

---

## Menstruation

**Katie Stadler, CNM**

When most people think of the menstrual cycle, they think of menstruation. Menstruation is the average 3-7 days of bleeding that happens roughly every month for people who are having normal, healthy periods. Periods are important and are the most obvious sign of the cycle. However, they are just part of a much larger picture of what's going on behind the scenes. What we see as a period each month is the result of the breaking down and shedding of the uterine lining through the cervix and the vagina. A period consists of about 30 ml of blood (about 2 tablespoons), along with mucus and the cells of the uterine lining that built up during the last cycle.

One way to understand menstruation is as a monthly messenger. We would be wise to pay attention, because it has so much to tell us about our health and fertility! For folks not using hormonal birth control, regular menstruation is a message that means all is well with the larger cycle and the reproductive system hormones. The Greek root of the word hormone means “to set in motion”, and that’s exactly what the hormones of the menstrual cycle do. The cycle is the result of a hormonal interplay between the brain, the ovaries, and the uterus. This communication begins in puberty and sets into motion the cycle of menstruation that will happen somewhere between 400 and 500 times in a person’s life. This cycle is the body’s way of preparing itself each month to support a pregnancy.



### The Hormones

To really understand the menstrual cycle, it’s helpful to make sense of the roles of the hormones. Hormones are responsible for the cycle phases. The following are the “big four” (but not the only) hormones of the menstrual cycle:

**Estrogen:** For females, estrogen is the hormone largely responsible for the physical changes that happen in puberty. Estrogen comes mainly from the ovaries, but smaller amounts are also produced in the adrenal glands and fat tissue. Estrogen is responsible for growing and maturing the uterine lining (the lining that is shed during menstruation). It also causes an egg to mature

before ovulation. Levels of estrogen are highest in the first half of the menstrual cycle. Estrogen also has many effects on the other parts of the body including the brain, bones, heart, and skin.

**Progesterone:** This hormone balances the effects of estrogen in the body. It is generally considered to have a calming influence. It increases feelings of emotional and physical well-being. Progesterone is produced after ovulation by the corpus luteum (the tissue that the egg came from) and controls the build up of the uterine lining. Progesterone also maintains the uterine lining if a pregnancy does occur. Progesterone influences sleep, appetite, and bone strength. Progesterone levels are highest during the second half of the cycle. If pregnancy doesn't occur, levels fall and the lining of the uterus is shed as a period.

**Follicle Stimulating Hormone (FSH):** This hormone is released from the pituitary gland in the brain. Its main role is to stimulate the ovarian follicles to prepare for ovulation.

**Luteinizing Hormone (LH):** LH comes from the pituitary gland and is the hormone that causes the mature ovarian follicle to rupture and release an egg. This is ovulation!

## The Cycle in Motion

During puberty, ovaries begin the cycle of menstruation with about 400,000 egg cells inside of them. Each of these egg cells exists within a fluid filled sac called an ovarian follicle. The cycle begins in puberty, when the hypothalamus releases gonadotropin-releasing hormone. This in turn stimulates the hormones that act on the ovaries to start sexual maturation and maintain reproductive function. It is during this time that the first egg is released. The first cycle is set in motion!

There are two ways to get to know the menstrual cycle. First, through what's happening with the ovaries (the ovarian cycle). Second, through what's happening in the uterus (uterine cycle). These cycles are not separate. They overlap and influence one another (see Figure 1). The ovarian cycle has three phases: follicular, ovulatory and luteal (see Figure 2). The uterine cycle also has three phases: menstrual, proliferative, and secretory.

One full cycle includes the time from the first day of one period to the first day of the next. A typical cycle ranges somewhere between 24 and 35 days with an average length of 28 days. The first half of the cycle includes all the bleeding days and what's known as the follicular phase. The second half of the cycle is the luteal phase. Between these phases is ovulation. Ovulation is the release of an egg from an ovarian follicle about midway through the cycle. This short phase is simply called ovulation or the ovulatory phase.

## Menstruation and the Follicular Phase

The follicular phase of the cycle begins with the first full day of menstrual flow (day 1 of the cycle). At the start of this phase, levels of both estrogen and progesterone are low. These low levels of estrogen and progesterone tell the brain to release follicle stimulating hormone (FSH).

