



Aakash



BYJU'S

NOTES

Reproductive Health





Key Takeaways

Population

1

Overpopulation

2

Contraception

Contraceptive methods

3

Natural methods

Barrier methods

Chemical methods

Intrauterine devices

Surgical methods

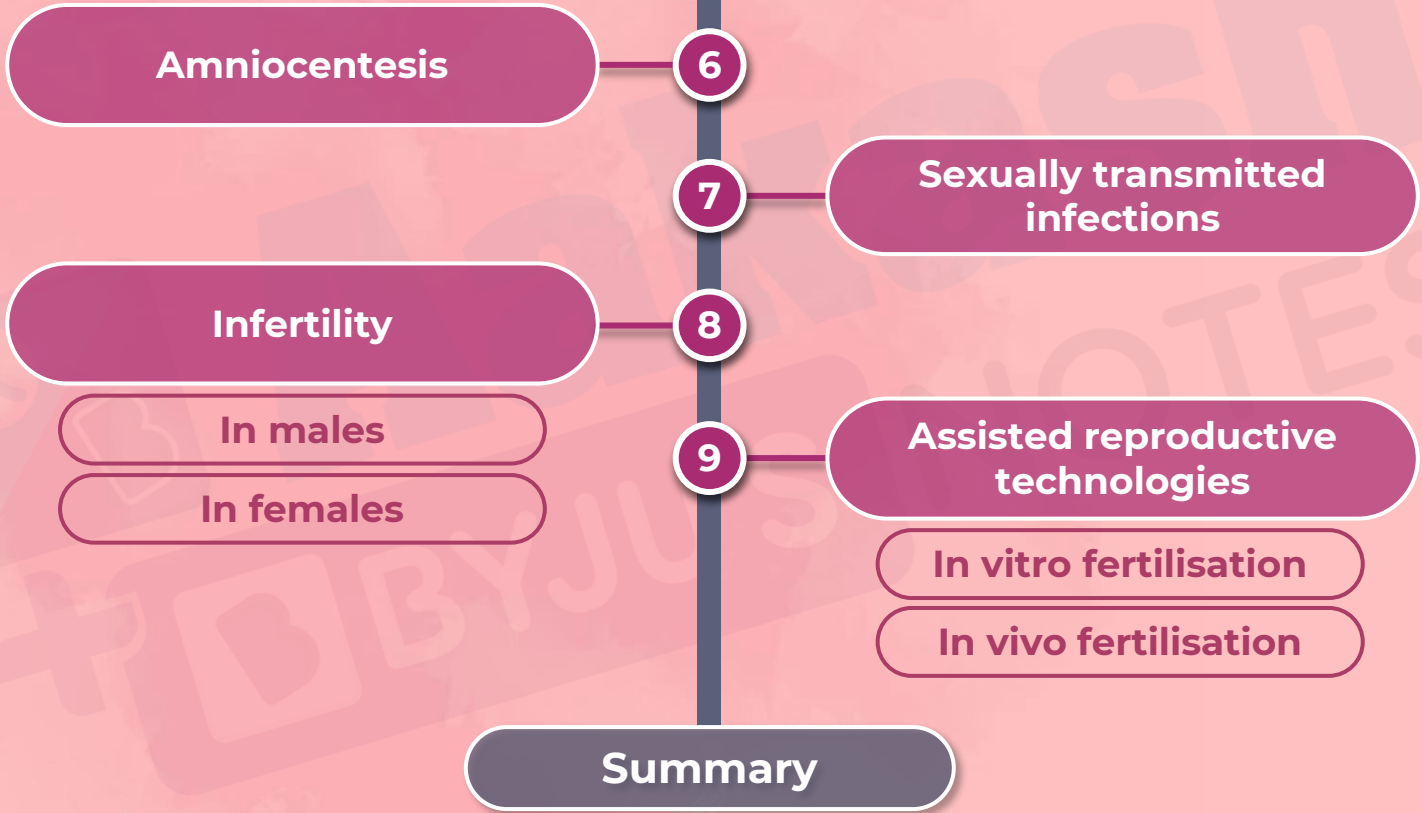
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Medical termination of pregnancy

Misuse

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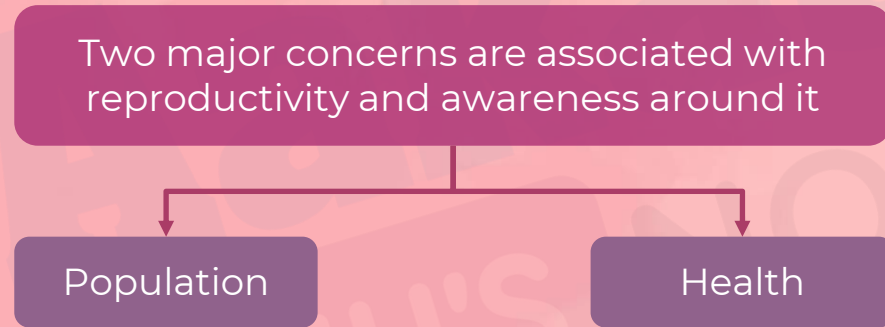
Female foeticide





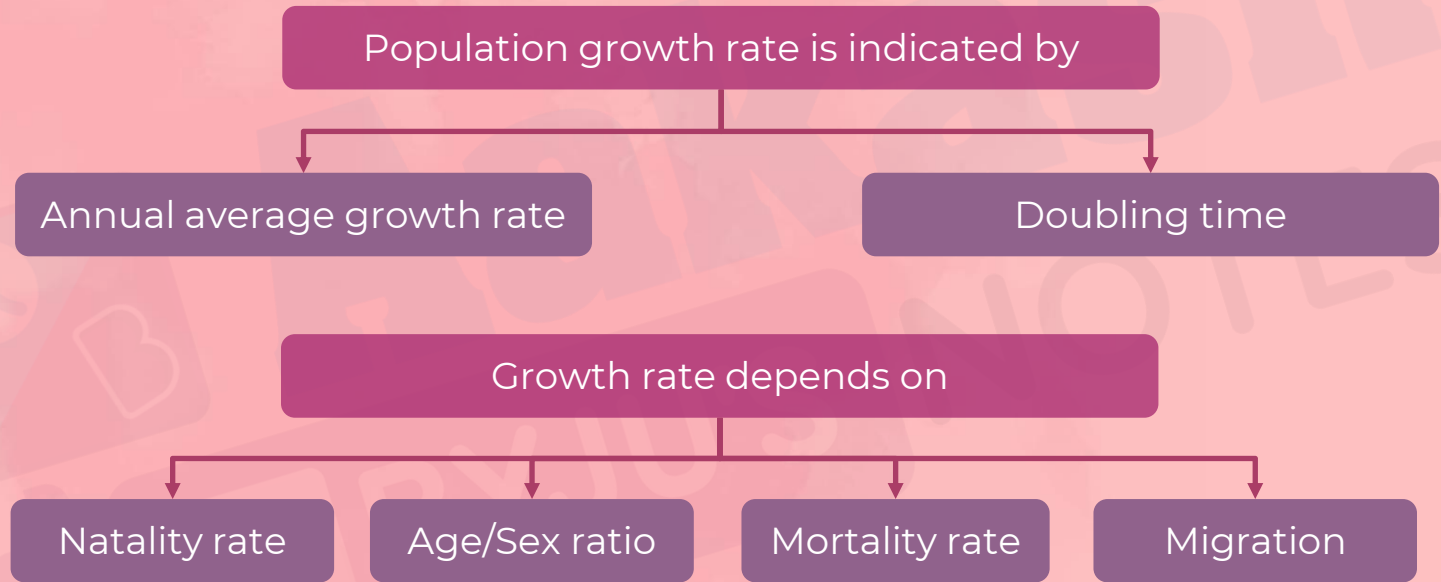
Reproductive Health

Reproductive health is physical, emotional, behavioural and social well-being in aspects of reproduction.





Population





Population

Birth/Fertility/Natality rate

- **Fertility** is the **ability** of the reproductively active individual to **produce offspring**.
- Natality rate is the **number of births per thousand individuals**.
- Birth rate can **never be negative** as opposed to population growth rate.

Mortality rate

- Mortality rate is the **number of deaths per thousand individuals**.
- It has **fallen** in most countries.
 - This is due to **modern medicines and improved hygiene and sanitation**.
 - Infants **below 1 year of age** and **senescent people** have a **higher mortality rate**.

Migration

- **Immigration rate** - Number of **people entering the country** per thousand people.
- **Emigration rate** - Number of **people leaving the country** per thousand people.

Age/Sex ratio

- It is the **ratio of individuals in different age groups/gender groups**.
- **Higher** percentage of females in **active reproductive age increases birth rate**.



Population

Total fertility rate

- The **average number of children** that would be born to a woman during her **reproductive years**.
- Total fertility rate varies from region to region
- **Developed** countries - **lower fertility rate**
- **Replacement level (RL)** - number of children a couple must produce to maintain population growth rate at zero
- **RL = 2.1** in developed countries
- **RL = 2.7** in developing countries

