Fertility control and contraception

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Effectiveness

Failure rates expressed as failure rate per 100 woman years(WY)

How to choose?

- Cost
- STI protection
- Safety & side effects
- Comfort & ease of use
- Reversibility & fertility plan

Most methods of contraception are safe for most women and the UK Medical Eligibility Criteria is a definitive reference guide concerning all methods of contraception, indicating which women can safely use which of the following methods:

- Natural family planning
- Barrier methods
- Combined hormonal methods
- Progestogen-only oral contraception
- Injectable contraception
- Subdermal implants
- Intrauterine methods

Definition of UKMEC category

UKMEC	Definition of category
1	A condition for which there is **no restriction** for the use of the contraception method
2	A condition where **advantages outweigh** theoretical or proven risks
3	A condition where the theoretical or proven **risks usually outweigh** the advantages of using the method.
4	A condition which represents an **unacceptable** health risk if the contraceptive method is used.

Natural family planning NFP

- Cycle or rhythm method(calendar method)
- Temperature method
- Cervical mucus method(Billing's method)
- Lactational amenorrhea method(LAM)

Mode of action

Natural family planning methods involve a continual awareness of fertility including the day of ovulation.

Effectiveness

The methods can be combined to increase effectiveness.

Advantages of NFP

- May be the only option for couples with certain religious or cultural beliefs
- Not medical, with no need for visits to clinics
- Makes women aware of their ovulation cycle and natural fertility
- Can enhance communication and cooperation within a relationship.

Disadvantages of NFP

- Higher failure rates
- Rely on the fact that conception days are known
- Long periods of abstinence
- No protection against STIs

LAM

- Exact mechanism poorly understood
- ?? Inhibition of normal pulsatile LH - anovulation
- > 98% effective if Fully, < 6/12, Amenorrhoeic
- No medical conditions where LAM is restricted

➢ **Alternative contraception when:**

- Reducing the frequency of breast-feeding
- Stopping night feed /baby sleeps through the night
- Separation from the baby (e.g. returning to work)
- Introducing supplements (e.g. drinks or even small amounts of solids)
- Anxiety, stress or illness in either the mother or the infant.

Barrier methods

- **Male condoms**

  Latex rubber, polyurethane

  Female condoms(Femidom)

  FR 5-21/100WY

  STI/HIV prevention

- **Diaphragm/cervical cap/sponge and spermicides**

❖ Effectiveness

Depends on the quality and consistency of use. Failure rates range from four to 20 per 100 woman-years.

Mode of action

Prevent fertilisation by preventing sperm reaching the female upper genital tract.

Indications

- Client choice
- Medical reasons to exclude hormonal methods
- Intermittent or infrequent intercourse
- while a new method is taking effect
- can also be used with another method for protection against sexually transmitted infection.

Advantages

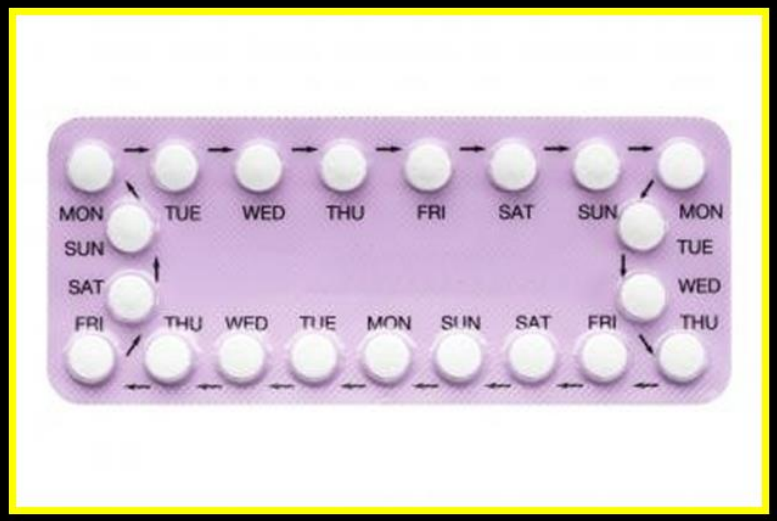
- Male condoms are widely available without requiring a visit to a health professional
- Male and female condoms offer protection against sexually transmitted infections – diaphragms and caps do not
- No systemic side effects
- No effect on lactation
- Spermicides provide lubrication
- Decreased risk of malignant and premalignant cervical disease.

