Family Planning & Contraception

Definition:
It optimizes both fetal well-being & maternal health by allowing sexually active couples to plan & prepare for the pregnancies they desire.

Ideal contraceptive:

- Inexpensive
- Easy & simple to use
- Minimum side effects
- Doesn't affect normal sexual intercourse
- Highly effective (high success rate in preventing pregnancy)
- Rapidly reversible
- Readily available
- Can be administered by non-healthcare personnel.
- Doesn't interfere with social & religious background

Contraceptive **effectiveness**

1. Perfect VS typical use (method failure and patient failure)
2. Correct VS incorrect use
3. Long term VS short term

Pearl index

- Method used for determination of pregnancy **failure rate**
- Pregnancy rate = no. of pregnancies x 100 women / 12 months of use

Classification of contraception:

1. Natural Methods
    - Periodic abstinence
    - Withdrawal (Coitus interruptus)
    - Lactational Amenorrhea Method
2. Hormonal
    - Oral (COCP, mini-pills)
    - Injectable (IM depo-provera)
    - Subdermal implant, Transdermal patches, Vaginal ring
3. Barrier Methods
    - Physical (condoms, diaphragm & cervical caps)
    - Chemical (spermicides)
4. Intrauterine Devices (copper & hormone releasing IUCD)
5. Sterilization (Vasectomy in males & Tubal Ligation in females)
6. Emergency contraception

COITUS INTERRUPTUS

- Also known as withdrawal or the pull-out method
- Removal of penis from vagina immediately before ejaculation
- Failure rate **15-30%**:
    - Man may not have self control
    - Premature ejaculatory discharge which contain semen.

PERIODIC ABSTINENCE

- Avoiding intercourse in the time of ovulation.
- The time of ovulation is determined by subtracting the length of the luteal phase (fixed period) from the length of the cycle (28 days cycle → ovulation will occur on day 14 of the cycle).
- Sperm life span is 48-72h (3 days) while the life span of ovum is 24-48h. So the risky time will be at ovulation time (day 14) +\- Sperm life spam (3 days) which is from **day 11 – 17**.
- The women should have a regular period for the last 3 months to be able to know the ovulatory (risky) time of the period.

LACTATIONAL AMENORRHEA

To be a successful Contraception there should be:

- Exclusive breastfeeding for the 1st 6 months without any Addition (formula).
- No menstrual period.

Benefits of natural methods:

- Easy to be taught
- Minimal side effects
- Available & affordable
- Doesn't interfere with social & religious background

Drawbacks:

- High failure rate

COMBINED ORAL CONTRACEPTIVES (COCP)

- The most extensively used method.
- Failure rate **1-2%** (better than mini pills)
- Contains synthetic estrogen & progesterone derivatives
- Pills package contains 21 active pills & 7 placebo or pill free interval
- Each pill contains 20-30ug of ethinyl estradiol & 1mg 19 – nor testosterone
- The women take her 1st pill on the 1st day of her cycle for 21 day then take 7 placebo during menses period.
- If menses doesn't occur we have to exclude pregnancy.
- If the woman coma at the 5th day of the cycle to take COCP, then we must exclude pregnancy before.
- COCP can taken immediately after abortion.
- Unlike mini-pills, here will be rapid recovery of fertility shortly after discontinuation of the pills.
- COCP not cause congenital abnormality on the fetus.

- Mechanism of Action (centrally & peripherally):
  - Central action (most imp.): inhibition of ovulation by suppresses the release of FSH & LH. It interferes with the release of GnRH from hypothalamus & in high con. They will inhibit pituitary gland directly.
  - Peripherally the same as mini-pills.

- Side Effects:
  - Spotting in the 1st 3m
  - Nausea, vomiting, weight gain
  - Breast tenderness
  - Depression (low serotonin level)
  - Melasma (facial skin discoloration)

  Other (rare):
  - **VTE** including DVT & PE, esp. in smokers, prolonged use & >35y.
  - Increased the risk of **cancer** of the breast, cervix & liver (HBV).
  - **Hypertension** (low bradykinin level)
  - GIT: gallstones, increase risk of liver disease
  - GUT: fibroid growth, post pill amenorrhea, Cystitis.
  - CNS: Depression, headaches, loss of libido
  - Metabolic effect: inc. HDL, TG & dec. LDL

- Benefits of COC:
  - Antiestrogenic effects op progesteron:
    - Decrease menses blood loss & improve anemia
    - Offers long term protection against ovarian & endometrial (adeno) & colorectal **ca**.
    - Dec. estrogen receptors in breast so dec. risk of begnin breast disease
  - Inhibition of ovulation → Treat severe dysmenorrhea
  - Other → Reduce the risk of **PID** but not STD (thicker mucus) & RA, fibrocystic change, ovarian cysts, **ectopic** pregnancy & osteoporosis.

