



Key Takeaways



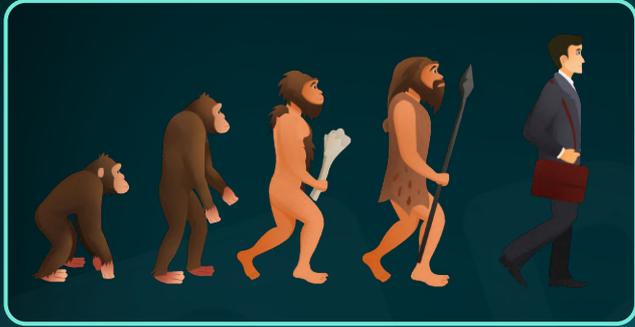
- World and Indian population

- Problems associated with high population

- Reasons of high population in India

- Population stabilisation policy

Growth of World Population



Evolution of modern man

- According to recent theories, modern humans appeared in Africa, 2,00,000 years ago.
- Since then, humans have dwelled on this planet and have been successful in continuously growing their population.
- Although several factors like pandemics, famine, wars, invasions had created population bottleneck, humans have thrived to sustain.

1 - 15 million

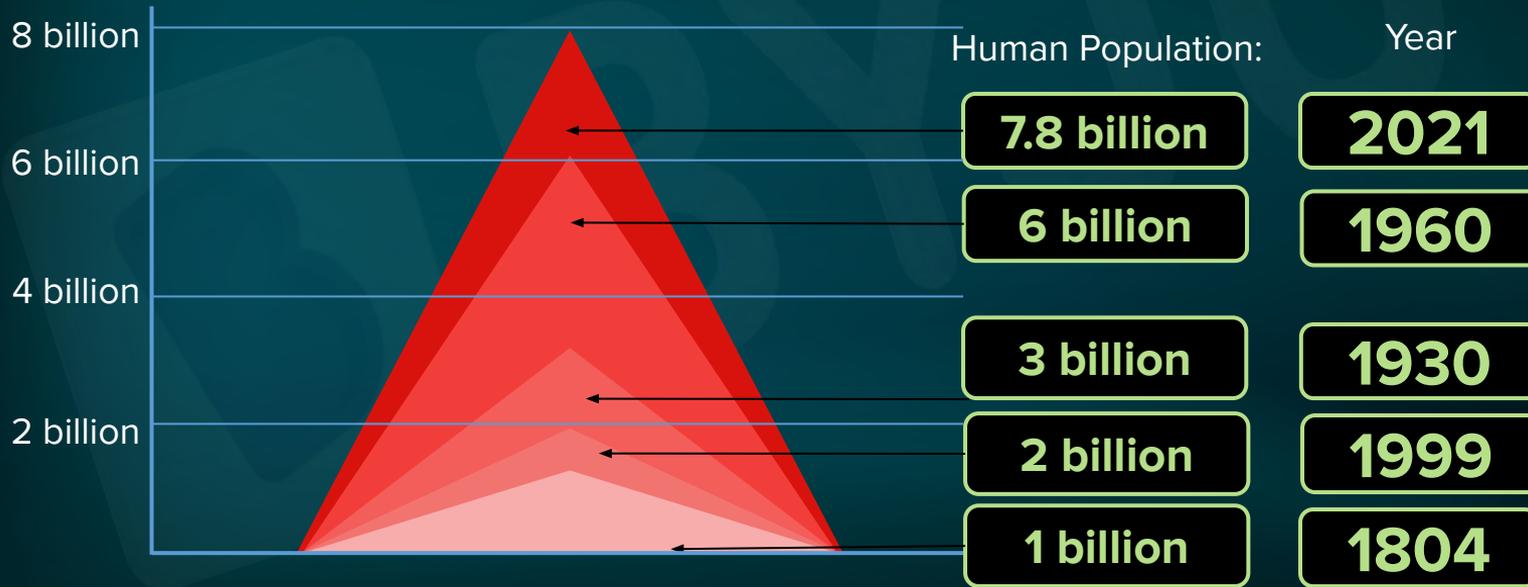
Population when agriculture emerged

50 - 60 million

Population during Roman empire
(4 A.D.)

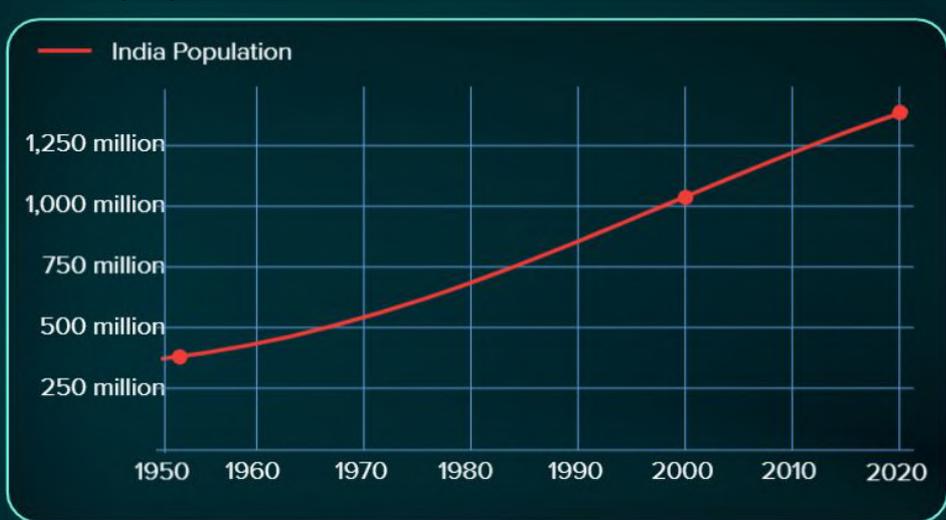
Growth of World Population

- World population reached its first billion in the year 1804.
- Currently, as of 2021 the world population has reached to 7.8 billion.



Population of India

- In India, the **population** during **independence (1947)** was approximately 350 million.
- In 2000, population **increased** to **1 billion**.
- **Currently**, the population of India is **1.38 billion**.
- In the world, **every sixth person** is **Indian**.
- **Population outburst**: Population which exceeds its sustainable size or the rapid increase in the population.

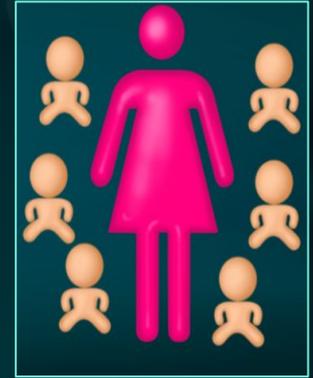


Population in India

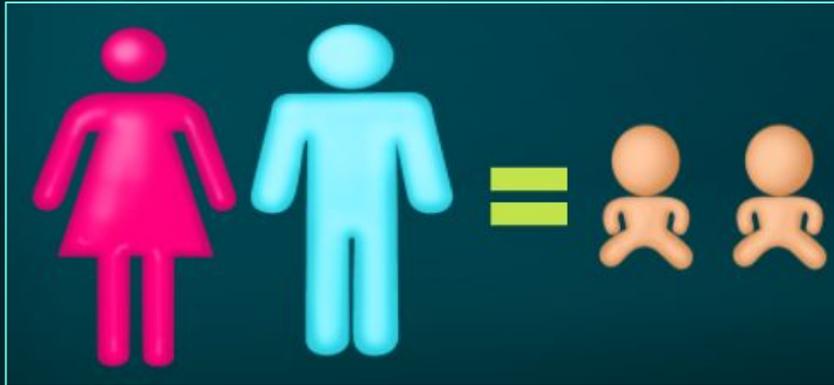
Population of India

Total fertility rate

- The average number of children **born per woman** over her lifetime is the **total fertility rate**.

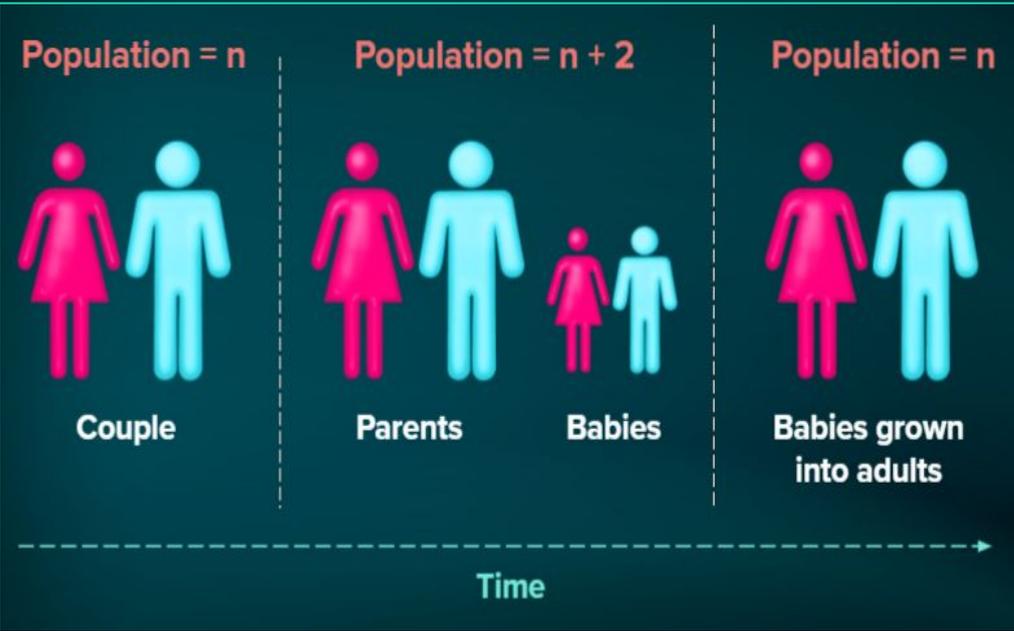


Ideal total fertility rate = 2



- For the population to **remain stable**, the couple should **ideally** have **2 kids**.
- As the **parents would die** and **children are still living**, this process maintains the **same population**.

Population of India

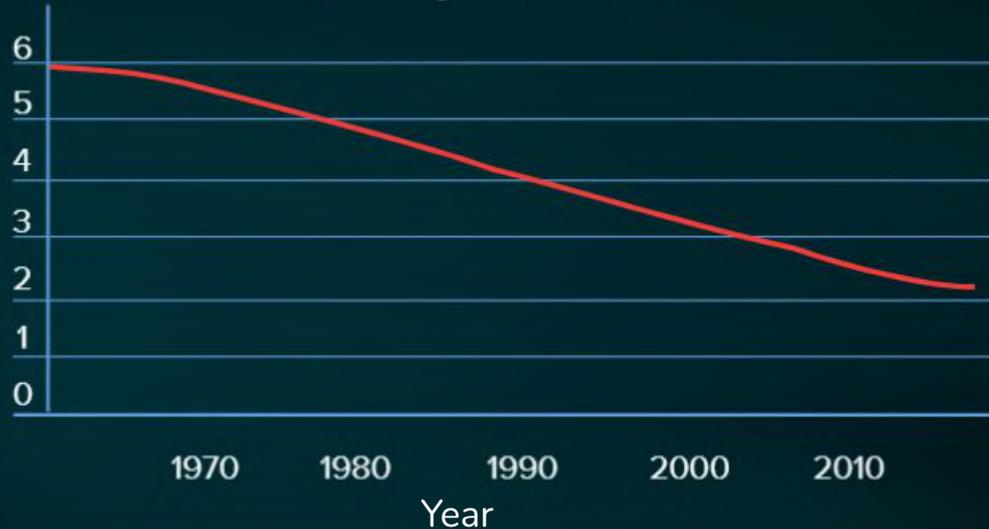


- The initial population of a couple can be **considered 'n'**.
- If they give **birth to 2 children** then the population increases to $n+2$.
- When the **parents die**, the **population reverts to n**.
- Hence, this is a **sustainable rate**.

Population of India

- In 1947, the **fertility rate of India** was around 6, means an **Indian woman** was having **around 6 children**.
- When **fertility rate** is **more than 6**, then it is **not a sustainable fertility rate**.

Fertility rate in India



Reasons for High Population in India

High mortality and lower life span

01

Child marriage

02

Illiteracy

03

Preference for male kids

04

Aversion from family planning

05

Non availability of contraceptives

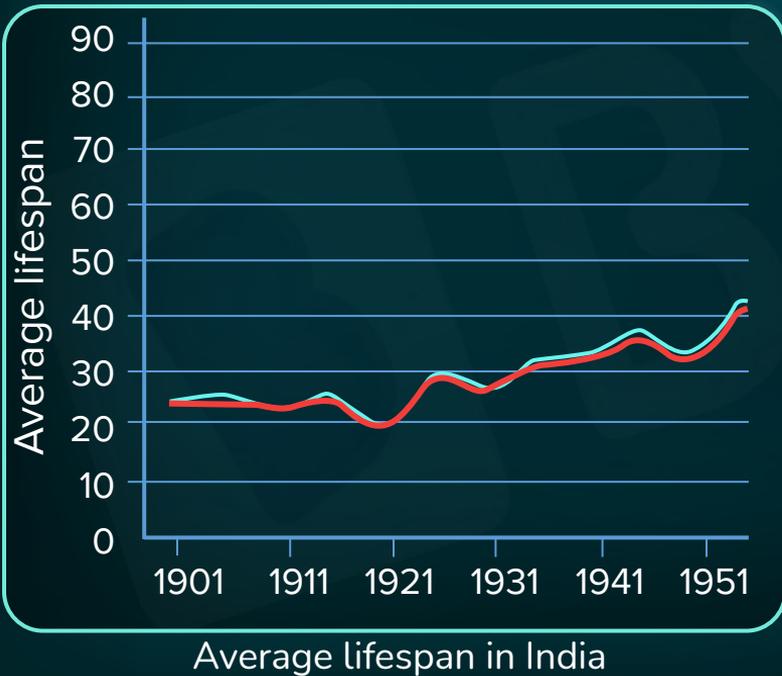
06

Reasons for High Population in India

B

High mortality and lower life span

01



- **MMR** (Maternal mortality rate) - Number of maternal deaths per 100,000 live births.
- **IMR** (Infant mortality rate)- Number of infant deaths per 1,000 live births.

- During 1950s, **health care facilities in India were poor.**
- Due to this people had lower lifespan.
- This led to the belief that having **more kids is helpful.**
- Due to **poor healthcare** facility **very less kids** would **survive.**

Reasons for High Population in India



Child marriage

02

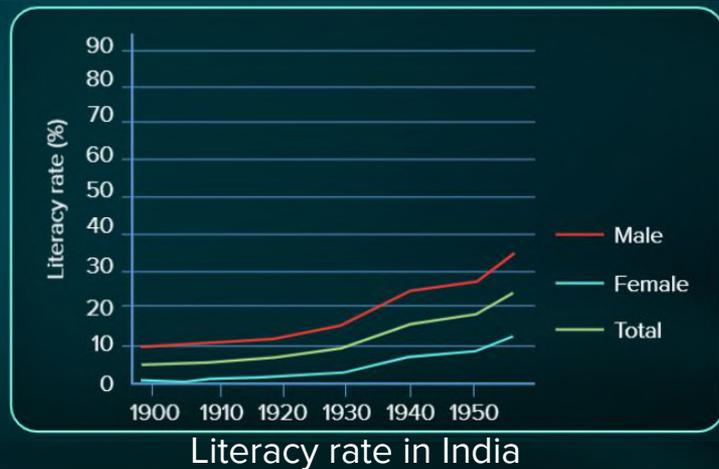


- **Child marriage** was more common during **1950s**.
- People **getting married** at **early age** increases the probability that they (young couples) **give birth** to **many kids**.

Illiteracy

03

- People during 1950s were **unaware** of the **disadvantages** of having **more children** than maintaining a sustainable population.



Reasons for High Population in India

B

Preference for
male kids

04



- During 1950s, women were expected to **handle household chores**.
- Most of the businesses, jobs were handled by males only. Hence, everyone desired to have sons.
- This led some couples to give birth to children **until** they **finally** had a **son**.
- This also led to **mistreatment** and **sometimes killing** of **daughters**.

Aversion from
family planning

05

- Some communities **do not believe** in the **family planning methods**.
- Few communities had belief that children are **God's gift** and one should have **more kids**.

Reasons for High Population in India

Non availability of
contraceptives

06



- During 1950s, contraceptives were **not** easily available.
- This led to **unwanted pregnancies**.
- Hence, India has huge population.



Maternal mortality rate is

- a) number of deaths per 1,000 live births
- b) number of maternal deaths per 100,000 live births
- c) number of infants deaths per 100,000 live births
- d) number of maternal deaths per 1,000 live births



Maternal mortality rate is

- a) number of deaths per 1,000 live births
- b) number of maternal deaths per 100,000 live births
- c) number of infants deaths per 100,000 live births
- d) number of maternal deaths per 1,000 live births**

Problems due to High Population

Problems due
to
overpopulation

Scarcity

Shortage of funds

Over consumption

Ecological imbalance

Problems due to High Population

B

Scarcity



- Due to huge population, demand for **basic requirements** such as **food, shelter, clothing, etc.** is increasing.
- Since these requirements are limiting, this condition leads to **scarcity** of **basic requirements** among people.

Shortage of funds



- Overpopulation causes unemployment and poverty.
- Huge population creates **shortage of funds provided** by **government** which leads to poverty.

Problems due to High Population

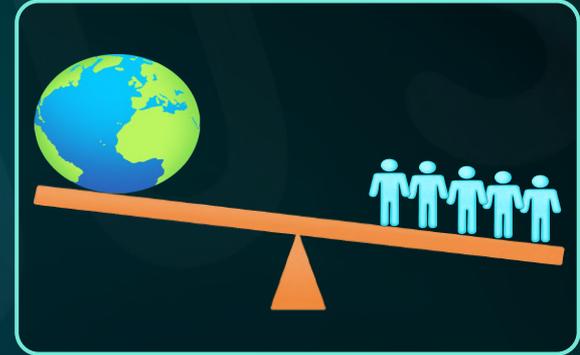
B

Over consumption



- More people means **increased demand** for **resources**.
- This leads to **overconsumption** of **resources**, which is a threat to environment.

Ecological imbalance



- **Overconsumption** of resources to fulfil our needs would create **depletion** of resources for other organisms.
- This **disrupts** the **natural balance** of **ecosystem**.

Population Stabilisation Policies

B

National Program for Family Planning (1952)

- India – First country to launch a family planning program
- Objective: To promote the use of contraceptive and curb population explosion



First such initiative taken up by government was
National Program for Family Planning in 1952

जोड़ी ज़िम्मेदार
जो प्लान करे परिवार

Population Stabilisation Policies

Advertisements for promoting family planning

- To alarm people about the program, various methods such as display of posters, billboards, postcard stamps and other audio and video materials were adopted.
- Soon family planning program was promoted under the slogan 'Hum do hamare do' (we two and our two).



Stamps promoting family planning

Reproductive and Child Healthcare Program



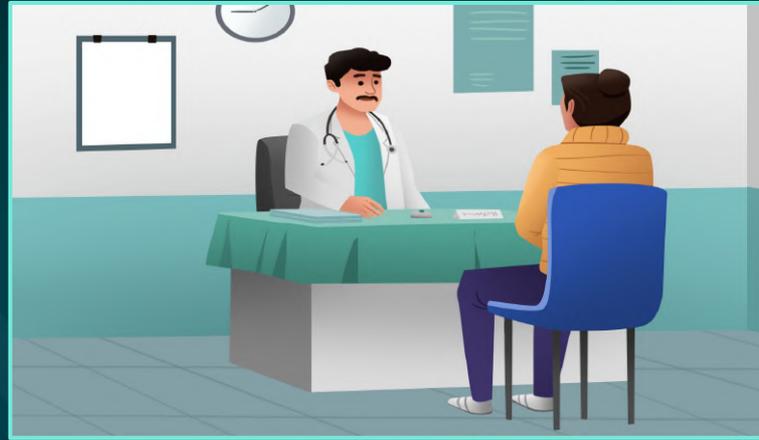
- Reproductive and Child Healthcare Program (RCH) was launched in 1997.
- **Objectives** were to:
 - reduce **total fertility rate, infant mortality rate** and **maternal mortality rate**.
 - monitor **overall well being** of mother and child.
 - adopt measures to avoid **unwanted pregnancies** and **sexually transmitted diseases**.

Reproductive Health



Reproductive health is the physical, emotional, behavioural and social well-being in all the aspects of reproductive system and its function.

Outcomes of Stabilisation Policies



- First and foremost outcome was people **got access to good health care.**
- It provided medical assistance to people for issues related to **pregnancy, delivery, STDs, abortions, menstrual cycle, infertility, etc.**
- It **reduced the overall IMR and MMR** in India.
- The **average life span increased** quickly after 1950s.
- People now have **few kids** as the **chances** of survival of kids **are more.**

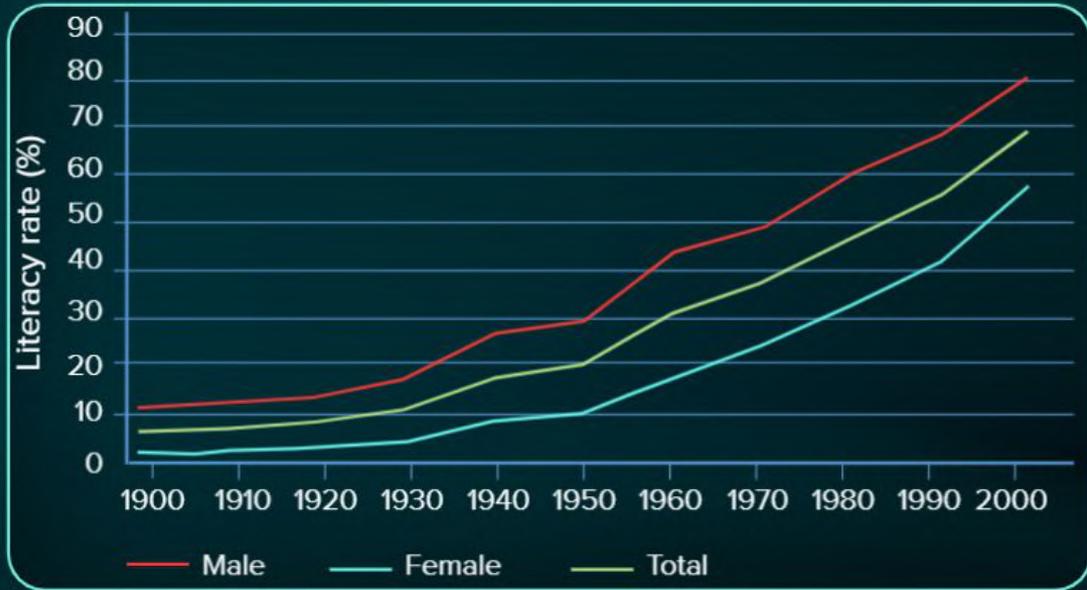
Outcomes of Stabilisation Policies



- Implementation of these policies increased the marriageable age of the **female** to **18 years** and of **males** to **21 years**.
- This solved the problem of child marriage.
- It **prevented couples** from having **more children** during their lifetime.

Outcomes of Stabilisation Policies

B



Literacy rate of males and females in India from 1900 to 2000.

- From the graph it is evident that how **literacy rate increased** after **1950s**.
- Policies played an important role in bringing **awareness about overpopulation**.
- People were **educated about the negatives** of having **more children**.

Outcomes of Stabilisation Policies

Introduction of sex education in schools

- Introduction of sex education in schools provides right information to the young ones.
- Sex education will discourage them to believe in myths and having misconceptions about sex-related aspects.
- This also reduced the chances of getting STIs by youth.



Outcomes of Stabilisation Policies



Awareness:

- Educating **fertile couple** about:
 - **birth control** options
 - care of **pregnant mothers**
 - **postnatal care**
 - importance of **breastfeeding**
- Providing information about:
 - **Reproductive organs**
 - **Adolescence**
 - **Safe and hygienic** sexual practices
 - **Sexually transmitted diseases**

Outcomes of Stabilisation Policies

Statutory ban on fetal sex determination methods

- The policies aimed at **legally banning fetal sex-determination methods** such as **amniocentesis** and **sex determination through ultrasound scanning**.
- **Fetal sex-determination** often led people to take extreme steps like **female foeticide**.



Outcomes of Stabilisation Policies



- Research has provided newer, better and easy to use **family planning methods**.
- For example:
 - **Saheli** – 1st and only non-hormonal oral contraceptive pill for females.
 - It was developed by **Central Drug Research Institute (CDRI)** Lucknow, India.



Saheli is now marketed under the name 'Chhaya'

Outcomes of Stabilisation Policies

B

- **Cheap and wide availability of contraceptives:** One of the major step taken was the community-based distribution of contraceptives with the help of local volunteers.
- **Contraceptives at medical shops and health centers:** Contraceptives are now easily accessible at places like medical shops, primary health centers etc.
- **Free distribution of contraceptives:** Under certain programs, contraceptives are distributed for free of cost.



Saheli is the first

- a) hormonal oral contraceptive
- b) non-hormonal oral contraceptive
- c) hormonal implant
- d) none of the above



Saheli is the first

- a) hormonal oral contraceptive
- b) non-hormonal oral contraceptive**
- c) hormonal implant
- d) none of the above

Result of Stabilisation Policies

B

Before stabilisation policies



During stabilisation policies



After stabilisation policies



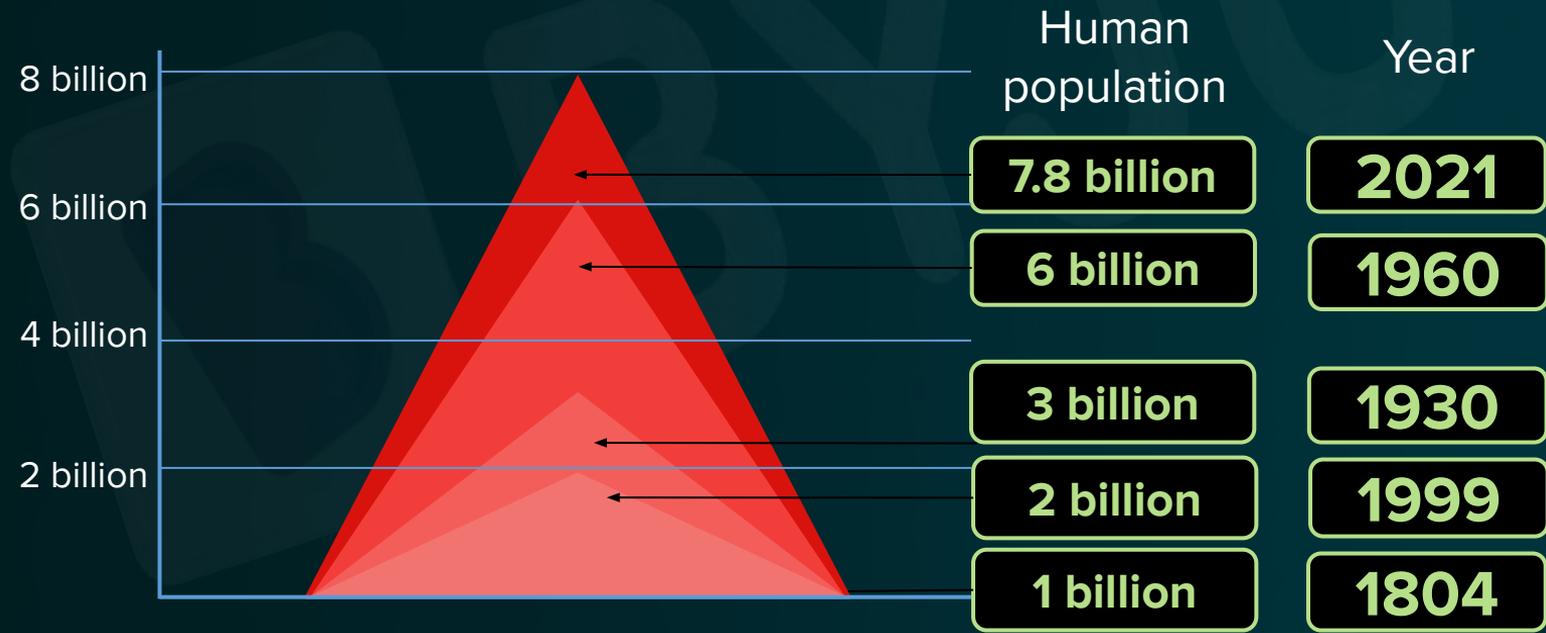
After **stabilisation policies**, there is a **reduction** in the **number** of **family members**.