Crude birth rate

- Number of live births per thousand individuals in the middle of a given year

Crude death rate

- Number of deaths per thousand individuals in the middle of a given year

Rate of natural increase

- Difference in the number of deaths and births

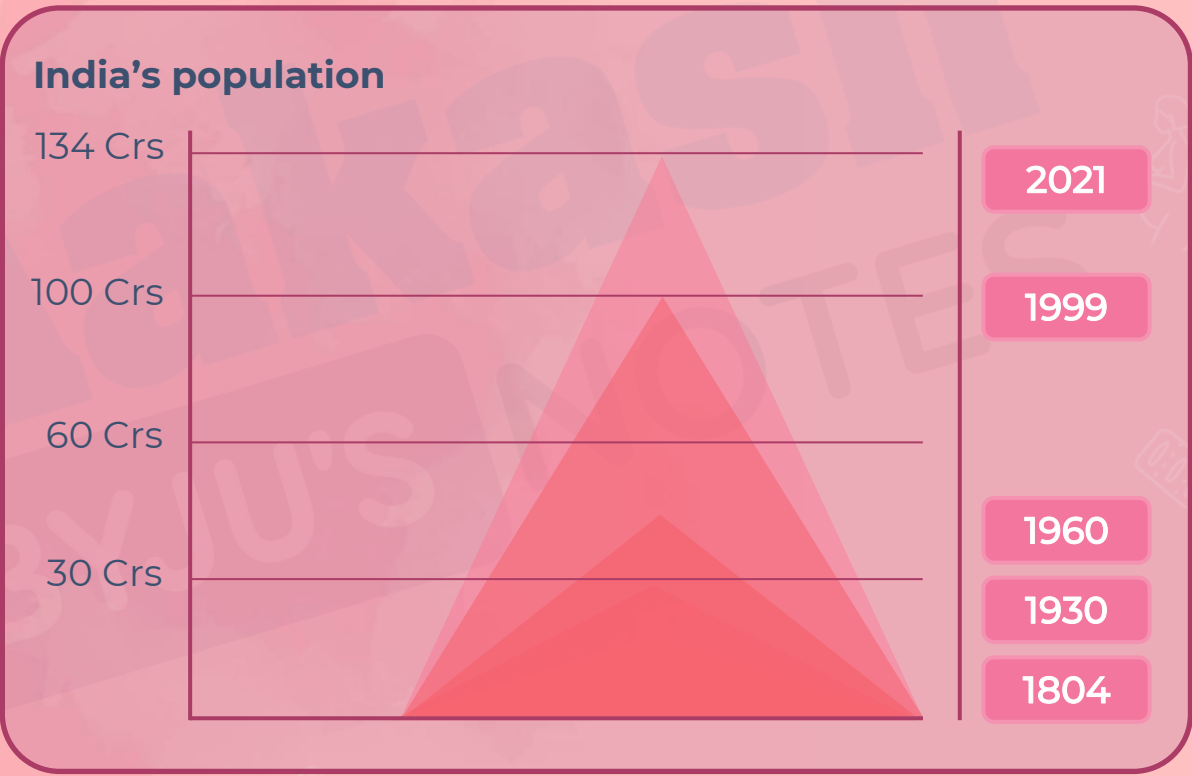
Demographic transition

- Demographic transition theory assumes that size and complexity of households decreasing as societies industrialise.
- State of zero population growth rate
- Witnessed by most developed countries



Overpopulation

- World population exploded from around **2 billion** in **1900** to about **6 billion** in **2000** and then to **7.2 billion** in **2011**.
- Population of India as well rocketed from **350 million** in **1947** to a **billion** in **2000** and then to **1.2 billion** in **2011**.





Overpopulation - Reasons

Low mortality and
higher life span

1

Child marriage

2

Illiteracy

3

Preference for
male kids

4

Aversion to family
planning

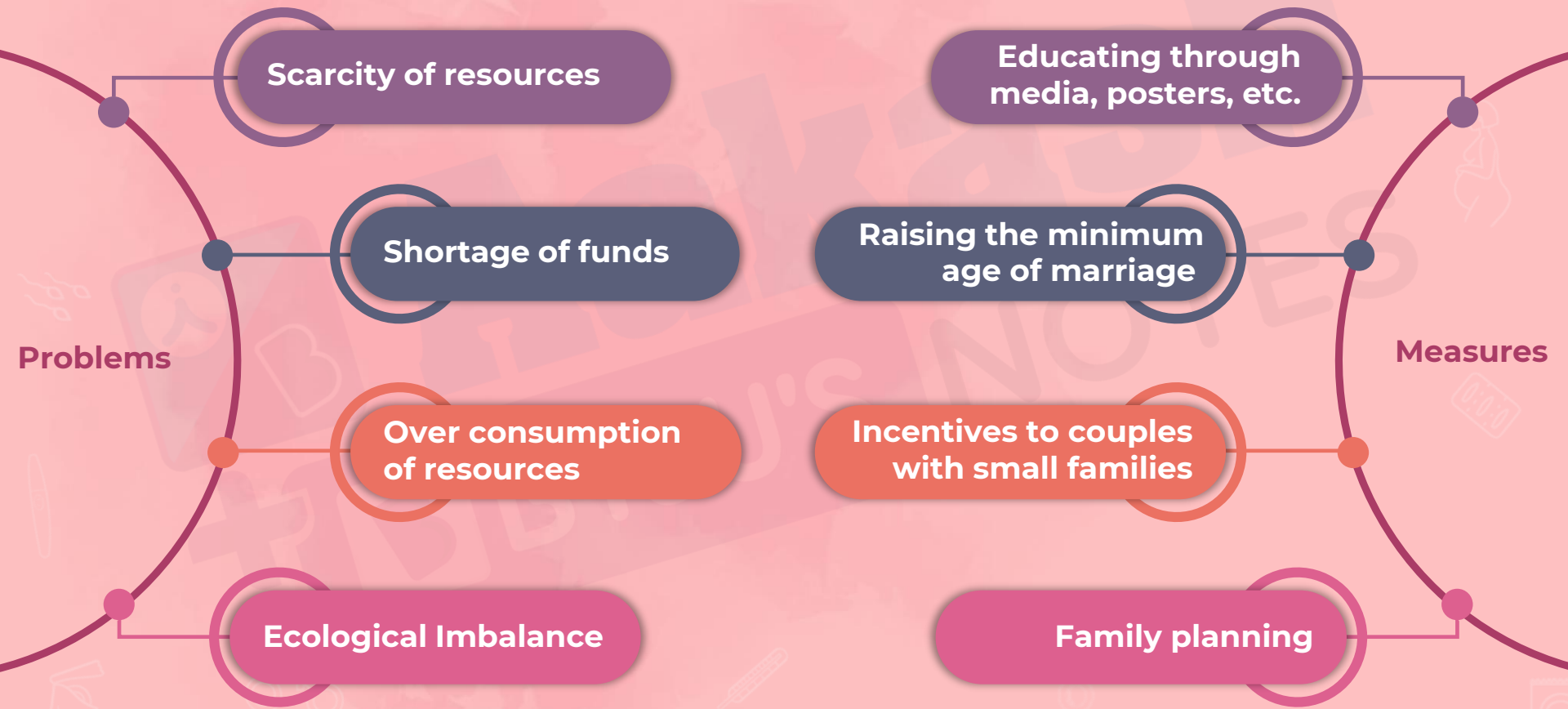
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Non availability of
contraceptives

6



Overpopulation





Methods to Tackle Overpopulation

Birth control/Contraception

- **Birth control** or **contraceptive** methods are the acts or methods which prevent conception.
- The word **contraception** comes from
 - **Contra** = **against**
 - **Conception** = **process of fertilization and subsequent pregnancy**



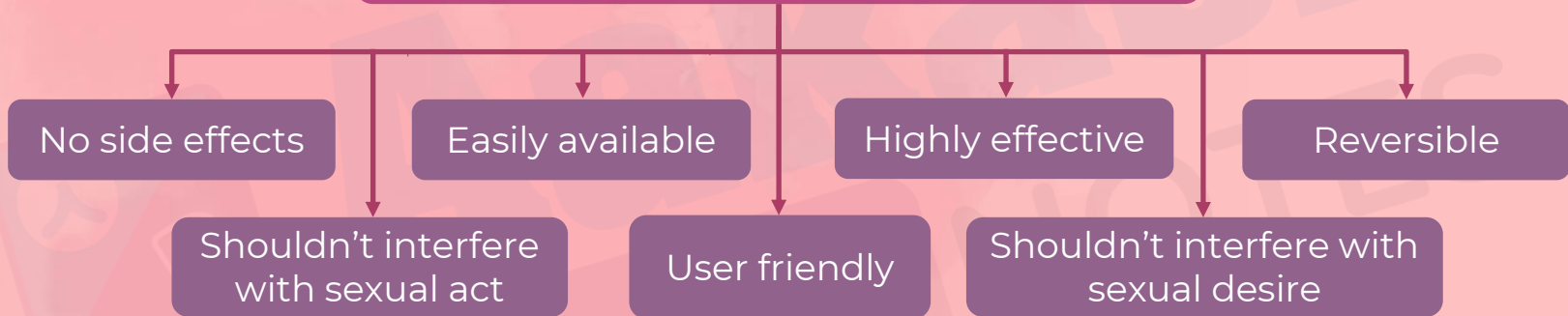
Each of these steps can be inhibited which would eventually lead to contraception or birth control.



Contraception

Ideal contraceptive

Seven characteristics of an ideal contraceptive

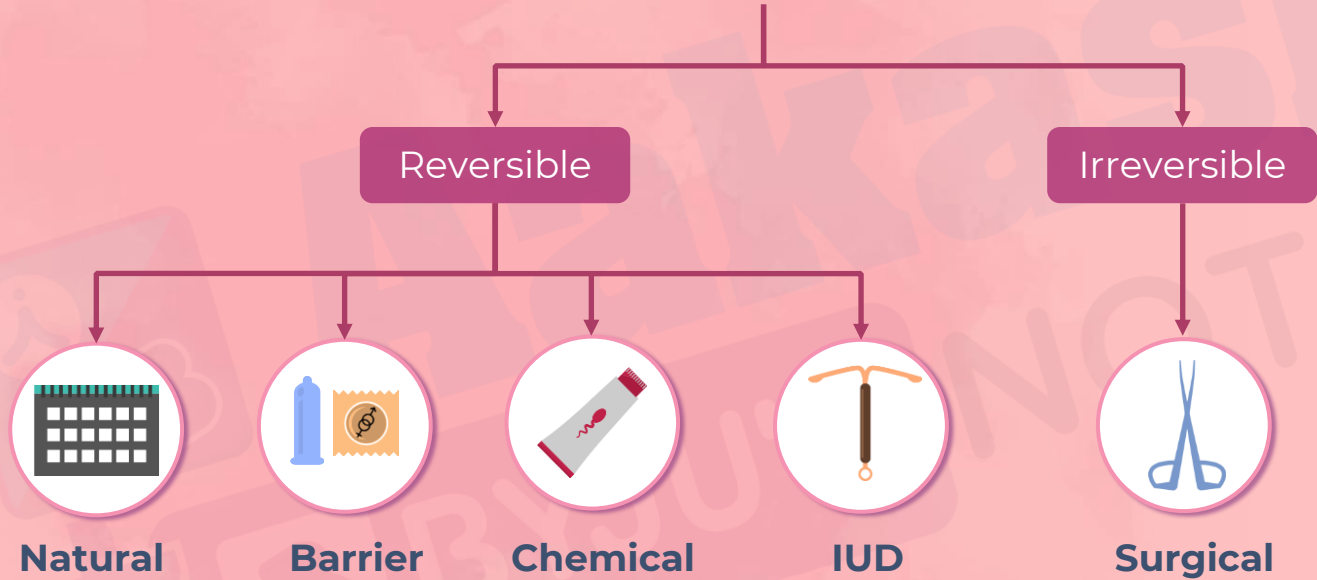


- **User friendly** infers that the user should be able to use it without the help of a doctor.
- **Easily available** infers that the contraceptive should be low cost and should be available at all places.
- **Highly effective** infers it should reduce the chances of pregnancy in a very high percentage of cases.



