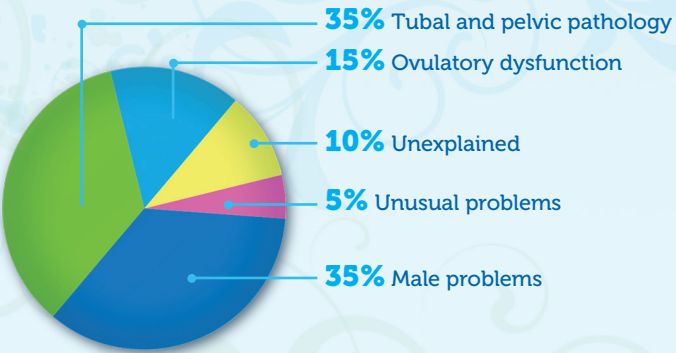


# About fertility testing

If you're struggling to have a baby, you're not alone. An estimated 6.1 million women in the United States struggle with infertility. Fortunately, medical progress in the last several decades has opened the door to parenthood for couples who previously may not have been able to conceive. There are a number of potential causes of infertility, and after reviewing your general medical history, your doctor can order tests to help determine the cause. Tests for infertility in men and women are described below.

## Causes of infertility in couples



## Fertility testing for men

### Semen analysis

For this test, your doctor will analyze a semen sample under a microscope to assess

- Sperm count
- Percentage of sperm that are moving (motility)
- Forward movement of the sperm (progression)
- Size and shape of the sperm (morphology)
- Amount of semen (volume)
- The ability of the semen to change from a gel-like state to a liquid state (liquefaction)



Sperm

### Lower limit reference values for normal semen

|                                            | WHO 5th edition | WHO 4th edition |
|--------------------------------------------|-----------------|-----------------|
| Volume (mls)                               | 1.5             | 2.0             |
| Total Sperm (millions in ejac)             | 39              | 40              |
| Sperm Conc. (millions per ml)              | 15              | 20              |
| Total Motility                             | 40              | 50              |
| % Normal Forms (by Kruger strict criteria) | 4               | 14              |

As with any test, values and how they are interpreted may vary somewhat. Discuss your results with your doctor to learn more about what they mean.

### Other tests that your doctor may recommend:

- Blood testing to look for hormonal abnormalities or potential genetic factors that can contribute to infertility
- Ultrasound to look for obstructions or abnormalities as well as to check your prostate and look for blockages of the tubes that transport semen
- Sperm antibody tests to check for immune cells that attack sperm
- Testicular biopsy to determine if sperm production is normal

## Fertility testing for women

### Ovarian reserve testing

Ovarian reserve testing is performed to help determine the potential number of eggs remaining in the ovaries and how well the ovaries are responding to hormonal signals from the brain. Your doctor will take a blood test on the third day of your menstrual cycle to check your levels of follicle-stimulating hormone (FSH), and may also check levels of estradiol, antimüllerian hormone (AMH), and/or inhibin-B. These hormone levels may indicate problems with egg supply. Your doctor may also recommend a transvaginal ultrasound to count the number of follicles (eggs) that are visible by ultrasound during the beginning of the menstrual cycle.



Ovary & Follicles

### Ovulation testing

Your doctor will want to check that you are ovulating (releasing an egg from the ovary) normally and that your ovaries are responding to normal hormonal signals. Ovulation tests include:

#### Tracking basal body temperature

(your body temperature at rest, when you first wake up) can help determine whether or not you have ovulated

#### Ultrasounds to help track follicular growth

**Home ovulation detection tests** that use urine to detect the rise in luteinizing hormone (LH) that occurs 1 to 2 days before ovulation, and that help define the period of greatest fertility

#### Blood hormone tests

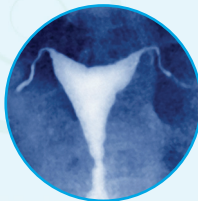
to track your levels of estrogen, LH, and progesterone, at specific times during your cycle



**Endometrial biopsy**, in which your doctor takes a small sample of your endometrium (lining of the uterus) to see if it has developed adequately for an embryo (fertilized egg) to implant and grow

### Examining the fallopian tubes

Blocked fallopian tubes can cause infertility. Your doctor will want to make sure your fallopian tubes are open so that the egg can pass from the ovary to the uterus. The hysterosalpingogram, a procedure that uses x-rays and a special dye, is often used to detect blockages.