- Uses of COC:
  - Effective **contraceptive** method.
  - Treat **heavy or painful periods** by make it light, pain-free & regular.
  - Improve **premenstrual symptoms**.
  - Treat & relive the Sx of **endometriosis** (give continuous without pill – free period to prevent breakthrough bleeding).
  - Functional **ovarian cyst**.
  - Treat **acne** & **hirsutism** (PCOS)

- Contraindication:
  Absolutes:
  - Circulatory diseases (IHD, CVA, significant HTN, VTE).
  - Heart failure (rare because incidence of CVD are mostly after menopause)
  - SLE, DM with retinopathy or nephropathy (affect vascular system)
  - Acute or severe liver disease
  - Focal migraine
  - Estrogen-dependent neoplasm (endometrial & breast ca)
  - Undiagnosed uterine bleeding
  - Increase serum TGs
  - Smoking in female more than 35y

  Relatives:
  - Generalized migraine
  - Long-term immobilization
  - Irregular vaginal bleeding
  - Less severe risk factors for CVD (obesity, heavy smoking, diabetes).
  - Undiagnosed amenorrhea & depression
  - Smoking in female less than 35 y
- Women should discontinue COC at least 2 months before any elective pelvic or leg surgeries.

MANAGEMENT OF MISSED COC PILLS:

- If she forgets **1 pill** & she remember **within 12 h**, she must take this miss pill.
- If she forgets **2 pills** (2 days): she must take them & then continue as usual.
- If she forgets **3 pills** (3 days) in the 1st 2w: she must take 2 pills maximum & back up therapy (condom, abstinence) for 1w & then continue as usual.
- If she missed the pills in the **3rd w**: she take the missing pills (maximum 2) & back up therapy & start taking the next packet immediately without free period.
- In case of unprotected intercourse the patient should take emergency pills.

MINI PILLS

- Also called Progesterone only pills (POP)
- Failure rate (pearl index): **2-3%**
- Taken every day (for **28 days**) without a break.
- It's important to be taken at the **same time** of the day to ensure that blood level do not fall below the effective levels.

- Indication
  - C/I for COCP (cardiovascular risk factors, DM…)
  - Lactation (we can give her COCP after 6m)
  - Old age (>35y)

- Mode of action (mainly peripherally) makes:
  - Cervical mucus thick, viscid & scanty→ decreases sperm permeability.
  - Endometrium thinning → not fit for implantation.
  - Alter ovarian responsiveness to gonadotropin stimulation.
  - POP doesn't inhibit ovulation mainly because a lower dose of progestin is used in preparations less than COP.
  - Decrease tube motility → so if POP fails the chance of **ectopic pregnancy** will be increased. But if not fail the risk decreased.

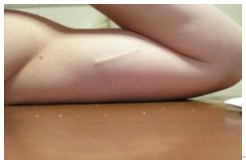
- Side effects
  - Breakthrough bleeding (spotting) during the use of the pills
  - Erratic or absent menstrual bleeding
  - Breast tenderness
  - Acne & wt. gain (androgenic effect)
  - Metabolic effect → inc. LDL & dec. HDL, TG
  - Post – pill amenorrhea
  - Osteoporosis & Functional ovarian cyst (Prolonged use)

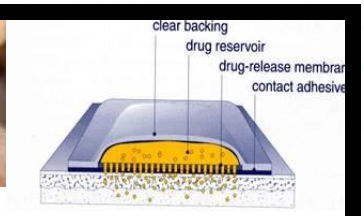
INJECTABLE PROGESTOGENS:

