

# 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 hpermenorrhea / 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 / H<sub>2</sub>O + 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)**

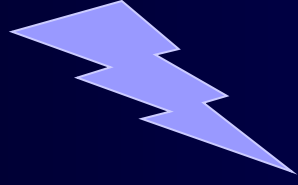
- *Progestins released directly into the uterus*
- *Thickening of cervical mucus + Partial ovulation suppression + Tubal motility*
- *Reduces quantity and duration of menstruation + pain*
- *Expensive*

Method

Typical rate  
Perfect rate

Typical rate

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



# Contraception

« 45% women in genital activity »

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

Thank You