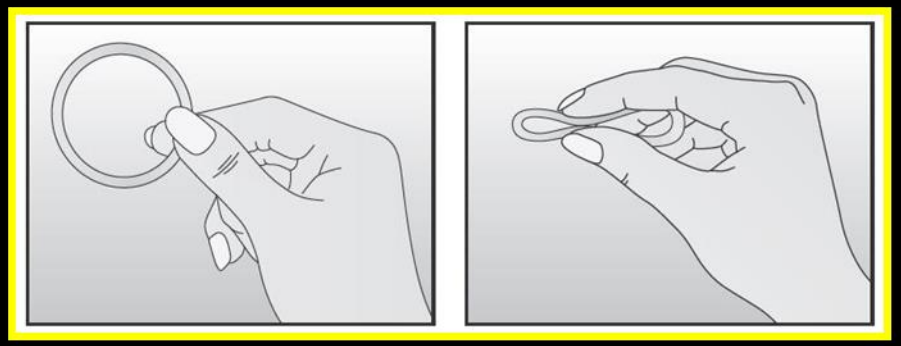
Disadvantages

- high rates of failure with 'typical use'
- Not acceptable in some relationships
- Diaphragms need fitting at a clinic and the woman needs to learn to fit them herself
- The size of diaphragm needs to be changed when there is a weight change of ± 4 kg

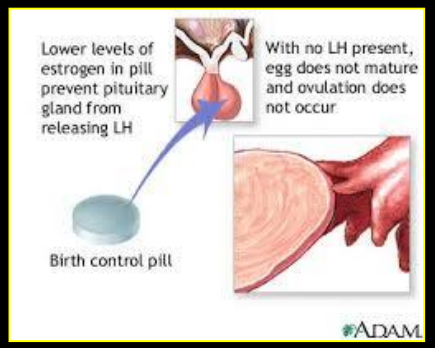
Combined hormonal contraception CHC

- Pills – monophasic & bi-/tri-phasic
- Patches
- Vaginal ring

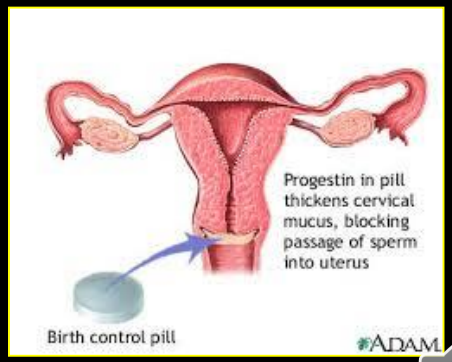




Mode of action



- Inhibit ovulation
- Alteration of vaginal and cervical mucus & inhibition sperm transport
- Atrophic endometrium-non-receptive



Advantages

- Reliable
- Reversible
- Independent of IC
- Non-contraceptive benefits

Disadvantages

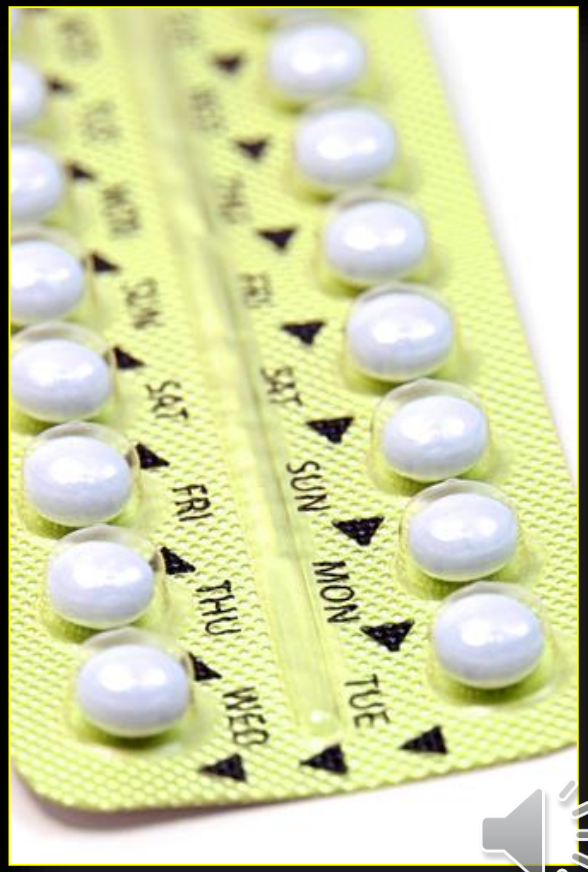
- Minor side effects, e.g. nausea, fluid retention, weight gain
- Increased risk of VTE, secondary to the estrogen-induced effect on clotting factors
- Increased risk of arterial disease
- Interactions with some drugs causes reduction of efficacy
- Missed pills, vomiting and diarrhoea can cause loss of efficacy

COCP

Effectiveness

0.2–8 / 100 WY, depending on reliability of use

- Monophasic (Fixed dose)
  20-35µg EE+ progestogen
- Variable dose(phasic)
- Administered on a 21:7 day basis
  (continuous pill-taking regimens)
- 1st 7 tablets inhibit ovulation
- 14 to maintain anovulation