Contraception

Contraceptive methods





Contraceptive Methods

Natural contraceptive methods

Periodic abstinence (Rhythm method)

Description

Involves avoiding coitus during fertile period i.e. from day 10-17 of the menstrual cycle.

How it works

- Ovulation occurs on 14th day
- **Sperms survive for 3 days**
- **Ovum survives for 1 day**
- Hence, **days 10-17** of menstrual cycle have high probability of fertilisation (fertile period)
- Abstaining from coitus during this period will prevent conception.

Drawback

- Actual time of ovulation cannot be predicted.

Coitus interruptus (Withdrawal method)

Description

Involves withdrawing penis from vagina before ejaculation.

How it works

- Insemination is avoided by withdrawal of penis in time.
- Sperms don't reach egg and fertilisation is averted.

Drawback

- Some sperms can enter vagina before ejaculation
- Withdrawal of penis may not occur in time.

Lactational amenorrhea (Absence of menstruation)

Description

It is a temporary period of infertility in women post-parturition. Release of GnRH, LH and FSH is reduced resulting in no ovulation and thus amenorrhea.

How it works

- Since the female is infertile during this period, no ovulation occurs
- As a result, coitus can't result in fertilisation since the sperms don't find an egg to fertilise.

Drawback

- Effective only up to 6 months from parturition.



Contraceptive Methods

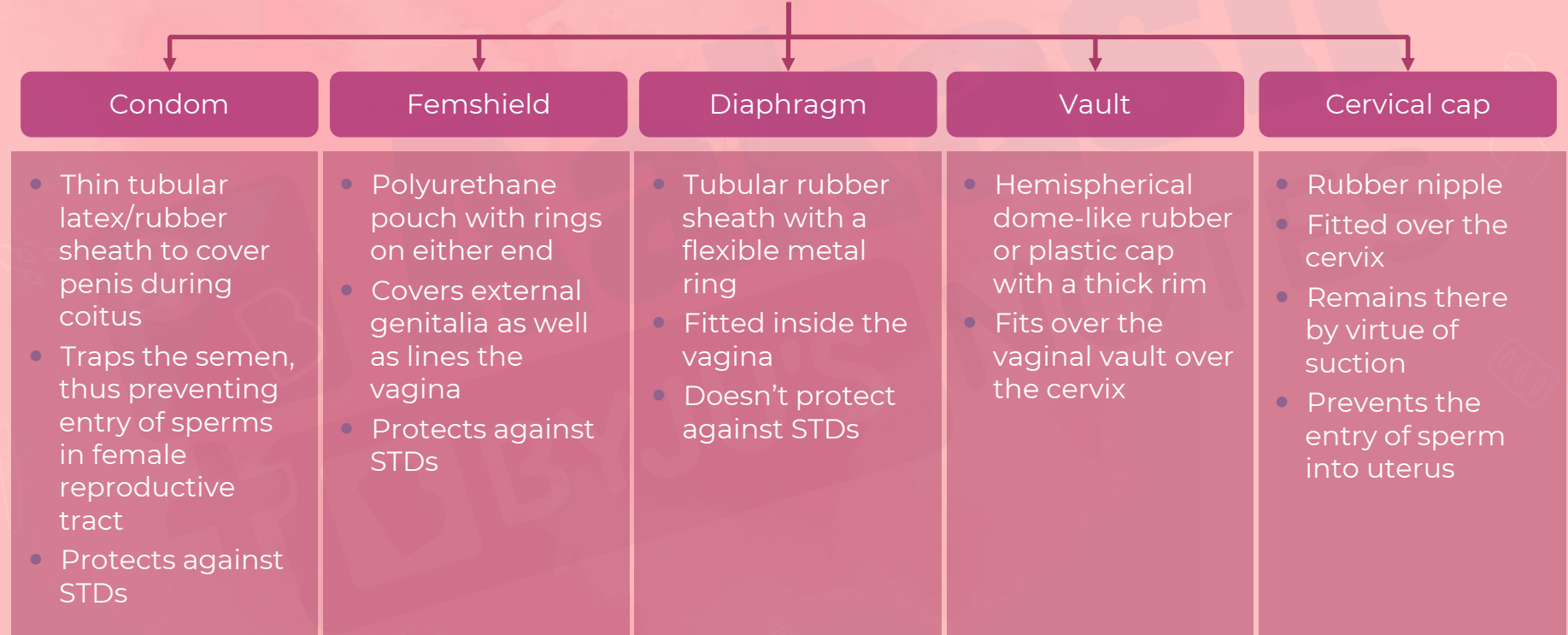
Natural contraceptive methods

Ideal contraceptive characteristics	Periodic abstinence	Coitus interruptus	Lactational amenorrhea
Side effects	No	No	No
Easily available	Yes	Yes	Yes
Reversible	Yes	Yes	Yes
User friendly	Yes	Yes	Yes
Interferes with sexual act	Yes	Yes	Yes
Interferes with sexual desire	No	No	No



Contraceptive Methods

Barrier contraceptive methods





Contraceptive Methods

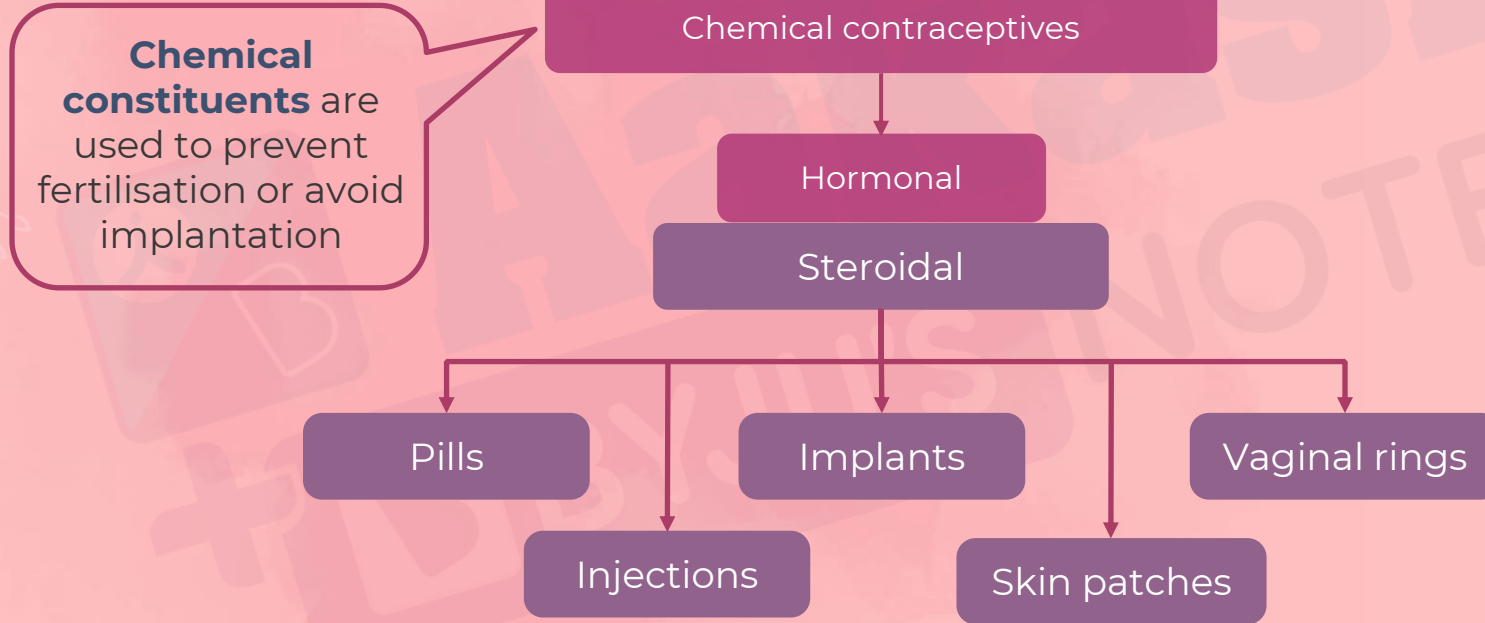
Barrier contraceptive methods

Ideal contraceptive characteristics	Condoms/ Male condoms	Femidoms/ Female Condoms	Diaphragms	Cervical caps	Vaults
Side effects	No	No	Risk of UTI	No	No
Easily available	Yes	Yes	Yes	Yes	Yes
Reversible	Yes	Yes	Yes	Yes	Yes
User friendly	Yes	Yes	Yes	Yes	Yes
Interferes with sexual act	Yes	Yes	Yes	Yes	Yes
Interferes with sexual desire	No	No	No	No	No



Contraceptive Methods

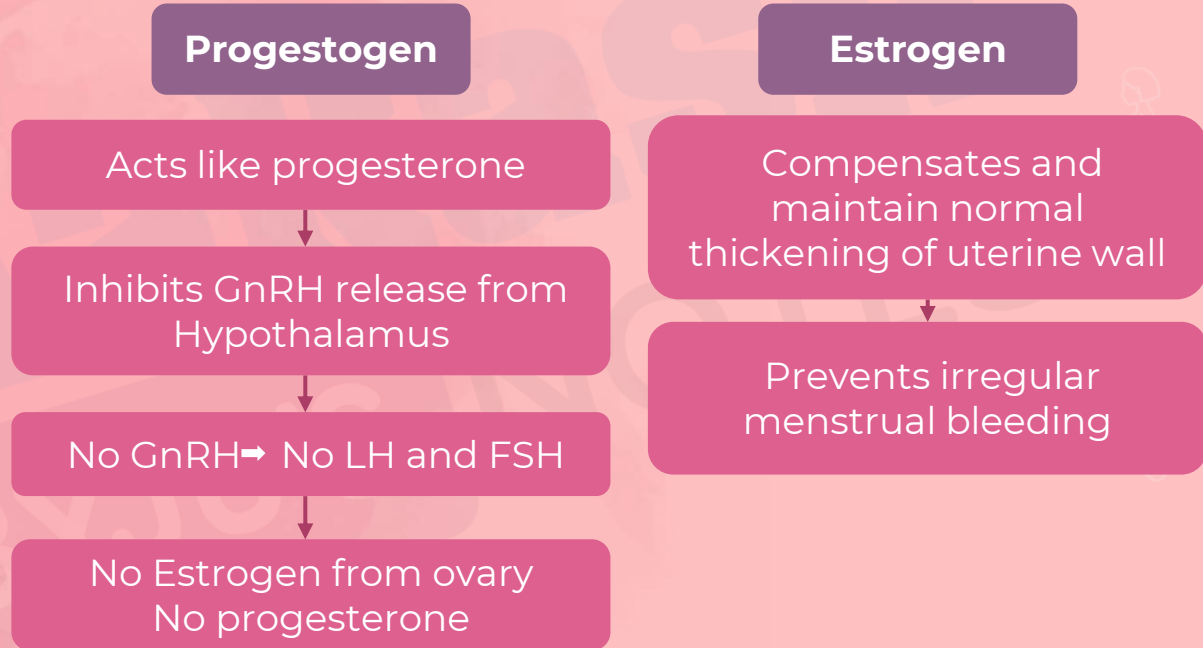
Chemical contraceptives





Hormonal Chemical Contraceptives

- Small doses of
 - **Progestogen alone**
 - **Progestogen-estrogen combinations given to women**
- Releases hormones in bloodstream and acts on endocrine system.
- Progestogen produces effect similar to progesterone
 - **Inhibits ovulation and implantation** thus prevents pregnancy


























