



## IVF and ICSI

Thank you for choosing LCRH to help you along your fertility pathway. We know that there is a lot of information to digest before you can start treatment and we hope this will help to answer some of your questions. Don't forget that our team are always available to speak to you about any queries you might have.

### **How to use this booklet**

This booklet has been designed to be read after your individualised treatment has been agreed with you and your Consultant and before you sign consents to treatment.

- take time to read and digest your information pack including the information leaflets and consent forms
- ensure before you have signed your consent forms that you have been provided with enough information to understand the nature, purpose and implications of your consent to treatment
- please bring or send any screening blood tests you may have had done elsewhere ahead of this appointment if you have not done so already

### **Your nurse consultation appointment**

This will last approximately 30 minutes and give you the opportunity to meet one of our specialist nurses. Our nursing team are available throughout your treatment should you need any advice, help or support during your treatment with us. During your appointment we will:-

- organise a personalised treatment schedule which will document which medications (if any) you will be taking, the dose and when they start.
- explain what will happen during your treatment
- finally your nurse will check that if all your queries have been answered that your consent forms have been completed correctly and signed

### **Information regarding IVF and ICSI cycles**

IVF is a process whereby eggs are collected and fertilised with sperm in the laboratory. The embryos produced as a result of this process are then allowed to develop in the laboratory and can either be transferred or subsequently frozen.

There are several steps involved in this process

1. stimulating the ovaries
2. control of ovulation
3. egg collection
4. fertilisation of eggs
5. embryo development
6. embryo transfer
7. freezing of embryos if sufficient embryos have developed

### **Stimulating the ovaries**

This is normally achieved with a hormonal injection called FSH (follicle stimulating hormone). This is the hormone that usually drives the production of a follicle in the normal menstrual cycle. Sometimes some preparations are used that also contain a hormone called LH (luteinising hormone). These injections are given on a daily basis as a subcutaneous injection.



### **Control of ovulation**

Once follicles reach a certain size in the menstrual cycle (usually around 17mm or above) then a surge of LH hormone will normally occur allowing the release of an egg to take place. For IVF treatment eggs need to be collected so it is necessary to control this process either by stopping the release of LH. This is achieved either by a drug called Cetrotide or Fyremadel.

### **Egg collection**

As the ovaries are being stimulated with FSH injections the response to this medication is being measured by ultrasound scans. Once there are sufficient follicles of large enough size a trigger injection is given to mimic the LH which would normally be released at ovulation. This allows the genetic material within the egg to divide. Egg collection is then timed for approximately 34-38 hours after this time.

Egg collection is done transvaginally in much the same way as a transvaginal scan. The procedure normally takes 30 minutes but we need you to be here in the clinic 30 minutes ahead of your appointment time so that you can

- be admitted
- sign consent
- meet our anaesthetist

Our anaesthetist will ensure that you are comfortable during the procedure with intravenous sedation. This is an effective and generally very safe method of anaesthesia.

You will need to stay with us until you have recovered from your sedation and have passed urine and had something to eat and drink. Generally, this takes an hour after you return from theatre.

You may need to take some painkillers during the next 24-48 hours. We generally suggest paracetamol if you can normally take this but suggest avoiding anti-inflammatory medications. If we are aiming to go ahead with embryo transfer then you will commence progesterone supplements the morning after egg collection. If there are any additional medications you require we will give you specific information regarding the timing and doses of these medications.

### **Fertilisation of eggs**

You will have previously discussed with your Consultant how any eggs collected may be fertilised. A sperm sample is produced on the same day as egg collection. The sperm sample is then processed to remove cells, immotile sperm and debris so that a concentrated sample of sperm is achieved.

