MUHC Reproductive Centre

Treatment Information for In Vitro Fertilization (IVF)

MUHC Reproductive Centre

- At the MUHC Reproductive Centre, as an academic institution, the various stages of the IVF process, as well as other fertility treatments, are carried out by a multidisciplinary medical team.
- This team consists of fertility specialists, medical fellows, nurses, auxiliary nurses, ultrasound technicians, embryologists, urologists, and patient attendants. All are there to support you throughout your treatment.
- Your doctor may not be assigned for your ultrasound appointments, during your egg retrieval, or embryo transfer.

What is IVF?

In vitro fertilization (IVF) is the fertilization of eggs by sperm, outside the body.

In IVF, eggs are removed from the ovaries and are fertilized with the sperm in the laboratory to create embryos. The best embryo can then be transferred a few days later into the uterus.

Who Needs IVF?

In general, IVF is recommended for the following situations:

4

1. Individuals with a diagnosis of infertility with known or unknown causes.

- Among the known causes are:
 - Damage or absence of the fallopian tubes
 - Severe male factor infertility
 - Severe endometriosis
 - History of previous failed infertility treatments
 - Advanced age

Who Needs IVF (con't)

2. Egg Donor (or Egg donation)

IVF is necessary to retrieve eggs from the donor, fertilize them with sperm in the laboratory, and create embryos that can then be transferred to the recipient for a pregnancy.

3. Fertility preservation for medical reasons

People seeking to preserve their fertility for medical reasons may resort to in vitro fertilization. This technique allows, for example, the cryopreservation of eggs or embryos before undergoing chemotherapy treatment following a cancer diagnosis.

4. Fertility preservation before gender affirmation treatments (transgender individuals)

Gender-affirming treatment can affect a person's reproductive capabilities. A transgender individual may undergo IVF to preserve their eggs (or create embryos) before starting their treatment.

Who Needs IVF (con't)

5. Rare Genetic Disease

IVF can be performed for individuals carrying a genetic anomaly that could lead to a serious illness, in order to test and select an embryo that is not affected.

6. Elective Fertility Preservation

Women who, for various personal reasons, choose to delay motherhood, may opt for IVF to preserve their eggs or create embryos for future use if necessary.

The IVF process

- Please note that the following information covers the entire IVF treatment process from the beginning (ovarian stimulation) to the end (pregnancy test).
- Typically, for those opting for IVF for reasons other than diagnosed infertility, the treatment will conclude either at the time of egg retrieval / or egg freezing, or after the creation and freezing of embryos.

IVF Process

1. HORMONE THERAPY

- 2. Ultrasound monitoring
- 3. Trigger Shot
- 4. Egg retrieval
- 5. Fertilization of the Eggs
- 6. Embryo transfer
- 7. Pregnancy test
- 8. Viability ultrasound

Why Take Hormones?

In order to prepare your ovaries to do IVF, you will need to take hormones for several days before eggs can be retrieved.

Without hormones, the body usually produces only one mature follicle per month. To increase your chance of conceiving, hormones called Gonadotropins will stimulate the ovaries to produce many mature eggs (instead of just one) and other hormones will help prevent premature ovulation before we collect your eggs.

Additional hormone therapy and other medication is given after the egg retrieval, in order to help implantation of the embryo and to support the possible pregnancy.

Which Hormones will I Take?

Sometimes other types of medication such as oral contraceptives can be used in combination with hormones in the process of IVF.

The choice of medications is based on the couple's test results and unique medical history*.

*Once you are ready to start IVF process, a nurse will send you the prescription along with instructions on medications that were prescribed to you.

Ovarian Stimulation



The number of mature eggs will depend on the woman's ovarian reserve, age and medical history.



A follicle is a fluid-filled sac that, potentially, contains an egg





The hormone are in the form of injections.

12

A nurse will teach you how to do the injections yourself in the subcutaneous tissue (the fat) of either your abdomen, thighs or on the back of your arm (if your partner is giving you the injections).

