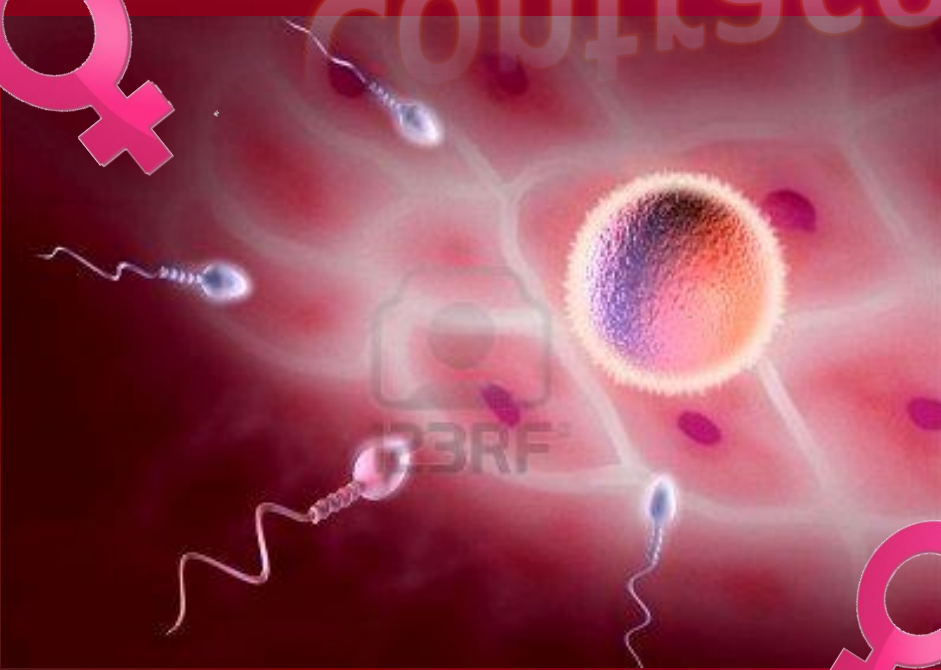


Oral

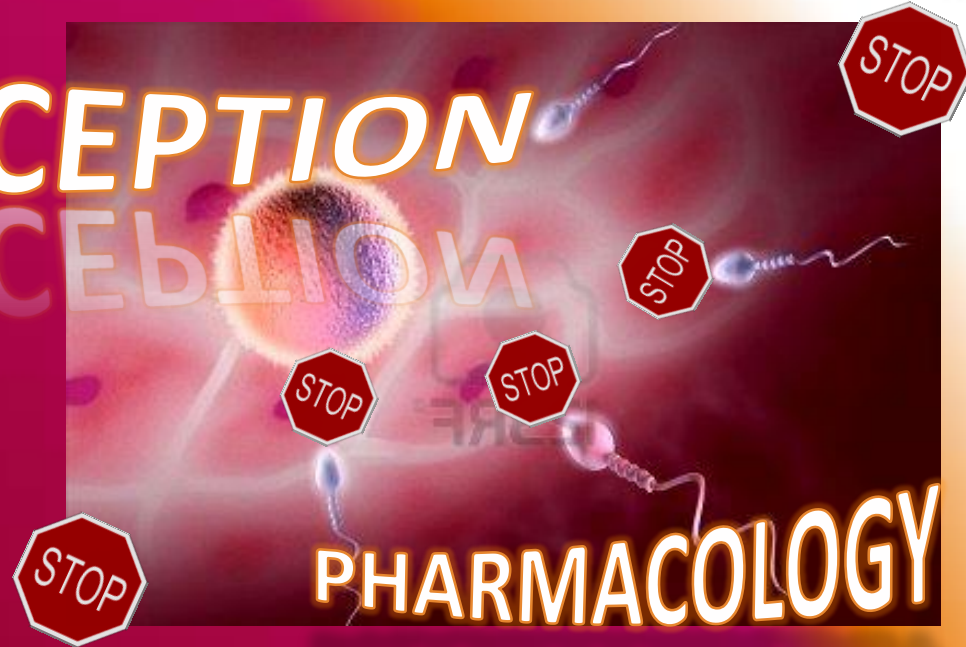
Contraceptive pills

contraceptive pills



CONTRACEPTION

CONTRACEPTION

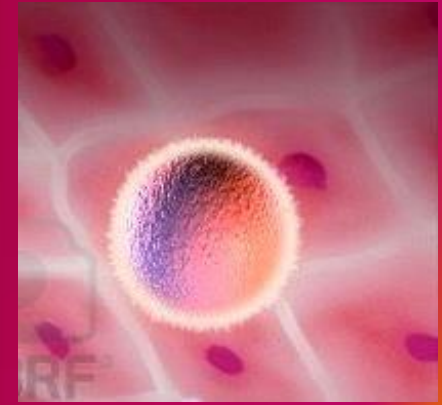
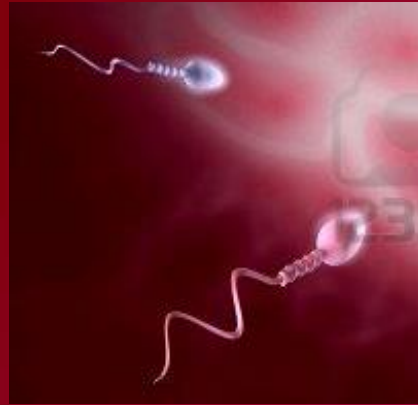


ILOS

By the end of this lecture you will be able to:

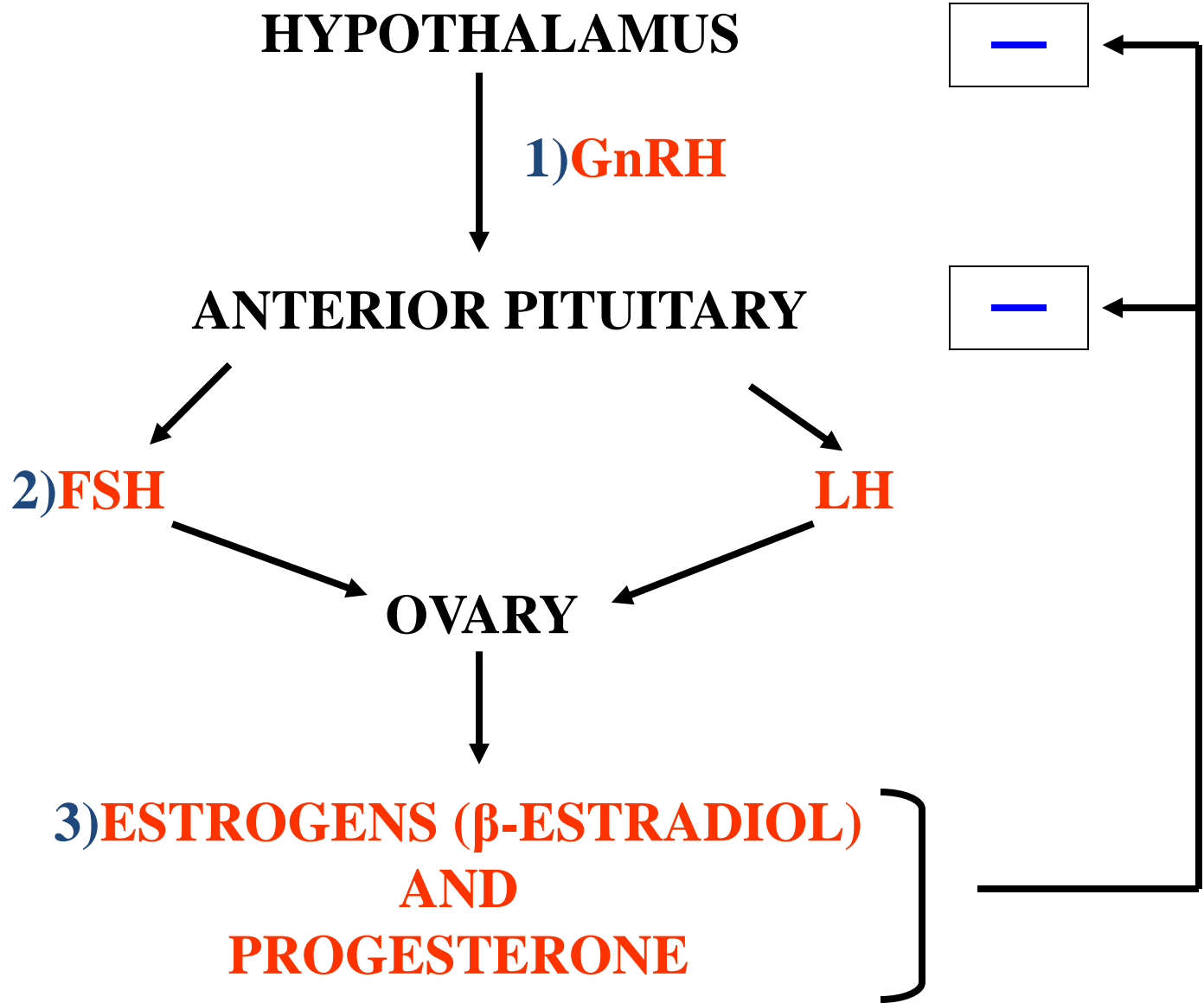
- ⊗ Perceive the different contraceptive utilities available
- ⊗ Classify them according to their site and mechanism of action
- ⊗ Justify the existing hormonal contraceptives present
- ⊗ Compare between the types of oral contraceptives pills with respect to mechanism of action, formulations, indications, adverse effects, contraindications and possible interactions
- ⊗ Hint on characteristics & efficacies of other hormonal modalities

