



Ferring Fertility Delivers...

An Infertility Education Resource

Getting an Infertility Diagnosis



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Getting an Infertility Diagnosis

After a person seeking infertility therapy receives a thorough evaluation by a health care professional, the cause of infertility can usually be determined. Once the diagnosis is made, the patient and her partner can move on to select a treatment option that is right for them.

Sometimes the factors preventing pregnancy are simple to detect and fix. In other cases, the causes of infertility are harder to determine. This “unexplained infertility” usually requires more extensive testing in order to get an accurate diagnosis.

Here you will find information about the potential causes of infertility. Only a health care professional can provide an accurate infertility diagnosis, based on a complete medical evaluation. Patients should talk to their health care provider about any questions they may have relating to their diagnosis. By gathering all relevant information, patients will be better equipped to take the next step on their journey to parenthood.

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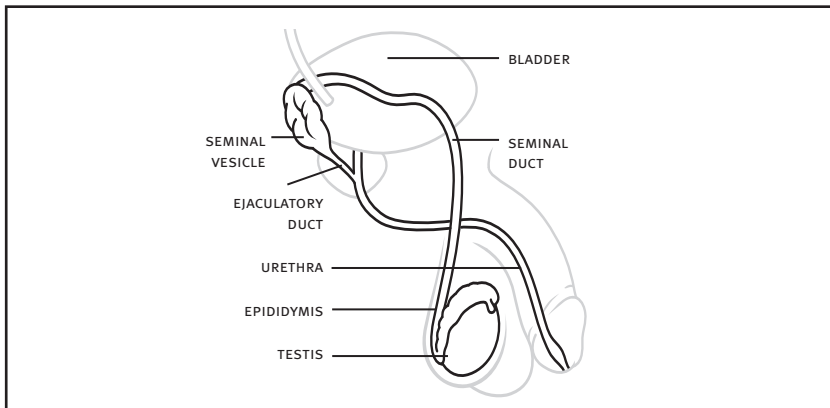
FERRING
PHARMACEUTICALS

Male Factor in Infertility

The cause of infertility may be due to a problem with the man's reproductive system, or a problem that involves both partners.

The cause of male infertility is often unknown. However, some causes have been identified, including problems related to:

- sperm production
- the anatomy or structure of the man's reproductive organs
- the man's immune system



Sperm production disorders

Male infertility may occur if sperm are produced in low numbers, or if many of the sperm produced are abnormal in shape or not able to move well. Abnormally shaped sperm may not be able to penetrate and fertilize an egg. Sperm that do not move well may not reach the egg. Some causes of sperm production disorders may include a genetic defect, infection, testicular trauma, hormonal imbalance, or exposure to radiation and certain medications.

Anatomical or structural problems

Anything that blocks the pathways in which the sperm travel may cause infertility. Structural problems may be caused by scar tissue that formed as a result of a previous surgery or from an infection in the pathways. Varicose veins that develop in the testes may also interfere with sperm production. Some structural defects may be congenital (from birth).

Immune system disorders

Some men develop antibodies to their own sperm, which may attack and weaken the sperm. Also, the antibodies may attach to the sperm and interfere with their movement or their ability to fertilize the egg.

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Questions & Answers

Q: What initial tests will my doctor use to evaluate my fertility?

A: After reviewing your medical history and the results of your physical examination, your doctor will order a semen analysis to evaluate your sperm. If the analysis is normal, your doctor may also want to check for a hormonal imbalance (testosterone, FSH, LH) and for genetic defects.

Q: What tests are used to diagnose infections and immune system disorders?

A: If your semen analysis shows sperm clumping or signs of infection, your doctor may order a semen culture, prostate fluid culture, and urinalysis. To evaluate immune system disorders, your doctor may order an antisperm antibody test, which may be performed on your semen, through a blood test, or both.

Q: What tests are used to diagnose structural problems that may result in infertility?

A: The “fructose test” can help your doctor evaluate a structural problem or a blockage of the seminal vesicles or the duct that connects the seminal vesicles to your ejaculatory duct. If there is no fructose in your semen, there may be a structural problem.

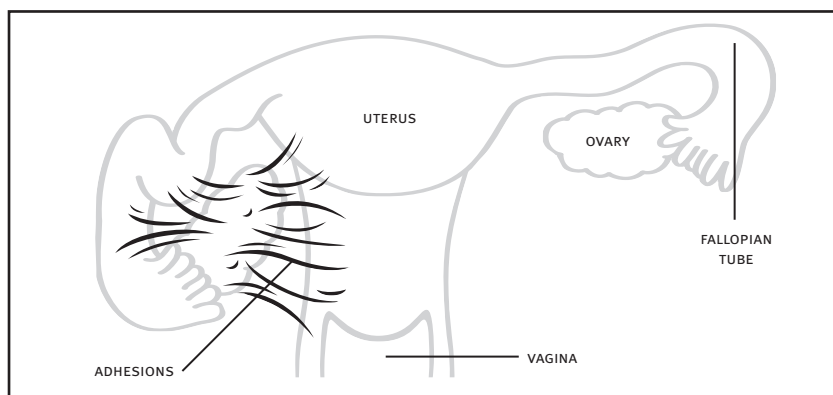
Q: What are the next steps in my infertility workup?

A: If your doctor diagnoses a structural problem, surgery may be an option. If you have an infection or an immune-system disorder, medications may help. Quite often, the reason for male infertility is unknown, so your doctor may speak to you about other options, such as intrauterine insemination (IUI), in vitro fertilization (IVF), and other similar procedures.

Pelvic Adhesive Disease

Pelvic adhesive disease is a condition in which scar tissue binds adjacent organs to each other.

