Lecture 2: The Menstrual Cycle

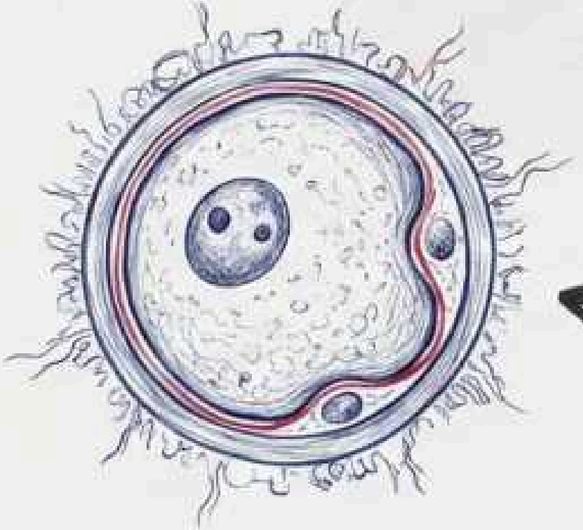
¶ 2.1

First day of period.

$21 \leqslant$ Normal Adult Cycle (Days) $\leqslant 35$

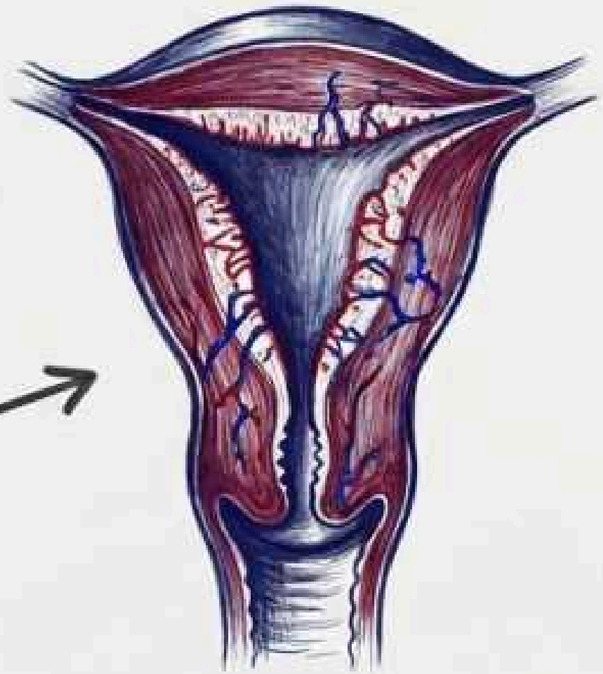
Day 1

Average ~ 28 days



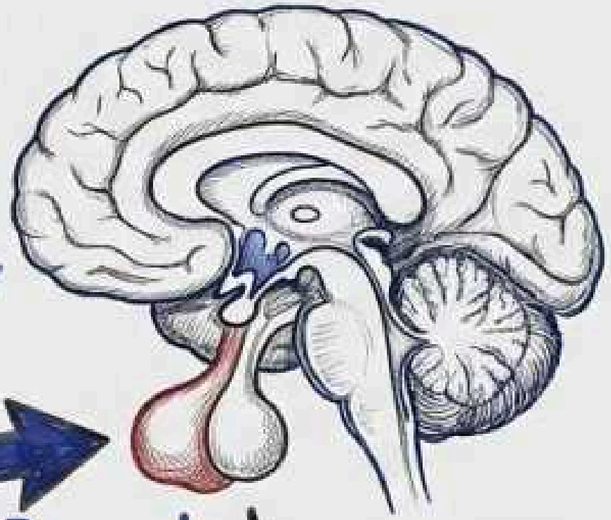
Core Function:

Prepares an egg for release + prepares the uterine lining for a possible pregnancy each month.



Gemini Notebook

¶2.2



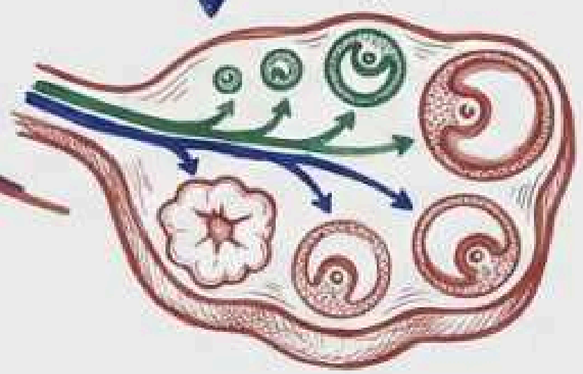
Hypothalamus releases GnRH in pulses.

