



# **HORMONAL CONTRACEPTION**

## **LARC**

**injectables and subdermal  
implants**

**By**

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## ➤ Introduction:

- Family planning refers to the planning of when to have children, and the use of birth control.
- It allows individuals and couples to anticipate and have their desired number of children, and to achieve healthy spacing and timing of their births

➤ **Purpose:**

- Family planning reinforces people's rights to determine the number and spacing of their children.
- Minimizes maternal and fetal deaths.
- Raising a child with significant amount of time, social, financial, environment.

➤ **Mechanism of action:**

- The Concept of Contraception based on preventing sperm to fertilize ovum or to prevent implantation of fertilized ovum

➤ **Criteria for an ideal contraceptive**

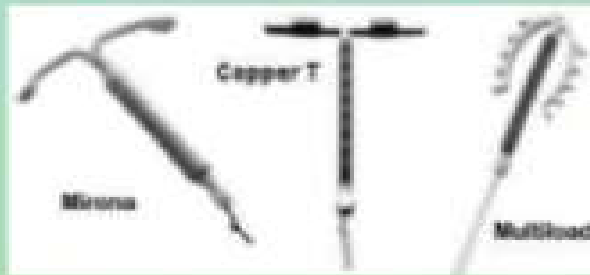
1. **Safe**: it means that the contraceptives is free from any kind of side effects or complications.
2. **Reliable**: it means that the contraceptives is cent percent effective.
3. **Easy to administer** and convenient.
4. **Cost effective**.
5. **Culturally feasible** and acceptable.
6. **Reversible** contraceptive protection.
7. Highly **effective**.

## Long Acting Reversible Contraceptive

Sub-dermal Implant



Intra-uterine system



Injectable contraception



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# INJECTABLE CONTRACEPTIVES



- Two types of injectable contraceptives :

(1) Progestogen-only formulations that contain a progestogen hormone and are effective for 2 or 3 months; and,

(2) Combined formulations that contain both a progestogen and an estrogen and are effective for 1 month

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# **Progestogen - only injectables (POICs ):**

TYPES.

EFFICACY.

MECHANISM OF ACTION.

RETURN OF FERTILITY.

NON-CONTRACEPTIVE HEALTH BENEFITS.

ELIGIBILITY CRITERIA.

SIDE-EFFECTS AND COMPLICATIONS.

ADVANTAGES OF PROGESTOGEN-ONLY INJECTABLES.

DISADVANTAGES OF PROGESTOGEN-ONLY INJECTABLES.