Hormonal Chemical Contraceptives

Contraceptive pills

- Have to be taken daily for a **period of 21 days** starting preferably within the first five days of menstrual cycle
- **After a gap of 7 days** (during which menstruation occurs) it must be repeated in the same pattern till the female desires to prevent conception.
- Oral pills are of two types:
 - Combined pills
 - Minipills

How contraceptive pills work?

- **Inhibit ovulation and implantation**
- Alter the quality of cervical mucus to **prevent/retard** entry of sperms
- **Inhibit motility** and **secretory activity** of fallopian tubes

S	M	T	W	T	F	S
×	×	×	×	×	×	×
						
						
						



Hormonal Chemical Contraceptives

Combined pills

- Contain both **estrogen** and progestin
 - Most commonly used progestin is **levonorgestrel** or **desogestrel**
 - Most commonly used estrogen is **ethinyl estradiol** or **menstranol**
- Monophasic combined pill contains estrogen and progestin in same amount
 - **Ex - Mala D** and **Mala L**
- **Multiphasic** combined pills maintain **estrogen at same level** through the 21-day course.
 - Level of **progestin** are **increased gradually**
 - **Ex-triquilar, Ortho-novum**

Minipills

- **Progestin only** pills
- Taken **daily** without break
- **Ex - POP**

Saheli

- **Saheli** is an oral contraceptive for females which contains a non-steroidal preparation.
- It is a '**once a week**' pill with very few side effects and high contraceptive value.



Hormonal Chemical Contraceptives

Contraceptive injections

- Contain **progestogen-estrogen** combination
- Ex - depot-medroxyprogesterone acetate injection's effect sustains for **approximately 3 months**
- **Ex - norethisterone enanthate's** effect sustains for 2 months.
- **Ex - Cyclofem and mesigyna**
 - Injected as a **combination**
 - Given **once every month**
 - Contains **progestin** and **oestradiol**

Implants

- **Hormone** containing devices implanted **sub-dermally for long term contraception**
- **Ex-norplant** - progestin only device with six small silicone capsules having levonorgestrel
- Remains effective for **5 years**
- **Ex-implanon - single rod like device** which is implanted through a wide-bored needle



Hormonal Chemical Contraceptives

Skin patches

- **Hormonal transdermal patch** applied to the skin
- Contains **estrogen – progestogen** combination
- Short-term and reversible

Vaginal rings

- Small, flexible, soft **plastic ring**
- Releases continuous dose of **estrogen – progestogen** combination

Spermicidal formulations

- Non - steroidal chemical formulation for **topical application**
- Contains chemicals which prevent pregnancy by
 - **Killing, blocking or slowing** the sperms
- Spermicidal creams (ex- delfen) are applied deep in the vagina and cervix just **10-60 minutes before sexual intercourse**
- Best effective with **other barrier method**
- It also comes in the form of **jellies**, ex - **perceptin, volpar paste**
- It also comes in the form of **tablets**, ex - **aerosol foam, chloramine - T** or **contab**



Emergency Contraceptive Methods

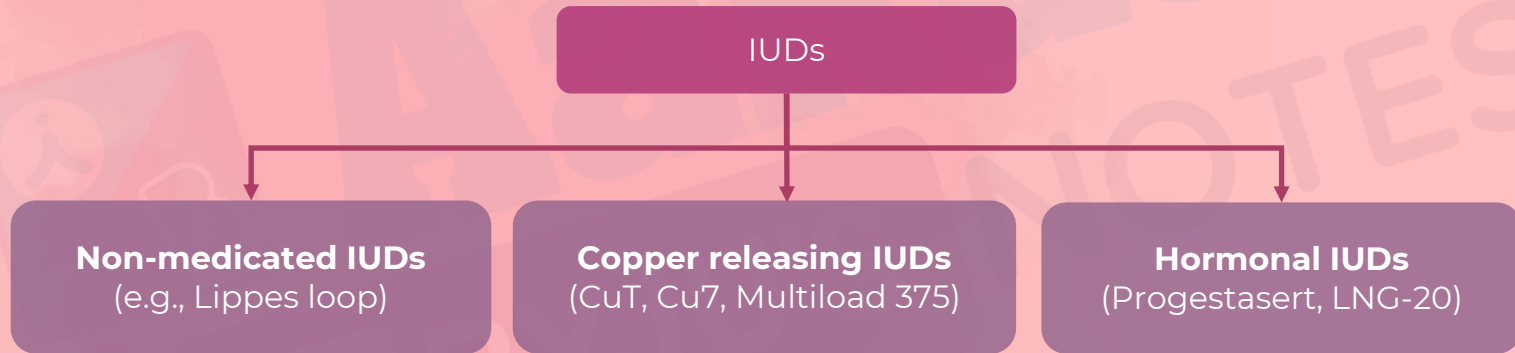
- It is a method of contraception that can be used to prevent pregnancy **after sexual intercourse**.
- They are also called **morning-after pills**.
- Pill/s should be taken **within 5 days** of sexual intercourse.
- They are more effective when taken as early as possible especially **within 3 days** or **$3 \times 24 = 72$ hours**.
- Two **Ovral tablets** to start and two tablets after 12 hours helps in prevention of pregnancy.
- Other options are **noral**, **norigynon** and **ovidon**.
- **Mifepristone** is a **single pill** treatment.
- They are used after **unprotected sex** and in case of rape.



Contraceptive Methods

Intrauterine devices or IUDs

- Small birth-control devices **placed in the uterus** to prevent pregnancy
- Long-acting reversible contraception



- IUDs are ideal contraceptives for females who want to **delay pregnancy and/or space children.**
- It is one of most widely accepted methods of contraception in India.



Intrauterine Devices or IUDs



CuT



Cu7



Multiload 375

How IUDs act?

- Increase **phagocytosis** of sperms within the uterus
- Cu ions released **suppress sperm motility and the fertilising capacity** of sperms
- The hormone releasing IUDs, in addition, **make the uterus unsuitable for implantation** and the **cervix hostile to the sperms.**



Intrauterine Devices or IUDs

Copper T features

- Copper T has **ionised copper**.
- It causes release of **toxic cytokines**.
 - They **suppress sperm motility** and their **ability to fertilize** ovum.
- Such devices need to be replaced **3-5 years**.
- **Cu T380A** has a replacement period of **7-10 years**.

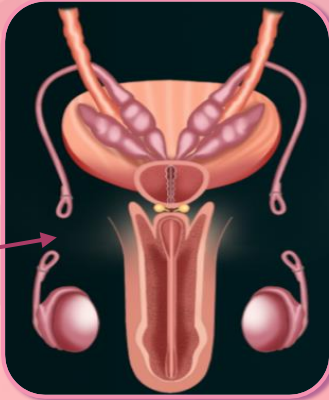


Contraceptive Methods

Surgical methods of contraception

Vasectomy

- It is a surgical method of **male sterilisation**.
- It prevents the transportation of sperms.
- Vas - Vas deferens, ectomy - surgical removal.

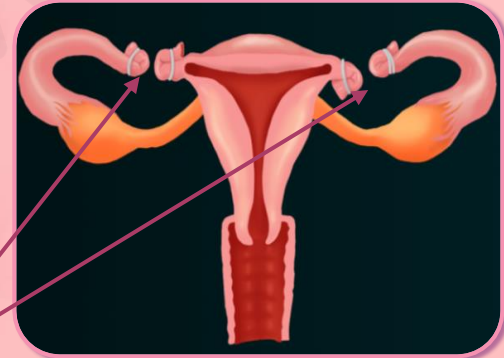


Cut and tied
vas deferens

Male sterilisation

Tubectomy

- It is a surgical method of **female sterilisation**.
- It prevents the transportation of ova.
- Tub - Fallopian tube, ectomy - surgical removal.



Sealed fallopian tube

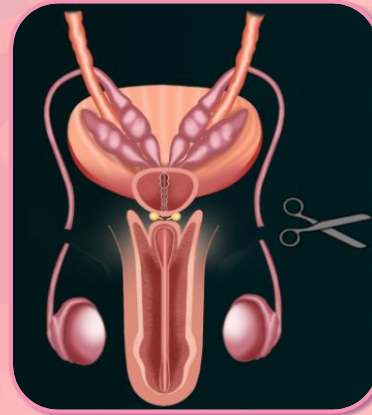
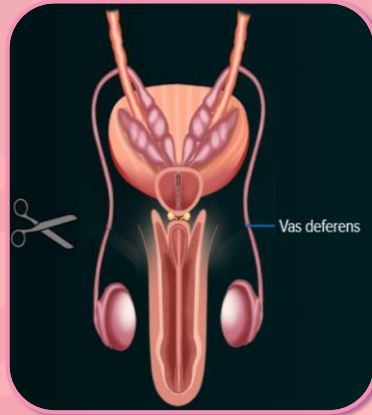
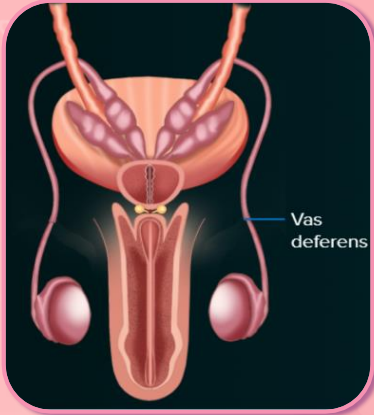
Female sterilisation



Vasectomy

Method of sterilisation

- A small **part** of the **vas deferens** is **removed** or tied up through a **small incision** on the **scrotum**.
- This blocks sperm from entering the ejaculate and thereby prevents conception.