All of the organs in your abdominal cavity are covered with a smooth, slippery tissue called the peritoneum. The surface of this tissue is lubricated, allowing adjacent organs to glide easily against each other. However, when the surface becomes damaged or inflamed, scar tissue forms. Scar tissue that develops between 2 organs will cause the surfaces of the organs to stick, or adhere, to each other. The bands of scar tissue are called adhesions.



Adhesions are often a cause of infertility. If they form inside or around the ends of the fallopian tubes, they may block an egg and sperm from meeting. If the tubes are partially blocked by adhesions, sperm may meet the egg, but the fertilized embryo may be trapped, resulting in an ectopic pregnancy. Adhesions that develop on the ovaries may disrupt ovulation, and those that develop inside the uterus may prevent a fertilized egg from implanting properly.

How pelvic adhesive disease is diagnosed

Your medical history and a pelvic exam may suggest the diagnosis of pelvic adhesive disease. However, only a laparoscopy or hysteroscopy can confirm this diagnosis. A laparoscopy is an outpatient surgical procedure in which your doctor will use a narrow fiberoptic telescope inserted through an incision near your navel to look for and sometimes remove adhesions in your pelvic cavity. A hysteroscopy is an outpatient procedure in which your doctor will use a narrow fiberoptic telescope inserted into your uterus through your cervix to look for and sometimes remove adhesions inside your uterus.

Questions & Answers

Q: What causes pelvic adhesive disease?

A: Anything that causes damage to the peritoneum — the smooth, slippery tissue covering the organs in the abdominal cavity — may result in adhesions. Surgical procedures, infections, and inflammation from endometriosis are the most common causes. It is not uncommon for adhesions to form after bowel surgery or surgery for appendicitis. Surgery on the ovaries, fallopian tubes, uterus, or cervix may also lead to adhesions. Infection and endometriosis are also capable of causing inflammation, which may damage the peritoneum and lead to adhesions.

Q: What kinds of symptoms can I expect?

A: Many women who have adhesions do not have any symptoms, except for infertility. Other women may feel abdominal or pelvic pain, menstrual cramps, tenderness, pain during intercourse, or pain during bowel movements.

Q: What treatments are available to me?

A: Surgery to remove the adhesions is the primary treatment option. It can usually be performed during a laparoscopy or hysteroscopy.

Q: Can the adhesions “grow back”?

A: Unlike tumors, adhesions do not grow back. However, new adhesions may form in the areas that were treated surgically.

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Endometriosis

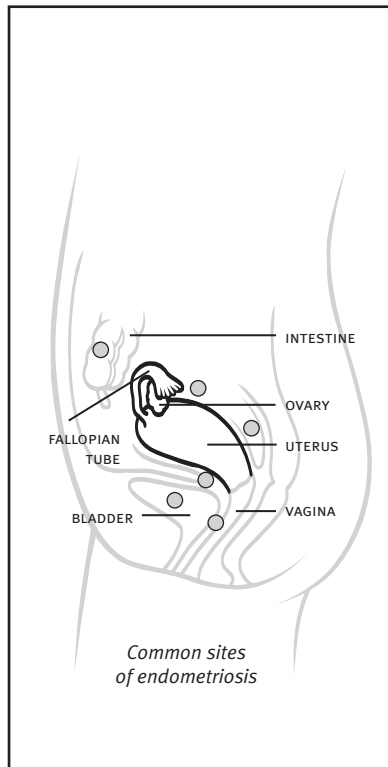
Endometriosis (EN-doh-mee-tree-OH-sis) is a condition in which endometrial tissue (tissue that lines the inside of the uterus) grows outside the uterus.

Endometriosis may be a cause of infertility. Endometrial tissue grows outside the uterus and attaches to other organs in your abdominal cavity such as the ovaries and fallopian tubes. The endometrial tissue inside and outside of your uterus responds to your menstrual cycle hormones in a similar way — it swells and thickens, then sheds to mark the beginning of the next cycle. Unlike the menstrual blood from your uterus that is discharged through your vagina, the blood from the endometrial tissue in your abdominal cavity has no place to go. Inflammation occurs in the areas where the blood pools, forming scar tissue.

Scar tissue can block the fallopian tubes or interfere with ovulation. In addition, endometrial tissue growing inside the ovaries may form a type of ovarian mass called an “endometrioma” (EN-doh-MEE-tree-OH-ma), which may interfere with ovulation. Endometriosis is a progressive disease. It tends to get worse over time and sometimes recurs after treatment. Endometriosis usually improves after menopause.

How endometriosis is diagnosed

Your medical history and a pelvic exam may suggest the diagnosis of endometriosis. However, only a laparoscopy can confirm this diagnosis. A laparoscopy is an outpatient surgical procedure. Your doctor will use a narrow fiberoptic telescope inserted through an incision near your navel to look for and sometimes remove scar tissue and endometrial tissue attached to other organs.



Questions & Answers

Q: What are the symptoms of endometriosis?

A: You may experience painful menstrual periods, abnormal menstrual bleeding, or pain during or after sexual relations. However, you may not have any symptoms at all.

Q: Why do I have this disease?

A: The cause of endometriosis is still unknown. One theory suggests that during menstruation, some of the menstrual tissue backs up through the fallopian tubes into the abdomen, where it implants and grows. Another theory suggests that endometriosis is a genetic birth abnormality, in which endometrial cells develop outside the uterus during fetal development.

Q: What does stage 2 endometriosis mean?

A: Doctors classify endometriosis as minimal (stage 1), mild (stage 2), moderate (stage 3), or extensive (stage 4), based on the amount of scarring and diseased tissue found. Staging is important for determining which treatment will be best for you.

Q: What treatments are available?

A: Your doctor may want to treat your endometriosis surgically, with medications, or a combination of both. Surgery involves removing the endometrial tissue from your ovaries or fallopian tubes. It can usually be done during a laparoscopy. Treatments using medications may be used for a few months before attempting pregnancy. They include medications that shrink the endometrial tissue and those that stop or interfere with estrogen production. A decrease in estrogen production stops the growth of endometrial tissue.