Constituents of COCPs

- **Oestrogen**

  Ethinyloestradiol

  20-35µg

  Estradiol valerate

  Estradiol

- **Progestogen**

  Norethisterone(NET)
  Norethindrone(NE)
  Levonorgestrel(LNG)
  Norgestrel(NG)
  Desogestrel(DSG)
  Gestodene(GSD)
  Norgestimate(NGM)
  Drospirenone
  Cyproterone acetate
  Dienogest
  Nomegestrol acetate

Non-contraceptive benefits

Decrease

- **Menstrual disorders**
  -menorrhagia, irregular bleeding: 50%
  -dysmenorrhea: 40%
  -PMS
- **Functional ovarian cysts**
- **Benign ovarian tumours**
- **Benign breast disease**
- **PID**
- 50% **endometrial and ovarian cancer**-15 yrs after stopping
- colorectal cancer: 20%
- **Protective against** RA, thyroid disease and duodenal ulcer

Major side effects

- **Venous thrombo-embolism(VTE)**

  highest 1st year
  non-user 5/100.000 WY
  2nd generation(LNG) 15/100.000
  3rd generation 25/100.000
  pregnancy 60/100.000

- **MI and stroke**

  increases with smoking, HTN

- **Migraine**

  risk of ischemic stroke increases
  with aura UKMEC 4

- **Cancer**

  Breast small increase 10/1000 non-pill users to 11/1000 pill users
  10 yrs after D/C to background risk
  Cervical slight increased risk
  Liver slight increase in benign and malignant tumours

Side effects

Oestrogenic

- Breast tenderness
- bloating
- weight gain
- nausea
- non-infective vaginal discharge
- some headaches
- Chloasma
- Photosensitivity

Progestogenic

- Acne
- Greasy skin/hair
- hirsutism
- depression
- loss of libido
- vaginal dryness

Contraindications

The UK Medical Eligibility Criteria for Contraceptive Use (UKMEC) 2016

https://www.fsrh.org/documents/ukmec-2016/

Absolute C/I to COC

- Past or present CVD
- Hx of VTE or current VTE on anticoagulants
- Thrombogenic mutations
- Familial hypercholesterolaemia
- IDDM with complications (e.g. retinopathy)
- BP consistently >160/95
- Smokers >35 years,>15 cig/day
- BMI ≥40
- Focal migraine with aura
- Stroke
- Major surgery with prolonged immobilisation

Relative C/I to COCP

- Family history (first-degree relative) of VTE aged under 45 years
- Systolic BP: 140–159 mmHg; diastolic BP: 90–94 BMI 30–35
- Focal migraine with aura >5 years ago

Absolute C/I

- Active liver disease
  Porphyria
-
- Medical condition affected by sex steroids e.g. chorea
- Undiagnosed genital tract **bleeding**
- Estrogen-dependent tumours e.g. breast cancer

Relative C/I

- Some malabsorption conditions
- Conditions requiring drug that which may interact with COCP (some antiretrovirals, some anticonvulsants, some antitubercular agents)
- Medically treated and current gall bladder disease

Initial assessment for CHC

- Past contraceptive use, obstetric hx, menstrual
- General health status:
  - -drug use
  - -medical as migraine, epilepsy
  - - risk factors for VTE
  - -sexual Hx
  - - family Hx
  - - smoking
- BP
- BMI

When to start CHC?

- Menstrual cycle
- Amenorrhoeic
- Postpartum
- Miscarriage

I forgot to take my happy pill

Missed pills

one pill

Continuing contraceptive effect

Take the missed pill when remembered

The remaining pills as usual

EC is NOT usually required

If 2 or more pills

Continuing contraceptive effect

Take the most recent pill ASAP

The remaining pills as usual

Condoms or abstinence for 7 days

Pills 1-7: EC is required if UPSI in the PFI or 1st week

Pills 8-14 : No EC if preceding 7 pills were taken

Pills 15-21 : Omit the PFI by finishing the pills in the current pack and starting a new pack the next day

Follow up

- 3 months after 1st prescription
  - BP
  - Any changes in risk factors
  - Further instruction
  - Assessment of any problems

Breakthrough bleeding BTB

- Default (2-3 days after missed pill)
- duration of use(1st few months)
- Disease(Chlamydia, cervical)
- Pregnancy
- Drugs
- D&V
- Disturbance of absorption
- Dose(low dose pills)

Progestogen-only Contraception

Types

- Progestogen-only pill (POP)
- Injectables
- Implants
- Intrauterine systems (IUS)

Progesterone-only pills(POPs)

Mode of action

- Alter cervical mucus & prevent sperm penetration
- Non receptive endometrium/ tubal motility
- May inhibit ovulation up to 60%

  Desogestrel-only pill-Cerazette-97%

Effectiveness

- FR 0.3-0.8/100WY
- Age > 40yrs, lower FR
- Weight - no evidence of reduced efficacy with increased weight

