

The James Cook University Hospital
Department of Reproductive Medicine

IN-VITRO FERTILISATION (IVF)

In-vitro fertilisation (IVF) is the fertilisation outside the body of the egg by the sperm and the replacement of the fertilised egg back inside the cavity of the womb (uterus).

How long has IVF been carried out?

Professor Robert Edwards and Patrick Steptoe were the pioneers who first successfully performed IVF in 1978. World-wide many tens of thousands of babies have now been born as a result of IVF treatment, and it is estimated that 1 in 100 babies born in the UK result from this type of treatment.

The role of the Human Fertilisation & Embryology Authority (HFEA)

Every treatment cycle, and every resulting pregnancy and birth, is registered confidentially with the HFEA. This is a statutory authority that licences all IVF centres in the UK. At each treatment we will inform the HFEA of the names and dates of birth of all the parties involved – patient, partner, and also when applicable any egg or sperm donor.

This information will be stored confidentially by the HFEA. This register was set up on 1 August 1991 and therefore contains information concerning children conceived by licensed assisted conception from that date onwards.

From 2008 people aged 18 or more (16 or more if contemplating marriage) who ask the HFEA will be told whether or not they were born as a result of licensed assisted conception treatment, and if so whether they are related to the person they wish to marry.

Why is IVF necessary?

IVF may be necessary for a number of different reasons –

- Blockage, damage or absence of the fallopian tubes
- Endometriosis
- Unexplained infertility
- Male factor infertility
- Ovulation problems that are difficult to treat by conventional means
- Combination of infertility factors

How will I know if I need IVF?

The assessment of any couple who are having difficulties conceiving will involve a number of tests. Once these tests have been completed a plan of how best to treat the infertility problem will be discussed. IVF is only one of several different treatments that may be appropriate depending on your particular circumstances.

What's the difference between IVF and ICSI?

The ovarian stimulation and egg collection in intra-cytoplasmic sperm injection (ICSI) and IVF cycles are exactly the same. The couple undergoing ICSI go through exactly the same process as they would in IVF. The key difference is that in IVF the sperm and egg are mixed together in a Petri dish, whereas in ICSI a single sperm is injected into the substance of the egg. (For more detailed information please see our separate Patient Information sheet on ICSI.)

Are there any circumstances in which IVF cannot be carried out?

IVF is not possible in the following circumstances –

- If the woman does not have a womb or there is an abnormality of the womb that prevents implantation.
- If the ovaries are incapable of producing eggs (unless donor eggs are to be used).
- If there are reasons in which it would be dangerous to carry out IVF, for example if the woman has medical problems which would make IVF hazardous, eg previous pelvic abscess formation or major bowel surgery in the pelvic area.
- If it would be dangerous to embark upon a pregnancy.

Is there an upper age limit for couples undergoing IVF?

Different units will have their own policy on the age limit of patients undergoing IVF. Generally, IVF is much less successful when the woman undergoing treatment is over 40. For patients undergoing NHS funded treatment, the upper age limit is 40, and for patients undergoing self-funded treatment the upper age limit at this centre is 48 years.

How successful is IVF?

The success of IVF treatment varies according to several factors. These include the woman's age, the duration of fertility, and whether the woman has been pregnant before. When there are abnormalities in the semen, the chances of success at conventional IVF are reduced. However, when there are significant male problems, a refinement of IVF known as ICSI (intra-cytoplasmic sperm injection) may be considered. There is an additional Patient Information sheet regarding ICSI.

The particular circumstances that affect your chance of successful treatment will be discussed with you and the most up to date results will be provided for you. If you have not been given these, please ask. Please [click here](#) to view our latest success rates as published by the Human Fertilisation and Embryology Authority (HFEA).

Does IVF guarantee fertilisation?

No. We can never guarantee that we will achieve fertilisation. However, on average, we expect between 60-70% of the eggs collected to fertilise. The incidence of complete failure of fertilisation with IVF is very low.