During the follicular phase, a few key things are happening:

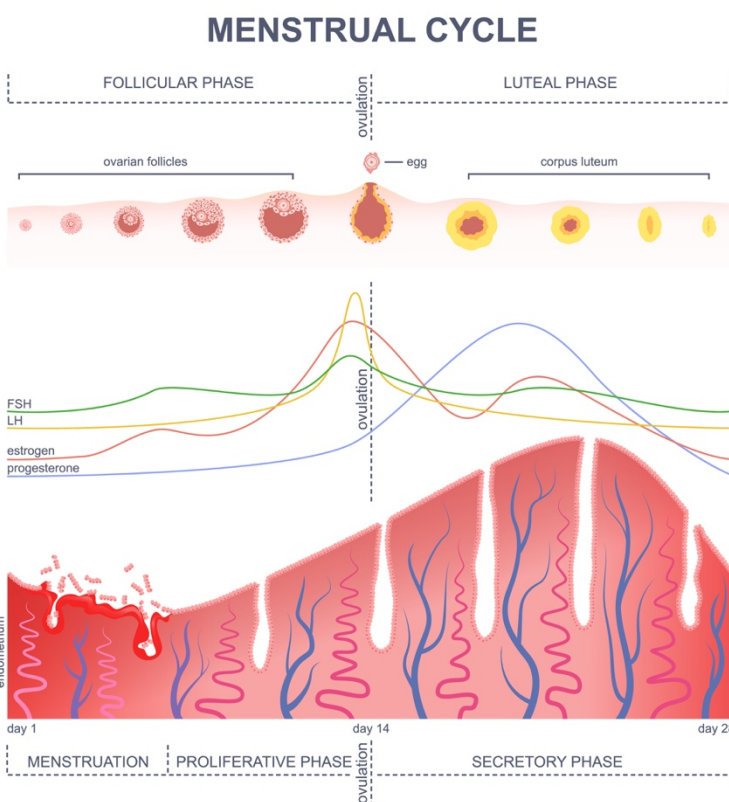


Figure 1

1. 5 or 6 ovarian follicles are starting to mature
2. A dominant follicle emerges in preparation for ovulation (the release of an egg by an ovary). This process is triggered by low levels of estrogen and progesterone that signal the release of follicle stimulating hormone.
3. A healthy uterine lining (endometrium) is beginning to build up to support a possible pregnancy.

This part of the ovarian cycle is also the proliferative phase of the uterine cycle. Cervical mucus and vaginal discharge are minimal at the beginning of this phase, but will soon appear as creamy, whitish in color, and tacky to the touch.

## Ovulation

Ovulation (the release of an egg by an ovarian follicle) typically happens around day 12-14 of the cycle. It is triggered by a high level of estrogen and a sharp rise in Luteinizing Hormone (LH). LH is the signal that pushes the egg out of the follicle. Once the egg leaves, the follicle becomes a corpus luteum, and the luteal phase of the cycle begins. When it leaves the ovary, the egg will travel to a fallopian tube. This is often where fertilization occurs.

Ovulation usually happens 14 days before the beginning of the next period. It is the time during the cycle that fertilization of an egg is most likely to occur. An ovulating person’s “fertile window” is considered to be the day of ovulation, the 5 days preceding it, and a few days after. This is because sperm can live for 5 days once they’re in the reproductive tract. Cervical mucus is clear, thin, and stretchy (sometimes described as egg white consistency) at this time in the cycle in order to help sperm in its mission to fertilize an egg. Some people experience ovulation as an achy or painful feeling on one or the other side of the lower abdomen where the ovaries are. The ache may last moments to a few hours.

### Luteal Phase (Secretory Phase of the Uterine Cycle)

The luteal phase is named for the corpus luteum, which is what’s left behind after ovulation. The corpus luteum secretes the hormone progesterone, halting the production of FSH. The uterine lining continues to thicken to prepare for a pregnancy. The lining secretes proteins to support and nourish the potential fertilized egg. Progesterone also signals breast tissue to prepare to produce milk. This is why some people feel breast tenderness during this part of the cycle and before menstruation occurs. Cervical mucus thickens with the high levels of progesterone at this point in the cycle. Vaginal discharge will noticeably lessen. Progesterone causes basal body temperature (early morning temperature, before getting out of bed) to rise after ovulation occurs. For folks tracking fertility, this rise is an indicator that ovulation occurred 12-24 hours earlier.

