations

<table>
<thead>
<tr>
<th>Multiphasic OCPs</th>
<th>Formulations</th>
</tr>
</thead>
</table>
| **Gracial (MSD)** | Desogestrel 25 mcg + EE 40 mcg (7 blue tablets)  
Desogestrel 125 mcg + EE 30 mcg (15 white tablets) |
| **Logynon (Bayer)** | LNG 50 mcg + EE 30 mcg (6 tablets)  
LNG 75 mcg + EE 40 mcg (5 tablets)  
LNG 125 mcg + EE 30 mcg (10 tablets) |
| **Trinordiol (Wyeth)** | LNG 50 mcg + EE 30 mcg (6 brown tablets)  
LNG 75 mcg + EE 40 mcg (5 white tablets)  
LNG 125 mcg + EE 30 mcg (10 yellow tablets) |
When to start COCs postpartum and postabortion?

- After spontaneous or induced abortion of a fetus of less than 12 weeks’ gestation → OCs should be started immediately to prevent conception after the first ovulation.

- For women who deliver after 28 weeks and are not nursing → the combination pills should be initiated 2 to 3 weeks after delivery.

- If the termination of pregnancy occurs between 21 and 28 weeks → contraceptive steroids should be started 1 week later.
Why are COCs not recommended for breastfeeding women?

- **Estrogen** inhibits the action of prolactin in breast tissue receptors;

- therefore, the use of combination OCs diminishes the amount of milk produced by OC users who breast-feed their babies
Nice to know…

- EE is about 1.7 times as potent as the same weight of mestranol, making a 50-mcg mestranol pill approximately as potent estrogenically as a 35-mcg EE pill.

- Desogestrel, norgestimate, and gestodene have been shown in animal, but not human, studies to have similar or greater progestogenic potency than an equivalent weight of levonorgestrel, with less androgenic activity.
Nice to know…

- The synthetic steroids have greater oral potency per unit of weight than do the natural steroids.

- Ethinyl estradiol has about 100 times the potency of an equivalent weight of conjugated equine estrogen or estrone sulfate for stimulating synthesis of various hepatic globulins.
Accidental pregnancies occurring during OC use...
Absolute contraindications for COCs
World Health Organization Medical Eligibility Criteria for Contraceptive Use 2009

1. Previous or acute episode of deep venous thrombosis or pulmonary embolism
2. Current and history of ischemic heart disease, cardiovascular accidents (stroke)
3. Known thrombogenic mutations (Factor V Leiden; Prothrombin mutation; Protein S, Protein C, and antithrombin deficiencies)
4. Women \( \geq 35 \) years old and heavy smoker (\( \geq 15 \) cigarettes/day)
5. Multiple risk factors for arterial cardiovascular disease (older age, HPN, smoking, diabetes)
6. Severe hypertension (SBP\( \geq 160 \) or DBP\( \geq 100 \))
Absolute contraindications for COCs

World Health Organization Medical Eligibility Criteria for Contraceptive Use 2009

7. Complicated valvular heart disease
8. Migraine headaches without aura (≥ 35 years old); with aura at any age
9. Diabetes mellitus with vascular disease
10. Systemic lupus erythematosus (SLE) with positive or unknown antiphospholipid antibodies
11. Severe hepatic disease (acute or flare viral hepatitis, cirrhosis, hepatoma)
12. Breastfeeding (< 6 weeks postpartum)
13. Breast cancer
Progestin-only Pills (POP)/”Minipill”s

consist of tablets containing a low dose of progestin without any estrogen and are ingested once every day without a steroid-free interval

<table>
<thead>
<tr>
<th>Cerazette (MSD)</th>
<th>Desogestrel 0.075 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daphne (DKT)</td>
<td>Lynestrenol 0.500 mg</td>
</tr>
<tr>
<td>Exluton (MSD)</td>
<td>Lynestrenol 0.500 mg</td>
</tr>
</tbody>
</table>
Progestin-only Pills (POP)/Minipills

• The daily progestin-only preparations do not consistently inhibit ovulation.

• They exert their contraceptive action via the other mechanisms listed earlier, but because of the inconsistent ovulation inhibition, their effectiveness is lower than that of the combined pills.

• Clinicians should counsel their patients using the minipill that preparations should be consistently taken at the same time of day to ensure that blood levels do not fall below the effective contraceptive level.
Progestin-only Pills (POP)/Minipills

- Because the factors that predispose to thromboembolism are caused by the estrogen component, the incidence of thromboembolism in women taking the minipill is not increased.

- Furthermore, blood pressure is not affected, nausea and breast tenderness are eliminated, and milk production and quality are unchanged.

