Fertility control family planning

By Dhai.A.Rashid

TYPES OF FAMILY PLANNING

- Natural Family Planning Method
- Artificial Family Planning Method

Combined horomons contraception

- The pill
- Patches
- The vaginal ring

Progestogen-only preparations

- Progestogen-only pills
- Injectables
- Subdermal implants

Hormonal emergency contraception

Intrauterine contraception

- Copper intrauterine device (IUD)
- Hormone-releasing intrauterine system (IUS)

Barrier methods

- Condoms
- Female barriers

Coitus interruptus

Natural family planning

Sterilization

Female sterilization

Vasectomy

Failure rates

All methods of contraception can occasionally fail and some are much more effective than others.

Failure rates are traditionally expressed as the number of failures per 100 woman-years (HWY), i.e. the number of pregnancies if100 women were to use the method for one year.

The effectiveness of a method depends on two factors:

1 how it works;

2 how easy it is to use.

Compliance and continuation

Many people use contraception incorrectly and inconsistently. Studies looking at pill use report nearly half of all women missing at least one pill per packet and a quarter missing two pills. The contraceptive injection is highly effective, but women can forget to attend for their repeat injection.

Methods which require correct use with every act of intercourse have the highest failure rates, for example condoms, natural family planning.

Women are often quick to stop contraception because of perceived side effects, such as weight gain or mood change. Methods which need to be inserted or removed by health professionals tend to have better,continuation rates as they cannot be easily abandoned in the heat of the moment

Method of contraception	Failure rate per 100 woman years
Combined oral contraceptive pill	0.1–1
Progestogen-only pill	1–3
Depo-Provera®	0.1–2
Implanon®	0.1
Copper IUD	1–2
Mirena®	0.5
Male condom	2–5
Diaphragm	1–15
Natural family planning	2–3
Vasectomy	0.02
Female sterilization	0.13

The contraceptive consultation

During the contraceptive consultation, there is often a great deal of information to discuss and not much time. The user needs to make an informed choice about which method to use. The discussion about a method needs to cover:

- mode of action;
- effectiveness;
- side effects or risks;
- benefits;
- how to use the method.

It is often helpful to give back-up written information.

Contraceptive counselling is multidisciplinary and specialist nurses play an important role. Some methods of contraception are only available on prescription, whereas others can be used without ever having to seek medical advice.

Counselling about sexually transmitted infections (STI) and HIV risk reduction and prevention is an integral part of a comprehensive contraceptive

Natural family planning

This is extremely important worldwide and may be the only type of contraception acceptable to some couples for cultural and religious reasons. It involves abstaining from intercourse during the fertile period of the month.

The fertile period is calculated by various techniques, such as:

- changes in basal body temperature;
- changes in cervical mucus;
- tracking cycle days;
- combined approaches.

Some commercially available kits are available, such as Persona® in the UK, and use readings of urinary hormone levels to define fertile periods when abstinence is required.

The failure rates of natural methods of family planning are quite high, largely because couples find it difficult to abstain from intercourse when required.

The lactational amenorrhoea method (LAM) is used by fully breastfeeding mothers. During the first six months of infant life, full breastfeeding gives more than 98 per cent contraceptive protection.


DAY 1
period begins
ovulation
monthly cycle

Barrier methods of contraception

Barrier methods prevent STIs and are therefore of enormous importance globally.
They prevent pregnancy by creating a physical barrier to the sperm reaching and fertilizing the egg.
They can be used in conjunction with a hormonal method or IUD to give personal protection against infection and to increase contraceptive efficacy.
Condoms

Male condoms

Male condoms are usually made of latex rubbe. They are cheap and are widely available for purchase or free from many clinics. They have been heavily promoted in Safe Sex campaigns to prevent the spread of STIs,particularly HIV.
Condoms of varying sizes and shapes are available Men must be instructed to apply condoms before any genital contact and to withdraw the erect penis from the vagina immediately after ejaculation

Female condoms

Female condoms made of plastic are also available (Femidom®). They offer particularly good protection against infection as they cover the whole of the vagina and vulva and, being plastic, are less likely to burst. However, many couples find them unaesthetic and they have not achieved widespread popularity.

Female Condom

- **Female Condom**
- The female condom is a thin plastic pouch that lines the vagina and can be put in place up to 8 hours before sex. Users grasp a flexible, plastic ring at the closed end to guide it into position. It's somewhat less effective than the male condom.
- **Pros:** Widely available, some protection against STDs, conducts body heat better than a male condom.
- **Cons:** Can be noisy, 21% of users get pregnant, not reusable. Should not be used with a male condom, to avoid breakage.

Female daiphragm

The diaphragm is the female barrier used mos tcommonly in the UK . Various cervical caps are also marketed. They should all be used in conjunction with a spermicidal cream or gel.
Diaphragms are inserted immediately prior to intercourse and should be removed no earlier than 6 hours later. Using a diaphragm requires careful teaching and fitting. Female barriers offer protection against pelvic infection, but can increase the risk of urinary tract infection and vaginal irritation.

Cervical Cap

- A cervical cap is similar to a diaphragm, but smaller. The FemCap slips into place over the cervix, blocking entry into the uterus. It is used with spermicide. The failure rate for the cervical cap is 15% for women who have never had children and 30% for those who have.
- **Pros:** Can stay in place for 48 hours, inexpensive.
- **Cons:** Must be fitted by a doctor, no protection

spermicides

Spermicides
Very few spermicidal preparations are now available . The marketed products are gel; pessaries, foams and creams. They all contain the active ingredient nonoxynol-9. Spermicides are designed to be used with another barrier method to make them more effective.
. Nonoxynol-9 may provide protectionagainst some STIs, but a recent concern has been the finding of a higher risk of HIV transmission in frequent spermicide users. Some types must be put in place 30 minutes ahead of time. Frequent use may cause tissue irritation, increasing the risk of infections and STDs. Spermicides are most often used along with other birth control methods

withdrawal

Withdrawal
Although not strictly speaking a barrier method,withdrawal, or coitus interruptus, is a widespread practice and obviously does not require any medical advice or supplies.
The penis is removed from the vagina immediately before ejaculation takes place. Unfortunately, it is not particularly reliable, as preejaculatory secretions may contain millions of sperm and young men often find it hard to judge the timing of withdrawal. The use of emergency contraception should be considered if a couple have used withdrawal

Birth Control Pill

- The most common type of birth control pill uses the hormones estrogen and progestin to prevent ovulation. When taken on schedule, the pill is highly effective. About 8% of typical users get pregnant, including those who miss doses. Like all hormonal contraceptives, the pill requires a prescription.
- **Pros:** More regular, lighter periods, or no periods, depending on the type of pill. Less cramping.
- **Cons:** Cost ($15-$50 per month), no STD protection. May cause side effects, including breast tenderness, spotting, serious blood clots, and raised blood pressure. Some women should not use birth control pills.
-

Combined oral contraceptive pills

Combined oral contraceptive pills
Combined oral contraception (COC) – 'the pill' – was first licensed in the UK in 1961 and its development marked a very significant milestone in contraception.
It contains a combination of two hormones: a synthetic oestrogen and a progestogen (a synthetic derivative of progesterone).
Since COC was first introduced, the doses of both oestrogen and progestogen have been reduced dramatically, which has considerably improved its safty profile Combined oral contraception is easy to use and offers a very high degree of protection against pregnancy, with many other beneficial effects. It is mainly used by young, healthy women who wish a method of contraception that is independent of intercourse. For maximum effectiveness, COC should always be taken regularly at roughly the same time

Mode of action

Combined oral contraception acts both centrally and peripherally.

