

CONTRACEPTION

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Introduction

Contraception is a part of Family Planning

(Contraception - recurrent abortion and infertility management - genetic counseling)

Regulation of family size

Wide range of methods is available

No ideal contraception exists

Contraception failure (the perfect use rate - the typical rate)

Intelligent choice of contraception :

Medical care provider (information , advice) + *Couple (needs)*

Stratification

Physiological - Natural

Hormonal

Mechanical - Barrier

Chemical

Oral - Vaginal

Intrauterine Device

Injectable - Implant

Temporary - Permanent

Emergency contraception

Hormonal Contraception

Synthetic female sex steroids (estrogens - progestins)

Administration (oral - implant - injectable - IUDs - vaginal)

Estrogens :

Ethinyl Estradiol (EE)

Mestranol (ME) - bioactivation in liver to EE

Progestins:

- **Estrane / 19-norprogestins (= testosterone + C 19), oral :**

norethynodrel, norethinodrone acetate, lynestrenol, norgestrel

norgestimate, desogestrel, gestodene (newer)

- **Pregnane / 17-acetoxy progestin (= progesterone), injectable :**

medroxy-progesterone acetate (Provera)

1- Affinities for estrogen, androgen, and progesterone receptors:

Directly bounded (norethinodrone, levonorgestrel)

Require bioactivation (newer : norgestimate, desogestrel, gestodene)

Progesterone receptors (medroxy-progesterone acetate,17-acetoxy progestin)

2- Ovulation inhibition:

newer are more selective

little dose (= little or no androgenic effect + inhibit ovulation)

3- Substitute for progesterone, and antagonize estrogen:

androgenic potency on lipid and glucose metabolism

+LDL , -HDL / effect glucose tolerance

*** Oral Contraceptive Pills (the most widely used) :**

Combined oral contraceptives (COCs)

Progestin-only formulations (POPs)

**** Injectable Hormonal Contraceptives:**

Progestin-only injectables

Combined injectables

***** Subdermal implants:**

Norplant

Implanon

****** Postcoital Contraception (emergency contraception):**

Estrogens - Combined

Copper IUDs

Danazol - Mifepristone

Oral Contraceptive Pills :

Types:

a- Combined oral contraceptives :

Monophasic / Multiphasic, (+21 days, -7days).

b- Progestin-only formulations : (Every day without interruption).

Mechanism of action:

a- Suppression of ovulation :

Suppress FSH and LH

b- Endometrium hypotrophy :

Not suitable to implantation

c- Thickening of cervical mucus :

Difficult for sperm

Advantages :

Effective

Other beneficial health effects

- **Reduce menstrual irregularities.**
- **Reduce hypermenorrhea / anemia / dysmenorrhea / premenstrual syndrome / PID / Functional ovarian cyst.**
- **Reduce ovarian and endometrial cancer.**
- **Reduce ectopic pregnancy.**
- **Reduce benign breast disease.**

Disadvantages :

Require daily use

No protection against STIs, HIV

Side effects are common :

Combined **Nausea, Dizziness, breast tenderness, headaches, mood changes, weight gain, breakthrough bleeding.**

Progestins **Irregular bleeding, amenorrhea, and similar but less common.**

May pose health risks (*Combined*)

Adverse effects : (*Combined*)

Lipid (+LDL, +Cholesterol, -HDL)

Glucose metabolism (effect glucose tolerance)

Hypertension (A-Renin / H₂O + Na) + weight gain

Thrombosis (? Coagulation factors ? Platelet ?)

Hepatic (biliary stone)

Contraindications: (*Combined*)

History: thrombosis/ embolus/ cerebral hemorrhage/ coronary disease.

Estrogen-dependent malignancy

History: gestational cholestasis/ impaired liver function/ hepatic adenoma.

**Hypertension / Diabetes / Heavy smoking + >35years /
Hyperlipidemia**

Migraine / Sickle cell disease / Epilepsy

**Planned major surgery / Active gallbladder disease /
Undiagnosed genital bleeding**

Injectable Hormonal Contraceptives :

Types :

a- Progestin-only

Depot-medroxyprogesterone acetate (DMPA) / 3 months

Norethisterone enanthate / 2 months

b- Combined / 1 month

Mesygyna (50mg DMPA+5mg estradiol valerate)

Cyclofem (25mg DMPA+5mg estradiol cypionate)

Injectable Hormonal Contraceptives

Mechanism of action:

- a- Suppression of ovulation .
- b- Endometrium hypotrophy, not suitable to implantation
- c- Thickening of cervical mucus, making it difficult for sperm

Advantages :

- Safe & effective
- Long-acting (but combined 1 month)
- No effect on lactation
- Other beneficial health effects

Injectable Hormonal Contraceptives

Disadvantages :

- Menstrual changes (**Irregular bleeding/spotting , prolonged/heavy bleeding , amenorrhea**) (less in combined)
- No protection against STIs, HIV
- Side effects (**headache ,dizziness ,breast tenderness , mood changes , Weight gain**) (more in combined)
- Effects cannot be stopped immediately
- Return to fertility is usually delayed (9 months)

Long term adverse effects :

DMPA : possible effect on bone density (<21y)

Combined : based on safety information for COCs.

