IN VITRO FERTILIZATION

THE PROCESS, RISKS, & CONSEQUENCES EXPLAINED

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Summary

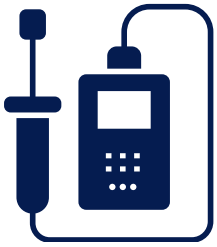
- **In vitro fertilization (IVF)** is a multi-step process during which a woman's eggs are removed and fertilized in a lab.
- The success rate of IVF is about **50% or less** and depends on factors such as maternal age, previous pregnancies, and underlying causes of infertility.
- IVF puts women at an **increased risk for potentially life-threatening complications**.
- Babies conceived by IVF have a **higher risk of birth defects** and being born prematurely.
- IVF involves the **manipulation and destruction** of human life on a large scale.
- The psychological impact of IVF includes deciding what to do with the extra human embryos, who are rightly viewed as children deserving of life.
- IVF **removes the creation of new life** from the context of the conjugal act, replacing it with a medical procedure.

What is IVF?

IVF is a **multi-step process** in which eggs are removed from a woman's ovaries and fertilized with sperm in a lab. The resulting human embryos are then transferred into the woman's uterus. If the transfer is successful and one or more human embryos implant in the uterus, a pregnancy is achieved. (1)

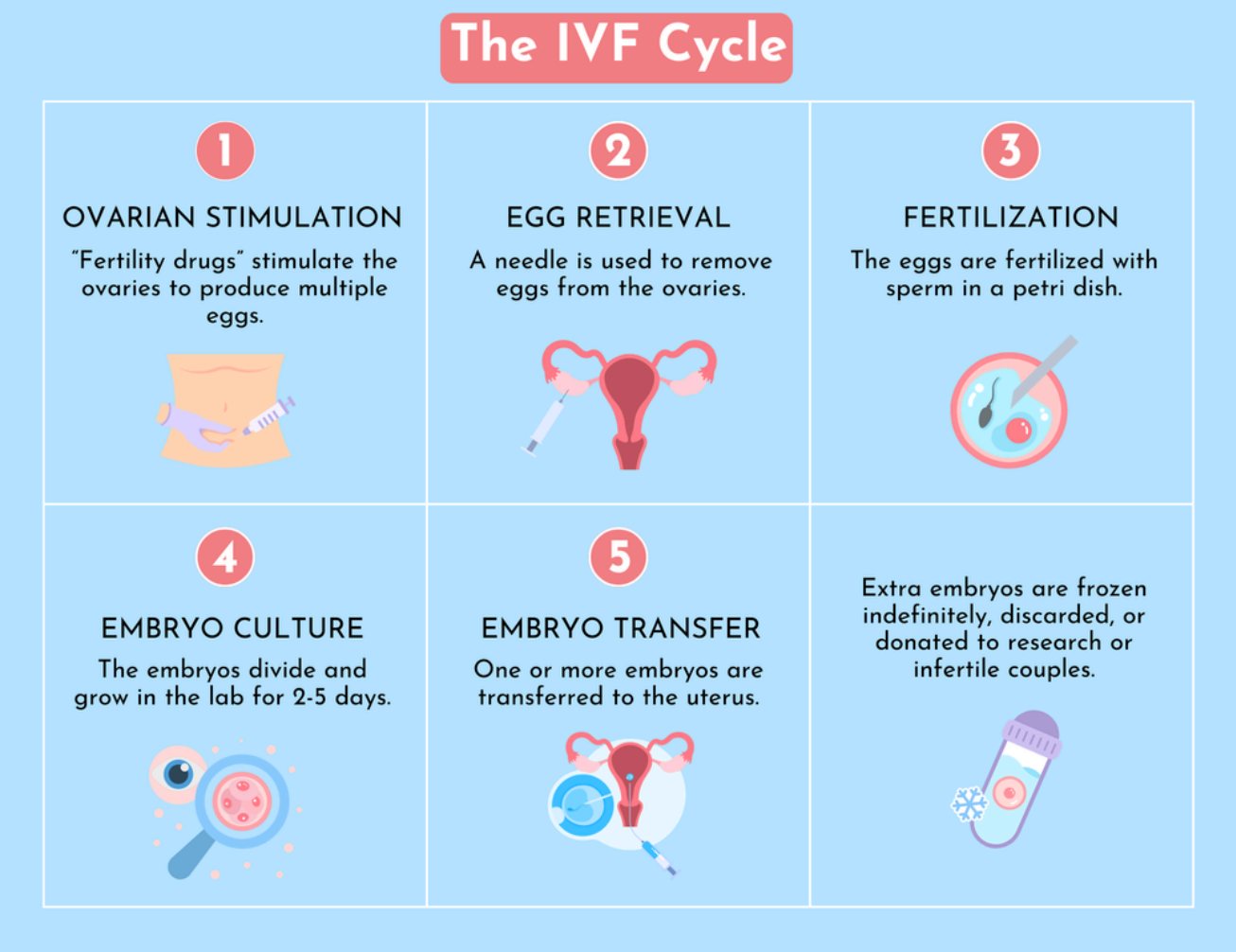
It is typically offered as a **medical procedure** to couples suffering from infertility who have already unsuccessfully attempted to conceive through other means.