- Inhibition of ovulation is by far the most important effect. Both oestrogen and progestogen suppress the release of pituitary follicle-stimulating hormone (FSH) and luteinizing hormone (LH), which prevents follicular development within the ovary and therefore ovulation.
- Peripheral effects include making the endometrium atrophic and hostile to implantation and altering cervical mucus to prevent sperm ascending into the uterine cavity

formulations

- *Oestrogens*
- Most modern preparations contain the oestrogen
- ethinyl estradiol (EE) in a daily dose of between
- 15 and 35 µg. Those containing lower dosages are
- associated with slightly poorer cycle control. Those
- containing higher daily dosages, for example 50 µg EE,
- are generally now only prescribed in special situations

- *Progestogens*
- Most COC contains progestogens that are classed
- as second or third generation. Second generation
- pills contain derivatives of norethindrone and
- levonorgestrel. The third generation pills include
- desogestrel, gestodene and norgestimate. Pills
- containing the newer progestogens, drospirenone and
- dienogest, are also available in the UK. A combined
- preparation licensed for the treatment of acne and
- hirsutism (but not contraception) contains the potent
- anti-androgen cyproterone acetate (Dianette®)

- *Regimens*
- Monophasic pills are almost always used and contain
- standard daily dosages of oestrogen and progestogen.
- Biphasic, triphasic or quadriphasic preparations have
- two, three or four incremental variations in hormone
- dose but are more complicated for women to use and
- have few real advantages.
- Most brands contain 21 pills; one pill to be taken
- daily, followed by a 7-day pill-free interval (the
- traditional 21/7 model). There are also some everyday
- (ED) preparations that include seven placebo pills
- that are taken instead of having a pill-free interval.
- Newer brands, particularly from abroad, offer a wider
- combination of active pills and pill-free days with

UK Medical Eligibility Criteria 2006 category 4 conditions (absolute contraindications) for use of the combined oral contraceptive pill

Breastfeeding <6 weeks postpartum
Smoking ≥15 cigarettes/day and age ≥35
Multiple risk factors for cardiovascular disease
Hypertension: systolic pressure ≥160 or diastolic ≥100 mmHg
Hypertension with vascular disease
Current or history of deep-vein thrombosis/ pulmonary embolism
Major surgery with prolonged immobilization
Known thrombogenic mutations
Current or history of ischaemic heart disease
Current or history of stroke
Complicated valvular heart disease
Migraine with aura
Migraine without aura and age ≥35 (continuation)
Current breast cancer
Diabetes for ≥20 years or with severe vascular disease or with severe nephropathy, retinopathy or neuropathy
Active viral hepatitis
Severe cirrhosis
Benign or malignant liver tumours

UK Medical Eligibility Criteria 2006 category

- 3 conditions (relative contraindications) for use of the
- combined oral contraceptive pill
- Multiple risk factors for arterial disease
- Hypertension: systolic blood pressure 140–159 or
- diastolic pressure 90–99 mmHg, or adequately
- treated to below 140/90 mmHg
- Some known hyperlipidaemias
- Diabetes mellitus with vascular disease
- Smoking (<15 cigarettes/day) and age ≥35 years
- Obesity
- Migraine, even without aura, and age ≥35 years
- Breast cancer with >5 years without recurrence
- Breastfeeding until six months postpartum
- Postpartum and not breastfeeding until 21 days
- after childbirth
- Current or medically treated gallbladder disease
- History of cholestasis related to combined oral
- contraceptives
- Mild cirrhosis
- Taking rifampicin (rifampin) or certain
- anticonvulsants
- Reproduced with permission from the Faculty of Sexual
- and Reproductive Healthcare, UK.

Common side effects of COC

Central nervous System — Depressed mood, Mood swing, Headaches, loss of libido

Gastrointestinal — Nausea, Perceived weight gain, Bloatedness

Reproductive — Breakthrough bleeding, Increased vaginal discharge, Breasts Breast pain, Enlarged breasts

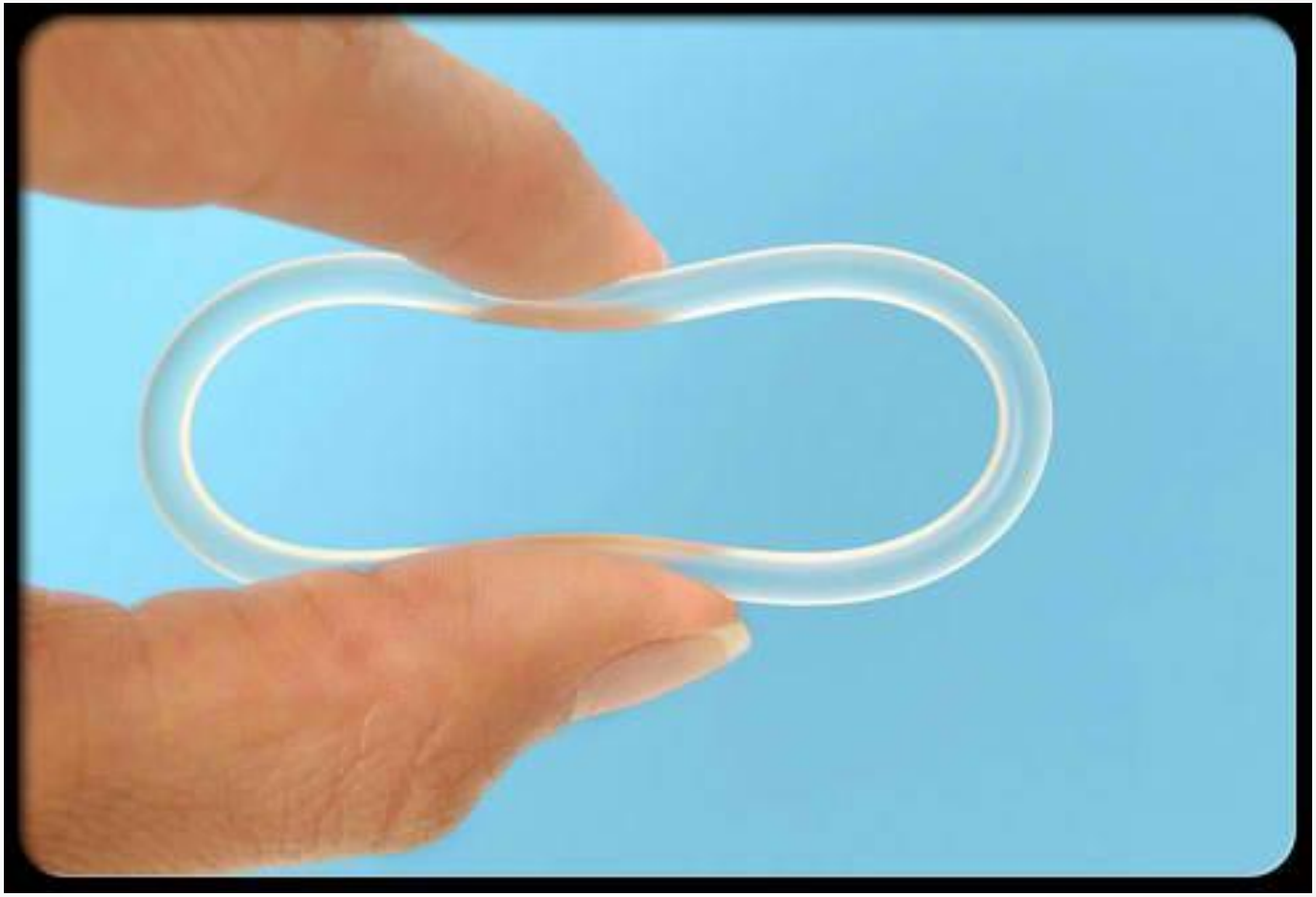
Miscellaneous — Chloasma (facial pigmentation which worsens with time oncoc