### Classification of menstrual cycle phases

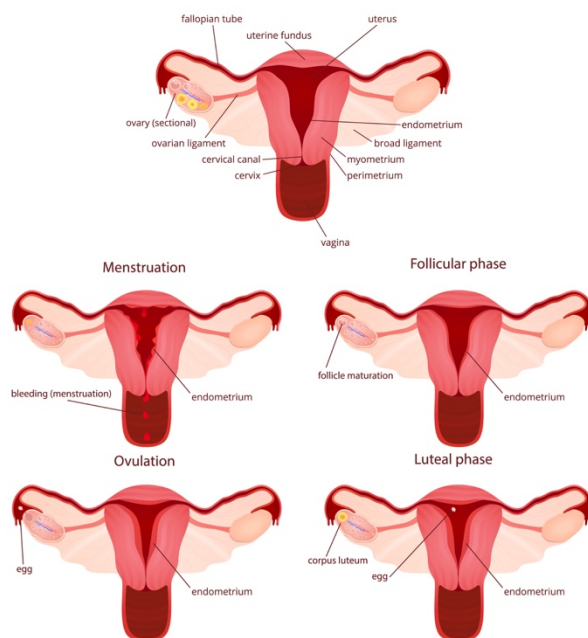


Figure 2

Progesterone causes basal body temperature (early morning temperature, before getting out of bed) to rise after ovulation occurs. For folks tracking fertility, this rise is an indicator that ovulation occurred 12-24 hours earlier.

If fertilization and implantation didn’t happen, LH and FSH levels quickly fall. The corpus luteum also breaks down and estrogen and progesterone levels decrease. Low levels of estrogen and progesterone levels trigger the shedding of the uterine lining, and we’re back to day 1 with menstruation!

## Know Thyself!

One of the best ways to understand your cycle is to track it over time. There are many ways to do this. You can mark your period on a calendar or a menstrual chart. There are also many menstrual and fertility tracker apps. Cycle tracking can be as simple as noting the days of your period. You may also want to note:

- type of flow (spotting, light, heavy)
- feelings and moods
- physical symptoms
- cervical mucus
- motivation levels
- basal body temperature
- moon phases

The more detailed your charting is, the more you will understand your cycle and its effect on your daily life.

Once you start to get to know your cycle, there are some messages to pay attention to. Your body may be trying to tell you something if you notice any of the following:

- Bleeding that lasts longer than 7 days
- A cycle longer than 35 days or shorter than 21 days
- Bleeding that is heavier or lighter than usual (some variation may be normal)
- Missing more than 3 periods in a row (irregular cycles can be normal during puberty and in perimenopause)
- Severe cramps with your period that cause you to miss out on things you'd normally do
- Bleeding in between periods or after sex

These symptoms can be caused by stress or illness, hormone imbalances, anovulatory cycles (a cycle where an egg isn't released), weight gain or loss (which are sometimes the cause of anovulatory cycles), abnormalities in your uterus, among other things. These things can be explored and addressed by a health care provider if you notice them occurring through your cycle tracking.



image via [@stilclassics on unsplash](#)

## Take Home Points:

- We can learn a lot about our health and fertility from our menstrual cycle.
- The main hormones of the menstrual cycle are estrogen, progesterone, Follicle Stimulating Hormone, and Luteinizing Hormone.
- The ovarian cycle has 3 phases (follicular, ovulatory, and luteal) and the uterine cycle has 3 phases (menstrual, proliferative, and secretory). These phases overlap and influence each other.
- One of the best ways to understand your cycle is to track it over time, using a calendar, menstrual chart, or app.
- Once you get to know your cycle, you will be able to notice trends or changes in your cycle that means your body is trying to tell you something.

## Resources:

Excellent short video explaining the process of menstruation from TedEd:

<https://www.youtube.com/watch?v=ayzN5f3qN8g>

2018 Best Period Tracker Apps from Cosmopolitan: <https://www.cosmopolitan.com/sex-love/a18210028/best-period-tracker-fertility-app/>

## References

Menstruation. (n.d.). Retrieved from

<https://www.plannedparenthood.org/learn/health-and-wellness/menstruation>

Stages in the Menstrual Cycle. (2014, April 1). Retrieved from

<https://www.ourbodiesourselves.org/health-info/stages-in-the-menstrual-cycle/>

Your Menstrual Cycle. (n.d.). Retrieved from

<https://www.womenshealth.gov/menstrual-cycle/your-menstrual-cycle>



Katie Stadler is a Certified Nurse Midwife in private practice near Cleveland, OH. In addition to her private holistic midwifery and women's health practice, she catches babies at an Amish birth center and provides services at a Title X reproductive health clinic. You can find her at [www.risemidwifery.com](http://www.risemidwifery.com)

No conflicts of interest to report.