



Fertility, explained: Trying to conceive in 2021

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An overview of female-factor infertility

Infertility refers to the inability to get pregnant but also encompasses cases of repeated failed pregnancies. Although much more common than you'd think, it can be heartbreaking and distressful for intended parents and their support networks.

The number one thing to know when you're confronting infertility is that you're not alone. It impacts **10% of the population**, and many of these intended parents do, in fact, conceive and have children thanks to modern medicine and assisted reproductive technologies.

So how do you know when to start seeking infertility treatment or assisted reproductive technology? The timelines below can offer you a reference of when you may need a little extra help:

- Under 30 and trying to conceive with unprotected sex for six months
- Over 30 and trying to conceive with unprotected sex for one year

Some additional signs that may accompany female infertility include:

- Irregular or no periods
- Painful or heavy periods, which can indicate endometriosis
- Symptoms of hormone fluctuations (like reduced sex drive, facial hair growth, thinning hair, and weight gain)
- And pain during sex

Fortunately, if you're experiencing one or a combination of these symptoms, your fertility doctor can provide you with the answers you seek. This includes the diagnosis of your or your partner's source of infertility and all available treatment paths for your specific needs. From there, you can embark on your unique, beautiful family-building journey.

So first, let's explore the top seven causes of female infertility, broken down by their source.

1. Egg-related infertility

To successfully conceive, the female reproductive system releases one young egg each month. If a woman is struggling with infertility, the challenge related to the female eggs can be divided into two categories: ovulation and egg quality and quantity.

Ovulation-related infertility

If a woman does not have a regular menstrual period occurring every 24 - 35 days, this can be related to infrequent or absent ovulation. This results in infertility as there are no eggs present for fertilization.

Women who report having a menstrual period every month and have symptoms such as breast tenderness prior to their monthly period are usually ovulating an egg. If a woman is not having a regular period and it's deemed that she's not ovulating, an evaluation is necessary to determine the cause.

Reasons why ovulation does not occur regularly include:

Polycystic ovary syndrome (PCOS)

The diagnosis of polycystic ovary syndrome (PCOS) requires three of the following symptoms: menstrual irregularities, androgen excess, and the appearance of polycystic ovaries on an ultrasound. This condition affects 5 - 8% of reproductive-aged women.

Primary ovarian insufficiency (POI)

Primary ovarian insufficiency (POI) is when the number of eggs present in the ovaries is very low. As a result, the patient has irregular periods and symptoms of hot flashes. In order to meet criteria for this diagnosis, the patient must be under the age of 40 years.



Thyroid disease and high prolactin levels

If a woman has either low or high thyroid levels or has high prolactin (a milk-producing hormone released by the brain), this can lead to irregular ovulation.

Hypothalamic dysfunction

Hypothalamic dysfunction is a problem with the part of the brain called the hypothalamus, which controls the pituitary gland and regulates many bodily functions. This can occur if a patient is susceptible to certain stressors causing their brain to release subnormal amounts of the hormones necessary for ovulation.

Number and quality of eggs

The other cause of infertility related to the egg is the actual number and quality of the eggs present. Even if a woman is ovulating regularly each month, she may still have difficulties conceiving. In order to understand egg production, it is important to understand a little bit more about normal ovarian physiology.

As a woman, you have the most eggs you'll ever have when you're in your mother's uterus, which is approximately five to six million. By the time you're born, there are around two million. At puberty, this number decreases to a couple hundred thousand, at age 37 - 38 around 25,000, and by menopause women essentially have no functioning eggs remaining. If your ovulation is regular, each month one of your eggs is ovulated and the rest present die off. Therefore, women have an exponential decline in the number of eggs.

Additionally, because the eggs have been around since before we were born, they do not divide well leading to problems with the number of chromosomes in the egg itself. If the number of chromosomes in the egg is incorrect, this can lead to problems with the embryo implanting in the uterus and an increased risk of miscarriage.

Doctors can determine if a patient is ovulating based on their menstrual cycle history and by testing their progesterone levels in the second half of their menstrual cycle. To evaluate the quantity of eggs in a woman's ovaries we test hormone levels called estradiol and follicle stimulating hormone (FSH) on the second or third day of the menstrual cycle.

2. Age-related infertility

It's impossible to review infertility and avoid consideration of the effect of age on fertility and egg quality. Many women are delaying childbearing into their late 30s and 40s, which has resulted in a significant increase in infertility due to the "Age Factor."

Many studies, including IVF success rates, demonstrate a significant drop in pregnancy rates as women get into their late thirties. Studies have shown that the chance of a 20-year-old woman conceiving after one month of exposure is at 30%. While, at 30 years this rate drops to 20% per month, and at 40 it's 10% per month. At 45, there is less than a 2 - 3% chance of a woman conceiving on her own after trying for one cycle. Parallel to this, the miscarriage rate increases from 10% at the age of 20 to 40% at the age of 45.

The reason behind this phenomenon lies in the fact that egg quality deteriorates with time, which in turn translates to lower pregnancy rates. Unlike men's sperm supply, women are born with a set number of eggs which they use up over the lifespan of their reproductive years. On the other hand, men generate new sperm in their testicles every 70 - 80 days, causing minimal effect to their fertility potential as they age.

With time, the amount of eggs dormant in the ovaries will deteriorate, hence the lower fecundity rate. A direct correlation to this is the increased risk of chromosomal anomalies in infants born from older women.

This is why it's recommended that women over the age of 34 have an amniocentesis performed at 16 - 17 weeks of gestation to rule-out a chromosomally abnormal fetus. Studies also demonstrate that at or around the age of 37, there's an accelerated loss in the quality and number of eggs, causing an acute drop in pregnancy rates in women older than 37.

One of the most common causes of infertility in this age group is accelerated ovarian aging. A term used to imply that the ovaries at a certain age are behaving as if they are older. It is imperative that every woman seeking help for infertility be tested for her ovarian reserve.