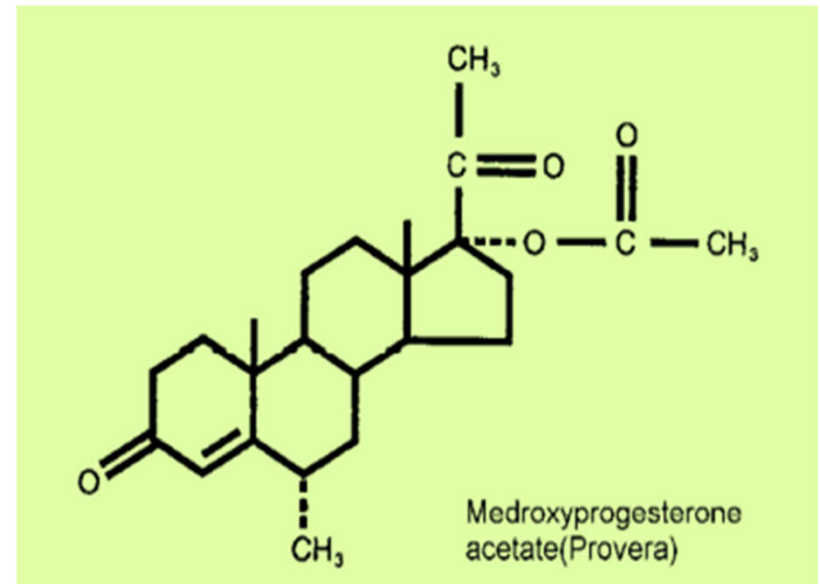
PROCEDURAL GUIDELINES



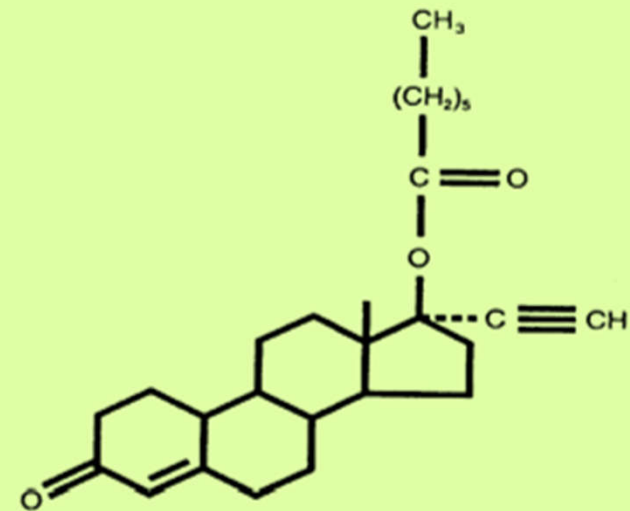
➤ Types:

There are two progestogen-only injectables available in the market:

1. Depot medroxyprogesterone acetate (**DMPA**), **150** mg, known by the brand name **Depo-Provera** given by injection every **3 months** (12 weeks).



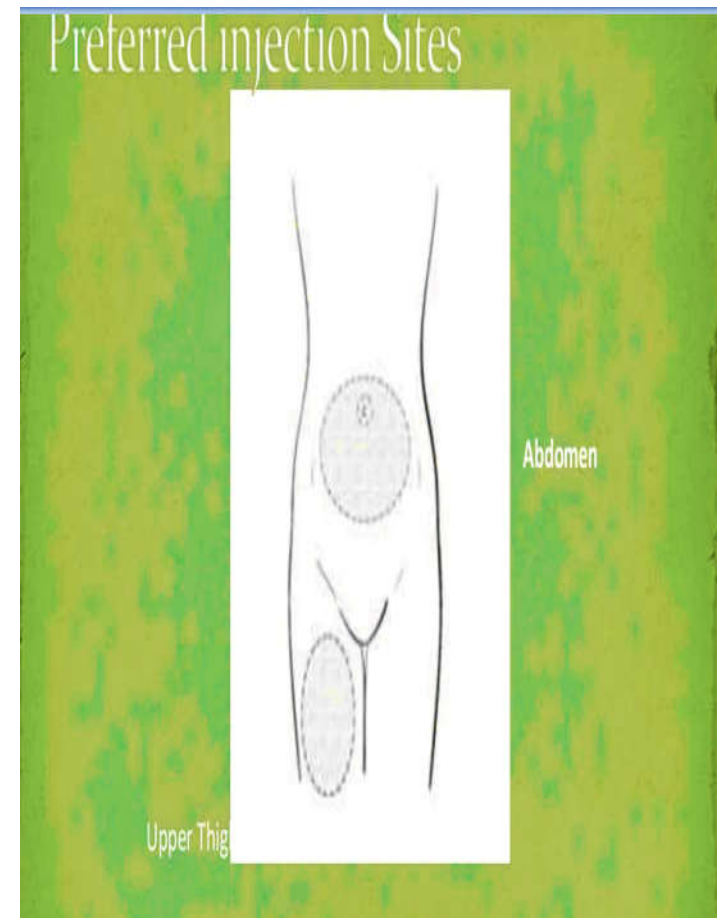
2. Norethindrone enanthate (NET EN) 200 mg, known by brand name **Norstrat** , given by injection every 2 months (8 weeks).



Norethindrone  
enantate

*Contraception: Figure 6 Structure of Norethindrone enanthate*

- Newly approved Depo-Provera:
- Depo-sub Q Provera (**DMPA- SC**).
- Contain **104 mg Depo- medroxy progesterone acetate**.
- **Subcutaneous** unlike I.M. In DMPA.
- Given every **12 weeks**.
- Should not used continuously for more than 2 years.

