

THE MENSTRUAL CYCLE

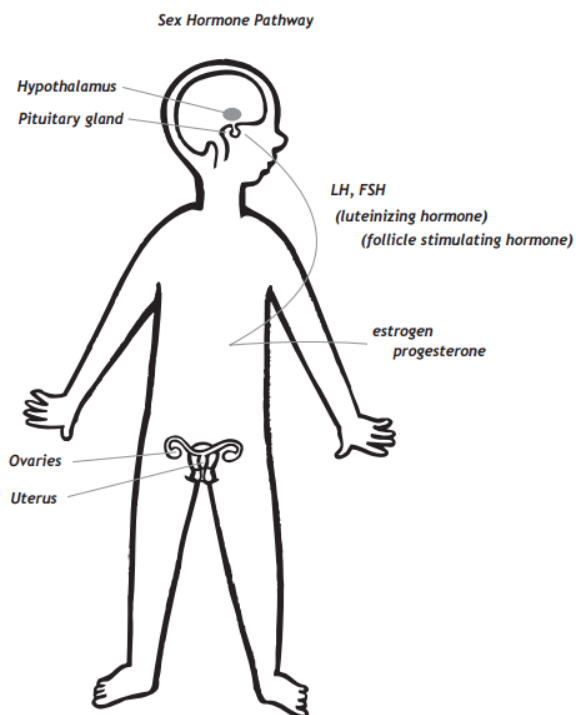
The menstrual cycle is the monthly series of changes in the female body that prepares it for potential pregnancy. The first menses (period) is called **menarche**. Puberty in the female body starts with the development of breast buds, which occurs when the pituitary gland begins to produce and release luteinizing hormone (LH) and follicle-stimulating hormone (FSH) in a pulsing fashion. This in turn causes the ovaries to enlarge and start producing estrogen.

We don't fully understand what causes this pulsing to start. Early normal puberty in the female body is 7-8 years old and normal late puberty is 13 years old. The growth spurt starts shortly after breasts begin to develop. Menarche usually occurs 2-3 years later, and periods can be irregular for the first 1-2 years.

There are variations of normal in regards to puberty timing and the menstrual cycle. Food intake and activity also play a role in functioning of the menstrual cycle. Some medical conditions or medical treatments can cause puberty or the menstrual cycle to be outside of normal. By understanding how the body works, it can help you understand what tests your doctor may order and/or treatments they may prescribe.

Potential reasons for irregular or absent menses:

- Treatment such as chemotherapy or radiation to the brain, abdomen or pelvis
- Autoimmunity — antibody attack on the ovaries
- Certain medication (antipsychotics, antidepressants, blood pressure or allergy medication)
- Absence or lack of development of reproductive organs, or structural abnormalities
- Low body weight, excessive exercise, stress
- Polycystic ovarian syndrome (PCOS)
- Over- or underactive thyroid gland
- Pituitary tumours, such as prolactinomas
- Genetic or metabolic conditions: Turner syndrome, Fragile X syndrome, galactosemia, disorders of glycosylation (CDG)
- Damage to or surgery to remove the ovaries or the pituitary



Your doctor will do a thorough evaluation and check your hormone levels. If your body is not able to make estrogen and progesterone, your doctor can prescribe them. They will instruct you on how to take the hormones that are necessary for your bone, heart and sexual health.

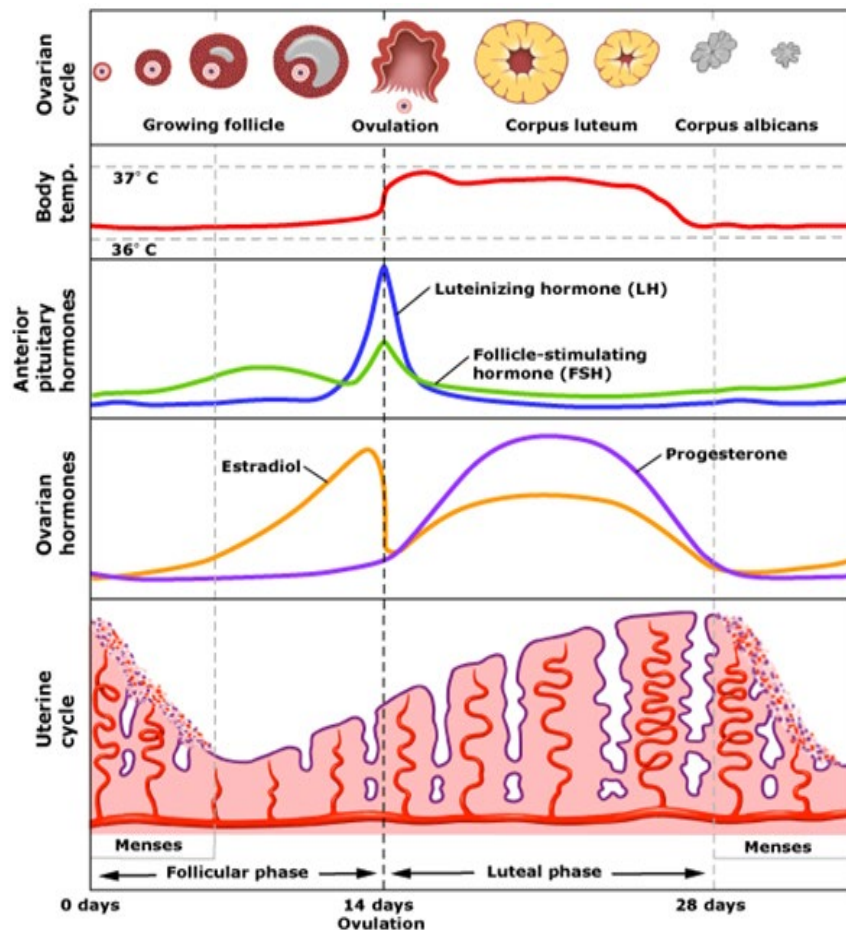
There are 4 phases to the menstrual cycle:

Follicular Phase: the release of LH and FSH from the pituitary gland causes an ovarian follicle to mature and produce estrogen. This causes regeneration of the uterine lining.

Ovulatory Phase: mid-cycle (14th day), LH and FSH are at their peak and cause rupture of the matured follicle to release an egg (ovum). If the egg is fertilized by a sperm cell, it forms a zygote and the start of a new human being.

Luteal Phase: the remains of the matured follicle changes into the corpus luteum which releases progesterone to maintain the lining of the uterus. If no fertilization occurs, the corpus luteum breaks down and causes shedding of the lining of the uterus starting a new cycle.

Menstrual Phase: the cycle ends with the menstrual flow (3-5 days) and is the result of the breakdown of the lining of the uterus if there is no fertilization.



Graphic from: <https://medium.com/@bicspuc/menstrual-cycle-an-important-process-of-human-reproduction-e22a4abce2e2>