In Vitro Fertilization

How to prepare and what to expect

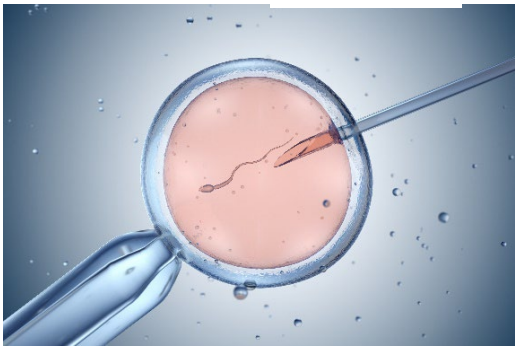
UW Medicine
UNIVERSITY OF WASHINGTON MEDICAL CENTER

This handout tells you *how to prepare for and what to expect when you go through a cycle of in vitro fertilization. It includes risks, benefits, and other options. This handout is in addition to the talks you have with your IVF team.*

Scan for a digital copy of this handout.

What happens during *in vitro* fertilization?

In vitro fertilization (IVF) involves many steps:



We are here to support you throughout your IVF process.

- **Ovarian hyperstimulation:** First, you will receive medicines that usually cause more than one egg to grow and mature in your ovaries.
- **Monitoring:** Blood and *ultrasound* tests will be done during your cycle. They will show us how your body is responding to the medicines. The ultrasound tests measure how the *follicles* (egg sacs) are growing. The blood tests show how much your hormone levels are rising.
- **Triggering ovulation:** Another medicine is injected to help your follicles mature and release eggs.
- **Egg retrieval:** Ultrasound is used to guide a needle into your ovary to retrieve your eggs.
- **Sperm collection:** Sperm will either be collected from your male partner, or thawed if you are using frozen donor sperm.
- **Egg fertilization:** We will use the sperm from your partner or donor to fertilize your retrieved eggs in the lab.
- **Assisted hatching:** With assisted hatching we create a small hole in the shell covering the embryo. If you do genetic testing on your embryos, assisted hatching is done before this test.
- **Embryo transfer:** *Embryos* are fertilized eggs that are starting to grow but are still very tiny. For embryo transfer, a *catheter* (thin tube) is placed through your *cervix* (uterine, or womb opening) and into your *uterus* (womb). The embryos are transferred through this catheter.
- **After-transfer management:** You may receive medicines to help the embryos attach to the wall of your uterus. This step is called *implantation.* These medicines will also support the growth of the embryo during early pregnancy.

Ovarian Hyperstimulation

Many different medicines may be used to help your follicles grow and mature. Your Center for Reproductive Health and Fertility (CRHF) doctor will talk with you about these medicines. They will be injected either into your muscle (*intramuscular*) or under your skin (*subcutaneous*).

Center for Reproductive Health and Fertility | Box 354780
4245 Roosevelt Way N.E., 3rd floor, Seattle, WA 98105 | 206.598.4225

Monitoring

While you are taking medicines to stimulate your ovaries, you will be closely monitored by your IVF team. This may be as often as every day. We will also stay in close contact with you after you have finished ovarian stimulation.

Monitoring includes:

- ***Venipuncture*** **(blood draw)**
- ***Transvaginal*** **ultrasound exams**. In a transvaginal ultrasound, an ultrasound probe (*transducer*) is placed in your vagina. The probe produces sound waves, which create pictures of the inside of your body. These images appear on a screen for your provider to see.

The ovarian hyperstimulation may be stopped if these tests show that:

- Your body is having too little response to the medicine. If this occurs, we will talk with you about other ways to manage your treatment.
- Your body is having too much response to the medicines (*ovarian hyperstimulation syndrome*). If this occurs, the cycle will be cancelled to protect your body from the effect of high hormones.

Triggering Ovulation

During monitoring, your doctor will tell you when your follicles are ready for the final steps of maturation. In this step, you will self-inject a medicine called the *ovulation trigger*. Your egg retrieval procedure will be done 34 to 36 hours after this injection.

Egg Retrieval

Egg retrieval is an *outpatient* procedure. You will not stay overnight in the hospital.

The procedure is done using a transvaginal ultrasound. Your provider will guide a needle to the ovary to *aspirate* (draw up) the eggs. You will have deep sedation medicine (anesthesia) that will make you sleep during this procedure. You will get this medicine through an *intravenous* (IV) line in your arm vein.

Rarely, the IVF team must cancel the egg retrieval shortly before it is set to take place. This may happen if you ovulate too soon, your hormones drop, or for other medical reasons.

Anesthesia Risks

Rarely, anesthesia may cause problems. Your body position while you are under anesthesia may cause short-term or permanent nerve damage. To lessen these risks:

- Your legs will be moved into the position for surgery while you are awake.
- The anesthesia team will watch you closely during your egg retrieval.

If your IVF team believes you should not have anesthesia for any reason, other medicines may be used.