3. Uterine-related infertility

Many conditions can affect the uterus itself and therefore make it more difficult for implantation of the embryo to occur. The uterus is connected to the vagina via the cervix and the inside of the pelvis via the fallopian tubes. The egg travels through these tubes after it is released from the ovary.

Fibroids, an overgrowth of the muscle tissue in the uterus, can interfere with implantation and embryo growth depending on the location and size of the overgrowth. Uterine polyps, an overgrowth of the endometrial tissue of the uterus, can also impede implantation and embryo growth. Additionally, scarring inside of the uterus (Asherman's Syndrome) can cause uterine malformations like uterine septum's, and other problems with implantation and embryo growth.

To determine if the inside of your uterine cavity is healthy, your doctors will perform a test called a hysterosalpingogram (HSG) or a saline sonography. During these tests, a dye is instilled into the uterus while imaging is performed to see if there are areas inside the uterus that do not fill up with the dye.

Uterine disease

The uterus is the incubator for the zygote, which implants and grows within it. Any abnormality affecting this organ can result in infertility or even a miscarriage.

The body of the uterus is composed of "smooth" muscular tissue and the cavity is lined with a specialized layer of cells called the "endometrium." This layer is crucial in the implantation process. The endometrium has to be devoid of any abnormalities and should reach a certain thickness to sustain a pregnancy. Hormones produced by the ovaries, Estrogen and Progesterone, help prepare the endometrium for implantation.

Fibroids

Fibroids, or myomas, are benign tumors of the muscle of the uterus. They are very common with almost 1 in 4 women harboring fibroids once during their lifetime. Fibroids are generally harmless and can attain different sizes under the influence of the estrogen hormone. If the fibroids are large, they can present symptoms such as discomfort, pain during intercourse, heaviness, urinary symptoms and abnormal bleeding. Fibroids shrink after menopause when the body's estrogen levels drop.

The location of fibroids is important in determining its harmfulness. They may be located in:

- The body of the uterus, called "Intramural" fibroids
- On the outside of the uterus attached to it with a pedicle, called "Serosal or pedunculated" fibroids
- Inside the uterine cavity or "Submucosal" fibroids.

When fibroids are large and close to the lining of the uterus, they must be removed before attempting to conceive again as it can interfere with implantation, cause infertility or increase the risk of miscarriages.

Adhesions

Adhesions or scar tissue inside the uterine cavity can also interfere with fertility. The most common causes of adhesions include infection or previous surgical manipulation of the uterine cavity, such as Dilation & Curettage (D&C), fibroid or polyp surgery.

Note: A D&C is a procedure in which the cavity of the uterus is scraped to remove abnormal tissue. Damage can occur when doctors perform the procedure aggressively, following the delivery of a baby, or when it is complicated due to an infection.

Many patients harboring such adhesions do not have any complaints or symptoms and it's diagnosed during routine infertility investigations during a hysterosalpingogram or ultrasound examination. In some patients, however, the scarring is so severe that there is an absence of periods or very light periods as most of the endometrium is covered with scarring. Since the endometrium is what is "shed" during the menstrual cycle, having less of it results in lighter periods.

Congenital anomalies

Some women are born with congenital anomalies of the uterus, and this can encompass a variety of abnormalities that range from mild to severe. In some cases, the uterus is absent or extremely small. In other cases, the uterus is divided in two halves or a thick membrane, called a Septum, is present in the middle of the cavity.

Such abnormalities can interfere with the normal implantation of the zygote and result in infertility or miscarriages. The diagnosis is usually made by the x-ray test called HSG or Hysterosalpingogram along with laparoscopy surgical exploration. Milder cases, such as a small septum, can be easily fixed on an outpatient basis. In extreme anomalies, surrogacy is the only solution for a successful outcome.

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4. Tubal-related infertility

The fallopian tube functions to pick up the egg from the surface of the ovary upon ovulation. It's here that the sperm and egg meet and fertilization occurs. Once fertilization occurs, the embryo travels through the fallopian tube for the next couple of days prior to being released into the uterus.

The internal lining of the fallopian tube contains delicate hair-like projections that are instrumental in facilitating the transportation of the sperm, egg, and embryo through the inside of the tube. If a patient has a tube or tubes that are damaged or blocked, the sperm and the egg are not able to meet and fertilization cannot occur in the body. If fertilization does occur but the tube is damaged, it may not be able to transport the embryo to the uterus.

Additional causes of tubal damage are:

- Sexually transmitted diseases such as Gonorrhea and or Chlamydia. If these infections remain undetected and are left untreated, they can permanently damage the tube's delicate lining and cause scar tissue, which can lead to tubal blockage.
- Past history of surgery in the pelvis, such as removing ovarian cysts or surgery for appendicitis.
- Endometriosis, which can cause scarring, tubal damage and blockage.

Your doctor can determine if the tubes are patent (open) by performing a test called a hysterosalpingogram (HSG). During this test, dye is instilled into the uterus and the tubes at the same time imaging is performed in order to see if the tubes fill up with the dye and ultimately spill the dye liquid into the pelvis.

Conditions that can result in tubal damage include:

Pelvic infections

The most common cause of tubal disease is pelvic infection, secondary to sexually transmitted diseases Gonorrhea and or Chlamydia. These infections typically affect young sexually active women and sometimes go unnoticed by the individual. Often, the patient will have a vaginal discharge with pelvic pain for a few days before she seeks help.

If caught in time, treatment with antibiotics will clear the disease without long term effects. In cases where treatment is not rendered, the bacteria can travel through the uterus and affect the tubes. The disease is called pelvic inflammatory disease (PID) and can be very serious if left untreated.

Pelvic inflammatory disease (PID)

There are different levels of damage that can occur in these cases. In mild cases, only the lumen of the tube is affected but damage to the ciliated epithelium or lining can still result in infertility or ectopic pregnancy. In the more serious cases, the fimbriae are affected, causing the end of the tubes to be clubbed or blocked with fluid accumulation in the proximal part of the tube called hydrosalpinx. Infertility is the obvious outcome as the tubes will not be able to pick up the egg. The disease does not necessarily affect both sides equally. However, in such cases, the patent tube is often non-functional because of damage to the luminal cells.

