

# Risks and complications of assisted conception

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**British Fertility Society Factsheet**



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No medical treatment is entirely free from risk and infertility treatment is no exception. However, while it is important to have information about the risks of treatment, it is also important to appreciate that most women go through IVF and other assisted conception treatments without serious problems.

This information sheet has been written to provide general advice for patients considering assisted conception treatment. This includes the following treatments:

- Use of drugs to induce ovulation in women intrauterine insemination (IUI) along with drugs to stimulate egg production
- in vitro fertilisation (IVF) and related treatments such as intra cytoplasmic sperm injection (ICSI) and egg donation

The risks of these treatments can be considered in four areas:

- 1 The risks associated with the drugs used to stimulate egg production
- 2 The surgical risks associated with egg removal during IVF, ICSI and egg donation
- 3 The risks associated with pregnancy resulting from any treatment
- 4 The risks of producing an abnormal baby following IVF, ICSI or egg donation

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## Risks associated with drugs used to stimulate egg production

### Excess stimulation of the ovaries -Ovarian Hyperstimulation Syndrome (OHSS)

Stimulation of the ovaries is a deliberate consequence of IVF treatment in order to obtain more eggs than would arise in a natural cycle. When the ovaries are too strongly stimulated there is a possibility of **OHSS** developing.

The majority of cases are a mild to moderate form, occurring in up to 5% of all patients undergoing IVF treatment. This is manifest by abdominal distension, abdominal discomfort and nausea. These cases settle in a few days and require observation, possible blood tests but no specialist treatment.

Less commonly a more severe case occurs. This happens in 0.5 - 1 % of all IVF cycles. This is manifest by more marked abdominal distension, nausea and vomiting, decreased output of urine and some difficulty with breathing. This requires admission to hospital for treatment that may include replacement of lost fluids, replacement of protein (albumin) and drainage of fluid from the abdominal cavity. This condition normally responds to treatment and resolves completely in 1 - 2 weeks. Rarely OHSS can be life threatening and fatalities have been reported. However you are 10 times more likely to die after natural childbirth than from IVF treatment.

***One of the purposes of monitoring the IVF cycle is to detect early signs of OHSS and modify or cancel the treatment if there are indications that this is developing. Treatments may be modified by reducing the strength of stimulation, coasting the stimulation (continuing the treatment but stopping the stimulation for several days or going ahead with the egg collection but freezing the embryos as we know pregnancy aggravates OHSS and can prolong and worsen its course.***

### Cancer

- a) **Ovarian cancer.** It has been suggested that the use of drugs used to stimulate ovaries may increase the risk of ovarian cancer. Two studies from North America suggested that the risk of ovarian cancer developing increased in women using the drug clomifene. Subsequent studies have not confirmed this risk. Women who have never been pregnant are known to be at slightly increased risk of ovarian cancer. The current position is that if a risk of ovarian cancer exists it is very low and unconfirmed.
- b) **Uterine cancer.** There is no association between the use of drugs to stimulate ovulation and the development of uterine cancer.
- c) **Cervical Cancer.** There is no association between the use of drugs to stimulate ovulation and the development of cervical cancer.
- d) **Breast cancer.** There is no association between the use of drugs to stimulate ovulation and the development of breast cancer

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## The surgical risks associated with egg removal during IVF and related procedures

### General anaesthetic and intravenous sedation

Patients undergoing IVF and related treatments will receive either intravenous sedation or general anaesthetic. This is a safe procedure but very occasionally there will be an adverse reaction to drugs or other complication. The risk of serious harm is very low **1 in 10,000** and is similar to that of other elective surgery.

### Egg collection and risk of damage to other structures

The ovaries are surrounded by important structures, including bowel, bladder, and major blood vessels. It is theoretically possible to puncture one of these structures although the likelihood is very low. The risk of a significant haemorrhage from an internal blood vessel is approximately **1 in 2,500**. If this occurred it would require immediate abdominal surgery to rectify the problem.

### Pelvic infection

Removal of eggs involves passing a needle through the vaginal wall into the ovary and it is possible to introduce infection into the ovary. This possibility is increased if there is an endometriotic cyst in the ovary at the time of treatment. This complication may cause pelvic pain and other signs of infection developing in the weeks after the procedure. It is treated with antibiotics but may rarely require abdominal surgery to drain an abscess. The risk of serious pelvic infection is likely to be less than **1 in 500**.

Andrologists are specialists in male reproductive matters and undertake the examination of sperm to give detailed information to the doctors, nurses and patients regarding diagnosis and treatment options. In some units the andrology service is provided by the embryologists.

In the IVF laboratory embryologists use their specialist skills to assess sperm, eggs and embryos and advise the doctors, nurses and patients about their quality. They are also responsible for freezing, storage and thawing of eggs, sperm and embryos as necessary.

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## The risks associated with pregnancy resulting from any treatment

### Multiple pregnancy

Multiple pregnancy can result from any treatment involving the use of drugs to stimulate egg production or when more than one embryo is replaced during IVF / ICSI or egg donation treatment.

The likelihood of a twin pregnancy resulting from clomifene treatment is approximately 10%, following IVF when two embryos are replaced 20-30% and following IUI treatment 10-20%.

Triplet pregnancy can also result from any of these treatments but is less likely. After clomifene therapy less than 0.5% and following IUI treatment 1-2%. The risk of triplets following IVF and related treatments is very low if 1 or 2 embryos are replaced although occasionally an embryo can split. If three embryos are replaced the likelihood of triplets increases.