Fluid retention

Change in contact lens

Birth Control Patch

- Women who have trouble remembering a daily pill may want to consider the birth control patch. The patch is worn on the skin and changed only once a month for three weeks with a fourth week that is patch-free. The patch releases the same types of hormones as the birth control pill and is just as effective.
- **Pros:** More regular, lighter periods with less cramping, no need to remember a daily pill.
- **Cons:** expensive), may cause skin irritation or other side effects similar to birth control pills. Doesn't protect against STDs.



- **Vaginal Ring**
- The NuvaRing is a soft plastic ring that is worn inside the vagina. The ring releases the same hormones as the pill and patch and is just as effective. But it only needs to be replaced once a month.
- **Pros:** Lighter, more regular periods, only replaced once per month.
- **Cons:** Cost ($30-$50 per month), may cause vaginal irritation or other side effects similar to pills and the patch. Doesn't protect against STDs.

Progestogen-only contraception

- Progestogen-only contraception
- avoids the risks and side effects of oestrogen.The current methods of progestogen-only
- contraception are:
- • progestogen-only pill, or ‘mini-pill’
- • subdermal implant (Implanon)
- • injectables (Depo-Provera®, Noristerat®)
- • hormone-releasing intrauterine system (Mirena)

- All progestogen-only methods work by a local effect on cervical mucus (making it hostile to ascending sperm) and on the endometrium (making
- it thin and atrophic), thereby preventing implantation and sperm transport. The higher dose progestogenonly methods will also act centrally and inhibit ovulation, making them highly effective.
- As they do not contain oestrogen, progestogenonly methods are extremely safe and can be used if a
- woman has cardiovascular risk factors, for example older women who smoke.

The common side effects of progestogen-only

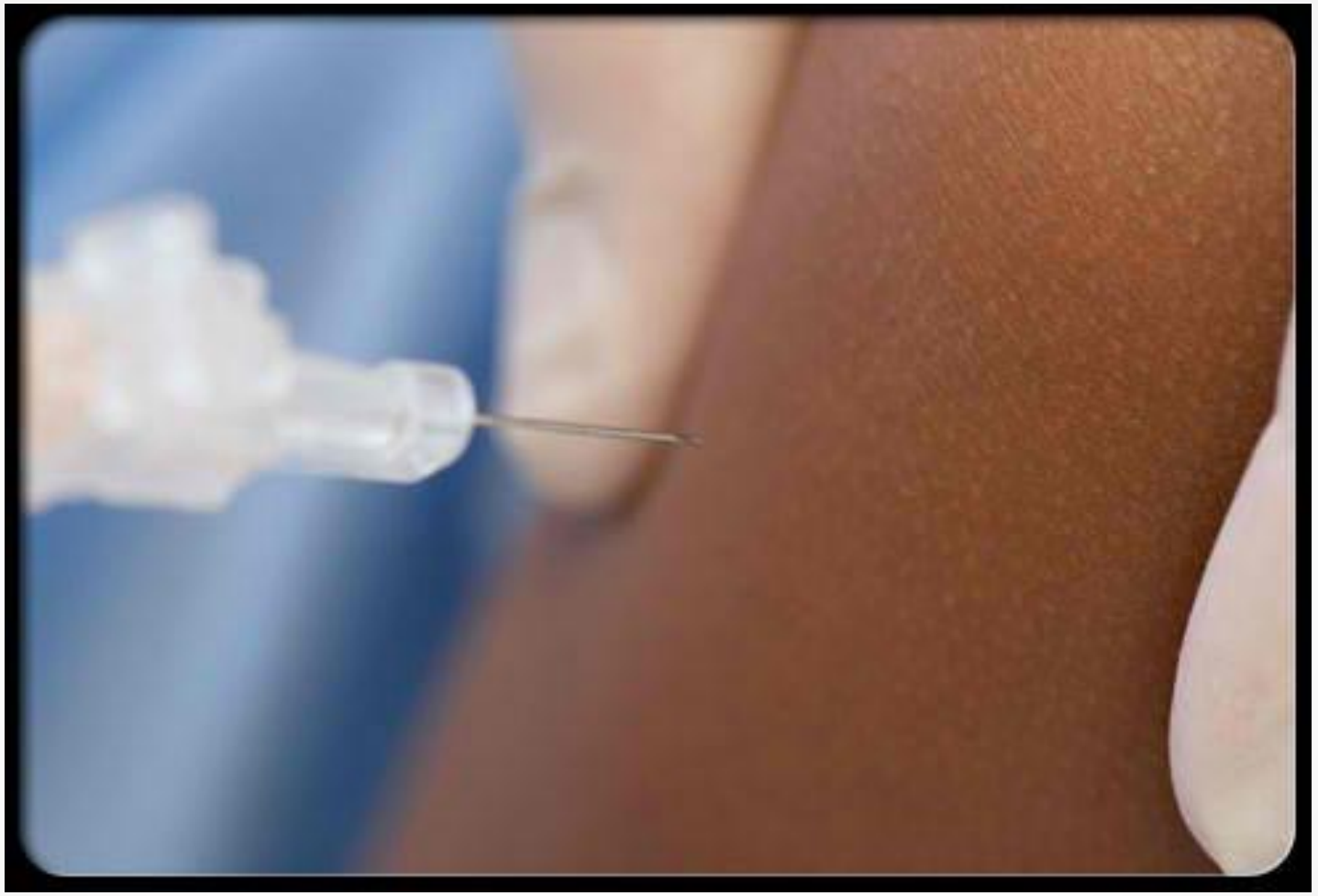
- methods include:
- • erratic or absent menstrual bleeding;
- • simple, functional ovarian cysts;
- • breast tenderness;
- • acne.

The progestogen-only pill (POP) is ideal for women who like the convenience of pill taking but wish to avoid COC. It is taken every day without a break. Although the failure rate of the POP is greater than that of COC it is ideal for women at times of lower fertility as detailed below. If the POP fails, there is a slightly higher risk of ectopic pregnancy.

There is only a small selection of brands in and they contain the second-generation progestogen norethisterone or norgestrel (or their derivatives) and the third-generation progestogen desogestrel. The dose of desogestrel in the POP Cerazette® inhibits ovulation in almost every cycle of use making it highly effective and the pill of choice for young women who cannot take the combined pill.

Particular indications for the POP include:

- breastfeeding;
- older age;
- cardiovascular risk factors, for example high blood



Depo-Provera is highly effective and it is given bydeep intramuscular injection (Figure 7.7). Most women who use it develop very light or absent menstruation. Depo-Provera will improve PMS and can be used to treat menstrual problems such as painful or heavy periods. It is very useful for women who have difficulty remembering to take a pill regularly.