Endometriosis

Endometriosis remains one of the most common and puzzling gynecological disorders in women. Endometriosis is the presence of tissue similar to the lining of the uterus or endometrium that grows outside the uterus, on the tubes, ovaries, bowels and the peritoneum or lining of the abdomen. Women with hereditary factors may have an increased tendency for endometriosis, and recent studies have suggested that the immune system may be involved.

Doctors do not know the exact cause of this disease, but it is known that patients who have this diagnosis have a decreased fertility potential compared to those who do not. Doctors typically make the diagnosis of endometriosis based on a patient's history and physical examination. However, the only way doctors can diagnose this condition for certain is to perform an operation and see if endometriosis is present.

Endometriosis typically develops when women are in their 30s or 40s, but this condition may be seen at any time in reproductive-age women. It's thought that 15% of infertile patients have endometriosis. Endometriosis goes through different stages. In stage 1, small implants are present inside the pelvis outside the confines of the uterus without any anatomical interference of egg pick-up. In stage 4, the ovaries and tubes may have extensive scarring and cysts and therefore direct interference would be present with the normal functionality of the tubes and ovaries.

Endometriosis should always be considered a possibility in infertile patients, particularly in the presence of a family history or other symptoms suggestive of the disease. Premenstrual pelvic pain and worsening pain during periods and intercourse are the most common symptoms of endometriosis, although the degree of pelvic pain seems unrelated to the severity of the disease progression.



Treating endometriosis can be difficult. If pain is your main complaint, surgical treatment with laparoscopy with “fulguration” or burning of the endometriosis is often very successful. And if you're trying to get pregnant but can't, it's important to determine if the tubes are open. If they are, conventional treatment with ovulation induction and insemination can be tried for a few cycles and if unsuccessful proceed to IVF. In cases where there is an anatomical disease with scarring and damaged tubes or ovaries, IVF would be the most suitable treatment from the outset.



Previous surgeries

Another common cause of tubal disease is the result of previous pelvic or abdominal surgical procedures. Possible procedures doctors can perform for gynecological conditions include ovarian cysts, endometriosis or fibroid tumors or non-gynecological conditions such as appendicitis or diverticulitis. Any time a “cut” is made in an organ such as the ovary or the uterus, the body will react by producing scar tissue in the ensuing weeks.

A deep cut usually results in scarring. Unfortunately, if the scarring affects crucial structures such as the Fallopian tubes, it could result in the inability of the tube to move freely in order to pick the ovulated egg from the surface of the ovary. If the scarring affects the surface of the ovary, a “blanket” forms, covering and preventing the egg from pick-up. A history of pelvic or abdominal surgeries is a clear indication to test the integrity of the Fallopian tubes. In some cases, doctors may require a laparoscopy to rule out tubal scarring. In this procedure, a telescopic-like instrument is introduced through the umbilicus in an outpatient setting and the tubes evaluated.

Genetics

In rare instances, a woman is born with congenitally absent Fallopian tubes. Other anomalies usually accompany such conditions, such as an abnormal uterus or even ovaries. The diagnosis is usually reached following laparoscopic evaluation. Women born without fallopian tubes can still achieve pregnancy through In Vitro Fertilization.

Side effects and complications of tubal disease

There are several possible side effects or complications from tubal disease. The dilated or swollen fallopian tube can cause pelvic pain. A patent but damaged tube is the most common cause for ectopic pregnancies. In these cases, the fertilized zygote gets “stuck” inside the tube and continues growing, causing pain and eventually rupturing. An ectopic pregnancy is a medical emergency in need of immediate attention.

5. Ovulation disease and disorders

The basis of reproduction is the presence of egg and sperm. Therefore, it is natural to look at the ovaries as the initial step in the investigation of the female partner.

Ovulation disorders and irregular menstruation

Your physician will first need to understand the pattern of your menstrual cycle. If this consultation confirms the presence of a regular cycle, the physician can be assured that the patient is producing an egg every month. An additional way to confirm ovulation is by reviewing the Progesterone hormone level with a blood test.

The test needs to be done a week after expected ovulation. A level over 3 ng/dl confirms ovulation. An alternative way is by doing serial pelvic ultrasound examinations to visualize the maturing follicle (with the egg in it) and confirm its rupture a few days later.

A woman will, on average, ovulate 400 times during her lifetime. By the age of 50-51, she will deplete her stores of eggs and therefore menopause ensues. Unfortunately, several years before menopause or during the perimenopausal years, a woman will start having erratic ovulation and therefore irregular periods. This can be accompanied with symptoms of hot flushes, which is secondary to a decline in estrogen levels, because of the lack of regular egg production.

Another instance of abnormal ovulation is the period immediately after puberty. For several months women may have irregular menstrual cycles because of erratic ovulation. Problems with ovulation are the most common causes of female infertility. These abnormalities can range from the occasional lack of ovulation and irregular periods to the total absence of ovulation with the resultant lack of any periods, which is known as amenorrhea.

Conditions associated with abnormal ovulation

Abnormalities related to weight

An individual's body fat percentage plays an important role in the regulation of their menstrual cycle. If you experience a significant decline in body fat, you may experience the total absence of normal periods or irregular periods. This is why many underweight athletes, such as marathon runners or ballet dancers, suffer from infertility. Studies have also demonstrated that overweight women have a higher chance of having anovulatory infertility especially when their BMI is greater than 27 kg/m².

Brain disease

Since the hormones governing the ovaries are released by areas of the brain called the hypothalamus and the pituitary gland, diseases affecting these areas such as tumors can cause abnormalities of ovulation. One such tumor is called a Prolactinoma that affects the pituitary gland.

Genetic causes

There are certain genetic conditions associated with abnormalities of chromosomes that can result in female infertility due to anovulation. One such common condition is a disease called Turner's syndrome. These women lack one of their X chromosomes and are born with "streak ovaries", which are not functional and cannot produce eggs. Some women suffer from a condition termed Premature Ovarian Failure.