Side Effects of Medications

These medications can have some side effects such as:

- ▶ Fatigue
- Headaches
- Breast tenderness
- Redness at injection site

- Nausea
- Bloating
- Mood changes
- Decreased libido

Side effects are usually mild and of short duration. You may contact your pharmacist if you have any concerns about your medication.

Persistent leg/calf pain, shortness of breath, rash all over body or feeling of wanting to hurt yourself or others is NOT NORMAL: contact emergency services immediately

Fertility Drugs



Private insurance

At a minimum, private insurers are required to cover all medications appearing on the List of Medications published by the RAMQ, without conditions or restrictions except those that apply to exceptional medications. For medications available through an exceptional access program, private insurers must provide coverage equivalent to the RAMQ's public prescription drug plan.

When an insured patient has reached the maximum contribution amount ~ 1200\$* then the private insurer must cover 100% of the total cost of additional prescriptions.

RAMQ coverage

The patient pays out a deductible of ~100\$* per month. The remaining amount should be covered.

* Amount for 2023, it changes every year, contact your insurance company and your pharmacist for more details.

Some of this information comes from the AQPP website (the Quebec Association of Owner Pharmacists

Where to Buy the Fertility Drugs?

Only a few pharmacies will carry the fertility drugs or are more familiar with the specific forms needed for reimbursement by your private insurance company or RAMQ.

We will provide you with a list of pharmacies.

Different IVF Protocols

There are different protocols (combinations of medications) that can be used to stimulate the ovaries and control ovulation. The treatment plan* is based on the patient's test results and unique medical history. These are the most common protocols:

- Antagonist (takes 2-3 weeks)**
- Microdose Flare (5-6 weeks)**
- Pill protocol (6 weeks)**
- IVM/natural (2-3 weeks)** used rarely

*Once you are ready to start IVF process, a nurse will send you detailed instructions on the specific protocol and medications that were prescribed to you.

**estimated time it takes from day 1 of your menstrual cycle to embryo transfer.



IVF Process

1. Hormone therapy

2. ULTRASOUND MONITORING

- 3. Trigger Shot
- 4. Egg retrieval
- 5. Fertilization of the oocytes (eggs)
- 6. Embryo transfer
- 7. Pregnancy test
- 8. Viability ultrasound

IVF Ultrasounds

- The vaginal ultrasounds (2 to 3 on average per treatment cycle) are done to monitor the growth of your follicles.
- **b** Done early in the morning.
- You might be at the clinic for 1-3 hrs each time.
- First ultrasound: usually no blood test required.
- Following ultrasounds: a blood test will be done each time to monitor the level of estradiol released by your follicles – it helps determine your response to the treatment.
- You can have breakfast before your appointment.

Ultrasound Days

- Bring your <u>completed</u> treatment consent and Covid-19 consent
- Please be on time for your appointment.
- Take a number when you come in to register.
- \blacktriangleright Ultrasound \longrightarrow Blood test \longrightarrow nurse for teaching and verification of file.
- Afterwards you can go back to work/ home*.
- Later that day, the doctor reviews your file and places a medical order.
- A nurse will call you the same day (between 1 pm to 6 pm) to inform you of the plan (what medication(s) to take, when you need to return for your next ultrasound and blood test, or when your egg retrieval will be).
- Go to your pharmacy to purchase medications (if needed).

* You live far away from hospital? We suggest you stay nearby until you receive the call.

Ultrasound Days – in summary



20



Make sure we can reach you !

21

It is important to give us the phone number where you can be reached later that day, if it is different from the one in your file.