Depo-Provera causes low oestrogen levels and this is associated with loss of bone mineral density. It is not known if this translates into a higher riskof osteoporosis in later life. Bone density seems to recover when Depo-Provera is stopped. Womenwith pre-existing risk factors for osteoporosis should probably be advised not to use Depo-Provera in the long term.

Particular side effects of Depo-Provera include:

- weight gain of around 2–3 kg in the first year of use;
- delay in return of fertility – it may take around six months longer to conceive compared to a woman who stops COC;
- persistently irregular periods; most women become amenorrhoeic.

Progestogen-only pill preparations.

Injectable progestogens

Two injectable progestogens are marketed in the UK:

1 depot medroxyprogesterone acetate 150 mg (Depo-Provera/DMPA);

2 norethisterone enanthate 200 mg (Noristerat).

Most women choose Depo-Provera and each injection lasts for 12 weeks with a 2-week grace period

Norethisterone enanthate only lasts for 8 weeks and is not nearly so widely used.

Depo-Provera is highly effective and it is given by

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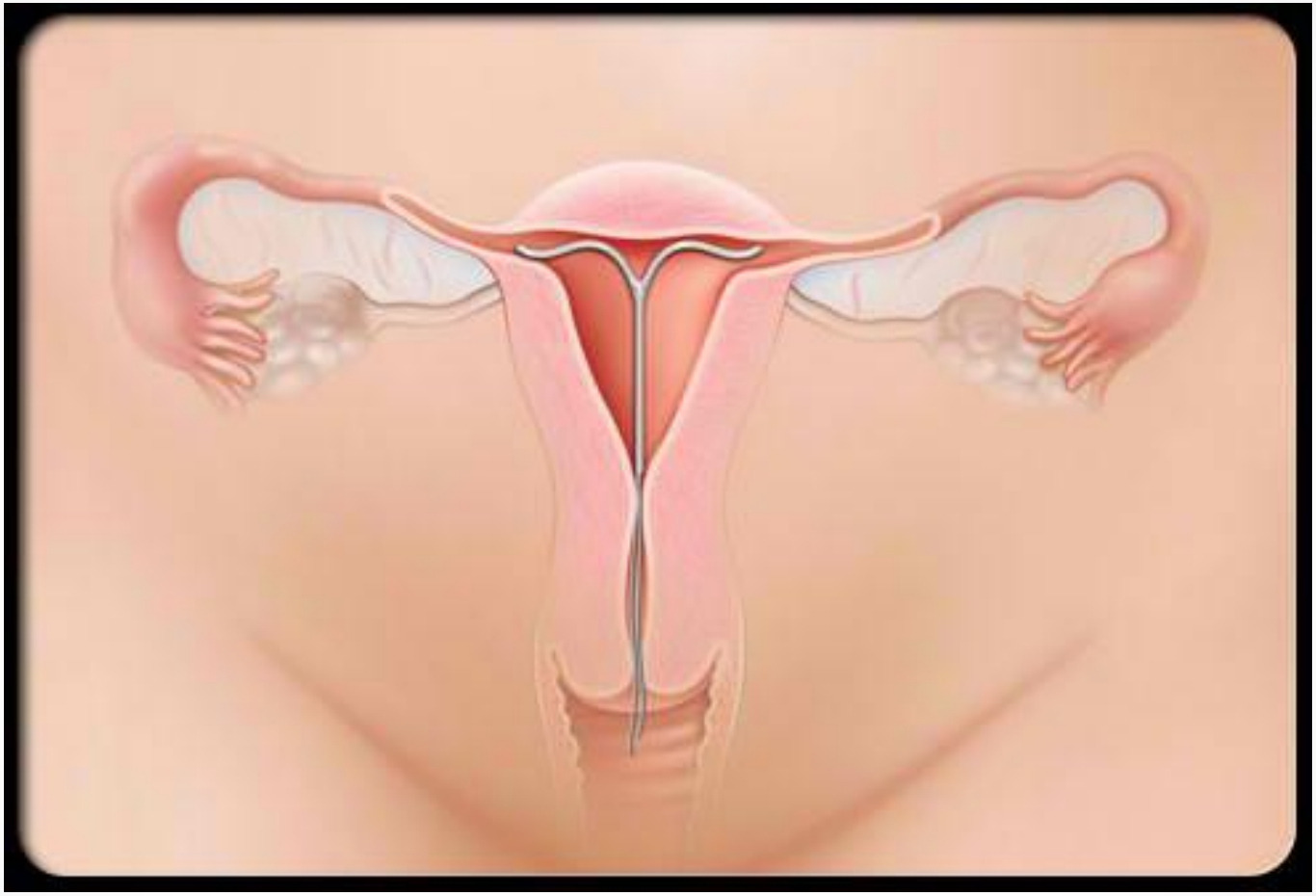
- who stops COC;
- • persistently irregular periods; most women
- become amenorrhoeic

Birth Control Implant

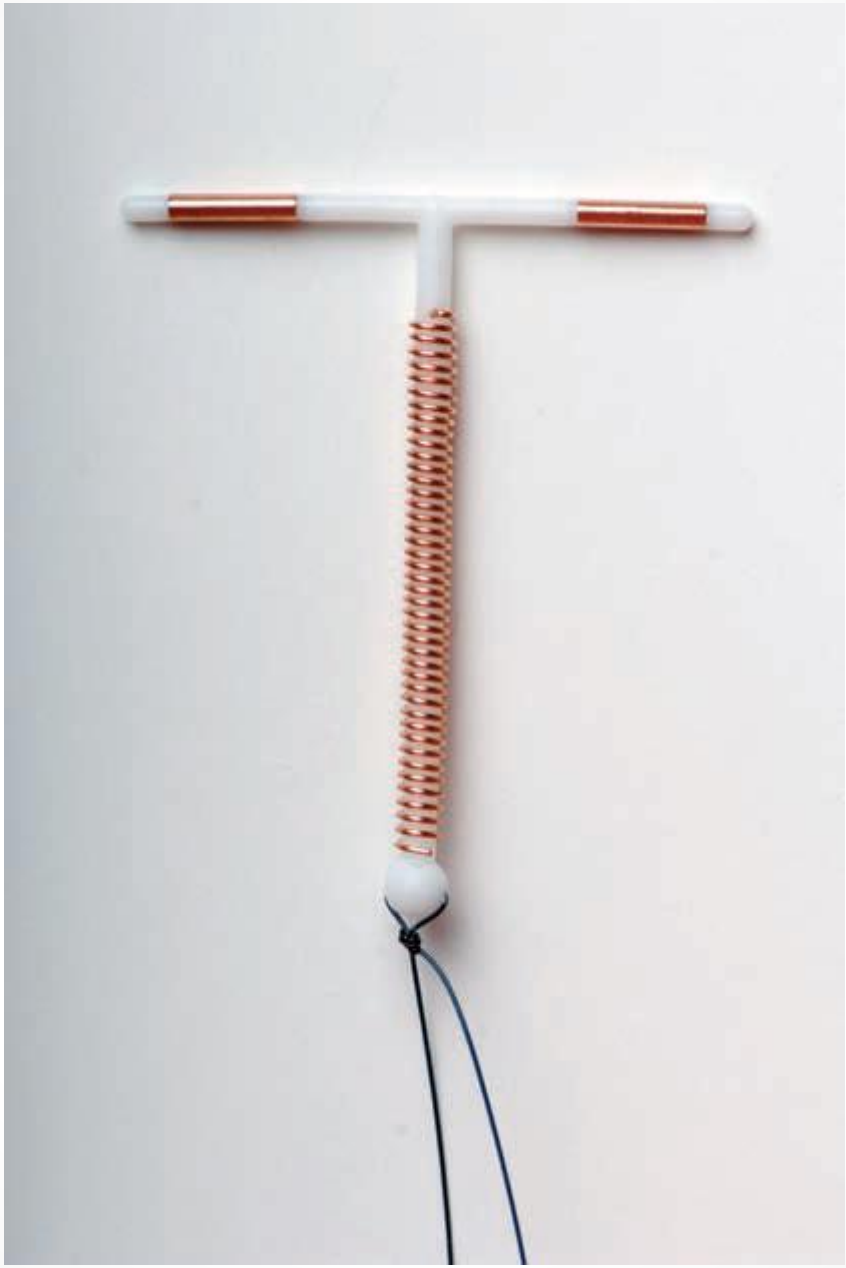
- The birth control implant (Implanon) is a matchstick-sized rod that is placed under the skin of the upper arm. It releases the same hormone that's in the birth control shot, but the implant protects against pregnancy for 3 years. The failure rate is less than 1%.
- Lasts three years, highly effective.
- **Cons:** More expensive upfront ($400-$800 for exam, implant, and insertion), may cause side effects, including irregular bleeding. Doesn't protect against STDs.