In these cases, due to an unknown genetic cause, the ovaries stop from functioning usually before the age of 40, which in turn results in amenorrhea or the absence of periods. The reason for the rapid depletion of eggs in these patients is not very clear.

6. PCOS

PCOS is one of the most common causes of abnormal ovulation and infertility in women, with one out of every 10 women of childbearing age being affected by PCOS. Put simply, it's a hormonal disorder that results from an imbalance of your reproductive hormones.

It's also thought that some patients with PCOS have poor quality eggs due to the elevated male hormone levels and some suffer from an increased miscarriage rate. Some reports actually show a doubling of the rate.

Causes of polycystic ovary syndrome

Its exact cause is still relatively unknown—however, researchers believe genetic predisposition plays a significant factor. Recent studies have demonstrated a clear link between PCOS and Insulin resistance, which may explain the link between PCOS and Diabetes. The higher insulin level leads to increased male hormones, which in turn lead to a disturbance of the ovulation cycle.

Conditions which likely contribute to the development of PCOS include:

Excess levels of androgens

Your body produces androgens (usually referred to as male hormones) in small amounts. If you have PCOS, you create a higher level of androgens—which overshadows the estrogen (female) hormones and prevents normal egg development. Estrogen is responsible for a normal ovarian function in the female reproductive system. High insulin levels



Your body produces insulin to transform food into energy. If your cells are not responding appropriately, insulin resistance can occur resulting in higher insulin blood levels. Unhealthy eating habits, lack of physical activity, and obesity can lead to insulin resistance, commonly found in women with PCOS. If left untreated, this resistance can result in type 2 diabetes.

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If you're unsure about whether or not you're experiencing PCOS and would like to know the symptoms associated with this syndrome, here's what you or your partner can expect:

Irregular menstrual cycle

PCOS can cause irregular or infrequent periods. Alternatively, some women may notice periods arrive every 21 days or even more often. If you leave PCOS untreated, it could lead to the development of small ovarian cysts or infertility.

Hirsutism

Hirsutism occurs if you have excessive hair growth on the face or chin areas and has been known to affect nearly 70 percent of women with PCOS.

Acne

You can experience excessive breakouts on the face, chest, or upper back if currently going through PCOS.

Hair loss

In contrast to hirsutism, you can experience excessive hair loss, or thinning of hair when diagnosed with PCOS.

Weight gain

Difficulty losing weight or weight gain with no apparent cause can also indicate a hormone imbalance associated with PCOS.

Darkening of skin

Women who experience darkened skin areas in the groin, underneath the breasts, or along neck creases could be at a higher risk for PCOS.

Skin tags

Skin tags, especially in the armpits or on the neck area, could also be a sign of PCOS.

Note: It is essential to present all symptoms to your doctor to help guarantee a proper diagnosis.

Polycystic ovary treatment options

At present, there is no cure for PCOS. However, with proper diagnosis and treatment, you have a higher chance of conception and healthy pregnancy. During your initial consultation, your doctor will walk you through everything you need to know about PCOS at the treatment options you have available to you. At PFCLA we treat PCOS with two common methods to achieve a healthy pregnancy.



7. Endometriosis

One of the most common health factors that can impact fertility is endometriosis, with it contributing to roughly one-third of all female infertility cases. Endometriosis is a condition in which the tissue lining the inner uterine cavity grows outside of the cavity, most commonly on the ovaries or the fallopian tubes.

With endometriosis, patients are often surprised to learn that, while surgery is entirely possible, it is not generally recommended, even if the endometriosis is interfering with the chance for a successful pregnancy.

Endometriosis does not always contribute to female infertility. In fact, many women with mild endometriosis have no difficulty whatsoever becoming pregnant and experience complication-free births.

However, if the endometriosis is severe, it is more likely to contribute to infertility. Moderate to severe cases of endometriosis are common female infertility factors, and can be present in combination with other infertility factors.

Thanks to modern medicine and assisted reproductive technologies, there are also multiple possible treatments available to women looking to improve their fertility or even improve their comfort if the condition is affecting it.

For women with particularly severe cases of endometriosis, surgery is a viable option. During the operation, the abnormal tissue is surgically removed via a laparoscopic procedure. This can help clear blockages of the fallopian tubes, which is common among women with severe endometriosis and one of the most common causes of infertility.

Endometriosis does not always contribute to female infertility. In fact, many women with mild endometriosis have no difficulty whatsoever becoming pregnant and experience complication-free births.

However, after surgery, the chances of successful pregnancy may not increase significantly, and some studies have suggested that endometriosis surgery may have little to no effect on improving pregnancy rates. Some fertility specialists believe that endometriosis surgery may even reduce the odds of a successful pregnancy achieved through fertility treatments, such as in vitro fertilization (IVF).

8. Unexplained infertility

If your doctor performs a complete investigation and no obvious cause of infertility is found, you'll be given a diagnosis of exclusion. Most of the time, patients are labeled with this diagnosis without completing all the necessary testing. The prognosis of conceiving is not necessarily better if the diagnosis of unexplained infertility is made. To the contrary, it could indicate a cause that could be more difficult to treat.

