The aim of this information sheet is to give information on the Oxford Fertility Unit IVM programme.
If after reading the information there are still questions you would like to ask then please do not hesitate to contact one of the team (names listed at the end).

Summary of eligibility criteria

1. Woman requiring assisted conception treatment
2. Age <37 years
3. Polycystic ovaries on scan (doesn't matter whether periods absent or regular)
4. <3 previous failed IVF cycles
5. BMI <35: Ideally <30

Introduction

Current in-vitro fertilisation (IVF) treatments use daily injections of drugs (called gonadotropins) to induce the development of multiple follicles in the ovaries. The oocytes (eggs) mature within these follicles, are collected, and then fertilised in the laboratory. An alternative approach is to collect immature eggs from *unstimulated* ovaries, to mature the eggs in the laboratory for 24-48 hours, and to then fertilize them when mature. Hence the oocyte maturation happens in the laboratory rather than the body. This is the basis of IVM treatment.

Advantages of IVM treatment compared to IVF

The main advantage of IVM treatment is that, unlike IVF, daily injections to stimulate the ovaries before egg collection are not required. Therefore the inconvenience and discomfort of daily injections are removed, and, most importantly, there is no risk of ovarian hyperstimulation syndrome (OHSS). Severe OHSS occurs in around 1 in a 100 standard IVF cycles and usually requires admission to hospital for a few days. Severe OHSS is even more common in women who have polycystic ovaries (PCO) on ultrasound scan or who have the polycystic ovary syndrome (PCOS). IVM treatment is shorter than standard IVF as there is no need to sniff a GnRH-agonist drug for 2-3 weeks to suppress the ovaries before the injections start.

Disadvantages of IVM treatment compared to IVF

IVM is a newer and less well established treatment than IVF. The pregnancy rate in IVM treatment is lower than for IVF. For women meeting the eligibility criteria listed above the IVM pregnancy rate is around 20 – 25%

Over 1000 babies have been born world-wide from IVM treatment. Recent studies have examined the health of some of these children and have been reassuring, showing no increase in rates of abnormality. However, it must be recognised that the numbers of babies born is still relatively limited. We ask that couples having children through IVM consider taking part in long term observation studies if requested.

Factors affecting success in IVM treatment

For standard IVF treatment one of the main factors affecting success rate is the age of the woman. This is likely to be the case with IVM also. A further important predictor of success with IVM treatment is the number of immature eggs collected. The more eggs collected, the more embryos are produced, and therefore the greater the choice of embryos for transfer. To help predict the number of eggs likely to be collected, and therefore the pregnancy rate, a count is made of the number of tiny 2-10 mm diameter resting follicles, each of which contains an immature egg, in the ovaries. The total number of these resting follicles measured during a routine ultrasound scan is known as the Antral Follicle Count (AFC). This has been shown to be an important predictor of success with IVM. On average, immature eggs are retrieved from half of the antral follicles present. However, as with standard IVF, there is always the risk that no eggs will be retrieved even when follicles are present or that the eggs collected do not mature, fertilize and produce embryos for transfer.

Procedure of IVM treatment

***Stage 1**: Before the egg collection*

You may have irregular menstrual cycles or indeed no menstrual period. If this is the case we need to induce a menstrual bleed with progestagen tablets. When you have a period a vaginal ultrasound scan will be performed between day 1-5 of the cycle to perform an Antral Follicle Count and to rule-out the presence of any cysts that may interfere with the egg collection. If large cysts are present the treatment cycle will be delayed until another month to let the ovaries settle.

You will give yourself an injection of hCG 35 hours before oocyte recovery. This injection, which is also used in standard IVF cycles, increases the speed and number of eggs that mature. This is the only drug taken before the oocyte recovery.

***Stage 2**: Immature oocyte recovery*

The oocyte recovery is performed in a similar way to a standard IVF collection. An anaesthetist will give you sedative and pain-killing drugs by an intra-venous drip. An injection of local anaesthetic into the top of the vagina via a speculum is given. A scan probe with a needle-guide attached is inserted into the vagina. A fine needle is then inserted through the guide into each ovary in-turn. The fluid from each ovarian follicle is aspirated and given to the embryologist who then searches for the immature eggs. The whole procedure takes around 30 minutes and you will be told the total number of immature eggs collected before you are discharged home.

In order to thicken the lining of the womb you will start taking oestrogen hormone tablets after the immature oocyte collection.

It is common to feel some lower abdominal discomfort after your egg collection. A small amount of vaginal bleeding is normal. If there is heavy vaginal bleeding, severe abdominal pain, fever, unusual vaginal discharge or any other problems that concern you then call the Unit. A doctor is on-call for the unit for emergencies 24 hours per day.

***Stage 3**: Semen production and egg fertilization using ICSI*

Your partner will be asked to produce a sperm sample on the day of egg collection. The oocytes that have successfully matured will be stripped of their surrounding cells and injected with sperm (intracytoplasmic sperm injection or ICSI). It has been demonstrated that the fertilization rate of in-vitro matured oocytes is significantly improved by using ICSI compared with conventional IVF because the zona pellucida (shell) of the oocyte is hardened during culture. About 70% of the immature oocytes retrieved will be successfully matured in the laboratory and suitable for ICSI. Of the oocytes that undergo ICSI in the region of 60% will successfully fertilize to produce embryos.

The day after the egg collection you should also start taking Cyclogest progesterone pessaries. Some oocytes may not mature until two days after the egg collection. They will be inseminated by ICSI using sperm kept in culture. The number of oocytes successfully fertilised will be known the day after ICSI.

***Stage 4**: Embryo transfer*

Embryo transfer takes place three or four days after immature oocyte collection depending on the maturation rate of the oocytes and the division of the embryos. A very fine catheter is passed into the uterine cavity with the embryos within. The procedure is similar to having a smear test so no anaesthetic is required. A maximum of two embryos are replaced in women under 40.

You should continue taking the oestrogen tablets and progesterone pessaries until the pregnancy test is done two weeks later. If the pregnancy test is negative you should stop both of the drugs. If it is positive you should continue both drugs until 10 weeks of pregnancy. Ultrasound scans are performed two and four weeks after the pregnancy test to determine the number and position of pregnancies. If all is well you will then be discharged to the care of your GP to make arrangements for care during the pregnancy and delivery.

Costs of IVM treatment

For the cost of treatment please refer to the current Unit price list. The cost of a cycle includes the scans, immature oocyte recovery, anaesthetist, oocyte culture and ICSI, embryo transfer and pregnancy scans as required. Drugs are extra and cost less than £200.

Consultants

Mr. Tim Child MA MD MRCOG, Consultant Gynaecologist. Tel No: 01865 782800

Tim Child is Director and and HFEA Person Responsible in the Oxford Fertility Unit. He was responsible for the day-to-day running of the McGill IVM programme during his research fellowship in Montreal, Canada. The McGill programme is one of the largest in the world and has been instrumental in developing IVM to be a clinical treatment. Tim has published 15 research papers and chapters on IVM.

Dr. Karen Turner PhD, Consultant Embryologist
Karen Turner is Laboratory Director in the Oxford Fertility Unit. She has undertaken training in IVM at the Karolinska Institute in Stockholm, Sweden and McGill University, Montreal, Canada.

For further information please contact the Oxford Fertility Unit on 01865 782800.