IN CONCEPTION → there is fusion of the sperm & ovum to produce a new organism.

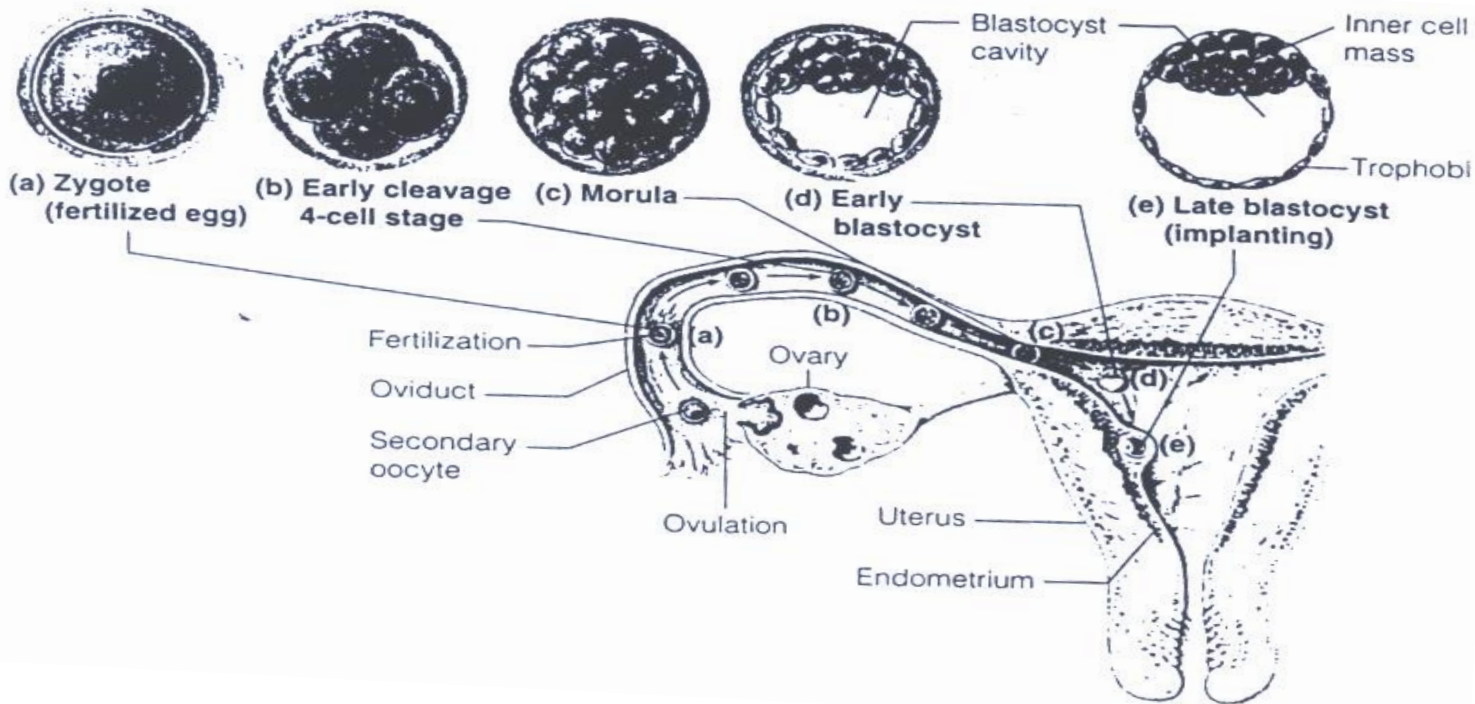
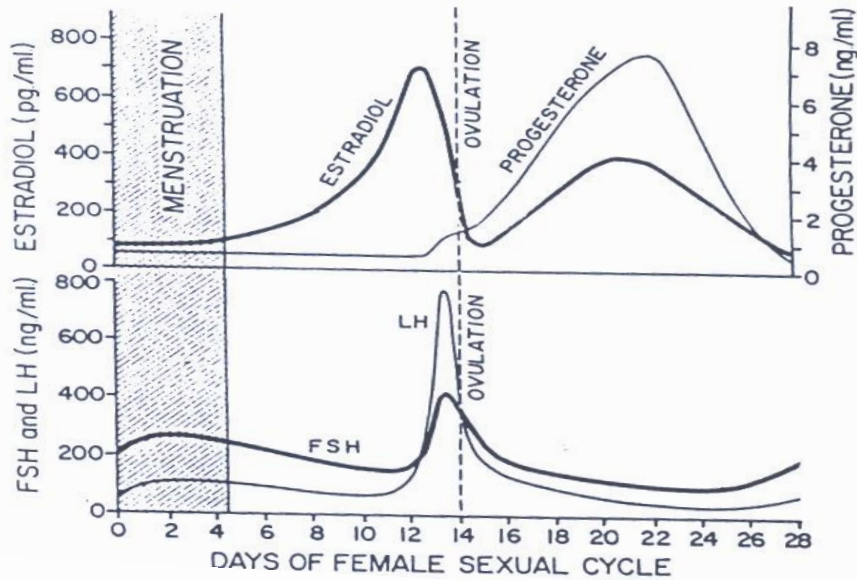


IN CONTRACEPTION → we are preventing this fusion to occur
This achieved by interfering with





Plasma concentrations of the gonadotropins & ovarian hormones during the normal female sexual cycle





Types

ORAL CONTRACEPTIVE Pills

According to composition & intent of use; OC are divided into three types

COMBINED Pills(COC)

Contain estrogen & progestin(100% effective)

MINI Pills(POP)

Contain only a progestin(97%effective)

MORNING-AFTER Pills

Contain both hormones or Each one alone (high dose) or Mifepristone + Misoprostol

ESTROGENS

Ethinyl estradiol or mestranol [*a "prodrug" converted to ethinyl estradiol*]

Currently concentration used now is very low to minimize estrogen hazards

PROGESTINS

- ☒ Norethindrone
- ☒ Levonorgestrel (*Norgestrel*)
- ☒ Medroxyprogesterone acetate

Has systemic androgenic effect; acne, hirsutism, weight gain.

- Currently
- ☒ Norgestimate
 - ☒ Desogestrel
 - ☒ Drospirenone

Has no systemic androgenic effect



MECHANISM OF ACTION OF COC

INHIBIT OVULATION by **SUPPRESSING THE RELEASE OF GONADOTROPHINS (FSH & LH)** → no action on the ovary → ovulation is prevented.

🚧 **Inhibit IMPLANTATION** by causing abnormal contraction of the fallopian tubes & uterine musculature → ovum will be expelled rather than implanted.

