

Levonorgestrel Intrauterine system LNG-IUS

BY

PROF. DR. YASSER A. HELMY

**Prof. of OB/GYN,
Faculty of Medicine- Sohag
University .**

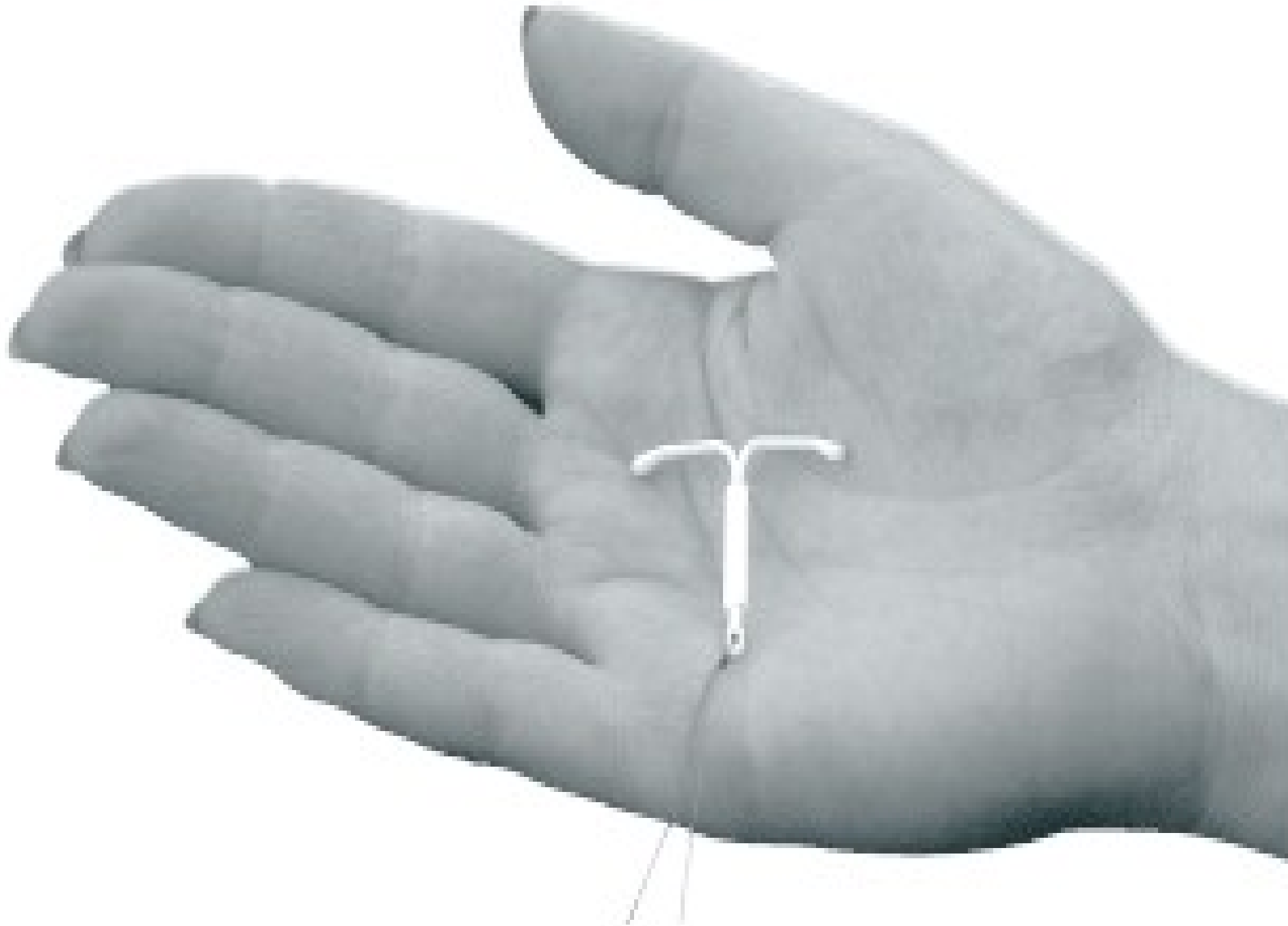
The LNG IUS structure:

The LNG IUS contraceptive was developed in the 1970s by Population Council and Bayer Schering Pharma, combining the features of oral contraceptives and IUD.