- Disadvantages: intermenstrual and other abnormal bleeding patterns
Long-acting contraceptives (LARC)

- patch
- Vaginal ring
- Subdermal implants “implanon”
- Injectable suspensions
- IUD
### Long acting Reversible Contraception Methods (LARC) and “Forgettable methods”

**Box 13-1  Comparison of Long-Acting Reversible Contraception (LARC) Methods**

<table>
<thead>
<tr>
<th></th>
<th>LNG-IUS</th>
<th>Copper IUD</th>
<th>ENG Implant</th>
<th>DMPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>5 years</td>
<td>10 years</td>
<td>3 years</td>
<td>3 months</td>
</tr>
<tr>
<td><strong>Estrogen-free</strong></td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Progestogen-free</strong></td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Inhibits ovulation</strong></td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Irregular bleeding</strong></td>
<td>+/-</td>
<td>-</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td><strong>Heavy bleeding</strong></td>
<td>-</td>
<td>+/-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Amenorrhea</strong></td>
<td>+/-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

“Forgettable methods” are LARC methods that do not require any action by the woman for at least 3 years. This includes the patient to have an injection every 3 months.
Intrauterine devices

Copper IUD

LNG-IUS
“Mirena”
Intrauterine devices

Mechanism of Action:
• All intrauterine devices induce a local inflammatory reaction of the endometrium, and the cellular and humoral components expressed in the tissue and the fluid fill the uterine cavity to create an environment that is toxic to sperm.
The LNG-IUS, has an added benefit of progesterone (Levonorgestrel) which thickens cervical mucus to impede sperm penetration and access to the upper genital track, and also produces a thin, inactive endometrium.
Emergency Contraception

- Steroids are most effective if treatment begins within 72h after unprotected coitus
- IUD is effective if inserted within 7 days from unprotected coitus
Surgical Sterilization
A. Pomeroy’s Technique/
Modified Pomeroy’s Technique

- Tube is grasped in the mid-portion with a Babcock clamp and ligated with suture.

- The mesosalpinx is perforated within the loop, and the tube is cut above the knot.

- This technique will help minimize the bleeding by compressing and sealing the mesosalpinx prior to tubal transection.

Pomeroy’s technique (A);
Modified Pomeroy’s Technique (B)
(Illustration by Dr. Enrico Gil C. Oblepias)
Surgical Sterilization

B. Parkland Procedure

- introduced by Parkland Memorial Hospital in the 1960’s

- avascular portion of the mesosalpinx is entered, and the tube is separated from the mesosalpinx.

- A 2-cm segment of the mid-portion of the tube is ligated proximally and distally with 0 chromic suture. The intervening segment is then excised.
Surgical Sterilization

C. Irving Procedure

- proximal segment of the tube is buried into the posterior uterine wall and the distal stump is buried in the mesosalpinx
Surgical Sterilization

D. Uchida Tubal Ligation

- Similar to Irving
- proximal portion of the tube buried in the mesosalpinx while the distal portion is exteriorized and left unburied.
E. Madlener Procedure

- The tube is picked-up and a loop of its mid-portion is crushed with a clamp.

- After which, the base of the crushed segment is ligated beneath the clamp.
F. Aldridge Procedure

- fimbriated end of the tube is freed from the mesosalpinx and tied.
- A traction suture is placed at the end of the tube which will be used to draw the ligated fimbriated end into a small incision in the broad ligament where it is fixed away from the ovary.
Surgical Sterilization

G. Kroner Procedure

- fimbriectomy
- discontinued since 1979 due to high complication and failure rates.
Tubal Occlusion

1. Electrocoagulation
2. Silicone rubber band
3. (Falope ring)
4. Spring clip (Hulka)
5. Titanium clip (Filshie)
6. Microinsert
Male Sterilization

- only available surgical sterilization option for men.
- It is a surgical procedure that occludes the passage of sperm through the vas deferens (vasectomy)
- A semen analysis is performed 6 to 12 weeks after the procedure, or after 15 to 20 ejaculations, to confirm that the ejaculate is free of sperm. In the meantime, a reliable form of contraception should be utilized.
WHO Medical Eligibility Criteria for Contraceptives
## WHO Medical Eligibility Criteria

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>WITH CLINICAL JUDGEMENT</th>
<th>WITH LIMITED CLINICAL JUDGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use method in any circumstances</td>
<td>Yes (Use the method)</td>
</tr>
<tr>
<td>2</td>
<td>Generally use the method</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Use of method not usually recommended unless other more appropriate methods are not available or not acceptable</td>
<td>No (Do not use the method)</td>
</tr>
<tr>
<td>4</td>
<td>Method not to be used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COC</td>
<td>POP</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td><strong>BREASTFEEDING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 6 weeks</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>6 wks – 6 months</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 6 months</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>POSTPARTUM</strong> (not breastfeeding)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 21 days</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>&gt; 21 days</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
# WHO Medical Eligibility Criteria

<table>
<thead>
<tr>
<th>SMOKING</th>
<th>COC</th>
<th>POP</th>
<th>INJ</th>
<th>CIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 35 years</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Age ≥ 35 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 15 cigarettes/day</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>≥ 15 cigarettes/day</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
## WHO Medical Eligibility Criteria

<table>
<thead>
<tr>
<th>HYPERTENSION</th>
<th>COC</th>
<th>POP</th>
<th>INJ</th>
<th>CIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx but BP cannot be taken</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>BP controlled and monitored</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Elevated BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sys 140-159; Dia 90-99</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Sys &gt; 160; Dia &gt; 100</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Vascular Disease</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>BMI &gt; 30</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>MULTIPLE RISK FACTORS FOR ARTERIAL CARDIOVASCULAR DISEASE</strong></td>
<td>3/4</td>
<td>2</td>
<td>3</td>
<td>3/4</td>
</tr>
</tbody>
</table>
Thank you!
youtube channel: Ina Irabon
www.wordpress.com: Doc Ina OB Gyne