Summary



World population has increased drastically.





Reasons for High Population



High mortality and lower life span

01

Child marriage

02

Illiteracy

03

Preference for male kids

04

Aversion from family planning

05

Non-availability of contraceptives

06



Problems due to High Population

Scarcity

Shortage of funds

Ecological imbalance

Over consumption

Stabilisation Policies

National Program for Family Planning (1952)

Hum Do Hamare Do



जोड़ी ज़िम्मेदार
जो प्लान करे परिवार



Stamps promoting family planning

Reproductive and Child Healthcare Program (RCH) was launched in 1997.



Outcomes of Stabilisation Policies



Access to good health care

Increase in marriageable age:
Females – 18 years; males – 21 years

Awareness: Introduction of sex education in schools

Statutory ban on fetal sex determination methods

Emergence of newer, better and easy-to-use family planning methods

Cheap and wide availability of contraceptives



Key Takeaways



- Contraception

- Checkpoints for contraception
- Ideal contraceptive

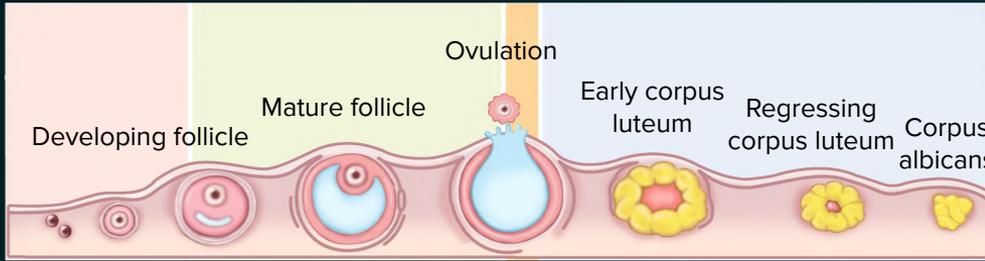
- Contraceptive methods

- Natural contraceptive methods
- Barrier methods

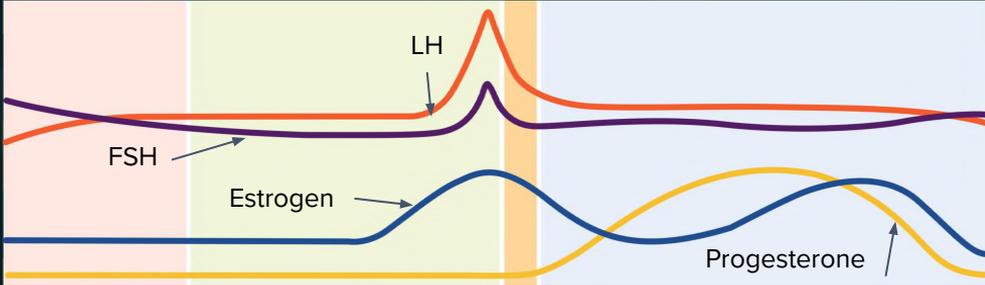
Recall! Menstrual Cycle

B

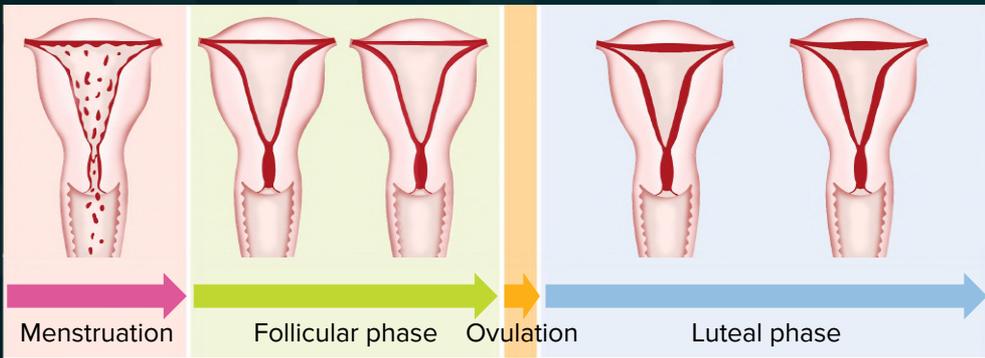
Ovarian events



Hormones

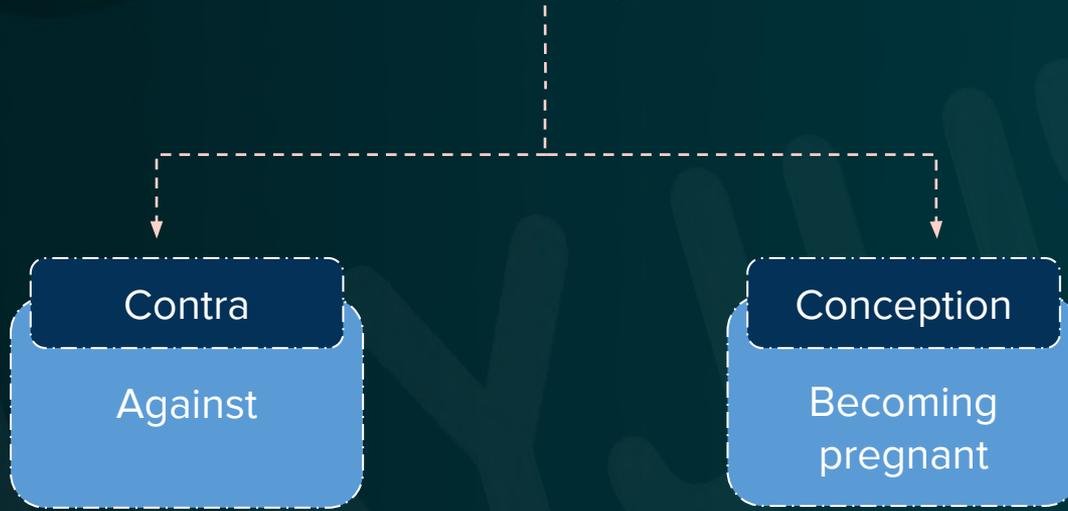


Days Uterine events



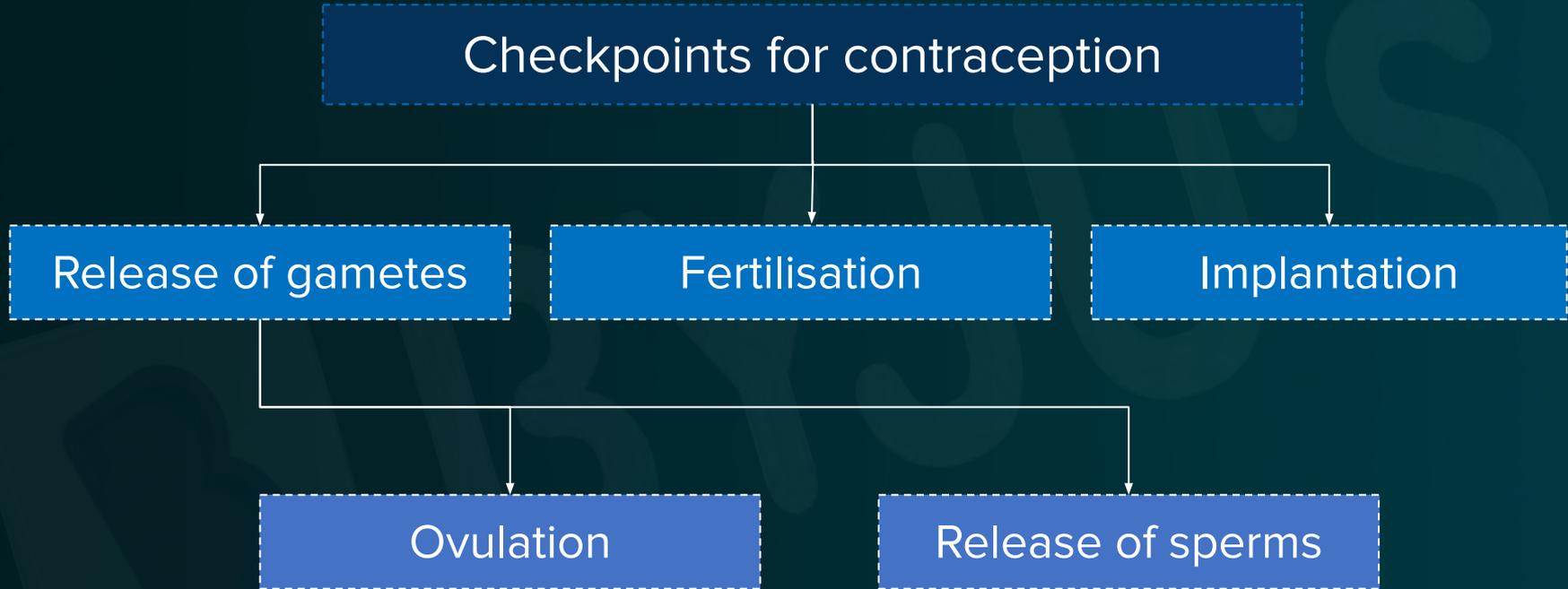
- It is generally a **28 day** cycle.
- It has the following phases:
 - **Menstrual phase**
 - Menstrual flow
 - **Follicular phase**
 - Maturation of ovarian follicles
 - **Ovulation**
 - Release of ovum
 - **Luteal phase**
 - Formation and disintegration of corpus luteum.

Contraception



- Birth control or contraceptive methods are the acts or methods which **prevent conception.**

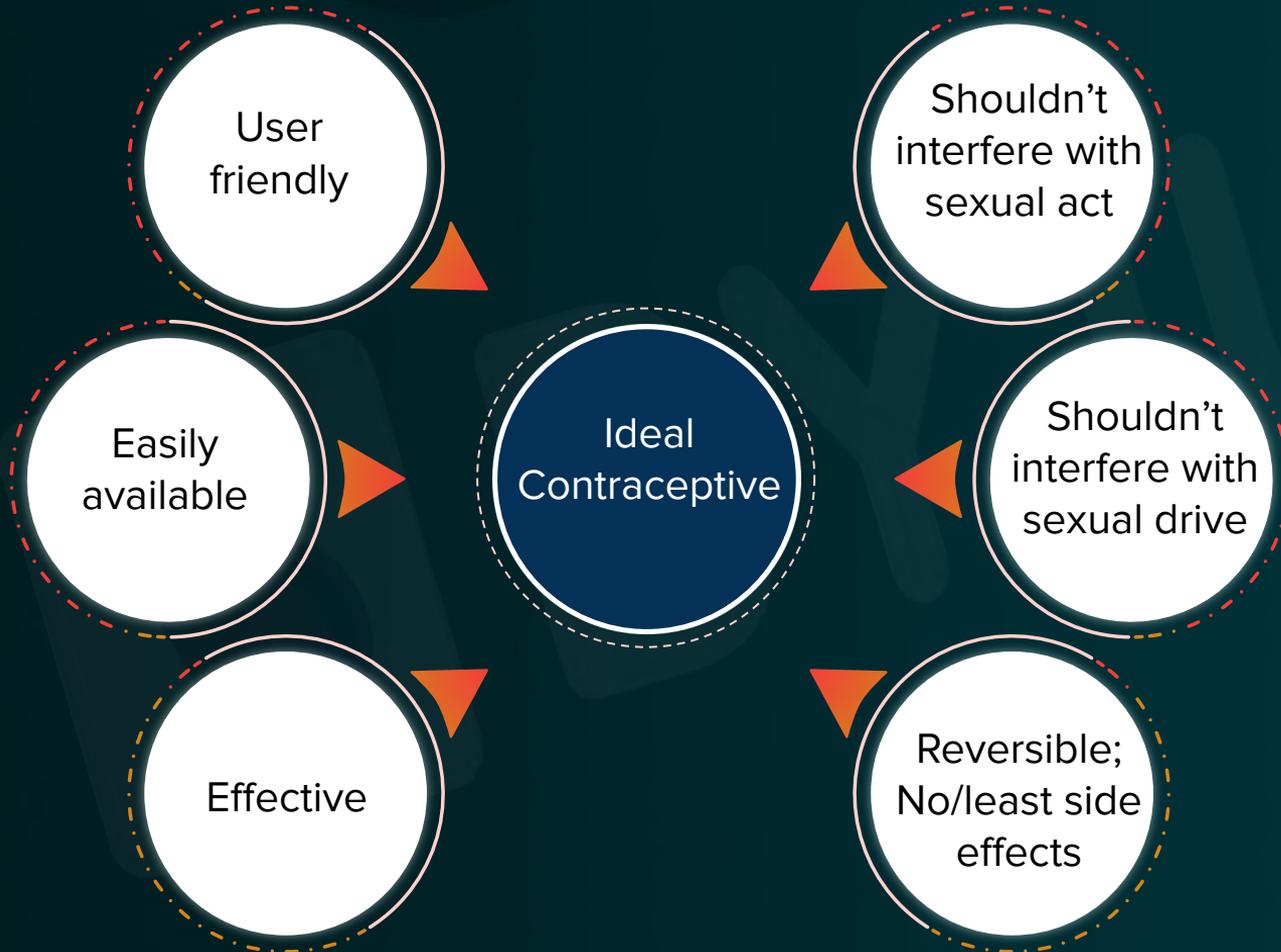
Contraception



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

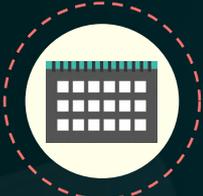
Ideal Contraceptive

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- User friendly infers that the user should be able to use it **without the help of a doctor**.
- Easy availability means that the contraceptive should be **low cost** and should be **available at all places**.
- Effectiveness pertains to the efficacy of the contraceptive in **preventing** the pregnancy.

Contraceptive Methods



Natural



Barrier



Chemical



Intrauterine device



Surgical

Contraceptive Methods



Natural methods

- Avoid meeting of ovum and sperm
- No need of chemicals or physical equipment
- **Temporary** in nature

Contraceptive Methods- Natural Methods



1

2

3

Periodic abstinence
(Rhythm method)

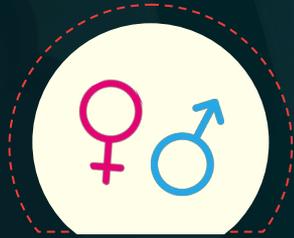
Coitus interruptus
(Withdrawal method)

Lactational amenorrhea
(Absence of menstruation)

- Periodic = between intervals
- Abstinence = to abstain from having sex
- Hence, in this method, the couple avoids coitus for certain days of the menstrual cycle

Natural Methods

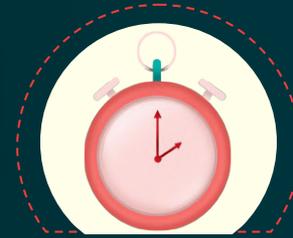
Periodic abstinence
(Rhythm method)



For both
males and females



Reversible

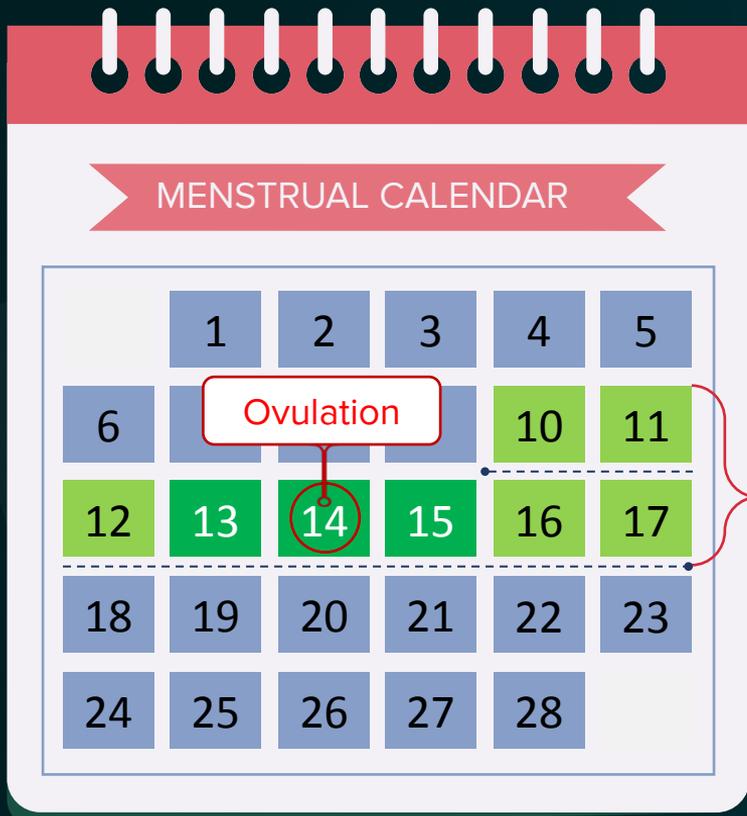


Short term

Periodic Abstinence



- Involves avoiding coitus from **day 10-17** of menstrual cycle
- This is because:
 - Ovulation occurs around the 14th day
 - The ovum remains viable for 1-1.5 days and the sperm survives for 3 days
- This makes the 10th to 17th day of the menstrual cycle very **fertile**, and chances of fertilisation are very high

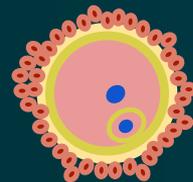


Fertile period



Sperm

(Survives 3 days)



Ovum

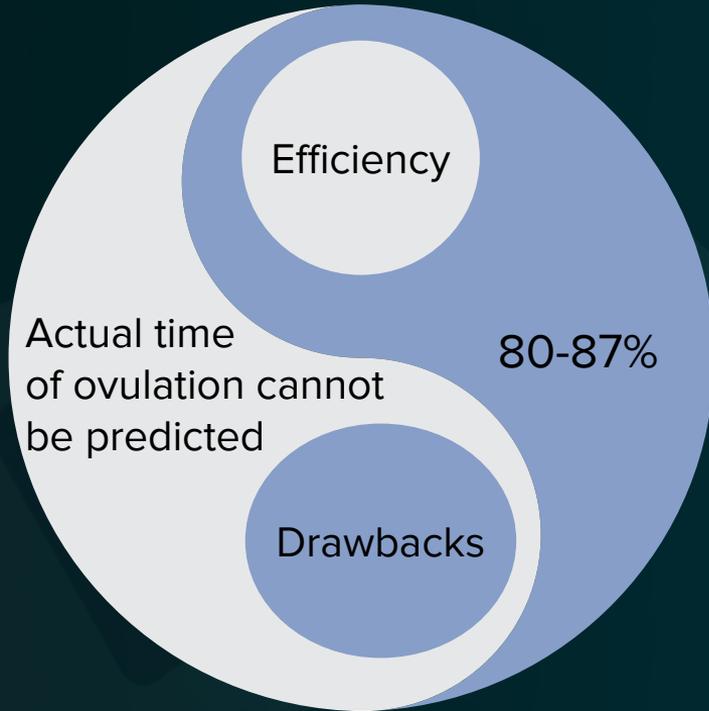
(Survives 1 day)

Periodic Abstinence

Even if the sperms enter the vaginal tract during coitus on the remaining days of the cycle (except 10th-17th day):

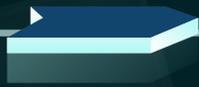
- They swim through the cervical canal, towards the uterus and then to the fallopian tubes.
- The sperms further swim to reach ampulla region (ampulla is the site of fertilisation).
- As there is **no ovum** on these days, there is **no conception**.

Periodic Abstinence



- The drawback of this method is that the accurate time of ovulation **cannot be predicted**, so it limits the efficiency.
- However, by predicting the ovulation date properly, and by abstaining from coitus during this period, the efficiency can be increased to around 80-87%.

Natural Methods



Periodic abstinence
(Rhythm method)



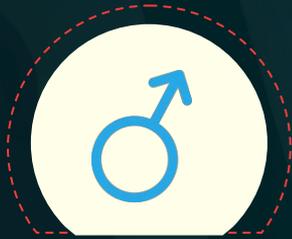
Coitus interruptus
(Withdrawal method)



Lactational amenorrhea
(Absence of menstruation)

Natural Methods

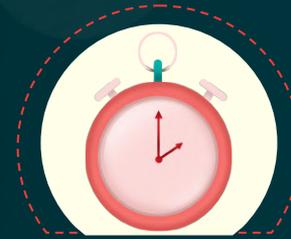
Coitus interruptus
(Withdrawal method)



For males only

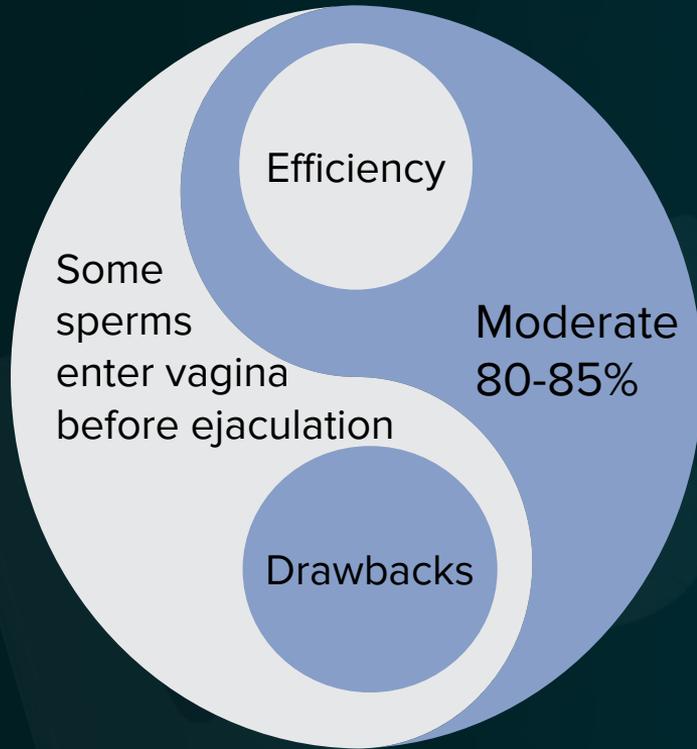


Reversible



Short term

Coitus Interruptus

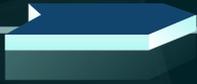


- Male **withdraws penis** from vagina **before ejaculation**.
- **Avoids insemination**, so conception is avoided.
- The drawback of this method is that some sperms may enter the vagina before ejaculation.

Natural Methods

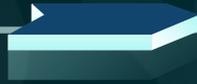


1



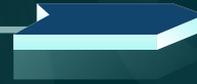
Periodic abstinence
(Rhythm method)

2



Coitus interruptus
(Withdrawal method)

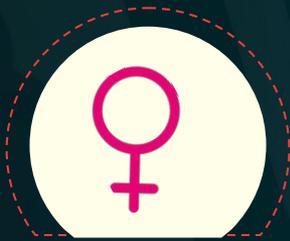
3



Lactational amenorrhea
(Absence of menstruation)

Lactational Amenorrhea

Lactational amenorrhea
(Absence of menstruation)



For females only



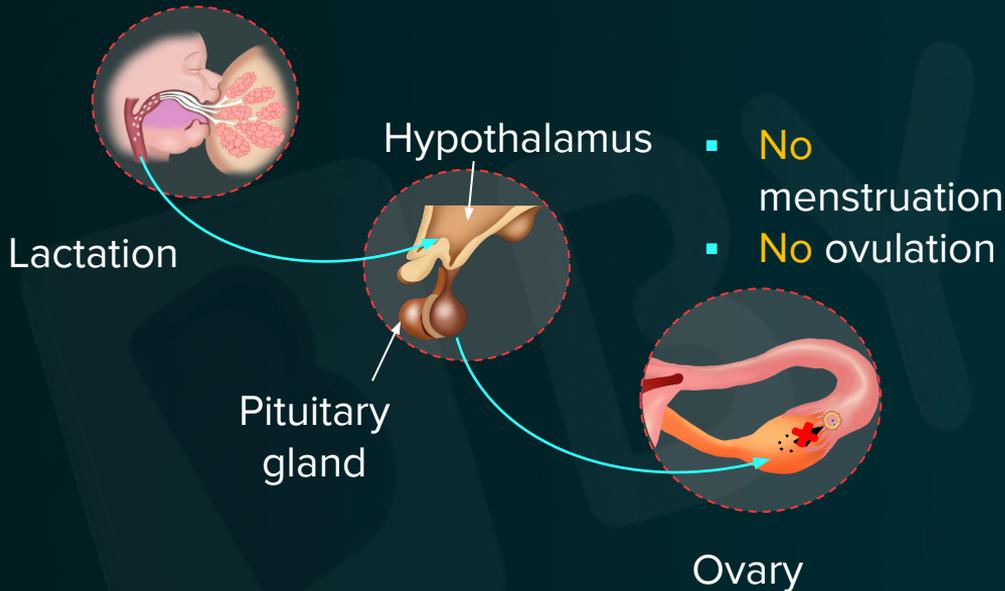
Reversible



Short term

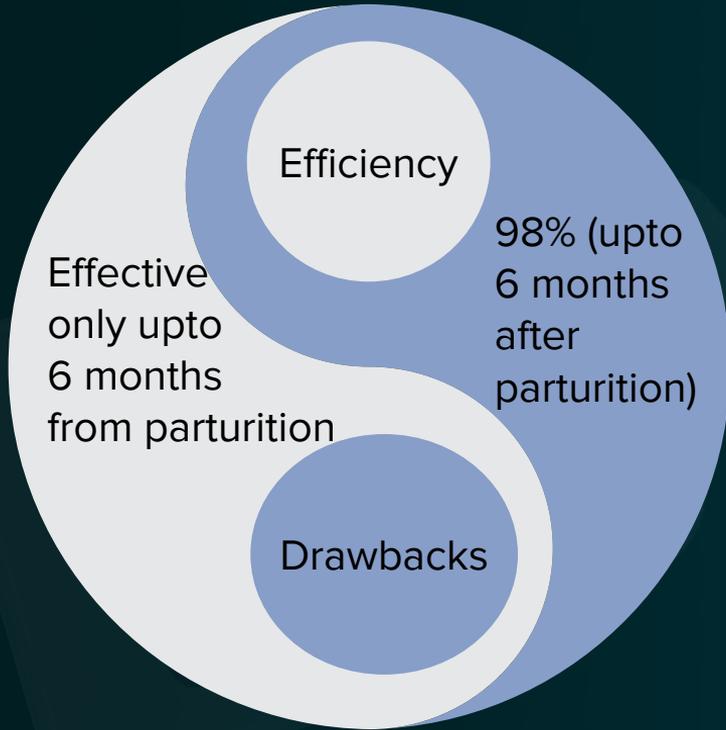
Lactational Amenorrhea

B



- Amenorrhea refers to the **absence of menstrual cycle**.
- It is a **temporary period of infertility** in women **post-parturition**.
- In this method, when the female is lactating or breast feeding, the suckling action of the baby, sends signals to the **hypothalamus** in the brain.
- The release of **GnRH** by hypothalamus is **reduced**.
- Inturn, the release of **LH** and **FSH** by pituitary is **reduced**, resulting in the **absence of ovulation and menstrual cycle (amenorrhea)**.
- Therefore the chances of conception are very low during intense lactation period.

Lactational Amenorrhea



- When the sperm reaches the ampulla during this period, there is **no ovum** to fertilise, thus **no conception**.
- The **drawback** of this method is that it has been reported to be effective only upto a maximum period of **six months following parturition**.



For effective use of the rhythm method, coitus should be avoided from day _____ to _____ of a woman's menstrual cycle.

A 10;17

B 13;15

C 10;14

D 1;7



For effective use of the rhythm method, coitus should be avoided from day _____ to _____ of a woman's menstrual cycle.

A 10;17

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Barrier Methods

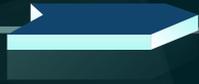


- In barrier methods, ovum and sperms are **prevented from meeting physically** with the help of barriers.
- So, these methods **prevent fertilisation**.

