Phases of the menstrual cycle [1]

1) Alice,

You've mentioned a lot in this service about a woman’s menstrual cycle, and the risks involved with unprotected sex. Details that you have mentioned include, for example, the high risk of pregnancy (i.e., as a result of unprotected sex or failed contraception) during the "fertile period" of a woman's cycle. What I would like to know is: what (typically) are the various stages in the cycle (e.g., ovulation followed by menstruation, etc.), when do they typically occur in the cycle, and, most importantly, WHEN are the (typical, of course) fertile and infertile (minimum chance of pregnancy) parts of the cycle?

— Wanting to better understand what my partner goes through

2) Hey Alice,

When calculating the length of your menstrual cycle, what is considered to be the actual first day of your cycle? Is it the first day there is "red" bleeding, or does it also include the first day or two of brown discharge?

— Confused

Answer

Dear Wanting to better understand what my partner goes through and Reader,

Whether you menstruate or you don’t, it can’t hurt to understand the steps and characteristics of the menstrual cycle, as it’s a function of many people’s bodies. The average length of the menstrual cycle is 28 days, although folks may experience cycles ranging between 21 and 35 days. The day bleeding starts is counted as the first day of the cycle. The blood may range consistencies and colors — thick, clumpy, or thin, and it might be brown, pink, or red (if experiencing brown discharge before the time when Aunt Flo is expected to arrive, it could be a sign of ovulation or pregnancy). Menstrual bleeding tends to last between two and seven days. The menstrual cycle is controlled by hormones, including estrogen and progesterone, released by the hypothalamus, the pituitary gland, and the ovaries.
Health professionals aren’t consistent in naming how many phases occur in the menstrual cycle or what they’re called; however, they do all contain the same components: menstruation, the follicular/preovulatory phase, ovulation, and the luteal/postovulatory phase. The follicular phase begins on the first day of the menstrual cycle. Additionally, this is the first day of menstruation (bleeding). Thus, it’s key to note that menstruation and the follicular phase overlap, although the follicular phase will continue even after menstruation itself has completed. Menstruation begins when the previous cycle completes. The uterine lining that develops in the previous cycle may no longer be needed if there is no fertilized egg (i.e., the beginning of a pregnancy) to support and begins to slough off, initiating menstruation. It’s made up of blood, endometrial cells, and mucus, and this process can last from three to seven days.

Simultaneously in the follicular phase, hormones from the hypothalamus stimulate the anterior pituitary gland, which produces large amounts of follicle stimulating hormone (FSH) and small amounts of luteinizing hormone (LH). The pituitary gland secretes FSH, which in turn stimulates the ovaries to begin follicle maturation. Generally, one ovarian follicle matures into an egg each cycle. The ovarian follicle produces increasingly higher levels of estrogen, and response to estrogen stimulation, the uterine lining thickens with increased numbers of blood vessels and uterine glands. Once the single follicle has been selected, the FSH and LH begin to drop. Ovulation occurs at midcycle, around two weeks before the start of menstruation, when the mature follicle releases the ovum (an egg). While the release of estrogen had previously helped to moderate the production of LH and FSH during the follicular phase, a switch occurs in the middle of the overall menstrual cycle in which these hormones have a positive feedback effect, and LH surges, with a smaller increase in FSH as well. The result of this LH surge is ovulation, which refers to the rupture of the follicle and the release of an egg. Some, but not all, people may feel a twinge or cramp in the lower abdomen or back, sometimes with vaginal secretion, perhaps spotted or tinged with blood. This is referred to as Mittelschmerz ("middle pain").

In the luteal, or postovulatory phase, the secretion of progesterone begins to rise. Following ovulation, the follicle transforms into the corpus luteum ("yellow body"), which produces the hormone progesterone. Under the combined influence of estrogen and progesterone, the endometrium (the lining of the uterus) continues to develop and the uterine glands secrete nutrients, making it ready to receive and sustain the fertilized ovum (if fertilization occurred). In the case of fertilization, the levels of ovarian hormones then remain high and the uterine lining remains intact through pregnancy. If pregnancy doesn't occur, the high levels of estrogen and progesterone rapidly fall.

In terms of conception, fertility depends on three factors: a healthy egg, healthy sperm, and favorable cervical mucus. The egg lives for 12 to 24 hours and then disintegrates if not fertilized. Healthy sperm travel through strands of fertile cervical mucus, which is produced a few days before ovulation. In the presence of favorable cervical mucus, which guides and nourishes the sperm, they may survive as long as five days within the body. Otherwise, sperm die very quickly and never reach the egg.

Generally, people might experience six days of fertility during the menstrual cycle — the five days before, the day of, and (in rare cases) the day after ovulation. Pregnancy is most likely if penis in vagina (PIV) intercourse occurs in the three days leading up to, or including the day of ovulation.
When estimating the fertile time frame, people may consider all of the simultaneous signs occurring in the body. The fertility awareness method [2], which is a strategy people use for birth control and conception purposes, teaches people to recognize these signs. They include the observation of: cervical mucus changes, feelings associated with ovulation, basal body temperature changes that occur after ovulation, and regularity of menstrual patterns. Calculating precisely when these events occur is highly improbable, but a close approximation may be made. Due to the unpredictability of menstrual cycles, it’s difficult to determine when ovulation is happening, and there’s possibility of pregnancy throughout the cycle, so other forms of birth control may be more effective when trying to prevent pregnancy.

While there are certain steps to the cycle that are generally followed, there may be some variation across cycles for period-having folks. For example, someone might miss a period, get their period early or late, bleed longer or shorter than usual, have heavier or lighter bleeding than usual, have varied premenstrual syndrome (PMS) symptoms, or just experience unpredictability around period timing month-to-month.

Alice!

Related questions

- Sexual attraction and menstrual cycles [7]
- What causes menstrual cramps? [8]
- Extended-cycle birth control pills: Putting periods on hold [9]

Resources

- Medical Services (Morningside) [10]
- Medical Services (CUIMC) [11]

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[1] https://goaskalice.columbia.edu/answered-questions/phases-menstrual-cycle