There are different ways of achieving fertilisation in the laboratory and ICSI (intracytoplasmic sperm injection) is one of these techniques. This is usually used in the following situations:

- where the count, motility and morphology of the sperm are not judged as being sufficient for normal fertilisation to occur
- where there has been previous poor or non-fertilisation with IVF treatment
- in some specific assisted conception techniques such as PGT-M

### **Risks associated with ICSI**

ICSI carries slightly more risks than some other fertility treatments, such as having a reduced number of eggs being available for treatment (compared to IVF), due to eggs being immature or damaged by the process of ICSI (less than 5%)

Other risks that may be associated with ICSI include:

- certain genetic and developmental defects in a very small number of children born using this treatment;



however, problems that have been linked with ICSI may have been caused by an underlying male infertility, rather than the treatment itself,

- the possibility that a male conceived as a result of ICSI may inherit his father's, or donor's, infertility (it is too early to know if this is the case, as the oldest boys born from ICSI are still in their teens). However, where there is a clearly defined genetic cause of male infertility, particularly if it is associated with the Y chromosome, it is highly likely that male offspring will inherit their father's, or donor's, infertility.

If you have a concern that this might apply to you, you may want to consider having genetic testing first to avoid the low sperm count being passed onto a male child.

We do strongly recommend that you should discuss the full implications of taking these tests with our counsellor before going ahead.

### **Embryo development**

The following morning after egg collection we will know how many of the eggs have been fertilized (approximately 70% of mature eggs). We will then allow the embryos to develop from anything between 2-5 days. This will depend upon how many eggs have fertilised and how your embryos have developed.

If your embryos are incubating in a time-lapse imaging system it may be possible to gain more information regarding your embryo(s) development over the time they are in the laboratory. Sometimes this can aid with embryo selection and may have some benefits in terms of undisturbed culture of your embryos.

### **Embryo transfer**

- The number of embryos to be transferred will already have been discussed before the day of embryo transfer. We suggest that a single embryo is transferred especially if:
  - you are young (<37 years)
  - you have good quality embryos
  - you have had previous multiple pregnancies
  - if PGT-A tested, we will only transfer one euploid embryo
- We advise you to have a half to full bladder for your embryo transfer this will enable a smooth transfer of your embryos. The bladder when full pushes down on the uterus allowing easier access into the uterine cavity and allows us to place the embryo in an optimal position.

Generally, embryo transfer is done without sedation although if there have been difficult transfers in the past or a need for sedation this can be arranged. We will ask you to arrive with a comfortably full bladder which will allow us to scan you abdominally so that we can see where to place an embryo. We use a speculum (the same instrument used when you have a smear test) to see the neck of the womb and we load the embryo in a small amount of culture medium and then pass the plastic tube through the cervix.

### **Freezing of embryos**

If we have spare embryos of sufficient quality then these may undergo PGT-A testing and/or be frozen for further attempts at treatment.

### **Treatment protocols**

There are several different ways of preparing for IVF/ICSI treatment.

### **Antagonist cycles**

This is one of the common cycles used for ovarian stimulation. It provides a flexible approach to stimulation particularly for patients at risk of ovarian hyperstimulation syndrome (OHSS). This is because a different trigger injection can be used (called busserelin) which radically reduces the chances of developing this condition.



- norethisterone tablets 5mg twice daily commence around day 15 of your cycle
- these are used for 10-14 days and a scan is booked once you have a withdrawal bleed a few days post stopping the Norethisterone.
- FSH injections start on day 1- 3 of this bleed.
- Serial scans are booked to check ovarian response to medication.
- On day 5 of your FSH injections GnRH injections are started (commonly fyremedal)
- Once there are sufficient follicles of large enough size a trigger injection is given to mimic the LH which would normally be released at ovulation. This allows the genetic material within the egg to divide. Egg collection is then timed for approximately 34-38 hours after this time

### **Long protocol cycles**

Very occasionally it may be beneficial to control your natural cycle before commencing stimulation. This protocol has an additional step of shutting the function of the ovaries down before commencing medication to stimulate the ovaries for egg collection. It takes about 5 weeks to prepare for embryo transfer

- buserelin injections start on either day 2 or day 21 of your cycle. If you start on day 21 it is normal to get a period in the 2 weeks that you are using buserelin
- after 2 weeks we will ask you to come for a scan.
- if at this point the lining of the womb looks thin and the ovaries have no follicles forming then we will start stimulation with FSH and continue buserelin injections.
- a blood sample is taken on day 5 for estradiol to monitor early response to stimulation. Occasionally we may ask you to also come for a scan at the time or following your blood sample
- scans are normally scheduled for day 9 and day 12 of stimulation although this may vary according to response
- once there are sufficient follicles of large enough size a trigger injection is given to mimic the LH which would normally be released at ovulation. This allows the genetic material within the egg to divide. Egg collection is then timed for approximately 34-38 hours after this time.