Are there any problems associated with smoking and/or alcohol consumption?

Yes. Smokers have only about two thirds the chance of success as non-smokers, and are twice as likely to miscarry if a pregnancy is achieved. Both partners need to stop smoking well before the treatment cycle – help is available through your local Smoking Cessation programme.

Even small quantities of alcohol adversely affect female fertility. Women should not drink alcohol during the six weeks prior to the planned date of egg collection. Alcohol also adversely

affects male fertility. Sperm take ten weeks to mature. Any alcoholic insult is therefore likely to affect sperm function for the next ten weeks.

Men should avoid drinking more than the equivalent of two pints of beer during any day in the three months prior to the planned date of IVF. Avoid binge drinking. A heavy intake of alcohol at any time during the ten weeks prior to egg collection may mean that the sperm fail to fertilise the eggs.

Does weight matter?

Yes - women who are overweight have a lesser chance of achieving a successful pregnancy. The reason for this is not entirely understood. The advice to lose weight is easily given, but we do understand that it is not so easily followed. However, if you do have a major weight problem, you should try to lose weight before you have IVF.

Is there any other relevant dietary advice?

Excess coffee or tea may also affect female fertility, and may increase the miscarriage rate. Women are advised not to consume more than two cups per day during the month prior to egg collection.

What are the chances of a multiple pregnancy?

A major complication of IVF is multiple pregnancy. Current HFEA guidelines will allow us to transfer a maximum of two embryos, and fertility units are encouraged to keep their multiple birth rate to a minimum by replacing embryos one at a time. As part of our single embryo transfer policy we recommend that women under 38 years of age and those receiving donated eggs have only a single embryo replaced, especially if they have additional embryos available for freezing. This gives a high chance of pregnancy and a much lower chance of twins. Two embryos may be advised if you are over 37 years of age, or if the embryo quality is less than good. If you are aged 40 or over and using your own eggs, we will talk to you about how many embryos are advisable to transfer.

What about freezing spare embryos?

If there are more embryos created than are necessary for the treatment then it may be possible to freeze and store the spare embryos. Freezing is usually offered if the quality of the spare embryos is good. There is a cost implication for private patients and NHS patients storing embryos for more than one year.

Is a baby resulting from IVF treatment at greater risk of an abnormality?

There is conflicting evidence that IVF babies are at any greater risk of an abnormality than babies conceived naturally. The chance of a baby conceived naturally being abnormal is approximately 2%, and the most recent data on babies conceived following IVF treatment indicates that this probability increases slightly to 2.6%.

Will a baby resulting from IVF treatment develop normally?

The first person conceived following IVF treatment was born in 1978. As far as we know, other than the problems of prematurity caused by multiple pregnancy, a baby conceived in this way is as likely to develop normally as a child conceived naturally.

Will a female resulting from IVF treatment have normal fertility?

There are some conditions which affect fertility that are known to have a genetic basis, eg polycystic ovarian syndrome. Apart from known inherited conditions, the process of IVF conception is not known to affect fertility in the offspring. However, as IVF is still under 30 years old, data to confirm this is not yet available.

Will a male resulting from IVF treatment have normal fertility?

Approximately 10-15% of severe male infertility has a genetic basis and is likely to be passed on to the male children that result from assisted conception. Apart from these cases, the IVF/ICSI process is not known to affect fertility in the male.

What is involved in IVF?

Preliminary tests – sperm count, blood tests for FSH (follicle stimulating hormone) level, AMH (anti-mullerian hormone), HIV, Hepatitis B&C, Rubella, Chlamydia.

Pre-treatment information session – our staff will tell you much of what you need to know about IVF, and you will have the opportunity to ask any questions that you may have.

Down-regulation – the woman's normal hormone production is often temporarily switched off by using a drug called Buserelin. Sometimes we will also use the oral contraceptive pill. This is to obtain control of egg production and release.