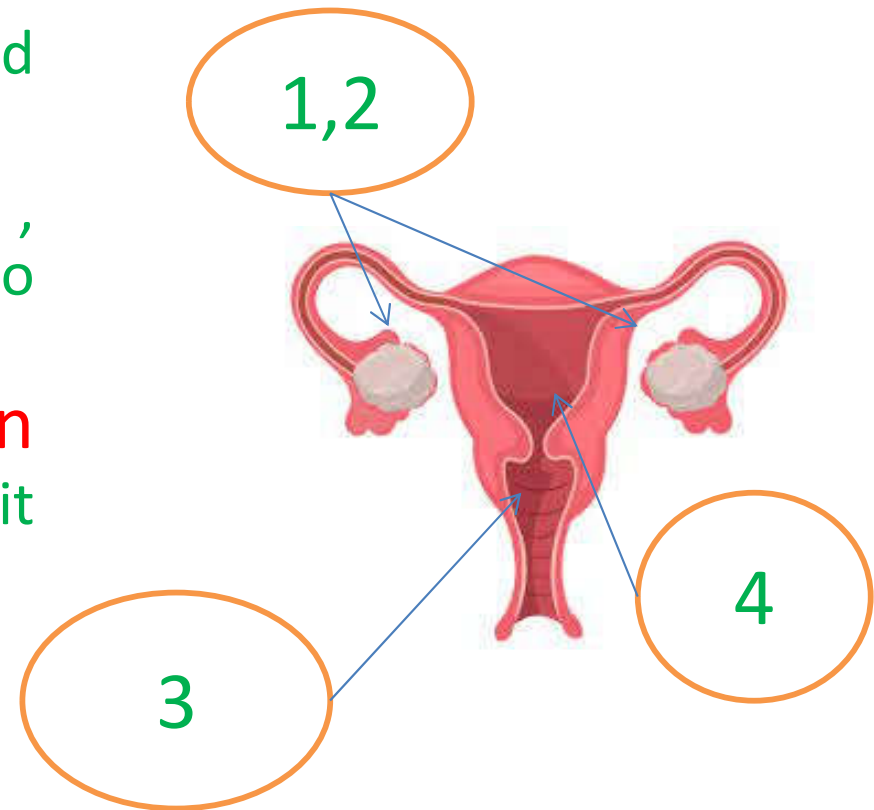


➤ Efficacy:

- Both DMPA and NET EN are highly effective contraceptives, comparable in efficacy to voluntary sterilization. The reported **failure rates** of POIs are low, and come within the narrow range of **0.1% to 0.6%**.

## ➤ Mechanism of Action:

1. **Suppression of ovulation**, as evidenced by absence of both the mid cycle LH peak and the rise of progesterone to level indicative of ovulation.
2. **Inhibition of folliculogenesis** and estrogen production is inhibited.
3. To **thicken cervical mucus** , which then presents an obstacle to sperm penetration.
4. There are **additional changes in the endometrium** that make it unfavorable to implantation



➤ Return of fertility:

- Fertility is not impaired after discontinuation of DMPA or NET-EN although its return is delayed .
- The **average time** between the last DMPA injection and conception is about **nine months** , including the three months during which the injection is effective.
- More than **80%** of women become pregnant within **one year** of discontinuing DMPA and **90%** within **two years**, fertility returns more quickly with NET TEN .

- Non-contraceptive health benefits:
  1. **Sickle cell disease:** In a two-year trial, women with sickle cell disease using DMPA had significantly **fewer crises** than women given a placebo.
  2. **Anemia:** POIs can **increase hemoglobin concentration**, mainly by reducing menstrual blood loss.
  3. **Pelvic endometriosis:** helps in **prevention** of and may make **symptoms** of existing **disease** less severe.
  4. **Fibroids** :May check development of existing fibroids. g. **Decreases the risk of endometrial cancer.**

➤ Eligibility criteria:

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



## ❑ **Contra-indications (category 4):**

POIs should not be used in the presence of:

- Confirmed or suspected pregnancy.
- Malignant disease of the breast.
- Current and history of ischemic heart disease.
- History of stroke.
- Severe headache with neurological focal symptoms.
- Benign or malignant liver tumors.
- Active hepatitis. Contraception and family planning .
- Using anticonvulsants.
- Undiagnosed vaginal bleeding

## ❑ Conditions requiring careful consideration (category 3):

- Women with heavy menstruation.
- Women < 16 years old.
- Severe hypertension.
- Complicated diabetes mellitus.
- Liver cirrhosis.

## ❑ Other Conditions (category 2)

- Women with mild to moderate hypertension.
- Diabetes (without vascular complications).
- Hyperlipidemias, or mild (compensated) cirrhosis

➤ Side-effects and complications:

1. Disruption of regular menstruation.
2. Delay in return to fertility.
3. Weight gain.
4. Headaches and Dizziness.
5. Concern about effects on lipid and lipoprotein metabolism.
6. Concern about effect on bone density.