Subdermal Implants :

Types :

Capsules placed under the skin that slowly release a progestin

a- Norplant:

Levonorgestrel / 6 match-sized / 5 years

b- Implanon:

Etonogestrel / single rod / 3 years

Mechanism of action:

a- Thickening of cervical mucus, making it difficult for sperm

b- Suppression of ovulation in 1/2 of a women's cycles

Advantages :

Safe & effective

Long-acting

No effect on lactation

Other beneficial health effects

Can be reversed anytime + Rapidly restoring fertility

Disadvantages :

- Menstrual changes (**Irregular bleeding/spotting , prolonged/heavy bleeding , amenorrhea**)
- No protection against STIs, HIV
- Requires provider's help + minor surgical procedure (twice)

Postcoital Contraception (Emergency C):

Implantation occurs on the 6th day after fertilization / Within 72hrs

Estrogens :

Tubal mobility and endometrium alteration - Interference with corpus luteum function.

Combined :

The most used regimen (EE 200mcg+norgestrel 2mg) (Overall 2+2tab/12h)

Copper IUDs :

More effective than sex steroids.

Mifepristone : Anti progesterone (RU486).

Danazol : Weak androgen - pregnancy rate 2%.

STERILIZATION

Female sterilization:

Surgical tubal occlusion

Advantages :

Safe & highly effective

Permanent method

No long-term adverse effects

Disadvantages :

Small risk of surgical complications

High initial cost

No protection against STIs, HIV

Cannot be reversed

Post-sterilization syndrome

Male sterilization:

Vasectomy, vas deferens and tubes occlusion

Advantages :

Safe

Permanent method

No long-term adverse effects

Minor surgery

A waiting period

Non Hormonal Contraception

* **Lactational amenorrhea method (LAM)**

** **Periodic abstinence**

*** **Coitus interruptus**

**** **Barrier methods**

Male, female condom / Diaphragm / Cervical cap

Vaginal spermicides

Lactational amenorrhea method (LAM):

Must be:

Within 6 m. postpartum + Amenorrhea + Fully breastfeeding

Mechanism of action:

Suckling nipples >> Hypothalamus , Prolactin + >> GnRH - >>
FSH - LH - >> Follicular development 0 >> No ovulation.

Advantages :

Effective (for all breastfeeding women) (no preparations)

Begins immediately postpartum (be used while women decide)

Disadvantages :

Requires conditions

No protection against STIs, HIV

Periodic abstinence & Coitus interruptus :

Advantages :

Readily available

Safe and side effects free

Disadvantages :

Requires skills and motivation (partner's cooperation)

No protection against STIs, HIV

High failure rate

Barrier methods:

Male, female condom / Diaphragm / Cervical cap / Vaginal spermicides

Mechanism of action:

Work by physically or chemically blocking.

Advantages :

Effective if used consistently and correctly

Safe and no systemic side effects

Immediate initiate, discontinue and return to fertility

Some protects against STIs, HIV

Disadvantages :

Requires motivation + partner's cooperation consistently

High failure rate

Intrauterine Devices IUD

Inert & Medicated (Copper or Hormone releasing)

Mechanism of action:

Causing endometrium reaction (making it hostile to sperm and possibly to egg).

Timing of insertion :

During menstruation - Anytime if no pregnancy

Postpartum >6w - post abortion (if no infection or hemorrhage)

Advantages :

Highly effective

Long acting but easily reversible with return to fertility

No effect on lactation

Disadvantages :

No protection against STIs, HIV

Requires trained provider's help (twice)

Can cause side effects :

Cramping & Increased, prolonged menstrual (inter.) bleeding

Can have complications :

PID (sequels)

Perforation (serious)

Expulsion

Ectopic pregnancy (more than other methods)

Intrauterine pregnancy (septic abortion - PROM - premature)

Contraindications :

History or recent STIs or PID

Uterine distortion

Unexplained vaginal bleeding

Others : Allergic to Cu /// Previous EP /// Nulliparity

Hormone releasing intrauterine system (IUS)

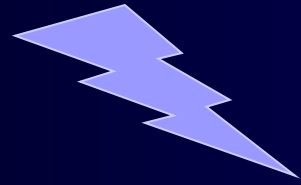
- *Progestins released directly into the uterus*
- *Thickening of cervical mucus + Partial ovulation suppression + Tubal motility*
- *Reduces quantity and duration of menstruation + pain*
- *Expensive*

Method

Typical rate
Perfect rate

Typical rate

Method	Perfect rate	Typical rate
<u>Non</u>	<u>85%</u>	<u>85%</u>
<u>COC</u>	<u>0.001%</u>	<u>2-3%</u>
<u>POP</u>	<u>0.005%</u>	<u>2-3%</u>
<u>IUD</u>		<u>2-3%</u>
<u>Sterilization (F)</u>		<u>0.004</u>
<u>Sterilization (M)</u>		<u>0.001</u>
<u>Periodic abstinence</u>	<u>9%</u>	<u>20%</u>
<u>Male condom</u>	<u>2%</u>	<u>12%</u>
<u>Diaphragm</u>	<u>6%</u>	<u>18%</u>
<u>Vaginal spermicides</u>	<u>9%</u>	<u>28%</u>



Contraception

« 45% women in genital activity »

Asia >60% ---- Africa < 20%

Thank You