Uterus & Fallopian Tubes

### Examining your reproductive organs

Your doctor will also want to check your uterus for any masses or abnormalities that may be contributing to infertility. This may require one or more of the following procedures:

**Transvaginal ultrasound**—this scan (sometimes 3D) shows your uterus and uterine cavity as well as the surrounding organs in your pelvis

**Hysterosalpingogram**—this procedure uses dye and an x-ray to view the uterus and uterine cavity for abnormalities

**Sonohysterogram**—in this procedure, a small amount of sterile saline is placed into your uterus so that the doctor can see the uterine cavity more clearly

**Hysteroscopy**—for this procedure, the doctor will vaginally insert a narrow tube with a camera into your uterus for a direct view. Typically performed with local or general anesthesia

#### Magnetic resonance imaging (MRI)

—a noninvasive scan of your uterus and surrounding pelvic structures used to determine the internal and external shape of the uterus



# In vitro fertilization (IVF) explained

## The Stages Of IVF

A course of IVF is typically referred to as a “cycle” rather than simply a procedure. That’s because this carefully timed process follows the steps of your menstrual cycle. The first part of an IVF cycle is called controlled ovarian stimulation (COS), followed by egg retrieval, sperm retrieval, fertilization, and finally embryo transfer.

### Controlled ovarian stimulation

In normal ovulation, only one egg is produced. In IVF, a number of eggs are retrieved to increase the chances of producing a healthy embryo and successful implantation. In order to retrieve multiple eggs, your doctor will need to stimulate multiple follicle growth with one or more medications so that multiple eggs are produced. COS will also include treatment with a drug called a gonadotropin-releasing hormone (GnRH) analogue to prevent the premature release of the eggs before retrieval. COS can also be used outside of IVF, in timed intercourse or an intrauterine insemination (IUI) process.



#### WHAT TO EXPECT DURING COS

Prior to the start of ovarian stimulation, your doctor may prescribe medication to help suppress the ovary. This may be an injection of a GnRH analogue or birth control (pills or the patch).

**A few days after your period begins**, your doctor may start you on treatment with follicle-stimulating hormone (FSH) and/or human menopausal gonadotropin (hMG), or another drug.

**For the next week or so (generally 8-14 days)**, your doctor will evaluate your hormone levels and regularly examine your follicles by transvaginal ultrasound to assess their development. Your doctor may prescribe an additional GnRH analogue midcycle to prevent premature release of the eggs. Your doctor will also keep track of any possible medication side effects.

**When your follicles are almost mature**, your doctor will tell you when to take your human chorionic gonadotropin (hCG) injection. hCG causes the eggs to reach full maturity and eventually ovulate. The hCG injection is usually given about 35 to 38 hours before egg retrieval is scheduled.

**If you aren’t producing eggs, or if the eggs you are producing aren’t able to develop normally, your doctor may suggest using an egg donor.** In this common procedure, the eggs are retrieved from a prescreened qualified donor, fertilized, and transferred into your uterus.

### Egg retrieval

Following hCG injection, prior to the time you would normally ovulate, your doctor will retrieve the eggs from the follicles. The doctor will use a transvaginal ultrasound probe with a thin needle attached to it to draw the fluid and egg from each follicle. This process usually takes under an hour in the office and your doctor will typically use general anesthesia or sedation.



### Fertilization

In this step, your partner’s sperm will be separated from the semen, then either incubated with the eggs overnight or microscopically inserted directly into the egg in a procedure called intracytoplasmic sperm injection (ICSI). The next morning, an embryologist will check that the eggs are fertilized and developing properly.



### Embryo transfer

Embryo transfer occurs after 3 to 5 days of incubation. An embryologist will determine the developmental stage and quality of the embryos and will work with you to decide how many will be transferred and at what time. Although more than one embryo may increase the likelihood of pregnancy, it will also increase the chances of having multiples (twins, triplets, etc). Once you and your doctor have decided on an appropriate number, your doctor will transfer the embryos vaginally via a narrow hollow tube, or catheter, directly to your uterus.



**In IVF, your doctor can freeze additional embryos (called a frozen embryo transfer, or FET) or freeze unfertilized eggs for use in later cycles.**

### Luteal phase support

In an IVF cycle, the luteal phase refers to the time following egg retrieval when your uterus is prepared for embryo transfer and implantation. Your doctor may prescribe progesterone in the luteal phase of an IVF cycle because the natural production of progesterone is suppressed. Starting some time after egg retrieval, progesterone helps prepare the uterus for implantation and to support a pregnancy, thus it can be continued for up to 10 weeks following a positive pregnancy test. Progesterone can be provided vaginally, orally, or as an injection—your doctor can work with you to determine which may be appropriate for you.