[−]

[+]

Oestrogen & Progesterone

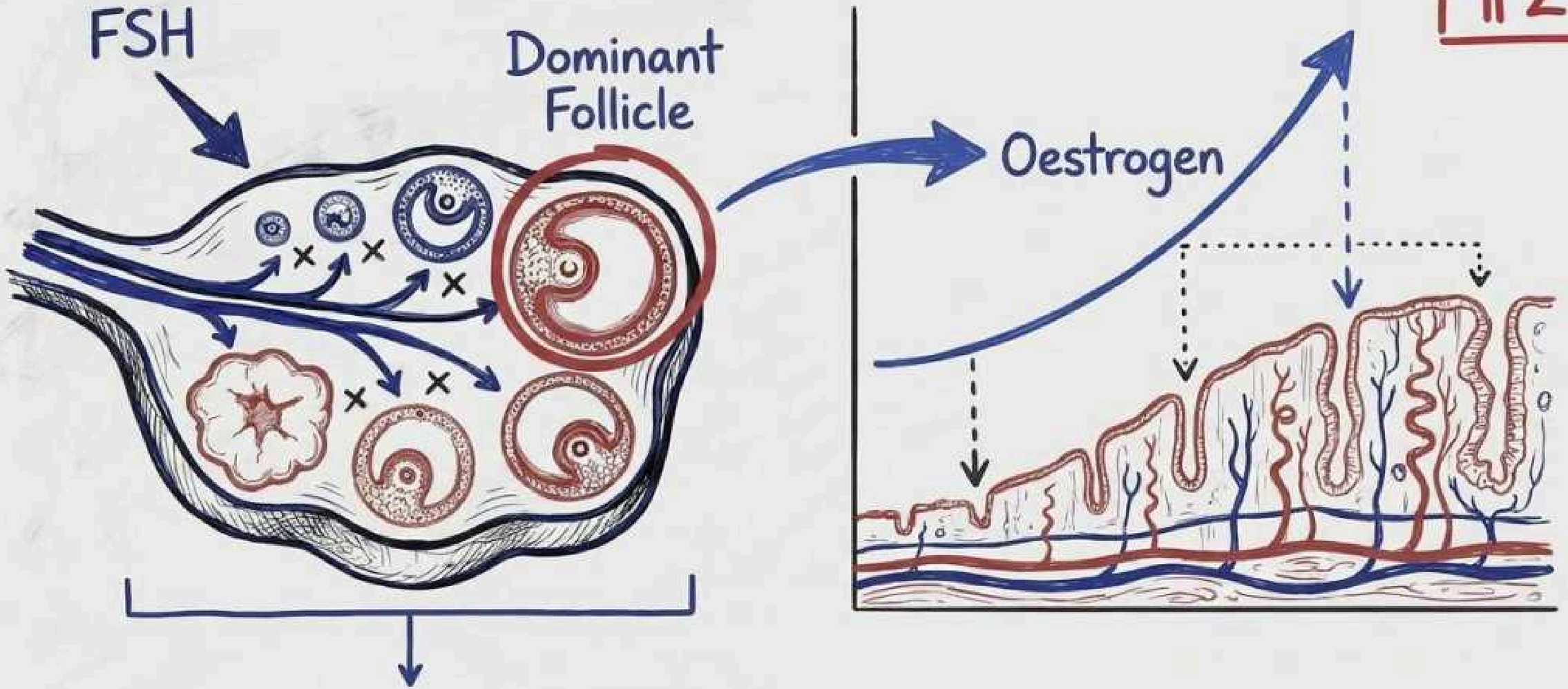
Gonadotropins:
FSH (Follicle-Stimulating Hormone) & LH (Luteinising Hormone).



The Master Control System: The HPO Axis.
Ovarian hormones feed back to the brain to regulate the cycle.

