What happens in the IVF lab

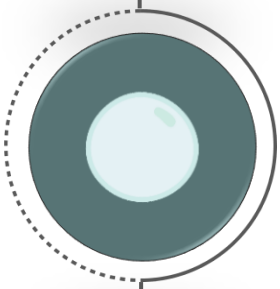
Embryologists are specially trained scientists who care for and look after your sperm, eggs and embryos. Embryologists are Healthcare Professionals registered with the Medical Sciences Council of New Zealand.

Egg and sperm collection

Getting Ready

Leading up to treatment, we encourage healthy lifestyles for both men and women. Eat lots of healthy food, and limit alcohol and caffeine (1 cup of coffee a day is fine). You must be smoke and drug free.

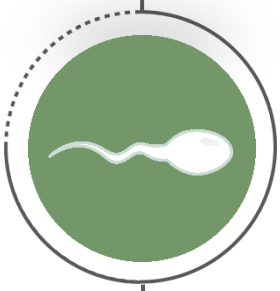
As you get closer to egg collection day, it's helpful for partners who will be providing a fresh sample of sperm on the day to have frequent ejaculations (about every 2-3 days).



Egg collection

On the day of egg collection, after being checked in by the nurse, you will meet an embryologist. One of us will be in theatre with you to look for your eggs as the doctor drains the fluid from the follicles on the ovaries (aspiration).

You will be told how many eggs were collected following your procedure.



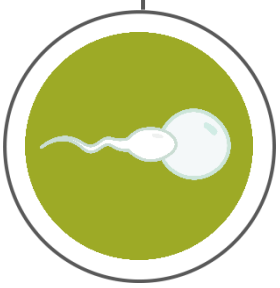
Sperm collection

After the egg collection, your partner needs to produce a semen sample, if using fresh sperm. We have a private room available with Wi-Fi.

- You **must** bring photo ID. This can be a driver's license or passport
- Remember you must be 2-3 days without sex or ejaculation

Your embryologist will speak to you before you go home about the semen sample and confirm if your treatment will be IVF or ICSI.

If you are anxious about producing a sample at the clinic, please phone the lab **(before the egg collection day**) to talk about back up sperm freezing or bringing the sample from home



Insemination

Insemination happens around four hours after your eggs have been collected.

We will add sperm to your eggs by standard insemination (IVF) if your sperm has 'washed' up well. Washing the sperm is a process where we separate the dead and immotile sperm from the strong, motile sperm.

With standard insemination, we add a large number of motile sperm to the dish with your eggs. Overnight, sperm swim to the eggs. Approximately 60-80% of eggs should fertilise in the presence of sperm.

If your doctor has recommended **Intracytoplasmic Sperm Injection (ICSI)** for male factor infertility, we will inject **all** the mature eggs. On average, 80% of eggs are expected to be mature.
A single sperm is carefully injected into each mature egg. Sometimes, the eggs do not survive the injection, and this can happen up to 5% of the time.

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Day 1 after egg collection

Fertilised egg

Fertilisation

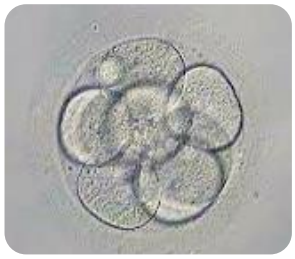
Your embryo is one day old! Your embryologist will check your eggs for fertilisation. Usually, **60-80%** of eggs fertilise.

Results

Your embryologist will phone you in the morning (the day after egg collection) with your fertilisation results. Very occasionally, failed fertilisation occurs. This is when no eggs have fertilised. This happens in around 1-3% of cycles.

A nurse will call you in the afternoon to check how you are and give you a provisional transfer time on day 3.

Day 3 after egg collection

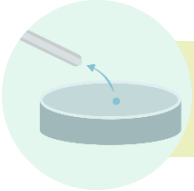


Day 3 embryo with 8 cells

Your embryologist will phone you in the morning to confirm whether your transfer will go ahead today (day 3) or wait an extra 2 days (day 5). This decision is based on how the embryos have developed between day 1 and 3.

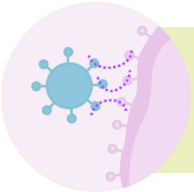
Embryo transfer

Your embryologist will select your best embryo for transfer.