➤ Advantages of progestogen-only injectables:

1. **Highly effective.**
2. **Long-term effect**; one action, having the injection causes contraception for 2-3 months.
3. **No** need to take a **daily decision** as entailed in using COCs.
4. Administration by injections may be more acceptable in certain culture, which value this route of administration over taking medication by mouth.
5. **Failures** due to incorrect use **less likely** than with COCs.

6. A leeway (grace period) of two weeks in case of DMPA and, one week in case of NET EN is affordable i.e. variation in the timing of repeat injection will not result in failure; allowing some flexibility in use.
7. Does not interfere with sexual relation.
8. The quantity and quality of breast milk do not seem to be affected.
9. No estrogen side effect.
10. Prevent ectopic pregnancy.

➤ Disadvantages of progestogen-only injectables:

1. Common side effects.
  - a. Menstrual disruption.
  - b. May cause weight gain.
  - c. May cause mild to moderate headache and or dizziness.
2. Requires more careful and caring pre-use counseling
3. Delay in return of fertility.
4. Requires repeated injections every 2 or 3 months.
5. Does not protect against STDs.
6. May result in transmission of hepatitis virus (and other viruses) in case the same syringe is reused.

## ➤ Procedural Guidelines:

### 1. Pre-use counseling:

- a) The advantages of the method.
- b) The high likelihood of menstrual irregularity.
- c) There could be a delay of 3 to 6 months in the return to fertility after discontinuation of the injections.



## 2. When to start :

- P-O-contraceptive is initiated within the first 7 days after beginning of the menstruation.
- In breastfeeding women the use can start 6 weeks postpartum.
- If the woman is not breastfeeding progestogen-only contraceptive can be initiated immediately postpartum or at any time during the first 6 weeks postpartum.
- Immediately after an abortion.
- Immediately at the time of stopping other method e.g. removal of an IUD

### 3. Giving the injection:

- A 2 or 5 ml syringe and a 21-23-gauge **intramuscular** needle is used.
- The injection is made deep in the **upper arm** (deltoid region) or in the gluteal region.
- The site of the injection should be not massaged; this may result in a rapid absorption of the steroid.
- Give the client a **card** giving the data of **next injection**.
- **leeway** (grace period) of **2 weeks** in case of **DMPA** and of **1 week** in case of **NET EN**.

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# **Combined injectables (CIC):**

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## ➤ Types:

Two formulations have been widely tested as monthly injectables:

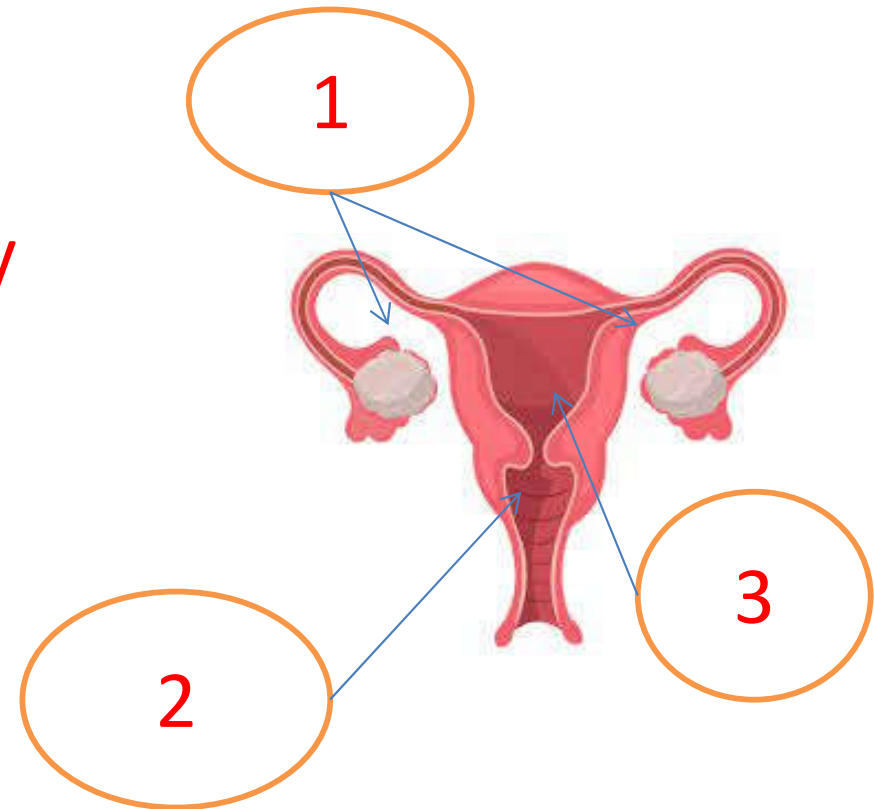
- 1. Cyclofem = medroxyprogesterone acetate (DMPA) 25 mg plus estradiol cypionate 5 mg.
- 2. Mesigyna = norethindrone enanthate (NETEN) 50 mg plus estradiol valerate 5 mg.