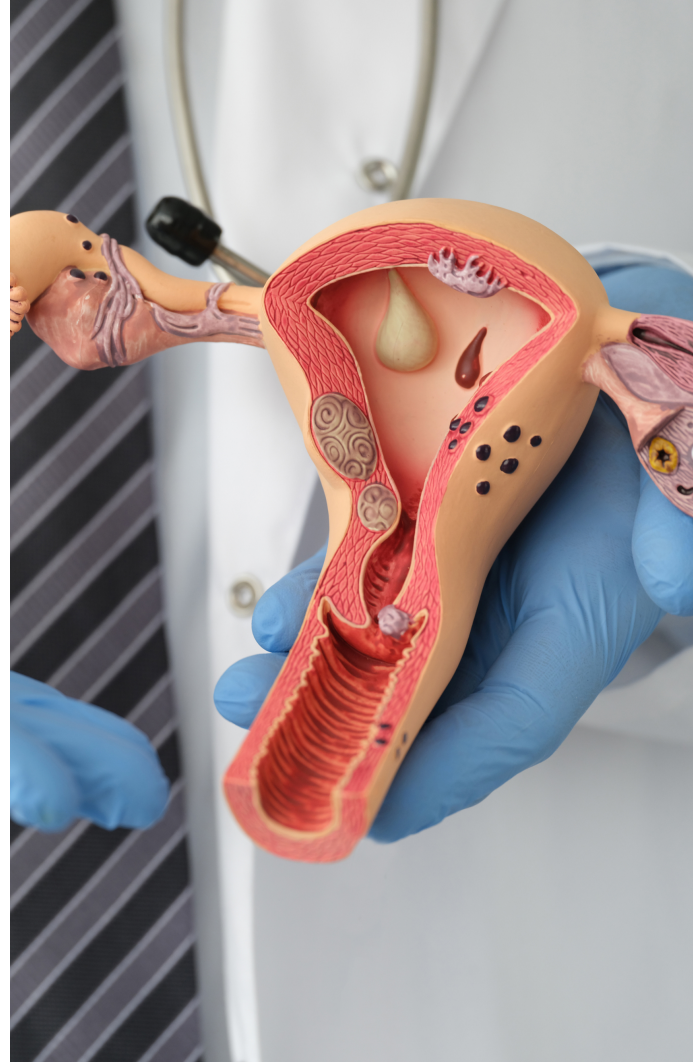
Occasionally, a diagnosis is reached following a treatment such as In Vitro Fertilization (IVF). For instance, a subset of patients suffer from infertility because of sperm with poor fertilization capabilities. When an IVF cycle is done in these patients, fertilization would be poor and therefore the diagnosis of male factor infertility is reached.

How the female reproductive system works

Now that you've explored common causes of female-factor infertility and perhaps even identified one you may be experiencing, let's do a refresher on the female menstrual cycle.

Information is power, and understanding your menstrual cycle helps you stay in tune with your body and can take away some of the fear you may be feeling over infertility. It may even help you get pregnant naturally or at the very least guide your perfect infertility treatment and family-building journey.

With that being said, let's break it down by what it is and its cycle every month.



Menstrual cycle, broken down by phase

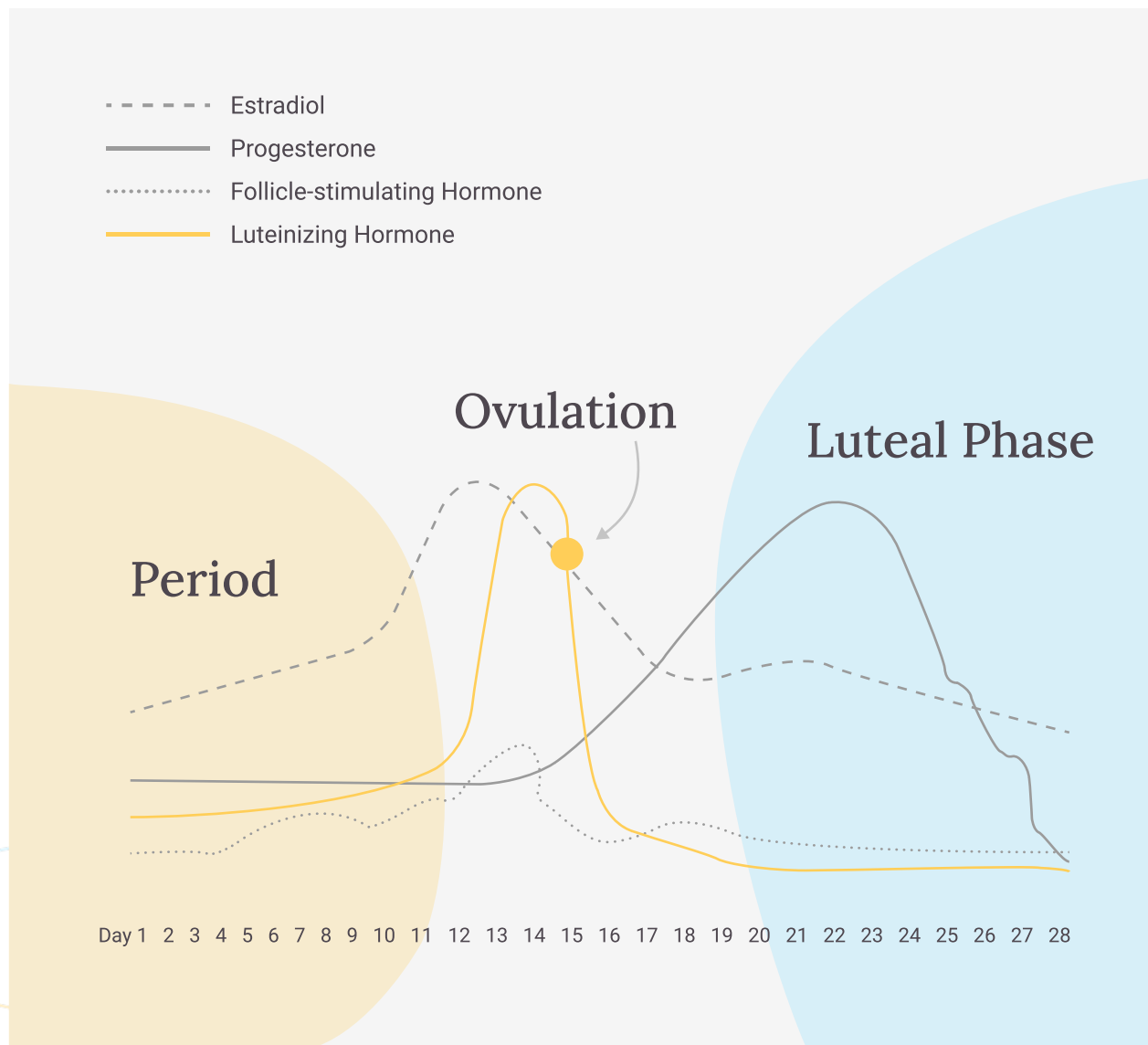
A woman's menstrual cycle is a coordinated process that requires hormonal releases from the hypothalamus, pituitary glands, ovaries and the uterus.