Contraceptive Methods



Barrier methods

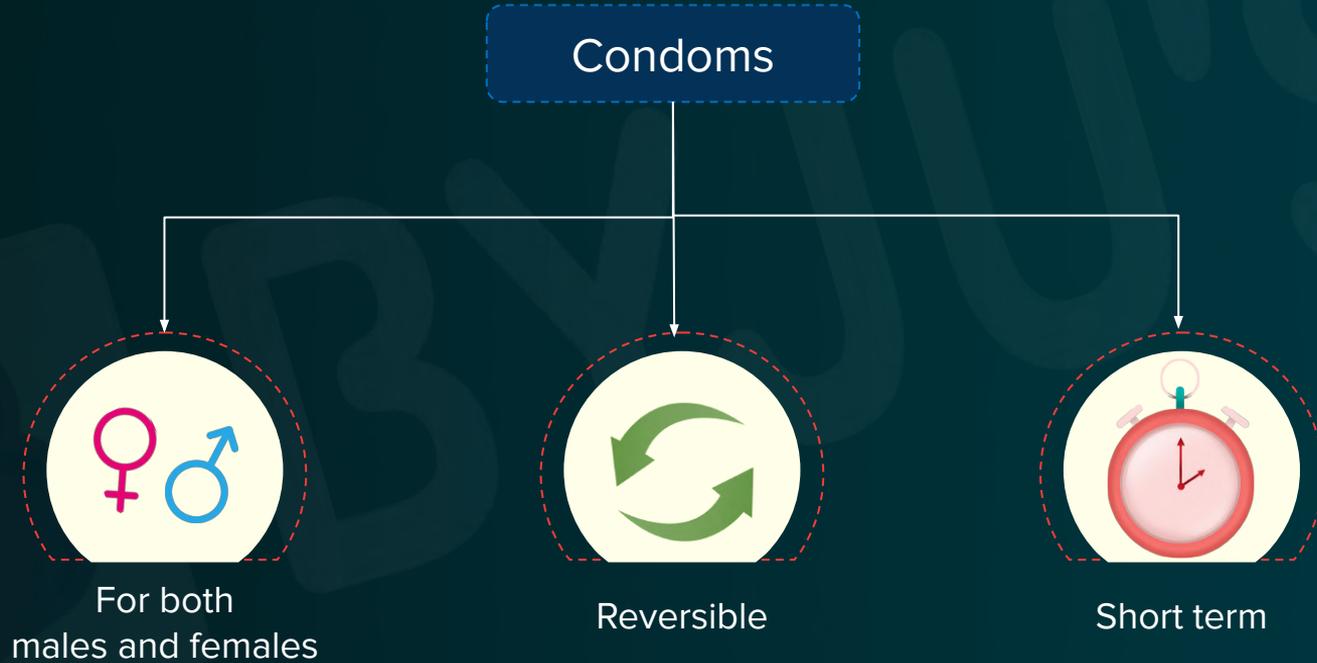


Condoms



Diaphragms, cervical caps
and vaults

Barrier Methods



Condoms



Male condom

- Covers the **penis** in males, so semen is not released into the female reproductive tract.

Female condom/
Femidoms

- Covers the **vagina** or **cervix** in females and prevents the sperm from entering the uterus.

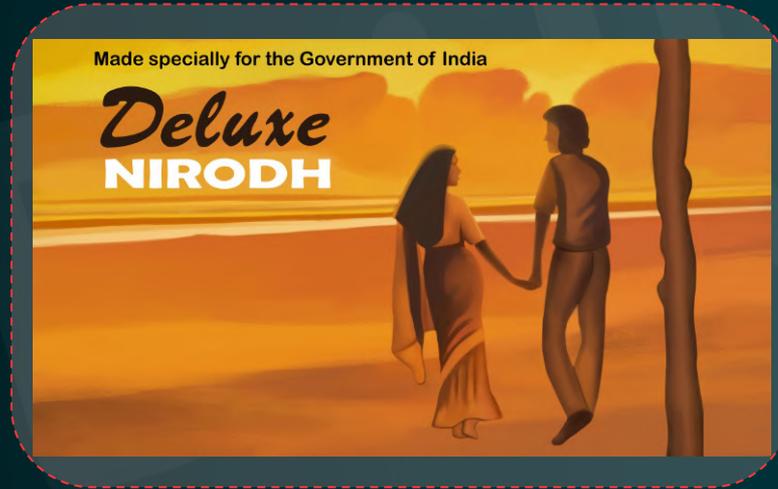
Features

- Usually made up of **thin rubber/latex** sheath
- Used just before and during coitus
- Prevent introduction of sperms into the female uterus
- Prevents **fertilisation**



Did you know?

Nirodh



- Nirodh, India's first condom for mass-distribution was introduced in 1963.

Types of Condoms





Did you know?



- Some people experience **itching, redness, or swelling** after using a condom.
- These can be symptoms of a **latex allergy**.
- According to a 2016 review, these allergies may occur in around **4.3%** of the world's population.

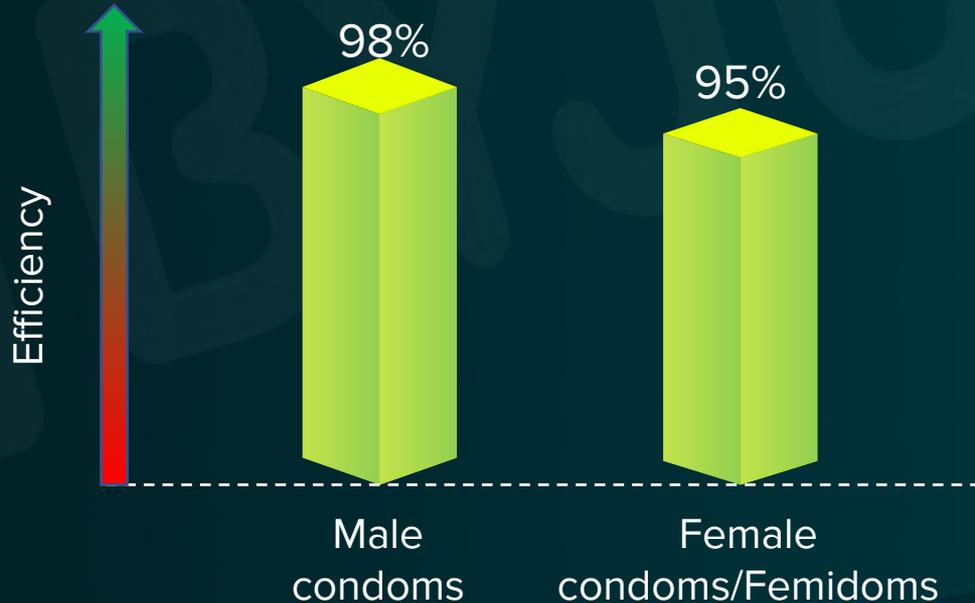
Advantages of Condoms

B

Protects users from
STDs

Easy to access and
dispose

Can be self-inserted;
gives privacy to user





Did you know?

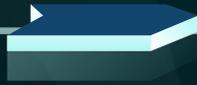


- The first condoms were made of **sheep intestines**.
- They are **slightly porous** allowing the passage of viruses including HIV.

Contraceptive Methods



Barrier methods



Condoms



Diaphragms, cervical caps
and vaults

Barrier Methods

Diaphragms, cervical caps and vaults



For females only



Reversible

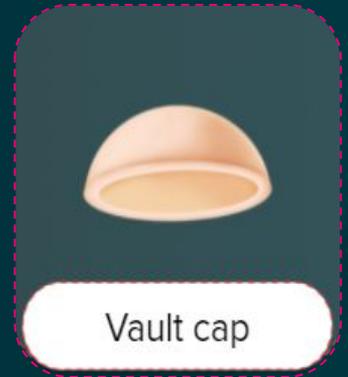


Short term

Diaphragms, Cervical Caps and Vaults



- Made of **rubber**
- Exclusively for **women**
- **Inserted** into female reproductive tract before coitus
- Need to be kept inserted for at least **6 hours** after coitus
- **Block entry of sperm** through cervix
- Reusable

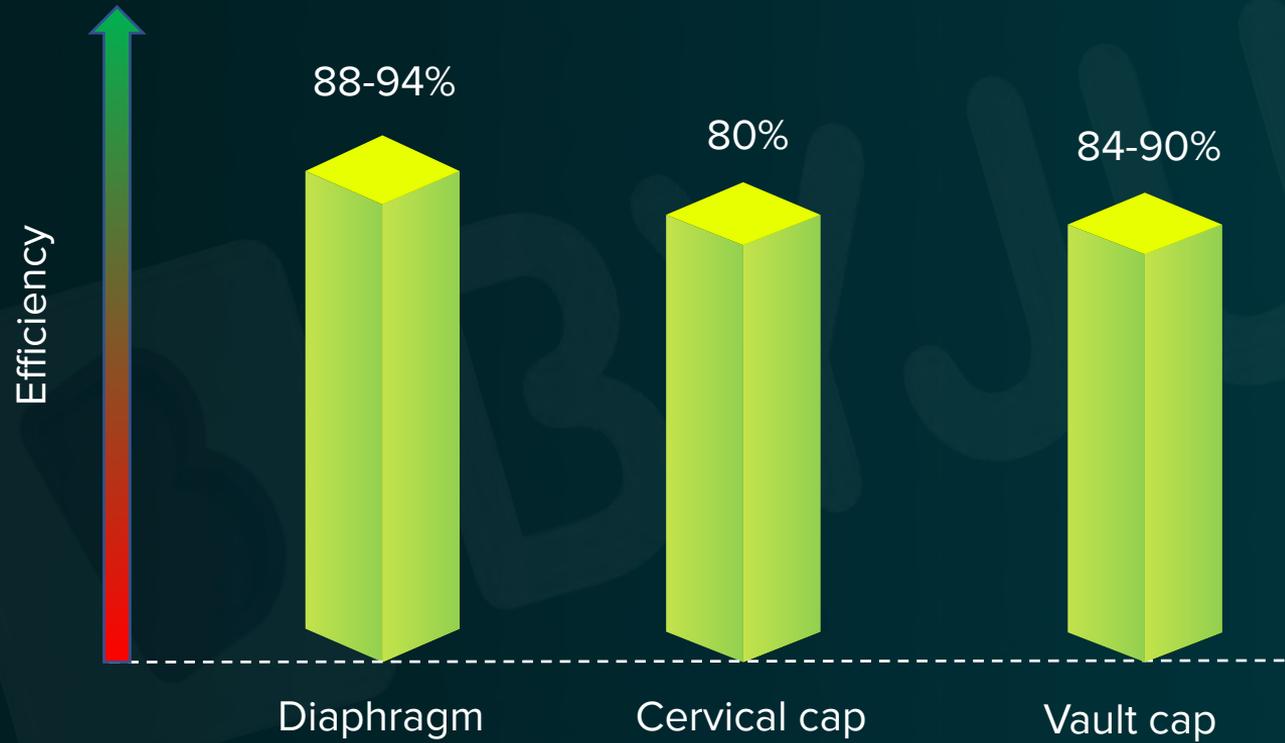


Spermicide vs Sperm



- Spermicide is a contraceptive substance that **immobilises or kills sperm** before they enter the uterus.
- It kills most of the sperms that enter the vagina.
- The barrier method then **blocks any remaining sperm** from passing through the cervix.

Efficiency of Diaphragm, Cervical Cap and Vault Cap B





What are the advantages of using condoms?

A

Protection from STDs

B

Prevention of conception

C

Can be self-inserted

D

All of the above

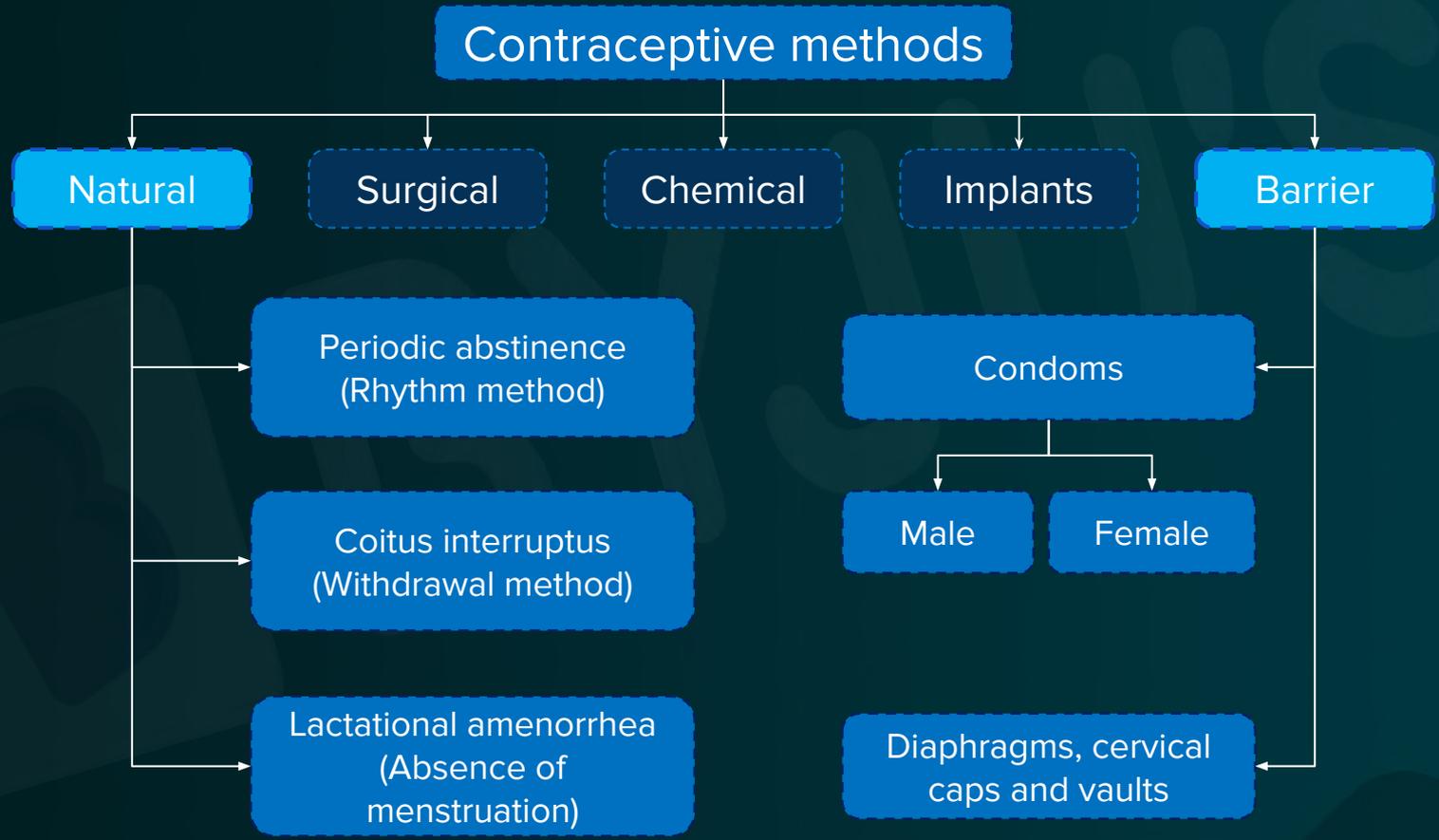


What are the advantages of using condoms?

- A Protection from STDs
- B Prevention of conception
- C Can be self-inserted
- D All of the above**



Summary: Methods of Contraception





Key Takeaways

- Chemical contraceptives
 - Hormonal chemical contraceptives
 - Non-hormonal chemical contraceptives

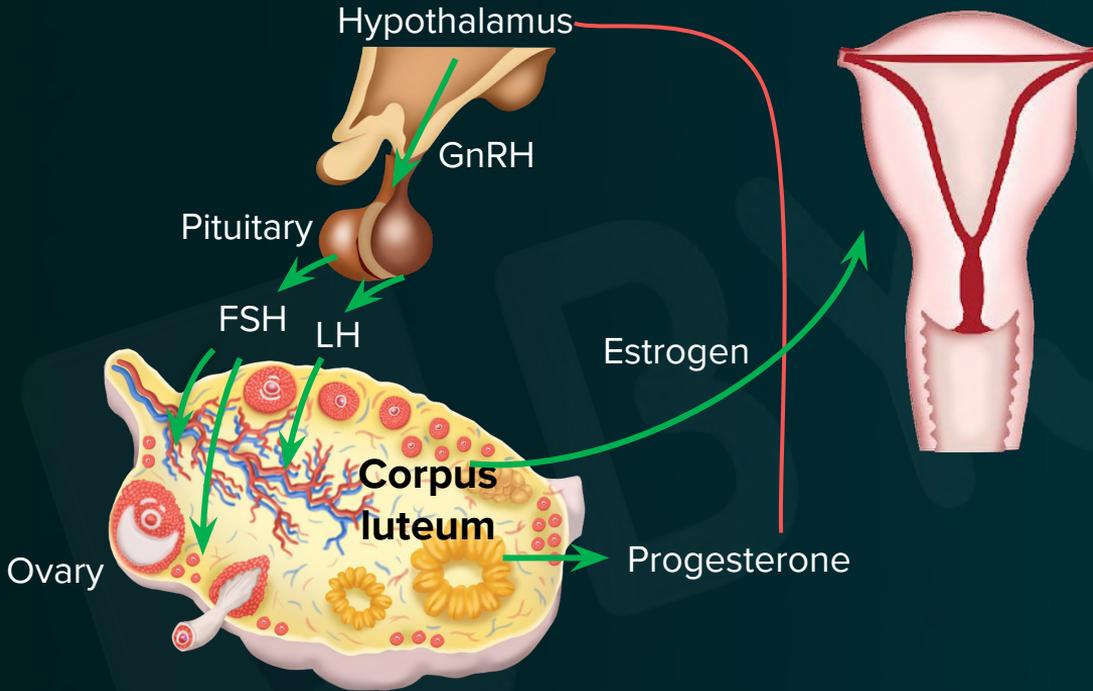
- Intrauterine devices

- Failure of contraceptives

- Emergency contraceptives

Recall! Hormones in Female Reproduction

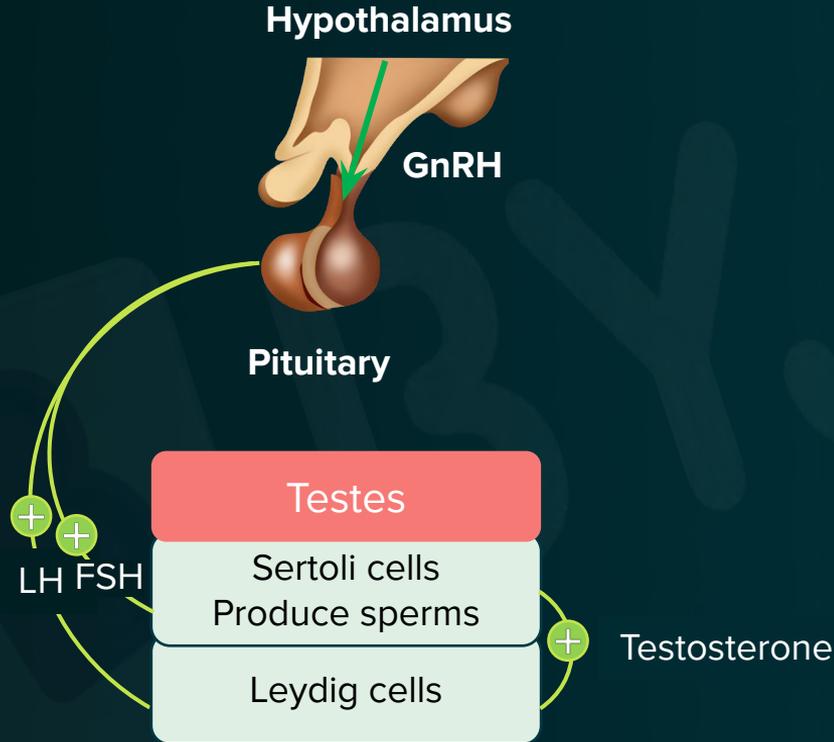
B



- Hypothalamus releases **GnRH**.
- GnRH stimulates pituitary gland to release **LH** and **FSH**.
- LH and FSH are responsible for follicular phase and ovulation.
- Ovary releases **estrogen** which helps in ovulation and thickening of uterine wall.
- Corpus luteum releases **progesterone** which send negative feedback to hypothalamus.
- Hypothalamus stops release of GnRH and prevents ovulation.



Recall! Hormones in Male Reproduction



- Hypothalamus releases GnRH which stimulates pituitary gland to secrete LH and FSH.
- LH stimulates leydig cells to release testosterone which along with FSH stimulate sertoli cells to produce sperm.

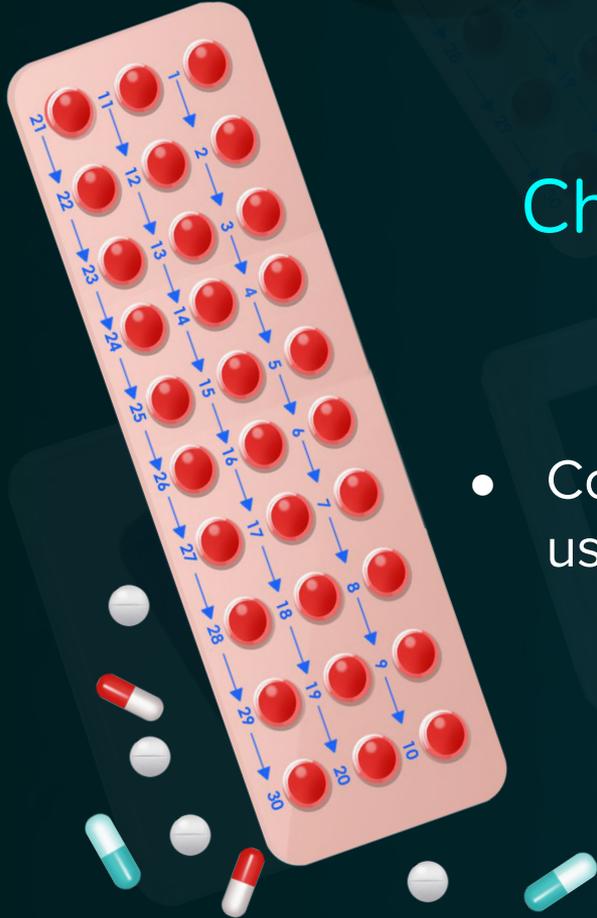


Recall! Contraceptive Methods



Chemical Contraceptives

- Contraceptives in which **chemical constituents** are used to prevent fertilisation or avoid implantation



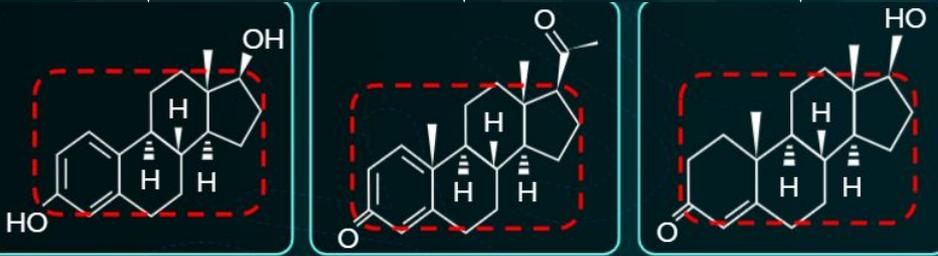
Chemical Contraceptive - Types

Hormonal

Steroidal

Non-hormonal

Non-steroidal



Estrogen

Progesterone

Testosterone

- Contraceptives without steroidal chemical composition are non-hormonal.

- Chemical contraceptives having steroidal chemical composition are hormonal.
- Steroids are organic compounds having a chemical structure based on four fused rings arranged in a typical configuration.

Hormonal Chemical Contraceptives



Progestogen

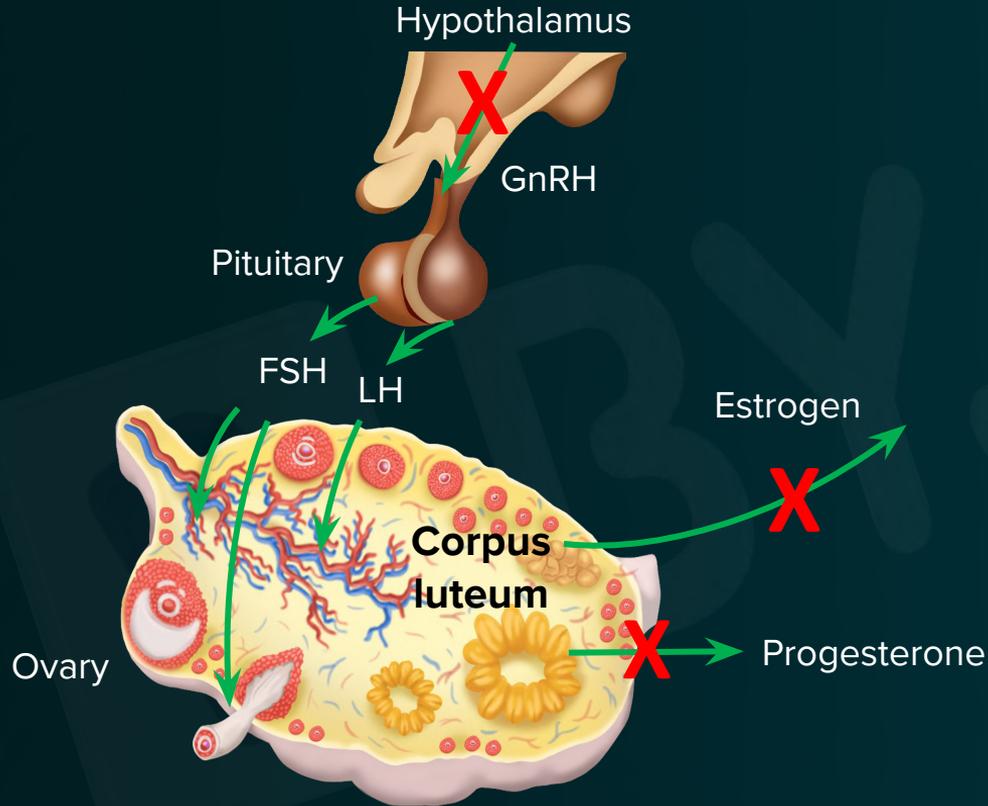
What is it?

- It is natural or synthetic steroid hormone, same as progesterone.
- It is also referred to as gestogen/gestagen.
- Extra- Progestin is synthetic progestogen.

How does it work?

- Taking small doses of progestogen or in combination with estrogen, releases hormones in bloodstream and acts on endocrine system.
- **Progestogen** inhibits ovulation and implantation and thus prevents pregnancy.

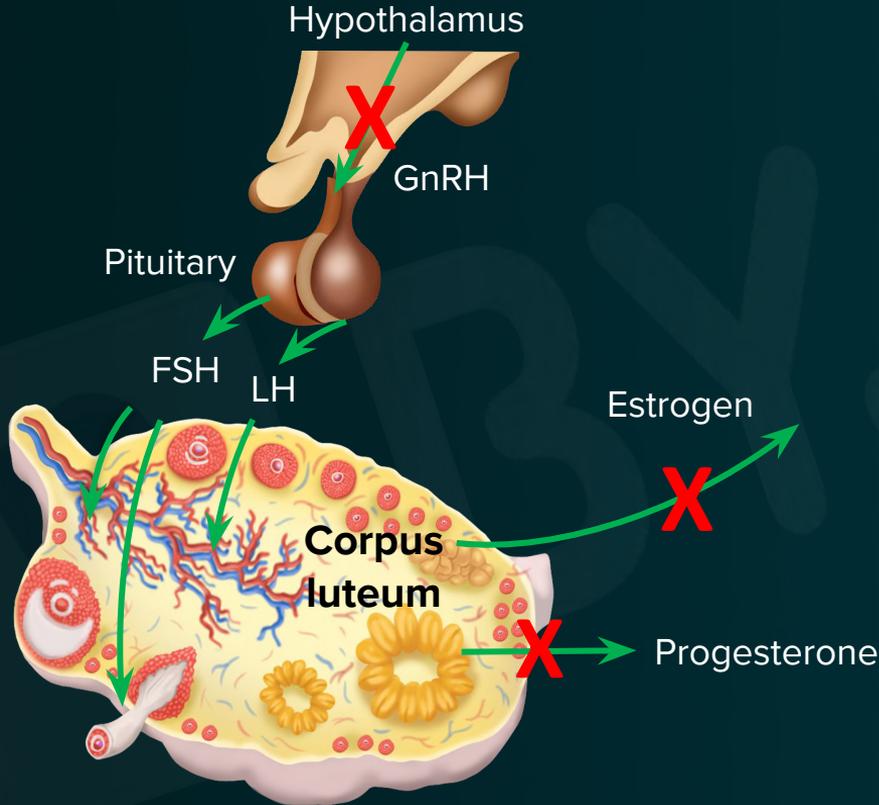
Hormonal Chemical Contraceptives



- **Progestogen** acts like the progesterone.
- It **inhibits GnRH release** from hypothalamus.
- No GnRH means no signal to pituitary to release LH and FSH.
- No LH and FSH means no estrogen and progesterone release from ovary.
- Progesterone maintains pregnancy.
- **Absence of progesterone** helps in **contraception**.