The complications of multiple pregnancy are:

- Increased risk of miscarriage
- Increased risk of premature labour
- Increased risk of pregnancy associated problems such as haemorrhage and high blood pressure
- Increased requirement for caesarian section and its complications
- Increased loss of a baby (still birth)
- Increased risk of a baby with physical or learning disability (as a result of premature birth)
- Increased risk of an abnormal baby

### Ectopic pregnancy (pregnancy occurring outside the womb)

IVF and related treatments increase the likelihood of an ectopic pregnancy. The incidence of ectopic pregnancy is 1-3 % of all pregnancies resulting from embryo transfer, about twice the normal rate. Patients who become pregnant following these treatments should have an early scan to ensure the pregnancy is correctly positioned. Ectopic pregnancy is usually treated surgically either by removing the fallopian tube or removing the ectopic pregnancy from the fallopian tube. If the ectopic pregnancy is very early it may be possible to use a drug called Methotrexate to dissolve the pregnancy tissue.

### Heterotopic pregnancy

This is a twin pregnancy with one in the Fallopian Tube (or other abnormal place) and one correctly situated in the uterine cavity. Although this is a rare condition its incidence increases following IVF and related treatments. This should be excluded by careful ultrasound undertaken in the early stages of pregnancy following these treatments.

### Miscarriage

Early miscarriage is very common in naturally conceived pregnancies. IVF and related treatments neither prevent nor increase the risk of miscarriage.

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## Risk of an abnormal baby following IVF / ICSI and related technologies

To date there have been over a million babies born following IVF and ICSI treatment worldwide. In the UK between 1 and 2% of all babies are conceived following IVF and its related technology. Concerns have been raised about the possible genetic risk to such children because of the manipulation of the egg and sperm during the process. Many studies have reported the incidence of abnormal babies but most have been too small or of insufficient quality to provide a reliable answer. One recent study has reviewed much of the available data and has concluded that compared to the risk of an abnormal baby arising following natural conception of 2% (i.e. 2 abnormal babies in 100 born) the risk of abnormal baby following IVF/ICSI treatment rises to 2.6% (i.e. 2 -3 abnormal babies in every 100 born). There is no conclusive data to link IVF with any specific abnormality although some recent studies have shown an increase in “imprinting” disorders which can lead to intellectual impairment. These are normally very rare disorders and the recent data indicates that although they may be increased as a result of IVF they are still rare.

At this time we cannot conclusively say whether or not there is a cause and effect relationship between IVF / ICSI and specific abnormalities, however, it is clear that, if such a risk exists, it is small and that further monitoring of children resulting from such treatment is necessary to answer this question.

**ICSI, and other treatments which combines with ICSI e.g. Surgical Extraction of Sperm** A proportion of men with severe sperm abnormalities have a genetic basis for this, usually an abnormality of the Y chromosome. This is likely to be inherited by male offspring following ICSI. There has also been reports of an increase in abnormalities in the number of the X or Y chromosomes in infants conceived following this treatment. These usually cause no serious abnormality but may be associated with infertility and occasionally can cause intellectual impairment (1 in 166, compared with 1 in 500 in naturally conceived children).

**Embryo cryopreservation and thawed embryo transfer** This technique has been carried out since 1985. The number of babies born is considerably less than by IVF. To date there has been no conclusive evidence of any increased incidence of abnormalities in babies born following replacement of thawed embryos.

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## Psychological and emotional risks

Undoubtedly infertility can lead to stress. Stress can also lead to infertility in some cases. Treatment for infertility is also stressful because of the emotional “roller coaster” of expectation, disappointment and success and the marked hormonal changes that occur during the cycle of treatment. This can in turn place strain on the relationship. Support should be provided by the staff of the infertility unit during this difficult time and additionally patients may find benefit from counselling.

## Laboratory risks

The processing of sperm and eggs in the laboratory is a complex and skilled process carried out by qualified laboratory personnel. It involves a number of stages including gamete preparation, fertilisation, embryo assessment and culture and replacement. Additionally there may be a requirement to freeze spare embryos and prepare them for storage.

Protocols and quality assurance are rigorous and designed to minimise errors in laboratory procedures. While serious mistakes are rare, things can and do go wrong. There will be occasions when an unforeseen problem with equipment or the culture media may give rise to adverse conditions and lead to one of the following:

- **Lower than expected or failure of fertilisation**
- **Low percentage of embryos dividing after fertilisation**
- **Lower quality of embryos than would normally be expected**

Problems of this nature are uncommon, nevertheless all IVF laboratories will experience such problems from time to time.

Patients may also, quite reasonably, be concerned about the possibility of a “mix up” in sperm, eggs or embryos. Procedures in the UK include specific measures to minimise the likelihood of such an event. The regulatory authority, the Human Fertilisation and Embryology Authority, inspects laboratories on an annual basis to ensure these procedures are in place.

## Embryo transfer

The placement of the embryos back inside the cavity of the uterus (womb) is a relatively simple procedure. There are virtually no risks to the female in carrying this out. Occasionally, however, one or more of the embryos may be lost during the course of placement. This is because the fine catheter that is used has to pass through the canal of the cervix which is normally very narrow and contains mucus. Despite taking great care with this procedure the catheter does not always pass through the cervix easily and sometimes the embryos get caught in the mucus

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