

# **Egg Freezing Information Booklet**

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**OTTAWA FERTILITY CENTRE**  
**CENTRE DE FERTILITÉ D'OTTAWA**

# Egg Freezing Information Booklet

## INTRODUCTION

Reading and understanding this document is part of the process of giving informed consent. Please read this information carefully.

The following information offers a description of potential adverse effects and risks associated with assisted reproductive technology (ART) procedures offered at the Ottawa Fertility Centre (OFC). Please read this document prior to meeting with your physician/nurse to consent for treatment.

Patients are encouraged to ask questions about their procedures so that they fully understand their treatment choices, their chance of success and any potential harmful effects or risks associated with their treatment(s). If you have any questions, please ask any member of our staff.

## PRE-TREATMENT RECOMMENDATIONS

During treatment patients having their eggs retrieved should live a healthy lifestyle to help optimize egg quality by following the recommendations listed below:

- Avoid smoking before and during treatment.
- Avoid recreational drugs before or during treatment.
- Discuss the use of all prescription and over-the-counter medication (including herbal remedies) with your physician, our nurses or a pharmacist before starting a treatment cycle.
- Ensure that your routine general physical exam and Pap test are up to date with your family physician or OFC physician.

## OVARIAN STIMULATION

To maximize the number of mature eggs that are collected and frozen, the ovaries are stimulated to produce multiple egg follicles at once. Various protocols and medications are used to stimulate egg production. Blood tests and vaginal ultrasound scans are used to monitor your response to the medications.

The following tables list the medications that may be required during your treatment cycle and some of their possible side effects or complications associated with each.

Any of the medications may be associated with allergic type reactions. Please make sure that you tell the doctor and the nurse if you have any allergies. Injectable medications may cause local irritation and redness.

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### Fertility Medications

Medications	Use	Side Effects
<b>Suprefact/Lupron/ Lupron Depot/Decapeptyl</b> (GnRH Agonist)	These medications are GnRH agonists used before and during ovarian stimulation to prevent early ovulation. Sometimes they are given mid-stimulation to trigger ovulation. They are given by sub-cutaneous (SC) or intramuscular injection.	May cause hot flashes, mood swings, mild headaches, joint symptoms and altered sleep patterns. Occasionally reddening, itching or swelling may occur at the injection sites. Suprefact contains <b>latex</b> which may cause an allergic reaction. Lupron has no latex and will be the replacement.
<b>Cetrotide/Orgalutran</b> (GnRH Antagonist)	These medications are used to prevent spontaneous ovulation, although 1-2% of patients will still ovulate and may result in a possible cancellation of a cycle. It is given by sub-cutaneous (SC) injection.	May cause headache, fatigue, dizziness and nausea. Transient and mild local reactions (redness, swelling and itching) may occur at the injection sites. Cetrotide is the first choice as it is latex free. Orgalutran contains latex which may cause an allergic reaction in some patients.
<b>Gonadotropins</b> (Gonal-F, Puregon, Repronex, Luveris, Menopur)	These are fertility hormone injections that are used to recruit, stimulate and grow multiple ovarian follicles. They are given by sub-cutaneous (SC) injection.	May cause headache, fatigue, breast tenderness, abdominal distension, bloating and increase the probability of multiple pregnancies. The most serious complication of gonadotropins is the possibility of ovarian hyper-stimulation syndrome (OHSS) (see below). Mild irritation and swelling are possible at injection sites.
<b>HCG</b> (Ovidrel, HCG-PPC)	HCG is given in the final phase of ovarian stimulation treatment. This injectable medication causes the final maturation of the eggs in IVF and ovulation in other treatments. It is given by sub-cutaneous (SC) injection.	May cause irritability and restlessness. It also has the same side effects as gonadotropins. HCG can precipitate OHSS.
<b>Estrogen</b> (Estrace, Estradot)	Estrogen orally or by patch may be used to prime the lining of the uterus for implantation of an embryo, to sustain the uterine lining or prevent premature egg maturation	May cause nausea, dizziness, headache, acne and breast tenderness. Estrogen may increase the risks of thromboembolic problems (blood clots, strokes) and long-term use may increase the risk of breast cancer.