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¶2.3



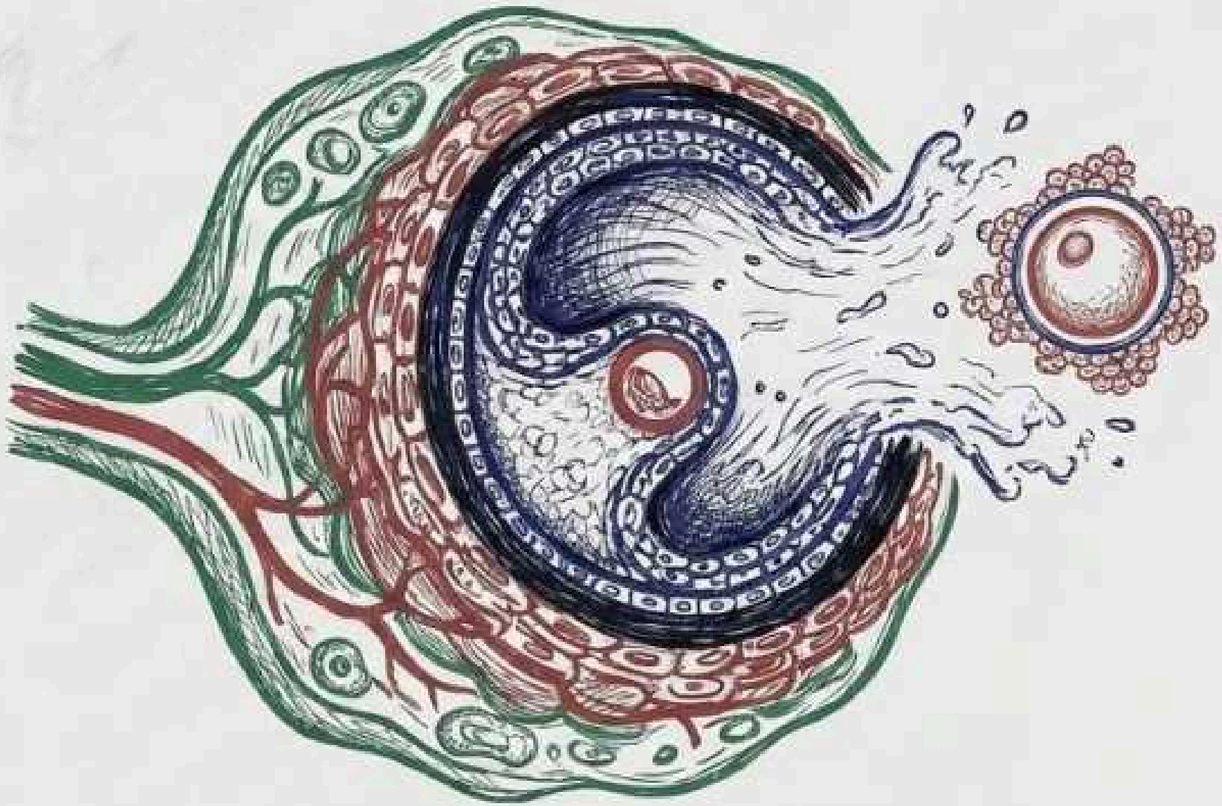
- Phase 1: The Follicular Phase (1st half of cycle).
- Mechanism: FSH stimulates follicle group → One becomes dominant → Rising Oestrogen.
- Result: Endometrium is rebuilt after the previous period.