Hormonal Chemical Contraceptives

B

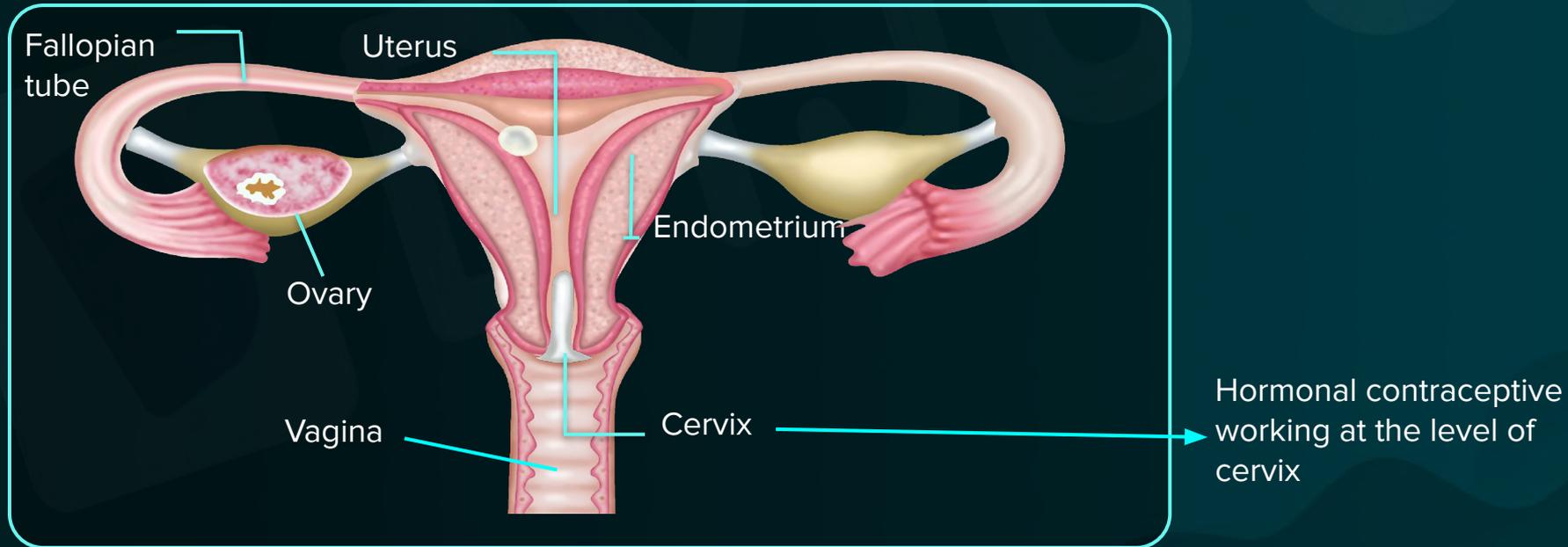


- **Estrogen** from contraceptive compensates and **maintains normal thickening of uterine wall**, hence **controls the bleeding**.
- Normal thickened uterine wall is not favorable for implantation and thus helps in contraception.
- **Estrogen** present in contraceptives **alternates uterine environment to prevent implantation**.

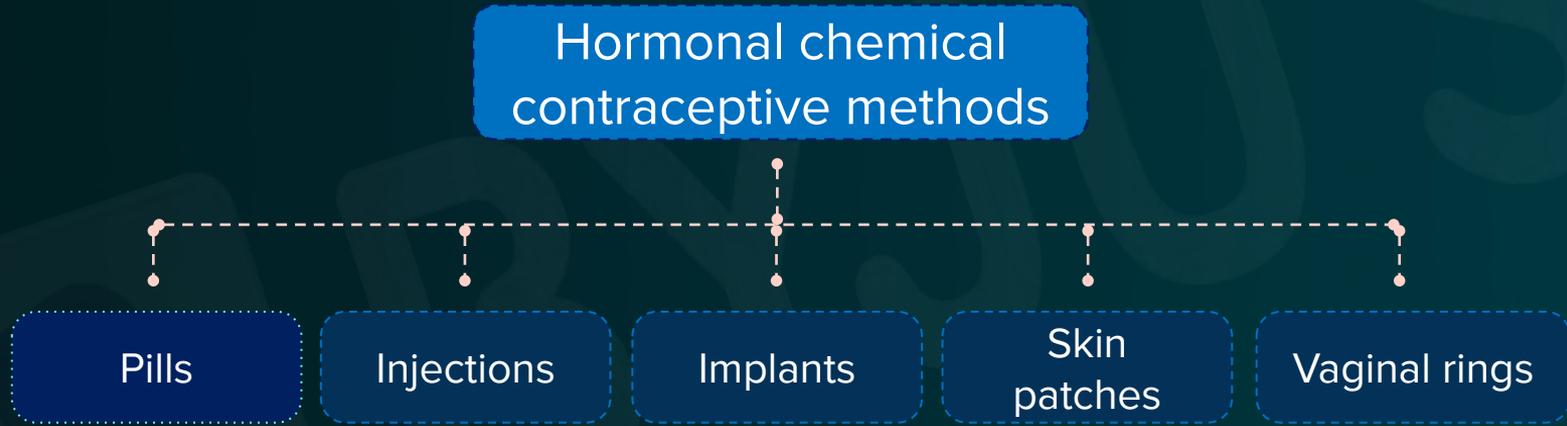
Hormonal Chemical Contraceptives

How does it work?

- Some hormonal chemical contraceptives cause secretion of thick mucus, which blocks the cervix and acts as a plug.
- They, hence, block the sperm entry.



Hormonal Chemical Contraceptives



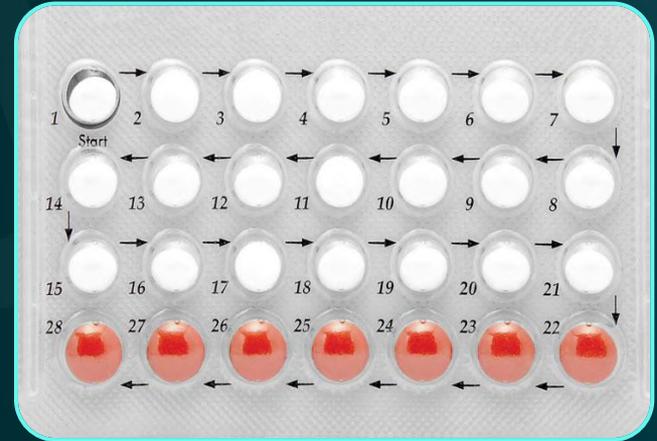
Hormonal Chemical Contraceptives



Pills

What is it?

Oral administration of small doses of **progestogen** or combination of **progestogen-estrogen**



Hormonal Chemical Contraceptives-Pills



Usage, efficiency and pattern of usage

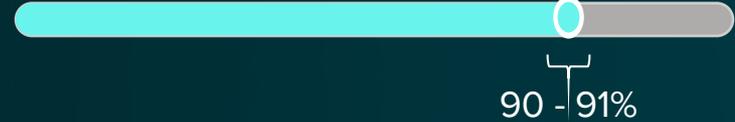
S	M	T	W	T	F	S
✗	✗	✗	✗	✗	✗	✗

Efficiency



S	M	T	W	T	F	S
✗	✗	✗	✗	✗	✗	✗
			✗			

Efficiency



- These pills are not taken during menstruation.
- Pills are to be taken daily for a period of 21 days starting preferably within the first five days of the menstrual cycle.
- Pills are 99% efficient but if even a single dose is missed its efficiency decreases to 90-91%.
- Intake of the pill must be repeated in the same pattern.

Hormonal Chemical Contraceptives



Injections

What is it?

Injections of **progestogens-estrogen** combination, intramuscularly

How to use?

Once in three months

Efficiency



Hormonal Chemical Contraceptives

B

Implants

What is it?

Matchstick sized rod of plastic or other inert material containing a form of the hormone progesterone called **etonogestrel**

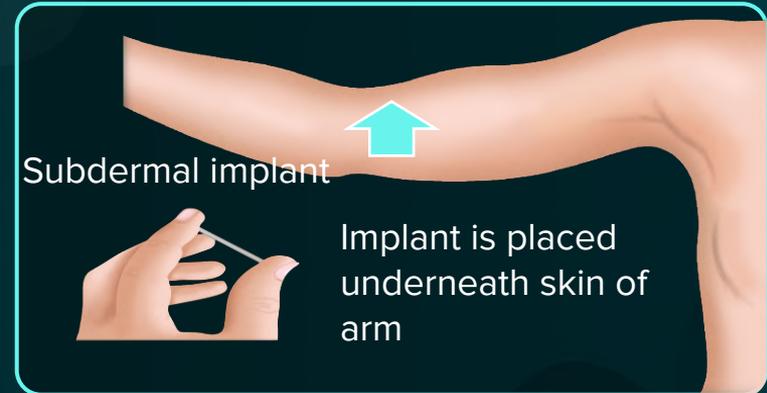
How to use?

Doctor or trained nurse insert the plastic rod implant under the skin of the inner arm above the elbow. These implants **provides conception for 2-3 years** if inserted once.

Efficiency



99%



Hormonal Chemical Contraceptives



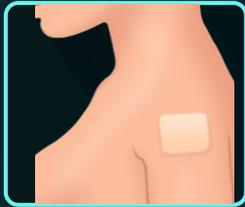
Skin patches

What is it?

- It is a **transdermal patch** applied to the skin.
- It contains **estrogen - progestogen combination**.
- These patches slowly keep releasing the hormone in the bloodstream through the skin.
- These patches are efficient but in rare cases it falls off. So one must be mindful about it.

How to use?

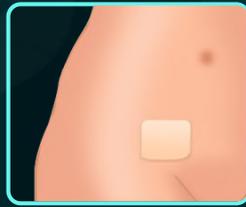
- Skin patch is adhesive patch worn on :



Upper torso
(excluding breasts)



Upper outer
arm



Abdomen



Buttock

Efficiency



- Patch requires replacement after 28 days.

Hormonal Chemical Contraceptives



Vaginal rings

What is it?

Small, flexible, soft plastic ring which releases continuous dose of estrogen - progestogen combination

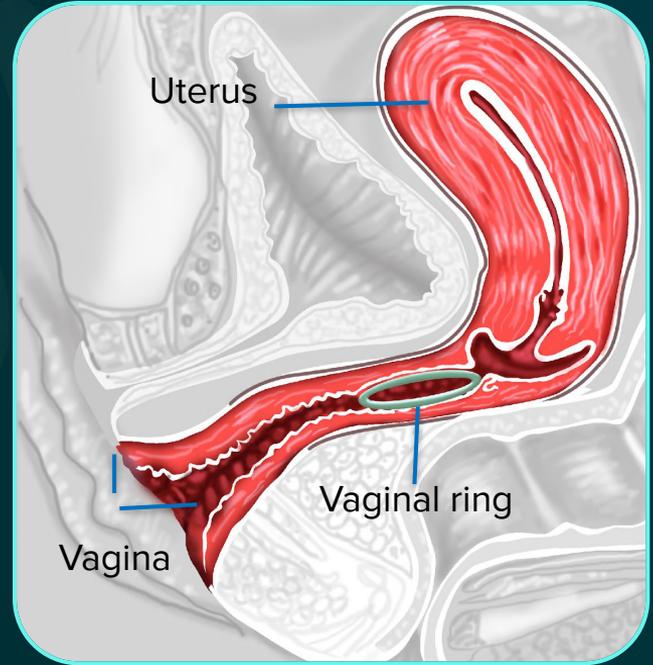


Hormonal Chemical Contraceptives

Vaginal rings

How to use?

- Vaginal rings can be put manually on doctor's advice.
- The ring is squeezed and inserted in the vagina.
- If used properly, it is 99% efficient.
- However, because of improper use sometimes the ring can be expelled out decreasing its efficiency to 91%.
- Users of vaginal rings report common problem of feeling uncomfortable on using them.



Efficiency



99%

Hormonal Chemical Contraceptives



Common drawbacks

- Irregular periods
- Mood changes
- Depression
- Weight gain
- Sore breast
- Vaginal irritation or inflammation
- No protection against Sexually Transmitted Infections (STI)
- Low sexual drive
- Migraine and nausea

Chemical Contraceptive - Types



Non- Hormonal Chemical Contraceptives



Saheli

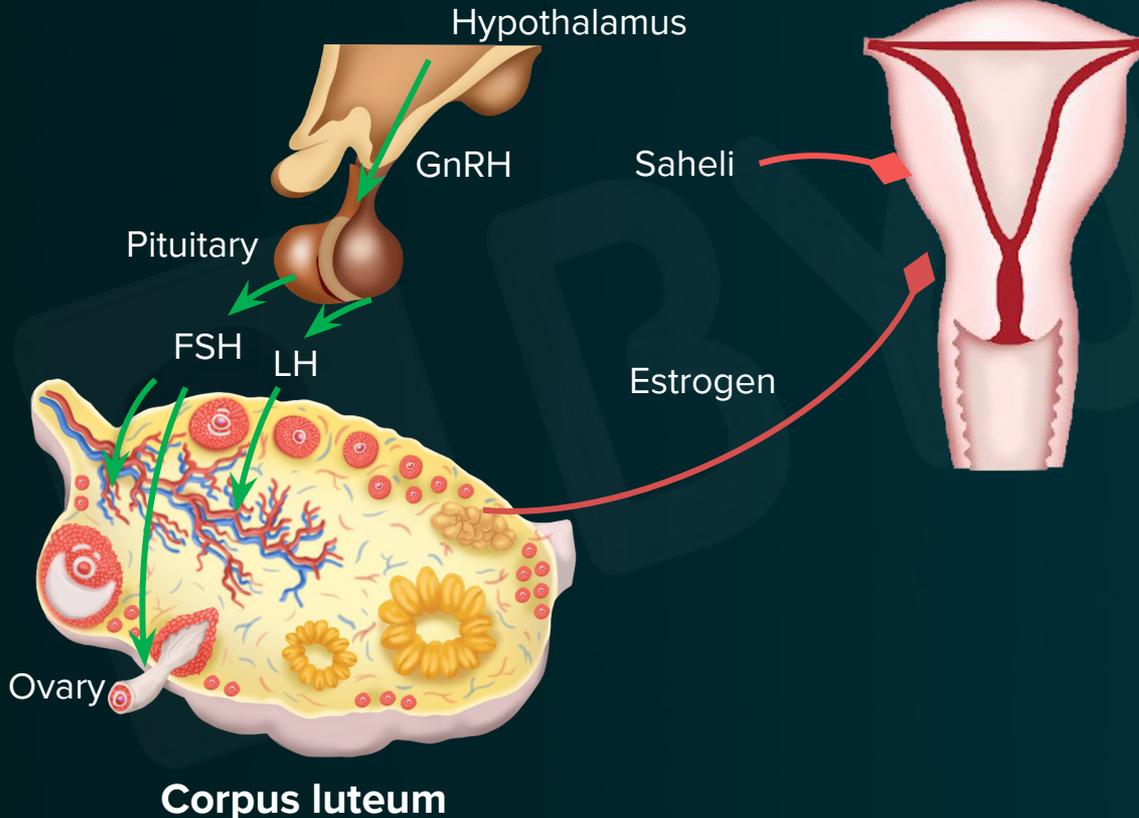
What is it?

- World's **first** and **only oral non-steroidal contraceptive pill**
- Developed at Central Drug Research Institute (CDRI), India

Non- Hormonal Chemical Contraceptives

B

Saheli



- Taking Saheli pill, does not affect the hormonal cycle.
- Instead, it modifies the estrogen receptors on the walls of the uterus.
- Now the modified receptor does not accept estrogen hormone and hence no thickening of uterine wall takes place.
- Hence, **no implantation** occurs.

Non- Hormonal Chemical Contraceptives



Saheli

How to use?

- Saheli is a 'once a week pill'.
- Initially, for a period of 3 months, 2 pills are taken in a week. For example, one pill on Monday then other, pill on Thursday.
- After 3 months, Saheli is taken only once in a week.
- For example, if taken on Monday then every week one pill must be taken.

Initial 3 months							After 3 months						
S	M	T	W	T	F	S	S	M	T	W	T	F	S

Drawbacks

- Very few side effect like
 - Weight gain
 - Nausea and vomiting

Efficiency



Non-Hormonal Contraceptives

B

Spermicidal Formulation

What is it?

Non - Steroidal chemical formulation for topical application such as:

- Cream
- Jelly
- Foam



How does it work ?

Contains chemicals which prevent pregnancy by:

- Killing the sperm
- Blocking cervix and entry to the uterus
- Slowing down the sperm's movement

Drawbacks

- No protection against STDs
- Effective for a limited time only and should be reapplied after three hours
- Vaginal irritation and infections

Non-Hormonal Contraceptives

Spermicidal Formulation

How to use?

- Applied deep in the vagina and cervix just 10-60 minutes before sex
- Not to be washed immediately after sex
- Must stay inside till 5-6 hours after sex, so reapply after 3-4 hours

Efficiency (Used alone)



- Not recommended to use alone
- Best effective with other barrier methods

Efficiency (In combination with other barrier methods)





Which of the following is non - hormonal contraceptive?



- a) Skin patch
- b) Rod implant
- c) Saheli
- d) Vaginal rings



Which of the following is non - hormonal contraceptive?

B

a) Skin patch

b) Rod implant

c) Saheli

d) Vaginal rings

Chemical Contraceptives

B

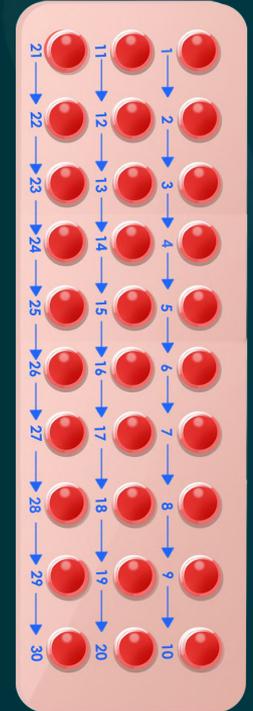
Male contraceptive pills

What is it?

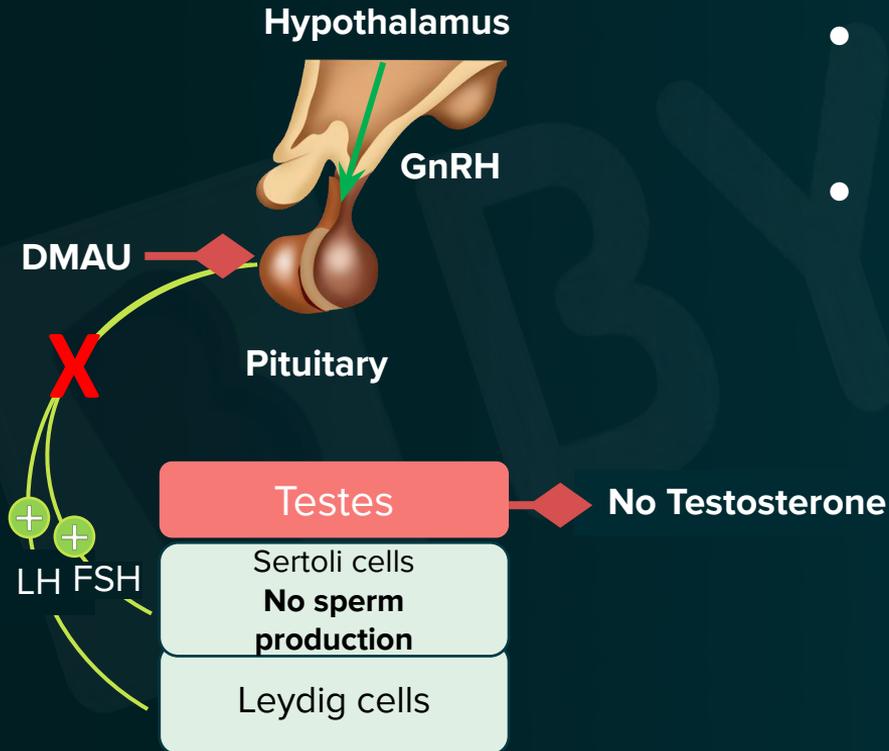
Pill with the formulation **Dimethandrolone undecanoate (DMAU)**

How does it work?

Inhibits sperm production (spermatogenesis) in testes



Male Chemical Contraceptives - Pills



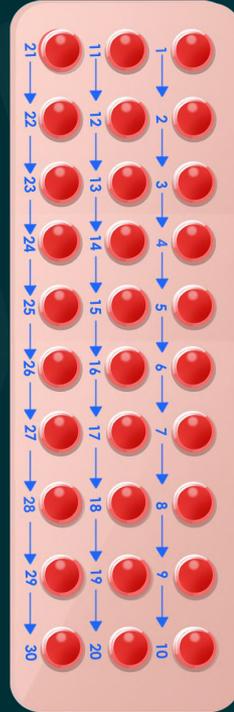
- DMAU inhibits pituitary from releasing LH and FSH
- No LH and FSH production □
No Testosterone □ No sperm production (Spermatogenesis)

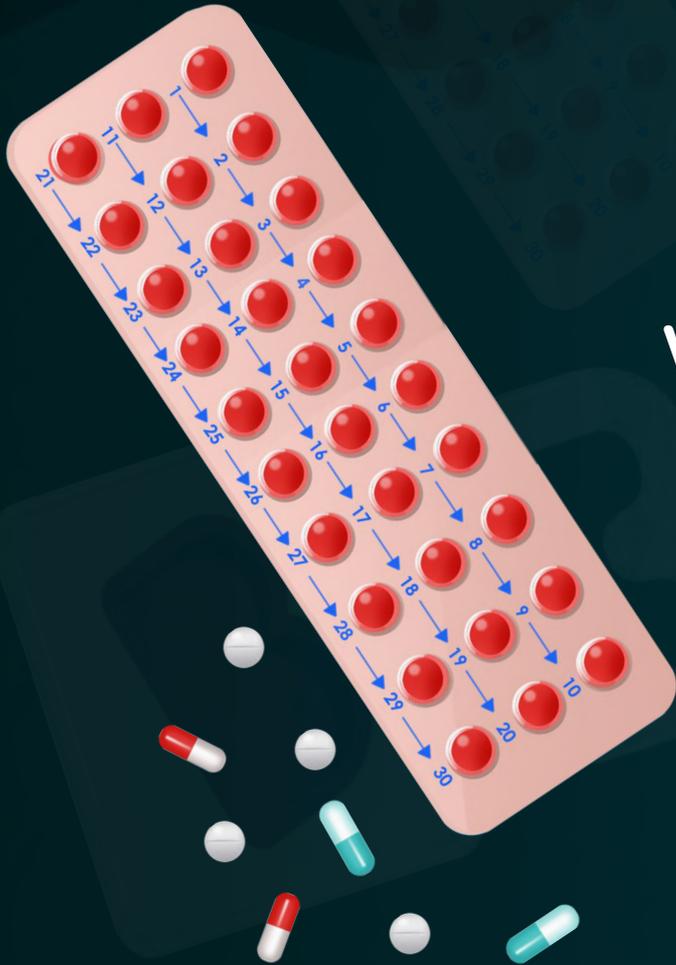
Male Chemical Contraceptives - Pills

Drawbacks

Low testosterone causes

- Mild erectile dysfunction
- Reduced sex drive
- Tiredness
- Weight gain





Why are there so limited options in oral chemical contraceptives available for males compared to females?

Male Contraceptive = Why is it so Difficult?



Female Reproductive System	Male Reproductive System
Drug has to interrupt ovulation of single egg in a month	Comparatively difficult to interrupt production of 1500 sperms per second
Drug has window of ovulation period to act and prevent contraception	No such window for targeted regulation in sperm formation

Male Contraceptive Gel

B

What is it?

Gel containing a combination of **progestin** and **testosterone**

How does it work?

- **Progestin switches off sperm production** in testes



How to use?

- Rubbed on shoulders, back and chest and absorbs through skin
- To be used everyday

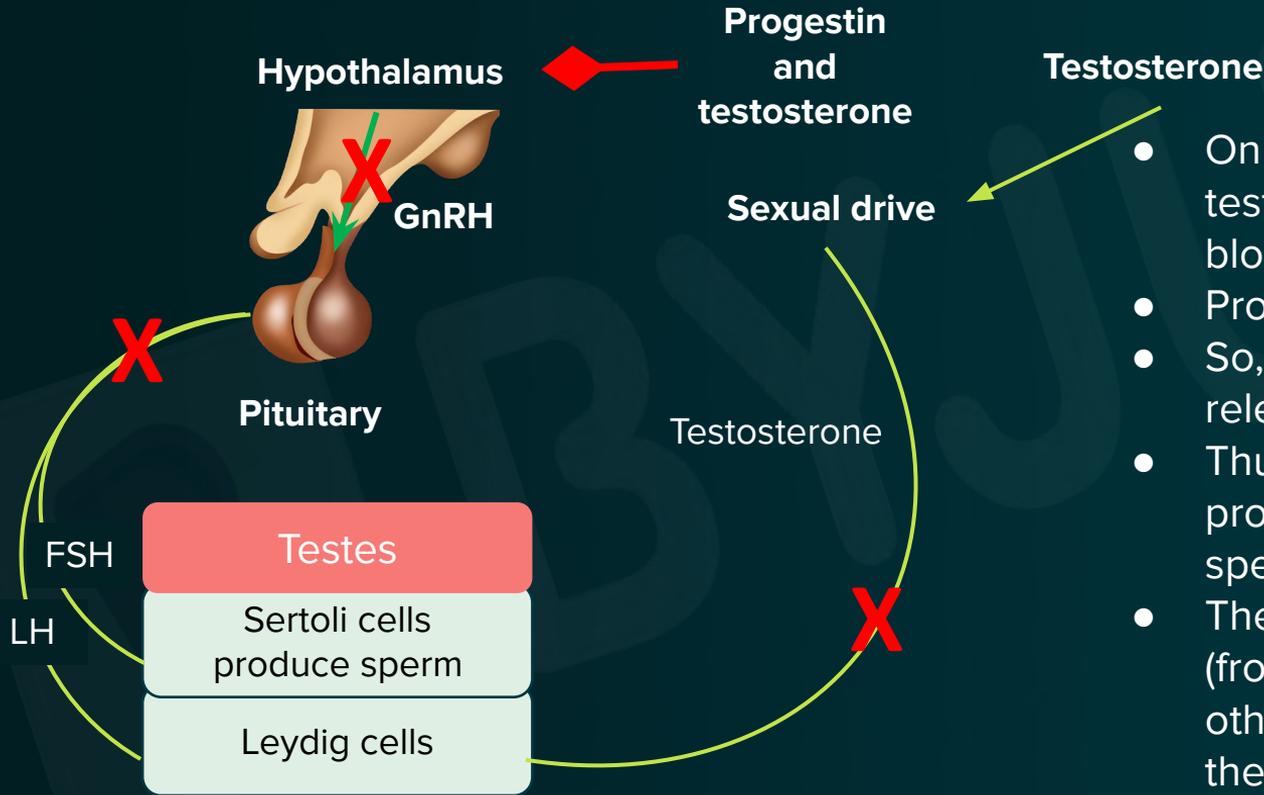
Drawback:

- Headache
- Tiredness
- Acne

Long term side effects are still under research

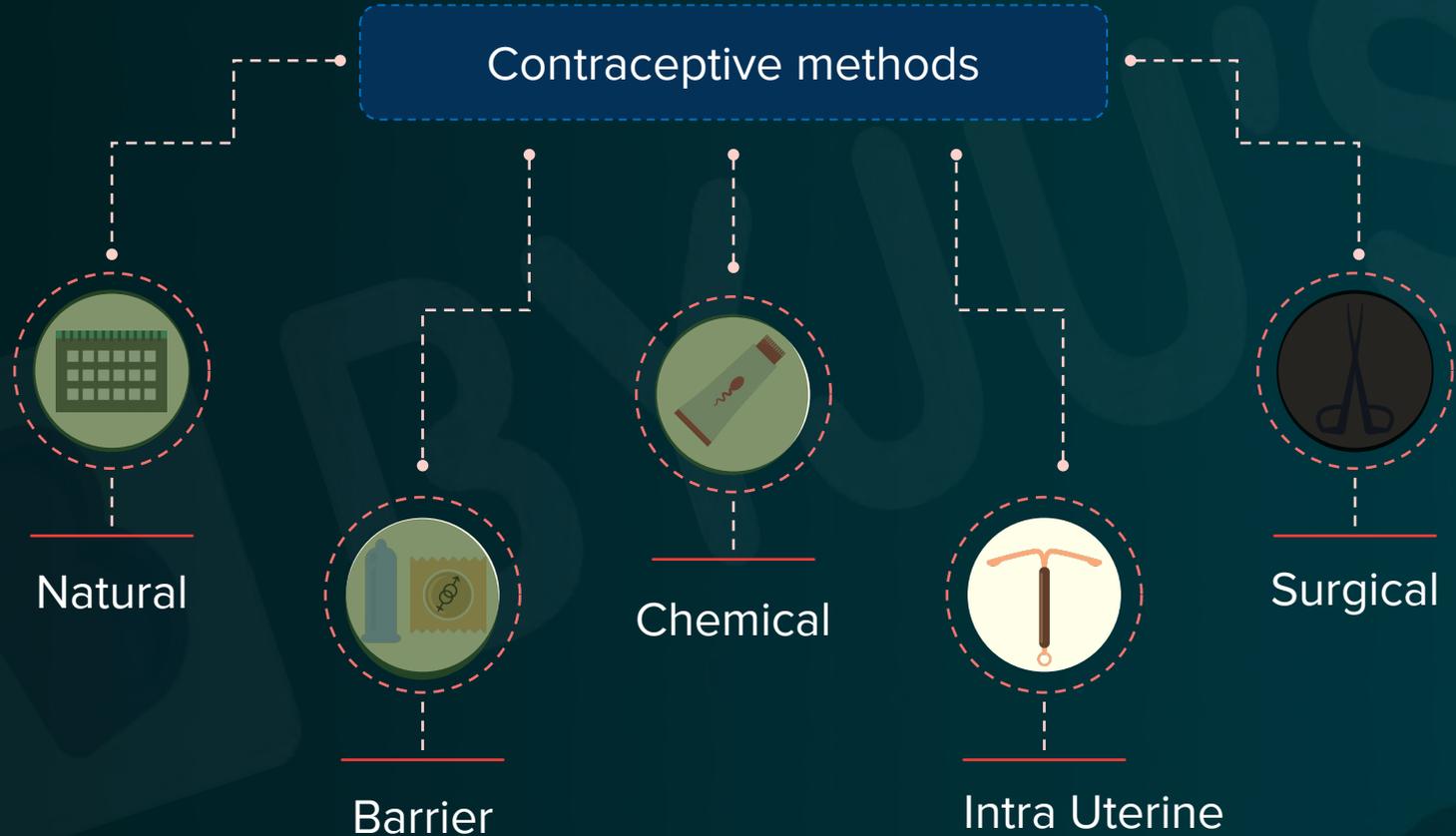
Contraceptive gel

B



- On applying gel, progestin and testosterone are absorbed in bloodstream.
- Progestin stops GnRH release.
- So, no LH and no FSH are released.
- Thus, by blocking testosterone production, this lowers the sperm quantity to a minimum.
- The replacement testosterone (from the gel) helps maintain other roles of testosterone in the body like sexual drive.