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### Other Medications

Medications	Use	Side Effects
<b>Oral Contraceptives</b> (Birth Control Pills)	You may be prescribed an oral contraceptive pill (OCP) to be taken to regulate the cycle before initiating IVF.	Side effects include headache, nausea, breast tenderness, dizziness, and moodiness. The OCP has been associated with an increased incidence of serious complications such as heart attack, thromboembolism (blood clot) and stroke. You should not take the OCP if you smoke and are over age 35, have liver problems, or have a history of blood clots or migraines with aura.
<b>Antibiotics</b> (Clavulin, Metronidazole, Doxycycline, Ancef, Clindamycin, Cefoxitin, Erythromycin)	Antibiotics are used to prevent infections of the uterus or fallopian tubes before, during or after fertility investigations or treatment.	The primary risk with antibiotic administration is an allergic reaction that can be as severe as anaphylaxis. Alcohol should not be ingested when taking Metronidazole. Infrequently, antibiotics may affect liver and kidney function or interact with other medications. Rare complications may include clostridium difficile: an infection of the bowels.
<b>Insulin Sensitizing Agents</b> (Metformin)	Metformin is used as an “off label” medication to treat insulin resistance in those with polycystic ovary syndrome.	Metformin may cause gastrointestinal upset (nausea, diarrhea and vomiting); it may cause a metallic taste in your mouth. It can rarely cause lactic acidosis and should be used with caution in kidney or liver diseases. To date, it has not been shown to cause any congenital problems in babies, but this is being continually monitored.
<b>Anti-estrogen Agents</b> (Clomiphene, Tamoxifen, Letrozole)	These medications are often used in the treatment of patients who do not ovulate. All of these drugs help by regulating hormonal secretion and by triggering increased production of your own FSH and LH that result in ovulation. The tablets are usually taken for 5 days of each cycle.	May cause hot flashes, breast tenderness, headache, dizziness and nausea. Occasionally, temporary visual disturbances and abdominal discomfort/pain may occur.
<b>Transdermal testosterone</b> (AndroGel)	May help to increase the pool of follicles available to respond to ovarian stimulation. Apply 1 pump to clean, dry skin of the shoulders/upper arms once daily in the morning and then wash your hands thoroughly	May cause stomach upset, headache, dizziness, hair changes, acne, change in sexual desire or trouble sleeping.
<b>Medroxyprogesterone (Oral)</b> (Provera)	Induces menstrual bleeding in those who are not pregnant and have not ovulated.	May cause, nausea, bloating, headache, breast tenderness, and moodiness.

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### ***Ovarian Hyper-Stimulation Syndrome (OHSS)***

Ovarian Hyper-Stimulation Syndrome (OHSS) is an exaggerated response to ovarian stimulation therapy used in assisted reproduction. It is usually associated with gonadotropin therapy (Puregon, Gonal-F, Menopur, Repronex, Luveris) and is rarely observed with the use of clomiphene citrate or letrozole

The incidence of moderate to severe OHSS is less than 1% at the Ottawa Fertility Centre.

Risk factors for developing OHSS:

- Young age
- Low body weight
- Polycystic ovary syndrome (PCOS)
- A high number of developing follicles
- A previous episode of OHSS

Symptoms of OHSS:

OHSS is a self-limited disorder that usually resolves spontaneously within several days but may last for a longer period of time.

Mild symptoms of OHSS are relatively common and include:

- Occasional lower abdominal discomfort
- Mild nausea
- Vomiting
- Diarrhea
- Abdominal swelling

Onset of symptoms:

Symptoms typically occur soon after ovulation or egg retrieval, but signs and symptoms may be delayed. Progression of illness is recognized when symptoms persist or worsen and may include:

- Rapid weight gain (more than 2 lbs per day)
- Respiratory difficulty (shortness of breath)
- Decreased urinary output (urinating less)
- Abdominal bloating and discomfort

Medical management of OHSS:

Management of mild OHSS can be done on an out-patient basis usually requiring oral analgesics (e.g. Tylenol) and counselling regarding the signs and symptoms of progressing illness. Patients will be assessed by the IVF physician on call at the clinic as required.

### ***Monitoring signs and symptoms of OHSS***

The physicians and nurses of the Ottawa Fertility Centre actively monitor symptoms of OHSS in our patients. Patients may be asked to call the clinic daily to report on signs and symptoms. Recommendations for the outpatient management of persistent OHSS include:

- Oral fluid intake of no less than 3 litres per day; sports drinks, fruit juices and water
- Strenuous physical activity and intercourse should be avoided
- Limited activity is suggested but strict bed rest is not needed and may increase the risks of blood clot formation in legs and lungs
- Weight should be recorded daily

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### *Culdocentesis*

If necessary, patients may require an out-patient procedure called culdocentesis. In this procedure, the physician will drain vaginally the excess fluid from your abdomen - a procedure similar to that of an egg retrieval. Risks associated with a culdocentesis include:

- Allergic reaction to pain medicine or antibiotics
- Complications from insertion of culdocentesis needle such as:
  - Direct needle injury to the blood vessel, bladder or bowel
  - Pelvic infection
- Intra-abdominal bleeding

### *Hospitalization*

Hospitalization is relatively uncommon but may be required based on the severity of symptoms, analgesic requirements and availability of support at home. There have been case reports of severe OHSS causing blood clots in the veins or lungs, stroke and rarely, death.