IVF Process

- 1. Hormone therapy
- 2. Ultrasound monitoring
- 3. TRIGGER SHOT
- 4. Egg retrieval
- 5. Fertilization of the eggs
- 6. Embryo transfer
- 7. Pregnancy test
- 8. Viability ultrasound

Ovulation Trigger

- On average, it takes 8-12 days of gonadotropin injections (hormones) before your follicles reach the optimal number and size (16-22mm). You will then be asked to take one (or 2) injection(s) called Trigger Shot.
- The Trigger Shot will cause eggs to undergo the final stage of maturation in preparation for egg retrieval (it replaces the natural surge of luteinizing hormone in your body).
- The timing of Trigger shot is VERY IMPORTANT. Unlike the other hormones that can be done more or less at the same time each day, the Trigger Shot must be done at the EXACT TIME you have been told by the nurse.
- It is usually done 36 hours before your egg retrieval.

Failure to follow these instructions may likely cause the cancelation of cycle or a suboptimal result for your IVF treatment.

The Trigger Shot



There are different medications that can act as a Trigger Shot

- HCG
- Ovidrel
- Suprefact

Often, the combination of Ovidrel and Suprefact is used as a 'Trigger Shot' 36 hours before egg retrieval.

(unless otherwise indicated by physician)

IVF Process

- 1. Hormone therapy
- 2. Ultrasound monitoring
- 3. Trigger shot
- 4. EGG RETRIEVAL
- 5. Fertilization of the eggs
- 6. Embryo transfer
- 7. Pregnancy test
- 8. Viability ultrasound

Day of Egg Retrieval

- > You must be fasting from midnight the night before.
- Arrive at the clinic at 7:30 or 8:00 am (as per instructions).
- Part of the preparation involves insertion of an IV line and taking your vital signs.
- If applicable, your partner or the sperm provider (if you are an egg donor) will produce the sample in the private room.
- ▶ The egg retrieval procedure takes approximately 15-20 min.
- You can go home on average 1 hour after the procedure ACCOMPANIED you cannot leave by Taxi/Uber/public transportation alone.
- > You should rest at home.

Day of Egg retrieval

Your partner, or sperm provider (if applicable) The sperm sample must be produced the morning of egg retrieval.

We have a private room available.

Your partner, or sperm provider, will need:

- Their RAMQ card or other ID card with picture.
- Their hospital card.



Day of Egg Retrieval

Sperm Bank

If you are using a sample from a sperm bank, please ensure that the sample has arrived at the Clinic before the start of treatment.

Day of Egg Retrieval

You are allowed to be accompanied in the procedure room, except on Sundays for safety reasons.

The person accompanying you must remain seated during the procedure; standing is not permitted.



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service@toonclips.com

Day of Egg Retrieval



30

If you know that the person accompanying you is not comfortable in a medical environment, please let us know in advance. It would be preferable to wait outside the procedure room.

Children are not allowed in the procedure room or the recovery area



Babysitting at HOME please

32 Our recovery room and procedure room



Local anesthesia and sedation

After asking you a few standard questions, the physician will start the preparation for your egg retrieval.

Medication such as Midazolam and Fentanyl (and sometimes local anesthesia) may be administered for a mild sedation and pain control.

Local anaesthesia by injection may also be used.

The procedure is not pain-free but tolerable for most people.

Note:

It is necessary to have someone accompany you on your return home.

Please refrain from consuming alcohol and driving for the next 24 hours following your egg retrieval.



Egg Retrieval Procedure

- A speculum will be inserted in your vagina to 'clean' inside and sometimes, local anaesthesia (freezing) is performed.
- Then, a needle attached to the vaginal probe (same as during your IVF monitoring ultrasound) will be inserted in the vagina to retrieve your eggs from the follicles.
- The fluid collected in the test tube is given to the embryologist to find your eggs under a microscope.
- You will be able to see 'live' (on a TV monitor) the work of the embryologist as he/she is searching for your oocytes.



IVF Process

- 1. Hormone therapy
- 2. Ultrasound monitoring
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- 4. Egg retrieval
- 5. FERTILIZATION OF THE EGGS
- 6. Embryo transfer
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- 8. Viability ultrasound

IVF in the Context of Fertility Preservation

Preservation of Eggs

Depending on the reason you are doing IVF, mature eggs collected on the day of retrieval may be frozen on that day.