🚧 **Increase viscosity of the cervical mucus** making it so viscous → no sperm pass

🚧 **Abnormal transport time through the fallopian tubes .**



Are known as Continuous / Extended cycle → **Cover 91 days schedule**

Taken **continuously for 84 days, break for 7 days**

Has very low doses of both estrogens and progestins

✚ **Benefit:** It lessens menstrual periods to 4 times a year (1 period every 3 months) → useful in those who have pain from endometriosis and can prevent migrains during period.

✚ **Disadvantages:** Higher incidence of breakthrough bleeding during early use.



COMBINED Pills [COC] *Continued*

Monthly Pills

- Currently, their formulation is improved to mimic the natural on going changes in hormonal profile.

Accordingly we have now the phase formulations

- 1. Monophasic** → (a fixed amount of estrogen & progestin)
- 2. Biphasic (2 doses)** → (a fixed amount of estrogen, while amount of progestin increases stepwise in the second half of the cycle)
- 3. Triphasic (3 doses)** → (amount of estrogen; fixed or variable & amount of progestin increases stepwise in 3 phases).

COMBINED Pills [COC] *Continued*

	Estrogen (mg)		Progestin (mg)	
Monophasic combination tablets				
Loestrin 21 1/20	Ethinyl estradiol	0.02	Norethindrone acetate	1.0
Desogen, Apri, Ortho-Cept	Ethinyl estradiol	0.03	Desogestrel	0.15
Brevicon, Modicon, Necon 0.5/35	Ethinyl estradiol	0.035	Norethindrone	0.5
Demulen 1/35	Ethinyl estradiol	0.035	Ethynodiol diacetate	1.0
Nelova 1/35 E, Ortho-Novum 1/35	Ethinyl estradiol	0.035	Norethindrone	1.0
Ovcon 35	Ethinyl estradiol	0.035	Norethindrone	0.4
Demulen 1/50	Ethinyl estradiol	0.05	Ethynodiol diacetate	1.0
Ovcon 50	Ethinyl estradiol	0.05	Norethindrone	1.0
Ovral-28	Ethinyl estradiol	0.05	D,L-Norgestrel	0.5
Norinyl 1/50, Ortho-Novum 1/50	Mestranol	0.05	Norethindrone	1.0
Biphasic combination tablets				
Jenest-28, Ortho-Novum 10/11, Necon 10/11, Nelova 10/11				
Days 1—10	Ethinyl estradiol	0.035	Norethindrone	0.5
Days 11—21	Ethinyl estradiol	0.035	Norethindrone	1.0

COMBINED Pills [COC] *Continued*

	Estrogen (mg)		Progestin (mg)	
Triphasic combination tablets				
Triphasil, Tri-Levlen, Trivora				
Days 1—6	Ethinyl estradiol	0.03	L-Norgestrel	0.05
Days 7—11	Ethinyl estradiol	0.04	L-Norgestrel	0.075
Days 12—21	Ethinyl estradiol	0.03	L-Norgestrel	0.125
Ortho-Novum 7/7/7, Necon 7/7/7				
Days 1—7	Ethinyl estradiol	0.035	Norethindrone	0.5
Days 8—14	Ethinyl estradiol	0.035	Norethindrone	0.75
Days 15—21	Ethinyl estradiol	0.035	Norethindrone	1.0
Ortho-TrI-Cyclen				
Days 1—7	Ethinyl estradiol	0.035	Norgestimate	0.18
Days 8—14	Ethinyl estradiol	0.035	Norgestimate	0.215
Days 15—21	Ethinyl estradiol	0.035	Norgestimate	0.25

**ADRs****A. Estrogen Related**

1. Nausea and breast tenderness
2. Headache
3. ↑ Skin Pigmentation
4. Impair glucose tolerance (hyperglycemia)
5. ↑ incidence of breast, vaginal & cervical cancer??
6. Cardiovascular - major concern
 - a. Thromboembolism
 - b. Hypertension
7. ↑ frequency of gall bladder disease

B. Progestin Related

1. Nausea, vomiting & headache
2. Slightly higher failure rate
3. Fatigue, depression of mood
4. Menstrual irregularities
5. Weight gain
6. Hirsutism
7. Masculinization (Norethindrone)
8. Ectopic pregnancy.