Two small incisions, one on each side of vas deferens, are done.



Then the cuts are sealed. Thus, the sperms cannot pass through the vas deferens.



Vasectomy

Techniques

- **Conventional vasectomy** - 1 cm incision is made over the area of vasa deferens with the help of scalpel.
 - Each vas deferens is cut and exposed and tied.
 - A gap of 1-4 cm is a must between the two ends.
- **No scalpel vasectomy** - Dissecting and ringed forceps are used instead of scalpel.
 - 1-2 cm of vas deferens is removed.
 - Each end is occluded by heat and clips.

Efficiency

Vasectomy is 99% effective.



Drawbacks

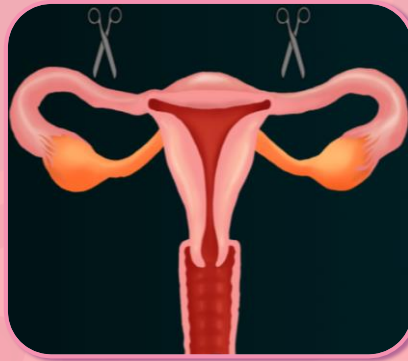
- Cannot be easily reversed, even if couples want to conceive later.
- There is a reversal technique, but it is usually not successful.



Tubectomy

Method of sterilisation

- A small part of the **fallopian tube** is **removed** or tied up through a **small incision** in the **abdomen** or through vagina.
- It is also called tubal ligation.



Two small incisions on both the fallopian tubes are made.



The ends are sealed.
It prevents the transportation of ova.



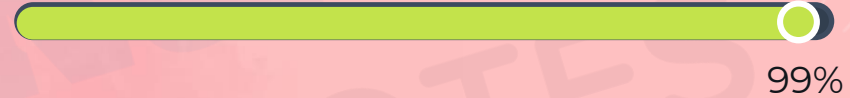
Tubectomy

Techniques

- **Conventional transabdominal surgery** - Fallopian tubes are cut and loose ends are tied to prevent reunion
- **Conventional laparotomy or Mini laparotomy** - In these two procedures, loop development and constriction of the basal region of the loop with the help of a silastic ring is used to achieve sterilisation.

Efficiency

Tubectomy is 99% effective.



Drawbacks

- It **cannot** be **easily reversed**. The **female cannot conceive** even if she wants to.
- Reversal technique is usually not successful.



Medical Termination of Pregnancy

- **Voluntary termination** of **pregnancy** before its complete term
- 20% of total pregnancies (45-50 million annually) are aborted
- Can be **safely performed** up to **12 weeks** (within first trimester) of pregnancy
 - Risky in the second trimester
- **Misoprostol** and **Mifepristone** is an effective combination for MTP
- **Vacuum aspiration** and **surgical operations** are taken up thereafter
- Helps in containment of population
- Used to end **unwanted pregnancies** arising due to unprotected sex or rape
- **Medical Termination of Pregnancy Act, 1971** was brought in by Government of India to prevent unnatural maternal deaths due to unsafe abortions



Misuse of MTP

- **Illegally** done by **unqualified quacks** (fraudulent or ignorant pretender to medical skill)
- Could be fatal for mothers



- Foetal **sex determination** followed by MTP
 - Female foeticide

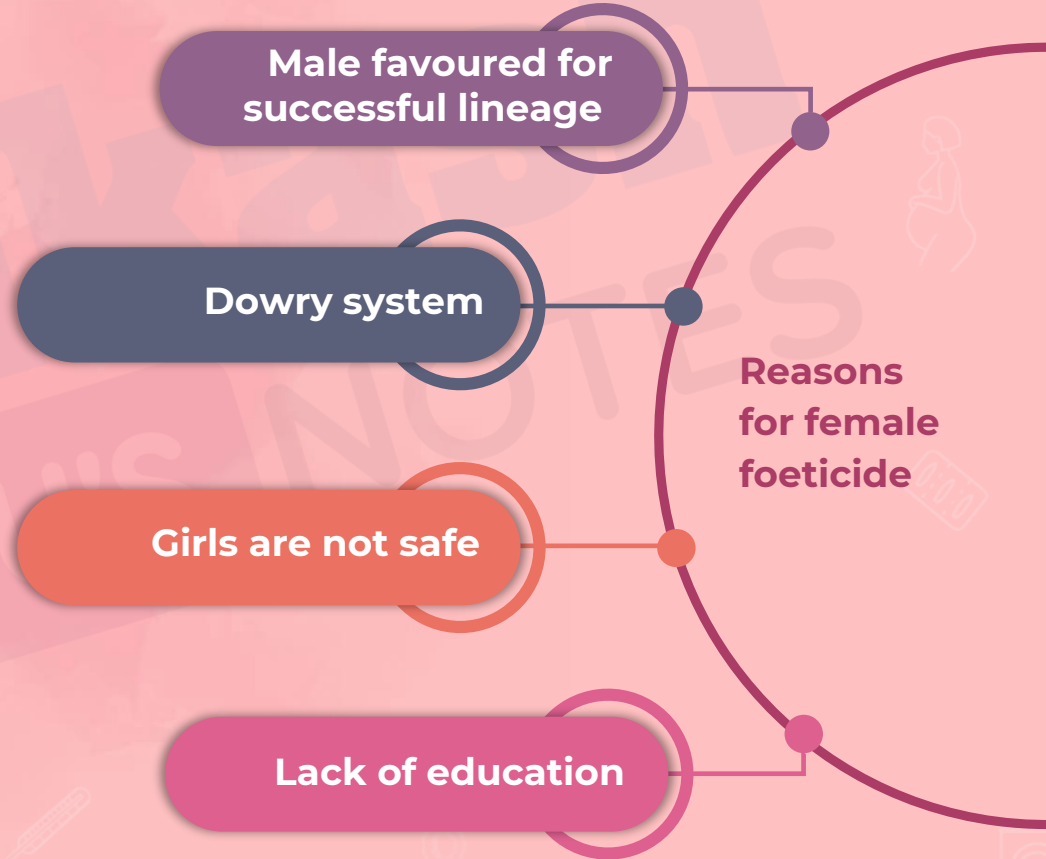


- **Sex-determination** methods such as **amniocentesis** and sex determination through **ultrasound scanning** are carried out.
- If the foetus is found to be **female**, then MTP is undertaken by couple which is totally against the law.



Female Foeticide

- It is the process of **selective abortion** of female fetuses.
- It is an **illegal practice**.
- There are strict laws against it and penalties are imposed on violators.





Amniocentesis

- It is a **prenatal test**.
- It is based on the **genetic makeup of the cells** from the **amniotic fluid**.
- It is used in sex determination test and foetal disorder test (Down syndrome, Haemophilia, sickle cell anaemia).
- It is performed **between 15th-20th weeks** of pregnancy.
- Amniotic fluid sample is taken from **mother and tested**.
- When it is performed, it carries a **minor risk factor (1%)** of causing a **miscarriage**.

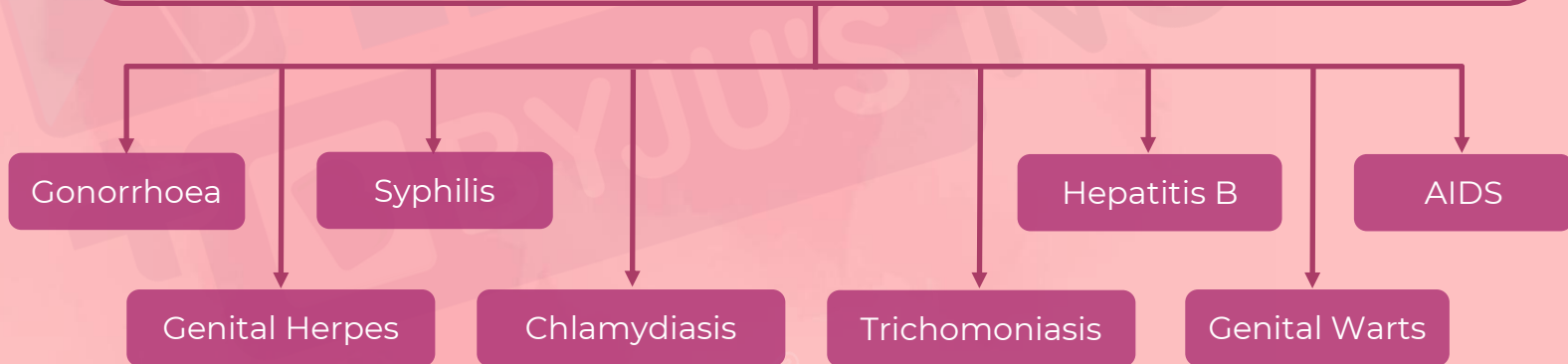


Safe period for performing amniocentesis



Sexually Transmitted Infections

- These are the diseases which can transmit through **sexual intercourse** or through the **body fluid interaction**.
- They are also called-
 - Sexually transmitted diseases (STDs)
 - Venereal disease (VD)
 - Reproductive tract infections (RTIs)
- Below are eight common STDs:



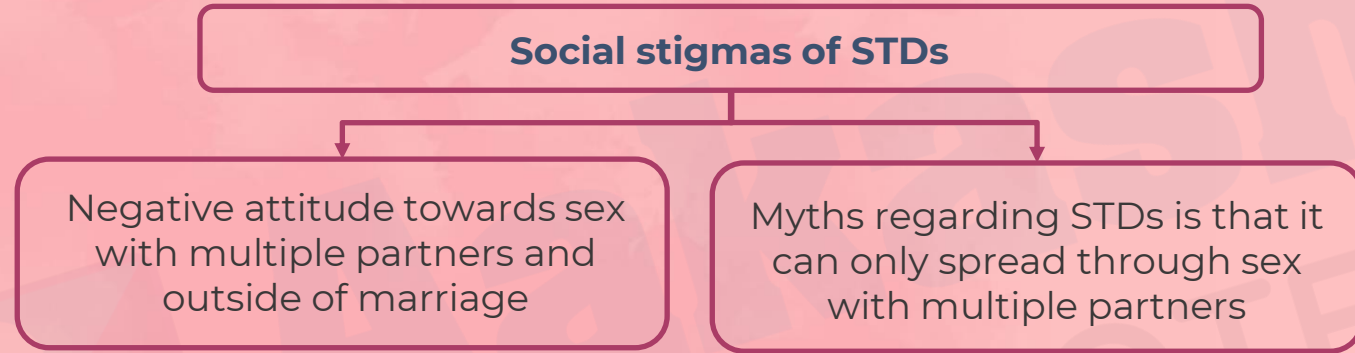


Sexually Transmitted Infections

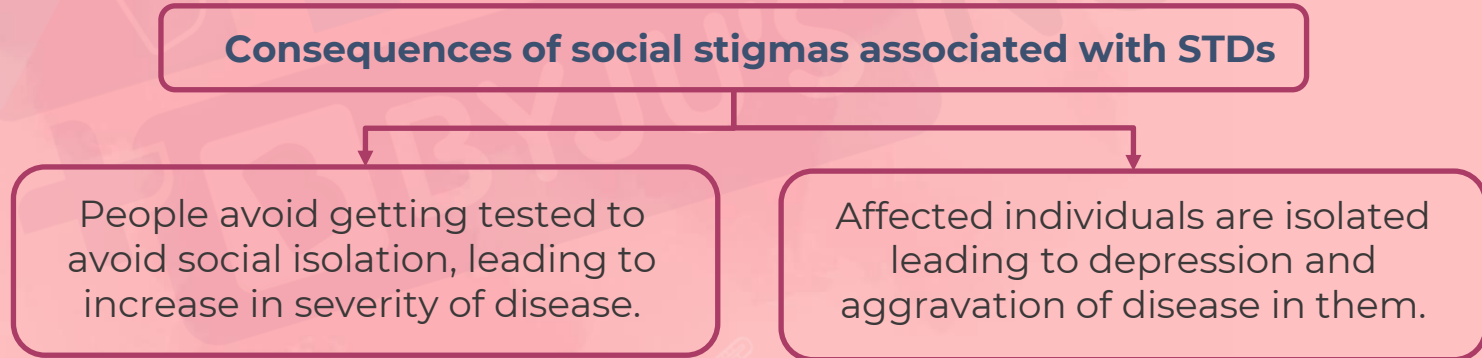
Sexually transmitted disease	Causative agent	Type of causative agent
Gonorrhoea	<i>Neisseria gonorrhoeae</i>	Bacteria
Syphilis	<i>Treponema pallidum</i>	Bacteria
Genital herpes	Human simplex virus type -2 (HSV-II)	Virus
Genital warts	Human papillomavirus	Virus
Hepatitis B	Hepatitis B virus	Virus
Trichomoniasis	<i>Trichomonas vaginalis</i>	Protozoa
Chlamydiasis	<i>Chlamydia trachomatis</i>	Bacteria
Acquired immunodeficiency syndrome	Human immunodeficiency virus	Virus



Sexually Transmitted Infections

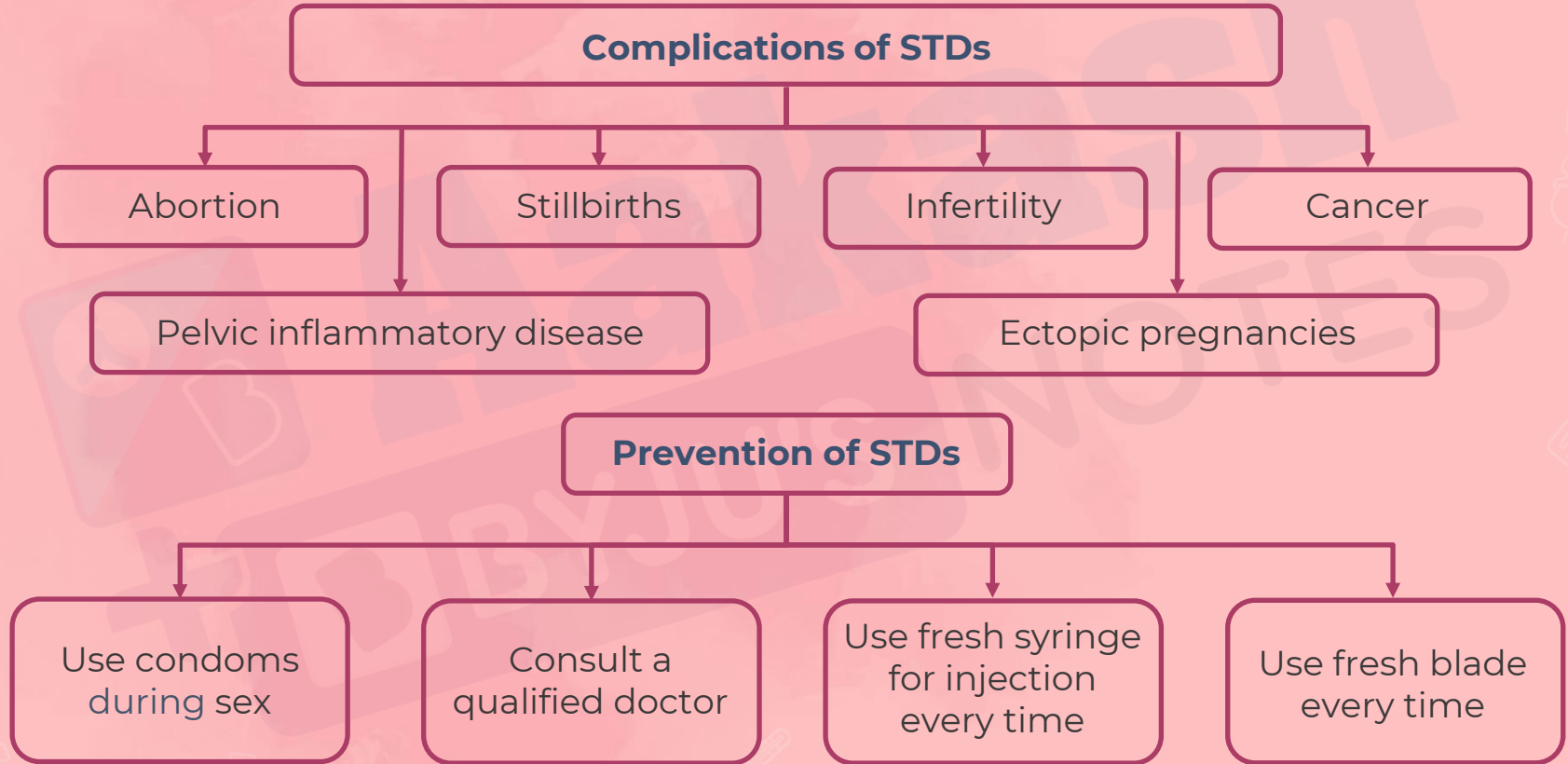


Consequently, individuals with STDs are looked down by the society.





Sexually Transmitted Infections





Infertility

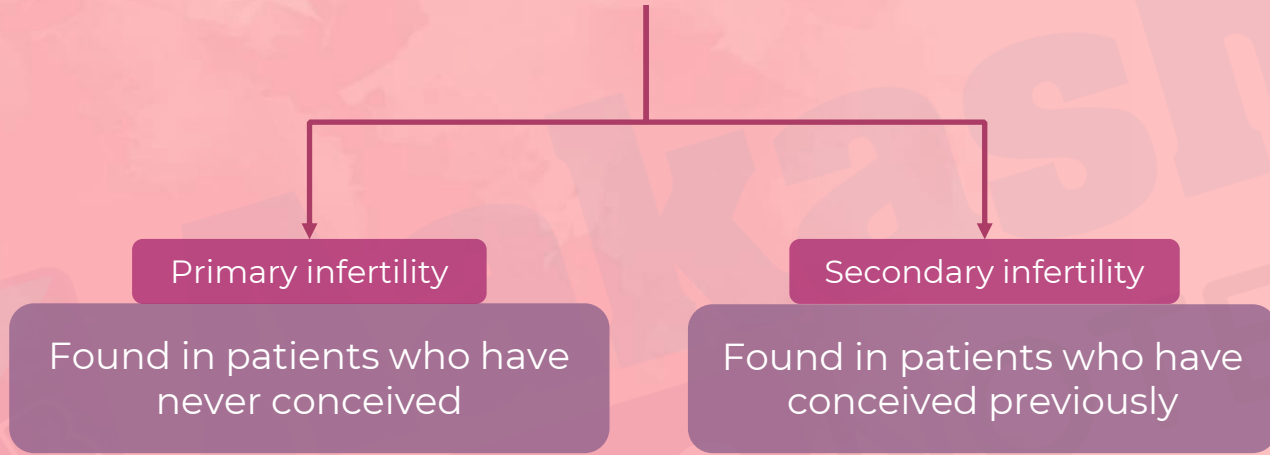
It is the inability to conceive or produce children even after 2 years of regular, unprotected sexual cohabitation.

