

Understanding your menstrual cycle

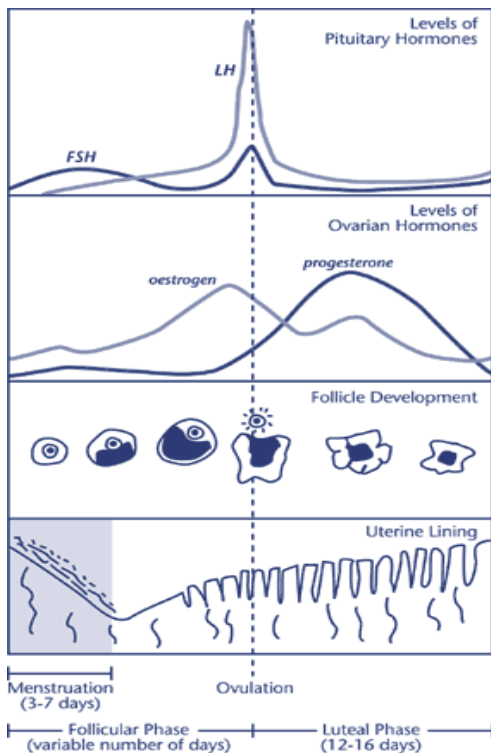
The menstrual cycle involves a number of changes associated with the development of an egg and the possibility of pregnancy. It starts on the first day of the menstrual period (referred to as day 1) and ends the day before the next period starts.

While the length of the menstrual cycle is often 28 days, it can vary anywhere from 20 to 40 days. Cycles longer than six weeks are considered unusual.

The length of the menstrual cycle can change throughout a woman's life. Irregular periods are common amongst adolescent women as well as in women approaching menopause. Factors such as stress, extreme emotion (good or bad), weight changes, excessive physical activity or travelling can also cause irregularities in a woman's menstrual cycle.

Phases of the cycle

The menstrual cycle has four distinct phases: menstruation, follicular phase, ovulation and the luteal phase.



Although menstruation is considered to be the first phase of the cycle, in order to properly understand menstruation it is necessary to first explain the other phases.

FOLLICULAR PHASE

During this phase the pituitary gland releases follicle-stimulating hormone (FSH) which causes between 10 and 20 follicles to begin developing in the ovary. Follicles are groups of cells that contain an immature egg (ovum). They produce the hormone oestrogen which causes the lining of the uterus (endometrium) to become thick in preparation for the possible embedding of a fertilised egg. Usually only one of these follicles develops into a mature egg. The mature follicle then moves towards the surface of the ovary with the other follicles breaking down and being reabsorbed by the body. The follicular phase can vary considerably in length, depending on the time of ovulation.

OVULATION

The rise in oestrogen during the follicular phase leads to the secretion of gonadotropin-releasing hormone (GnRH) which in turn increases the pituitary gland's production of luteinising hormone (LH) and FSH. The rise in LH triggers ovulation, where the follicle and ovary open to release the egg from the ovary. Following ovulation the egg is swept into the fallopian tube and moves towards the uterus. If the egg is not fertilised by sperm it will disintegrate over the next 12 to 24 hours.

Cervical mucus and position

Just before ovulation the cervical mucus becomes clear and slippery, resembling raw egg white. At this time it is very elastic and can be stretched into a string between two fingers. It is referred to as 'fertile mucus' because a woman is considered fertile when it is present. The texture of the fertile mucus assists and nourishes the sperm as they travel up the vagina towards the opening of the cervix.

When a woman is in a non-fertile phase of her cycle the cervical mucus differs in colour and texture. It might be sticky, crumbly, gummy or creamy (like lotion) in texture and white, milky or yellow in colour. This mucus cannot be stretched between the fingers and may have a 'sour' smell. It is important to note that secretions related to sexual arousal, semen, lubricants, spermicides, vaginal infections (e.g. thrush), and certain medications can all interfere with the appearance of cervical mucus.

The positioning of the cervix and its opening (os) also change throughout a woman's cycle. Around ovulation the cervix moves into a higher position and the opening widens. Some women may also experience aches or pain at this time. This pain can vary from cramps or a general ache in the abdomen to sharp pains in one side. Spotting (light bleeding) can also occur.

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Time of ovulation

Women often believe that ovulation occurs mid-cycle. It actually occurs 12-16 days before the next period. So, although a woman with a 28 day cycle may ovulate mid-cycle (between day 12 and day 16), a woman with a 36 day cycle will ovulate between day 20 and day 24.