## **EGG RETRIEVAL**

Egg retrieval is a procedure in which a needle is inserted through the vagina into the ovary to obtain the eggs - this is performed with ultrasound guidance. Patients are given Versed (a Valium-like medication) and an intravenous narcotic (Fentanyl) to make the egg retrieval process as comfortable as possible. Patients are also given antibiotics prior to egg retrieval to reduce the risk of infection. Risks of egg retrieval include the following:

- Allergic reaction to pain medicine drugs or antibiotics
- Complications from insertion of egg retrieval needle such as:
  - Direct needle injury to the blood vessel, bladder or bowel
  - Pelvic infection including infection of a fallopian tube or ovary after egg retrieval
- Intra-abdominal bleeding

## **LABORATORY PROCEDURES**

### **EGG FREEZING**

Once the eggs are retrieved, they are examined under the microscope and assessed for maturity. Not every egg that is retrieved will be mature. Only mature eggs can be frozen. Eggs are frozen rapidly through a process called vitrification. Before vitrification, the eggs are placed in a solution that removes some of the water from the cell. Vitrification is a specialized freezing technique by which the eggs are cryopreserved using an ultra-rapid cooling technique, turning them into a glassy solid instead of ice, and by doing so, avoiding ice-crystal formation which can be very detrimental to their survival. The eggs are then stored at a very low temperature (-196°C). In the future, the eggs can be thawed for In Vitro Fertilization (IVF). When they are warmed, the eggs are put in a series of different fluid solutions to reverse the dehydration. Approximately 85-88% of eggs will survive the freeze-thaw process.

In the future if thawed, each egg is injected with a single sperm via Intracytoplasmic Sperm Injection (ICSI)

Under most circumstances, approximately 70% of eggs fertilize. However, the following risks exist:

- No fertilization due to poor quality sperm and/or eggs
- Abnormal fertilization of some or all of the eggs
- Bacterial contamination of the eggs - the bacteria may be from the semen, the vaginal secretions collected with the eggs, and rarely, from the laboratory products used to support the developing embryo
- Egg loss, due to some unforeseen event, such as equipment failure or loss during handling or manipulation

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### BARRIERS TO SUCCESSFUL EGG FREEZING

The two most important factors that influence the chance of a future live birth after egg freezing are:

- The egg provider's age
- The egg provider's ovarian reserve (number of eggs in the ovary)

Patients may experience other potential barriers to a successful egg freezing, including:

- Low or excessive response to fertility medications
- Unable to access ovaries for egg retrieval
- No eggs found at egg retrieval
- Eggs are found to be abnormal at the time of egg retrieval

In the future, when the frozen eggs are thawed, other barriers include:

- The inability of the sperm provider to produce a semen sample or to give a sperm sample of sufficient quality or quantity
- Failure of fertilization
- Abnormal embryo development
- Difficult or failed embryo transfer
- Failure of implantation
- Unforeseen events resulting in unfavourable laboratory conditions. These events may include hazardous or catastrophic weather, equipment malfunction or failure, infection of either partner, contamination of laboratory products or human error.
- Loss or damage to eggs or embryos

### DISPOSITION OF EGGS

You should keep your eggs frozen until you are certain your family is complete, or you are certain you do not want to use them. As the owner of your frozen eggs, your consent will be required concerning the disposition of such eggs. Certain uses or dispositions may also require approval by the Ottawa Fertility Centre.

We require that you specifically provide for the disposition of any eggs that are not used for the purpose of attempting to initiate a pregnancy, in case of your death or incapacitation.

You should understand that you retain the right to change your decision in this regard at any future time by providing the Ottawa Fertility Centre with written notice to this effect.

### ANNUAL RENEWAL

You understand that a renewal of your decision regarding the disposition of stored eggs must be made annually. Every twelve (12) months from the date of freezing, the Ottawa Fertility Centre will contact you to renew your written instructions concerning the disposition of your frozen eggs and the payment of annual storage charges. The Ottawa Fertility Centre will make reasonable attempts to contact you, but it is your responsibility to keep the Ottawa Fertility Centre informed of your current address and telephone number. If you do not reply, your eggs will be discarded unless direction for their use has been provided.

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**\*\*Trigger warning: The information below relates to achieving a pregnancy in the future with the use of frozen eggs. This information is important to know, however it is not mandatory to read for your upcoming appointment\*\***

### **FOR FUTURE USE OF FROZEN EGGS - PREGNANCY AFTER ASSISTED REPRODUCTION TREATMENT**

Spontaneously conceived pregnancies in untreated patients with a history of infertility may be at increased risk for obstetrical complications and perinatal mortality when compared to those with no fertility issues. Similarly, even singleton pregnancies conceived with Assisted Reproductive Technology (ART), with or without ICSI, are at increased risk of obstetrical complications such as high blood pressure, preterm birth, low birth weight and perinatal mortality.

