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 **IMPLANTATION**

**Implantation:** The act of setting in firmly.

In embryology, implantation refers specifically to the attachment of the fertilized egg to the uterine lining, which occurs approximately 6 or 7 days after [conception](https://www.medicinenet.com/conception_pictures_slideshow/article.htm).

**What Is Implantation Bleeding?**

[**Implantation bleeding**](https://www.webmd.com/baby/implantation-bleeding-pregnancy) is light bleeding from the [**vagina**](https://www.webmd.com/women/picture-of-the-vagina) that happens in some women 10 to 14 days after conceiving a [**baby**](https://www.webmd.com/parenting/baby/default.htm).

You may think it’s just a light period, but it’s an early sign of [**pregnancy**](https://www.webmd.com/baby/default.htm). It’s not dangerous, and you don’t need treatment.

After a [**sperm**](https://www.webmd.com/infertility-and-reproduction/guide/sperm-and-semen-faq) fertilizes your egg, the combination becomes an [**embryo**](https://www.webmd.com/baby/ss/slideshow-conception). It travels to your uterus, where it implants itself into the lining.

Sometimes, as the embryo attaches, it causes a little bleeding. It doesn't mean the [**baby**](https://www.webmd.com/parenting/baby/rm-quiz-newborn-typical) will have problems.

## Implantation Bleeding Signs and Symptoms

[Implantation bleeding](https://www.webmd.com/baby/guide/bleeding-during-pregnancy) tends to happen before you notice [morning sickness](https://www.webmd.com/baby/guide/Managing-morning-sickness). You might have:

* [Blood](https://www.webmd.com/heart/anatomy-picture-of-blood) that’s brown or pinkish
* Blood that’s lighter in flow than what you get during your period
* Mild cramping
* Tender swollen [breasts](https://www.webmd.com/women/picture-of-the-breasts) or nipples
* [Fatigue](https://www.webmd.com/women/guide/why-so-tired-10-causes-fatigue)
* [Headache](https://www.webmd.com/migraines-headaches/migraines-headaches-basics)
* [Upset stomach](https://www.webmd.com/digestive-disorders/digestive-diseases-nausea-vomiting)
* Vomiting (morning sickness)
* [**Food cravings**](https://www.webmd.com/baby/the-truth-about-food-cravings) or aversions
* Mood swings
* Peeing more than usual

If you’re not sure whether you’re having implantation bleeding or your period, take a [**pregnancy test**](https://www.webmd.com/baby/guide/pregnancy-tests) or talk to your doctor.

**THE FACTORS THAT FACILITATE THE MOVEMENT OF SPERM IN THE FEMALE REPRODUCTIVE TRACT**

## Site of semen deposition

The site of semen deposition is not easy to establish in many species because it must be determined by examining the female immediately after coitus and by considering the anatomy of the penis, vagina and cervix during coitus. However, it has been accomplished for humans, in which semen has been observed pooled in the anterior vagina near the cervical is shortly after coitus.

## Vaginal defenses against infectious organisms may affect sperm

The vagina is open to the exterior and thus to infection, especially at the time of coitus; therefore, it is well equipped with antimicrobial defenses. These defenses include acidic pH and immunological responses and can damage sperm as well as infectious organisms. To enable fertilization to take place, both the female and the male have adopted mechanisms for protecting sperm.

## Sperm transport through the cervix

In some species, the cervical canal widens under the influence of estrogen. Fluoroscopy and scintigraphy have been used in domestic dogs and cats to examine cervical patency.

## Sperm transport through the uterus

At only a few centimetres in length, the human uterine cavity is relatively small and could be traversed in less than 10 min by sperm swimming at about 5 mm/min, which is the swimming speed of sperm in aqueous medium.

## Rapid sperm transport

Sperm have been recovered in the cranial reaches of the tubal ampulla only minutes after mating or insemination in humans and several other species of mammals. Rapid transport of sperm into the Fallopian tube would seem to counter the proposed model of sperm swimming one-by-one through the uterotubal junction.

**THE PHYSIOLOGICAL ADAPTATIONS OF THE FEMALE TO PREGNANCY**

### **Fetal-placental unit**

Levels of progesterone and estrogen rise continually throughout pregnancy, suppressing the hypothalamic axis and subsequently the menstrual cycle. The progesterone is first produced by the [corpus luteum](https://en.wikipedia.org/wiki/Corpus_luteum) and then by the placenta in the second trimester. Women also experience increased [human chorionic gonadotropin](https://en.wikipedia.org/wiki/Human_chorionic_gonadotropin) which is produced by the placenta.