Contraindications of estrogen containing pills

- Thrombophlebitis / thromboembolic disorders
- CHF or other causes of edema
- Vaginal bleeding of undiagnosed etiology
- Known or suspected pregnancy
- Known or suspected breast cancer, or estrogen-dependent neoplasms
- Impaired hepatic functions
- Dyslipidemia, diabetes, hypertension, migraine.....
- Lactating mothers – use progestin - only pills(mini pills)

**N.B. Obese Females, smokers,
Females > 35 years**

better given progestin only pills



Interactions

Medications that cause contraceptive failure

Medications that ↑ COC toxicity

Medications that is altered in clearance by COC

Impairing absorption

CYT P450 Inducers

CYT P450 Inhibitors

Medications that cause contraceptive failure

- Antibiotics that interfere with normal GI flora → ↓ absorption → ↓ its bioavailability, e.g.: Ampicillin
- Microsomal Enzyme Inducers → ↑ catabolism of OC e.g.: Phenytoin , Phenobarbitone, Rifampin

Medications that ↑ COC toxicity

Microsomal Enzyme Inhibitors; ↓ metabolism of OC → ↑ toxicity e.g.: Acetaminophen, Erythromycin.

Medications altered in clearance (↓) by COC: → ↑ in their toxicity

WARFARIN, Cyclosporine, Theophylline



Types

ORAL CONTRACEPTIVE Pills

COMBINED Pills

MINI Pills

MORNING-AFTER Pills

Progestin-Only Pills (POP)

Contains only a progestin → as norethindrone or desogestrel....

Mechanism of action

➤ *The main effect is*

→ increase cervical mucus, so no sperm penetration & therefore, no fertilization.



Indications

🚩 Are alternative when oestrogen is contraindicated (e.g.: during breast feeding, hypertension, cancer, smokers over the age of 35).

Contraceptives containing only a progestin

Should be taken **every day**, the **same time**, **all year** round

I.M injection e.g. medroxy progesterone acetate 150 mg every 3 months..



MORNING-AFTER Pills *Continued*

Indications

When desirability for avoiding pregnancy is obvious :