IUD

- IUD stands for intrauterine device, a T-shaped piece of plastic that is placed inside the uterus by a doctor. The copper IUD, works for as long as 12 years. The hormonal IUD, Mirena, must be replaced after 5 years. Both types make it more difficult for sperm to fertilize the egg. Fewer than eight in 1,000 women get pregnant.
- Long-lasting, low-maintenance.
- Irregular or heavier periods. More expensive upfront, may slip out, may cause side effects.

- Fitting of an intrauterine contraception is performed by trained healthcare personnel and is
- a brief procedure associated with mild to moderate
- discomfort. A fine thread is left protruding from the
- cervix into the vagina and the IUD can be removed in
- due course by traction on this thread



Intrauterine contraception

Modern intrauterine contraception is highly effective and is becoming increasingly popular in the UK. It is ideal for women who want a medium- to long-term method of contraception independent of intercourse and where regular compliance is not required.
Intrauterine contraception protects against both intrauterine and ectopic pregnancy but, if pregnancy occurs, there is a higher chance than normal that it will be ectopic.
Fitting of an intrauterine contraception is performed by trained healthcare personnel and is a brief procedure associated with mild to moderate discomfort. A fine thread is left protruding from the cervix into the vagina and the IUD can be removed in due course by traction on this thread

Copper intrauterine device

Copper-bearing devices are available in various shapes and sizes. They cause much less menstrual disruption
than the older plastic devices which are now no longer available. Most copper IUDs are licensed for ten years of use, although the small devices may only be for five years. The more copper a device has, the more effective it is. The modern ‘banded’ device has copper on the stem and copper sleeves on the arms

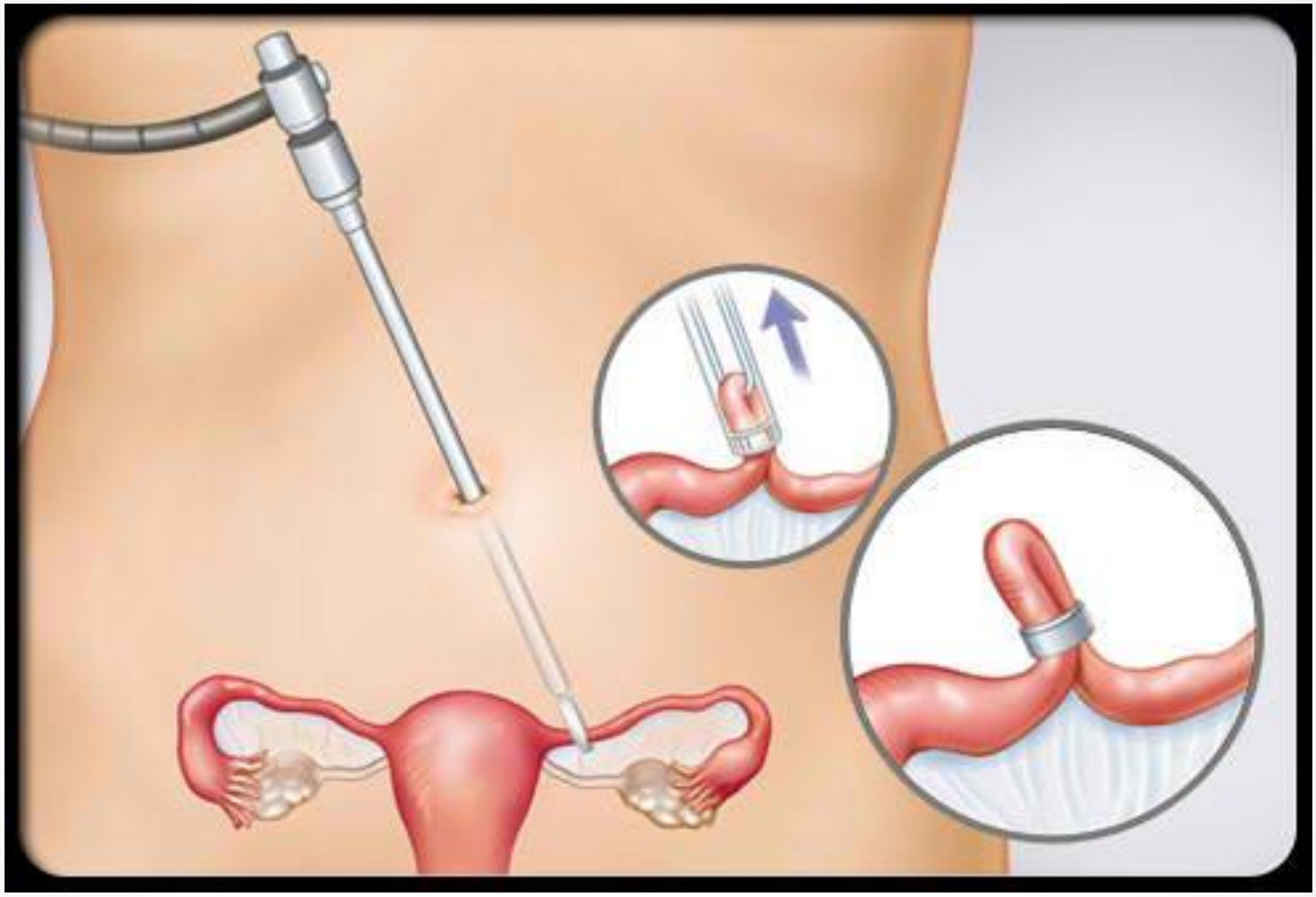
Hormone releasing intrauterine system (Mirena)

Hormone-releasing devices have also been developed. The Mirena has a capsule containing levonorgestrel around its stem which releases a daily dose of 20 µg of hormone. It is associated with a dramatic reduction in menstrual blood loss and is licensed for contraception, the treatment of heavy menstrual bleeding and as part of a hormone replacement therapy (HRT) regimen.