Once a female reaches reproductive age, cycles of hormonal activity repeat about every 28 days. This cycle, also known as the menstrual cycle, is the hormonal activity that prepares a woman's body for potential pregnancy.

The Follicular phase

The follicular phase starts on the first day of a woman's period. During this phase, the hypothalamus produces a hormone called gonadotropin-releasing hormone (GnRH) to stimulate the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the pituitary.

Once FSH and LH are in the bloodstream, they travel to the ovaries to stimulate growth of 15-20 eggs in the ovaries, each in their own follicle (a fluid-filled structure that houses the eggs). These hormones also cause an increase in estrogen, which turns off the FSH to limit the number of follicles that mature. As this phase progresses, a follicle in one ovary will become dominant and continue to mature, while the others stop growing and die.



The ovulatory phase

The ovulatory phase starts around 14 days after the follicular phase begins. This is the midpoint in the menstrual cycle, with the next menstrual period beginning two weeks later.

During ovulation, the rise in estrogen from the dominant follicle triggers a surge in the amount of LH produced by the brain, causing the dominant follicle to release its egg from the ovary. Then, an egg is released (ovulation) and is captured by the fallopian tubes. During ovulation, the uterine lining thickens to prepare for implantation and fertilization.

The Luteal phase

The luteal phase begins right after ovulation. Once the egg is released, the empty follicle develops into a new structure called the corpus luteum. This secretes the hormone progesterone, which prepares the uterus for a fertilized egg to implant.

If a man's sperm has fertilized the egg (conception), the fertilized egg (embryo) will travel through the fallopian tube to implant itself in the uterus. This marks the beginning of pregnancy. If the egg is not fertilized, it passes through the uterus and the lining of the uterus breaks down and sheds, beginning the next menstrual period.

Getting pregnant naturally

If you and your partner are currently struggling to get pregnant, there are still many steps you can take to improve your chances of becoming pregnant naturally before seeing a fertility specialist. For reference, couples only have a **20-37 percent chance** of getting pregnant within their first three months of trying.

Try not to be discouraged after these first couple months, as the longer you and your partner try to get pregnant, the greater the chance of success you'll have as the months of trying add up. If you and your partner have no sources of infertility, you will have an 80 percent chance of conceiving within the first year of trying, and a 90 percent chance within the first two years.

During this time, there are best practices you can both follow to increase your chances of getting pregnant. These range from adopting healthy lifestyle changes to changing how and when you have sex.

The most important thing you can do to increase your chances of natural pregnancy is to monitor your ovulation and time intercourse to when your body is releasing an egg for fertilization. Below we've outlined the process you should follow to do this.

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Timing your Ovulation

Ovulation, which refers to when your body releases an egg during your menstrual cycle, is needed to get pregnant. After the egg is released from one of your ovaries, it will only live for approximately 12 to 24 hours, meaning you and your partner will have sex before the egg is passed.

The most effective way to do this is by monitoring your ovulation. There are multiple indications of when you're ovulating, however, the most reliable ways to track it are with:

The calendar method

If you have a regular menstrual cycle (one that occurs between every 25 to 35 days), your ovulation will typically occur two weeks before your menstrual period. For a regular 28-day cycle, ovulation can be expected on days 13 to 15. If you experience an irregular cycle or no cycle at all, you should visit a fertility specialist for further evaluation to determine if you are still ovulating. Fortunately, many fertility treatments today, like egg donation and IVF, can help you overcome ovulation-related infertility so you can still make your dream of starting a family come true.

An ovulation monitor kit

If you want a little more guidance, [fertility monitors and ovulation predictor kits](#) can help you track your ovulation.

Finding your fertile window

Once you have determined your date of ovulation, you and your partner can try to have sex on or before the day. This does work; however, there is a better, more flexible schedule available for those trying to conceive: your fertility window.

So what does this mean for you and your partner? Despite not being common knowledge, sperm can survive in the uterus for two to five days following intercourse. It can increase your chances of conceiving if the sperm is already waiting for the egg to be released.

To accomplish this, have sex ten days after the first day of your last menstrual period. Continue having intercourse every other day for the next ten days to ensure you have healthy, mature sperm delivered with each intercourse.

This method of natural family building is very effective in helping you achieve pregnancy and can even help you overcome a condition impacting your fertility. However, in the case that it isn't successful, there is still a lot of hope! In the U.S., 12 percent of women have used an infertility service; and assisted reproductive technologies are improving all the time. In fact, they have never been so successful.

Read on to learn more about the different types of assisted reproductive technologies, their processes, and the best candidates for them. We hope you find one that's just right for you and your future family!



Getting pregnant with Assisted Reproductive Technologies (ART)

IVF

In Vitro Fertilization (IVF) is an advanced form of Assisted Reproductive Technology (ART) that helps infertile women and couples conceive. Through IVF, eggs are manually fertilized using sperm from a woman's partner or donor.

Since the introduction of IVF into mainstream medicine in the 1980s, nearly 5 million babies have been born through assisted reproductive technology (ART). And there are many ways to tailor the IVF process to intended parents, such as **mini IVF treatments** for people searching for a lower-impact, less expensive approach to fertility.

It's important to understand that IVF does not ensure a successful pregnancy. Some patients require multiple IVF cycles to achieve a successful pregnancy, while others may never achieve pregnancy by themselves. However, all couples can supplement their service with an egg or sperm donor, or a surrogate, on a need basis to realize success.