Unsuccessful withdrawal before ejaculation

Torn, leaking condom

Missed pills

Exposure to teratogen e.g. Live vaccine

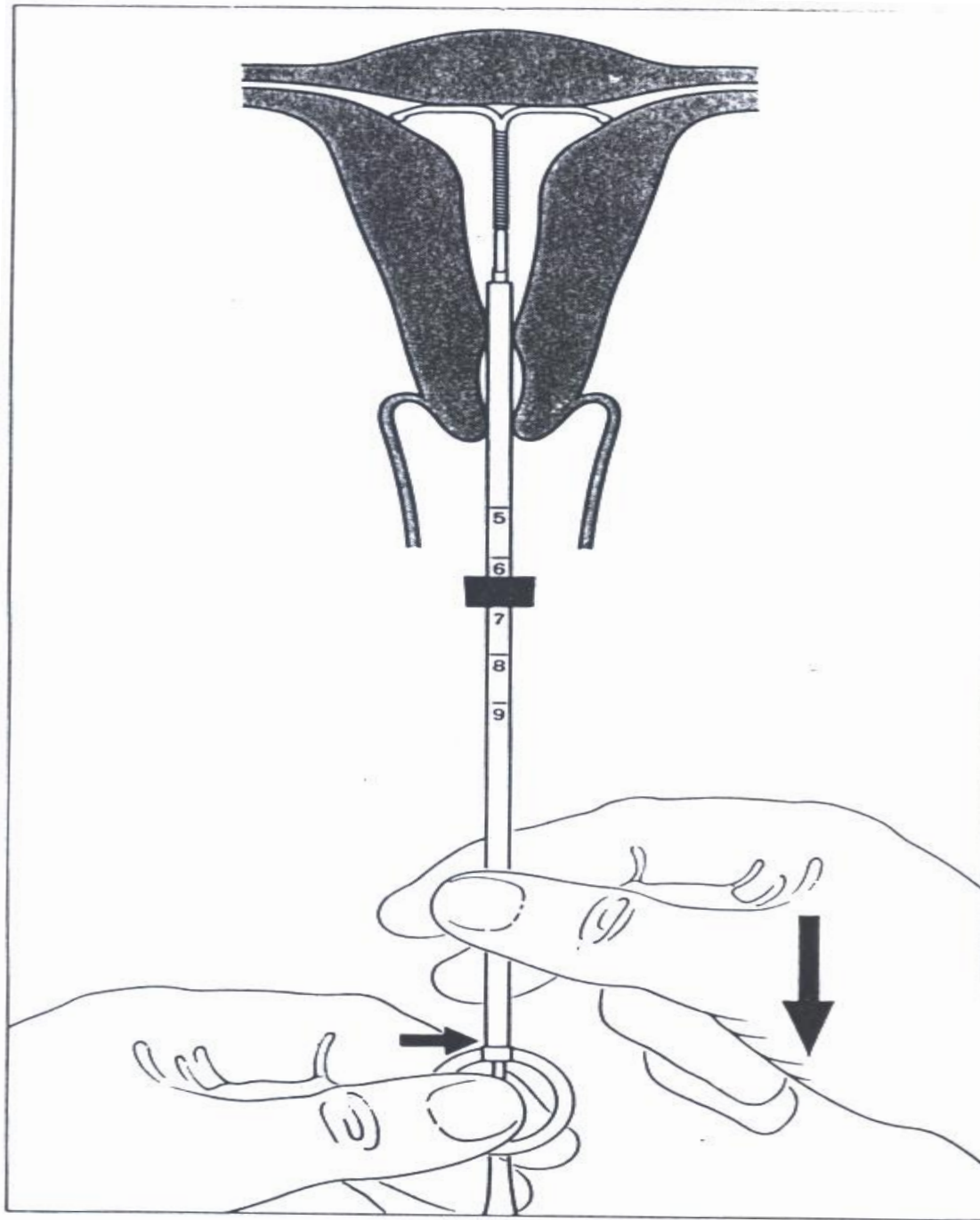
Rape

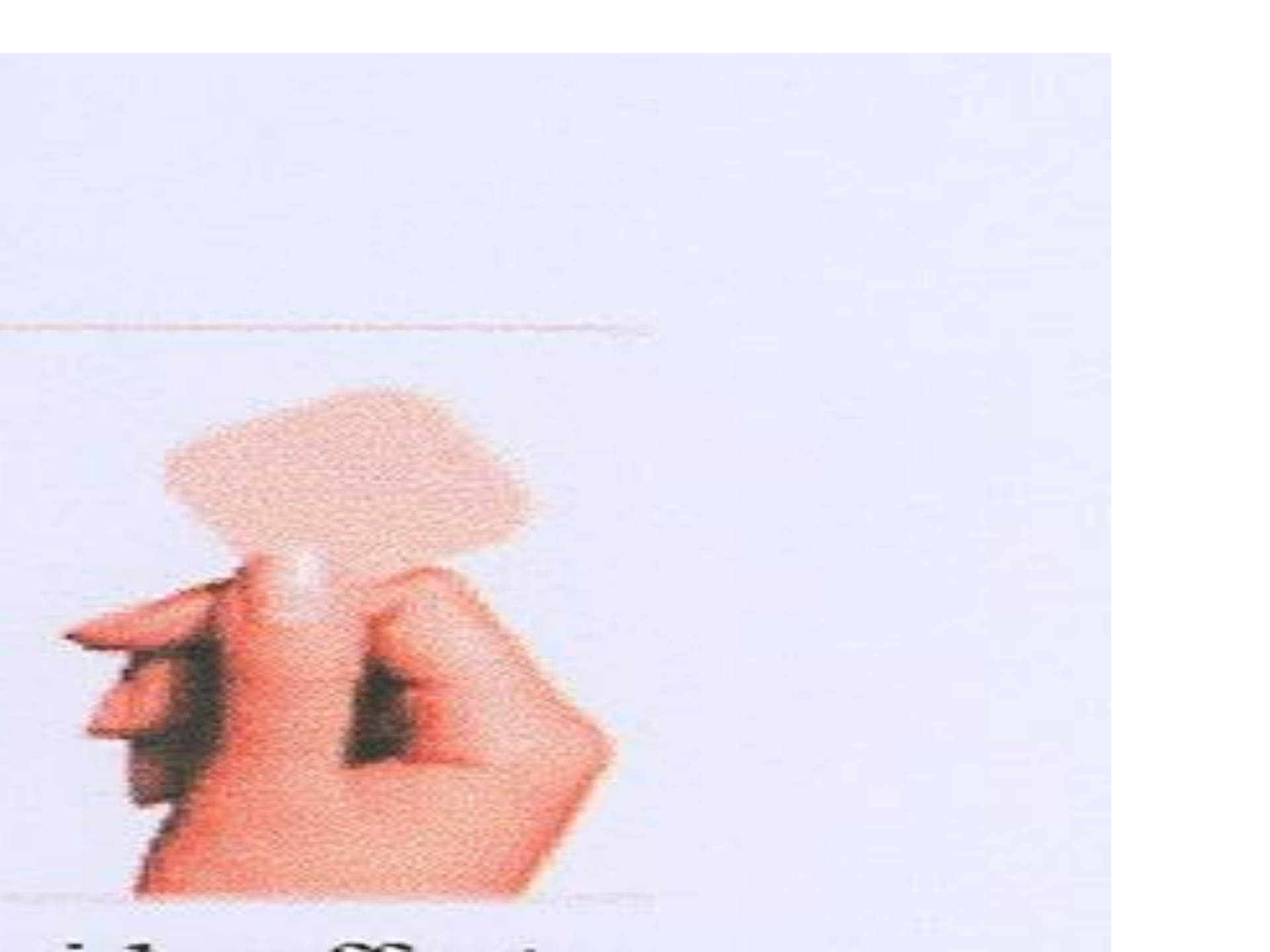
MORNING-AFTER Pills

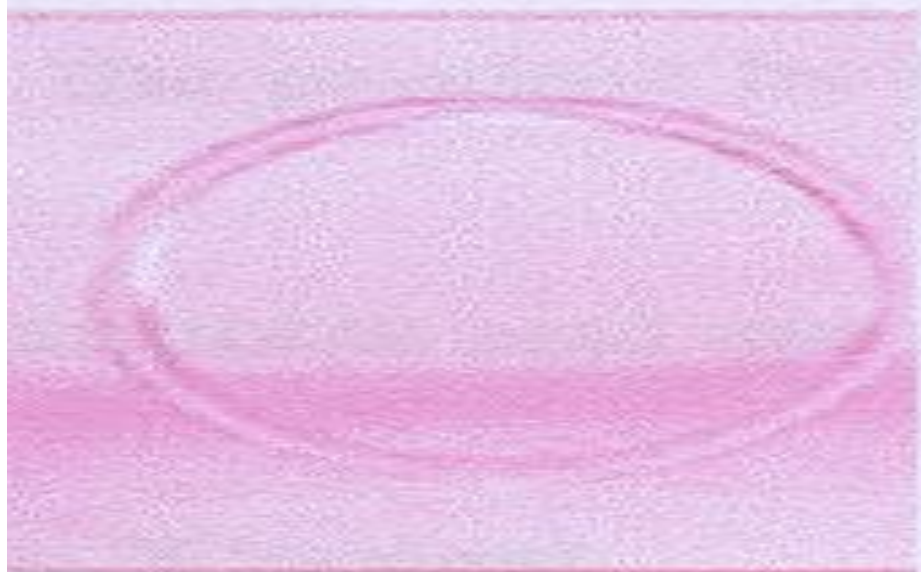
Post Coital
Contraception

Emergency
Contraception

Composition	Method of Administration	Timing of 1st dose After Intercourse	Reported Efficacy
Ethinyl estadiol + Levonorgestrel	2 tablets twice with 12 hrs in between	0- 72hrs	75%
High-dose only Ethinyl estadiol	Twice daily for 5 days	0- 72hrs	75 - 85%
High dose only levonorgestrel	Twice daily for 5 days	0- 72hrs	70 – 75%
Mifepristone ± Misoprostol	A single dose	0- 120 hrs	85 - 100%







CONTRACEPTION

CONTRACEPTION

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