- 2 types:
  - **Depo-Provera** (oil-based) – Depomedroxyprogesteron (DMPA)
    - IM (150mg), SC (104mg) every **3 m**onths
    - Doesn't increase risk of breast ca
  - Noristerat lasts for 8 weeks so it is not widely used.
- Mechanism of action:
  - High-dose progestogens inhibit follicular development & prevent ovulation (1^0 MOA) by decreases the pulse frequency of GnRH release by the hypothalamus, which decreases the release of FSH & LH
  - Peripherally the same as mini-pills.
- Benefits of Depo-Provera:
  - Slow release & v. effective
  - No GI upset (avoid 1^{st} pass hepatic effect)
  - Failure rate (**0.5%**)
- Side effect of Depo-Provera (similar to minipils but more exaggerated):
  - Weight gain
  - Persistent menstrual irregularity (amenorrhea, oligomenorrhea)
  - Delay in return of fertility (muscle reservoir up to 9m)
  - Increase the risk of osteoporosis & functional ovarian cyst
- Contraindications:
  - Known/suspected pregnancy
  - Undiagnosed vaginal bleeding & Breast cancer
  - Liver disease

SUBDERMAL IMPLANTATION

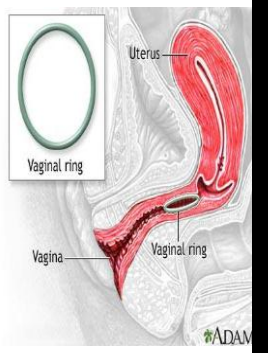
- **Implanon** is a single-rod long acting reversible hormonal contraceptive.
- Effective for up to **3 years**, then it should be removed.
- Rapid return of fertility
- Inserted under local anesthesia on the medial aspect of the arm.
- S/E as COCP: Menstrual irregularity, weight gain …
- Disadvantages: pain, bleeding & infection.
- Complication: broken, slight migration & fibrosis.
- Failure rate (**<1%**) due to incorrect insertion or insertion during pregnancy.





TRANSDERMAL PATCH

- It releases norelgestromin & ethinyl estradiol.
- **Weekly** applied, for 3 weeks & the last week of the cycle is a **patch-free week**
- Normal activities can be done while using the patch.



VAGINAL RING

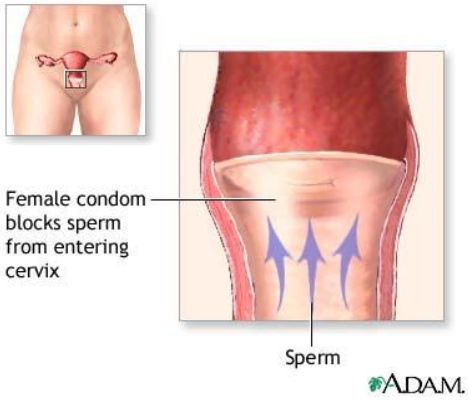
- Contain ethniyl estradiol and etonogestreland
- Place in vagina for 21 days and remove 7 days to allow withdrawal bleedings.

MALE CONDOM

- Easily available, reversible, and have fewer side effects than hormonal methods.
- Effective and acceptable if used consistently and correctly.
- Emergency contraception if condom burst or slips off.
- Benefits:
    - Cheap, available, easy to use & to apply
    - Not affect the hormones of the patient
    - Male participant
    - Protect against STD
- Fail due to:
    - Rupture
    - Not applied in a right way or applied after a pre ejaculatory discharge
- Drawbacks:
    - Latex sensitivity
    - Interruption of coitus & decreased sensation
- Efficacy: **88 to 98%**, depending on if used properly
- Increasing the efficacy:
    - Reservoir tip
    - The addition of spermicidal lubricant to the condom (water-based).
    - The addition of an intravaginal spermicidal agent.

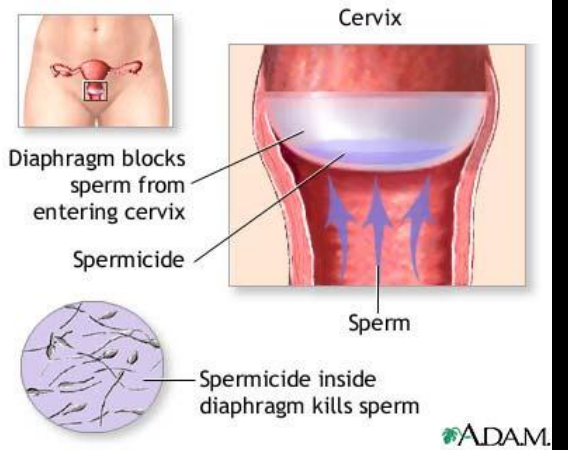
FEMALE CONDOMS

- It contains 2 flexible rings:
  - One ring placed inside the vaginal canal, serves as an insertion mechanism and internal anchor.
  - The other ring forms the external patent edge of the device and remains outside of the canal after insertion.
- Mechanism of action:
  - Prevents passage of sperm & infections (protect against STDs).
  - Inserted up to **8 h** prior to intercourse & remain in place up to 8 hours.
- Efficacy:
  - Pregnancy rates range between **5-21 per 100** women per year.