■

The LNG IUS structure:

The product consists of a T-shaped flexible plastic frame and white cylinder shaped hormone reservoir around the vertical arm of the frame, with two nylon threads for removal



The LNG IUS structure:

The LNG IUS contains the progestogen hormone *levonorgestrel* (LNG) which is a derivative of 19-nortestosterone. It has been used in birth control pills since the 1970s. The system contains 52 mg of the hormone levonorgestrel and releases 20µg/24h in the uterus for up to five years of protection.

The LNG IUS structure:

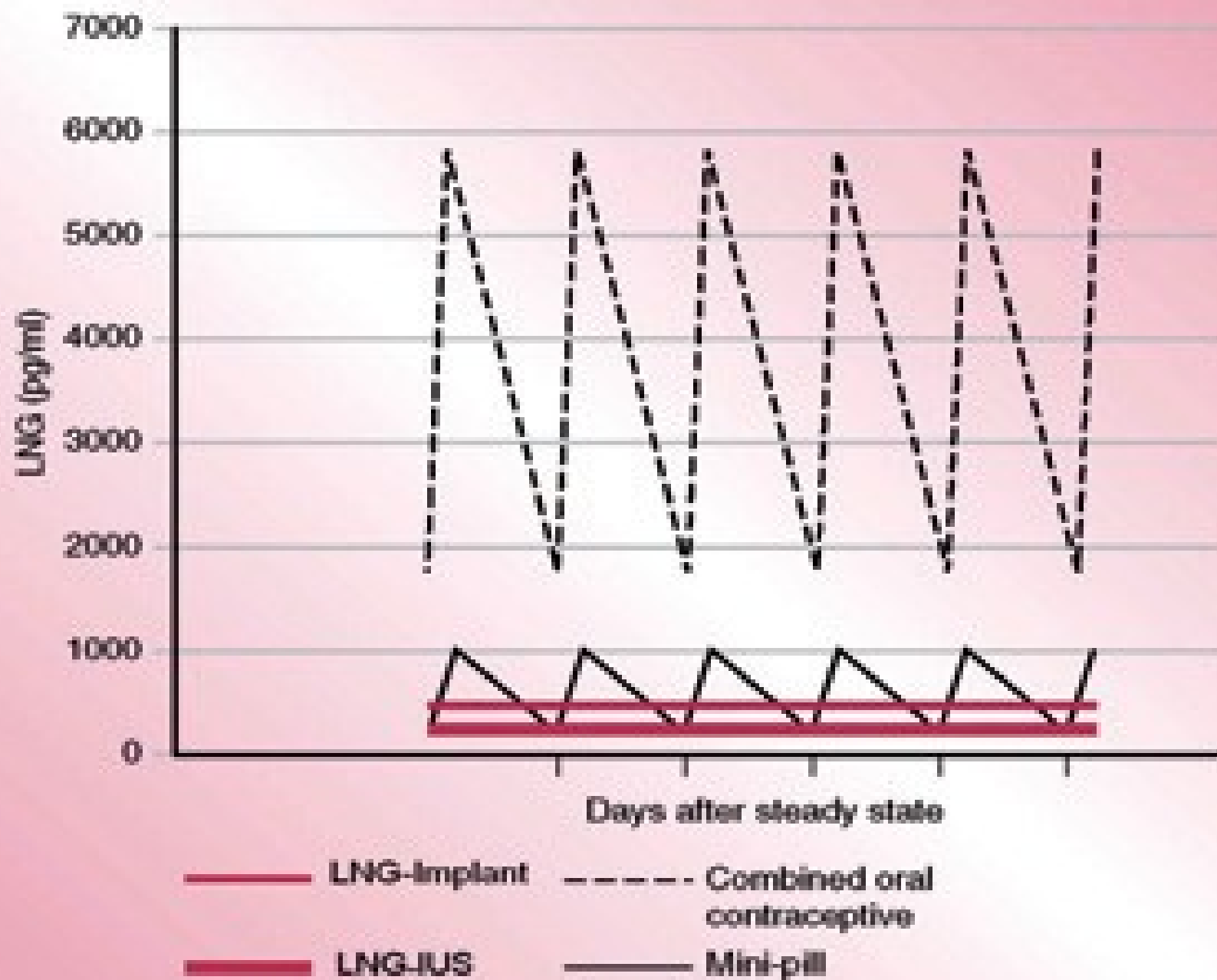
The *levonorgestrel* in LNG-IUS it acts mainly locally at the level of the endometrium.