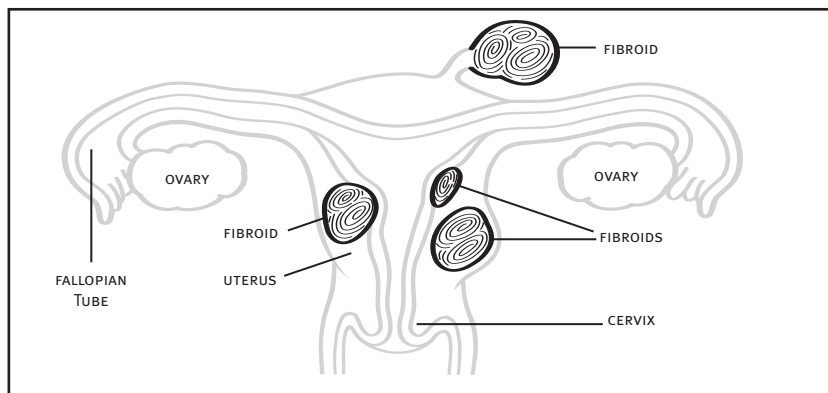
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Uterine Fibroids

Uterine fibroids, also known as leiomyomas (LI-oh-my-OH-mahs), are noncancerous growths that develop in or on the uterus.

Uterine fibroids develop from the smooth muscle cells of the uterus and can grow inside or outside of your uterus. Fibroids can interfere with pregnancy in many ways. The ones that grow on the inside wall of your uterus can cause changes in the endometrial tissue, making it difficult for a fertilized egg to attach to the uterine wall. Fibroids that develop outside your uterus can interfere with pregnancy by compressing or blocking the fallopian tubes, thereby preventing the sperm from reaching the egg.



How fibroids are diagnosed

Your medical history and a pelvic exam are necessary in diagnosing fibroids. Listed below are tests that may also be used to confirm the diagnosis:

- **Ultrasound** — a scan that uses high-frequency sound waves to detect fibroids in and around the uterus and cervix
- **Hysterosalpingogram** — a procedure that uses x-rays and a special dye to detect fibroids on the inside of your uterus and to see if your fallopian tubes are open
- **Hysteroscopy** — a procedure in which your doctor uses a narrow fiberoptic telescope inserted into the uterine cavity to look for and sometimes remove fibroids
- **Laparoscopy** — a procedure in which your doctor uses a narrow fiberoptic telescope inserted through an incision near your navel to look for and sometimes remove fibroids

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Questions & Answers

Q: What symptoms will I experience if I have fibroids?

A: The severity of your symptoms will depend on the number, size, and location of the fibroids. You may experience severe, painful cramps and abnormal or excessive bleeding, especially during your periods. Also, you may have difficulty with moving your bowels or urinating if you have fibroids that are putting pressure on your rectum or bladder. Hemorrhoids may also develop if you become constipated. However, if your fibroids are small, you may not have any symptoms at all — in fact, you may not know that you have fibroids until you go through infertility testing.

Q: Why do I have fibroids?

A: The cause of uterine fibroids is unknown, but they require estrogen to grow. They often shrink after menopause, when estrogen levels decrease.

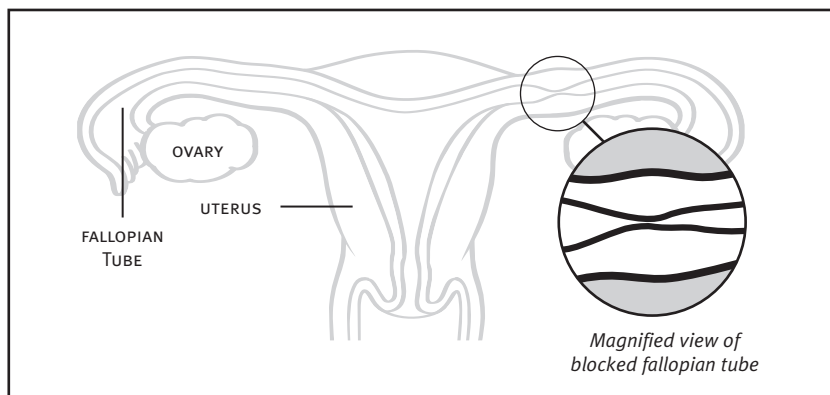
Q: What treatments are available to me?

A: Your doctor may want to treat your fibroids surgically or with medications. Fibroids can be removed during a laparoscopy, hysteroscopy, or through an open incision (myomectomy). Medications that stop or interfere with your body's estrogen production are used to shrink fibroids and prevent them from growing larger. However, you can only use these medications for a few months — long-term use may increase your risk of bone loss. Keep in mind that treatments do not provide a cure — new fibroids can grow after treatment.

Tubal Disease

Tubal disease is a disorder in which the fallopian tubes are blocked or damaged.

One of the many causes of infertility is tubal disease, in which your fallopian tubes become blocked or damaged. Scar tissue resulting from endometriosis or abdominal or gynecological surgery (bowel surgery, cesarean section, ruptured appendix, etc) can block the egg from entering or traveling down your fallopian tube to meet the sperm. Infections, such as chlamydia, can damage the cilia (tiny hairs lining the fallopian tubes) that help to transport the egg. Without normal cilia, the egg may not meet the sperm, or if an egg becomes fertilized, it may not be able to travel to the uterus. This can result in an ectopic pregnancy, which can further damage your tube.



Tubal ligation (having your “tubes tied” to prevent pregnancy) can also leave your fallopian tubes damaged. However, reconstructive surgery to reverse tubal ligation is often successful.