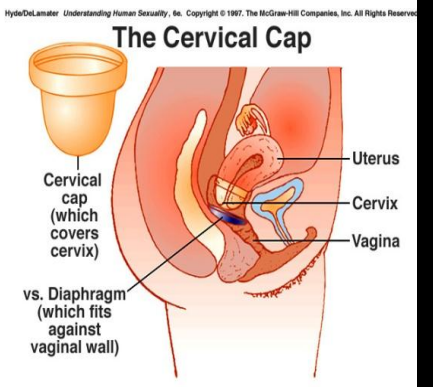
DIAPHRAGM

- Shallow latex cup with Spermicids.
- A spring mechanism to hold it in place in the vagina. So the posterior rim fits into the posterior fornix & the anterior rim is placed behind the pubic bone.
- Prevents passage of semen into the cervix.
- Provides effective contraception for **6 h** & after intercourse must be left in place for at least 6 hours.
- Effectiveness depends on user age, continuity of use & the use of spermicide.
- Relative Contraindications:
  - Latex allergy, uterine prolapse & Repeated UTIs.
- Disadvantages :
  - Vaginal erosions if not placed properly.
  - Prolonged use increase the risk of **UTI**
  - More than 24 h use inc. the possible risk of toxic shock syndrome (**TSS**).
  - Need expert
  - High failure rate (~**20%**).



CERVICAL CAP

- A cup-shaped latex device that fits over the base of the cervix.
- The cap must be filled one third full with spermicide prior to insertion.
- Inserted **8 h**ours before coitus and can be left in place for as long as 48 hours.
- MOA: mechanical barrier & a chemical agent (spermicide) to sperm.
- Pregnancy rates range between **4-36 per 100 women** per year.
- Effectiveness depends on the parity due to the shape of the cervical os.
- Disadvantages:
  - Cervical erosions & vaginal spotting
  - Risk for TSS
  - Need expert & previous history of normal pap smears
  - High failure rate



FEMALE BARRIER

- Disadvantages :
  - Expensive, not available & difficult to use
  - Time Limitation & Needs expert.
  - Not protect against STD (spermicidal causes injury to the vaginal mucosa, so it becomes more prone To STD's).
- Benefits :
  - Can be used for multiple intercourses.
  - Female participant.

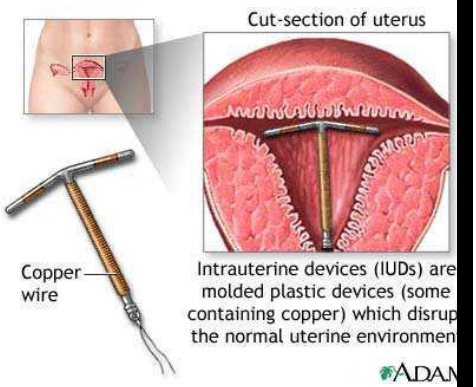
SPERMICIDES

- Consist of a base combined with either **nonoxynol-9** or **octoxynol**.
- MOA: destroys the sperm cell membrane.
- Forms: vaginal foams, suppositories, jellies, films, foaming tablets & creams.
- Failure rate is about **26%** within the 1st year of use.
- Advantages:
  - Available, inexpensive & easy to use of application
  - Augments the contraceptive efficacy of the cervical cap and diaphragm.
- Disadvantages:
  - Minimal protection against STDs
  - Risk of vaginal irritation and allergic reaction.

IUCD

- The world's most widely used method of reversible birth control.
- Need expert to insert it.
- Act as a foreign body, prompts the release of leukocytes & PG that cause toxic effect against both sperm & eggs.
- 3 TYPES:

1. Inert (not used because of painful and heavy periods).
2. **Copper**-releasing (paragard):
   - Effective for **3-10y**
   - MOA:
     - Toxic effect against sperm & eggs (spermicidal)
     - Prevent implantation (emergency contraception)
   - Advantages:
     - Cheap
     - Long-term contraception & when COCP is C/I
     - Emergency contraception
   - Disadvantages (endometrial inflammstion):
     - Inc. the risk of PID in the 1st 3m.
     - Menorrhagia, dysmenorrhea, mucus discharge & back pain