#### **Miscarriage**

An early pregnancy loss (or miscarriage) can occur with any fertility treatment. The risk of miscarriage is associated with the age of the egg provider at the time of egg freezing. Egg freezing or IVF does not increase the risk of miscarriage. Most miscarriages are associated with lower abdominal cramping and bleeding, but do not necessarily require treatment. In some cases, complete removal of the pregnancy tissue may be expedited with medication (misoprostol) or accomplished by procedure called Manual Vacuum Aspiration (MVA) or Dilatation and Curettage (D&C).

#### **Tubal (Ectopic) Pregnancy**

An ectopic pregnancy may develop as a result of fertility treatment. The majority of ectopic pregnancies occur in the fallopian tube. If an ectopic pregnancy is diagnosed, you may require surgical treatment that may involve the removal of the affected fallopian tube. Medical treatment with a drug called Methotrexate may be an option in selected cases.

#### **Ovarian Torsion**

In less than 1% of cases, a fluid filled cyst(s) in the ovary can cause the ovary to twist on itself. This can decrease the blood supply to the ovary and result in significant lower abdominal pain. Surgery may be required to untwist or possibly remove the ovary.

#### **Multiple Pregnancies**

The chances of twins or a higher order multiple pregnancy (ie triplets or more) is increased when more than 1 embryo is transferred into the uterus at the same time. Complications of multiple pregnancies may include but are not limited to the following:

- Complications for the pregnant person: pre-eclampsia (high blood pressure), gestational diabetes, placenta previa (abnormal position of the placenta), placental abruption (separation), post-partum (after delivery) hemorrhage (excessive bleeding), operative deliveries (like a Cesarean Section) and post partum depression. There is also increased parental stress and decreased quality of life.
- Complications for the infants: increased risk of dying before, during or after delivery, fetal growth restriction (reduced growth in the fetus), pre-term birth (consequences may include cerebral bleeding – bleeding into the brain, retinopathy – damage to the eyes, bronchopulmonary dysplasia – severe breathing problems and necrotizing enterocolitis-bowel damage) and cognitive delays – delayed ability to do simple tasks. Following birth, multiples suffer from increased rates of learning difficulties and poor growth in infancy. In addition, blastocyst transfer increases the risk of monozygotic (identical) twinning which is a higher risk type of twin pregnancy with even poorer outcomes than non-identical twins.

At the Ottawa Fertility Centre, every effort is made to reduce the likelihood of multiple pregnancies by offering single embryo transfer when appropriate.

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Our goal is to help you build your family – one healthy baby at a time.

The table below lists the **risks to the babies** of a twin pregnancy compared to pregnancy with one baby (singleton).

Risks of Twins Compared to Risk of Singleton Pregnancies				
	Singletons	Twins	Increased risk with twins	
Low birth weight less than 5.5 lbs	5.9 %	53.1 %	9 times	↑ risk
Very low birth weight less than 3.3 lbs	0.7 %	8.2 %	10 times	↑ risk
Prematurity less than 32 weeks	3.1 %	11.0 %	3-4 times	↑ risk
Prematurity less than 28 weeks	0.3 %	3.7 %	10 times	↑ risk
Still birth (death before birth)	0.4 %	1.4 %	3 times	↑ risk
Neonatal death (death in 1 <sup>st</sup> month of life)	0.3 %	2.3 %	8 times	↑ risk
Infant death (death in 1 <sup>st</sup> year of life)	0.9 %	4.9 %	5 times	↑ risk
Malformation rate	2.7 %	3.5 %	1.5 times	↑ risk
Severe handicap rate	2.0 %	3.4 %	1.5 times	↑ risk

The average length of pregnancy in a twin pregnancy is 36 weeks. Full term singleton pregnancies are 40 weeks. Since this is only an average, many twin pregnancies are delivered much earlier than 36 weeks. Because twins are often born prematurely, the risk to the long-term health of these infants is increased. This includes a 7 times increased risk of cerebral palsy. NICU (Intensive Care) hospital care is seen in more than 25% of twins and in more than 75% of triplet pregnancies. Twin pregnancies also pose a **greater risk for the mother** during the pregnancy as shown in the table below. Other risks include premature labour sometimes requiring prolonged bed rest during the pregnancy.

Maternal Risks in Twin Pregnancy	
Hypertension (high blood pressure)	2-3 x higher risk
Heavy bleeding after delivery	3-4.5 x higher risk
Cesarean section	3 x higher risk
Maternal death (rare even with twins)	2-3 x higher risk