The Procedure

Guided by ultrasound, your doctor will insert a needle through your vaginal wall and into your ovary. The fluid inside your follicles will be drawn out through the needle. Your doctor will draw the fluid from as many follicles as possible. This fluid will be taken to the lab, where an *embryologist* will look for eggs. An embryologist has special training in handling eggs and sperm and the growth and development of embryos.

Cryopreservation

You may choose to have some eggs frozen (*cryopreserved*). Freezing eggs allows you to have IVF later. This may be important if you have cancer or a chronic disease, or if you are preserving your fertility because you are not ready to have children.

Some frozen eggs may not survive after being thawed. And some eggs that are thawed may not accept sperm (cannot be fertilized).

Sperm Collection

If you have a male partner who is providing sperm, sperm collection will take place at the time of the egg retrieval. If you are using donor sperm, it is thawed at this time. This sperm is used to fertilize your retrieved eggs.

Sperm may also be collected before the day of egg retrieval to use in case your partner cannot provide a sample on the day of the egg retrieval. This sperm will be frozen until it is needed. Sometimes, sperm do not survive a thaw, but this is very rare.

Egg Fertilization

After your egg retrieval, the embryologist will check your eggs and prepare them for fertilization. Fertilization may be tried in 1 of 2 ways:

- With standard *insemination*, each egg is placed in a dish in the lab. Sperm are specially washed and prepared for insemination. The sperm are then added to the dish. The sperm must then enter the egg on their own.
- In *intra-cytoplasmic sperm injection* (ICSI), a single sperm is injected into each egg. ICSI is more complex than standard insemination and costs more. It may be used when the chances of fertilization by insemination seem low.

Your IVF team will decide whether you need insemination or ICSI, based on:

- Your infertility diagnosis
- How fertility treatments have worked for you in the past
- Your sperm and egg quantity or quality

Ask your provider if you have any questions about this decision.

Assisted Hatching

Assisted hatching uses a laser to create a small opening in the outer covering of the embryo. Assisted hatching is used when an embryo biopsy is needed for preimplantation genetic testing of the embryo. A biopsy may be used to diagnose a disease or to check the number of chromosomes in an embryo.

Fresh Embryo Transfer

If you are planning a fresh embryo transfer, it is done 3 or 5 days after egg retrieval. During the transfer, one or more of the embryos that grew will be placed into your womb. A thin tube (*catheter*) is passed through your cervix for this process.

Mock Transfer

We may advise you to have a "mock transfer" before your IVF cycle begins. In a mock transfer, your doctor will insert a soft catheter into your uterus to mimic the actual embryo transfer. This helps us address any problems that might arise during transfer, before we transfer the actual embryos.

Embryos Used in Transfer

Your IVF team will decide how many embryos to transfer, based on your age, embryo quality, and other medical factors. The number they choose will allow for both the best chance of pregnancy and the lowest chance of *multiple gestation* (being pregnant with more than 1 baby at the same time). Your IVF doctor will talk with you about this decision.

Some embryos may be frozen for possible use in a later frozen embryo transfer cycle. We use embryos that are 5 to 7 days old (*blastocysts*) for freezing.

After-Transfer Management

To increase the chances of successful implantation, you will take the hormone progesterone, either by intramuscular injection or placed into your vagina. After a fresh embryo transfer, progesterone is usually given until the 8th week of pregnancy.

What happens to extra embryos created from IVF?

If your IVF procedure results in more embryos than you need for transfer, the extra ones may be cryopreserved, depending on their quality. You and your partner (if you are partnered) will choose in your IVF consent form how you would like to use the unused embryos to be handled.

What are the benefits of IVF?

You might receive these benefits from IVF:

- Pregnancy
- Extra embryos that can be cryopreserved for future family-building

CRHF doctors and staff **cannot** guarantee that:

- Any of the steps in the process will succeed
- IVF will result in a live birth
- A pregnancy will result in delivery of a healthy full-term newborn

We will provide information to help you make your decision. But only you can decide if the possible benefits of having IVF are worth the risks.

What risks and problems are involved in IVF?

Usually, injectable hormonal medications (gonadotropins) are used for an IVF cycle. These medicines help stimulate the ovaries to grow follicles containing eggs.

Possible side effects of injectable fertility medicines include:

- Mild bruising and soreness at the injection site (using different sites for the injections can help)
- Temporary allergic reactions, such as skin reddening and/or itching at the injection site
- Nausea and occasional vomiting
- Breast tenderness and increased vaginal discharge
- Mood swings and fatigue
- Ovarian hyperstimulation syndrome (OHSS)

Most symptoms of OHSS (nausea, bloating, pelvic discomfort) are mild. They usually go away without treatment within a few days after the egg collection. In severe cases, OHSS can cause ovaries to become very enlarged and large amounts of fluid to build up in the abdomen (belly) and possibly the lungs. This can cause dehydration, trouble breathing, and severe abdominal pain. Very rarely (in less than 1% of IVF cases), OHSS can lead to blood clots and kidney failure.

