

In Vitro Fertilization (IVF)

What is it?

In vitro fertilization (IVF) is one of the most widely used treatments for infertility. The procedure involves collecting eggs and sperm from each partner and then combining them in a laboratory to allow fertilization to occur outside the body. Once the egg has been successfully fertilized, an embryo develops. The embryo(s) can then be transferred back into the uterus to help achieve a pregnancy.

When is it used?

IVF is commonly used in patients who have:

- Tubal disease
- Endometriosis
- Ovarian problems
- Unexplained infertility
- Previous treatment failure
- Male related infertility

How is it done?

Eggs are retrieved during a standard in vitro fertilization cycle which involves six phases:

1. Pituitary Suppression

A hormone called a “GnRH agonist” is used to suppress the messages from the pituitary gland to the ovaries effectively preventing early ovulation.

2. Ovarian Stimulation

Hormones called luteinizing hormone (LH) and follicle stimulating hormone (FSH) are given daily for 10-14 days in order to stimulate the ovaries to produce more eggs than normal. The growth of the eggs are then monitored through ultrasound of the ovaries and by assessing the level of estrogen in the blood. Ultrasounds and blood tests are done at The Kelowna Regional Fertility Centre between 8:30 and 9:00 am Monday to Friday and on weekends between 9:00 and 10:00 am. A typical IVF cycle may look like the following:

Treatment Day	1	2	3	4	5	6	7	8	9	10	11
Ultrasound						(✓)		✓		✓	✓
Blood Test				✓		✓		✓		✓	✓
Injection	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

3. Egg Retrieval

Once the ultrasound and blood tests show that the follicles are the right size an injection of hCG is given to trigger the final maturation of the eggs. The eggs will then be retrieved at Genesis Fertility Centre 34 – 36 hours after the hCG injection.

Prior to egg retrieval, an intravenous will be started and a short acting medication to help minimize discomfort will be provided. A physician will then insert an ultrasound-guided needle through the top of the vagina into ovaries. The fluid is drained from each follicle and observed under a microscope for eggs. The procedure takes about 20 – 30 minutes and often patients can go home an hour later. Genesis Fertility Centre encourages partners to attend the procedure.

4. Fertilization

On the day of egg retrieval, a fresh sperm sample is provided by the partner (or in some instances, donor sperm is used). The sperm sample is washed, concentrated and then added to the eggs a few hours after retrieval. A Genesis Fertility Centre Embryologist will then examine the eggs the next day for fertilization. For most patients, 70 – 80% of the eggs will be successfully fertilized. However, not every follicle will contain an egg, not every egg will fertilize and not every egg that is fertilized will go on to form a quality embryo.

5. Embryo Transfer

Three to five days after egg retrieval, Genesis Fertility Centre will transfer the fertilized eggs (now embryos) to the uterus using a fine plastic tube. This takes only a few minutes and most women do not find it uncomfortable.

The exact number of embryos transferred depends on the women's age and quality of the embryos. Genesis Fertility Centre will choose the healthiest embryos that are the most likely to result in pregnancy. Extra healthy embryos may be frozen for future embryo transfers.

The transfer process lasts only a few minutes and patients can return home soon afterwards.

6. Luteal Phase and Pregnancy Test

Genesis Fertility Centre suggests that patients take it easy for 24 hours following embryo transfer. Light non-aerobic activity can be resumed over the next few days. Many women return to work after a few days if their jobs are not too strenuous.

Sixteen days after retrieval a pregnancy test will be done. If the test is positive an ultrasound will be scheduled at The Kelowna Regional Fertility Centre. Once the ultrasound confirms a healthy pregnancy the doctor will discuss plans for optimal pregnancy care.



Optimization

Weight: It is important to be at a healthy weight for your height. Women with a body mass index under 19 or over 32 have a lower chance of getting pregnant and an increased risk of miscarriage.

Smoking: Women who smoke have a lower chance of becoming pregnant and a higher rate of miscarriage.

Supplements: Patients are recommended to take a multivitamin containing folic acid (1.0 mg daily). This B vitamin reduces the risk of some serious defects of the brain and spinal cord in the fetus by 50%.

What are the success rates?

The Kelowna Regional Fertility Centre has a clinical partnership with the Genesis Fertility Centre, where IVF is performed. Many factors influence success rates, one of the most important is the female patient's age. For the most current rates please refer to www.kelownafertility.ca.

Counselling is necessary

Infertility and the associated treatments can be a stressful time for couples. As a result the Kelowna Regional Fertility Centre provides counselling services and a comprehensive orientation to ensure that patients are comfortable and well informed during the entire process.

What are the risks?

Drugs

- Mild bruising and soreness at the injection site
- Allergic reaction, gastrointestinal distress, headache, or mood changes
- Ovarian Hyperstimulation Syndrome (OHSS). One percent of patients experience OHSS in which the ovaries produce many follicles and become larger than normal. Often OHSS is mild and improves without treatment. In some cases however, the symptoms can be more severe with OHSS resulting in very enlarged ovaries, dehydration, fatigue, and extra fluid accumulating in the abdomen and lungs. Very rarely (fewer than 1% of women undergoing egg retrieval through IVF), OHSS can lead to blood clots and kidney failure

Egg Retrieval

- Mild to moderate discomfort (during or after the procedure)
- Injury to organs near the ovaries, such as the bladder, bowel, or blood vessels (1/1000)
- Bleeding from the ovary or pelvic vessels. Any bleeding is usually mild rarely requiring transfusion or surgery

- Pelvic infection is a very rare complication. However if they occur, they may be severe and typically are treated with intravenous antibiotics. It is typically treated with intravenous antibiotics. Rarely surgical intervention may be required.
- Ovarian cyst formation
- Ovarian torsion (twisting of the ovary requiring surgical intervention)

Multiple Pregnancies

- Twins occur in 20 – 35% of pregnancies, while triplets occurs in 1 – 5%
- Premature labor with possible risks to the infant
- Premature delivery
- Maternal hemorrhage
- Cesarean delivery
- Pregnancy-induced high blood pressure
- Gestational diabetes
- The optimal number of embryos to be transferred is highly individual and often based on age. The goal is to transfer the minimum number of embryos necessary to provide a high likelihood of pregnancy with the lowest risk of multiple pregnancy

Birth Defects

- The goal of IVF is to help you have a healthy baby. Overall, there does not seem to be an increased risk of birth defects in children conceived through IVF compared to those who conceive naturally

Ectopic Pregnancy

- Ectopic pregnancy is a rare complication (1/100).

Cancer

- Recent studies have failed to provide any convincing evidence that supports any association between fertility drugs and ovarian cancer

What is the cost?

IVF is not an MSP-covered service in British Columbia. The Kelowna Regional Fertility Centre and Genesis Fertility Centre have a standard fee for this service. Please see the respective fee schedules for current pricing.