How tubal disease is diagnosed

Your medical history and a pelvic exam are necessary in diagnosing tubal disease. However, other tests are needed to confirm the diagnosis. You may need one or more of the following tests:

- **Sonohysterogram** — a procedure that uses ultrasound to detect masses in your uterus that may be blocking your fallopian tubes
- **Hysterosalpingogram** — a procedure that uses x-rays and a special dye injected into your fallopian tubes to see if they are open or blocked
- **Laparoscopy** — an outpatient surgical procedure in which your doctor uses a narrow fiberoptic telescope inserted through an incision near your navel to look for and sometimes remove scar tissue or endometrial tissue blocking the fallopian tubes
- **Fallopiscoposcopy** — a procedure in which a tiny fiberoptic endoscope is threaded through your fallopian tubes, allowing the surgeon to see the insides of the tubes

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Questions & Answers

Q: What treatments are available to me?

A: If scar tissue in or around your fallopian tubes is causing the problem, your doctor can often remove it surgically. If your fallopian tubes are damaged, your doctor may be able to repair them using surgery, depending on the type and extent of the damage. If your tubal disease is severe, you may want to consider in vitro fertilization (IVF) — a procedure in which eggs are removed from your ovaries, mixed with your partner’s sperm, and then placed into your uterus. IVF bypasses your fallopian tubes.

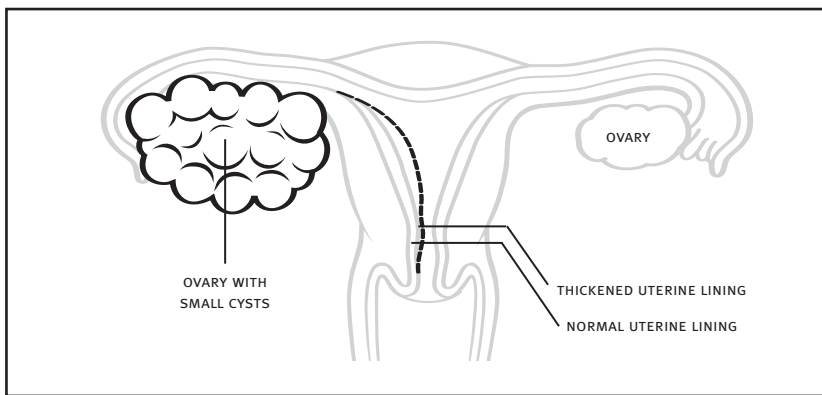
Q: What can you tell me about reversing tubal ligation?

A: Reversing your tubal ligation is major surgery that is most frequently performed by laparotomy through an incision in the abdominal wall. It is a lengthy procedure that often requires the use of a surgical microscope (called microsurgery). You can expect a stay in the hospital and a few weeks off from work. It will be several weeks before you can resume your normal activities.

Polycystic Ovarian Syndrome

Polycystic (pol-ee-SIS-tik) ovarian syndrome (PCOS) is a disorder in which the ovaries produce excessive amounts of male hormones and develop many small cysts.

Polycystic ovarian syndrome (PCOS) is caused by hormonal imbalances that prevent ovulation. Your body produces too much of some hormones and not enough of others. Women who are diagnosed with PCOS usually have low levels of follicle-stimulating hormone (FSH), yet have high levels of luteinizing hormone (LH). FSH is the hormone that's responsible for stimulating the growth of follicles in the ovaries that contain maturing eggs. If you lack FSH for a long time, your follicles will not mature and release their eggs, resulting in infertility. Instead, the immature follicles in your ovaries develop into small cysts.



High levels of LH cause your body to produce too much estrogen and androgens (male hormones) — testosterone and DHEAS (dehydroepiandrosterone sulfate). High levels of estrogen can cause the endometrial tissue in your uterus to get very thick, which can lead to heavy and/or irregular periods. If your androgen levels are high for a long time, you may develop acne and/or hair on your face, and you may experience hair loss.

How PCOS is diagnosed

Your medical history and a pelvic exam are necessary in diagnosing PCOS. However, other tests are needed to confirm the diagnosis. You may need one or more of the following tests:

- **Blood hormone levels** — blood tests that reveal the levels of certain hormones in your blood, such as FSH, LH, estrogen (estradiol), and androgens (testosterone and DHEAS)
- **Ultrasound** — a scan that uses high-frequency sound waves to identify the many small cysts in the ovaries
- **Endometrial biopsy** — a procedure in which a sample of your endometrial tissue is examined to help explain why your periods are irregular

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Questions & Answers

Q: What are common symptoms of PCOS?

A: You may have heavy, irregular periods, or you may stop menstruating entirely. You probably won't be able to tell if you are ovulating until your doctor does a few tests. Other symptoms include acne, excessive hair growth on the face, obesity, and infertility.

Q: Why do I have this disease?

A: The cause of this disorder is unknown; however, heredity plays a significant role.

Q: What treatments are available to me?

A: Your treatment will depend on your specific needs. Obesity may make the condition worse, so losing weight may help improve the hormonal imbalance. If your goal is to become pregnant, then your doctor may prescribe a medication to stimulate ovulation. Other medications such as hormones, oral contraceptives, and insulin-sensitizing medications (metformin) can improve irregular or heavy periods and other symptoms. Early diagnosis and treatment can reduce the development of acne and facial hair.

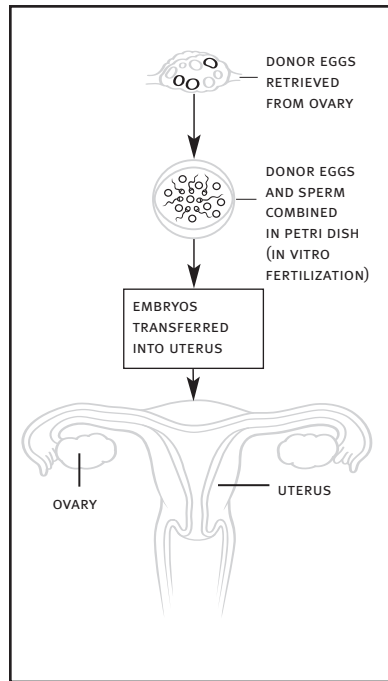
Q: Are there any long-term risks associated with PCOS?