Candidates for IVF

Because IVF is unique to each patient's situation, there is no "one-size-fits-all" approach to fertilization. However, good candidates for IVF include:

- Women with blocked fallopian tubes
- Women with an infertility disorder (Polycystic Ovarian Syndrome or Endometriosis)

Women with irregular cycles of ovulation

IVF might not be as effective for:

- Women over 37 years of age (it's urgent you act quickly for IVF or fertility preservation)
- Women with trouble producing healthy eggs
- Women with no interest in getting an outside donor

An overview of your IVF cycle

After you choose your doctor and go through financial clearance, you will be assigned to your own personal dedicated care coordinator from the start of your IVF cycle to the very end. Here's an example of what you can expect during an IVF cycle, though every program is carefully crafted to fit your needs, so your treatment plan may vary.

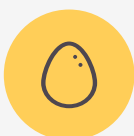
IVF: Step-By-Step



1 | Consultation
& Testing



2 | Ovarian
Stimulation



3 | Egg
Retrieval



4 | Fertilization



5 | Embryo
Transfer



6 | Pregnancy
Test

- **The initial consultation with your physician**

Your initial IVF cycle appointment will review the overall process and details such as any necessary testing requirements and the medications you'll need.

- **Getting ready for your egg retrieval**

Your care coordination team will get you set up with everything you need for your (or your egg donor's) upcoming egg retrieval.

They will handle all of your appointments, help with any travel questions, walk you through medication administration, and anything else necessary to set you or your egg donor up for a great retrieval. Appointments leading up to the egg retrieval could include, but are not limited to, ultrasounds and bloodwork to help determine the number and size of follicles present in your ovaries.

- **Your egg retrieval procedure**

The egg retrieval procedure is a 10-30 minute process of removing eggs from the ovaries, typically under general anesthesia. Your chances of pregnancy usually increase if your, or your egg donor's, ovaries produce more eggs. The number of eggs produced depends on many factors, including your or your egg donor's age and ovarian reserve. Please note that IVF medications can always raise the number of eggs produced!

- **The egg fertilization process**

A fresh or frozen semen sample is provided to our IVF lab (either through a donor or from your partner). For fresh samples, it's provided the same day as the retrieval. Using that sample, our embryology team fertilizes the eggs and creates embryos.

For IVF, intracytoplasmic sperm injection (ICSI) is often used to create the embryos. ICSI is a process whereby your embryologist injects a single selected sperm into each of the eggs. After the eggs are fertilized, your embryologist checks the eggs to determine if the fertilization was successful, as not every egg gets fertilized.

- **Your embryo transfer procedure**

The embryo transfer procedure is one of the final stages of the IVF process. This is the procedure where your doctor places one or more embryo(s) in your or your surrogate's uterus to create a pregnancy. The exact timing of the transfer depends on where the body is in its cycle, and the preparation of the uterine lining through medications. The success of the transfer depends on many factors, including but not limited to age, quality of the embryo(s), and uterine lining and health.

IVF cycle outcomes

If you're hoping to start a family, IVF is a great service to choose. In the most established IVF clinics in the nation, like the Pacific Fertility Center of Los Angeles, success rates are 40% higher than the national average after just one embryo transfer, so intended parents like you and your partner can have a baby.

How do we know this? Out of nearly 160,000 embryo transfers performed in the United States in 2016 (including fresh and frozen embryo transfers), 37.8% resulted in live births. By contrast, PFCLA has a 53.1% live birth rate per embryo transfer. Not to mention, our doctors don't turn away difficult cases to inflate our IVF success rates, and many patients for whom other doctors were ineffective or unsuccessful often come to PFCLA.

Intrauterine Insemination

Alternatively, your doctor can perform Intrauterine Insemination (IUI) or also known as artificial insemination, which places sperm directly into the uterus to increase the chances of successful fertilization and conception.

Candidates for Intrauterine Insemination (IUI)

If you're considering IUI, your doctors will walk you through everything you need to know about this procedure. To give you a head start on how you'd know if this treatment is right for you, here are some indicators our care team considers for this treatment:

- Single females or same-sex couples who choose sperm donation to achieve pregnancy.
- Males with mild factor infertility such as low sperm count, low sperm mobility, or sperm abnormalities.
- Males or females with unexplained infertility.
- Males with a blocked reproductive tract.
- Females with abnormal cervical mucus or scarring that hinders sperm mobility.
- Females with ovulation issues.
- Couples experiencing logistical intercourse issues.

Our expert team of professionals at PFCLA carefully coordinates this procedure with your natural cycle, or fertility medications to help you achieve a successful conception.

What to expect with IUI

IUI is intended to increase fertilization chances by placing a concentrated amount of carefully prepared sperm in your uterus, or that of your partner or surrogate. This procedure provides an advantage over traditional conception by allowing the sperm to reach the fallopian tube much faster and fertilize the egg independently.

We've seen many intended parents choose this option because it's less invasive and more affordable than in vitro fertilization (IVF) and other fertility treatments.

The IUI procedure

If IUI is an option that you or your partner would like to consider, here's what to expect throughout the procedure:

1. Before your doctor performs IUI, they will test and evaluate the quality of the sperm specimen. If you or your partner chooses a sperm donor, your doctor will also test the sperm for HIV and any infectious diseases.
2. Your doctor clears the sperm after evaluation, the IUI procedure's first step involves sperm washing and separating the healthy sperm from the seminal fluid. *Note:* This step can provide a more concentrated and useful sample.
3. Your doctor will insert a highly concentrated amount of the most motile sperm in the uterine cavity via a small catheter. The process is virtually painless and will only last about 20 minutes. *Note:* This step is performed either in conjunction with your partner's or surrogate's natural ovulation cycle, or with the assistance of fertility medication, which induces ovulation to increase egg production.

Our entire team at PFCLA is committed to caring for you or your surrogate during every step of your journey. Your doctor can monitor you or your surrogate for pregnancy signs during follow-up appointments, to assess it's chance of success.