Contraindications

There are very few absolute contraindications to the use of intrauterine contraception, the following category 4 conditions:

- current STI or PID, including post-abortion and following childbirth;
- malignant trophoblastic disease;
- unexplained vaginal bleeding (before assessment);
- endometrial and cervical cancer (until assessed and treated);
- known malformation of the uterus or distortion of the cavity, for example with fibroids;
- copper allergy (but could use a Mirena)



sterillization

Female sterilization and male vasectomy are permanent methods of contraception and are highly effective. They are usually chosen by relatively older couples who are sure that they have completed their families. Occasionally, individuals who have no children or who, for example, carry an inherited disorder may choose to be sterilized. The uptake of female sterilization and vasectomy in the UK is relatively high compared to many other European countries, with around 50 per cent of couples over the age of 40 years relying on one or other permanent method.

Vasectomy is easier, cheaper and slightly more effective than female sterilization. It does not require a general anaesthetic. Semen analysis has to be checked after the procedure to ensure that it has been

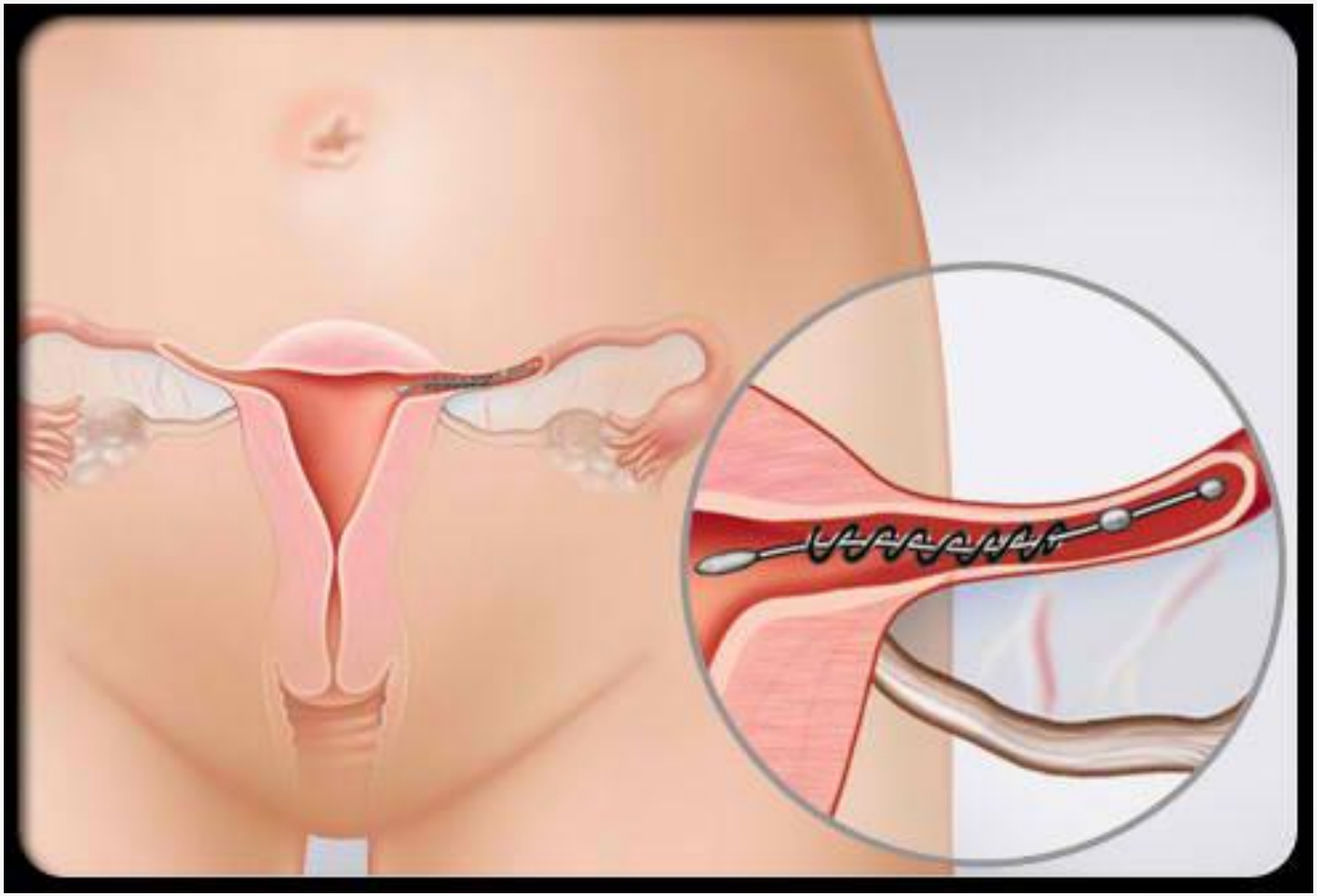
Technically, both female sterilization and vasectomy can be reversed, with subsequent pregnancy rates of about 25 per cent, .
Individuals should not have a sterilization procedure performed if there is a chance that one day they might want to have it reversed.
It is estimated that around 10–15 per cent of individuals in the UK subsequently regret the decision to be sterilized. Regret is more common in individuals who are aged less than 30 years at the time, have no children or in women who are within a year of delivery.
Long-acting reversible contraception is highly effective and the option to use these methods instead of a sterilization procedure should always be raised in the counselling session. They are reversible should a woman wish to keep her options open for a future

Female sterilization

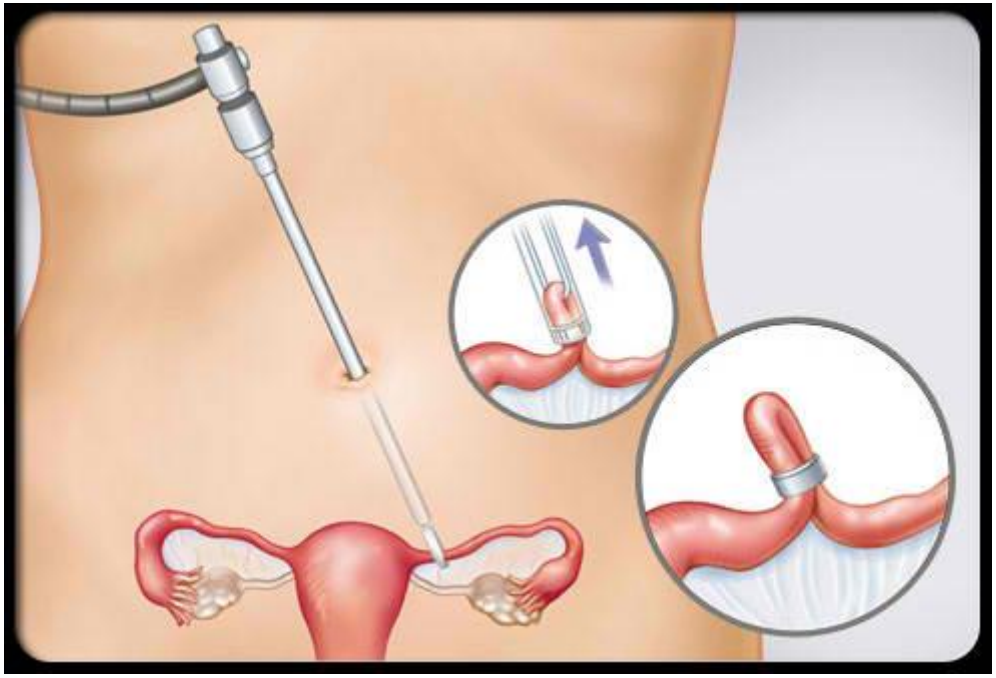
This involves the mechanical blockage of both Fallopian tubes to prevent sperm reaching and fertilizing the oocyte It can also be achieved by hysterectomy or total removal of both Fallopian tubes.