Contraceptive Methods

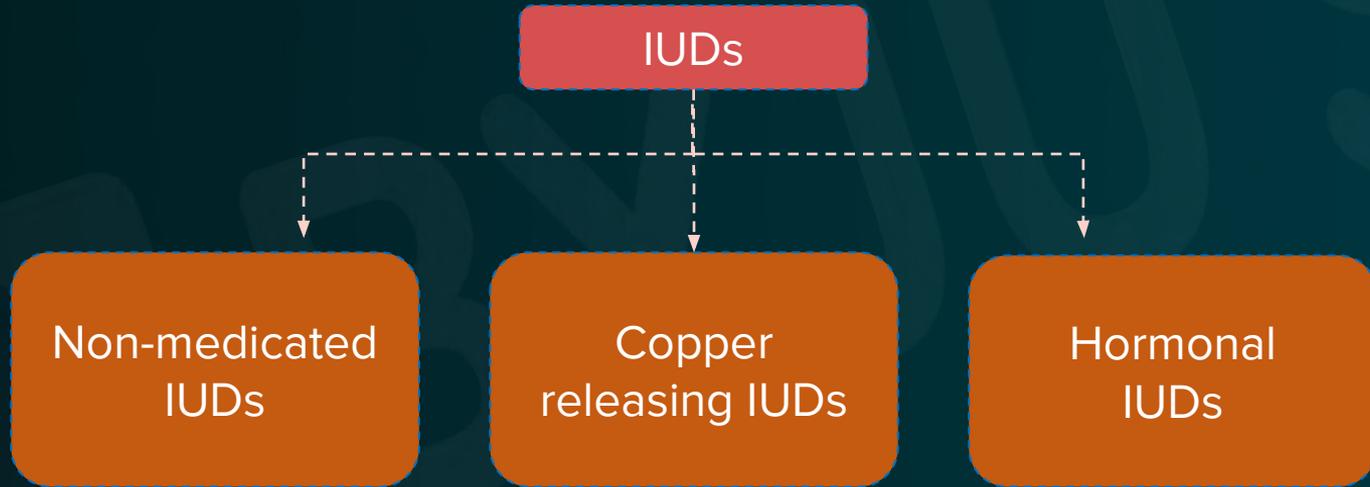


Intra Uterine Devices or IUDs

- Small birth-control devices placed in the uterus to prevent pregnancy
- Results in long-acting reversible contraception



Intra Uterine Devices or IUDs - Types



Non-medicated IUDs - Lippes Loop

B

What is it?

- Double S shaped inert flexible plastic loop
- Overall trapezoid shape

How does it work?

Foreign material inserted into the uterus provokes an increase in the immune cells in the uterus:

- Killing (phagocytosing) the sperm
- Preventing implantation of the embryo

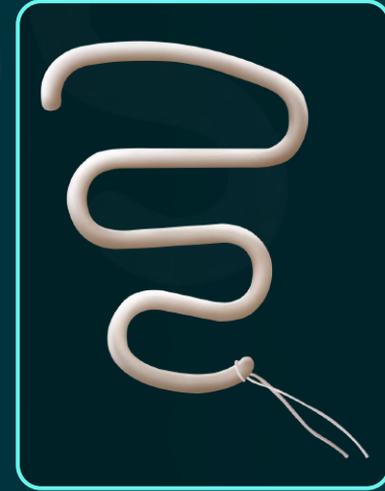
How to use?

- A doctor or a trained nurse inserts the IUD into the uterus.
- Double S shape of the Lippes loop sits within the folds of the uterus lining.

Drawbacks

- Expulsion of the IUD
- Bleeding and pain
- Pelvic inflammation

Efficiency



Cu Releasing IUDs - CuT, Cu7 & Multiload 375



What is it?

- Plastic frame wrapped with fine copper wire
- Called a 'T' because it is T shaped and called '7' because it looks like a 7

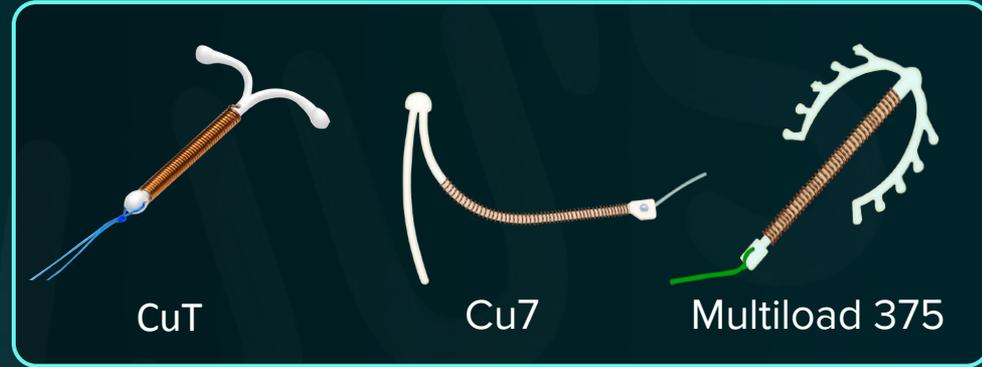
How does it work?

Releases Cu ions that:

- decrease sperm motility
- disrupt implantation of embryo

How to use?

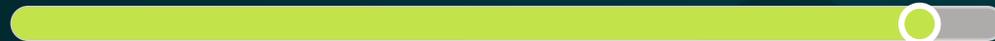
- A doctor or a trained nurse inserts the IUD into the uterus.
- Plastic arms help the IUD sit between the folds of the uterus lining



Drawbacks

- Cramping
- Pelvic inflammation
- Expulsion from the uterus
- Perforation into the uterus wall
- Heavier periods

Efficiency



97%

Hormonal IUDs - Progestasert, LNG-20



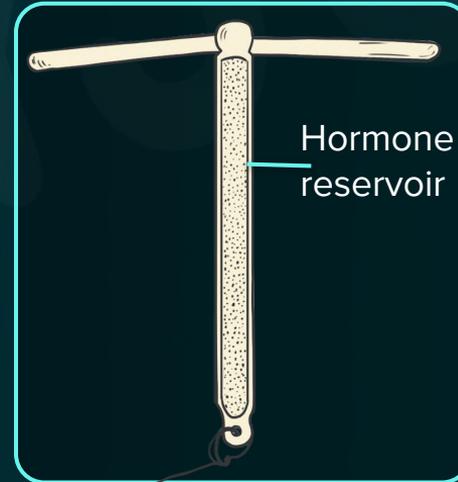
What is it?

- T-shaped piece of plastic with a reservoir containing the hormone

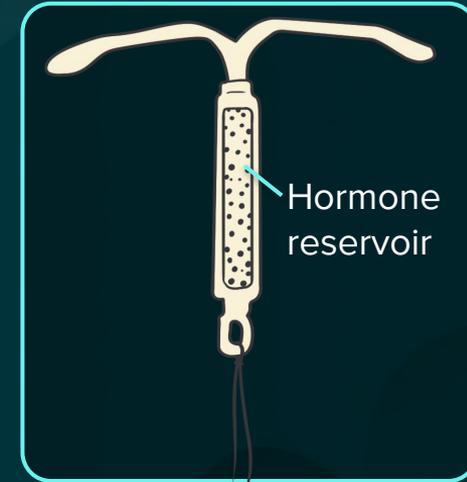
How does it work?

- Hormone (progesterone) in the reservoir is continuously released into the uterus as regulated by the membrane enclosing it.
- This **inhibits** the **ovulation**.
- It does not increase the serum levels of the hormone.
- However, it lasts only for an year.

Efficiency



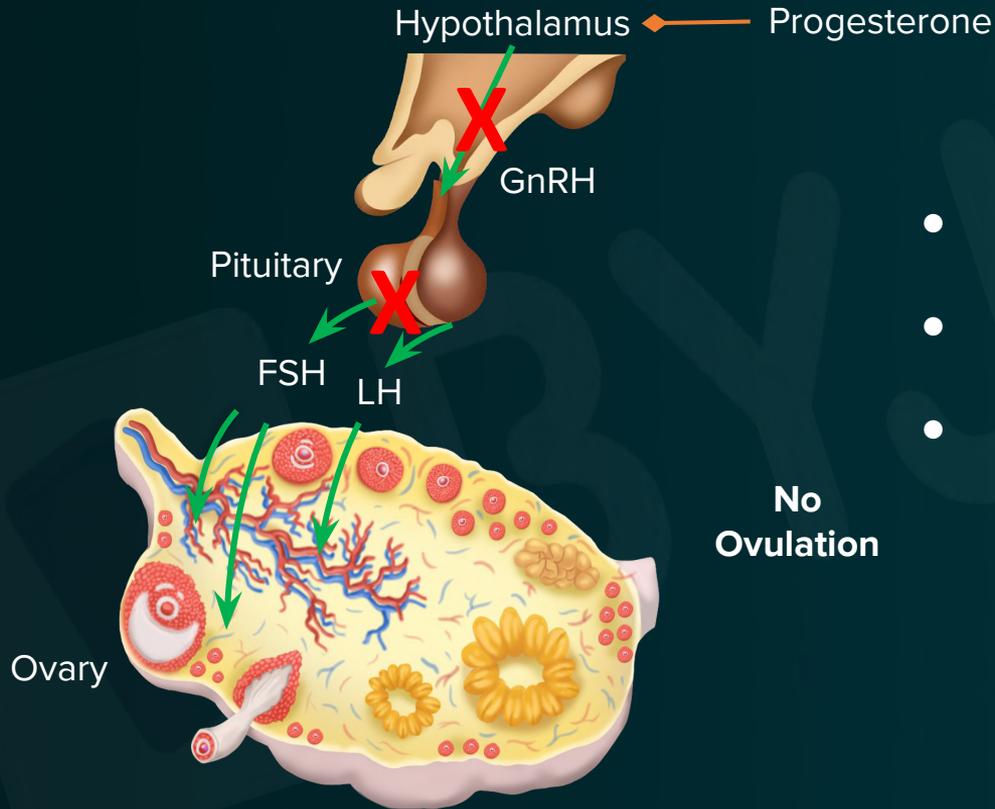
Progestasert



LNG-20

Hormonal IUDs

B



- Progesterone from the reservoir of IUD is released.
- Thus Inhibits GnRH release from hypothalamus.
- No LH □ No FSH □ No ovulation.

Hormonal IUDs - LNG-20



How does it work?

Releases **levonorgestrel**, a progestin (synthetic hormone similar to progesterone)

- Thickens cervical mucus - prevents entry of sperm
- Prevents ovulation (same mechanism as progesterone)
- Lasts about 5 years

How to use?

- A doctor or a trained nurse inserts the IUD into the uterus.
- The T arms sit between the folds of the uterus.

Efficiency



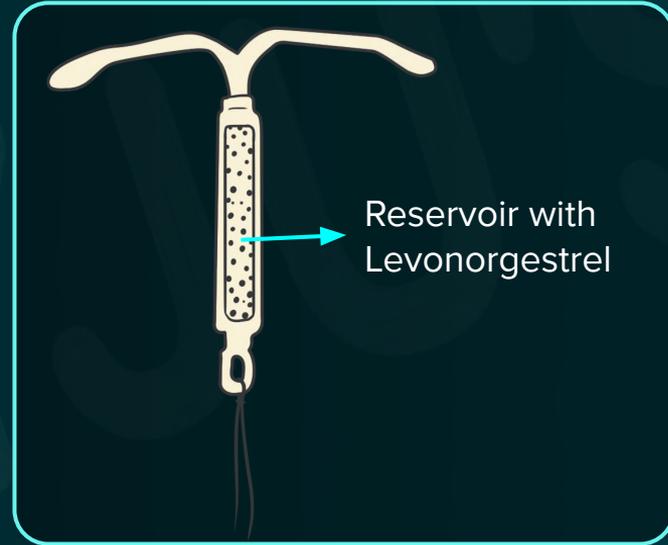
Hormonal IUDs - LNG-20



Drawbacks

Same as other IUDs

- Weight gain
- Ovarian cysts
- Negatively affects mental health
- Nausea
- Headache & migraines
- Lower sexual drive



LNG-20



Which of the following is a hormone releasing IUD?



a) LNG - 20

b) Multiload 375

c) Lippes loop

d) Cu7



Which of the following is a hormone releasing IUD?

B

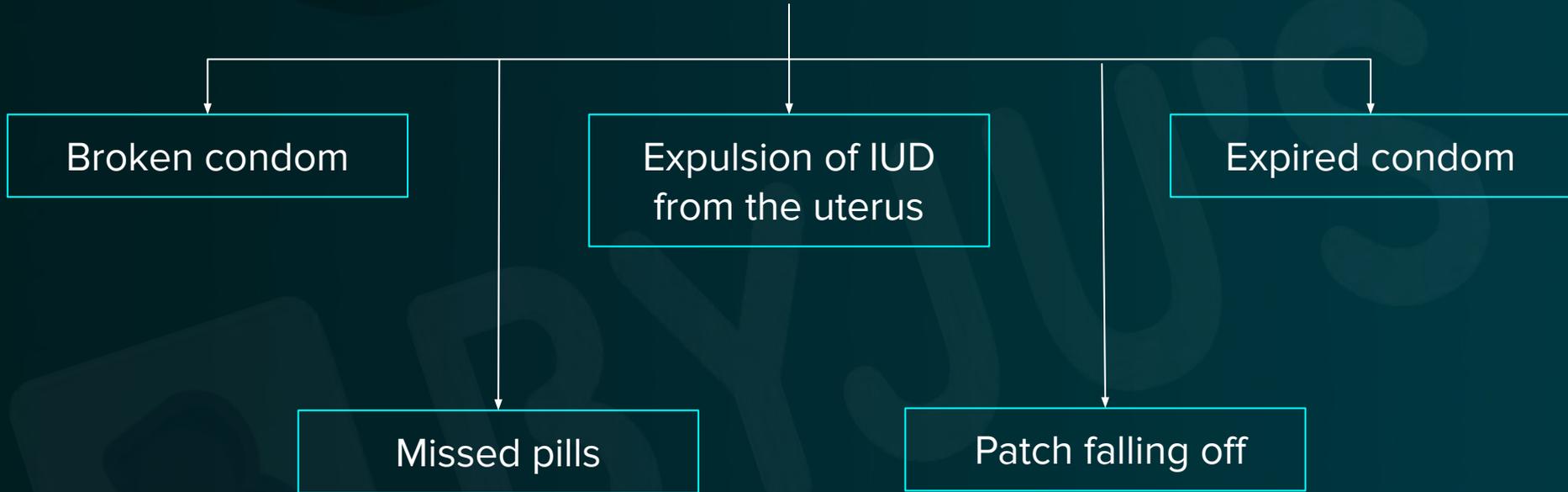
a) LNG - 20

b) Multiload 375

c) Lippes loop

d) Cu7

Failure of Contraception



Failure of Contraception = Risk of Pregnancy

Emergency Contraceptive Pills

B

What is it?

Medical formulation containing **levonorgestrel**

How does it work?

Levonorgestrel has a few effects:

- Delays or prevents ovulation
- Thickens the cervical mucous to prevent sperm's entry into the uterus
- Prevents implantation of the embryo

Emergency Contraceptive Pills

B

How to use?

- Pill should be taken within 5 days of sexual intercourse
- More effective when taken as early as possible, especially within 3 days or $3 \times 24 = 72$ hours
- Best used after **unprotected sex** or **rape**

Drawbacks

No long term or serious side effects

Short term side effects include

- Headaches
- Abdominal pain
- Changes in period schedule
- Feeling sick (If at all experienced one should contact the doctor)

Efficiency



~95%



Did You Know?



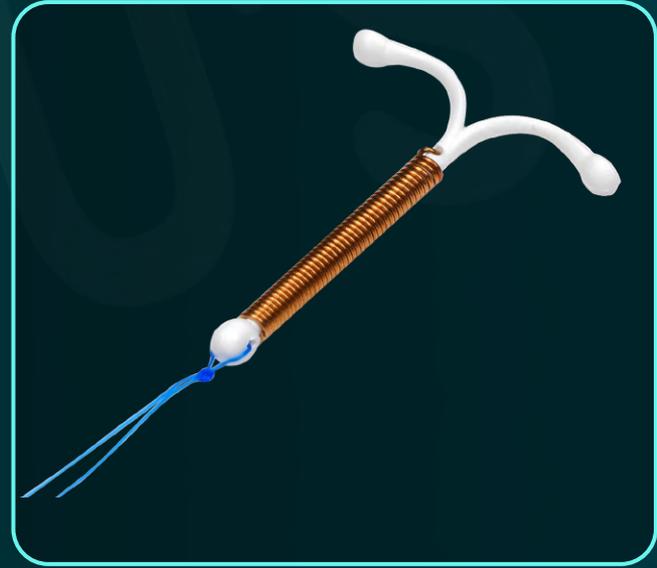
Cu IUDs = Emergency contraceptives

How does it work?

It prevents implantation of the embryo.

How to use?

The IUD must be inserted by a doctor or a trained nurse within 5 days of the unprotected sex.





Summary



Hormonal contraceptives

Nature

Gender

Duration

Reversibility

Hormonal contraceptives	Nature	Gender	Duration	Reversibility
Pills	Hormonal	Females and males	Short term	Reversible
Injections	Hormonal	Females	Short term	Reversible
Implants	Hormonal	Females	Long term	Reversible
Skin Patches	Hormonal	Females	Short term	Reversible
Vaginal rings	Hormonal	Females	Short term	Reversible
Contraceptive cream	Hormonal	Males	Short term	Reversible



Summary



Non-hormonal contraceptives

Nature

Gender

Duration

Reversibility

Saheli	Non- hormonal	Females	Short term	Reversible
Spermicidal formulation cream	Non- hormonal	Females	Short term	Reversible



Summary



Intra Uterine devices	Nature	Gender	Duration	Reversibility
------------------------------	---------------	---------------	-----------------	----------------------

Non- medicated IUD	Non- hormonal	Females	Long term	Reversible
Copper IUDs	Non- hormonal	Females	Long term	Reversible
Hormonal IUDs	Hormonal	Females	Long term	Reversible



Summary



Emergency Contraceptive Methods

- Emergency contraception refers to methods of contraception that can be used to prevent pregnancy **after** sexual intercourse.
- Emergency contraceptive pills are medical formulation containing **levonorgestrel**.
- Eg. : I-pill



Key Takeaways



- Surgical contraceptives

- Vasectomy
- Tubectomy

- Medical termination of pregnancy (MTP)

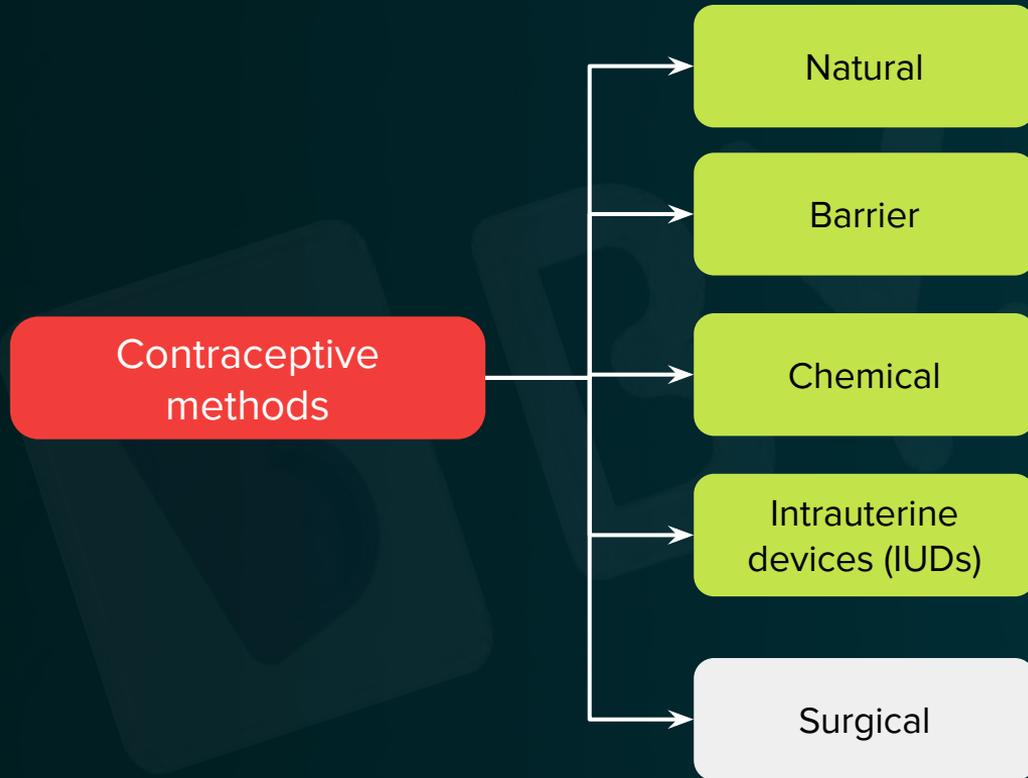
- Misuse of MTP

- Birth defects

- General overview of contraceptives

- Amniocentesis

Types of Contraceptive Methods



- ❖ There are majorly **five types** of **contraceptive methods**.
- ❖ Surgical methods are the **terminal methods** of birth control to prevent any more pregnancies.

Types of Surgical Methods

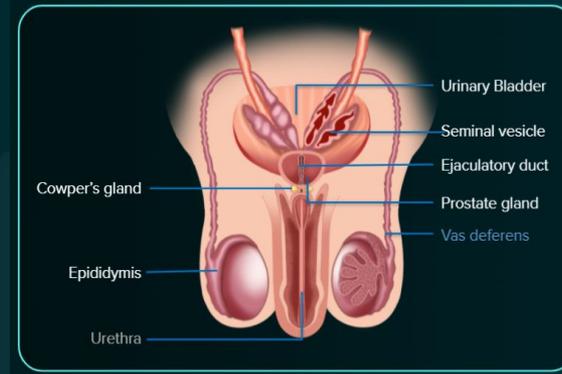
Surgical
contraceptives

Vasectomy

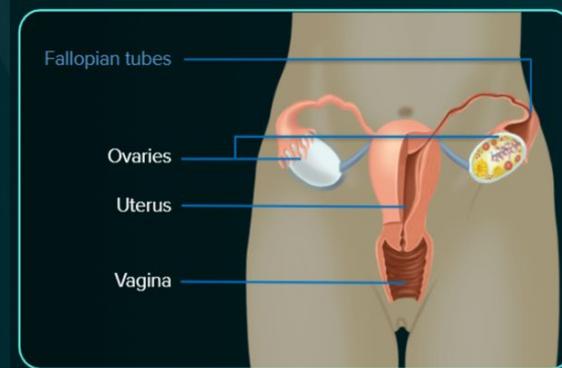
Done in
males

Tubectomy

Done in
females



Male reproductive organ

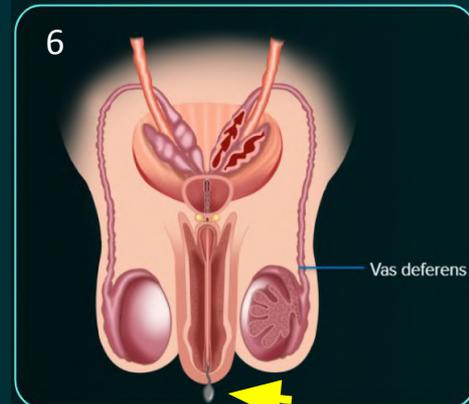
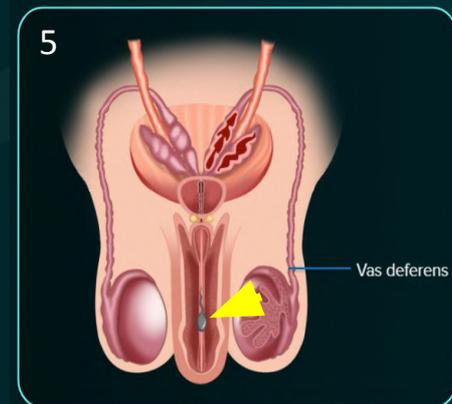
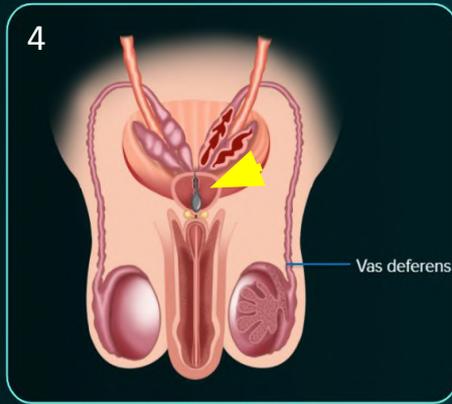
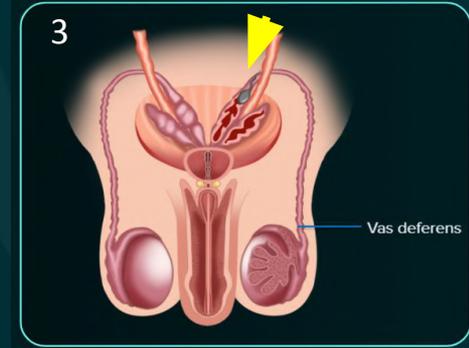
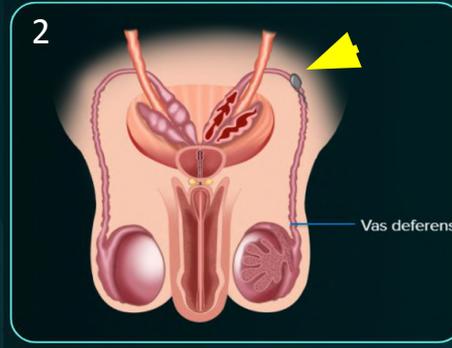
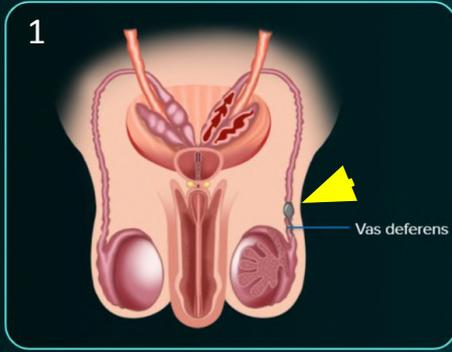


Female reproductive organ



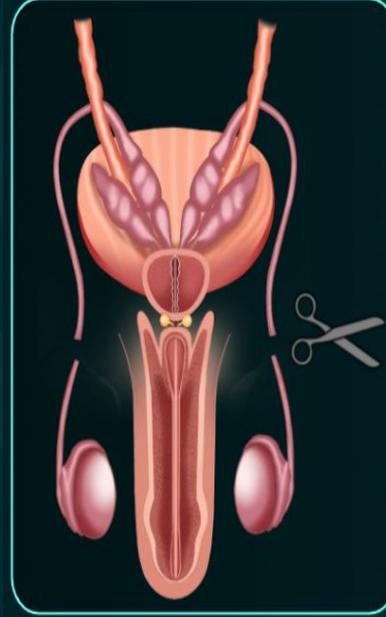
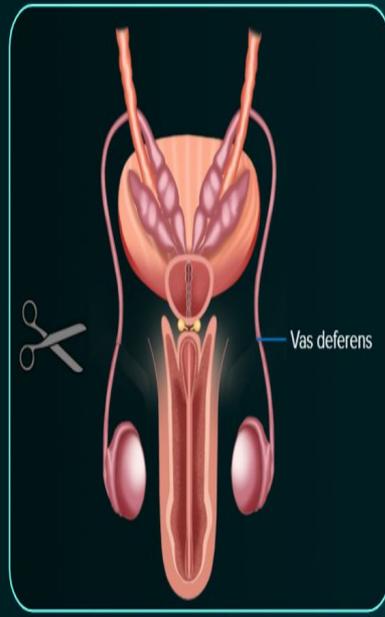
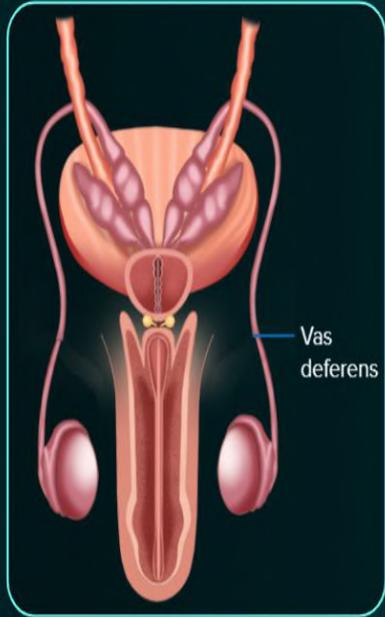
Recall! Sperm Journey

Sperms travel from testis to the penis and eject out of it during coitus.