Its causes:

- | | |
|-----------------|--------------|
| Immunological 1 | Physical 2 |
| Disease 3 | Congenital 4 |
| Psychological 5 | Drugs 6 |



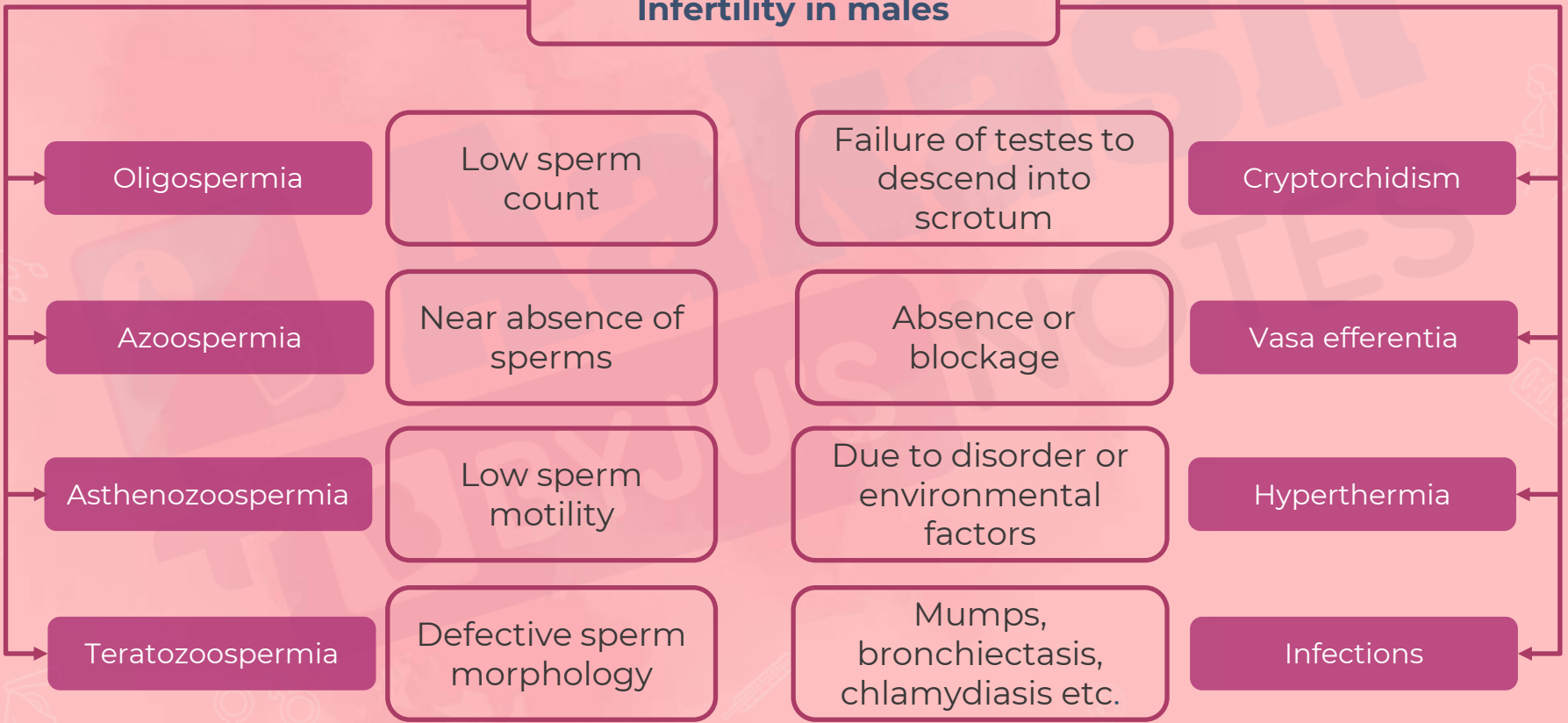
Infertility





Infertility

Infertility in males





Infertility

Infertility in females

- Impaired motility, loss of cilia and blocked lumen in fallopian tube resulting in it being unable to pick up the ovum.
- It is caused by infection or endometriosis

- Anovulation (non-ovulation) or oligo-ovulation (deficient ovulation) caused by deficient functioning of hypothalamopituitary complex

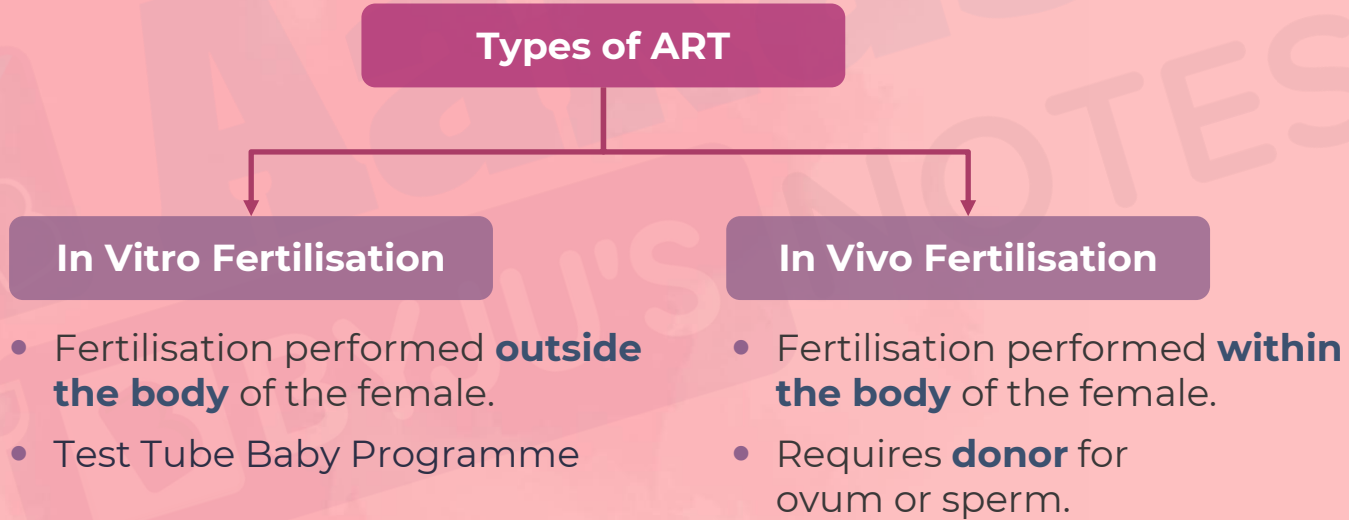
- Inadequate growth and functioning of corpus luteum resulting in reduced progesterone secretion and deficient secretory changes in endometrium.
- It is called luteal phase and inhibits implantation.

- Ovum is not liberated and remains trapped inside the follicle due to hyperprolactinemia (higher than normal levels of prolactin in blood).



Assisted Reproductive Technologies (ART)

A set of medical procedures aimed at treating infertility.

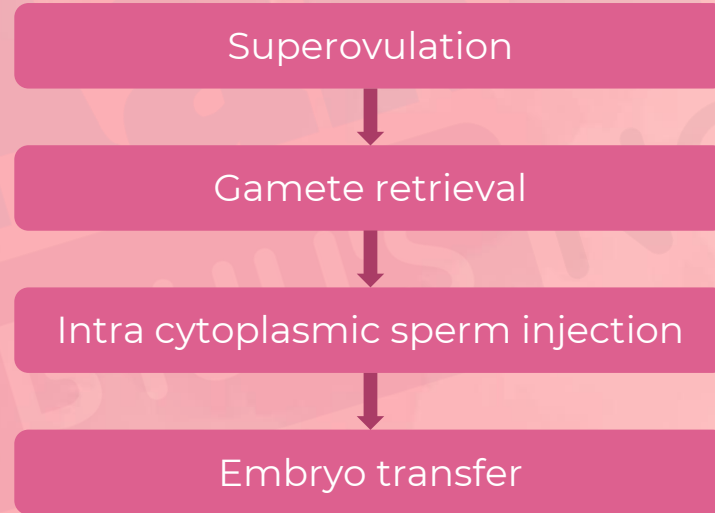




In Vitro Fertilisation

Fertilisation performed **outside the body** of the female.

Steps of in vitro fertilisation :





In Vitro Fertilisation

Superovulation

Hormone treatment to produce several mature ova instead of just one

The two hormones are - **Luteinizing hormone** (LH) and **follicle stimulating hormone** (FSH)

- **LH** helps in the **release of an egg** from the ovary
- **FSH** stimulates the **growth of ovarian follicles**

Gamete retrieval

Extraction of sperm and ova from donors

- Extraction of ova - **Transvaginal oocyte retrieval**
- Extraction of sperm -
 - **Collection condom**
 - **Surgical method**



In Vitro Fertilisation



Intra Cytoplasmic Sperm Injection

- The **sperm is directly injected into the ovum.**
- It is done in case of low sperm count, high concentration of deformed sperm and low sperm motility.

Embryo Transfer

The embryo is implanted in the female genital tract for further development.

- **Zygote Intra Fallopian Transfer (ZIFT)** - The zygote or early embryos with up to 8 blastomeres is transferred into the fallopian tube.
- **Intra Uterine Transfer (IUT)** - Embryos with more than 8 blastomeres are transferred into the uterus.
- **Surrogacy** - It is an arrangement, often supported by a legal agreement, whereby a woman (the surrogate mother) agrees to bear a child for a couple.



Did You Know?

Freezing gametes

Sperms can be preserved in sperm bank through a process called cryopreservation.



Cryopreservation



In Vivo Fertilisation

Fertilisation performed **within the body** of the female.

Techniques of in vivo fertilisation :

Types of procedures

Gamete intrafallopian transfer (GIFT)

- Performed if the female is **unable to produce an egg**

Artificial insemination (AI)

- Performed in cases of **inability** of the male partner **to inseminate** the female or **very low sperm count**
- Sperms are **artificially** introduced in vagina

Intra uterine insemination (IUI)

- Performed if **vagina is too acidic** or **pH of semen is not alkaline enough**
- Sperms are **directly** placed in uterus artificially



In Vivo Fertilisation

Techniques of in vivo fertilisation :

- **Gamete Intra Fallopian Transfer (GIFT)** – Transfer of an ovum collected from a donor into the fallopian tube of another female.
- **Artificial Insemination (AI)** - The semen collected either from the husband or a healthy donor is artificially introduced into the female reproductive tract.
- **Intra Uterine Insemination (IUI)** - The sperms are directly introduced in the uterus.