### **Modified natural protocol**

This protocol may be used where there is a contraindication to full stimulation or where the reserve of the ovaries (how well the ovaries may respond to stimulation) is reduced.

- The OCP is started from day 15 of your cycle.
- day 1 of your cycle is the first full day of bleeding (that is red bleeding which has started before 12pm)
- after a reassuring baseline scan and blood tests (LH, FSH and E2) then clomiphene citrate is started.
- HMG injections are commenced on day 5 of your cycle
- once a developing follicle reaches 10mm or above GnRH antagonist injections are started (commonly fyremedal) to stop ovulation
- once there are sufficient follicles of large enough size a trigger injection is given to mimic the LH which would normally be released at ovulation. This allows the genetic material within the egg to divide. Egg collection is then timed for approximately 34-38 hours after this time

**Please feel free to ask any member of the team any questions that you have after reading this information. You may find visiting the HFEA's website also helpful – [www.hfea.gov.uk](http://www.hfea.gov.uk)**

- We will give you a date to do your pregnancy test at the time of transfer
- If whilst you are waiting to do your pregnancy test you have developed pain or bleeding or anything else you are concerned about please contact the Clinic so you can be given further advice and support
- Sometimes the result can be unclear and you may need to repeat the test
- If positive or negative please call the Clinic so that one of our team can give you further advice and



discuss with you what you should do next.

- If positive on day 10 and again a few days later we ask you to come in for a HCG and Progesterone blood test
- We will arrange an early pregnancy scan for you approx. 2 weeks from the positive pregnancy test result.

#### **Pregnancy scan**

- Most positive pregnancy tests result in a normally developing pregnancy.
- If the pregnancy scan has been performed and all is well we would advise you to see your GP to arrange your ante-natal care.
- You may need a prescription to continue any medication.
- Blood pregnancy levels and urine pregnancy tests may not always accurately predict whether a pregnancy is developing normally and your first scan is important to determine this.
- If you have had any pain or bleeding after the positive pregnancy result an early scan and blood tests will be recommended to help us monitor complications of pregnancy such as ectopic pregnancy.
- Occasionally if we suspect an ectopic pregnancy or sadly you have suffered a miscarriage we may refer you to a local specialist centre (early pregnancy assessment unit) to take over your care.
- We must know the final outcome of your pregnancy to inform the HFEA of the results of your treatment
- Please keep in contact during this time we are always available to support you with advice through to the end of your pregnancy

#### **Reasons a treatment cycle may be converted to a freeze all cycle**

- If there is a risk of developing Ovarian Hyperstimulation Syndrome (OHSS), it may be that the specialist decides to freeze all embryos to allow the ovaries to settle before preparing for transfer.
- Hormone levels may indicate that the uterus is not at the right maturity to support implantation so it may be that transfer is delayed in order to prime the uterus appropriately.

#### **Reasons a treatment cycle may be cancelled**

- occasionally a baseline scan may show that it is not favourable to commence a treatment cycle e.g. the presence of a large cyst in the ovary
- sometimes the ovaries may under-respond to stimulation, that is not enough follicles form to go ahead with egg collection.
- sometimes the ovaries will over-respond to stimulation and in this case we may advise cancelling the cycle and not proceeding with egg collection, or alternatively we may recommend collecting your eggs but freezing any resulting embryos.
- Once eggs have been collected there is no guarantee that fertilisation or further development of embryos will take place

If you have unfortunately failed to reach the point of egg collection or embryo development then we will arrange for a follow-up consultation to discuss what options to consider from here.

**The team at LCRH wish you every success with your treatment.**