1. They will load the embryo into a catheter for the doctor to place in your uterus.

2. The embryo is passed into your uterus



3. For every transfer at Fertility Plus, your embryo is transferred in 'Embryo glue'. Embryo glue gives your embryo a better chance of implanting into the uterus

- Transfers are similar to having a smear test done.
- You will need a full bladder for this procedure.
- Embryo transfers generally do not involve sedation, so you are able to eat normally.
- Your partner doesn't need to attend but is most welcome.
- The procedure takes about ten minutes, but you'll be in the clinic for about half an hour as you'll speak with an embryologist prior and a nurse afterwards.

Day 5 – 6

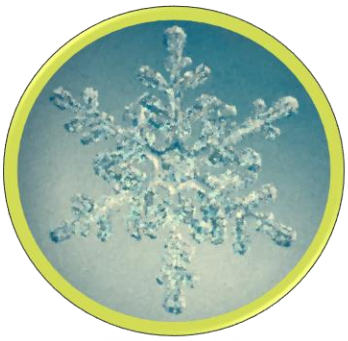
Blastocyst

After your embryo transfer, whether on day 3 or day 5, any leftover embryos will be assessed for freezing at the blastocyst stage (day 5-6).

On average about 40-50% of fertilised eggs form blastocysts. In some couples, we see much higher than this and in some couples no blastocysts develop. 65% of our couples have embryos suitable for freezing.

Your embryologist will call you on day 6 to let you know if your embryos were suitable for freezing. Your embryologist will email you a lab summary of your cycle after day 6.

Freeze Only Cycles



Some patients will be unable to have a fresh embryo transfer.

The cycle then becomes a 'Freeze-Only' cycle and any suitable embryos are frozen for use in a future frozen embryo transfer (FET) cycle.

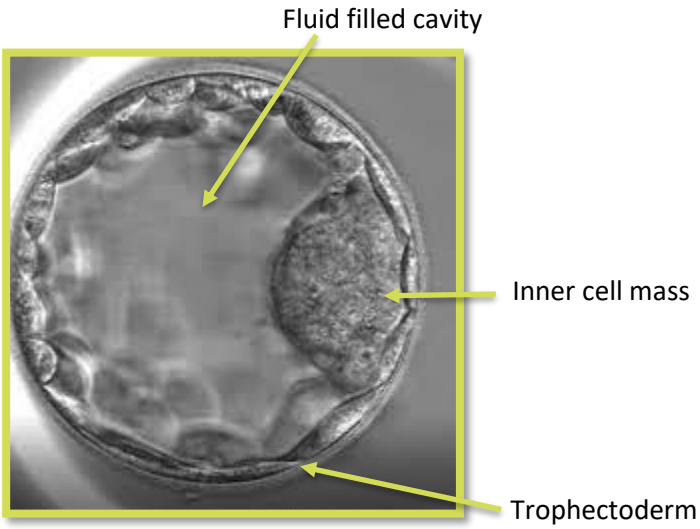
Your embryos will all be grown to blastocyst stage (Day 5-6) and any suitable blastocysts frozen.

Your embryologist will phone you on day 6 to let you know if any embryos have been frozen. You will receive an email with a summary of your lab cycle after day six.

Blastocyst Grading explained

Blastocysts are embryos that have developed to the stage of having two distinct cell types (inner cell mass and trophectoderm) and a central fluid filled cavity. The inner call mass cells will develop into the fetus and the trophectoderm cells will become the placenta. We use a grading system called 'Gardner's Blastocyst grading '. Blastocysts are given a grade for three different components.

Blastocyst grading is helpful in the laboratory, however the potential of the embryo to continue to normal implantation and a healthy baby is difficult to predict on grading alone.



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- A number is given for the blastocyst development stage – the degree of expansion and hatching status
- The inner cell mass (ICM) is given a letter grade
- The trophectoderm is given a letter grade

Expansion Grade

1 – Fluid cavity less than half the volume of embryo

2 – Fluid cavity more than half the volume of embryo

3 – Full blastocyst, cavity fills the embryo

4 – Expanded blastocyst, cavity larger than the embryo and shell is starting to thin

5 – Blastocyst has started hatching

6 – Blastocyst has fully hatched

Inner Cell Mass Grade

A – Many cells tightly packed

B – Several cells, loosely packed

C – Few cells

Trophectoderm Grade

A – Many cells forming a tight cohesive layer

B – Fewer cells, forming a looser layer

C – Fewer larger cells

For example, a 4BA means that the blastocyst is expanded (grade 4) and has a loosely packed inner cell mass (B) and the trophectoderm has many cells forming a tight cohesive layer.

If you have any questions for the embryology team, please feel free to contact us on fertlab@adhb.govt.nz