For women with a regular cycle, an easy way to approximate the time of ovulation is to subtract 16 from the number of days in the cycle and then add 4. This will calculate the span of days in which ovulation is most likely to occur. For instance, a woman with a 22 day cycle is most likely to ovulate between days 6 and 10 of her cycle ($22-16 = 6$ ($+4 = 10$)).

Ovulation and conception

Following ovulation, the egg's life span can be up to 24 hours, but is usually between 6 and 12 hours. In contrast, sperm generally survive for 3 days, but can live for up to 5 days if optimal fertile cervical mucus is present. Pregnancy is therefore possible 3 to 5 days before ovulation and in the 24 hour period following ovulation.

By being aware of the various signs of ovulation women can calculate their fertile and non-fertile days for contraceptive purposes or to optimise the chance of pregnancy. Women interested in charting their cycle should consult someone experienced in the area of fertility awareness and natural family planning. Women under 35 who are experiencing difficulty in conceiving should consult their doctor after 12 months of trying. This time is reduced to 6 months for those 35 and over.

LUTEAL PHASE

During this phase the remnants of the follicle that released the egg (now called the *corpus luteum*) releases large amounts of progesterone as well as some oestrogen. These hormones contribute to the further thickening and maintenance of the lining of the uterus. If fertilisation does not occur the corpus luteum breaks down and progesterone levels decline leading to the disintegration of the lining.

During this phase women may experience physical and emotional changes including tender or lumpy breasts, fluid retention, bloating, mood swings, tiredness or anxiety (see *Premenstrual syndrome* section).

MENSTRUATION

Menstruation occurs when the broken down lining of the uterus flows out through the vagina. Menstruation generally lasts from 3 to 7 days. Some women will regularly have periods for shorter or longer than this. The length can also differ from one cycle to the next. In addition to blood, menstrual fluid is made up of several components including endometrial cells, cervical mucus and vaginal secretions. The amount of menstrual fluid lost also varies but a woman generally loses between 50-100ml of fluid.

Menstrual flow may be heaviest or lightest at the beginning of menstruation or may change throughout. The colour can range between black, brown, dark red, bright red and pink. Menstrual fluid only tends to have an unpleasant odour after it has been in contact with air for a period of time.

Age of first and last period (menarche and menopause)

In Australia the average age of menarche (first period) is considered to be between the ages of 11 and 14. Menarche usually occurs a year or two following the appearance of other puberty related changes like breast development and pubic and underarm hair growth. Menarche is also related to size and weight. Girls with a higher body mass index (BMI) are likely to begin getting periods earlier than those with lower BMI scores.

Research suggests that the average age of menarche has fallen over the last century, due to a number of factors including improved diet, better health care and possibly the increase in oestrogen-like substances in the environment (eg. pesticides, plastics). It is recommended that if a young woman has not had her period by the time she is 16 she should consult a doctor to ensure that she does not have a medical condition that is preventing menstruation from occurring.

When young women first start menstruating they are often anovulatory (not ovulating) and, therefore, not fertile. Menstruation without ovulation is quite common in the first few cycles of menstruation and can also occur during other life stages such as before menopause. Even though women may be unsure as to whether they are ovulating at particular times in life, contraception still needs to be used if pregnancy wants to be avoided.

Menopause, the ending of periods, typically occurs in the late 40s or early 50s. In the time leading up to menopause the menstrual cycle and/or flow may change, becoming lighter, heavier or longer. While irregular bleeding is also common at this time, it can be a symptom of gynaecological cancer so women experiencing this should consult their doctor.

Sex and menstruation

Some women avoid sexual activity when they have their period for personal, cultural or religious reasons. However there are few physical reasons why women should avoid sex during menstruation. One consideration is that the risk of transmitting blood borne infections such as hepatitis C and HIV is higher when having unprotected sex at this time.

The pill and menstruation

The pill contains synthetic oestrogen to prevent the development of an egg (and therefore, ovulation) and synthetic progesterone to increase the thickness of cervical fluid (to slow the movement of sperm) and prevent the complete development of the uterine lining.

Because women on the pill do not ovulate they do not experience changes in cervical mucus or experience ovulation pain. Their 'period' is actually a withdrawal bleed resulting from the stopping of the synthetic hormones (during the seven days of inactive/ sugar pills) rather than a natural menstruation.

