

In Vitro Fertilisation

In IVF, one or more mature oocytes are removed from a woman's ovary by laparoscopy and fertilized by exposure to sperm under laboratory conditions outside a woman's body. About 40 hours after fertilization, the laboratory-grown fertilized ova are inserted into a woman's uterus, where ideally one or more of them will implant and grow.

Who Can Use In Vitro Fertilization?

IVF is most often used for couples who have not been able to conceive because a woman has blocked or damaged fallopian tubes. It is also used when the man has oligospermia or low sperm count because the controlled, concentrated conditions in the laboratory require only one sperm.

IVF may be helpful to couples when an absence of cervical mucus prevents sperm from traveling to or entering the cervix, or anti-sperm antibodies cause immobilization of sperm. In addition, couples with unexplained subfertility of long duration may be helped by IVF.

There are also many facilities that offer IVF to individuals and same-sex couples.

A donor ovum, rather than a woman's own ovum, also can be used for a woman who does not ovulate or who does not ovulate or who carries a sex-linked disease that she does not want to pass on to her children.

How does IVF Work?

Before the procedure, a woman is given an ovulation-stimulating agent such as GnRH, clomiphene citrate (clomid), or human menopausal gonadotrophin. Beginning about the 10th day of the menstrual cycle, the ovaries are examined daily by ultrasound to assess the number and size of developing ovarian follicles.

When a follicle appears to be mature, a woman is given an injection of hCH, which causes ovulation in 38 to 42 hours. A needle is then introduced intravaginally, guided by ultrasound, and the oocyte (a cell in an ovary) is taken from its follicle. Because of the drugs given to cause ova maturation, many oocytes may ripen at once, and perhaps as many as 3 to 12 can be removed.

The oocytes are incubated for at least 8 hours to ensure validity. In the meantime, the husband or donor supplies a fresh semen specimen. The sperm cells and oocytes are mixed and allowed to incubate in a growth medium. Genetic analysis to reveal potential DNA abnormalities or the potential sex can be completed at this point.

In the past, many sperm were necessary even under laboratory conditions to allow sperm to make their way through the resistant barrier surrounding the ovum. Several techniques, such as creating passages through the resistant cells, have been discovered to help sperm cross the barrier. In some instances, it has been possible to inject sperm directly under the barrier. This is the technique that makes it possible for fertilization to take place with only one sperm.

Arguments suggesting that this technique could lead to an increased number of birth defects are unproven.

What Happens After Fertilization?

After fertilization of the chosen oocytes occurs, the zygotes formed almost immediately begin to divide and grow. By 40 hours after fertilization, they will have undergone their first cell division. In the past, multiple eggs were chosen and implanted to ensure a pregnancy resulted but this technique also resulted in many multiple births.

Newborns from multiple births have a much lower chance of surviving the neonatal period than others. For that reason, today, only one or two fertilized eggs are chosen and transferred back to the uterine cavity through the cervix by means of a thin catheter.

If the couple desires, any eggs not used can be frozen for use at a later time. As with sperm cryopreservation, egg cryopreservation presents a range of ethical and religious dilemmas regarding who would “own” them if the couple should divorce; as well as whether the eggs should be saved, donated, or discarded. Additionally, progesterone may be given to a woman if it is believed that she will not produce enough on her own to support implantation. Proof that the zygote has been implanted can be demonstrated by a routine serum pregnancy test as early as 11 days after transfer.

In some centers, nurse practitioners are the healthcare providers who complete oocyte removal and transfer. In all centers, nurses need to supply support and counseling to sustain the couple

through the process. The recovery rate for harvesting ripened eggs is high, as is the ability to fertilize eggs by sperm. The overall pregnancy rate by IVF is as low as 38% to 42% per treatment cycle, however. Although IVF programs do not result in an increase in birth defects, about 25% of pregnancies end in spontaneous abortion. Once a pregnancy has been successfully established, a woman's prenatal care is the same as that for any pregnancy. Research has shown that, because the couple was so committed to the procedure, they adjust to pregnancy and parenthood well.

If an ultrasound reveals that a multiple pregnancy of more than two zygotes has been achieved, selective termination of gestational sacs until only two are remaining may be recommended. This is done by intra-abdominal injection of potassium chloride into the gestational sacs chosen to be eliminated. Reducing the number of growing embryos to a number a woman can expect to carry to term without difficulty helps to ensure the success of the pregnancy.

How Much Does IVF Cost?

IVF is expensive and is available only at specialized centers and the cost of in vitro fertilization varies widely depending on factors such as geographic location, clinic reputation, and specific treatment requirements. On average, IVF can range from \$12,000 to \$15,000 per cycle, not including additional expenses like medications and genetic testing. However, it's crucial to consult with a fertility clinic to get accurate cost estimates for your unique situation.

Should I Isolate after IVF?

There is a risk of maternal infection if bacteria are introduced at any point in the transfer. Waiting to be accepted by a center's program and waiting for the steps of obtaining the oocyte, laboratory growth, and pregnancy success is a major psychological strain. Couples report a feeling of social isolation during this time and weariness answering friends' and family's questions about the procedure. However, getting empathetic support through this difficult time can prove rather useful. As such, if there is no infection risk, the final decision to isolate rests on the shoulders of the parent/s to-be.