

In-vitro fertilisation: IVF – information leaflet

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IVF is the most sophisticated of the assisted conception procedures. A number of eggs are sucked out of the woman's ovaries and sperm are used to fertilise them outside the woman's body. They are incubated and grown for from 2 to 5 days, after which one or more embryos are replaced in the woman's womb so that hopefully one or more may implant and grow into a baby. Fewer sperm are needed for conception than in the normal course of events, and since the procedure also bypasses the Fallopian tubes that connect the ovaries with the womb it can help couples with a variety of problems, including:

- blocked tubes
- low sperm counts and sperm quality
- problems where the woman's immune system is hostile to the man's sperm
- prolonged unexplained infertility
- failure to conceive as a result of other subfertility treatments

The procedure involves:

1. A preliminary appointment with a clinic doctor for the purposes of assessment and discussion about the procedure. This may include a preliminary internal ultrasound scan of the woman's womb and ovaries to check for any problems (such as possible cysts or fibroids of the womb) that may have a bearing on the treatment. Other aspects of this preliminary appointment would include:

- discussion and review of the problems and investigations that have led to referral for IVF;
- consideration of the limitations of treatment, possible alternative treatments, the chances of success, the need to consider a 'course' of treatments rather than a 'one-off' attempt and the possibility that treatment may not succeed;
- the importance of counselling and clinic's policy relating to this;
- practical aspects of the treatment, what it would involve and possible complications;
- reviewing those tests that may already have been performed
- possibly arranging further preliminary tests (that may include blood tests from the man and the woman and/or semen assessment);
- being given forms to take away for written consent to undergo treatment and in certain cases to enable information about the treatment to be disclosed to other doctors or members of the hospital staff who may need to know about it;
- arranging a provisional schedule for treatment;

2. An appointment with the nurse co-ordinator would then be arranged to cover practical aspects of treatment (including instruction in self-injection where necessary), plus an advanced semen assessment where necessary. Whilst fewer sperm are needed for IVF treatment than in the ordinary course of events it is still necessary for there to be a certain minimum number of good quality sperm. The man may be asked to bring a fresh semen sample at the time of this visit so that an assessment can be made as to how well the sperm survive the IVF processing procedure.

3. The UK Human Fertilisation & Embryology Authority requires all clinics that perform IVF to offer independent counselling to couples. This is not some kind of 'assessment' procedure, is totally confidential, and is provided for a variety of reasons including:

- to ensure that couples have fully thought through many of the non-clinical issues of their condition and treatment as it may relate to their own lives, the lives of any existing children, and the lives of the children who may be born as a result of treatment;
- where the couple want it, to provide expert independent support and possibly even counselling therapy to mitigate some of the emotional stresses involved with treatment, especially if it fails;

It is our clinic's policy that in most cases a preliminary introductory appointment with the clinic counsellor will be necessary.