3. Hormonal-releasing IUCD (**Mirena** → levonorgestrel-releasing).
   - Effective up to **5y** & failure rate (**1:4000**)
   - Release a daily dose of 20 micrograms
   - MOA:
     - Dec. ovulation frequencies.
     - Thickening of cervical mucus & thinning of endometrium.
     - Toxic effect against sperm & eggs
   - Advantages:
     - Long-term contraception & used when COCP is C/I
     - Not inc. the risk of PID or ectopic pregnancy.
     - Treat menorrhagia, dysmenorrhea, chronic pelvic pain, endometriosis & anemia
   - Disadvantages: S/E like mini pills
   - Complication
     - Uterine perforation & infection (esp. 1st 20 days)
     - Expulsion of the IUCD
     - High risk of ectopic, miscarriage, preterm labor (If get pregnant)

- Contraindications of IUCD:
    - Pregnancy
    - Postpartum puerperal sepsis
    - Immediately after septic abortion.
    - Active STDs or PID.
    - Undiagnosed abnormal vaginal bleeding.
    - Suspected gynecological malignancy (Cervical, Endometrial ca).
    - Uterine anomalies & fibroids.
    - Copper allergy, wilson disease & previous ectopic (copper C/I)
    - Active liver disease (mirena C/I).

EMERGENCY CONTRACEPTION

- Used after unprotected intercourse and before implantation within **72 hours**.
- Indication:
    - Failure of condoms
    - Unprotected intercourse
    - Missed COCP.

2 types:

1. Hormonal emergency contraception (**Levonorgestrel**)
    - Should be taken within **72h** of unprotected intercourse
    - Single dose (1.5mg) or 2 doses (0.75mg) 12h apart
    - The earlier the better
    - Prevented **75%** of unplanned pregnancies
    - No real contraindication
    - The precise mechanism of action is not known

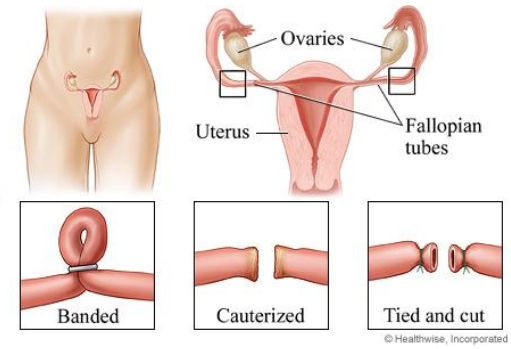
2. IUD for emergency contraception (**copper** bearing IUD)
    - Effective up to **5 days** following the anticipated day of ovulation
    - MOA: prevent implantation & Cu ions exert an embryo toxic effect
    - Can cover multiple episode of intercourse in the same menstrual cycle
    - Contraindication as any IUD
    - Hormonal releasing IUD has not shown to be effective for EC & should not be used.

STERILIZATION

- Permanent contraception method
- Highly effective
- Can be reversed
- Chosen by:
  - Older couples who completed their families.
  - Individual who carry a genetic disorder
- Counseling before the procedure is of vital importance.

FEMALE STERILIZATION (tubal ligation)

- Mechanical blockage of both fallopian tubes to prevent sperm from reaching and fertilizing the oocyte by clips, cautery or cut.
- It can also be achieved by hysterectomy or total removal of both fallopian tubes
- It is performed by laparoscopy (most common), mini-laparotomy or colpotomy.
- Suprapubic mini-laparotomy is the technique of choice postpartum.
- Advantages:
  - Intended to be permanent
  - Highly effective immediately after the procedure
  - Safe, quick recovery & cost effective
  - Lack of significant long-term side effects
- Disadvantage:
  - Possibility of patient regret
  - Difficult to reverse
  - Future pregnancy could require (IVF)
  - More expensive than vasectomy



- Complications:
  - Anesthesia problems (GA).
  - Damage to intra-abdominal organs.
  - Risk of ectopic pregnancy (late complications, so any sterilized women who misses her period & has pregnancy Sx should seek medical advice).
- Failure rate (**1:400**) could be due to:
  - Already pregnant
  - Recanalization of the tubes
  - Cutting the round ligament instead of the tubes.
- Success rate of:
  - Reversibility of the Procedure is **80%** (tubes returned anatomically not functionally).
  - Getting pregnant is low **30%**