A: Yes. Long-term exposure to high levels of estrogen (and not enough progesterone) can lead to an increased risk of uterine cancer. Treatments such as birth control pills are available to reduce this risk. Women who have PCOS may also be at increased risk for diabetes. Your doctor may want you to have a screening test for diabetes.

Premature Ovarian Failure

Premature ovarian failure is the medical term used to describe early menopause.

Menopause usually occurs in women between the ages of 42 and 56. Premature ovarian failure (early menopause) is a condition in which menopause occurs before the age of 40. Women who develop early menopause usually have run out of eggs in their ovaries. The cause of premature ovarian failure is generally unknown. However, there are a few reasons why the ovaries may stop producing eggs at an early age. Exposure to certain chemicals or medical treatments can damage or destroy the ovaries. These may include chemotherapy and radiation therapy. Autoimmune diseases such as rheumatoid arthritis are sometimes associated with early menopause because the immune system forms antibodies that attack and damage the ovaries. Heredity can also play a role — some genetic disorders lead to early menopause.



How premature ovarian failure is diagnosed

Your medical history is important in diagnosing premature ovarian failure. However, other tests are needed to confirm the diagnosis. You may need one or more of the following blood tests:

- **FSH blood level** — a high level of follicle-stimulating hormone (FSH) in your blood at a specific time in your cycle may indicate menopause
- **Immunology testing** — tests that diagnose autoimmune problems of the thyroid, parathyroid, and adrenal gland that may be related to early menopause
- **Karyotype** — a photograph of your chromosomes, used to diagnose genetic causes of early menopause

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Questions & Answers

Q: What are common symptoms of early menopause?

A: You may experience menstrual irregularity, hot flashes, mood changes, loss of libido, and vaginal dryness.

Q: What treatments are available to me?

A: In vitro fertilization (IVF) using donor oocytes (eggs from a fertile woman) is an option you may want to consider if you wish to become pregnant.

Q: Are there any long-term risks associated with early menopause?

A: Yes. Your ovaries are not producing enough estrogen to protect you from heart disease and osteoporosis (loss of bone density). You can reduce your risks for these diseases with hormone replacement therapy, calcium supplements, and regular exercise.

Ovulatory Dysfunction

Ovulatory dysfunction is a term that describes a group of disorders in which ovulation fails to occur, or occurs on an infrequent or irregular basis.

Ovulatory dysfunction is one of the leading causes of infertility. Anovulation (no ovulation) is a disorder in which eggs do not develop properly or are not released from the follicles of the ovaries. Women who have this disorder may not menstruate for several months. Others may menstruate even though they are not ovulating. Although anovulation may result from hormonal imbalances, eating disorders, and other medical disorders, the cause is often unknown.

Women athletes who exercise excessively may also stop ovulating (amenorrhea). In women athletes, amenorrhea often coexists with eating disorders and osteoporosis, a condition referred to as the “female athlete triad.” This condition, and its resulting infertility, is often treated with estrogen therapy, a change in dietary habits, and psychological counseling.

Oligo-ovulation (ol-IH-go-ov-u-LAY-shun) is a disorder in which ovulation doesn't occur on a regular basis, and your menstrual cycle may be longer than the normal cycle of 21 to 35 days.

How ovulatory dysfunction is diagnosed

Your medical history is useful in diagnosing ovulatory dysfunction. However, other tests may be required to confirm the diagnosis. You may need one or more of the following tests:

- **FSH blood level** — a blood test that measures the amount of follicle-stimulating hormone (FSH) in your blood to see if you are approaching menopause
- **Progesterone blood level** — a blood test that measures the amount of progesterone in your blood to diagnose if ovulation has occurred
- **Ultrasound** — a scan that uses high-frequency sound waves to see if follicles in your ovaries are developing; also used to evaluate ovarian function — for example, small ovaries with a few small follicles may be a sign of approaching menopause
- **Endometrial biopsy** — a procedure in which a sample of your endometrial tissue is examined to determine if it is developed enough to support a pregnancy

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Questions & Answers

Q: How can I tell if I am ovulating?

A: Ovulation prediction kits are helpful for detecting when you are about to ovulate. They measure the luteinizing hormone (LH) in your urine. An LH surge (high level of LH in your urine) means that you will probably ovulate within the next 24 to 36 hours. The test is performed mid-cycle. (For example, it is performed on days 13 and 15 of your menstrual cycle if you usually get your period every 28 days. Day 1 is the first day of your period.) If you do the test every day during your mid-cycle and do not detect an LH surge, you may not be ovulating.

Q: How can charting my basal body temperature (BBT) help to diagnose anovulation?

A: Your BBT should rise about 1°F just after you ovulate, about 2 weeks before your next period is due to begin. If there is no rise in your BBT at mid-cycle, you may not be ovulating. BBT charting cannot predict ovulation, but it may confirm that ovulation has occurred.

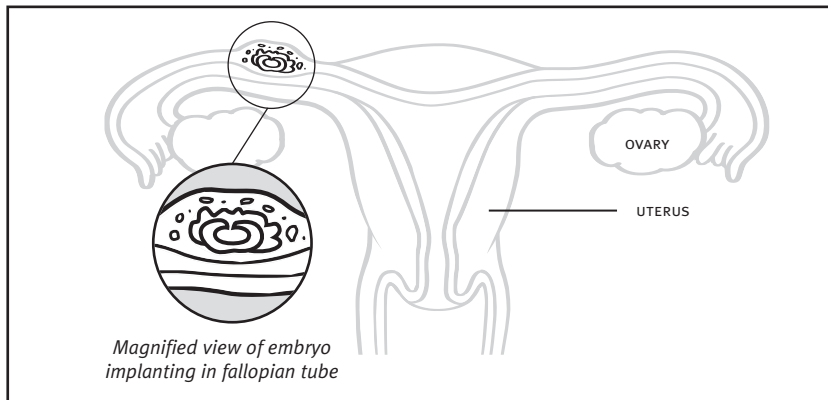
Q: What treatments are available to me?