3. Provided that IVF is considered a suitable treatment and the couple wish to proceed the next stages are:

- a 'planning' appointment with the nurse-co-ordinator to finalise the schedule for the injections, scans, blood tests, and treatment; reiterate the procedure in the event of an emergency; and give an emergency contact phone number.
- A course of hormone treatment, usually using a combination of tablets and injections, to stimulate a number of eggs to develop on the ovaries. This is monitored by visits to the clinic for ultrasound scanning, especially during the week leading up to egg collection. Couples are usually taught to perform their own injections. Although some clinics perform 'natural cycle' IVF without hormone stimulation or control the success rate is reduced and it is very difficult to schedule. Our clinic does not usually perform 'natural cycle' IVF, therefore. In some cases there may be an advantage from 'minimal stimulation' IVF, however
- 'egg retrieval' - a minor procedure in which a needle is guided by the ultrasound scanner into the ovaries to suck some of the eggs out. This is usually performed with the help of local anaesthetic and a pain-killer/sedative combination. It usually takes about 20 - 30 minutes. The woman's partner or a close friend could accompany and be with her throughout if desired. It should be possible to leave hospital a few hours later. An appointment is made for the woman to come to the clinic at Heavitree Hospital on the morning of the operation. She should have had nothing to eat or drink from midnight and there should be someone who could pick her up a few hours later, take her home and stay with her overnight. For those people with homes more than one hour's travelling distance away it may be advisable to stay locally in a hotel overnight.
- A sperm sample needs to be produced on the day of egg collection. The man may be advised to produce his sample on the premises in some cases;
- the eggs are fertilised in the laboratory using the man's sperm;
- embryo transfer - the couple will be asked for a telephone number at which they can be contacted during the 24 to 48 hours after egg recovery. If the eggs fertilise the woman is asked to attend the Fertility Clinic for a minor and generally painless procedure usually two to three days after the egg recovery operation in order to replace up to two of the fertilised eggs, which by then would have developed into embryos, into the womb by injecting them through a soft plastic tube passed through the cervix. Very, very occasionally there can be problems with the woman's cervix that can make it difficult to transfer the embryos without risk of harming them. If this proves to be the case it may be possible to repeat the attempt at embryo transfer the following day under a general anaesthetic;
- patients are asked to perform a pregnancy test two weeks after the embryo transfer and, if positive, to attend for an ultrasound scan two weeks later. If it is negative a

follow-up debriefing appointment is arranged as soon as possible, usually within two weeks. Some couples may prefer to have a 'telephone' debriefing consultation.

Embryo Freezing

It may be possible to freeze and store some of the embryos for up to 10 years maximum if they are of good quality. Our clinic's policy is to allow storage for up to just 5 years in the first instance, but the man and the woman can extend this to 10 years upon application in the fifth year to the clinic. They can subsequently be thawed out and transferred to the woman's womb in the same way as fresh embryos if desired. Only the best quality embryos are likely to survive the freezing and thawing process and success rates with frozen embryo transfer are generally lower than with fresh embryos. On the other hand the treatment is less costly and less complicated. It may also have particular advantages for older women trying for their first baby since if their treatment is successful their fertility may have declined significantly by the time they are in a position to try for another. If couples wish to make contingency plans for embryo freezing additional counselling and consent forms have to be provided and completed in advance of the IVF treatment cycle. The following points in particular will need consideration:

- how long the couple wish the embryos to be stored
- it is possible that no embryos at all will survive freezing and thawing
- embryo freezing may have a greater chance of success if the freezing is performed on the day after fertilisation at what is called the 'pronucleate' stage. On the other hand freezing embryos at this stage will reduce the number available to choose from for fresh embryo transfer, and so freezing pronucleate embryos may only be recommended if there is a large number.
- Whether or not embryo freezing is advisable also depends upon the number and quality of the spare embryos. There would normally need to be at least four good quality spare embryos to make it worthwhile.
- Couples may also consider if at some future date they no longer wish or are able to use their frozen embryos whether they would like or be prepared to donate them to another couple or couples (up to a maximum of 10 children resulting). Members of clinic staff are not allowed by the HFEA Code of Practice (which effectively is legally binding on clinics) to bring this subject up themselves during the course of a couple's IVF treatment, but if a couple did ever wish to donate embryos for this purpose a further appointment would be arranged at their request. Special consent from the couple and further HIV blood-testing would be necessary before the embryos could be donated.
- Despite all reasonable precautions situations may arise that are beyond the clinic's control (e.g. fire, flood, terrorism, malicious damage etc.) that may lead to the loss of stored embryos. It is very difficult to obtain insurance to compensate couples for the loss of their embryos in such an unlikely event (if, indeed, anything could compensate for this) and it is therefore only possible for us to undertake storage on the understanding that the Clinic will not be held liable for losses due to circumstances beyond our control.