It is the **most commonly used form of artificial reproductive technology** (ART), which encompasses all fertility treatments where human eggs or embryos are handled. (2)



How Does IVF Work?

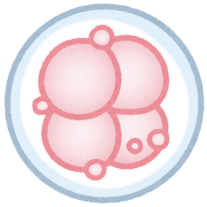
- IVF is performed in what is called a “cycle.” One cycle of IVF usually takes about 2 to 3 weeks to complete. (3) Some couples undergo multiple IVF cycles before achieving pregnancy.
- The IVF cycle has **5 main steps:** ovarian stimulation, egg retrieval, fertilization, embryo culture, and embryo transfer. (4)



- **The first step in the IVF cycle is ovarian stimulation.** Normally, a woman’s ovaries produce one egg per month. However, an IVF provider will often administer “fertility drugs” to stimulate the ovaries to produce multiple eggs. This allows the doctor to make more than one embryo and choose which ones have the best chance of implantation. Ultrasound and blood tests are used at this stage to monitor the development of the eggs and measure hormonal levels. (5)

How Does IVF Work? (cont.)

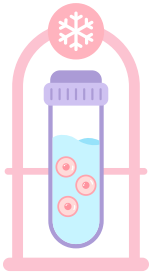
- **Egg retrieval takes place about 36 hours after ovarian stimulation.** A needle is inserted vaginally to remove eggs from the ovaries, guided by an ultrasound. (6)
- The retrieved eggs are mixed with sperm in a petri dish during **fertilization.** In ~60% of ART cycles, the provider will inject sperm directly into the eggs to better guarantee fertilization. (7)



The fertilized eggs become embryos when they begin to divide into multiple cells. The human embryos divide and grow in a lab for two to five days during the embryo culture. The IVF provider may conduct preimplantation genetic testing during this time. Embryos without genetic abnormalities are considered the best candidates for transfer. (8)

- **The final step of the cycle is the embryo transfer.** This may be carried out as a fresh transfer or a frozen embryo transfer (FET). A fresh transfer happens within the same IVF cycle about five days after fertilization. One or more human embryos are deposited in the woman's uterus with a transfer catheter. For a FET, embryos are frozen and transferred at a later date. Most transfers today are FET and only use one or two embryos. With either a fresh transfer or FET, a provider may prescribe progesterone to thicken the uterine lining and increase the chances of implantation. (9)

Extra embryos from the cycle are typically cryopreserved, which means they are frozen and stored indefinitely. The frozen embryos may be used for future cycles. (10) Extra embryos also may be discarded or donated to research or infertile couples after the completion of an IVF cycle. The number of surplus embryos depends on how many eggs were retrieved and fertilized. IVF providers typically remove six to 15 eggs during the egg retrieval. (11)



If around 65% to 80% of retrieved eggs are then fertilized, this would result in the creation of four to 12 human embryos. (12)

An embryo transfer requires only one or two of these embryos, leaving a number of extra embryos ranging from two to 10 in this scenario.

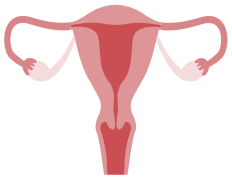
How Successful Is IVF?

- The success rate of IVF in the U.S. is about **50% for women under the age of 35**, and the rate decreases for older age groups. (13)
- In 2021, women under the age of 35 accounted for **36.2% of those who used ART** in the U.S. Other age groups (35 to 37, 38 to 40, and over 40) each made up around **20% of women who used ART.** (14)
- The outcome of IVF depends on various factors, including maternal age, previous pregnancies, and underlying causes of infertility. (15)
- About **2.3% of children born in the U.S.** every year are conceived using ART. (16) On a worldwide level, there are over half a million IVF deliveries annually. (17)

What are the Consequences of IVF?