Female sterilization will not alter the subsequent menstrual pattern as such, but if a woman stops the combined pill to be sterilized, she may find that her subsequent menstrual periods are heavier. Alternatively, if she has an IUD removed at the time of sterilization, she may find her subsequent menstrual

- Essure® is a newer technique which is becoming
- popular. It involves insertion of metal springs into
- each Fallopian tube guided by the hysteroscope
- (Figure 7.16). Scar tissue grows round the metal
- springs and blocks the tubes. It can be performed
- under local anaesthetic or light sedation making
- it a cheaper and easier option than conventional



- Consent
- It is essential that individuals are very carefully
- counselled before sterilization and give written
- consent. Consent forms do not ask for the partner's
- written consent.
- The consent form should clearly indicate that
- sterilization:
- • is a permanent procedure;
- • very occasionally can fail.
- The failure of sterilization and vasectomy is a
- major area of medical litigation.



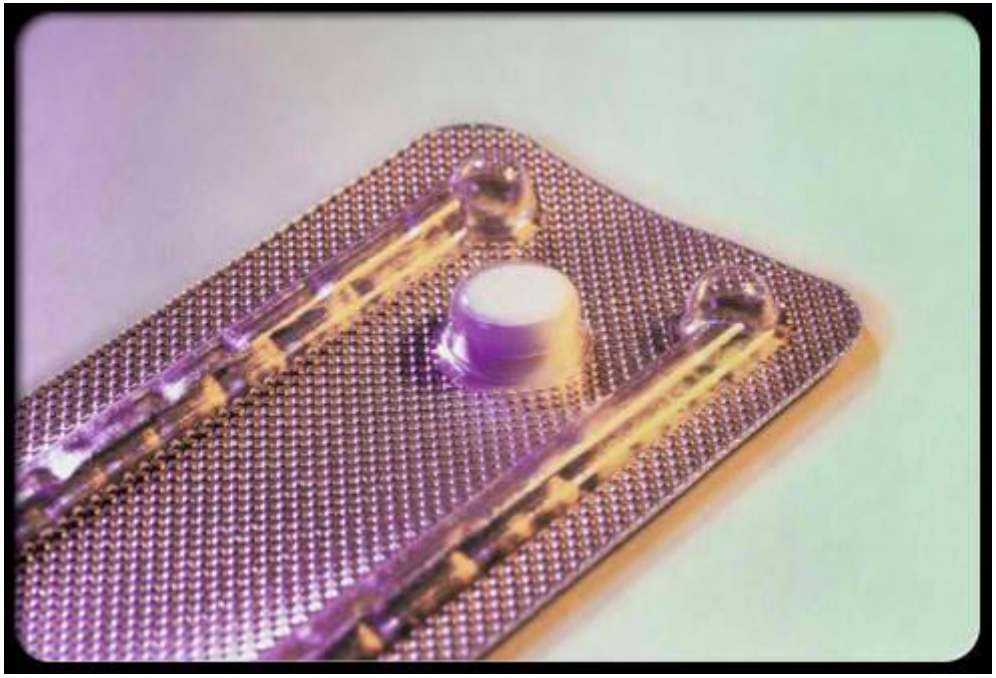
Vasectomy

- Besides condoms, a vasectomy is the only birth control option available to men. It involves surgically closing the vas deferens – the tubes that carry sperm from the testes, through the reproductive system. This prevents the release of sperm but doesn't interfere with ejaculation.
- Permanent, cheaper than tubal ligation, almost 100% effective.

Requires surgery, not effective immediately, may not be reversible.

Tubal Implant

- A newer procedure makes it possible to block the fallopian tubes without surgery. Small implants of metal or silicone are placed inside each tube. Scar tissue eventually grows around the implants and blocks the tubes. Once an X-ray confirms the tubes are blocked, no other form of birth control is needed.
- Permanent, no surgery, almost 100% effective.
- Takes a few months to become effective. May raise the risk of pelvic infections, irreversible, expensive.



Emergency Conception

- Emergency contraception
- Emergency contraception (EC) is a ‘back-up’ method
- that is used after intercourse has taken place and
- before implantation has occurred. EC should be
- considered if unprotected intercourse has occurred, if
- there has been failure of a barrier method, for example
- a burst condom, or if hormonal contraception has
- been forgotten.
- There are two types of EC in general use

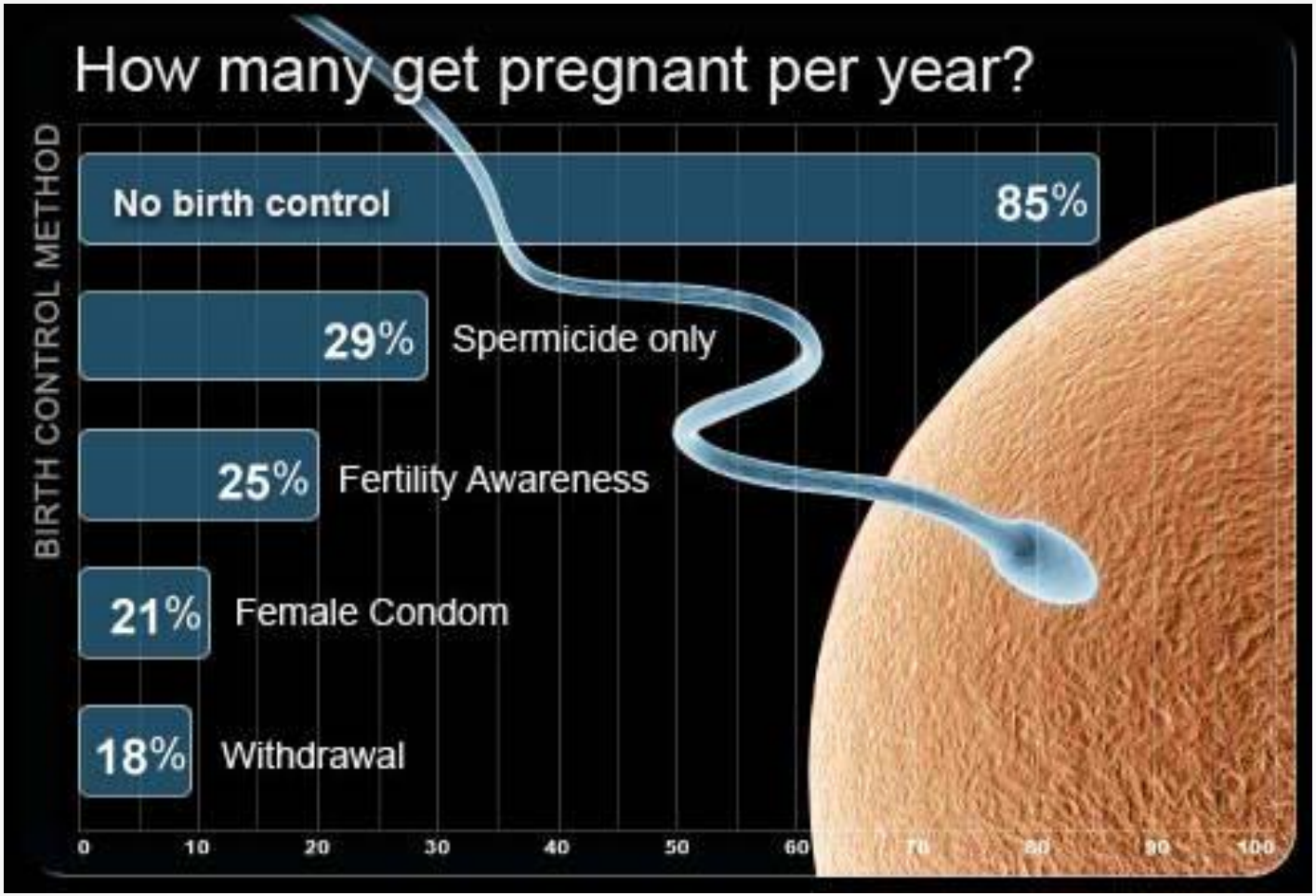
- *Hormonal emergency contraception*
- Levonorgestrel can be taken for EC in a single dose
- of 1.5 mg (Levonelle®). It has to be used within 72
- hours of an episode of unprotected intercourse and
- the earlier it is taken the more effective it is. There are
- no real contraindications to its use.
- Levonelle® is not 100 per cent effective but will
- prevent around three-quarters of pregnancies that
- would otherwise have occurred. It is available free
- on prescription or over the counter in pharmacies
- (either to buy or free in some regions). It can be used
- on more than one occasion in a short space of time