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¶2.4

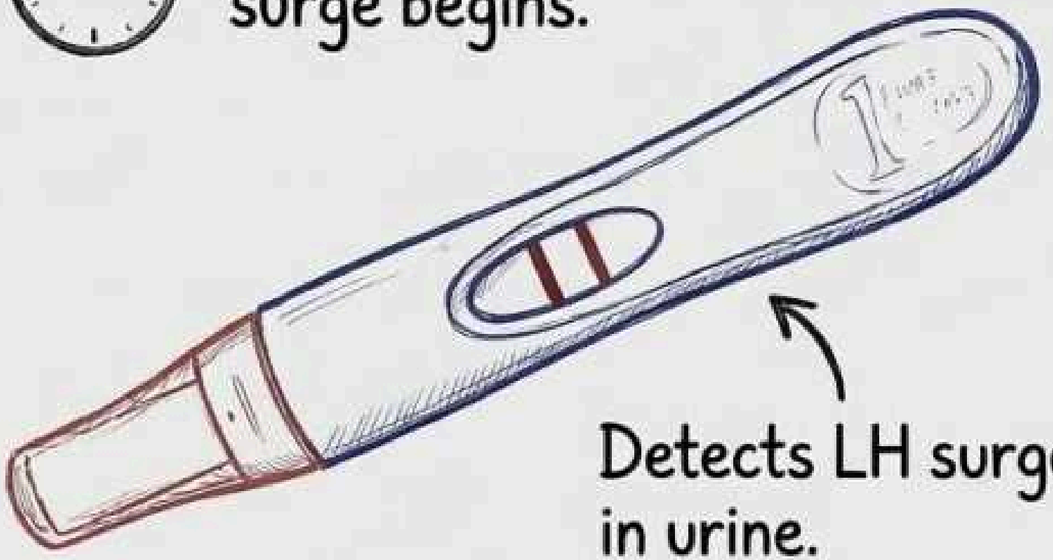
[↑] Oestrogen x Sufficient Time → Suppression Stops → SUDDEN LH SURGE

* An unusual switch in feedback





~ 1.5 days after surge begins.

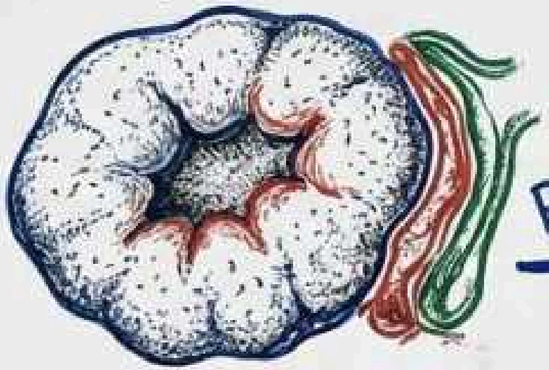


Detects LH surge in urine.

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¶ 2.5

Corpus Luteum



"Yellow Body"

Progesterone ↗

1. Alters endometrium to receive embryo.
2. ↑ Body temperature (slightly).

Luteal Phase (2nd half of cycle).

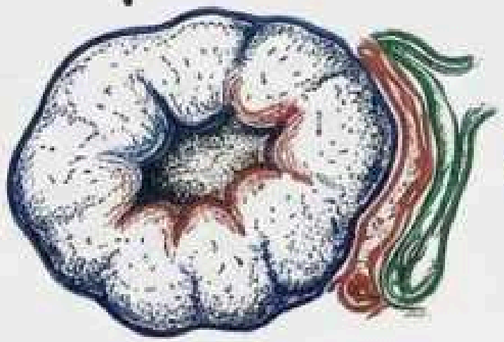
k ~ 14 days (Fairly Constant)

Therefore: Differences in cycle length mostly reflect the Follicular Phase.

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¶2.6

Corpus Luteum

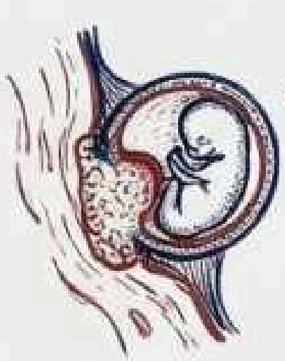


Keeps Corpus Luteum going.