36

The next steps regarding fertilization (slides 37-54) are therefore not applicable in your situation. Continue reading this presentation by going directly to slide 55.

Preservation of Embryos

For patients planning embryo preservation, the eggs will be put in contact with the spermatozoa on the same day of retrieval and the resulting embryos will be frozen after incubation of 3 to 6 days in the laboratory. Slides 37-54 are therefore not applicable in your situation. Continue reading this presentation by going directly to slide 55.

IVF in the context of egg Donation

Usually, the IVF process for an egg donor stops after the egg retrieval. Occasionally, it is necessary to have a follow-up ultrasound a few days after egg retrieval.

37

After donation, the eggs collected will be fertilized with the sperm of the intended parent (where applicable). The embryos created will be frozen and stored for possible transfer to the recipient.

Slides 38-54 are therefore not applicable in your situation. Continue reading this presentation by going directly to slide 55.

IVF in the context of PGT-M for rare genetic disease

For those who plan to have their embryos biopsied for a rare genetic disease (preimplantation screening), the eggs collected will be fertilized with the sperm on the same day of retrieval, and the resulting embryos will mature in the laboratory until the day of the embryo biopsy (day 5).

The embryos will then be frozen until the screening results are obtained. Then, the transfer of a healthy embryo will be planned.

The fertilization

The oocytes (eggs) retrieved will be put in contact with sperm following the egg retrieval.
2 methods of fertilization exist, your physician will determine which one is recommended for you



- Eggs are mixed directly with the sperm.
- Maturity of eggs and fertilization are assessed the following day.



39

- Cells surrounding the eggs are removed to assess egg maturity.
- Only mature eggs can be inseminated or frozen.
- One sperm is directly injected into one egg.

IVF

- The embryologist takes approximately 100 000 sperm X number of oocytes (10 oocytes = 1 million sperm) and places it in the petri dish where eggs are waiting to be fertilized.
- This method is good if there is no concern about the sperm
- The dish is then placed in the incubator hoping that the sperm fertilizes as many oocytes as possible. On average, 60-80% will get fertilized. However, there is no guarantee. In very rare cases, there is no fertilization and 'Rescue ICSI'* may be attempted in those circumstances.

*ICSI: see next page





4

ICSI

ICSI or Intra Cytoplasmic Sperm injection is a procedure where a single selected sperm is injected into each egg in order to achieve fertilization.



Embryo - day 1

- A mature egg looks like the egg in Figure A
- A successfully fertilized egg should look like the one in Figure B
- There are 2 signs of fertilization, indicated by the arrows seen in Figure B

At this point, embryo quality is still unknown





Embryo – days 2-3

On day 2 the embryo should be 2-4 cells



On day 3 the embryo should be 6-9 cells

43

- On day 2 it is possible to assess the embryo quality which is based on the % of fragmentation, the cell number and size.
- This will help determine whether the transfer or freezing will be performed on day 3 or day 5.



2 days after your egg retrieval, you will receive a call from the embryology lab with an update.

Days 5 and 6



- On day 5, embryos should have reached the blastocyst stage and be ready to transfer.
- Only a few embryos will make it to the blastocyst stage.
- The ones that did not can sometimes be cultured one more day and be frozen for future use if they are of sufficient quality.



A Early blastocyst



B Expanded blastocyst



C Hatching blastocyst



Culture of Embryos in the Lab

The embryologist needs to monitor daily the development of your embryo(s) from the time of fertilization until your embryo transfer or embryo freezing.

2 methods are used:

Conventional vs Embryoscope

The use of Embryoscope is not routine and there are extra fees. You should discuss this with the medical team.

https://www.vitrolife.com/ivf-journey/evaluation/time-lapse/

Preimplantation Genetic Screening (PGT-A)

46

- Your doctor will have had a discussion with you if PGT-A is an option you should consider.
- Preimplantation genetic testing (PGT) is a technique in which one or more cells are taken from an embryo for testing to provide information about the genetic make-up of the rest of the cells in that embryo.
- PGT-A can check for extra or missing chromosomes called aneuploidy. This test can find conditions like Down syndrome.
- The biggest advantage of PGT-A is to identify embryos with a higher likelihood of resulting in a successful and healthy pregnancy.