A woman may experience various side effects during each part of the IVF cycle. These side effects are mostly uncomfortable, but they can also lead to emergency situations.

Physical Effects



Almost one-third of women undergoing ovarian stimulation develop a mild case of ovarian hyperstimulation syndrome (OHSS). (18)

OHSS happens when the ovaries become swollen and painful from overstimulation. Fluid may leak from the ovaries into the abdomen and lungs. Most mild cases resolve on their own, but severe OHSS occurs in up to 2% of women. **Severe OHSS requires hospitalization due to potential complications such as blood clots, kidney failure, or even death.** (19) If the IVF cycle results in a pregnancy, OHSS may lead to an increased risk of preterm delivery and low birth weight. (20)

The risks associated with egg retrieval are **rare but serious.** The long needle used for the procedure can injure organs close to the ovaries, such as the bladder, bowels, or blood vessels. An **infection may also occur** following egg retrieval. **Emergency surgery may be necessary** if either side effect becomes severe. (21)

Physical Effects (cont.)

If a woman achieves pregnancy through IVF, she is also at a higher risk for certain complications during pregnancy and birth. Many of these complications can also harm the child growing inside of her.

IVF:

- Comes with a higher risk of gestational diabetes. (22) Women who conceive through IVF may be at a **four- to five-fold increased risk** of developing gestational diabetes than those who conceive without IVF. (23)
- Is associated with **higher rates of placental abnormalities** and placental-related complications. (26)
- Has been linked to an **increased risk of developing an ectopic pregnancy.** (27) The widespread use of IVF has contributed to a rise in the incidence of heterotopic pregnancy, a rare type of ectopic pregnancy. (28) In a heterotopic pregnancy, one embryo implants inside the uterus, while another implants somewhere outside the uterus, usually in the fallopian tube. One estimate found that only 1 in every 30,000 naturally conceived pregnancies are heterotopic. (29) In comparison, heterotopic pregnancies are estimated to occur in 1 in every 100 to 3,600 ART pregnancies (30)
- Creates pregnancies with a **higher risk of preterm birth,** especially in the presence of a multiple pregnancy, where the mother is carrying two or more babies. (33, 34) A multiple pregnancy comes with more risks than a singleton pregnancy. Since embryo transfers may include more than one embryo, a woman who uses IVF is **more likely to have a multiple pregnancy.**

Women who receive a frozen embryo transfer or donor embryo transfer are at a **higher risk of developing a hypertensive disorder** while pregnant. (24) The risk may be 74% higher for pregnancies conceived using frozen embryos versus naturally conceived pregnancies. (25) Persistent high blood pressure during pregnancy usually indicates preeclampsia, a complication that can result in life-threatening conditions for both the mother and baby.

- Women who conceive by IVF are **more likely to have a C-section.** (31)
- C-sections are known to present **more risks to a mother and baby** than vaginal births. (32)

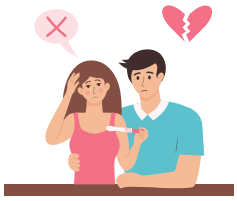
Physical Effects (cont.)

- A child conceived by IVF may have an **increased risk** of developing birth defects. (35, 36)

IVF is also harmful to the human embryos that are created but not transferred.

- The IVF industry in the U.S. has an estimated **1.5 million frozen human embryos** in storage (37). The vast majority of these human persons will never get an opportunity to actualize their potential for life.
- IVF clinics may **treat surplus human embryos as waste**, discarding those that are not frozen. In this way, IVF contributes to the destruction of human life.
- Some human embryos created during IVF are donated to research. Using human embryos for scientific research involves the experimentation on and, ultimately, the **destruction of human life**.

Psychological Effects



For couples already struggling with infertility, IVF can cause further psychological distress for both the woman and the man. It is common for those going through IVF to feel depressed and anxious. (38)

The high cost of IVF can create a **heavy financial burden** for couples that adds to the stress of the process. The average cost of one IVF cycle can range from $15,000 to $30,000. (39)

Couples who freeze extra embryos must endure the **emotional trial** of deciding what to do with them. Their options are to save the human embryos for future IVF cycles, donate them to research or infertile couples, have them destroyed, or keep them frozen indefinitely. Parents may postpone deciding for years because of the discomfort and uncertainty that the situation causes, instead paying a yearly fee to store their frozen embryos. Some couples rightly view their surplus embryos as children and the siblings of their living children. (40) The inability to bring all their children into the world understandably **causes mental anguish and difficulty** in deciding what to do.