Drawbacks of ART

Maybe invasive

1

Requires extremely high precision handling

2

Can be done only by specialized professionals

3

Expensive

4

Very few ART clinics

5

Emotional, religious and social factors

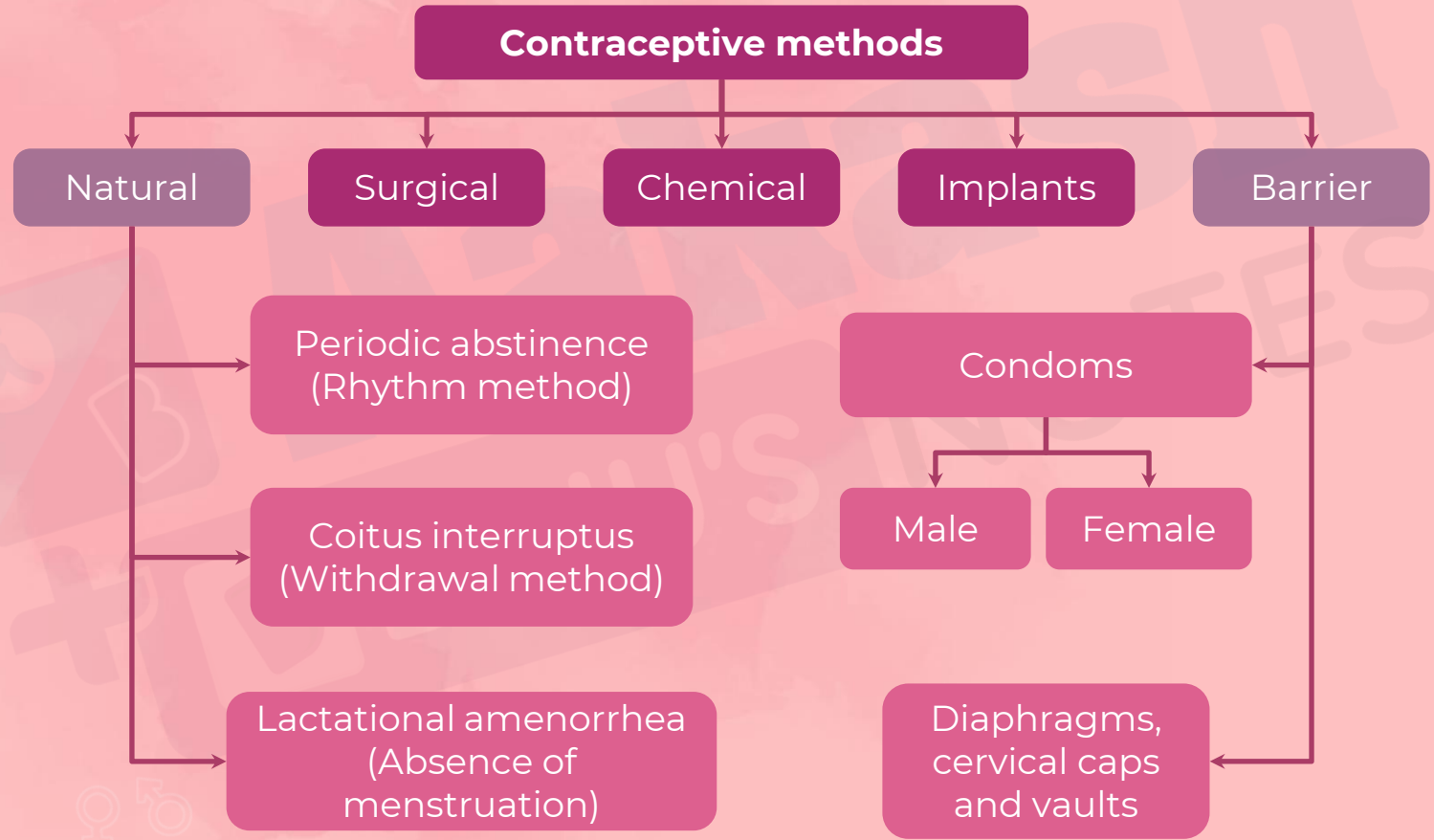
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Adoption

It is a legal process which fully transfers parental responsibility from a child's biological parents to the adoptive parents.

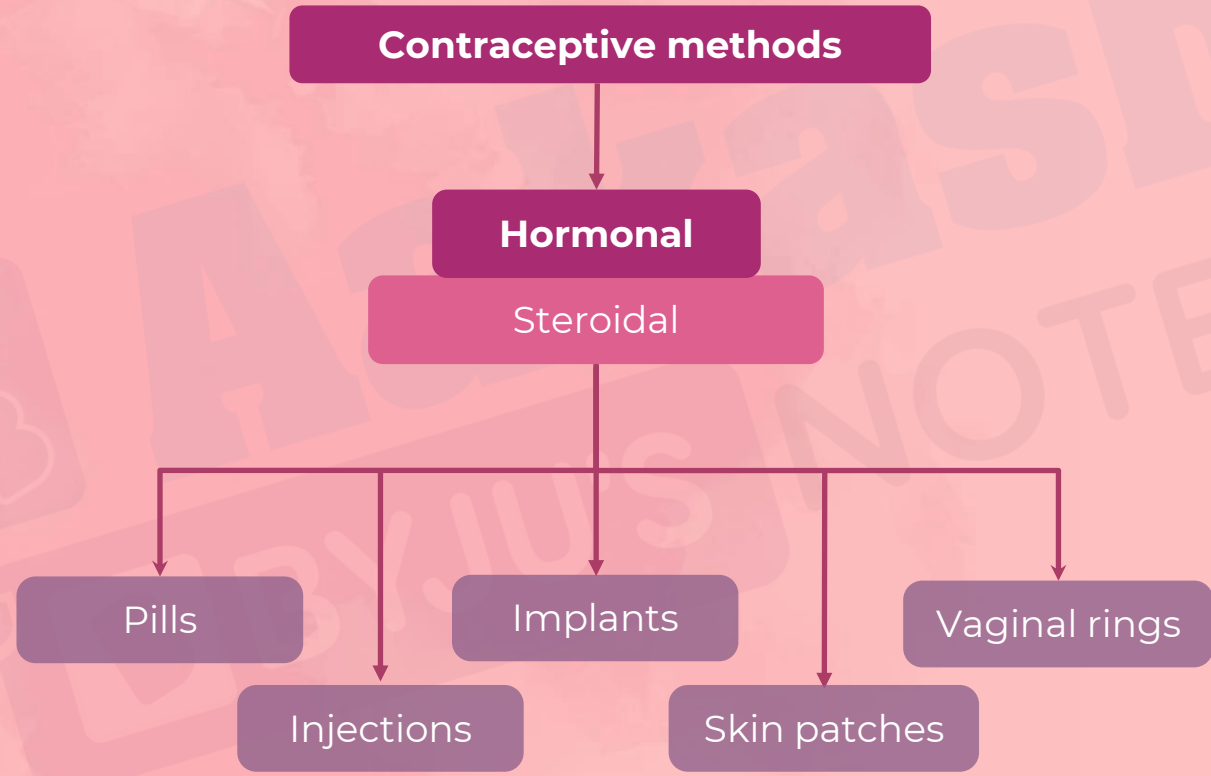


Summary



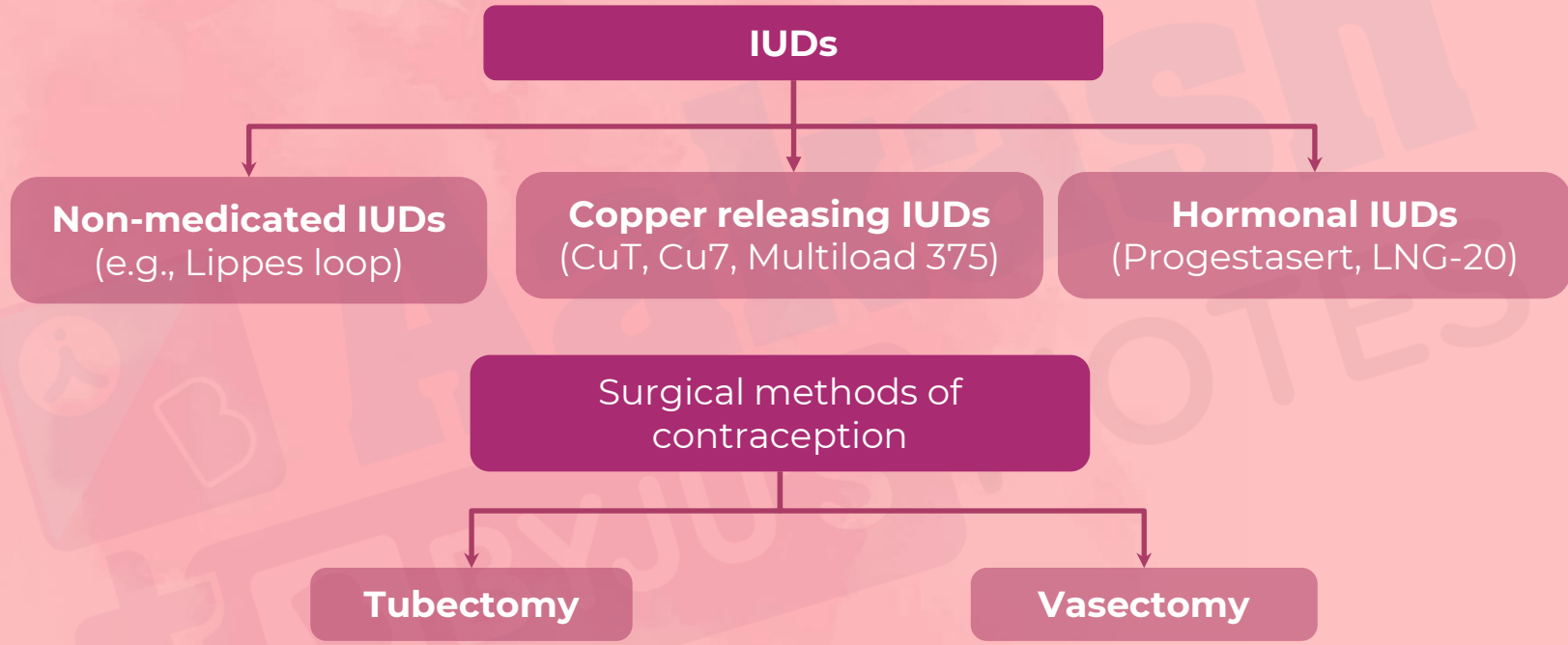


Summary





Summary





Summary

Sexually Transmitted Diseases

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Genital warts	Human papillomavirus
Hepatitis B	Hepatitis B virus
Trichomoniasis	<i>Trichomonas vaginalis</i>
Chlamydiasis	<i>Chlamydia trachomatis</i>
Acquired immunodeficiency syndrome	Human immunodeficiency virus



Summary

Sexually Transmitted Diseases

Social stigma

- Negative attitude towards sex
- Discrimination due to myths
- Isolation
- Avoid getting tested

Complications of STDs

- Stillbirths
- Infertility
- Abortion
- Pelvic inflammatory disease
- Ectopic pregnancies
- Cancer

Prevention of STDs

- Avoid unprotected sex
- Use condoms during sex
- Consult with a doctor
- Use fresh syringe for injection ever time



Summary

Infertility

It is the inability to conceive or produce children even after 2 years of unprotected sexual cohabitation

Assisted reproductive technology (ART)

A set of medical procedures aimed at treating infertility.

In vitro fertilisation (IVF)

Fertilisation performed outside the body of the female.

In vivo fertilisation

Fertilisation performed within the body of the female.

Drawbacks of ART

ARTs could be invasive, few ART clinics, performed only by professionals, high precision handling, expensive, emotional, religious and social factors

Adoption

It is a legal process which fully transfers parental responsibility from a child's biological parents to the adoptive parents.