Women taking the pill can use it to miss or delay a withdrawal bleed. This can be convenient for women planning travel or special occasions. Women who experience health problems like endometriosis, menstrual migraine and heavy bleeding may use the pill to reduce the number of withdrawal bleeds they have a year (and, therefore, the number of times they experience symptoms).

Women taking a monophasic pill (same dosage throughout the cycle) can miss or delay a withdrawal bleed by simply missing the inactive/ sugar pills and going straight on to the next pill packet. However, women on a triphasic pill (different dosages throughout the cycle) may experience spotting if they do this due to the change in hormone levels at the start and end of the pill packet. Women on triphasic pills who wish to miss a withdrawal bleed should seek advice from their doctor.

Breakthrough bleeding can sometimes occur in women on the pill, particularly in the first few months of taking it or if using a triphasic pill. A woman is still covered contraceptively if she has not missed taking any active pills and has a break-through bleed. However, she should consult her doctor to review the choice of pill and to ensure the bleeding is not related to another condition (see *Bleeding between periods* section).

Return of periods after childbirth

The length of time before a woman's period returns following pregnancy largely depends on whether she is breastfeeding or not. This is because the hormone that stimulates milk production, prolactin, also inhibits ovulation and the return of menstruation. Therefore, women who are fully breastfeeding may not have a period for several months after birth or until they finish breastfeeding. The return of menstruation in breastfeeding mothers depends upon the frequency and duration of breast feeds a day. It is important to be aware that women will ovulate, and therefore be fertile, before the return of their first period following delivery/breastfeeding.

Sanitary protection

PADS

Sanitary pads come in a variety of shapes and thicknesses to suit different flow types and situations (e.g. night time pads). Pads generally need to be changed every three to four hours and should be wrapped and disposed of in a bin. They cannot be flushed down the toilet as they will block the plumbing.

TAMPONS

Tampons are preferred by many women because they are comfortable to wear and convenient to use. Tampons come in various sizes to suit different menstrual flows. Women should choose the minimum possible absorbency to suit their flow. Tampons need to be changed every three to four hours. Parents of girls new to using tampons may wish to remind their daughters to change their tampon regularly. Like pads, tampons should be disposed of in a bin rather than flushed down the toilet. This is particularly important in rural areas in Australia that often use septic systems.

Some women worry that a tampon will get 'lost'. This is not physically possible because the entrance from the cervix to the uterus (the cervical opening or os) is so small that a tampon cannot enter it. Tampons do occasionally become 'stuck'. If this happens, adopting a squatting position or sitting in a warm bath can assist in removing the tampon.

Young women (and parents of young women) also ask whether tampons can be used by virgins. The answer is 'yes' because tampons do not break the hymen as it already has a small gap in it which allows the menstrual fluid to flow out. Often a girl's hymen is no longer intact anyway by the time she gets her first period as a result of normal physical activity. To make tampon insertion easier, first time tampon users may wish to try a mini tampon, use some lubricant or saliva on the tampon or use a tampon with an applicator. Once a tampon has been inserted correctly a woman should not be able to feel it.

MENSTRUAL CUPS

Menstrual cups are made of rubber or silicone and are worn inside the vagina to catch menstrual fluid. Because they sit inside the vagina they can be worn when participating in activities such as swimming but cannot be worn when engaging in penetrative sex. In Australia they are classified as a medical device and must therefore be approved for sale by the Therapeutic Goods Administration (TGA).

TOXIC SHOCK SYNDROME (TSS)

Toxic shock syndrome is a rare illness caused by the toxins released by the bacteria *Staphylococcus aureus*. It is believed that using a tampon absorbency that is too high or not changing a tampon for a long period of time can cause staphylococcal bacteria to rapidly multiply, releasing toxins into the bloodstream. Symptoms include a sudden high fever, a rash similar to sunburn, vomiting, diarrhoea, muscular pain and headache. Choosing the lowest absorbency tampon necessary,

washing hands thoroughly before and after inserting a tampon, using pads overnight and changing tampons at least every three to four hours can minimise the already low risk of TSS.

DISABLED WOMEN

Women with disabilities that restrict their movement may find it difficult to use tampons or menstrual cups. Women with impaired hand function may find using lubricant on a tampon can help or can have their carer assist them. Women with limited lower body sensation who use sanitary pads need to regularly check for signs of skin irritation and pressure from their pad as well as ensuring that pads are well placed. Women may find thicker, larger pads such as those designed for incontinence are easier to use.