Psychological Effects (cont.)

The IVF industry has seen **numerous cases of paternal discrepancy**, which happens when the biological father of a child turns out to be different from the man who is believed to be the father. **Paternal discrepancy may occur by mistake or intentionally,** and in both instances, the consequences are permanent and traumatizing. In some cases, an IVF clinic accidentally uses the wrong sperm, leading to the conception of a child by the wrong father. Scandal can also arise when an IVF doctor commits "fertility fraud" by substituting his own sperm for the father's. Paternal discrepancy due to IVF may be more widespread than publicly known since many people do not discover the error unless they receive genetic testing as adults. **The discovery of paternal discrepancy can lead to family dysfunction, violence, and legal battles.** It also causes **emotional trauma** to the individual discovering that they are not biologically related to the man they believed to be their father. (41)

Although much rarer than paternal discrepancy, **sometimes the transfer of the wrong embryo occurs,** likely due to improper labeling or record keeping. (42) As in cases of paternal discrepancy, the **effects are irreversible and harmful** to family life.

What are the Ethical Issues with IVF?

Modern culture views IVF as a widely accepted medical procedure that helps infertile couples have children. New life is always a gift, and children born from IVF have just as much dignity as those born from natural conception. They are human persons in the full sense of the word and not responsible for how their conception came about. However, the end of IVF does not justify the means. The Catholic Church teaches that **IVF is unethical because the process requires those involved to engage in immoral actions.**

IVF:

- **Separates procreation from the conjugal act.** Conception is meant to take place in the context of a one-flesh union between one man and one woman, not in a lab. IVF violates the nature of the conjugal act in its unitive and procreative aspects by replacing the act with a medical process.

What are the Ethical Issues with IVF? (cont.)

- Requires that **human reproduction happen outside of natural marriage and the one-flesh union** between one man and one woman. The practice of donating sperm and eggs makes it possible for people in same-sex relationships or other irregular unions to have children. The Church teaches that such unions are immoral and that children deserve to be raised by a mother and a father.
- Violates human life by the **destruction and freezing of human embryos on a large scale.** It is a scientific fact that human life begins at fertilization—an entirely new human being is formed when sperm and egg meet. The human embryos created by IVF are human persons, but the process disregards this reality and instead allows for them to be manipulated, frozen, and discarded.

A small percentage of couples who use IVF have another woman carry their baby for them. In 2021, 4.4% of IVF cycles used a gestational carrier, otherwise known as a surrogate mother. (43) The Church condemns surrogacy because it offends the dignity of the child and surrogate mother, treating her body as a means to an end.

The collection of sperm necessary for fertilization often involves masturbation, which the Church teaches is a mortal sin.

A dangerous mindset that may accompany IVF is **viewing the desired child as the product of a technical process,** and a commodity that they paid for, rather than as a gift. This does not imply that parents do not deeply love a child conceived by IVF. However, a child is meant to be conceived as the fruit of the marital love expressed in the conjugal act.

Preimplantation genetic testing (PGT) constitutes a form of **discrimination against human embryos based on genetic factors.** IVF clinics not only use PGT to screen for genetic abnormalities, but they sometimes permit couples to select certain characteristics for their child. This most commonly includes choosing the sex of the baby, but some clinics even offer other options such as eye color and intelligence. The number of IVF cycles that utilize PGT has steadily increased over the past 2 decades. In 2018, approximately 45% of IVF cycles implemented PGT in the U.S. (44) **IVF providers who use PGT decide which human embryos get a chance at life beyond a petri dish based on their qualities and characteristics.**

What Can You Do To Help?

1. **Pray:** Pray for the sanctity of human life to be upheld from natural conception until natural death on the political and social level.
2. **Vote:** Vote for politicians who support pro-life policies and recognize that human embryos are human persons with the right to life.
3. **Be informed about NaPro technology:** NaPro technology is an alternative treatment to IVF that is accepted by the Catholic Church. Being informed about it will enable you to better articulate the Church's teachings on reproductive technology and emphasize that the Church wants to help infertile couples in morally licit ways. (45, 46)
4. **Support PRI:** Sign up for the weekly PRI Insider to hear the latest news on IVF, including the development and use of ART technologies. Consider making a donation to support our work defending human life at every stage!

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