No Pregnancy

Pregnancy

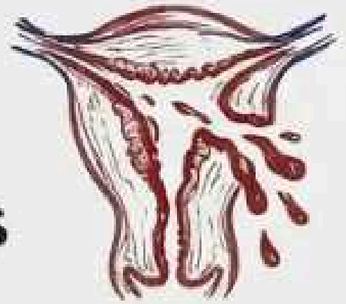
↓ Progesterone ↓ ↓ Oestrogen



hCG



~ 2 weeks

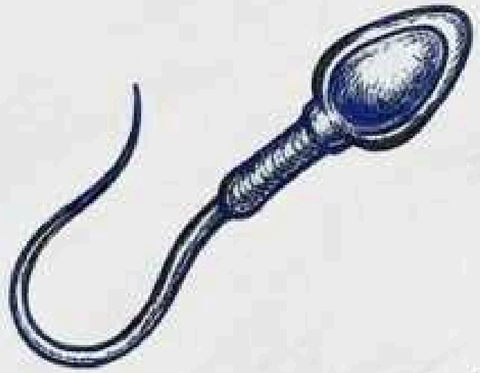


Period

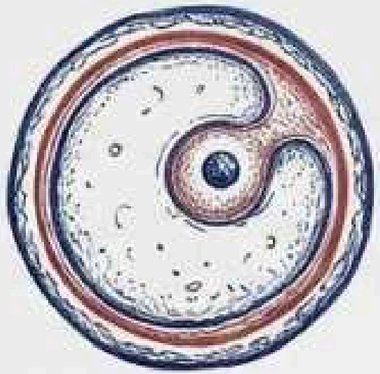
Pregnancy tests detect hCG.

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¶ 2.7



+

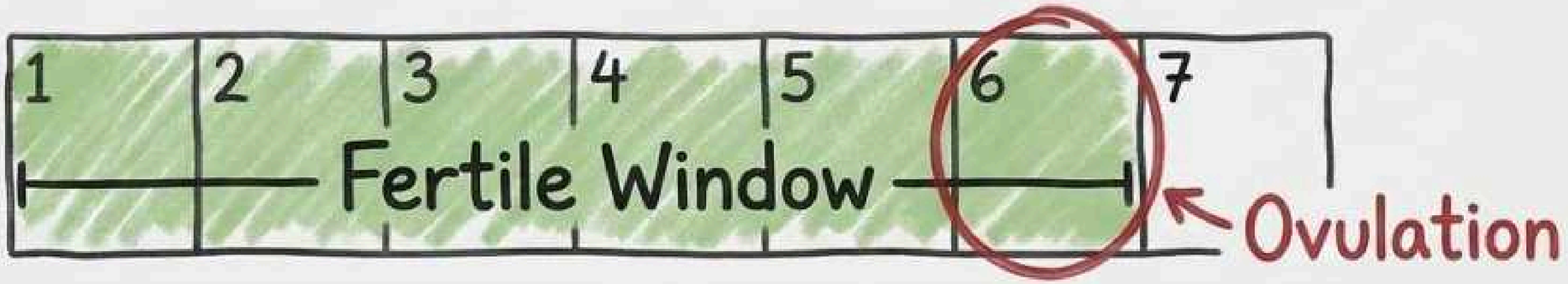


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~ 6-Day Fertile Window

~ 5 days survival

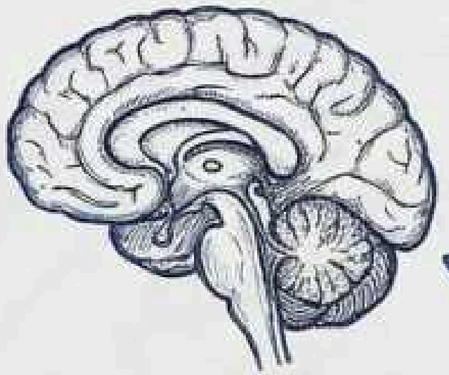
~ 1 day survival (post-ovulation)



Critical knowledge for couples trying to conceive: the window ends on the day of ovulation.

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¶2.8



Hypothalamic Causes:

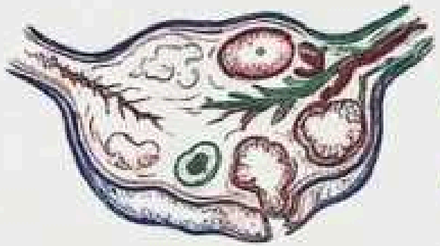
- Low body weight
- Intense exercise
- Stress (suppresses hypothalamus).

Amenorrhoea
(Absent Periods)

Pregnancy

Rule #1:
Always check first.