- A progestogen receptor modulator (ulipristal
- 30 mg) ellaOne® is now licensed for EC. It is used
- up to 120 hours following unprotected intercourse
- or contraceptive failure. It will be available on prescription only in the UK.

An IUD for emergency contraception

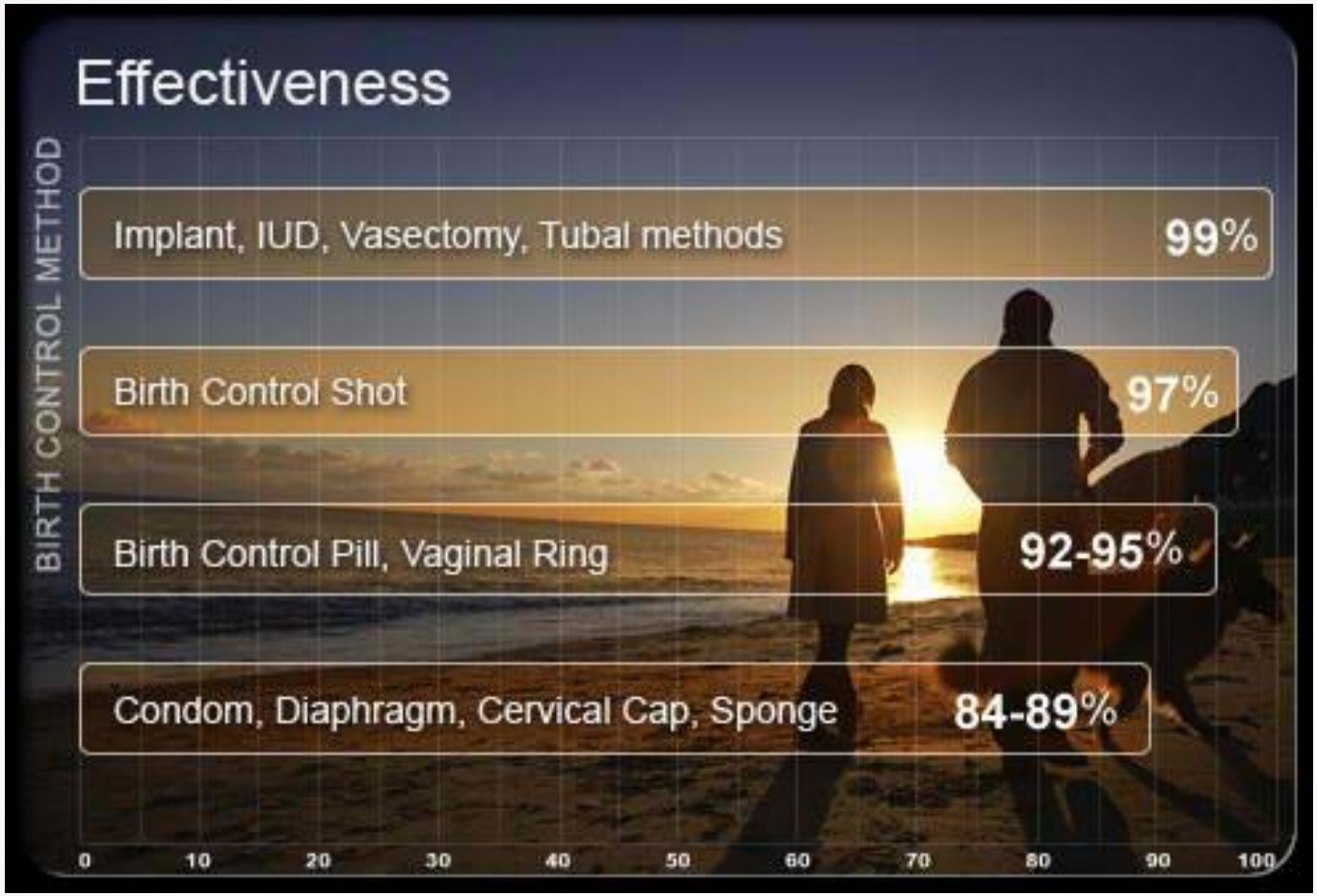
A copper IUD can be inserted for EC and is highly effective. It can be inserted up to 5 days after the calculated earliest day of ovulation covering multiple episodes of intercourse in the same menstrual cycle, *or* up to 5 days after a single episode of unprotected intercourse at any stage in the cycle. The IUD prevents implantation and the copper ions exert an embryotoxic effect. The normal contraindications to an IUD apply and, if there is a risk of sexually transmitted infection, antibiotic cover should be given. The Mirena has not been shown to be effective for EC and should not be used in this situation.

The copper IUD can remain *in situ* for ongoing contraception or be removed once the menstrual period has started.


How many get pregnant per year?
BIRTH CONTROL METHOD
No birth control
85%
29%
Spermicide only
25%
Fertility Awareness
21%
Female Condom
18%
Withdrawal
0
10
20
30
40
50
60
70
80
90
100

Least Effective Methods

- Without using any form of birth control, 85% of sexually active couples will get pregnant within a year. Even the least effective birth control options reduce that number considerably.


Effectiveness
BIRTH CONTROL METHOD
Implant, IUD, Vasectomy, Tubal methods
99%
Birth Control Shot
97%
Birth Control Pill, Vaginal Ring
92-95%
Condom, Diaphragm, Cervical Cap, Sponge
84-89%
0
10
20
30
40
50
60
70
80
90
100

Thank You! ☺