Treating female infertility with IUI

Think of IUI as a way for sperm to get a head start. However, sperm still need to reach and fertilize the egg on its own. [Intrauterine insemination \(IUI\)](#), also called artificial insemination, is a fertility treatment available if you've tried to conceive for at least one year with no success.

The IUI treatment aims to increase the number of sperm that reaches the fallopian tubes, increasing the chance of fertilization. The procedure involves injecting several washed sperm via a catheter directly into your uterus. The success rate for IUI ranges between 10 - 20% in one cycle.



Ovulation induction

Ovulation induction is a process where you take fertility medications to stimulate the release of one or more eggs from your ovary. Medicine provided with this treatment can help you or your partner develop a mature egg if you can't ovulate or ovulate irregularly. During the initial consultation your doctor will address any concerns you may have of this treatment and provide you with a solution that works best for you.

Depending on your needs, your doctor may recommend one of several treatments:

Ovulation induction medication

There are two types of ovulation induction medications: oral and injectables. Your doctor will usually provide you with either clomiphene or letrozole tablets as a first-line treatment if you are unable to ovulate or ovulate infrequently. These tablets are easily administrable, have minimal side effects, offer a lower cost, decrease your risk of multiple pregnancies, and involve less monitoring.

However, if you've tried oral medication without successful ovulation, your doctor will ask you to consider injectables such as gonadotropins as another form of infertility medications.

Your doctor will also use clomiphene or gonadotropins for intrauterine insemination (IUI) or in vitro fertilization (IVF) treatments.

What to expect during the ovulation induction process

Here's what you can expect during an ovulation induction treatment:

1. In most cases, you'll take clomiphene pills orally or inject gonadotropins under your skin once in the evening (e.g., between 5 PM and 8 pm).
2. After taking the clomiphene or after a few days of injections, your doctor will ask you to take part in a pelvic ultrasound to measure follicle growth. You also may be asked to take a blood test to measure hormone levels.
3. Depending on the results of these tests, your doctor will then advise you to increase or decrease the gonadotropin dose.
4. If you don't ovulate independently, the goal is to have one follicle approximately appear at 15 to 18 mm in size. If three or more follicles (greater than 15 mm each) appear, your physicians will advise you to cancel the cycle due to a risk of becoming pregnant with twins, triplets, etc.
5. In some situations, your doctor will advise you to convert the cycle to include In Vitro Fertilization (IVF), which allows the doctor to control the number of embryos placed in the uterus.

Note: Your doctor may request you to repeat blood testing and pelvic ultrasound during a cycle.

Ovulation induction outcomes

The goal of this treatment is to have one follicle grow around your viable egg. Your doctor can cancel the cycle if you develop too many eggs, which increases the risk of multiple pregnancies.

In some situations, the cycle may be converted to an IVF treatment, allowing your doctor control over the number of embryos placed in your uterus.

Side effects of ovulation induction

The side effects of these medications are usually minimal. These include but are not limited to:

- Hot flashes
- Night sweats
- Sleep disturbances
- Headaches
- Fatigue
- Mild nausea
- Abdominal discomfort
- Mood changes

In rare cases, Ovarian Hyperstimulation Syndrome (OHSS) can occur. If you are already ovulating but experience infertility, your doctor can provide the same procedures outlined above to increase the number of ovulated eggs per cycle. This process is called Superovulation or Controlled Ovarian Hyperstimulation (COH).

Women who don't ovulate or ovulate irregularly

If you ovulate irregularly, your doctor will provide you with medications (either injections called gonadotropins or pills called clomiphene citrate) to stimulate the development of a single follicle and ovulation of a single egg.

Women who ovulate regularly

If you ovulate regularly, your doctor will provide you with clomiphene and/or gonadotropins to improve the chances of a live birth by stimulating the ovaries and subsequent ovulation of more than one egg.

Treating female infertility uterine surgery

Myomectomy is a common type of uterine surgery that doctors perform to treat female infertility. In this procedure, your doctor will remove your uterine fibroids (also known as myoma) through an open abdominal surgery or laparoscopy—depending on the fibroids' number, location, and size.

What are fibroids?

Fibroids are benign tumors of the muscle in the uterus, and are relatively common. In a majority of women, fibroids don't interfere with the ability to conceive.

However, in certain instances, a fibroid is found inside the uterine cavity or underneath the uterine lining (endometrium), interfering with implantation. A fibroid can also block the opening of the fallopian tube or increase in size, which can interfere with pregnancy and need to be removed.

If uterine surgery sounds like an option you or your partner would like to take, speak to a member of our staff by scheduling a call.

Treating female infertility with tubal reversal surgery

If you're under the age of 35 and have had tubal ligation, you might be right for tubal reversal surgery. This procedure reverses a tubal ligation surgery, commonly known as "getting your tubes tied."

In other cases, the cause of infertility can be related to tubal disease. This is often due to secondary scarring from a previous infection such as a sexually transmitted disease or previous abdominal or pelvic surgery (for an ovarian cyst or appendectomy).

Success rates for tubal surgery

The success rate for tubal surgery is, unfortunately, low. It's also not recommended if you or your partner are over the age of 35. If the ligation was done with a clip and not burned or cut, tubal reversal might be considered.

Alternatives to tubal surgery

If tubal surgery is not something you or your partner would consider, your doctor can recommend in vitro fertilization instead (IVF). Fortunately, success rates from IVF are high if you are going through tubal disease at any age.

Advantages of IVF include:

1. Much higher success rates on a per-month basis.
2. No surgery involved that requires an extended period of recovery.
3. If successful, your permanent contraception will remain intact.

Note: Very few women undergo tubal surgical repair as IVF success rates are much higher.



Begin your journey with top-rated fertility care

As you can see, building a family has never been more accessible and successful. If you're coping with infertility blues or looking to start your family but don't know how, you don't have to wait any longer to take steps toward this dream.

The fertility specialists at Pacific Fertility Center would be happy to answer any further questions you may have regarding infertility diagnosis and treatment options. To speak with one of our doctors, **send us a message at your earliest convenience**, or call (818) 869-3123 to schedule a personal consultation.