LNG can be detected in plasma 15 minutes after insertion and the maximum plasma level is reached within few hours. Few weeks after insertion the plasma level reaches peak plateau at low level (150-200 pg/ml)

The LNG IUS structure:

The safety of *levonorgestrel* has been proven by clinical use also in sub-dermal implants, minipills and COCs since decades.

The plasma levels achieved by LNG IUS are lower than those achieved by the above methods.



LNG IUS MECHANISMS OF ACTION:

- Thickens cervical mucus
- Inhibits sperm function in uterus
- Reduces monthly growth of the lining of the uterus making periods lighter and shorter
- Change in tubal motility

LNG IUS MECHANISMS OF ACTION:

- LNG IUS can also lessen menstrual blood loss in women who have heavy menstrual flow

The effect on the endometrium is mediated through:

- ↓ in estrogen receptors
- ↓ in mitotic activity in glandular & stromal elements
- ↑ 17^α-oxoreductase activity (convert estradiol into estrone)
- induction of secretory transformation

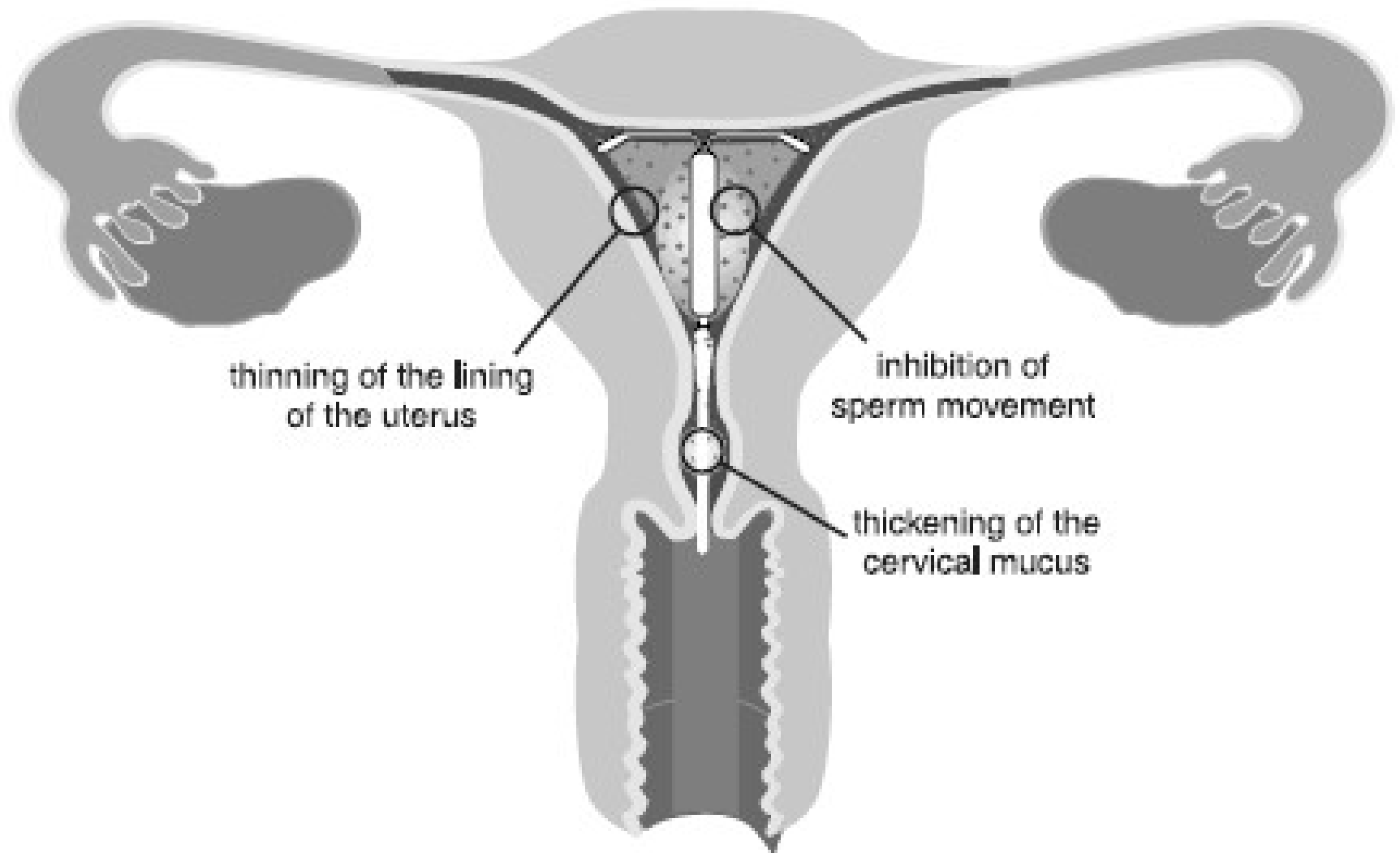
LNG IUS MECHANISMS OF ACTION:

Few weeks after insertion the endometrium atrophies and becomes unresponsive to estrogen with no menstrual shedding.

These endometrial changes are uniform within 3 cycles after insertion.

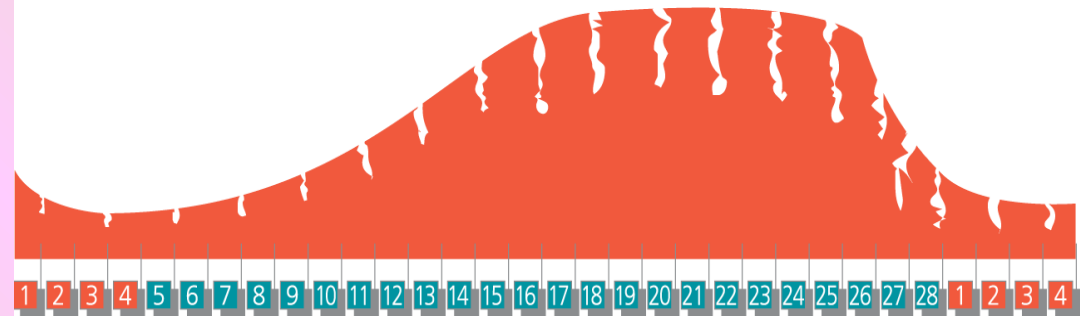
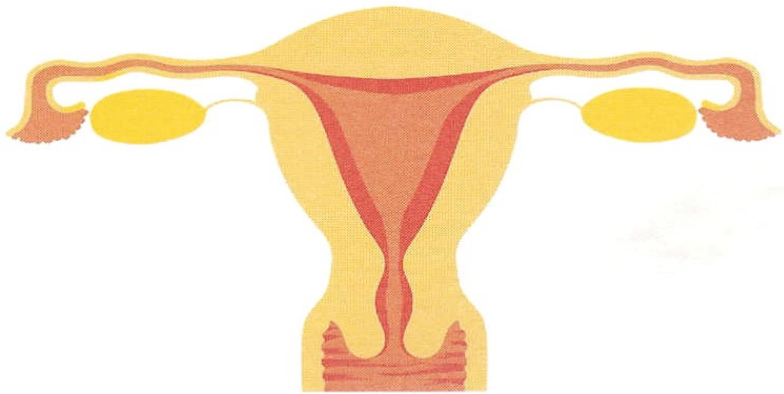
After removal the endometrium returns to normal and menstruation resumes within 30 days.