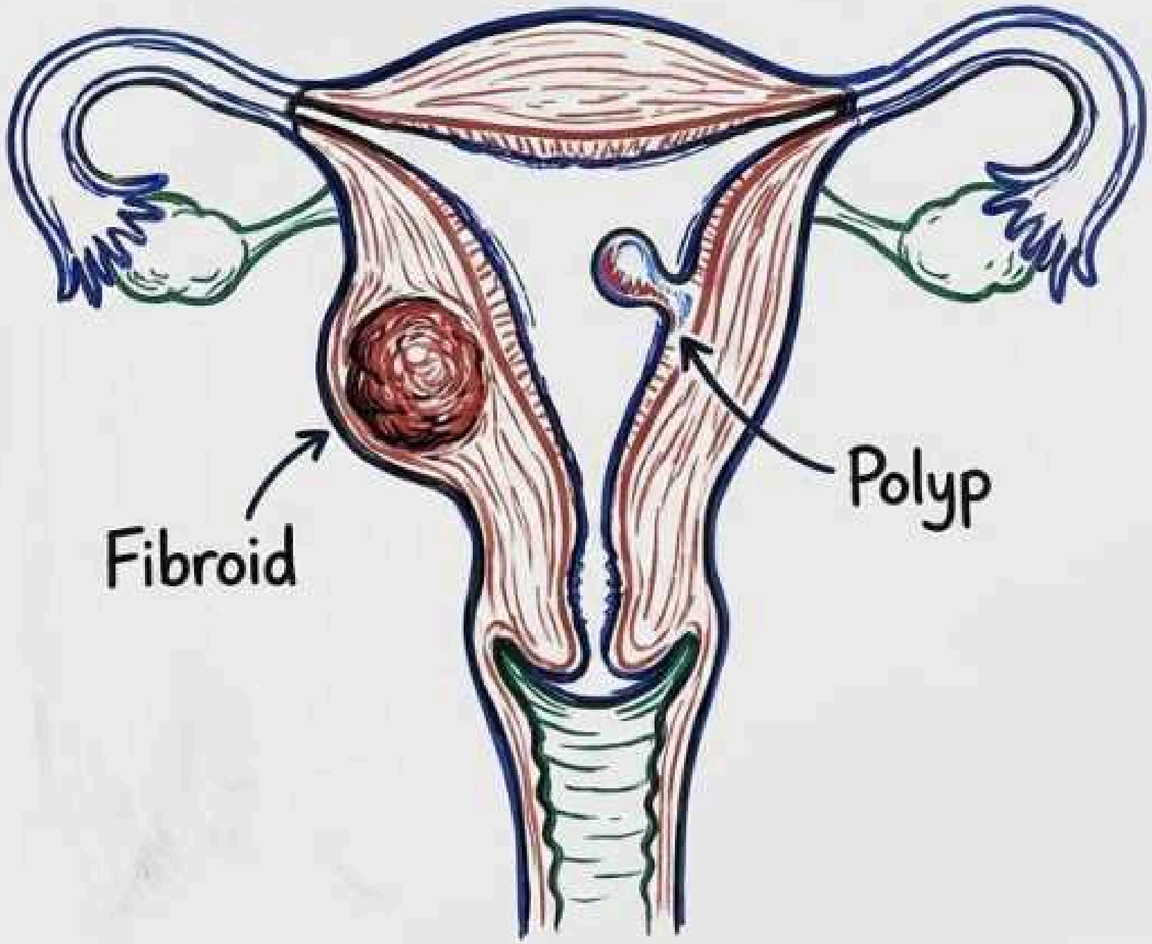
Systemic/Endocrine:



- Polycystic Ovary Syndrome (PCOS, per Med 531 B)
- Thyroid disease
- High prolactin
- Early ovarian failure.

Gemini Notebook

¶ 2.9



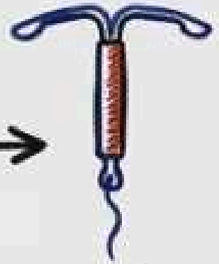
① **Impact**: Common cause of iron deficiency anaemia (per Med 525 B).

② **Causes**: Structural (Fibroids, Polyps) & Systemic (Bleeding disorders e.g., von Willebrand disease).