A: If you are not ovulating, your doctor may prescribe a medication to stimulate ovulation. If you decide to take medication to ovulate, your doctor will want to monitor you carefully to see if and when you are ovulating. Monitoring usually involves ultrasound and blood tests.

Ectopic Pregnancy

Ectopic pregnancy is any pregnancy that implants in a site other than the uterine cavity.

During a normal pregnancy, an egg becomes fertilized by a sperm inside the fallopian tube. The fertilized egg travels down through the fallopian tube and into the uterus, where it implants itself on the inside wall. An ectopic pregnancy occurs when the embryo implants itself outside the uterus. In most cases, ectopic pregnancy occurs in a fallopian tube — a fertilized egg becomes trapped there and implants itself. Although more rare, ectopic pregnancy can also occur in other places such as on an ovary, within the cervix, or in the abdomen.



Symptoms of ectopic pregnancy may include irregular bleeding after a missed period, lower abdominal pain, and lower back pain. If you have these symptoms, call your doctor right away — an ectopic pregnancy can become a serious, life-threatening medical emergency if it is not diagnosed and treated early. Your fallopian tube can rupture from the growing embryo, resulting in severe pain, uncontrolled internal bleeding, and shock.

How ectopic pregnancy is diagnosed

Your medical history and a pelvic exam are helpful in diagnosing ectopic pregnancy. However, other tests are needed to confirm the diagnosis. You may need one or more of the following tests:

- **hCG (human chorionic gonadotropin) test** — a blood test that confirms pregnancy by measuring the amount of hCG (a hormone produced by the pregnancy) in your blood; often, this test is repeated every 2 days
- **Ultrasound** — a scan that uses high-frequency sound waves to determine where the embryo has implanted itself

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Questions & Answers

Q: What causes an ectopic pregnancy?

A: The cause is often unknown. However, ectopic pregnancy tends to occur when the fallopian tube has become damaged in some way — from a previous infection, endometriosis, tubal surgery, or even a previous ectopic pregnancy. Scar tissue that is partially blocking the inside of the fallopian tube can trap the fertilized egg, resulting in an ectopic pregnancy.

Q: What treatments are available to me?

A: Your treatment will depend on how early the ectopic pregnancy is discovered. If you are in a lot of pain and have heavy internal bleeding, you will likely need emergency surgery to stop the bleeding. The surgery may involve either removing the embryo from your tube or removing the segment of the tube containing the embryo. If the ectopic pregnancy is discovered early, before the embryo has grown large enough to rupture your fallopian tube, an injection of a medication, methotrexate, may be an option. Methotrexate prevents the rapid division of cells in early pregnancy, thereby ending the pregnancy.

Q: How will an ectopic pregnancy affect my chances for a successful pregnancy in the future?

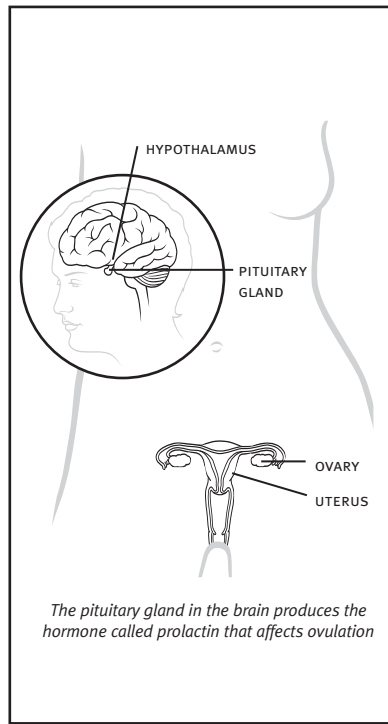
A: Ectopic pregnancy can damage your fallopian tube, which may reduce your chances for future normal pregnancies. In addition, women who have had an ectopic pregnancy are at increased risk for a future ectopic pregnancy. Your doctor will discuss treatment options that may increase your chance for pregnancy.

Hyperprolactinemia

Hyperprolactinemia (HI-per-pro-lak-tin-EE-mee-ah) is a disorder in which your pituitary gland produces excessive amounts of the hormone prolactin.

Prolactin is a hormone that stimulates milk production in women. Prolactin normally circulates in the blood in small amounts in women who are not pregnant, and in large amounts during pregnancy and right after birth. Hyperprolactinemia (excessive prolactin) can cause irregular or no ovulation, resulting in infertility. Women who have this disorder often have irregular periods, and they may also experience galactorrhea (ga-LAK-toh-REE-ah) — milk production when not pregnant.

One of the most common causes of hyperprolactinemia is a benign tumor growing on the pituitary gland — the gland that produces prolactin. The pituitary gland is located at the base of the brain, near the vision center. Other causes of excess prolactin production may be an underactive thyroid (hypothyroidism) or certain medications you may be taking. Sometimes the cause is unknown.



How hyperprolactinemia is diagnosed

Your medical history and a physical exam are helpful in diagnosing hyperprolactinemia. Listed below are tests that may also be used to confirm the diagnosis.

- **Prolactin blood level** — a blood test that measures the amount of prolactin in your blood
- **Thyroid test** — a blood test that diagnoses thyroid disorders; hypothyroidism (underactive thyroid) can cause hyperprolactinemia
- **Computerized Tomography (CT)** — a 3-dimensional scan that produces an image of the pituitary gland to detect a tumor or other abnormality
- **Magnetic Resonance Imaging (MRI)** — a scan that uses high-frequency radio waves to produce an image of the pituitary gland to detect a tumor or other abnormality

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Questions & Answers

Q: What treatments are available?