IVF Process

- 1. Hormone therapy
- 2. ultrasound monitoring
- 3. Trigger Shot
- 4. Egg retrieval
- 5. Fertilization of the eggs
- 6. EMBRYO TRANSFER
- 7. Pregnancy test
- 8. Viability ultrasound

Embryo Transfer

- Occurs 2-5 days after the egg retrieval.
- The best embryo is selected for transfer.
- When there are many embryos, waiting longer, until day 5, may help identify the "best" embryo (because poorer embryos will not survive until then).
- The decision about when to transfer the embryo is made on an individual basis and depends on the number and quality of embryos.
- The procedure (10-15 min) is not painful but may be uncomfortable due to the need of having a full bladder and a speculum inserted.
- The doctor can give you a "time off letter" from the day of transfer until the day of your pregnancy test.

Assisted Hatching

- The embryo naturally breaks out of this shell as it grows.
- Occasionally, the doctor may ask the laboratory to make a small "crack" in the outer shell of the embryo right before it is placed into the woman's body (assisted hatching).
- The hope is that assisted hatching might help the embryo expand, implant into the uterine wall, and finally lead to a pregnancy. This technique is mainly used in frozen embryo cycles.





Embryo Transfer

50



How many to Transfer?

- As per the regulation of the Quebec Government, only 1 embryo will be transferred in all cases if you are under the age of 37*.
- On RARE occasions, if you are over the age of 37 AND there are other medical reasons, 2 embryos may be transferred.
- Your treating physician will be the one to suggest the number of embryos to transfer based on your situation and the regulations.

*In the case of egg donation, it is the donor's age that is taken into account.

Embryo Cryopreservation (Freezing)

- Good quality surplus embryos remaining after transfer may be frozen for future use.
- Success rates with frozen embryo cycles are similar to fresh cycles.
- Rarely embryos do not survive freezing and thawing.
- Embryos can be kept into storage for many years (although if you want to use your embryos after 45 years old, you will need to undergo further evaluation).
- The maximum age to do treatment is 50 years old.



52

Pregnancy Testing

Pregnancy blood test is done 16 days after your egg retrieval.



Viability ultrasound

This ultrasound examination is done vaginally around the 7th week of pregnancy at our Center (3 weeks after your positive pregnancy test).

Purpose:

- Confirm location in the uterus (to rule out ectopic pregnancy).
- Determine the baby's gestational age (size corresponding to embryo transfer date).
- Determine single or multiple pregnancy.
- A heartbeat (flickering) can usually be seen on ultrasound at this stage.

This is the end of the journey through an IVF cycle. The next step will be to call your obstetrician. He/she will follow you for the rest of the pregnancy. We can provide you a referral if needed.



Risks of IVF treatment

The risks associated with an IVF treatment are low.

- Bleeding
- Infection
- Ovarian hyperstimulation (OHSS)
 - 1% of IVF cycles
 - May need to freeze all embryos and transfer at later date
 - May need to be hospitalized
- Ovarian torsion
- Thrombosis (blood clots)
- Premature delivery / low birth weight/ congenital abnormalities
- Miscarriage
- Ectopic pregnancy



Lifestyle with IVF

(for both partners)



Light to moderate exercise

- Eating well
 (Nutritionist available)
- Relaxation technics



- Recreational drugs
- Smoking
- Excessive alcohol intake
 - Overweight/underweight

Treatment fees

Find out if you are eligible for RAMQ coverage

57

Fertility Preservation

People who have a valid health insurance card (RAMQ) do not have to cover fertility preservation costs for medical **conditions that permanently affect the ovaries**. However, there may be some fees for medications.

Your doctor will have already confirmed whether this applies to you.

Infertility or rare genetic disease

Only one IVF cycle is covered by the Régie de l'assurance maladie (RAMQ) for eligible people under the age of 41.