Vasectomy

B



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



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.



Recall! Constituents of Semen



Sperm



Other secretions from

seminal vesicles

prostate gland

bulbourethral glands

- Semen = sperm + secretions from seminal vesicles, prostate gland and bulbourethral glands.



Sperm



Other secretions from

seminal vesicles

prostate gland

bulbourethral glands

- Vasectomy eliminates only sperm from the semen, so the seminal plasma remains in the ejaculate.
- Hence, seminal plasma is ejaculated during the sexual act.

Tubectomy

B

Tubectomy

- It is the **surgical method** of female **sterilisation**.
- It prevents the transportation of **ova**.

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**.

Tub

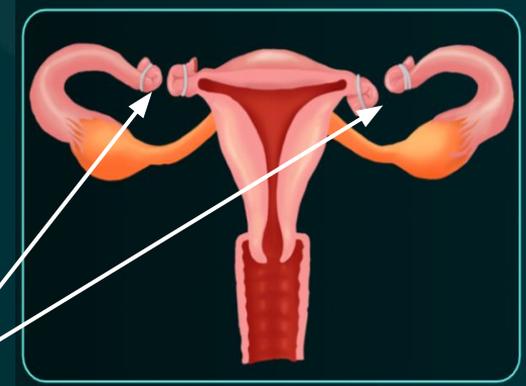


Fallopian tube

ectomy



Surgical removal



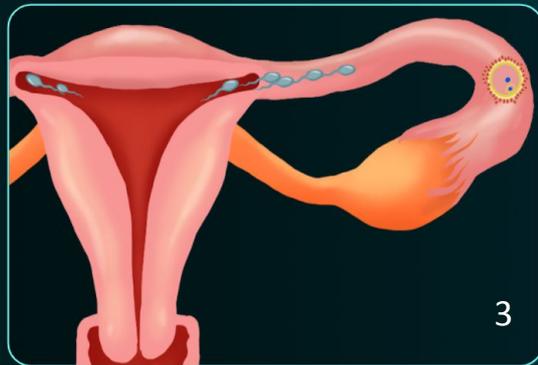
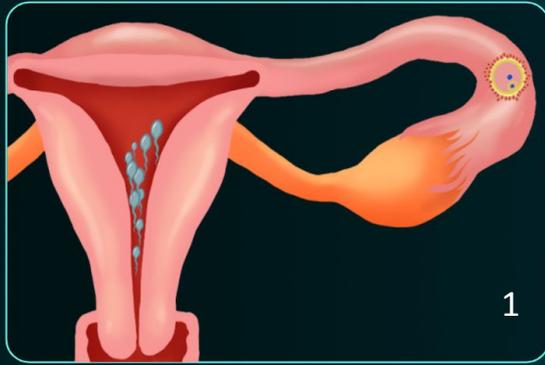
Sealed fallopian tube

Female sterilisation



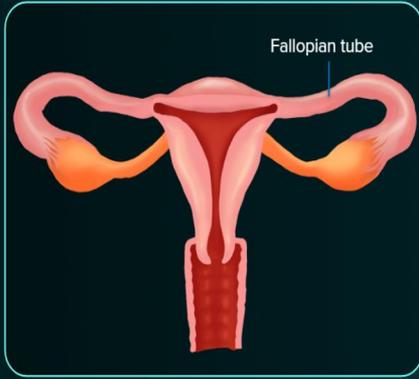
Recall! Journey of the Sperm in Female Reproductive System

Sperms travel through vagina to the fallopian tube to fuse with ovum.

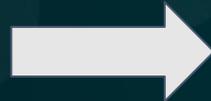


Tubectomy

B



Two small incisions on both the fallopian tubes are made.



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

Tubectomy



Efficiency

Vasectomy is 99% effective.



Drawbacks

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



Did You Know?



Vasectomy and tubectomy do not affect the sexual act



Medical Termination of Pregnancy

Medical termination of pregnancy (MTP) is done in case of:

- failure of contraceptives used during coitus
- rapes
- abnormal foetal growth that could be harmful for the mother or foetus



Contraception failures



Rape



Unprotected sex



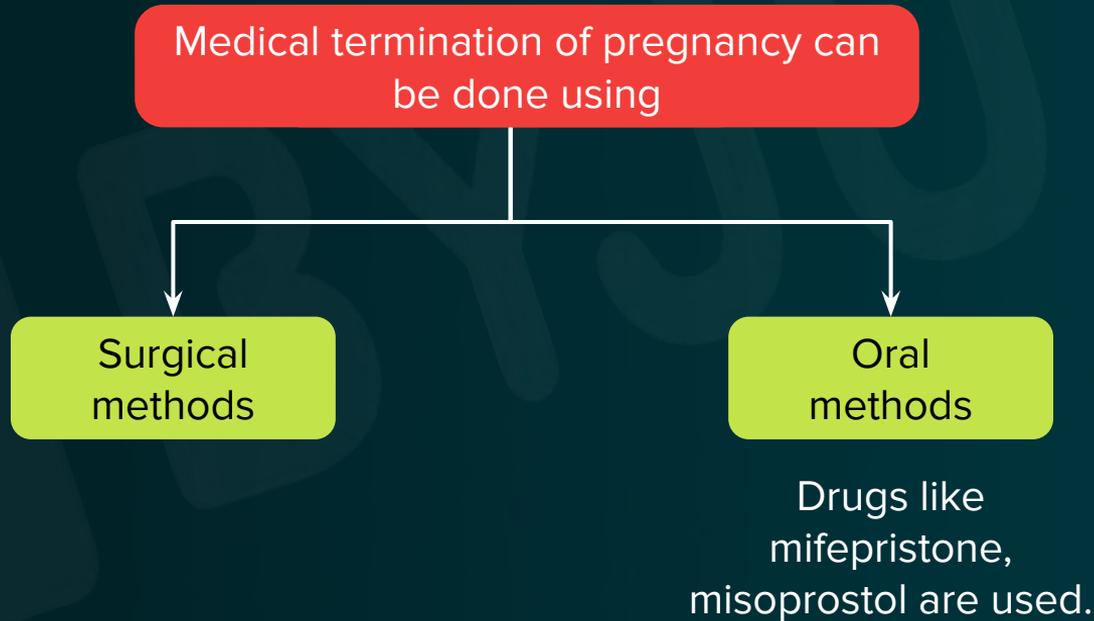
Continuation of pregnancy being harmful for mother or foetus.

Medical Termination of Pregnancy



- MTP is the **voluntary termination** of pregnancy which is also called **induced abortion**.
- It was **legalized in India in 1971** by the Indian government with **strict restrictions to prevent any misuse**.
- MTP is still a topic of debate in many countries as many **social, emotional, moral and religious issues** are involved in it.
- Nearly **45 to 50 million MTPs are performed in a year** all over the world which accounts to **1/5th of the total number of conceived pregnancies** in a year.

Medical Termination of Pregnancy



Medical Termination of Pregnancy



- MTPs are considered **relatively safe** during the **first trimester**, i.e., upto **12 weeks** of pregnancy.
- **Second trimester** abortions are **riskier**.

Misuse of MTP

B

- **Illegally** done by **unqualified** quacks.
- Could be **fatal** for mothers.



- It is found that majority of the MTPs are performed **illegally** by **unqualified quacks** (fraudulent or ignorant pretender to medical skill) which are not only unsafe but also **fatal** for mothers.

Fetal **sex determination** followed by MTP

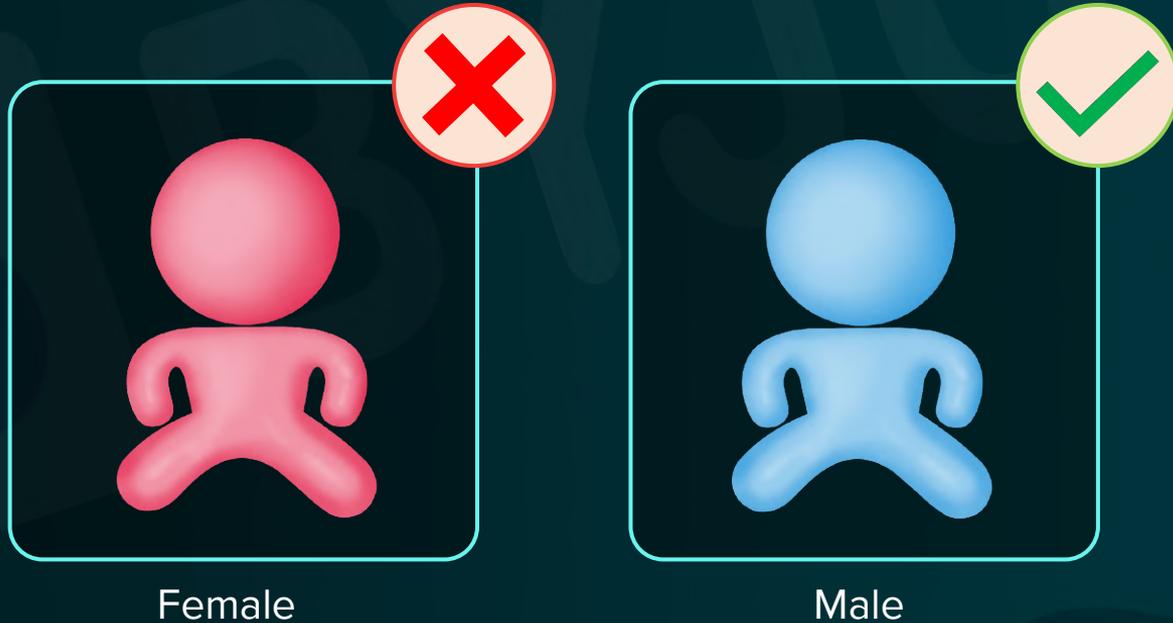
- female foeticide



- **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 done by couple this is totally **against law**.

Female Foeticide

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



Reasons for Female Foeticide

Reasons for
female
foeticide

Male favored for
successful lineage

Dowry system

Girls are not safe

Lack of education



Vasectomy and tubectomy

B

a) inhibit hormone production

b) prevent gamete transport

c) inhibit gamete production

d) none of the above



Vasectomy and tubectomy

a) inhibit hormone production

b) prevent gamete transport

c) inhibit gamete production

d) none of the above



Did You Know?



Female to male sex ratio in India

- 94.1 females : 100 males was the sex ratio during 1960's.
- 100 females: 108.18 males in 2020.
- Female foeticide leads to reduced number of females in a population.



Sex Ratio

The sex ratio indicates number of **females per 1000 males in a population**.



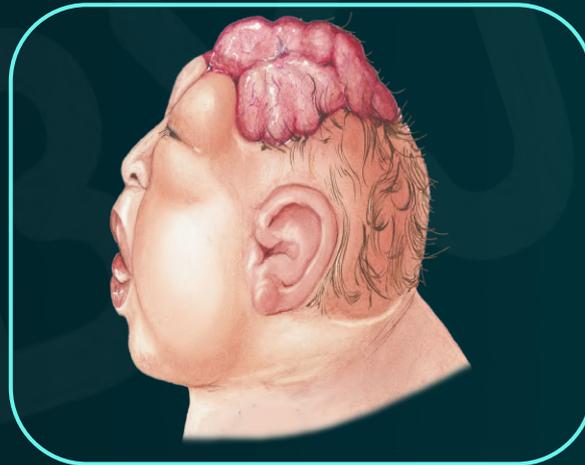
- Ideal case: The number of males to females must be 1:1.
- Example : **X number of females** are there in a population for 1000 males. Then **sex ratio will be x:1000**. Ideal case is 1000 females are present for every 1000 males in a population (i.e., 1:1).
- It provides an **indication** of both the **relative survival of females and males** and the future breeding potential of a population.

Birth Defects

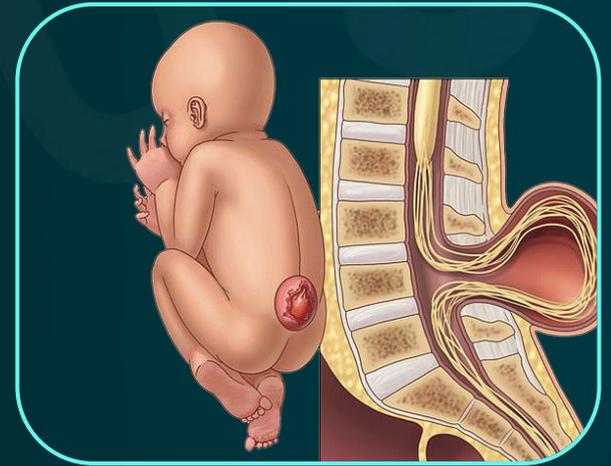
- Birth defects are the problems in a baby that occur during its development in the mother's body.
- It is always better if the **parents of the kid were aware** of these **congenital anomalies** i.e., **birth defects before giving birth**.



The baby is born with **cleft lip** (an opening in the upper lip).



The kid suffers from **anencephaly** (it is a type of neural tube defect).



The kid suffers from **spina bifida** (a protruding structure at the spinal cord is seen in these cases).

Birth Defects



The child has **Down syndrome** (a genetic disorder).

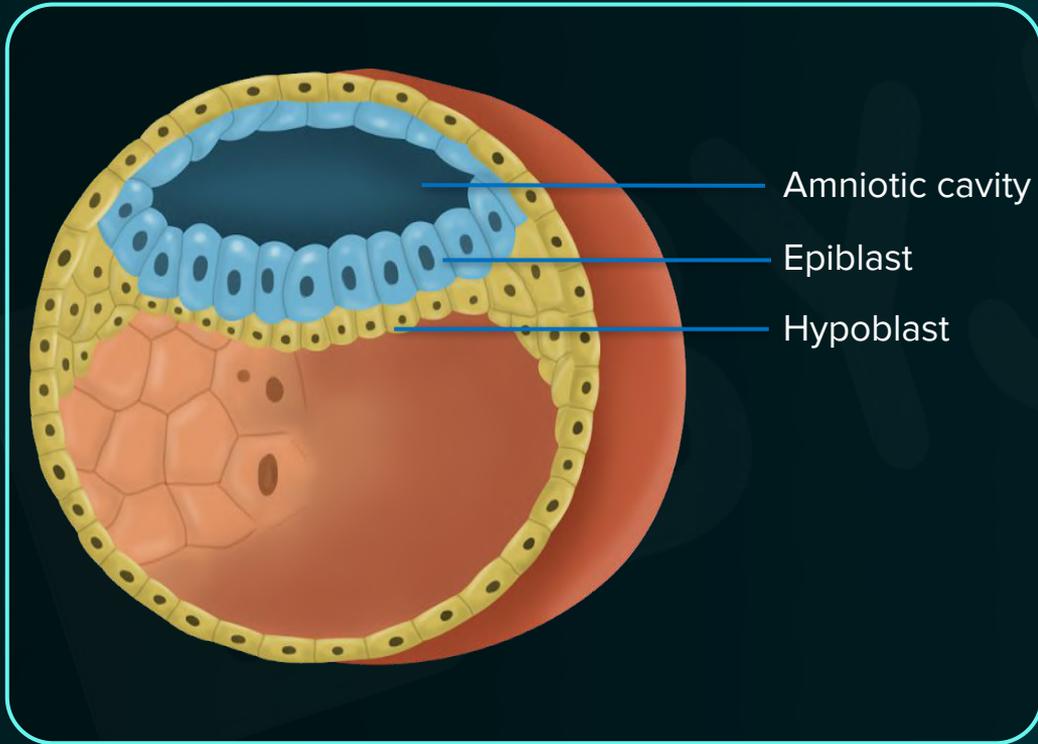


The kid is born with **clubbed foot** (it can occur solely or can be associated with other diseases).



Recall! Gastrulation

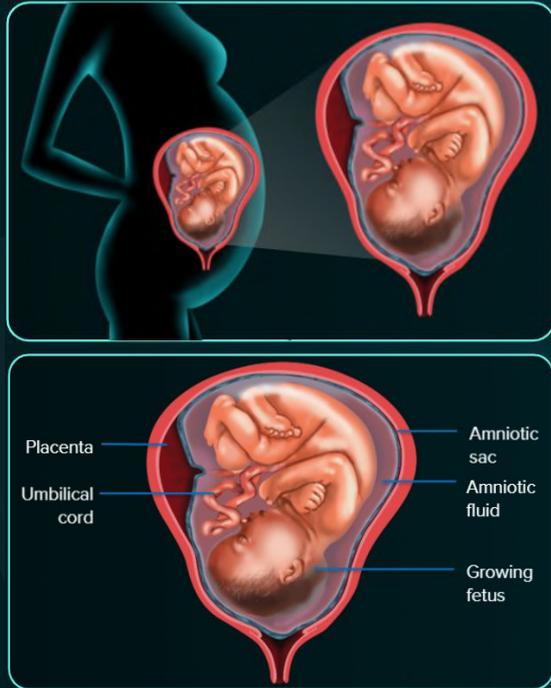
B



- Gastrulation is a process of development of blastula into multidimensional structure called **gastrula**.
- A fluid accumulates in the epiblast of amniotic cavity. That fluid is called **amniotic fluid**.

Amniocentesis

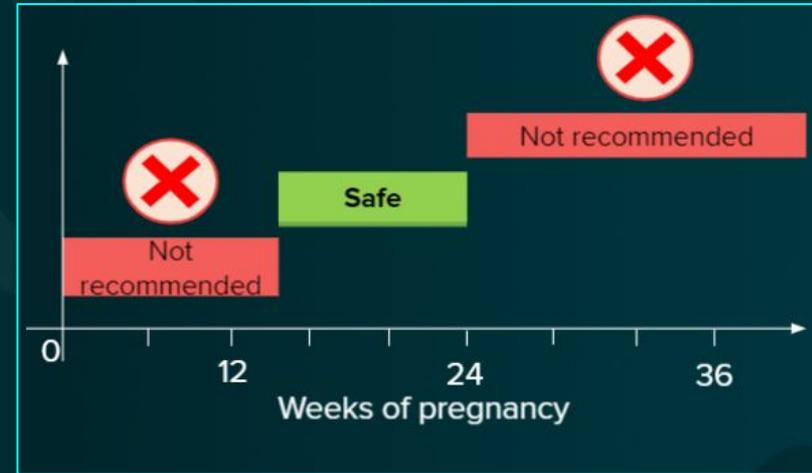
Amniotic fluid



- Amniotic fluid is the **protective liquid** around the foetus in the amniotic sac.
- The fluid has **urine of foetus** and **other nutrients**, antibodies and hormones.
- The fluid also **serves** as a **cushion for the growing foetus**.

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 fetal disorder test.
- 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**.



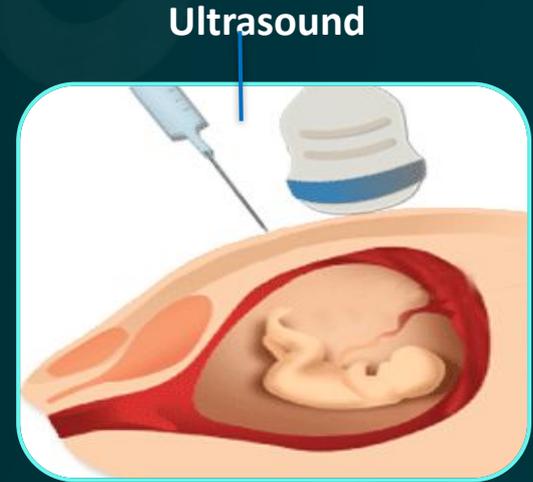
Safe period for performing amniocentesis

Amniocentesis

It can detect some birth defects like – down syndrome, spina bifida, etc. along with the sex of the child.

Steps of performing amniocentesis

- Step – 1** Ultra sonography (USG) to detect where the baby is present.
- Step – 2** Insertion of the needle gently.
- Step – 3** Taking the sample of amniotic fluid.
- Step – 4** Testing the sample in lab.



Advice of Amniocentesis

B

Amniocentesis is allowed in the following conditions:

Mother of age more than 35 years

Abnormality found by ultrasound

Previous history of pregnancy with genetic abnormality in the child

Family history of genetic disease



Sex ratio is number of females per males. Ideal sex ratio is?

B

a) 1:2

b) 1:1

c) 2:1

d) None of the above



Sex ratio is number of females per males. Ideal sex ratio is?

B

a) 1:2

b) 1:1

c) 2:1

d) None of the above

Overall View of Contraception



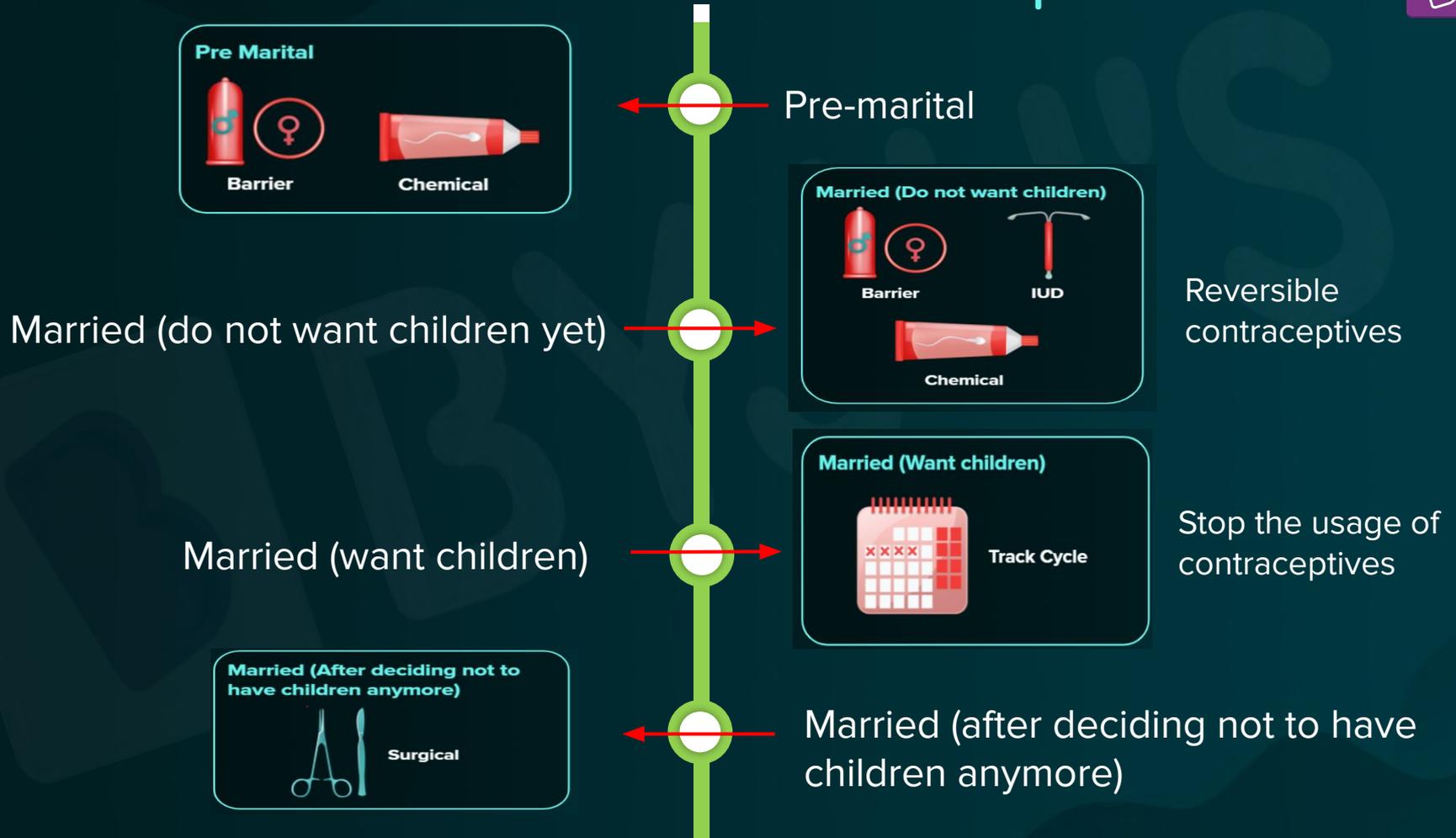
Contraception awareness is essential for

- curbing population growth
- birth control options

With this, people will be aware and the chances of high population can be reduced.