POPs

- 3-hour window period
- Cirazette 12 hours

Progesterone-only Injectable contraception POIC

- Depot medroxy progesterone acetate(DMPA) 12-weekly
- Norethisterone enanthate(NET-EN) 8-WEEKLY

Mode of action

- Inhibit ovulation
- Thickening of Cx mucus prevents sperm penetration
- Changes in endometrium

POIC

- FR per 100 women-years DMPA

  0.3 (ideal use)
- Delayed return of fertility up to 18 months
- linked to weight gain
- DMPA is associated with a small reversible reduction in bone mineral density as a result of hypoestrogenism with long-term treatment

Progestogen-Only Implant POI

Implanon

- Single rod/68 mg etonogestrel(ENG)/ 3 yrs

Mode of action

- Inhibition of ovulation
- Thickening of Cx mucus
- Endometrial changes

Side effects

Bleeding problems & weight gain

Complications with removal

Indications

- Women with unacceptable side effects from estrogen or contraindications to its use e.g. smokers over the age of 35, migraine with aura
- DMPA can be used while awaiting sterilisation or a vasectomy to be effective
- Safe during lactation
- DMPA and IUS have high rates of amenorrhoea and are regularly used in the management of heavy menstrual bleeding, dysmenorrhoea and endometriosis.

Contraindications

- Sensitivity or side effects to progestogens
- Pregnancy
- Undiagnosed vaginal bleeding
- Breast cancer

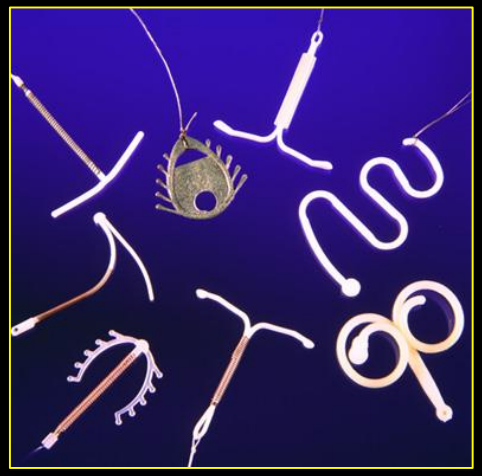
https://www.fsrh.org/documents/ukmec-2016/

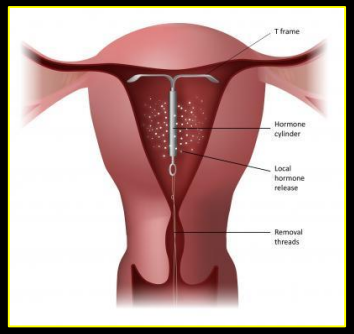
Disadvantages

- Irregular bleeding and changes in the bleeding pattern are the major side-effects of these methods
- Implants and IUS need to be inserted and removed by a healthcare practitioner, with the associated procedural risks.

Long-Acting reversible contraception(LARC)

- Non-hormonal: IUCD or Cu-IUD
- Hormonal: (LNG-IUS, POIC, POI)