The embryo transfer(s) resulting from this cycle will be covered by the RAMQ up to 42 years minus 1 day.

RAMQ Eligibility Criteria

The next slide refers to the first part of the RAMQ commitment form and summarizes the eligibility criteria.

Further information is available on the RAMQ website:

https://www.quebec.ca/en/family-and-support-forindividuals/pregnancy-parenthood/assistedreproduction/medically-assisted-reproduction-program

Excerpt from the RAMQ undertaking form

Information on eligibility criteria

Eligibility criteria for insured medically assisted procreation services:

- 1. Eligibility criteria for insured medically assisted procreation services required for artificial insemination and in vitro fertilization (IVF) are as follows:
 - The person alone or spouses are insured persons under the Québec Health Insurance Plan or are active members of the Canadian Armed Forces
 and residents of Québec.
 - The person alone or either spouse has never before formed an assisted procreation project as part of the current program of insured services.
 - In the case of spouses, either is infertile or unable to reproduce, or at high risk of conceiving a child with a hereditary disease or an inherited chromosomal disorder resulting in a serious, disabling, or fatal condition for which there is no treatment that can reverse the serious, disabling, or fatal condition.
 - The person alone or either spouse has not undergone voluntary surgical sterilization or had reanastomosis of the uterine tubes or the vas deferens.
 - . The man is 18 years of age or over at the time the first service is provided in the course of the assisted procreation project.
- 2. In addition to the eligibility criteria mentioned in point 1 above, medically assisted procreation services required for artificial insemination are considered insured services only if the following condition is met:
 - The woman is 18 years of age or over and less than 41 years of age at the time of the ovarian stimulation (stimulated ovulatory cycle or modified natural ovulatory cycle), on the first day of the menstrual cycle (natural ovulatory cycle), and at the time of every artificial insemination.
- 3. In addition to the eligibility criteria mentioned in point 1 above, medically assisted procreation services required for *in vitro* fertilization (IVF) are considered insured services only if the following conditions are met:
 - The woman is 18 years of age or over and less than 41 years of age at the time of the ovarian stimulation (stimulated ovulatory cycle or modified natural ovulatory cycle), or at the time of the ovarian puncture (natural ovulatory cycle).
 - . The woman is less than 42 years of age at the time of the last frozen embryo transfer.

Treatment fees (if you are non-eligible)

If you are not eligible, please refer to the price list on our website:

https://muhc.ca/reproductivecentre/page /what-you-need-know

As well as the information regarding the tax credit for infertility treatments:

https://muhc.ca/reproductivecentre/taxcredit-fertility-treatments

Nursing Info-Line

A nurse is available to answer your questions concerning your treatment.

- Monday Friday , 1- 3 pm call 514 843-1650 option 4.
- ► Have your hospital card ready.
- This service is not for scheduling appointments or renewing prescriptions.
- The nurse is not authorized to give medical results, only pregnancy test results.

Are you Immune to Rubella and Varicella?

62

- Part of the basic investigation we do at MUHC Reproductive Center are the tests to check for the woman's immunity against Rubella and Varicella.
- Vaccination for Rubella and Varicella is recommended for all women of reproductive age whose tests indicate a lack of antibodies*.
- ▶ For any questions, refer to your fertility specialist or family physician.

^{*}we follow recommendations of the 'protocole d'immunization du Québec' PIQ

Folic Acid

- Don't forget your folic acid
- 0,4 -1 mg every day
- Start 3 months before treatment if possible, don't stop.

https://muhcpatienteducation.ca/DATA/ GUIDE/537_en~v~folic-acid-supplementsand-pregnancy-not-developed-bypatient-education-office-.pdf



Research

As part of the MUHC, we are committed to integrating excellence in patient care, teaching and research.

64

You may be approached and invited to participate in a specific research study. You do not have to agree and it will not affect your care. As with most university ethically approved studies, there is usually no financial incentive.

Thank you for choosing MUHC Reproductive Centre