### **Pancreatic Insulin**

The placenta also produces [human placental lactogen](https://en.wikipedia.org/wiki/Human_placental_lactogen) which stimulates maternal lipolysis and fatty acid metabolism. As a result, this conserves blood glucose for use by the fetus. It can also decrease maternal tissue sensitivity to insulin, resulting in [gestational diabetes](https://en.wikipedia.org/wiki/Gestational_diabetes).

### **Pituitary gland**

The [pituitary gland](https://en.wikipedia.org/wiki/Pituitary_gland) grows by about one-third as a result of hyperplasia of the lactrotrophs in response to the high plasma estrogen. [Prolactin](https://en.wikipedia.org/wiki/Prolactin), which is produced by the lactrotrophs increases progressively throughout pregnancy. Prolactin mediates a change in the structure of the breast [mammary glands](https://en.wikipedia.org/wiki/Mammary_gland) from ductal to lobular-alveolar and stimulates milk production.

### **Parathyroid**

Fetal skeletal formation and then later lactation challenges the maternal body to maintain their calcium levels. The fetal skeleton requires approximately 30 grams of calcium by the end of pregnancy. The mother's body adapts by increasing [parathyroid hormone](https://en.wikipedia.org/wiki/Parathyroid_hormone), leading to an increase in calcium uptake within the gut as well as increased calcium reabsorption by the kidneys. Maternal total serum calcium decreases due to maternal [hypoalbuminemia](https://en.wikipedia.org/wiki/Hypoalbuminemia), but the ionized calcium levels are maintained.

### **Adrenal glands**

Total [cortisol](https://en.wikipedia.org/wiki/Cortisol) increases to three times of non-pregnant levels by the third trimester. The increased estrogen in pregnancy leads to increase corticosteroid-binding globulin production and in response the [adrenal gland](https://en.wikipedia.org/wiki/Adrenal_gland) produces more cortisol. The net effect is an increase of free cortisol. This contributes to insulin resistance of pregnancy and possibly striae. Despite the increase in cortisol, the pregnant mom does not exhibit [Cushing syndrome](https://en.wikipedia.org/wiki/Cushing_syndrome) or symptoms of high cortisol. One theory is that high progesterone levels act as an antagonist to the cortisol.

The adrenal gland also produces more [aldosterone](https://en.wikipedia.org/wiki/Aldosterone), leading to an eight-fold increase in aldosterone. Women do not show signs of hyperaldosterone, such as hypokalemia, hypernatremia, or high blood pressure.

The adrenal gland also produces more [androgens](https://en.wikipedia.org/wiki/Androgens), such as testosterone, but this is buffered by estrogen's increase in sex-hormone binding globulin (SHBG).  SHBG binds avidly to testosterone and to a lesser degree.

### **Thyroid**

The [thyroid](https://en.wikipedia.org/wiki/Thyroid) enlarges and may be more easily felt during the first trimester. The increase in kidney clearance during pregnancy causes more iodide to be excreted and causes relative iodine deficiency and as a result an increase in thyroid size. Estrogen-stimulated increase in thyroid-binding globulin (TBG) leads to an increase in total [thyroxine](https://en.wikipedia.org/wiki/Thyroxine) (T4), but free thyroxine (T4) and [triiodothyronine](https://en.wikipedia.org/wiki/Triiodothyronine) (T3) remain normal.

## Breast size

A woman's breasts grow during pregnancy, usually 1 to 2 cup sizesand potentially several cup sizes. A woman who wore a C cup bra prior to her pregnancy may need to buy an F cup or larger bra while nursing. A woman's torso also grows and her bra band size may increase one or two sizes. An average of 80% of women wear the wrong bra size, and mothers who are preparing to nurse can benefit from a professional bra fitting from a lactation consultant. Once the baby is born up to about 50–73 hours after birth, the mother will experience her breasts filling with milk (sometimes referred to as “the milk coming in”). Once [lactation](https://en.wikipedia.org/wiki/Lactation) begins, the woman's breasts swell significantly and can feel achy, lumpy and heavy (which is referred to as engorgement). Her breasts may increase in size again by an additional 1 or 2 cup sizes, but individual breast size may vary depending on how much the infant nurses from each breast. A regular pattern of nursing is generally established after 8–12 weeks, and a woman's breasts will usually reduce in size, but may remain about 1 cup size larger than prior to her pregnancy. Changes in breast size during pregnancy may be related to the sex of the infant, as mothers of female infants have greater changes in breast size than mothers of male infants.