IUCD and LNG-IUS

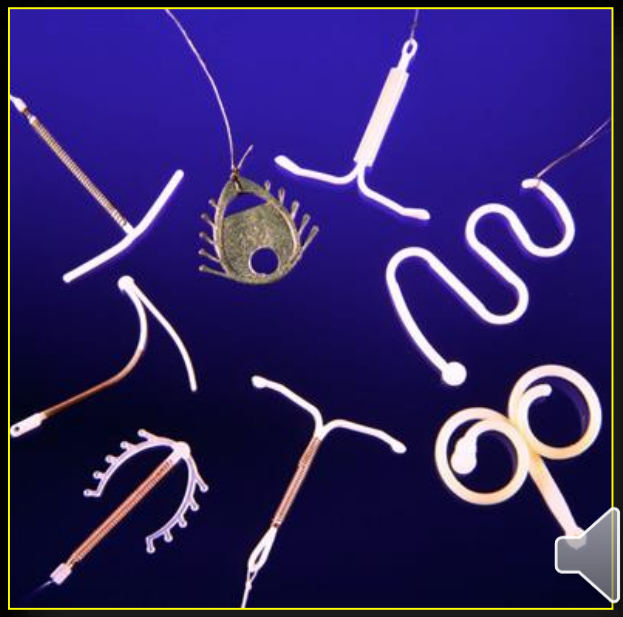
Standard T-shaped IUCD 380mm² copper

10yrs

Other Cu-IUDs and LNG-IUS for 5yrs

FR < 2%

0.2-2 HWY

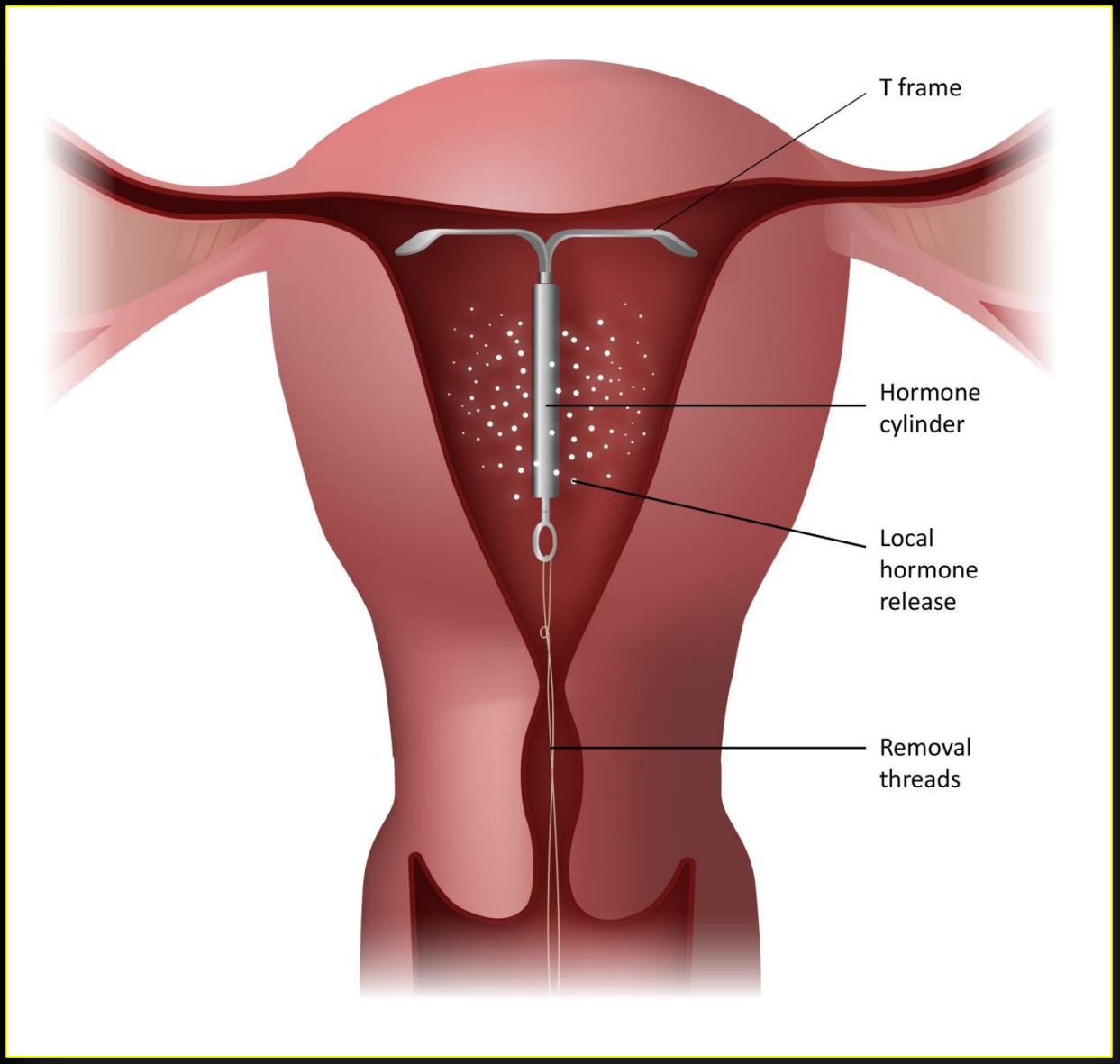


IUCD&IUS

Mode of action

- Inhibit fertilization by direct toxicity
- Anti-implantation inflammatory reaction within endometrium
- Copper in Cx mucus inhibits sperm penetration
- LNG-IUS mainly on endometrium and Cx mucus

Mirena-IUS


T frame
Hormone cylinder
Local hormone release
Removal threads

Insertion & removal

- STI risk assessment(sexual Hx)
- Screening
- Prophylactic Abx
- Timing
- Follow up