LNG IUS MECHANISMS OF ACTION:

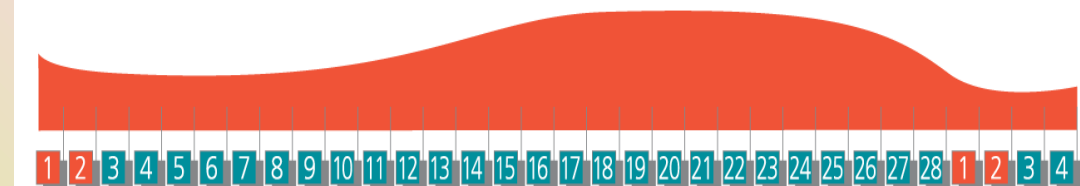
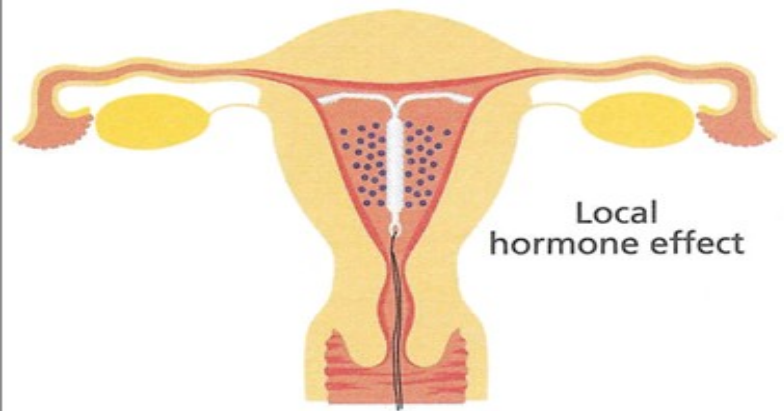


LNG IUS ENDOMETRIAL EFFECTS:

Normal menstrual cycle



Menstrual cycle in a woman with **LNG IUS**



CHARACTERISTICS OF LNG IUS:

- Effective rate of contraception with unplanned pregnancy rate of 0.2% at 1 year and less than 1% at 5 years
- High continuation rate: up to 85% at one year
- No impact on return to fertility after removal (80% at 1 year)
- ¹⁴Significantly reduces menstrual blood loss

Who might use LNG IUS? :

A woman might choose LNG IUS if she:

- Wants contraception of high efficacy
- Wants contraception that is reversible
- Wants a contraceptive method that does not require daily action
- Wants treatment for heavy periods

Who should not use LNG IUS? :

A woman should not use LNG IUS if she:

- Has an untreated pelvic infection now
- Has had a serious pelvic infection in the past 3 months after a pregnancy
- Can get infections easily
- Has or is suspected to have cancer of the uterus or cervix

Who should not use LNG IUS? :

A woman should not use LNG IUS if she:

- Has unexplained bleeding from the vagina
- Has liver disease or liver tumor
- Has or has had breast cancer
- Has a condition of the uterus that changes the shape of the uterine cavity, such as large fibroid tumors

Non contraceptive benefits or uses :

Perimenopausal bleeding:

--The LNG IUS can dramatically reduce the amount of blood loss and leads to amenorrhea and hence reduces the number of hysterectomies needed.

--The reduction of blood loss is far superior than medical treatments (antifibrinolytics and prostaglandins inhibitors)

Non contraceptive benefits or uses :

Perimenopausal bleeding:

--Treatment by LNG IUS avoids the side effects and risks associated with hypoestrogenic state induced by Gn-RH analogues and danazol which are also unacceptable for long term usage

--Treatment by LNG IUS avoids high recurrence rate after endometrial ablation procedures

Non contraceptive benefits or uses :

- Improvement of dysmenorrhea & premenstrual tension syndrome
- Reduction of the size of existing fibroids
- Reduction in the incidence of ectopic pregnancy & PID

Problems and adverse effects :

- Fitting difficulty because of wide vertical stem, so dilatation of the cervix may be needed
- As other IUDs perforation, expulsion, missing the threads are possible complications

Problems and adverse effects :

- Bleeding problems usually take place in the first 3 months until the endometrium atrophies under the effect of the released hormone
- Adverse progestogenic effects physical & metabolic
- Functional ovarian cysts

THANK
YOU