## ➤ Efficacy:

- Monthly injectables are highly effective giving a failure rate of 0.2 or less pregnancies per 100 women per year. The effectiveness of CIC depends on the timing of the first injection and adherence to the injection schedule.

➤ **Mechanism of Action:**

1. Combined injectable contraceptives act principally by inhibition of ovulation.
2. Cervical mucus changes.
3. The incomplete secretory changes in the endometrium



➤ **The return of fertility:**

It is expected to be slightly delayed after discontinuation of the injections, i.e. the delay is much shorter than the delay in return of fertility after the discontinuation depot progestogen-only injectables.

## ➤ Side-Effects

- Irregular bleeding
- Amenorrhea.
- Heavy bleeding.
- Prolonged bleeding.
- Headaches, dizziness, and body weight changes.
- However, these side-effects are much less common than with the use of POIs



## **Advantages of monthly CICs:**

1. Highly effective.
2. Reversible.
3. Injections are more acceptable in certain cultures.
4. No need for daily decision to take the medication. This makes use-failure less likely.
5. The estrogen contained is natural estradiol that is less likely to result in estrogen related side effects. There is lesser incidences of nausea, headache, and weight gain than with COCs and POICs

6. The metabolic changes e.g. changes in lipogram and coagulation parameters are less marked than in users of POICs and COCs.

7. Reasonable and more acceptable bleeding pattern than that in users of progestogen-only contraceptives.

## Disadvantages of monthly CICs:

1. The need to take a monthly injectable.
2. The shorter grace period (relative to POICs).  
Contraception and family planning
3. Menstrual irregularity, particularly during the early months of use.
4. Not suitable for breastfeeding mothers. The estrogen content may changes the quantity and quality of breast milk.
5. Does not protect against STDs

➤ **Eligibility Criteria:**

Until sufficient clinical data become available, the eligibility criteria for the use of combined injectable contraceptives are based on data from combined oral contraceptives

➤ **Procedural guideline:**

- CIC injectables will be immediately effective
- CIC can be used during the first 5 days of the menstrual cycle.
- At other times in a menstrual cycle as long as the possibility of pregnancy is ruled out.
- At 6 months postpartum.
- Immediately after abortion.
- Stop using CICs about four weeks before elective surgery that will involve prolonged immobilization , and restart them two weeks after the woman has returned to mobility. In emergency procedures, consider prophylactic anticoagulant measures .
- Leeway time is 3 days only.

## INGECTABLE CONTRACEPTIVES:

Name	Active ingredients	Duration of effect	Leeway time	Trade name
<b>DMPA (POIC)</b>	Depomedroxyprogesterone acetate 150 mg, aqueous	90 days	2 weeks	Depo-Provera
<b>NET-EN (POIC)</b>	Norethisterone– enanthate NET-EN 200 mg, oily	660 days	1 week	Norstrat
<b>Mesigyna (CIC)</b>	Norethisterone enanthate 50 mg Estradiol valerate 5 mg	30 days	3 days	MESIGYNA