③ **Treatments**:



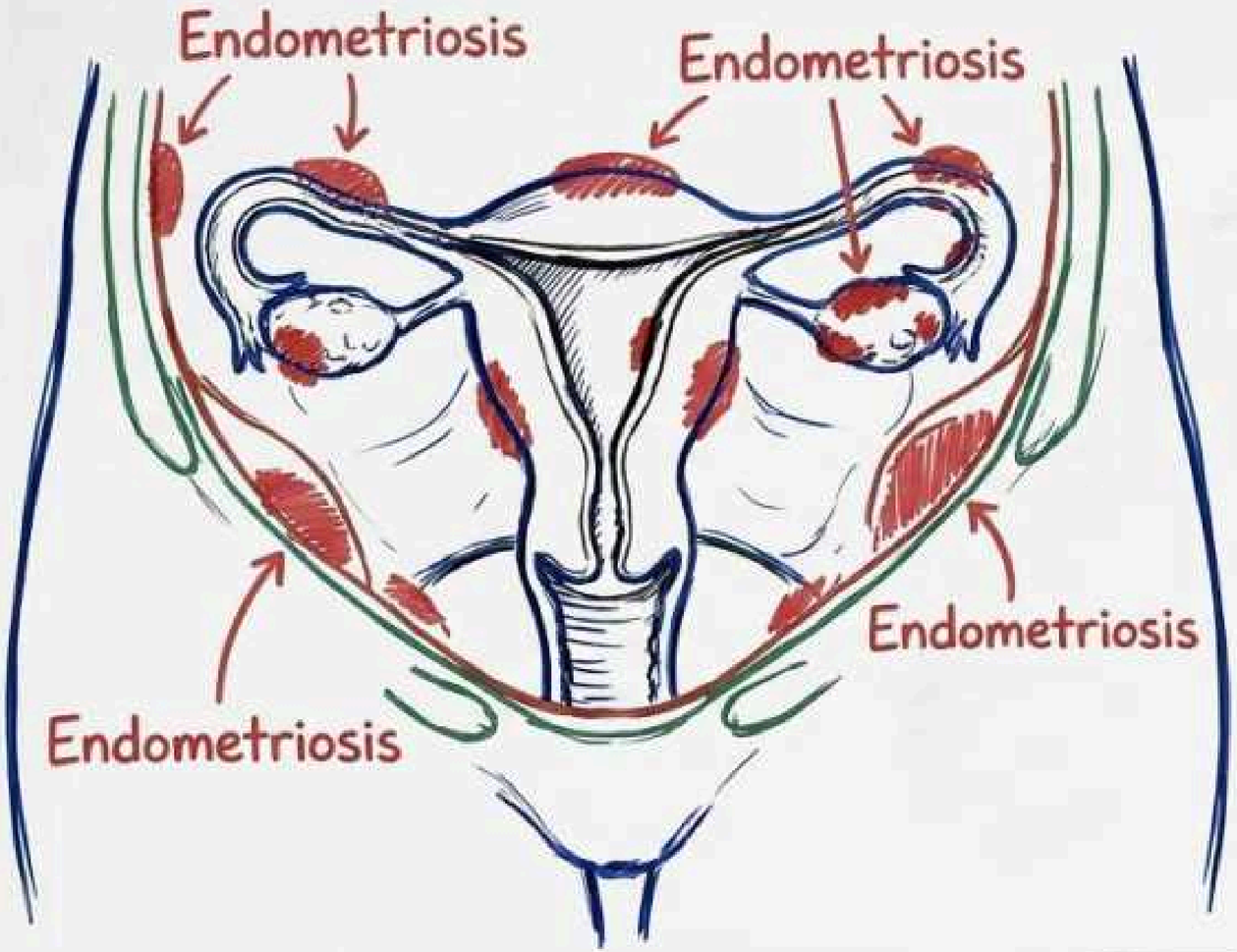
Tablets



Hormone-releasing coil

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¶ 2.10



1 in 10

Affects women of reproductive age.

- Painful periods
- Pelvic pain
- Pain during sex
- Reduced fertility

! Diagnosis often delayed for years—period pain is too often wrongfully dismissed as normal!