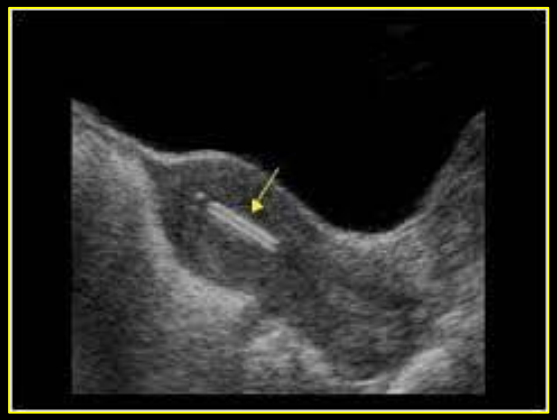
IUCD-IUS Risks

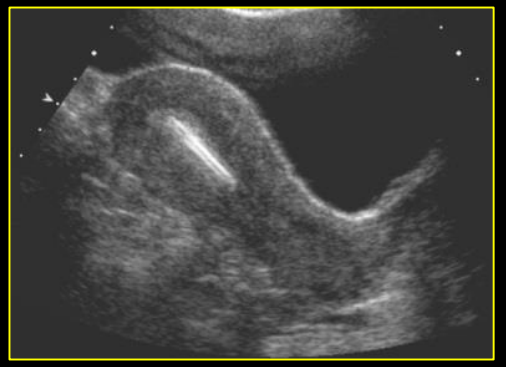
- **Expulsion**
  1/20 in the first 3/12,menstruation
- **PID**
  6-fold increase 1st 3 weeks
  overall risk is low unless STI exposure
- **Perforation** 2/1000,MC at insertion
- **Ectopic pregnancy** 0.02/100WY(0.3-0.5/100WY non-users)
- **bleeding pattern & pain**
- **Vasovagal syncope**
- **Lost threads**
- **Pregnancy**

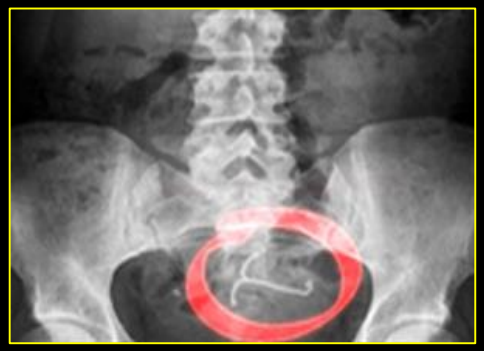
D.Dx of missed thread

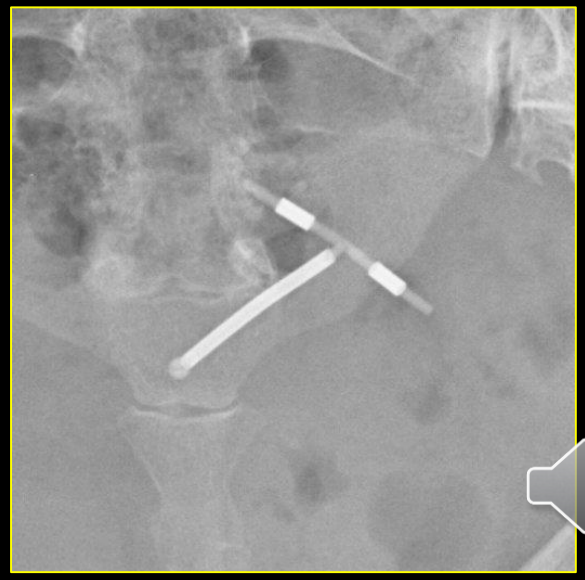
- Expulsion
- Perforation
- Pregnancy
- Short thread

Mx U/S, abdominal X-ray









Pregnancy with IUCD

- R/O ectopic
- Remove <12 wks if visible thread
- Increased risk of 2nd trimester miscarriage, PTD& infection if left in situ
- Small risk of miscarriage with removal

Hormonal side effects(IUS)

- Bleeding pattern/ blackish discharge
- Headache
- Mood changes
- Acne
- Breast tenderness
- Change in libido
- Ovarian cysts-functional

IUCD – UKMEC 4

- Pregnancy, puerperal sepsis and immediate post-septic abortion
- **Unexplained vaginal bleeding** – initiation of the method
- **GTD** – persistently elevated beta HCG levels or malignant disease
- **Cervical cancer** – initiation of the method in women awaiting treatment
- **Endometrial cancer** – initiation of the method
- **Ovarian cancer** – initiation of the method
- **Current PID**, symptomatic and asymptomatic chlamydial infection or purulent cervicitis or gonorrhoea – initiation of the method
- **Pelvic tuberculosis** – initiation of the method

LNG-IUS – UKMEC Category 4

- Puerperal sepsis
- Post-septic abortion
- Unexplained vaginal bleeding – initiation of the method
- GTD – persistently elevated beta HCG levels or malignant disease
- Cervical cancer – initiation of the method in women awaiting treatment
- Endometrial cancer – initiation of the method
- Ovarian cancer – initiation of the method
- Breast cancer – current
- Current PID, symptomatic and asymptomatic chlamydial infection or purulent cervicitis or gonorrhoea – initiation of the method
- Pelvic tuberculosis – initiation of the method

It's always a good idea
to have a back up plan.