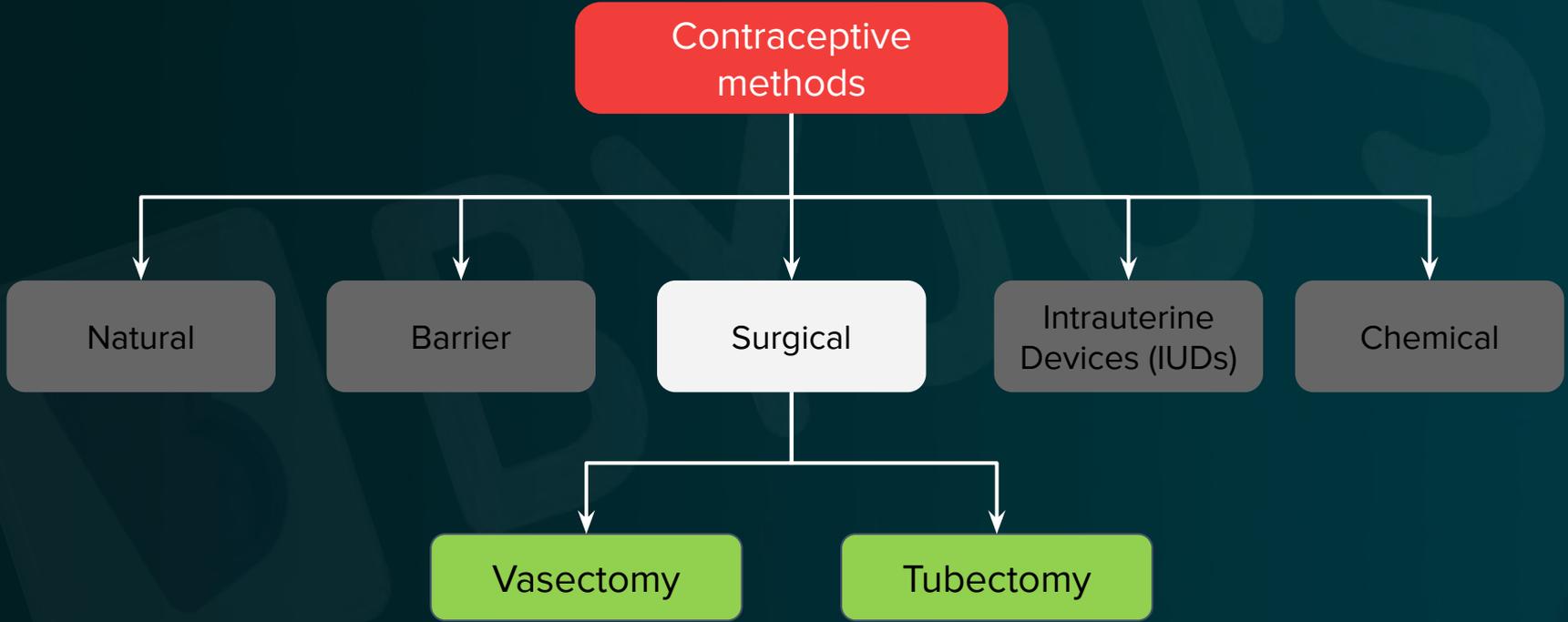


Overall View of Contraception





Summary





Birth Defects

B

Birth defects are the problems that happen to baby during its development in **mother's body**.

Anencephaly



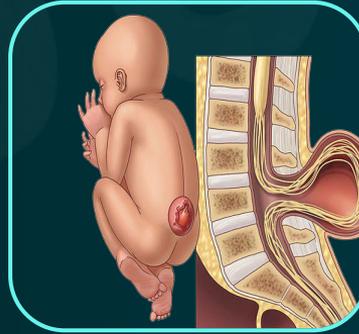
Cleft lip



Down syndrome



Spina bifida



Clubbed foot





Medical Termination of Pregnancy



MTP is a voluntary termination of pregnancy
(also called induced abortion).

MTP

- Induced abortion.
- Allowed only in some conditions
- Legalized by government in 1971



Amniocentesis

It is a test which can detect some birth defects like –
Down syndrome, spina bifida, etc. along with the sex of the child.

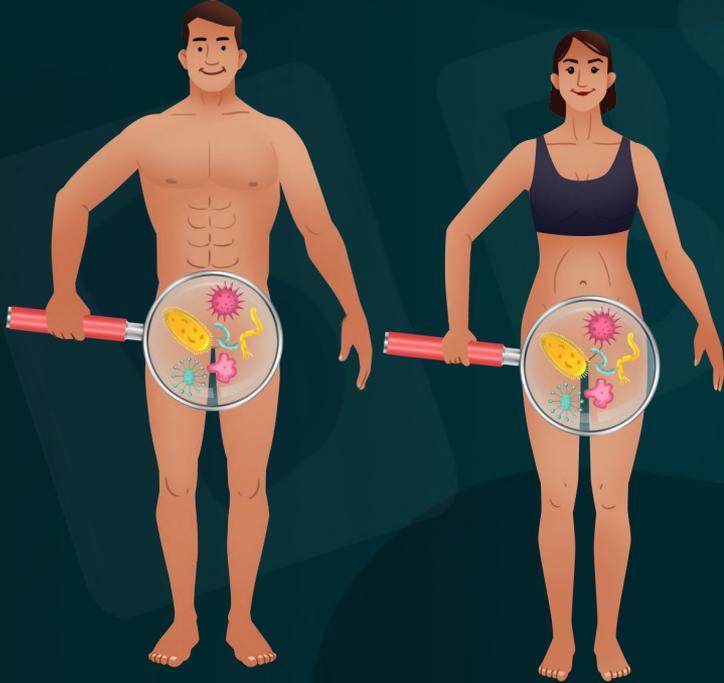




BYJU'S Classes Notes

Reproductive Health

Sexually Transmitted Infections (STI), Myths, Complications and Prevention of STIs





Key Takeaways



Sexually transmitted infections

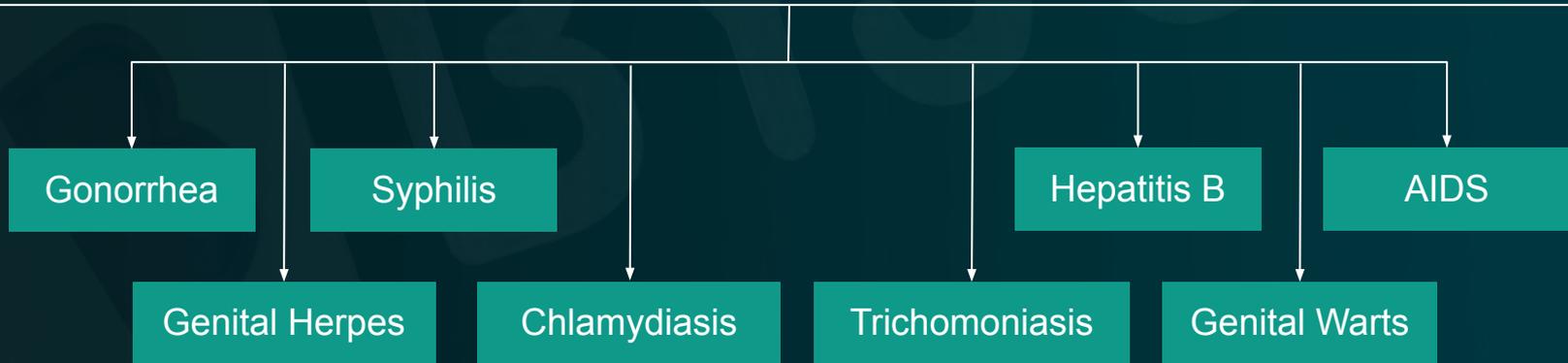
Myths regarding STDs

Complications of STDs

Prevention of STDs

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:



Gonorrhoea

Causative organism

Neisseria gonorrhoeae

Type

Bacteria

Symptoms



Burning
sensation
during urination



Penile/Vaginal
discharge



Testicular
swelling



Bleeding
between periods

Transmission

Unprotected Sex



Vaginal



Oral



Anal



Mother
to baby

Gonorrhoea

- Most people infected with Gonorrhoea are **asymptomatic**.
- A person is said to be asymptomatic when despite the infection, he/she **doesn't show** any **symptoms** of the disease.

Treatment

- Antibiotics are used to treat this disease.

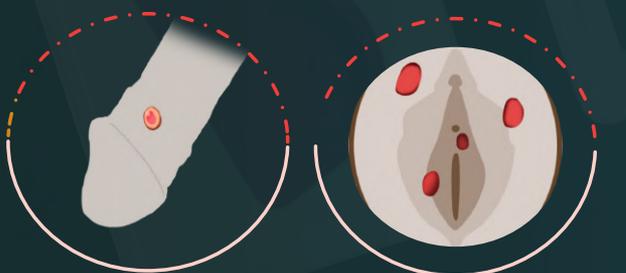


Syphilis

B

Causative organism	Type
<i>Treponema pallidum</i>	Bacteria

Symptoms



Infectious painless sores



Swollen lymph nodes

Sore throat

Hair loss

Body rash

Syphilis

- Sores formed are hard and painless.
- There are two stages of syphilis infection.
 - **Primary** - curable with antibiotics
 - **Secondary** - if left uncured, it affects the internal organs and can cause the death of the patient.

Transmission

Unprotected Sex



Vaginal



Oral



Anal

Direct contact with sores



Treatment

Antibiotics



Genital Herpes

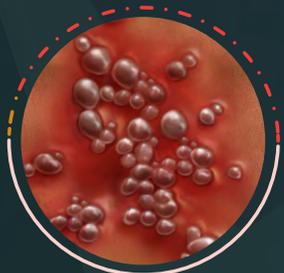
Causative organism

Herpes Simplex Virus Type 2
(HSV-2)

Type

Virus

Symptoms



Infectious genital
sores



Itchiness



Body pain



Fever

Genital Herpes

- It can also cause **swelling** of the **vulva** in women.
- Treatment can help **reduce symptoms** but the disease is cured by the action of the immune system.
- Antiviral medicines **prevent** further worsening of blisters.
- **Applying petroleum jelly** eases the pain.

Transmission



Vaginal



Oral



Anal



Direct contact
with sores

Unprotected sex

Antibiotics Vs Antivirals

Antibiotics

- Antibiotics are used to **kill bacteria** and **prevent** them from **growing, multiplying** and **causing diseases**.
- Examples - Penicillin, tetracycline, amoxicillin, etc.

Antivirals

- Antivirals are used to **minimize symptoms** and **infectivity** of the **viruses**.
- Examples - Acyclovir, retroviral, etc.

Genital Warts

Causative organism	Type
Human Papillomavirus (HPV)	Virus

- Warts are the **hard thickened lumps** or **callus** formed on the skin.
- If left **uncured**, then they **might spread** to **internal organs** and can also lead to the **patient's death**.

Symptoms



Painful warts on genitals



Itching



Transmission

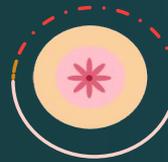
Unprotected sex



Vaginal

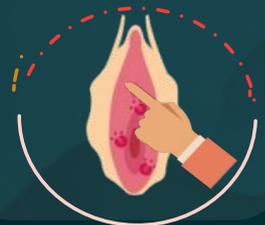


Oral



Anal

Direct contact with sores



Genital Warts

Treatment



Cryotherapy

(Doctor freezes the warts using liquid nitrogen)



Antiviral injections

(Antiviral drugs are injected to kill virus)



Surgery

(Physical removal of warts)



Disinfectant gel

(Disinfectant gel is applied on affected areas for cure)

Hepatitis B

B

Causative organism

Hepatitis B Virus (HBV)

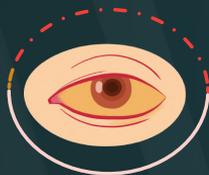
Type

Virus

Symptoms



Fever



Jaundice



Vomiting



Headache



Weakness



Pain in left part
of abdomen

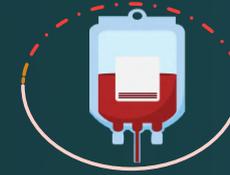
Transmission



Organ transplant



Infected
needle



Blood
transfusion



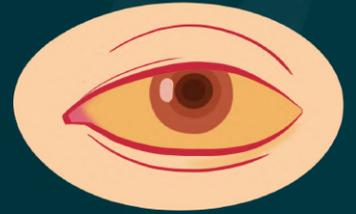
Mother
to baby



Recall! Jaundice



- Jaundice is a condition in which the **skin, sclera** of the eyes (white part) and **mucous membranes turn yellow**.
- The **high level** of **bilirubin**, a yellow-orange bile pigment, which is secreted by the liver.
- The **breakdown** of **red blood cells** by **bile**, imparts the colour.



Hepatitis B

Treatment

Hepatitis B

- Hepatitis B is considered to be one of the **deadliest** STDs.
- However, **Hepatitis B** is preventable with the help of vaccine.

Acute

- Short term disease
- Cured by plenty of rest and fluid diet
- Treatable

Chronic

- Long term disease
- Antiviral drugs are used to control viral spread
- Untreatable

Acquired Immunodeficiency Syndrome (AIDS)



Causative organism	Type
Human Immunodeficiency Virus (HIV)	Virus

Transmission



Blood transfusion



Mother to baby



Unprotected sex



Infected needle

Treatment

- There is no treatment for AIDS as of now, we cannot avoid the death of a patient.
- Antiretrovirals are used to **prolong** the **life** of patient.

Acquired Immunodeficiency Syndrome (AIDS)



Symptoms



Fever



Body pain



Body rash



Itchiness



Weakness



Chills



Sore throat

Trichomoniasis

Causative organism	Type
<i>Trichomoniasis vaginalis</i>	Protozoa

Treatment - **Drugs** are used to **cure** this disease.

Symptoms



Burning sensation during urination



Vaginal discharge



Genital irritation

Transmission

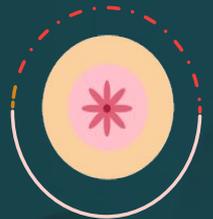
Unprotected sex



Vaginal



Oral



Anal

Chlamydia

B

Causative organism	Type
<i>Chlamydia trachomatis</i>	Bacteria

Treatment- **Antibiotics** are used to **cure** this disease.

Symptoms



Vaginal discharge



Testicular pain



Bleeding



Fever

Transmission

Sex



Vaginal



Oral



Anal

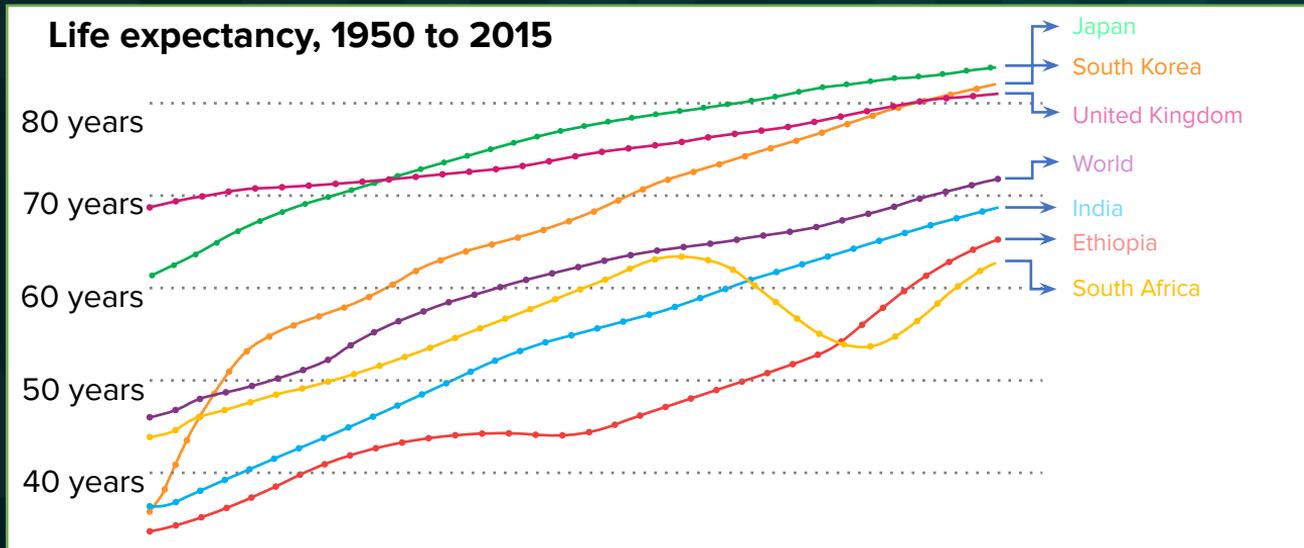
Unprotected sex





Did You Know?

- The average life expectancy, for HIV infected patients, was **very low** in most developing countries.
- In recent years, because of **proper treatment** and **availability of antiretroviral drugs**, AIDS patients **life expectancy has increased** considerably to around 65 years.
- This is a huge **improvement** in the **quality of lives** of the HIV patients.



Myths Regarding HIV/AIDS

Myth

Human Immunodeficiency Virus (HIV) spreads through hugging

HIV spreads through eating together

HIV spreads through handshake

HIV spreads through kissing

Fact

HIV does not spread through hugging. It spreads only through exchange of body fluids

HIV does not spread through eating together. It spreads only through exchange of body fluids

HIV does not spread through handshake. It spreads only through exchange of body fluids

HIV does not spread through kissing. It spreads only through exchange of body fluids



Match the following sexually transmitted diseases (Column 1) with their causative agent (Column 2) and select the correct option.

Column 1		Column 2	
a	Gonorrhoea	i	HIV
b	Syphilis	ii	HSV
c	Genital warts	iii	<i>Treponema pallidum</i>
d	AIDs	iv	<i>Neisseria gonorrhoeae</i>



Match the following sexually transmitted diseases (Column 1) with their causative agent (Column 2) and select the correct option.

Column 1		Column 2	
a	Gonorrhoea	iv	<i>Neisseria gonorrhoeae</i>
b	Syphilis	iii	<i>Treponema pallidum</i>
c	Genital warts	ii	HSV
d	AIDs	i	HIV

Social Stigma



Negative attitude towards sex

- Society is judgemental towards sex with multiple partners and outside of marriage.

Consequently, individuals with STDs are looked down by the society and are considered to be lacking character even though -

- having **multiple sexual partners** is **not wrong**
- **STDs can spread through**
 - **Blood transfusion**
 - **Infected needles**
 - **Mother to baby during delivery**

Myths regarding STDs

- There is also a misconception that STDs spread only through sex with multiple partners.

Consequences of social stigmas associated with STDs

People **avoid getting tested** to avoid social isolation, leading to increase in severity of disease.

Affected individuals are isolated leading to **depression** and **aggravation of disease** in them.

Complications of STDs

Pelvic inflammatory disease



- ❖ **Inflammation** of the pelvic region is caused by many STDs.
- ❖ **Lower abdomen area** means the **pelvic region** of the body.

Abortion



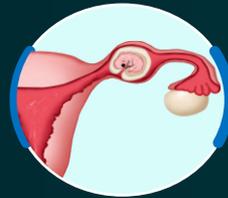
- ❖ Chances of **abortion** (failure of natural pregnancy leading to death of baby) are **three times higher** in **HIV positive women** than the normal women.



Stillbirths

- ❖ Some STDs like **syphilis** cause **stillbirths**.
- ❖ Stillbirth is the **death of baby** after **20-28 weeks** of normal delivery.

Ectopic pregnancies



- ❖ Some STDs cause the embryo to **develop outside** the uterus.
- ❖ **Fertilised egg** cannot survive outside the **uterus**.
- ❖ This causes **pelvic pain, inflammation**, etc.

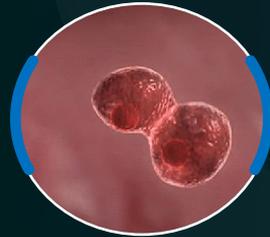
Complications of STDs

Infertility



- ❖ STDs like gonorrhoea can cause **men** and **women** to lose their ability to
 - Produce healthy gametes
 - Get pregnant

Cancer

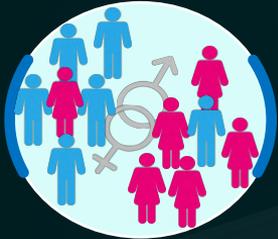


- ❖ Some STDs like HPV cause excessive growth of cells resulting in
 - Penile cancer in men
 - Cervical cancer in women

Prevention of STDs

B

Avoid unprotected sex



- ❖ Unprotected sex with unknown partners is dangerous and should be avoided to reduce risk

Consult with a doctor



- ❖ Early detection helps doctors to completely cure the patient
- ❖ Delay in detection of STDs can be life-threatening

Use Condoms during sex



- ❖ Provides physical barrier between male and female during sex
- ❖ Condoms prevent most of the STDs from being transmitted

Use fresh injection/blade every time



- ❖ Always use fresh needle while taking injection
- ❖ Make sure barber uses a fresh blade
- ❖ Dispose off the blade/injection after use



Summary



Sexually transmitted disease	Causative agent
Gonorrhoea	<i>Neisseria gonorrhoeae</i>
Syphilis	<i>Treponema pallidum</i>
Genital herpes	Human simplex virus type -2 (HSV-II)
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

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

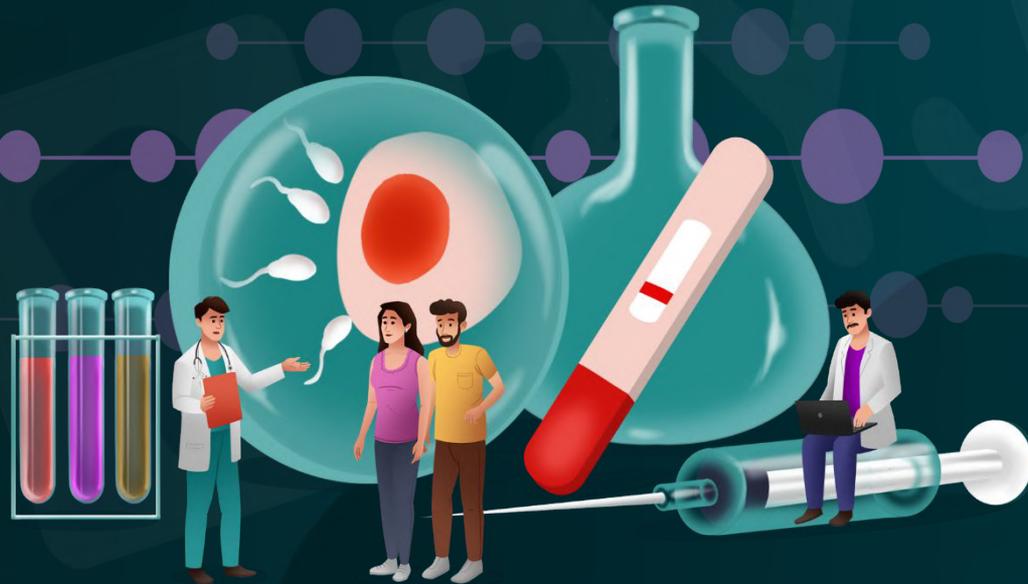
Prevention of STDs

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

BYJU'S Classes Notes

Reproductive Health

Infertility, Assisted Reproductive Technologies, Unconventional Parenthood





Key Takeaways

- Infertility

- Reasons for infertility

- Unconventional parenthood

- Adoption

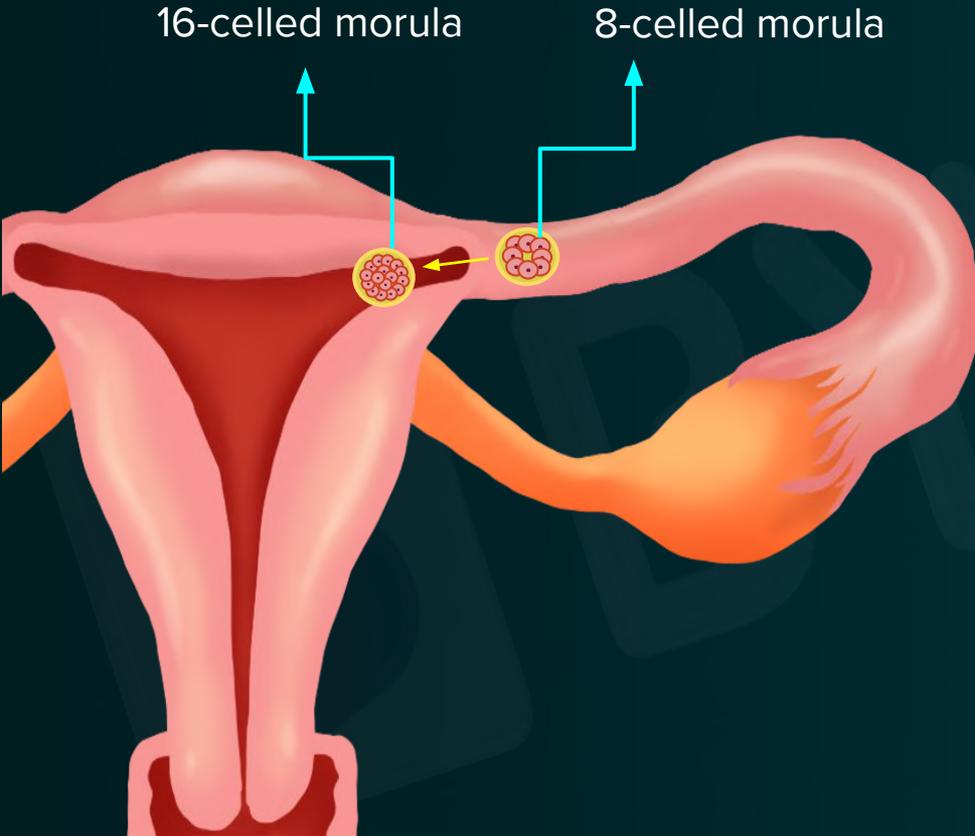
- Assisted reproductive technologies (ART)

- *In vitro* fertilization
- *In vivo* fertilization
- Drawbacks of ART



Recall! Implantation

B

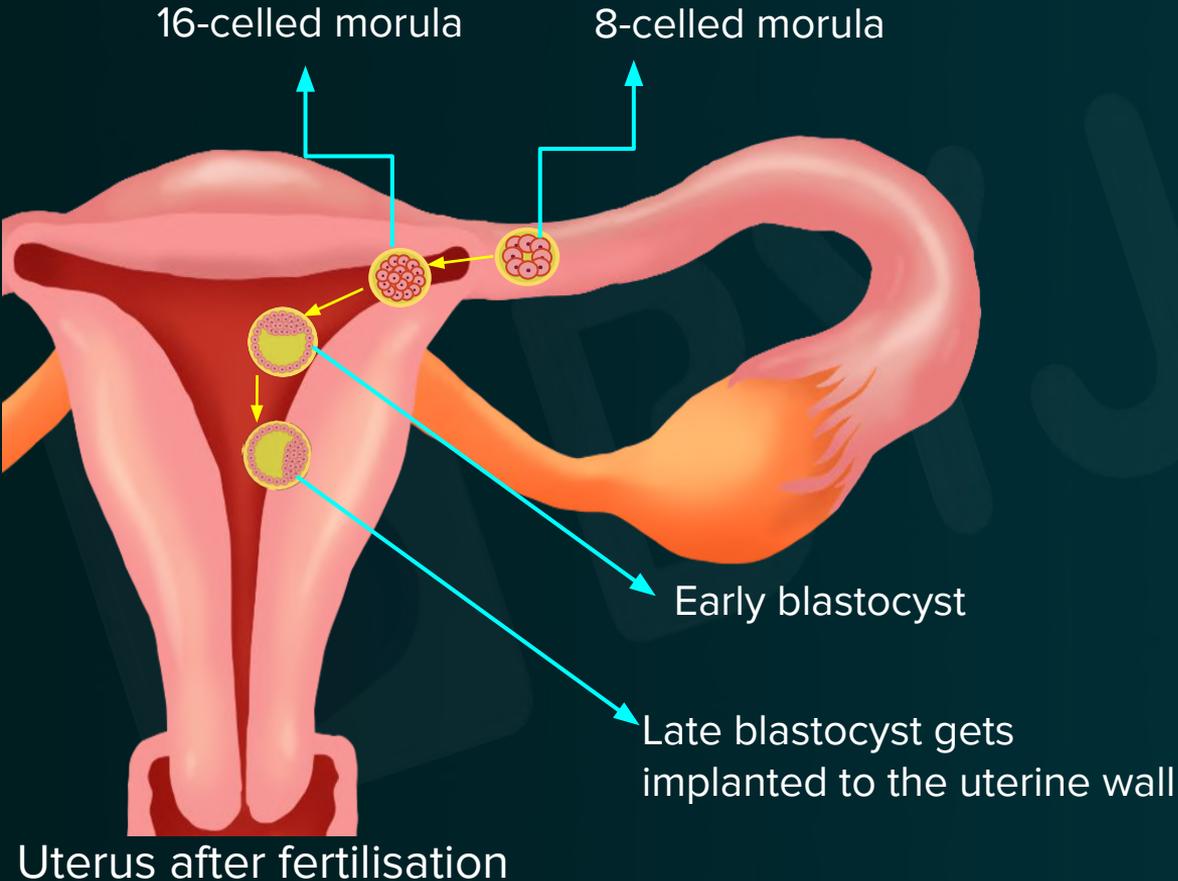


- On the **4th day** after fertilisation, **8 blastomeres** (daughter cells) are formed.
- On the **5th day** after fertilisation, **16 blastomeres** are formed.
- The embryo at 8 to 16 blastomere stage is known as **morula**.