Menstrual problems

Some of the most commonly reported menstrual problems are an absence of periods, painful periods, heavy bleeding, bleeding between periods and premenstrual syndrome (PMS).

AMENORRHOEA (ABSENCE OF PERIODS)

Outside of pregnancy, amenorrhoea is usually the result of hormonal disturbance. These disturbances can be caused by a wide range of factors including weight gain or loss (body weight and body fat percentage are directly related to menstruation), over-exercising, extreme emotion (both good and bad), anxiety or stress, travel, dietary changes and conditions such as polycystic ovary syndrome. Often amenorrhoea is temporary, with periods returning in time. Women who are not pregnant and have not had a period for longer than six months should consult their doctor.

DYSMENORRHOEA (PAINFUL PERIODS)

While some women experience only mild discomfort when they have their period other women suffer from severe, incapacitating pain. Women might get pain a few days before their period or during the first few days of bleeding. The pain can be a cramping-type pain, caused by the contraction of the uterine muscles, or a heavy dragging pain in the pelvic region. Pain in the legs and back, headaches, nausea, constipation or diarrhoea are also common.

Period pain can be the result of prostaglandins, the substance that causes the uterus to contract during a period. Severe period pain might also signal the presence of a condition such as pelvic inflammatory disease or endometriosis. A woman should see her doctor if she experiences period pain that is unusual for her or if pain is severe enough to require time off from work or school.

Popular remedies for mild pain include analgesics (aspirin or paracetamol), herbal medicines, warm baths, heat packs, gentle exercise and rest. Treatment for more severe period pain includes the use of antiprostaglandins (eg. Nurofen, Ponstan) and oral contraceptives. If women do not find relief with these treatments they should consult their doctor.

MENORRHAGIA (HEAVY BLEEDING)

Because it is hard to measure the amount of menstrual fluid lost it is difficult to define what constitutes heavy bleeding. However, the degree to which a woman's period interferes with her everyday life can provide a guide e.g. having to change a pad or tampon every hour. Heavy bleeding can be caused by a number of factors including hormonal imbalances, fibroids, polyps, endometriosis or, less commonly, bleeding disorders. Excessive blood loss through heavy periods can lead to anaemia. Treatment for heavy bleeding might include drug treatments such as the pill or antiprostaglandins, endometrial ablation (the destruction of the uterine lining) or the use of the Mirena intra-uterine system.

BLEEDING BETWEEN PERIODS

Bleeding or spotting between periods can be a symptom of a number of conditions including sexually transmitted infections, gynaecological cancer, endometriosis, fibroids or a thyroid disorder. It can also be a side effect of some contraceptives or medications (see *The pill and menstruation* section). If a woman experiences bleeding between periods she should consult her doctor.

PREMENSTRUAL SYNDROME

Premenstrual syndrome (PMS) refers to a number of symptoms some women experience before each period. Physical signs of PMS might include tender or lumpy breasts, fluid retention, bloating, food craving and headaches. Psychological signs might include mood swings, tiredness and feelings of anxiety, anger and sadness.

Women who suffer from mild premenstrual syndrome might find exercise, dietary changes, yoga, relaxation techniques and herbal remedies useful.

PREMENSTRUAL DYSPHORIC DISORDER (PMDD)

A small percentage of women suffer from a severe form of PMS called premenstrual dysphoric disorder (PMDD). Women with PMDD experience symptoms so severe that they greatly impact their everyday functioning.

Treatment for PMDD can include lifestyle changes, the pill, cognitive behavioural therapy or, if other treatments are unsuccessful, the antidepressants selective serotonin-reuptake inhibitors (SSRIs).

MENSTRUAL MIGRAINE

Around half of all women who suffer from migraine can clearly link at least some of their attacks to their periods. Some women have migraine attacks only related to their period, not at other times of their menstrual cycle. It is thought that the drop in oestrogen that occurs just before a woman has a period is a migraine trigger.

Women who think their migraines may be related to their menstrual cycle are recommended to keep a diary tracking their menstrual cycle and migraine attacks for three months to show their doctor.



For help understanding this fact sheet or further information on menstruation or menstrual problems call the Health Information Line on 3839 9988 (within Brisbane) or 1800 017 676 (toll free outside Brisbane).

This is one of a series of women's health information factsheets available at www.womhealth.org.au.

A full list of references is available from Women's Health or on the website.

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