A: Your treatment will depend on the cause of your excessive prolactin production. If you are diagnosed with an underactive thyroid, your doctor can prescribe a thyroid medication for you. Once your thyroid problem is corrected, the amount of prolactin in your blood should decline to a normal level.

If you have a tumor on your pituitary gland, or if the cause of your hyperprolactinemia is unknown, treatment with medication can reduce your prolactin levels. Also, the medication usually causes pituitary tumors to shrink.

Q: How will treatment improve my chances for pregnancy?

A: Once your prolactin blood level is within the normal range, your periods should become more regular and you should start ovulating normally again.

Q: Will treatment cure this disorder?

A: No. Although these medications are very effective in bringing down your prolactin level to a normal range, they cannot cure the disorder. If you stop treatment, your prolactin levels are likely to increase again, and your symptoms will probably return.

Q: Is it true that this disorder can increase my risk of osteoporosis and heart disease?

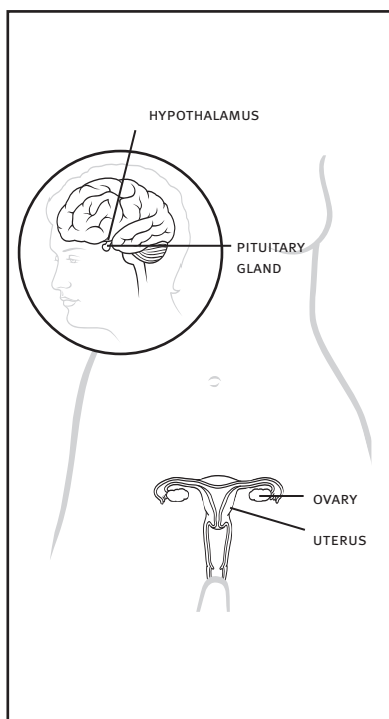
A: Yes. Hyperprolactinemia can cause reduced estrogen production from the ovaries. Estrogen plays an important role in keeping your bones strong and dense, so a lack of estrogen can reduce your bone density and leave you at risk for osteoporosis. Estrogen also helps to protect against heart disease. Treatment to correct hyperprolactinemia can restore your estrogen levels and help protect you from osteoporosis and heart disease later in life.

Hypothalamic Amenorrhea

Hypothalamic amenorrhea is a condition in which menstruation stops for several months due to a problem involving the hypothalamus.

Hormones play a crucial role in every step of a successful pregnancy. The hypothalamus in the center of the brain controls reproduction. It produces a hormone called gonadotropin-releasing hormone (GnRH). GnRH signals the production of other hormones needed for an egg to mature and for ovulation, such as follicle-stimulating hormone (FSH) and luteinizing hormone (LH) that are produced by the pituitary gland. In turn, FSH and LH signal the ovaries to produce estrogen. Estrogen thins the cervical mucus and prepares the uterus for a fertilized egg.

Sometimes the hypothalamus stops producing GnRH, which in turn will reduce the amount of other hormones produced (FSH, LH, and estrogen). Ovulation and menstruation stop, resulting in infertility.



How hypothalamic amenorrhea is diagnosed

Diagnosing hypothalamic amenorrhea involves eliminating some of the other possibilities as to why your periods have stopped. For example, your doctor will want to make sure you're not pregnant or have another disorder that's causing the problem. Your medical history and a pelvic exam are necessary in diagnosing ovulatory dysfunction, as well as one or more of the following tests:

- **Hormonal studies** — blood tests that measure the levels of FSH, LH, human chorionic gonadotropin (hCG), and prolactin. Low levels of FSH and LH may indicate hypothalamic amenorrhea. High levels of prolactin may suggest a tumor on the pituitary gland, which can lead to amenorrhea. The hCG test is used to confirm or eliminate the possibility of pregnancy
- **Progesterone challenge** — a test that will induce menstrual bleeding (after taking progesterone) in women with certain types of amenorrhea, but **not** in women who have hypothalamic amenorrhea
- **Computerized Tomography (CT)** — a 3-dimensional scan that produces an image of the pituitary gland to detect a tumor or other abnormality

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Questions & Answers

Q: What treatments are available to me?

A: Treatment will vary depending on the cause. If your doctor suspects your daily routine is the cause of your amenorrhea, you may be asked to make some changes, such as limiting your exercise or gaining weight. If this doesn't work, your doctor may prescribe hormone or fertility medications so that you will start ovulating and menstruating again.

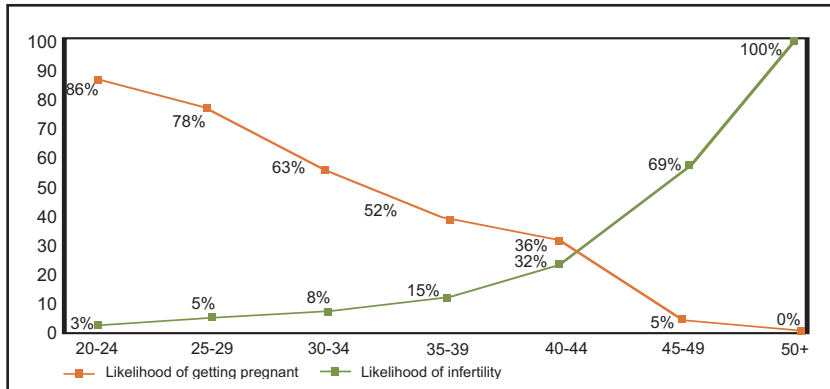
Q: A friend told me that this disorder can increase my risk for osteoporosis and heart disease. Is that true?

A: Yes. Hypothalamic amenorrhea can lead to less estrogen production from the ovaries. Estrogen helps to prevent bone loss, so if you lack estrogen you may be at increased risk for osteoporosis. Estrogen also helps to protect against heart disease. Your doctor may recommend estrogen therapy to reduce these risks if you do not wish to attempt pregnancy.