Uterus after fertilisation



Recall! Implantation



- Morula continues to divide and transforms into a **blastocyst**.
- **8-9 days** after fertilisation, the embryo gets **implanted** to the uterine wall at the late blastocyst stage.

Infertility

- It is the **inability to conceive** or produce children even after **2 years** of unprotected sexual cohabitation.
- Infertility can be due to problems in both **males and females**.
- It is wrong to blame only the women for infertility.

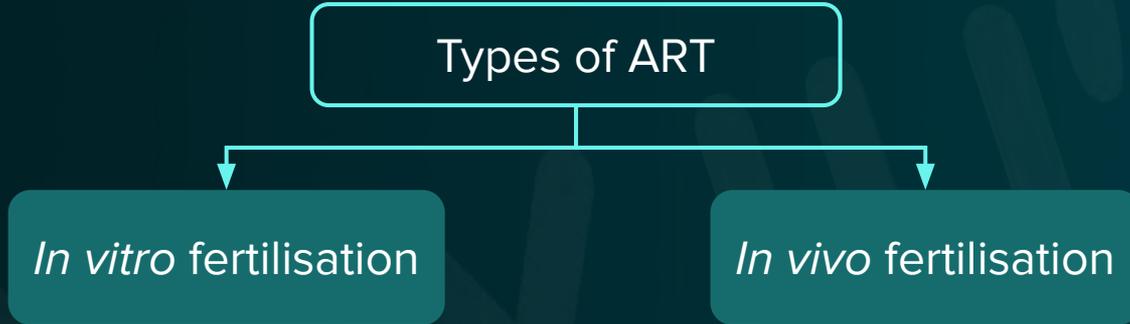


Assisted Reproductive Technologies

They are a set of medical procedures aimed at treating infertility.

- **Specialised health care units** (infertility clinics, etc.) help in diagnosis and corrective treatment of some of these disorders and **enable infertile couples to have children**.
- However, where such corrections are not possible, the couples can be assisted to have children through certain special techniques commonly known as **Assisted Reproductive Technologies (ART)**.

Assisted Reproductive Technologies



- It is also known as **test tube baby programme**.
- Fertilisation is performed **outside** the body of the female in almost similar conditions.
- Fertilisation is performed **within** the body of the female using artificial techniques.

Steps of *In Vitro* Fertilisation (IVF)



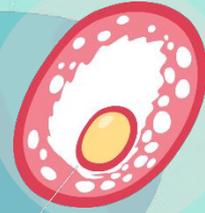
Consultation



Baseline blood test
and ultrasound



Superovulation



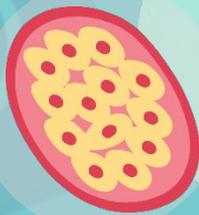
Oocyte
maturation



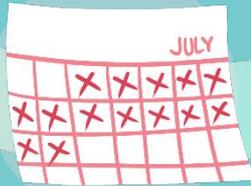
Fertilisation



Gamete
retrieval



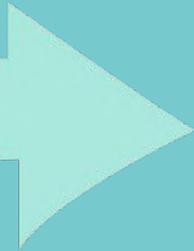
Embryo
transfer



Two-week monitoring



Pregnancy
test

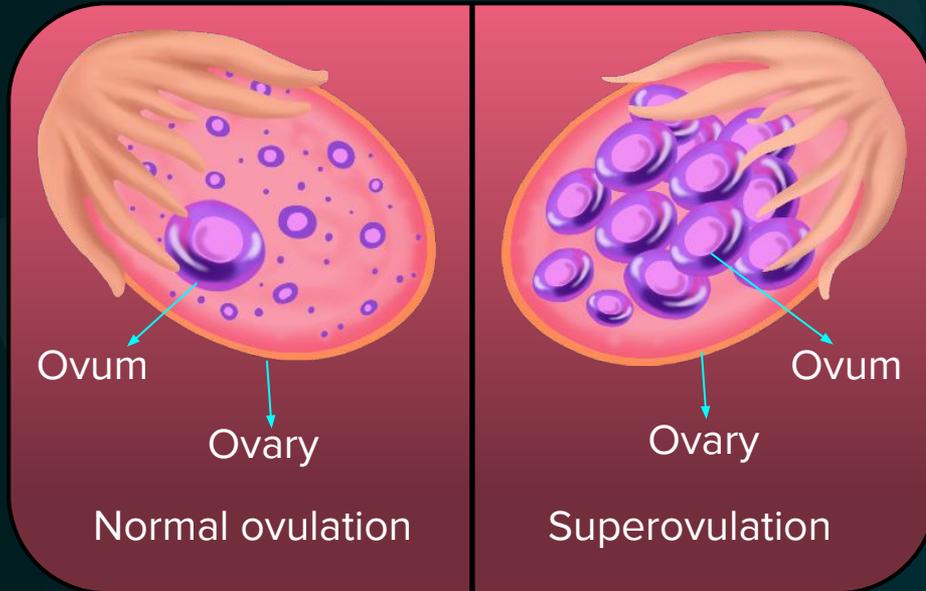


Test Tube Baby Programme

B



1) Superovulation



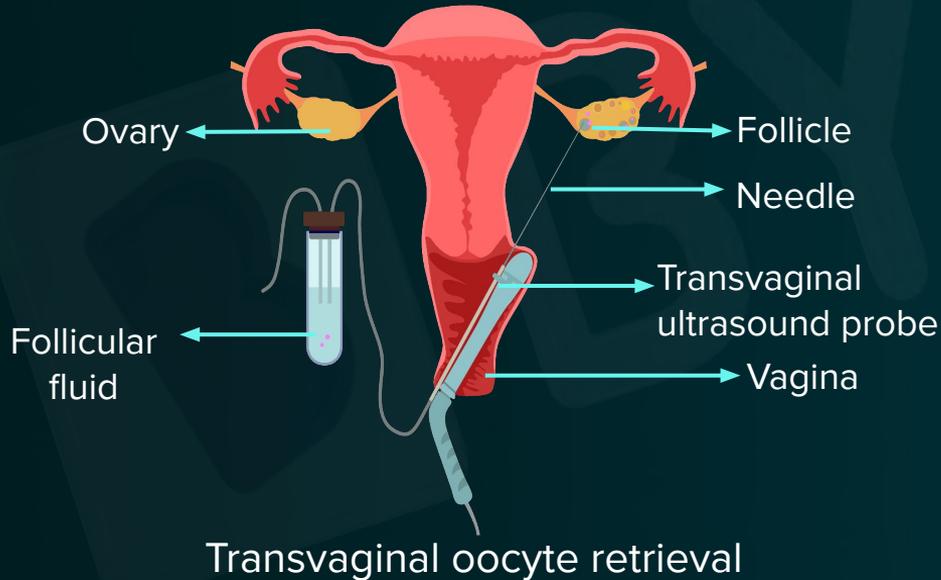
- It involves hormone-treatment that stimulates the ovary to produce **several mature ova** instead of just one.
- To induce superovulation, **LH** and **FSH** are injected into the female.
- **LH surge** induces maturation of ova.

Test Tube Baby Programme

B

2) Gamete retrieval

Extraction of ova



- Once the hormone treatment helps produce several mature ova, the physician extracts the ova through a noninvasive procedure called **transvaginal oocyte retrieval**.
- A thin **needle guided by sonogram** is inserted through the vaginal wall into the ovaries to extract several mature ova.

Test Tube Baby Programme

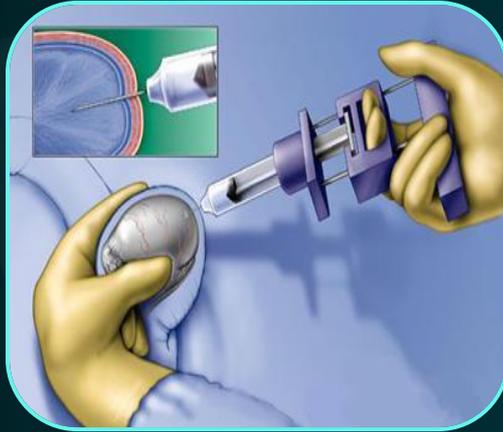
B

2) Gamete retrieval

Extraction of sperm



Collection
condom



Surgical
method



- The physician obtains sperms from the male in the form of semen either by:
 - **Ejaculation collection condom:** In this, the sperm is collected via intercourse to ensure sperm viability and motility are maintained.
 - **Surgical method:** It is used if there is an obstruction preventing the normal ejaculation of sperms.

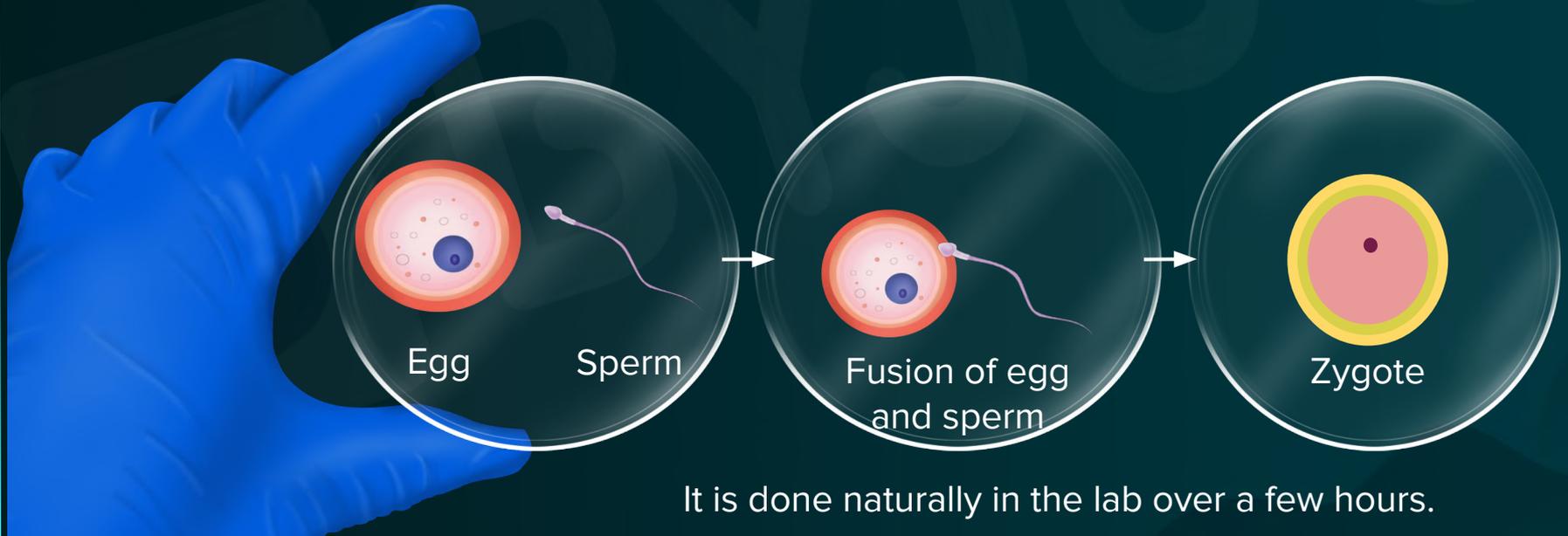
Test Tube Baby Programme

B

3) Fertilisation

Natural fertilisation *in vitro*

- It is facilitated in an artificial environment.
- In this process, sperm and egg are allowed to fuse in **test-tube/petri-dish**.



It is done naturally in the lab over a few hours.

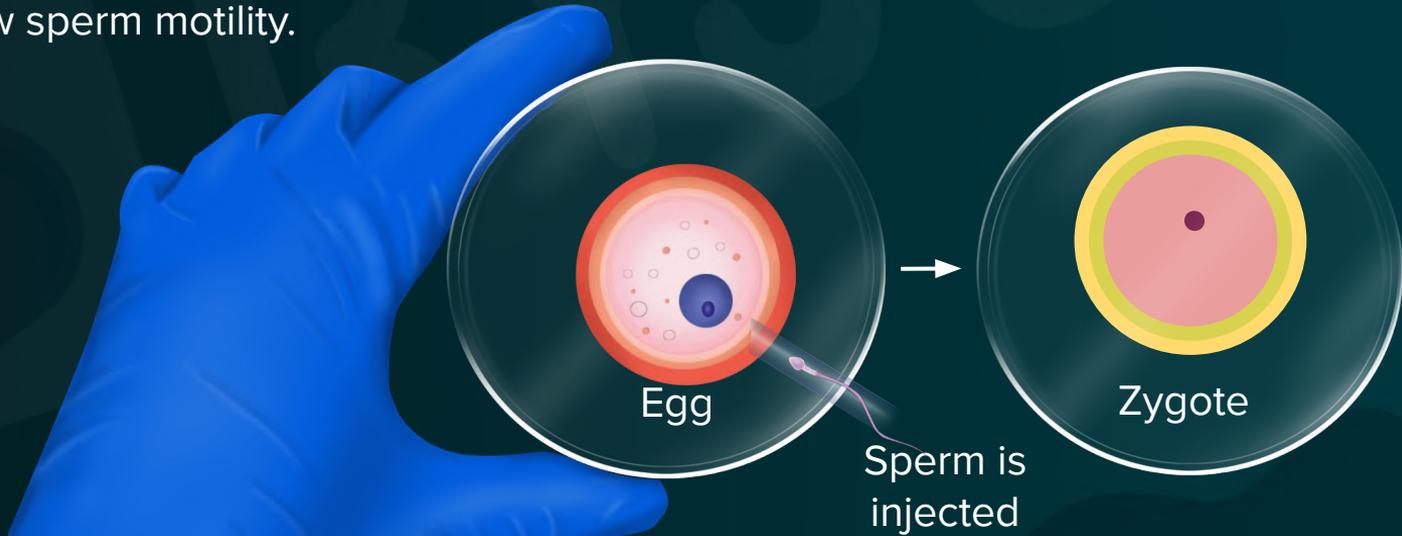
Test Tube Baby Programme

B

3) Fertilisation

Intracytoplasmic sperm injection (artificial method)

- In this procedure, a sperm is **directly injected into the ovum**.
- It is performed in case of:
 - low sperm count
 - high concentration of deformed sperm
 - low sperm motility.

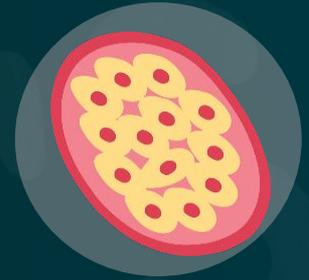
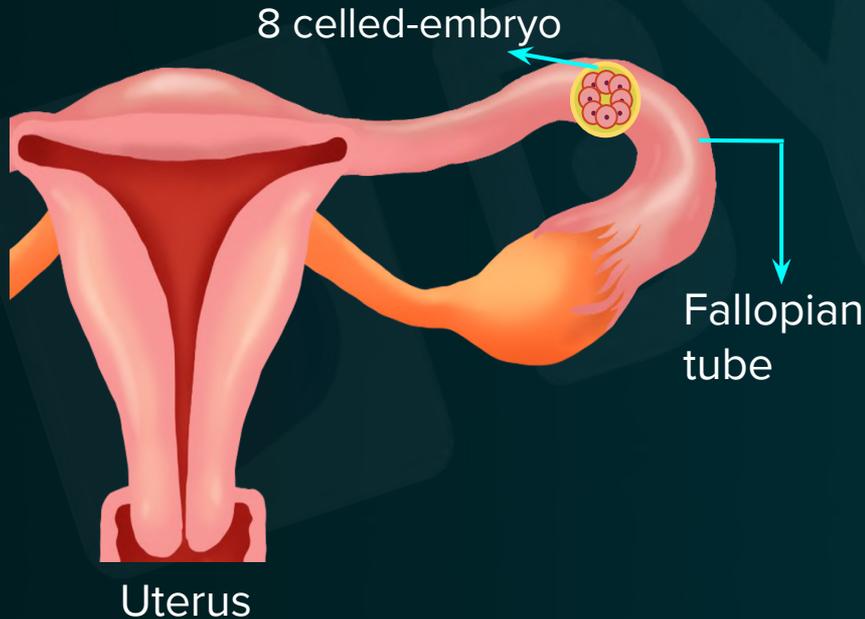


Test Tube Baby Programme

B

4) Embryo transfer

Zygote Intrafallopian Transfer (ZIFT)

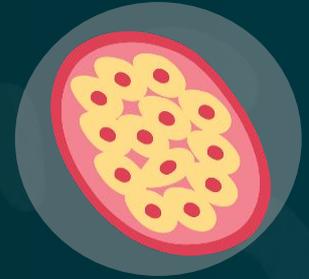


- The **zygote** is introduced in the female body for further development.
- It is an **invasive** procedure.
- Zygote with **8 blastomeres** is transferred to the **fallopian tubes**.
- The zygote travels down the fallopian tube and gets implanted in the uterine wall.
- In a healthy young woman, there is approximately a **32–36% chance of success**.

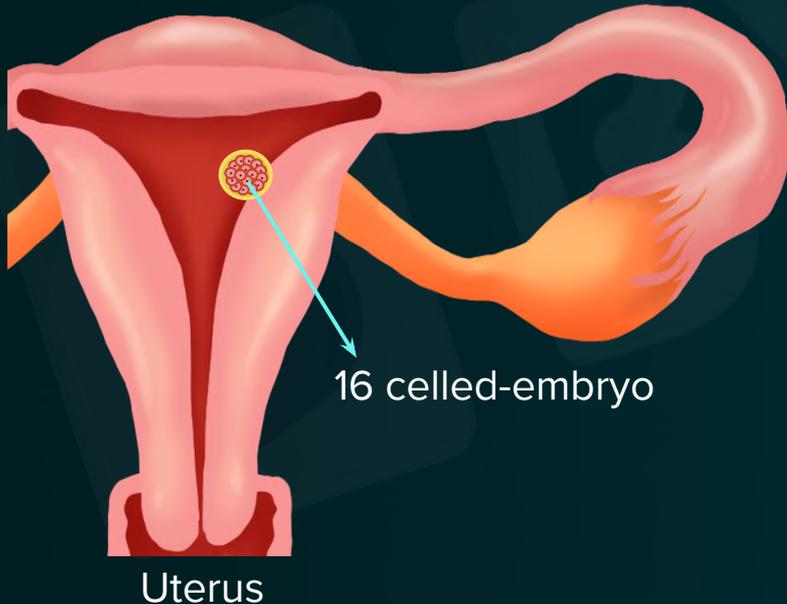
Test Tube Baby Programme

B

4) Embryo transfer



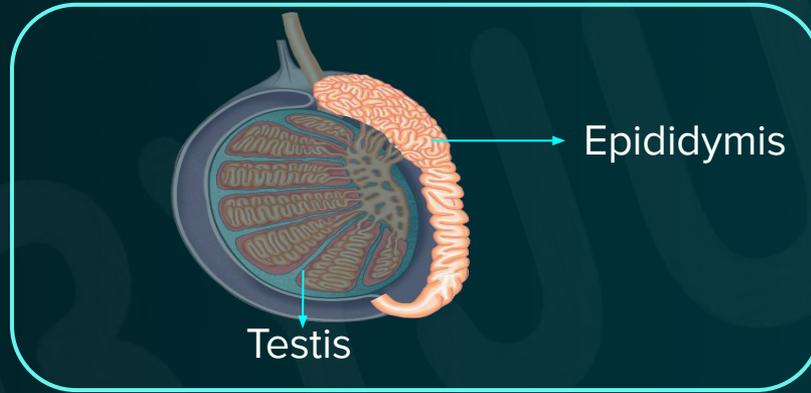
Intra Uterine transfer (IUT)



- Embryo transfer can also be done in the 16 blastomere-stage.
- In this case, the **embryo is transferred directly to the uterus** where it gets implanted in the uterine wall.
- In a healthy young woman, there is approximately a **32–46% chance of success**.
- This procedure is helpful in cases where **blockage in the fallopian tubes** prevents the normal fusion of sperm to the egg.



Which part of the male reproductive tract is the sperm retrieved from?



- The sperm is usually taken from the **epididymis** rather than the testes.
- Sperm retrieval is typically performed **on the day of egg retrieval** as IVF laboratories prefer to work with fresh sperms rather than frozen ones.



Did you know?

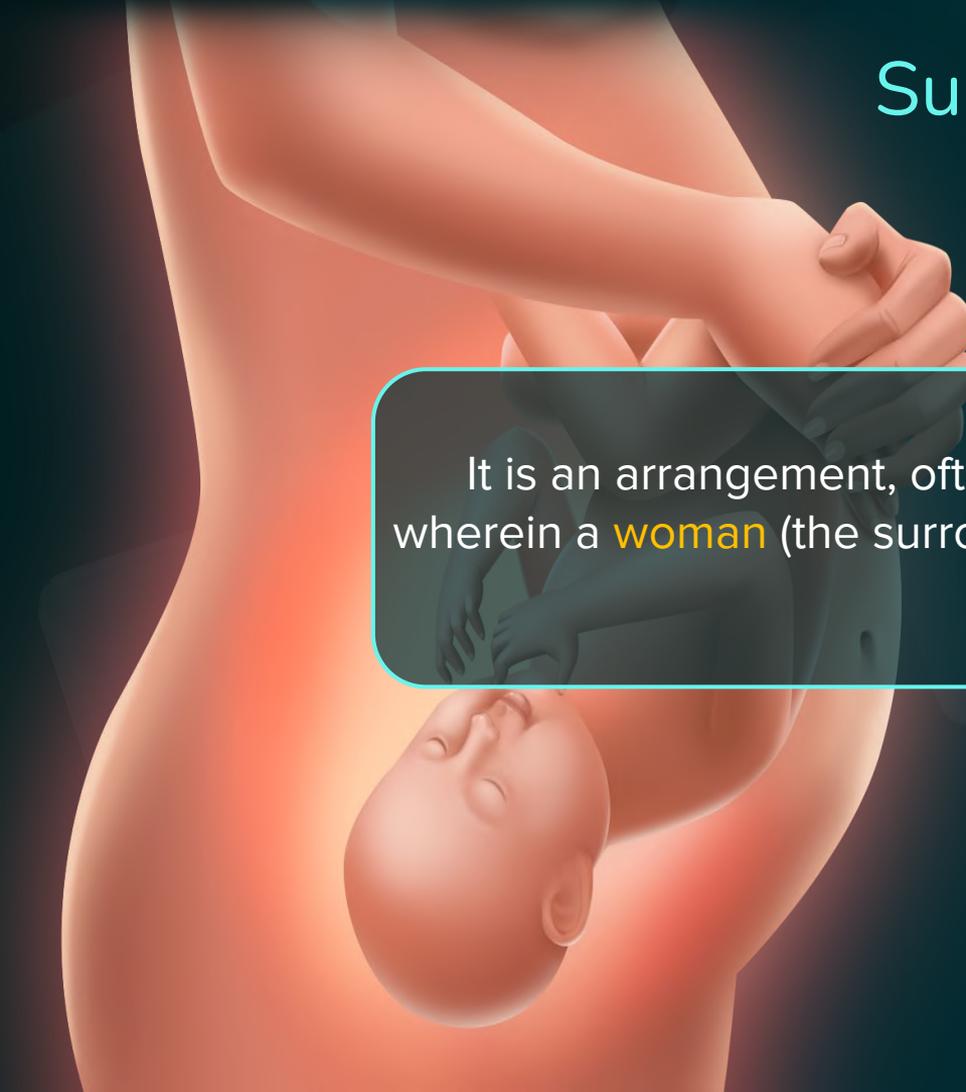
B



- To increase chances of conception, doctors usually transfer **multiple embryos** at once.
- Hence these techniques often result in **twins or triplets** more often than natural pregnancies.

Surrogacy

B

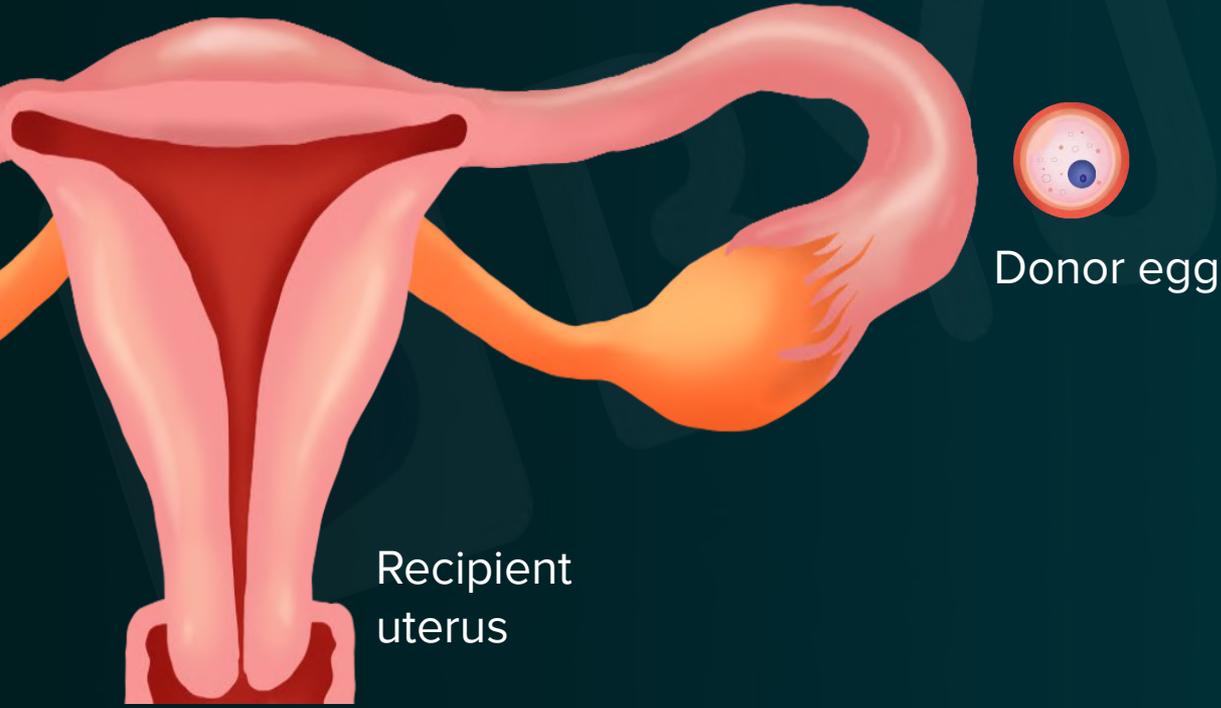
An illustration of a pregnant woman from the waist down, shown in profile. She is holding her belly with both hands. The background is a gradient of orange and red, suggesting a warm, nurturing environment. The woman's skin is a light, natural tone.

It is an arrangement, often supported by a **legal agreement**, wherein a **woman** (the surrogate mother) agrees to **bear a child for a couple**.

In Vivo Fertilisation



Fertilisation performed **within** the body of the female using a donor egg with the help of **artificial** techniques



Donor Sources

- A friend or family member
- Another infertile couple willing to share their retrieved eggs
- Egg bank (in this case, frozen eggs)
- Egg donor agency
- Fertility clinic offering IVF treatment

In Vivo Fertilisation

There are 3 possible procedures for *in vivo* fertilisation.

Gamete intrafallopian transfer (GIFT)

Performed if:

- the female is **unable to produce an egg**
- the female reproductive tract has an ideal environment for the sperms

Artificial insemination (AI)

Performed in cases of:

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

Intra uterine insemination (IUI)

Performed if:

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



Did you know?

B



Cryopreservation

Cryopreservation is the process in which gametes are stored at -196°C in liquid nitrogen.

Drawbacks of ART

B

Maybe invasive

Very expensive

Requires extremely high
precision handling

Very few centers

Can be done only by
specialized professionals

Emotional, religious and
social factors

Unconventional Parenthood

B

Adoption

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





Summary

Types of Assisted reproductive technologies