Studies from several decades ago suggested a link between ovarian cancer and the use of fertility medicines. However, more recent, high-quality studies no longer show clear associations between ovarian cancer and the use of fertility medications.

What are the risks of the egg retrieval?

During the egg retrieval, your doctor uses ultrasound through the vagina to guide the insertion of a long, thin needle through your vagina into the ovary and then into each follicle to retrieve the eggs. Possible risks for this procedure include:

- Mild to moderate pelvic and abdominal pain during or after. In most cases, the pain disappears within a day or two and can be managed with over-the-counter pain medications.
- Injury to organs near the ovaries, such as the bladder, bowel, or blood vessels. Very rarely, bowel or blood vessel injury can require emergency surgery and, occasionally, blood transfusions.

- Pelvic infections following egg retrieval or embryo transfer are uncommon. Severe infection may require hospitalization and/or treatment with intravenous antibiotics.

  Rarely, to manage a severe infection, surgery may be required to remove one or both ovaries, tubes, and/or uterus. Patients who have had pelvic infections or endometriosis involving the ovaries are more likely to get IVF-related infections.

What are the risks associated with the embryo transfer?

A catheter holding the embryo(s) is used to gently place them into your uterus (womb). You may feel mild cramping when the catheter is inserted through the cervix or you may have vaginal spotting (slight bleeding) afterward. Very rarely, an infection may develop, which can usually be treated with antibiotics.

Will my IVF pregnancy be more complicated than if I conceived on my own?

Having a pregnancy with more than 1 baby (twins, triplets, etc.) is more likely with IVF, especially when more than one embryo is transferred. These pregnancies carry significant risks, including:

- Preterm labor and/or delivery: premature babies (regardless of whether they were conceived naturally or with IVF) are at higher risk for health complications such as underdeveloped lungs, intestinal infections, cerebral palsy, learning disabilities, language delay, and behavior problems.
- Maternal hemorrhage (severe bleeding)
- Delivery by cesarean section (C-section)
- Pregnancy-related high blood pressure
- Gestational diabetes

The more embryos that are transferred into the uterus, the greater the risk. Your doctor should transfer the minimum number of embryos necessary to provide a high likelihood of pregnancy with the lowest risk of multiple pregnancy.

Will IVF increase the risk of my child having a birth defect?

The risk of birth defects in the general population is 2%-3%. This risk is slightly higher for patients with fertility problems. Most of this risk is due to having pregnancies later in life and the underlying cause of infertility. It's not clear if IVF alone causes birth defects. But when IVF is combined with a process called *ICSI* (intracytoplasmic sperm injection), there may be an increased risk of birth defects. ICSI is when sperm is injected directly into the egg.

There may also be a small chance of sex chromosome problems (X or Y chromosomes) with ICSI. But it's not clear if these problems are caused by ICSI or by sperm issues. Men with sperm problems are more likely to have chromosomal issues that can be passed to their children. These problems are very rare.

IVF may slightly increase the chance of rare genetic conditions called imprinting disorders, such as Prader-Willi syndrome.

Miscarriage

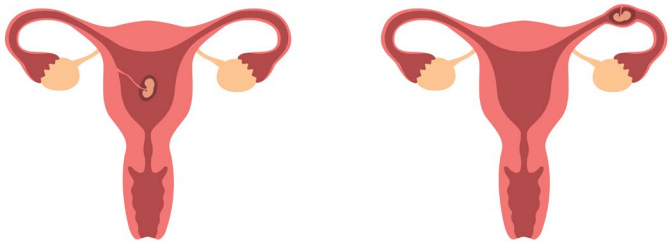
The risk of *miscarriage* (pregnancy loss) after IVF is similar to the risk after natural conception. The risk of miscarriage increases with the mother's age. For example, women in their 20s have about a 15% risk, but women in their 40s can have more than a 50% risk.

Ectopic Pregnancy

There is a small risk (1%) of *ectopic pregnancy* with IVF. This happens when the pregnancy grows outside the uterus. The risk is similar to women with infertility issues. If you have sharp, stabbing pain, vaginal bleeding, dizziness, fainting, lower back pain, or low blood pressure, **call your doctor immediately**. These may be signs of an ectopic pregnancy.

An ectopic pregnancy can be dangerous to your health and must be treated right away. If you have an ectopic pregnancy, you may be given medicines to end the pregnancy or you may need surgery to remove it.

There is also a 1% risk of a *heterotopic pregnancy* after IVF. This is when one embryo grows in the uterus and another grows in the fallopian tube. This usually requires surgery, but the pregnancy in the uterus can usually continue safely after the ectopic pregnancy is removed.



normal pregnancy ectopic pregnancy

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

Center for Reproductive Health and Fertility:

Weekdays 8 am – 5 pm: Call 206.598.4225

After hours, weekends, and holidays: Call 206.598.6190 and ask to page the CRHF provider on call.

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