Emergency contraception

- **Hormonal method**

Progestogen-only EC

Levonorgestrel-Levonelle 1500

ASAP after UPSI- 72hrs

(73-120 hrs limited evidence of efficacy)

more than once in a cycle

double dose if using liver enzyme-inducing drugs

Mode of action

- Alters Cx mucus & impairs sperm transport
- Inhibit ovulation

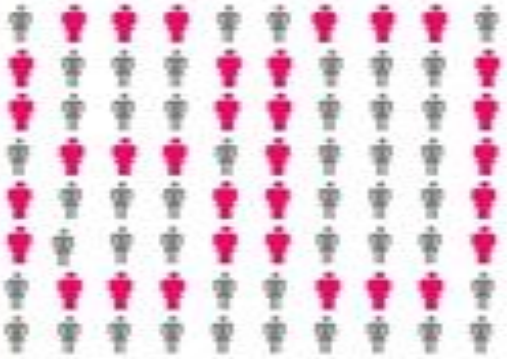
Ulipristal acetate-ellaOne

- One 30mg tablet
- Selective progesterone receptor modulator
- 72-120 hrs of UPSI
- Effective as Levonelle
- Repeat dose not advised in the same cycle

EC

- **IUCD**
  - Cu-IUCD inserted up to 5 days of first episode of UPSI and up to 5 days of the estimated day of ovulation
  - Effective immediately
  - Long-term
  - FR 1%
  - screening for STIs/prophylactic Abx
  - C/I same as IUCD

If **1000** women have a single act of unprotected sexual intercourse (UPSI) within a cycle:



Approximately **80** women would be pregnant if **none** of them used any EC.

Approximately **10** women would be pregnant if they all used **POEC**.

Approximately **1** woman would be pregnant if they all used **EC IUD**.

Side effects and risks

- Vomiting
- Timing of the next menses
- Ectopic pregnancy
- No evidence teratogenicity

Sterilization

- Permanent / Usually irreversible
- Counselling includes options, risks, benefits and failure rates

