

Editorial

In vitro fertilization (IVF)

Christiane Eichenberg

Sigmund Freud Private University Vienna, Austria

Editorial

Introduction: In vitro fertilization (IVF) is a complex series of procedures used to help with fertility or prevent genetic problems and assist with the conception of a child. During IVF, mature eggs are collected (retrieved) from ovaries and fertilized by sperm in a lab. Then the fertilized egg (embryo) or eggs (embryos) are transferred to a uterus. One full cycle of IVF takes about three weeks. Sometimes these steps are split into different parts and the process can take longer. IVF is the most effective form of assisted reproductive technology. The procedure can be done using your own eggs and your partner's sperm. Or IVF may involve eggs, sperm or embryos from a known or anonymous donor. In some cases, a gestational carrier — a woman who has an embryo implanted in her uterus — might be used. Your chances of having a healthy baby using IVF depend on many factors, such as your age and the cause of infertility. In addition, IVF can be time-consuming, expensive and invasive. If more than one embryo is transferred to your uterus, IVF can result in a pregnancy with more than one fetus (multiple pregnancy). Your doctor can help you understand how IVF works, the potential risks and whether this method of treating infertility is right for you.

IVF is offered as a primary treatment for infertility in women over age 40. IVF can also be done if you have certain health conditions. For example, IVF may be an option if you or your partner has:

- Fallopian tube damage or blockage. Fallopian tube damage or blockage makes it difficult for an egg to be fertilized or for an embryo to travel to the uterus.
- Ovulation disorders. If ovulation is infrequent or absent, fewer eggs are available for fertilization.
- Endometriosis. Endometriosis occurs when the uterine tissue implants and grows outside of the uterus — often affecting the function of the ovaries, uterus and fallopian tubes.
- Uterine fibroids. Fibroids are benign tumors in the wall of the uterus and are common in women in their 30s and 40s. Fibroids can interfere with implantation of the fertilized egg.
- Previous tubal sterilization or removal. If you've had tubal ligation — a type of sterilization in which your fallopian tubes are cut or blocked to permanently prevent pregnancy — and want to conceive, IVF may be an alternative to tubal ligation reversal.
- Impaired sperm production or function. Below-average sperm

concentration, weak movement of sperm (poor mobility), or abnormalities in sperm size and shape can make it difficult for sperm to fertilize an egg. If semen abnormalities are found, your partner might need to see a specialist to determine if there are correctable problems or underlying health concerns.

- Unexplained infertility. Unexplained infertility means no cause of infertility has been found despite evaluation for common causes.

- A genetic disorder. If you or your partner is at risk of passing on a genetic disorder to your child, you may be candidates for pre-implantation genetic testing — a procedure that involves IVF. After the eggs are harvested and fertilized, they're screened for certain genetic problems, although not all genetic problems can be found. Embryos that don't contain identified problems can be transferred to the uterus.

- Fertility preservation for cancer or other health conditions. If you're about to start cancer treatment — such as radiation or chemotherapy — that could harm your fertility, IVF for fertility preservation may be an option. Women can have eggs harvested from their ovaries and frozen in an unfertilized state for later use. Or the eggs can be fertilized and frozen as embryos for future use.

Women who don't have a functional uterus or for whom pregnancy poses a serious health risk might choose IVF using another person to carry the pregnancy (gestational carrier). In this case, the woman's eggs are fertilized with sperm, but the resulting embryos are placed in the gestational carrier's uterus.

What Causes of Infertility Can IVF Treat?

- When it comes to infertility, IVF may be an option if you or your partner have been diagnosed with:
 - Endometriosis
 - Low sperm counts
 - Problems with the uterus or fallopian tubes
 - Problems with ovulation
 - Antibody problems that harm sperm or eggs
 - The inability of sperm to penetrate or survive in the cervical mucus
 - Poor egg quality
 - Genetic disease of mother or father
 - An unexplained fertility problem