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# SUBDERMAL IMPLANTS



## I. NORPLANT: 1<sup>st</sup> generation implants.

- **Structure:**

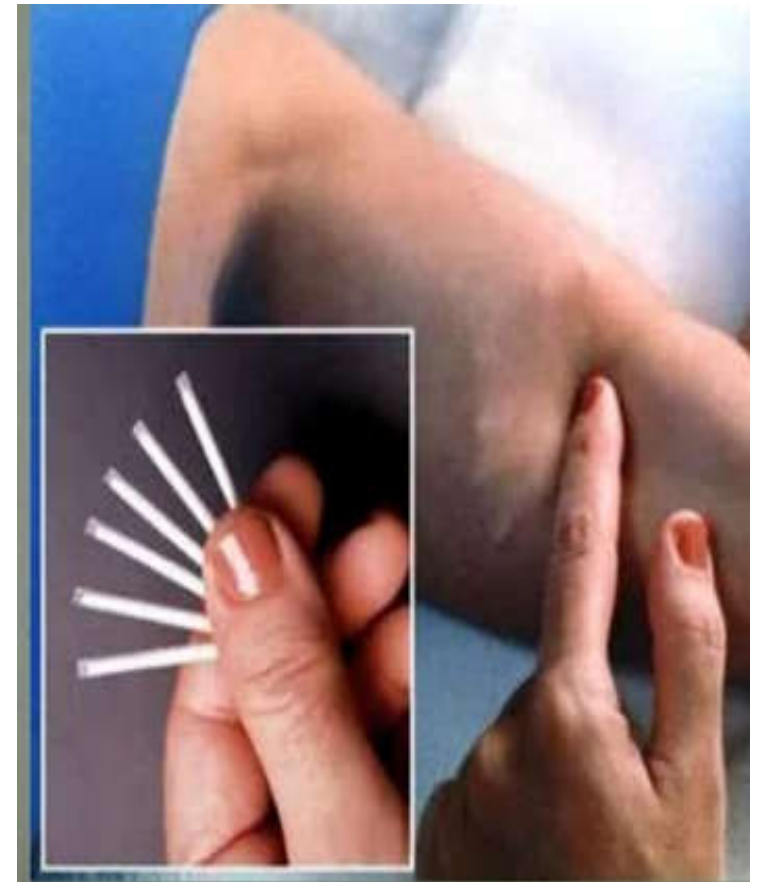
Consists of **6 rods**, each measuring 34 mm in length and 2,4 mm in diameter.

- **Hormonal content:**

Each rod contains **36** mg Levonorgestrel, releasing **80** ug daily. Effective for **five years**

- **Mechanism of action:**

Acts by suppressing LH surge necessary for ovulation.





- **Insertion:**

Inserted through special trocar subdermally on the inner surface of the left upper arm under local anesthesia.

- **Side effects:**

1. IUB that normalizes long term use.
2. headache.
3. Acne, weight gain/ loss, mastalgia, mood change or depression.
4. Hyperpigmentation at site of implant.
5. Hirsutism.
6. Galactorrhea.
7. Symptomatic functional cyst.

## II. JADELLE (NORPLANT 2):

- **Structure:**

Consists of **2** non biodegradable silicon elastomer capsule, each measuring 43 mm in length and 2,5 mm in diameter.

- **Hormonal content:**

Each rod contains **75** mg Levonorgestrel. Effective for **5 years**.

- **Mechanism of action:**

Acts by suppressing LH surge necessary for ovulation.



- **Side effects:**
  1. IUB that normalizes long term use.
  2. headache.
  3. Acne, weight gain.
  4. Depression.

### III. IMPLANON:

- **Structure:**

Consists of **single** non biodegradable rod 4 cm in length and 2 mm in diameter.

- **Hormonal content:**

The rod contains **68** mg etonogestrel (active metabolite of desogestrel), releasing **60** ug daily. Effective for three years