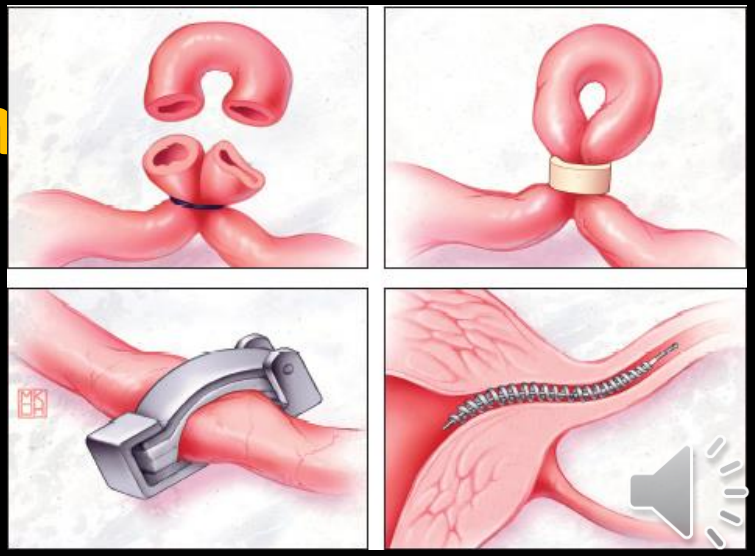
Female –tubal occlusion

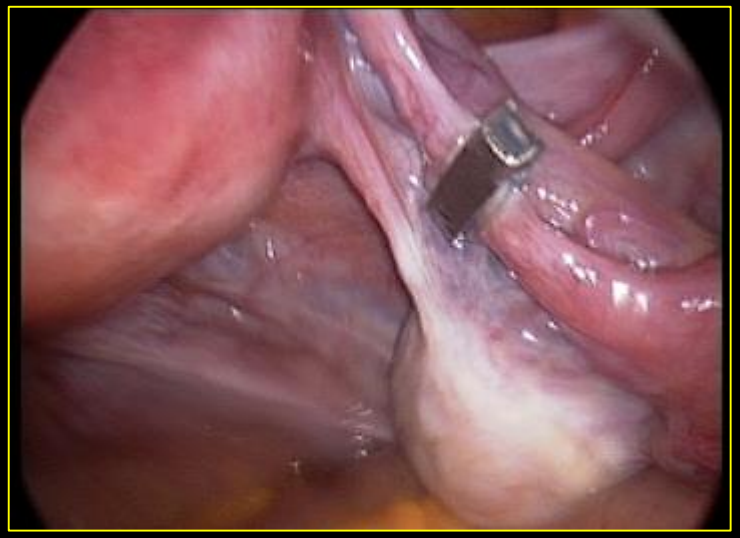
FR 1/200

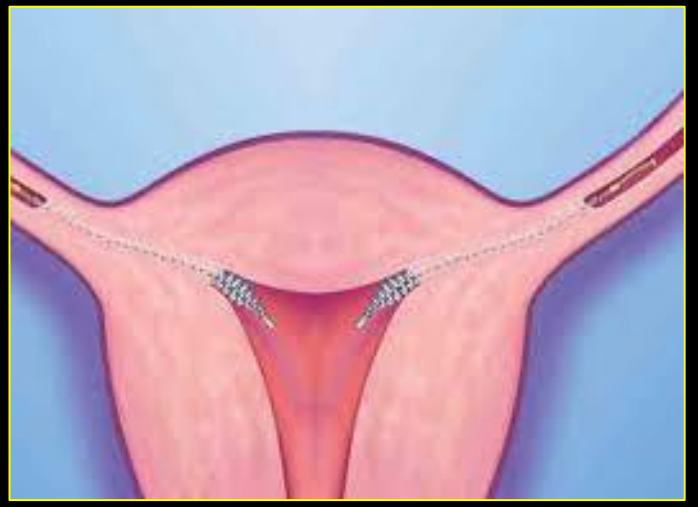
Male sterilization- vasecton

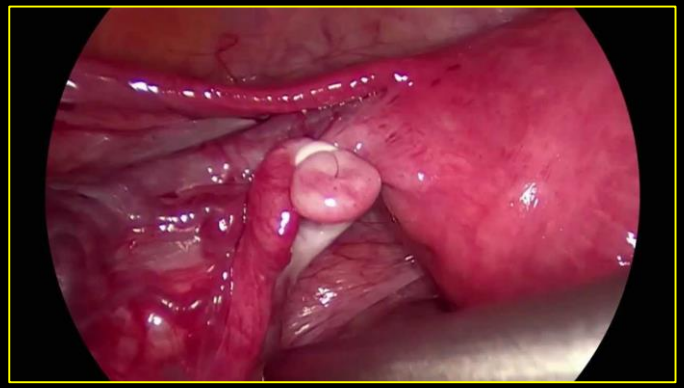
FR 1/2000

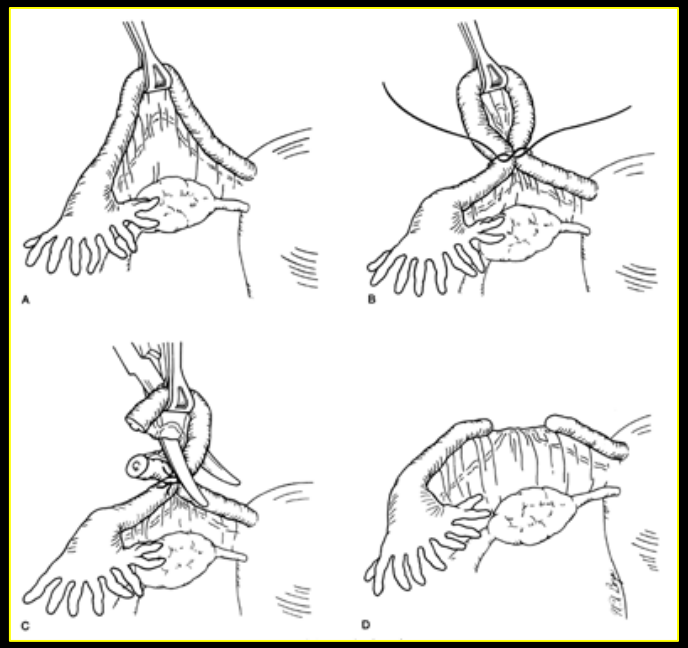
Early and late failure







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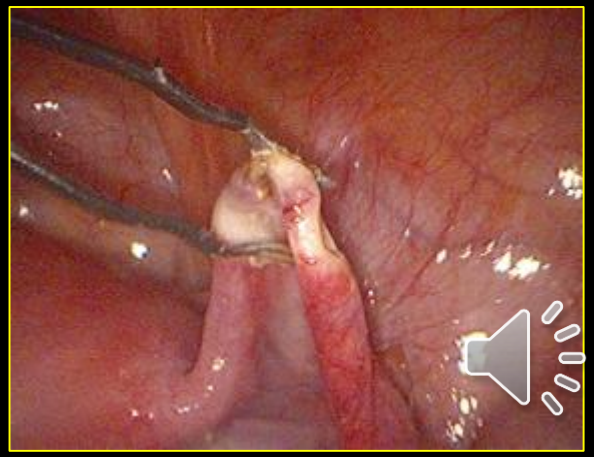

Contraception after 40

- Natural decline in fertility mid-30s
- No contraceptive method is C/I by age alone.

History(all types of contraception)

Age

- **Current contraception**
- **Past contraception**
- **Pregnancy**
- **Past major illness and operations**
- **Allergies**
- **Regular medication** (including herbal remedies)
- **Menstrual history**
- **Previous gynaecological history**
- **STIs and sexual history**
- **Smoking**
- **Cervical smear history**
- **Family history**

Thank you!