Superovulation – this involves stimulation of the ovaries with drugs called gonadotrophins – The woman's ovaries are stimulated with hormone injections (Gonal-F, Menopur, or Merional).

Monitoring the development of the eggs with ultrasound scanning – this is done to assess the development of follicles.

Admission to hospital for the eggs to be collected from the ovaries – this procedure is carried out under sedation.

Semen sample – the male produces a semen sample, or the donor sperm sample is prepared.

Embryo development – in IVF, the eggs and sperm are placed together in a Petri dish to allow fertilisation. In the case of ICSI treatment, the mature eggs are injected to produce fertilisation.

Replacement of fertilised eggs (embryos) – developing embryos are monitored daily for the next 3-5 days. If there are sufficient good quality embryos on Day 2 or 3, then they may be left for an additional 2-3 days for blastocyst culture. The embryos are placed in the woman's uterus under ultrasound guidance between 1 and 6 days of embryo development.

Implantation of embryos – the female patient commences progesterone supplements (for example cyclogest pessaries or gestone injections) to encourage implantation of the embryos.

Pregnancy test – a pregnancy test is performed 18 days after the egg collection.

Who will carry out the treatment?

IVF treatment to be successful involves a large number of professionals with different expertise who together form the multidisciplinary team. During the course of your treatment, you will be seen by different members of this team at different stages. Your day to day contact will be with the nursing team, the majority of whom are experienced fertility practitioners who can answer most of your concerns. The gynaecologists will undertake the removal of the eggs and replacement of the embryos.

What if the treatment doesn't work?

IVF / ICSI treatment is successful in only a proportion of cases, but if treatment is unsuccessful it is important to gain from this as much information as we can, to inform you of your future chances and options and, if appropriate, you will be offered an appointment to attend clinic to see one of our gynaecologists.

Are there any dangers with IVF?

As mentioned previously, a major complication of IVF is multiple pregnancy. Multiple pregnancies have a much higher risk of pregnancy complications including miscarriage, high blood pressure and premature birth. The risk at all stages of a twin pregnancy is even higher and so the chance of having even one healthy baby at the end of treatment is lower than with a single pregnancy. All the available research is pointing towards the use of single embryo transfers to reduce this risk.

Ectopic pregnancies can also occur and you can be bleeding even though the pregnancy test is positive. This is uncommon but can be serious – usually requiring an urgent operation and often resulting in severe damage to, or loss of, the fallopian tube.

There is a small risk of a pelvic infection after removing the eggs. The most common complication is the ovaries over-responding to the superovulation – and this is called ovarian hyperstimulation syndrome (OHSS) (please see our separate information sheet.) Any patient undergoing treatment with gonadotrophins is at some risk of developing OHSS. High oestradiol levels and the development of a large number of follicles during the stimulation phase suggest an increased risk, but it is not possible to reliably predict which individuals will develop the syndrome.

Are drugs always necessary in IVF treatment?

The purpose of the drugs used in IVF treatment is to increase the likelihood of successful treatment by potentially increasing the number of eggs available for fertilisation and replacement.

Can donor sperm or eggs be used in IVF?

Yes. When the woman is unable to produce her own eggs, the use of donor eggs can provide the opportunity for treatment. The process is essentially the same except that the patient does not have to go through the stimulation phase or the removal of the eggs.

Donor sperm can also be used in circumstances when the woman requires IVF for her own particular reasons (for example blocked fallopian tubes), and the male partner has no sperm.

How much does IVF cost?

This treatment may be available as an NHS treatment. Eligibility for NHS treatment is currently determined by your local clinical commissioning group (CCG) – the body that funds all healthcare in the district in which you live. Those who are not eligible for NHS funding will have to pay for their own treatment. An up to date list of charges is available upon request or can be downloaded from our page on the [South Tees Hospitals NHS Foundation Trust](#) website.

Counselling

Independent counselling is available to all patients by contacting Janet Owen on 07951 579785. Please ask any of our staff if you feel this would be beneficial. Separate information on the availability of counselling is provided.