Advanced Age

Age plays an important role in a woman's ability to become pregnant and carry a pregnancy to term.

With advancing age, many biological changes take place that work against conceiving and carrying the pregnancy to term. From age 30 to 35, there is a gradual decline in the ability of women to become pregnant; after age 40, there is a sharp decline. Also, the chance of miscarriage and chromosomal abnormalities, such as those that cause Down's syndrome, increase with age. Even the success of in vitro fertilization (IVF) and other similar procedures decreases with advancing age.



Why does age play such an important role in fertility? One reason is that as women age, they are less likely to ovulate regularly. In addition, they are more likely to have medical problems that can cause infertility, such as endometriosis. However, the more important reason relates to the condition and decreasing number of the woman's eggs. As the eggs age, they become more resistant to fertilization. Also, more of the eggs tend to have chromosomal abnormalities — oftentimes, this may result in miscarriage.

Diagnostic tests for advanced-age infertility

Your evaluation is likely to begin with your medical history and a pelvic exam. However, other tests are needed to determine whether your age is affecting your fertility. You may need one or more of the following tests:

- **Follicle-stimulating hormone (FSH) blood level** — a blood test that measures the amount of FSH in your blood; a high level of FSH in your blood in the beginning of your cycle may mean that your infertility is age-related
- **Estradiol blood level**— a blood test that measures the amount of estradiol (estrogen) in your blood; a high level in the beginning of your cycle may mean that your infertility is age-related
- **Ultrasound** — a scan that uses high-frequency sound waves to see if your ovaries have a normal appearance

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Questions & Answers

Q: How does my age influence the timing of tests, procedures, and treatments?

A: If you are over the age of 40, it is extremely important to talk with your doctor as soon as possible about the options that are available to you. Unlike younger women who may have more time, women over 40 may need a more aggressive and faster approach. Your tests and procedures may be scheduled over a shorter time than usual. Also, your doctor may want you to consider procedures that may increase your chances for pregnancy, such as intrauterine insemination (IUI), IVF, or gamete intrafallopian transfer (GIFT). If you decide to use one of these “assisted reproductive technologies,” your doctor may recommend that you begin as soon as possible.

Q: How does my age influence the types of treatment available to me?

A: As you approach age 40, the quality and number of your eggs tends to decline, ovulation may become irregular, and your ovaries may produce less estrogen and progesterone. Progesterone is needed to stabilize the lining of the uterus so that a fertilized egg can implant itself. Your doctor may recommend medication, an assisted reproductive technology procedure, or a combination of the two. Another option for older women is the use of eggs donated by a woman who is in her 20s or 30s. The eggs are mixed with your partner's sperm and transferred to your uterus or fallopian tubes. Younger eggs are more likely to result in pregnancy and less likely to end in miscarriage.

Recurrent Miscarriages

Recurrent miscarriage is defined as 3 or more consecutive, spontaneous pregnancy losses.

Approximately 20 percent of pregnancies end in miscarriage, which is defined as the loss of a pregnancy before 20 weeks of gestation. Most miscarriages occur within the first 12 weeks of gestation. “Recurrent miscarriage,” also known as “habitual pregnancy loss,” is commonly defined as 3 or more miscarriages. When miscarriage occurs this frequently, there may be an underlying cause such as a genetic defect, an infection, or a condition in which the cervix is too weak to support a fetus (cervical incompetence). Other causes include an abnormally shaped uterus, uterine fibroids that hinder implantation or growth of the fetus, and hormonal imbalances (prolactin, thyroid, and progesterone). Having an illness such as diabetes mellitus or an immune-system abnormality may also cause miscarriage.

Diagnostic tests to determine the causes of miscarriage

Your medical history, a pelvic exam, and one or more of the tests listed below are necessary in diagnosing possible causes of your recurring miscarriages:

- **Karyotype** — a mapping of your chromosomes, used to diagnose genetic defects
- **Hysterosalpingogram** — a procedure that uses x-rays and a special dye to evaluate the shape of the inside of your uterus
- **Laparoscopy** — an outpatient surgical procedure in which your doctor uses a narrow fiberoptic telescope inserted through an incision near your navel to evaluate your uterus, fallopian tubes, and ovaries
- **Hysteroscopy** — a procedure in which your doctor uses a narrow fiberoptic telescope inserted into the uterus to look inside your uterine cavity
- **Vaginal ultrasound** — a scan that uses high-frequency sound waves to detect abnormalities in and around the uterus, ovaries, and fallopian tubes
- **Blood hormone levels** — blood tests that reveal the levels of certain hormones in your blood, such as prolactin, thyroid, and progesterone
- **Endometrial biopsy** — a procedure in which a sample of your endometrial tissue is examined under a microscope to determine if it is appropriately developed for an implanting embryo
- **Glucose screening** — a blood test used to diagnose diabetes mellitus, which, if left uncontrolled, increases the likelihood of miscarriage
- **Antibodies tests** — blood tests used to detect an immune-system abnormality

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Questions & Answers

Q: Are there any risk factors associated with miscarriage?

A: The risk of miscarriage increases with increasing age, especially in women over the age of 35. Smoking, caffeine, and alcohol increase your risk of miscarriage. Also, some medications, including those you can buy without a prescription, may increase your risk.

Q: What treatments are available to me?

A: Treatment will depend on the cause of the miscarriages. If you are diagnosed with cervical incompetence (a condition in which the cervix opens too early because of the baby's increasing weight), you may require surgery. If you have an infection, you and your partner may be treated with medication. Your doctor can remove uterine fibroids surgically, and can treat hormonal imbalances, diabetes, and immune-system abnormalities with medications. Sometimes the cause cannot be determined, and therefore no treatment can be prescribed.