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¶ 2.11



PMS (Premenstrual Symptoms)

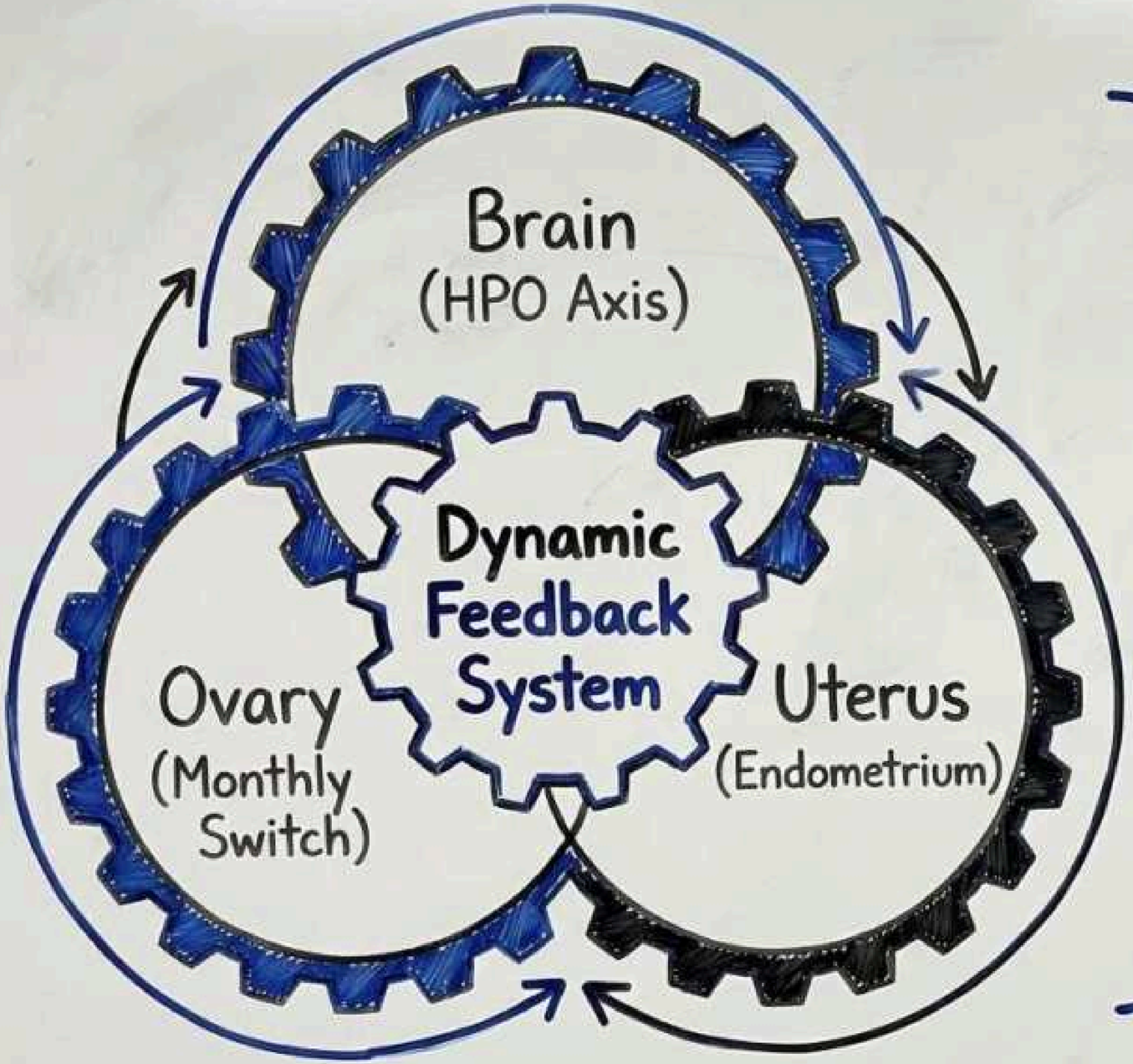
- Common. Occurs days before period.
- Symptoms: Bloating, breast tenderness, mood changes.

PMDD (Premenstrual Dysphoric Disorder)

- Smaller subset, severe form.
- Symptoms: Marked mood symptoms that actively disrupt daily life.
- Action: Responds to specific medical treatments.

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¶ 2.12



These hormones perfectly explain:

→ Pregnancy Tests

→ Ovulation Tests

→ Menstrual Disorders

Up Next: Male Reproductive Physiology.

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