OUTCOME:

There is an element of luck in IVF success, as there is with all fertility treatment. A leaflet detailing our success rates is available. Because of the risks of multiple births we are required by the HFEA to restrict the number of embryos transferred to two except when the woman is over the age of 40. Some couples may even wish to restrict embryo transfer to just a single embryo. Although this may reduce the success rate in a single cycle, if there is a reasonable number of top quality embryos and the woman is aged less than 37

the combined success rate from a single fresh embryo transfer plus a subsequent frozen transfer may not be significantly different from putting two fresh embryos back in the same cycle.

If a treatment has been unsuccessful there may be many possible reasons:

1. Failure to respond to the drugs - sometimes people do not respond to the drugs that are given to stimulate ovulation. A previous good response does not always guarantee a good response the next time;
2. Failure to obtain eggs from the ovaries. The eggs develop in small fluid-filled sacks called 'follicles'. Sometimes although the ovarian scans show the presence of follicles it may not be possible to find eggs in them at the egg recovery operation;
3. Failure of the eggs to fertilise or develop into embryos;
4. Failure of embryos to implant in the womb;

There are as yet no long-term follow-up studies of babies born from IVF and/or frozen embryo transfer treatment that extend to adulthood. Considerable evidence exists to show that the risk of abnormalities is similar to natural conception, with the possible exception of genetically transmitted problems from men whose sperm counts are very low and whose babies have been conceived via ICSI and a very rare (although serious) condition called 'Prader-Willi' syndrome. The possible problems related to IVF or ICSI may include an increased risk of cystic fibrosis; minor anatomical abnormalities such as childhood hernias or 'hole-in-the-heart' defects; developmental delay; and also abnormalities of the male Y-chromosome that may result in male children also experiencing problems with their fertility. The possibility that some of the procedures involved in IVF and/or embryo freezing may give rise to as yet unsuspected problems should be considered.

Disposal of embryos:

IVF is a procedure that is highly regulated by law in the UK because of the ethical and moral issues surrounding the creation of human embryos and the disposal of those which cannot be placed back in the woman's womb. The law does not allow IVF centers to replace more than two embryos at a time in most cases, which means that there may be a number of spare embryos after treatment. If these are not to be frozen they are usually disposed of sensitively and immediately according to legal requirements.

Taking account of the welfare of children who may be born as a result of treatment:

Centers are required to take into account not only the request of couples seeking treatment, but also the welfare of any child which may be born as a result as well as that of existing children in the household or family. So far as our clinic is concerned this usually means that:

- Treatment will usually only be offered to couples who are committed to a stable long-term relationship and who are prepared to consent to be the legal mother and father of the child or children resulting from treatment. In cases where a child born from treatment would have no legal father (e.g. posthumously) the onus is on the woman or couple undergoing treatment to provide written assurance to the satisfaction of Clinic staff of arrangements to ensure that the needs of that child for a father would be met;
- There should be no substantial risk that the child would inherit or contract a serious medical disease (e.g. Hepatitis or AIDS);

- The prospective parents should enjoy sufficiently good health such that the parental needs of a child could be met without serious difficulty;
- The man should be not be older than 60 years, and the woman not more than 50 years;
- We would not be able, or prepared, to treat couples where there is a background on either side of child abuse or violence and couples must be prepared (if necessary) to give their consent for inquiries to be made of the police or social services to ensure that this is not the case. We are also required to obtain the consent of couples to consult with their General Practitioners in case there are any other factors which may have a bearing on eligibility for treatment;

Confidentiality:

More than the usual degree of medical confidentiality covers information about IVF treatment. Except in an emergency the center undertaking treatment is not allowed to communicate with others (including GPs) about it except with the express written permission of the couple concerned. Information is, however, sometimes given to the couple to pass on to their doctor or to others. Because of this regulation it may be necessary to obtain written permission to pass on some general details of treatment to hospital and Health Authority staff who may be involved in it in a peripheral way and with the administration of its funding. This information would be treated with the same confidentiality as that accorded to other medical information.