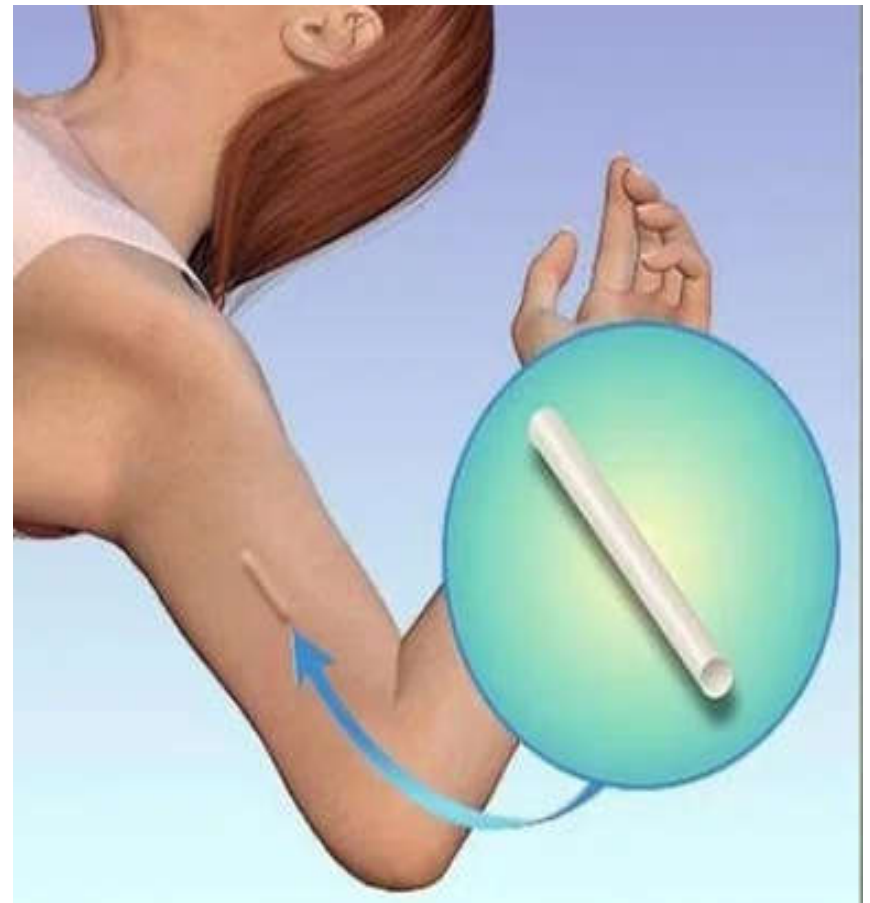
- **Mechanism of action:**

Acts by suppressing LH surge necessary for ovulation, as well as its effect on cervical mucus.



## IV. NEXAPLANON:


- Identical to implanon except for containing 15 mg Barium sulphate added to the core to make it detectable by X ray



- **Side effect:**

Compared with Norplant system, implanon is associated with:

1. Higher frequency of amenorrhea and oligomenorrhea.
2. Decrease in the prevalence of prolonged bleeding.
3. Decrease in frequency of adverse effects such as weight gain, headache and acne.



<b>Progestin</b>	<b>Proprietary name</b>	<b>Number of units</b>	<b>Lifespan according to license</b>
LNG	Norplant	Six capsules	5 years
LNG	Jadelle®	Two rods	5 years
LNG	Sino-implant (II)	Two rods	4 years
ENG	Implanon NXT/ Nexplanon	Single rod	3 years

## V. CAPRONOR: under development

- **Structure:**

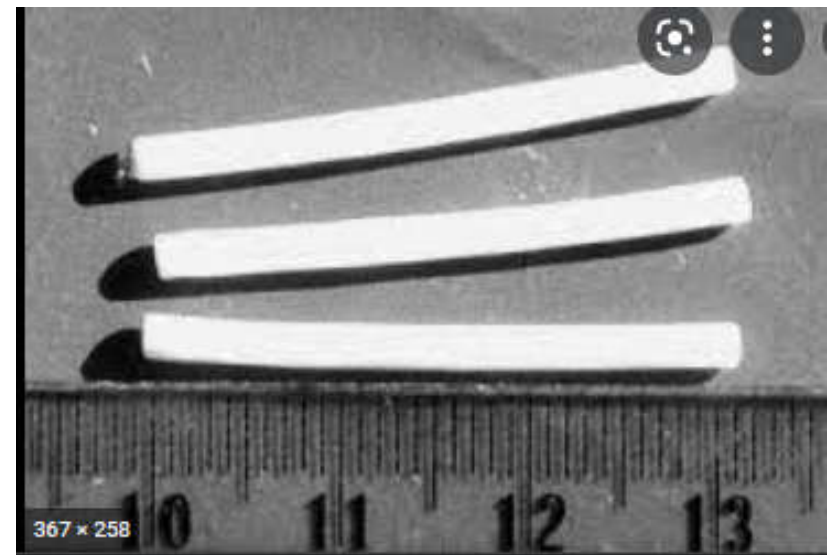
Consists of **single** biodegradable rod 4 cm in length and 2,4 mm in diameter.

- **Hormonal content:**

The rod contains **68** mg etonogestrel (active metabolite of desogestrel), releasing **60** ug daily. Effective for one year.

- **Mechanism of action:**

Acts by suppressing LH surge necessary for ovulation, as well as its effect on cervical mucus.





Thanks

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