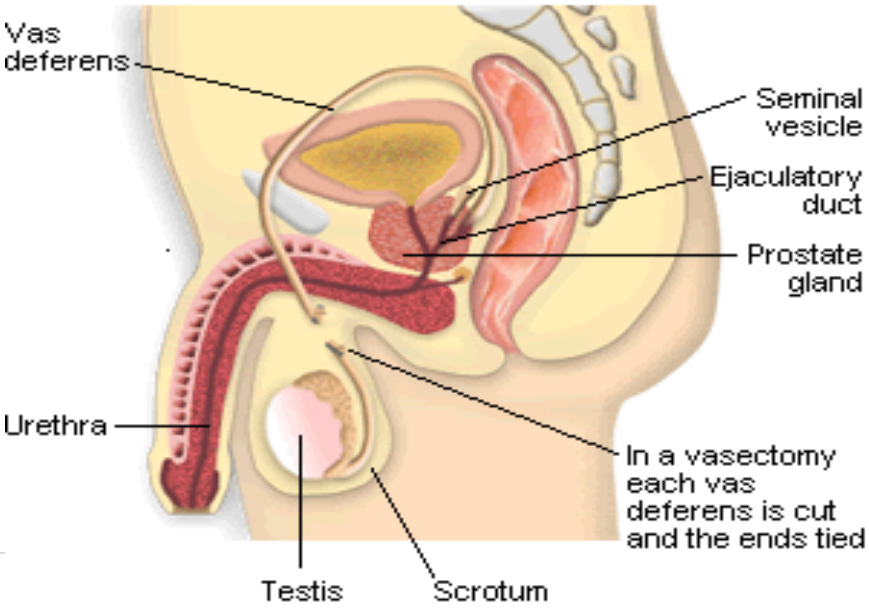
Male vasectomy

- Division of vas deferens on each side to prevent release of sperm during ejaculation.
- Advantages:
- Intend to be permanent
- Highly effective
- Easy, safe & quick recovery (more than tube ligation)
- Cost effective (less expensive than tubal ligation)
- Usually under local anesthesia & outpatient procedure.
- Lack of significant long-term side effects
- Disadvantages:
    - Reversal is difficult, expensive & often unsuccessful.
    - Not effective immediately (need 12-16 weeks), until all sperm cleared from the reproductive tract. So 2 samples of semen taken at 12-16 wks to see if sperms are still present.
    - Not protect against STDs.

Complication:

- Bleeding, wound infection & hematoma (Immediate complications).
- Sperm granuloma (small lumps at the cut end of the vas as a result of a local inflammation, need excision).
- Antisperm antibodies (some males).
- Chronic testicular pain.
- Surgical & anesthesia complication.

- Success rate of:
    - Reversibility of the procedure is 80%.
    - getting pregnant is low 25%
- Failure rate (**0.1%**)



HISTORY to choose the appropriate type of contraception:

1. Age & Parity
    a. 50y won't use COCP, instead give her mini pills or IUCD
    b. 30y can give her any type
2. Pregnancy is an absolute C/I for any type of contraception
3. Lactation
    a. Fully lactating, don't give her COCP in the 1st 6m
    b. Partially lactating, give her COCP after 6w
    c. If not lactating, give her COCP after 3-4w
4. Menses: menorrhagia, don't give her any type, until find the underlying cause
5. Previous history of contraception
6. History of ectopic pregnancy
7. Medical history: DVT, stroke, MI… absolute C/I for COCP
8. Smoking: 40y & smoke, absolute C/I for COCP
9. Focal migraine absolute C/I for COCP
10. Active liver disease (hepatitis, cirrhosis) absolute C/I for COCP
11. Cancer history, esp. breast ca. it's better to avoid hormonal contraception
12. Drug history: Rifampicin (anti-TB) & Anti-epileptic (phenytoin, carbamezapine) reduce the efficacy of COCP & may get pregnant

How to INSERT IUCD:

1. History (any C/I)
2. Ask her to prepare herself & empty her bladder
3. Lie in lithiotomy position & legs on stirrup
4. Examine the uterus size, shape & mobility
5. Use sterile bivalve to visualize the cervix
6. Use tenaculum to catch the anterior cervical lip & to straighten the uterus
7. Use uterine sound to measure the length of the uterus
8. Release the IUCD after inserting it, then cut the thread & leave 0.5 cm
9. Do U/S immediately to ensure that it's in the fundus.
10. Do U/S after 1m to see the IUCD, if not seen, we have 2 possibilities either expulsion with heavy menses or perforate through the uterus, so do x-ray:
    a. No IUCD → means expelled
    b. See IUCD → then remove it to prevent adhesions
11. Then check the IUCD every 3m in the 1st year, then annually