



**Reproductive Medicine &
Infertility Associates**

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Overview for IVF Patients

Introduction

In vitro fertilization and embryo transfer (IVF-ET) was first successfully accomplished in humans over 20 years ago; since then, thousands of children have been conceived. IVF is a procedure that enhances the chance of pregnancy in couples for whom other fertility therapies have been unsuccessful or are not possible. It involves multiple steps resulting in the insemination and fertilization of eggs in a laboratory. The embryos created in this process are placed into the uterus for potential implantation. Each stage of the procedure is associated with specific risks, as are all treatments. It is an elective medical treatment, which may provide a couple that has been otherwise unable to conceive with a chance to establish a pregnancy. This is an explanation of the IVF process. Please read all the information in this packet carefully, to review the risks and benefits.

Stimulation and Monitoring

Superovulation techniques are used in IVF to stimulate the ovaries to produce several eggs (oocytes) rather than the usual single egg as in a natural cycle. Multiple eggs increase the chance of obtaining multiple embryos (fertilized eggs) for transfer and the probability of conception. There are multiple medications required to boost egg production. Each is administered by injection only. Lupron, Follistim, Bravelle, Repronex and Gonal-F are given subcutaneously (beneath the skin), and the others are intramuscular injections (into the muscle).

These ovulation induction medications coax the ovaries to produce more than one egg to the point of maturity. Hormone levels of estrogen and progesterone reach levels much higher than normal values. When the estrogen level becomes elevated, side effects may be experienced. Because of these possible side effects, it is important that we carefully monitor your response to these medications. This monitoring also allows your physician to determine when the eggs are ready for the next stage, oocyte (egg) retrieval. Monitoring includes frequent blood drawing for estradiol (estrogen) and possibly progesterone, LH and FSH levels. These blood tests will take place over approximately a twelve-day period.

Another part of monitoring in IVF involves the use of intravaginal ultrasound to track follicular growth. The eggs develop inside fluid-filled cysts of the ovaries called follicles, which enlarge as the eggs mature. Ultrasound studies usually begin after an estrogen response has been measured and continue on a frequent basis until oocyte (egg) retrieval.

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Ovarian stimulation with the fertility medications causes multiple follicles to develop. This is desirable in IVF because as the number of eggs increases, the chance for success increases. Multiple embryos can also increase the risk of multiple pregnancy. Approximately 25-28% of pregnancies with IVF will be multiple. Most of these will be twins, but triplets, quadruplets or even greater multiple pregnancies can occur. A procedure called "selective reduction of pregnancy" has been performed in several medical centers across the country in selected cases of triplets or more. Selective reduction is not offered on site. More information on this procedure and recommended centers is available on request.

Egg retrieval

For IVF, collection of eggs is usually performed under transvaginal ultrasound guidance. To accomplish this, a needle is inserted (under IV sedation) through the vaginal wall into the ovaries using ultrasound to locate each follicle. The follicular fluid is drawn up into a test tube to obtain the eggs. Patients are given pain medications intravenously and are carefully monitored by a nurse anesthetist. Generally, the oocyte (egg) retrieval takes 30-45 minutes. Patients are usually discharged home within an hour after the retrieval.

Collecting and Preparing the Sperm

A semen sample will be obtained from the partner by masturbation on the day of the oocyte (egg) retrieval. This is usually obtained while the retrieval is being performed. Abstinence from ejaculation for two to four days prior to providing this semen specimen is recommended. After the specimen is produced, the sperm will be prepared for inseminating the collected eggs in our laboratory. A second sample of fresh semen may be needed the day of or the day after egg retrieval to inseminate egg(s) that were not mature or did not initially fertilize. Because this can be a stressful time period for men, the man/partner may be unable to produce a specimen when needed. If a frozen specimen is not available and a fresh ejaculate cannot be produced, any eggs collected will be discarded. Men who feel that they may have difficulty producing a semen specimen have the opportunity to have their specimens frozen by our laboratory ahead of time for use in this situation.

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Insemination of Eggs and Embryo Culture

Following egg retrieval, the follicular fluid is immediately transferred to the adjacent laboratory for identification of eggs, evaluation, and preparation for insemination. In the process of collecting the follicular fluid, it is typical for a large number of eggs to be retrieved. The prepared sperm will be added to each egg and they will be allowed to incubate overnight under controlled laboratory conditions. The next day, each egg is evaluated for evidence of fertilization. However, it is possible that no eggs are fertilized. If this happens, the laboratory staff may re-inseminate the eggs or perform intracytoplasmic sperm injection (ICSI) in hopes of obtaining embryos for transfer. If fertilization still does not occur, the eggs will be discarded and the remainder of the procedure will be cancelled. In the case of severe male factor, the couple may be asked to consider the option of using anonymous donor sperm (obtained through a licensed sperm bank for use as a "backup" or secondary sperm source) if it is not possible to obtain sufficient sperm from the partner at the time of fertilization.

The eggs that have fertilized will be allowed to develop for one or more additional days under controlled laboratory conditions before they are placed inside the woman's uterus. Depending upon the couple's wishes, some fertilized eggs or embryos may be frozen and stored for future use. After the embryos are transferred to the womb, the woman will continue progesterone supplementation that begins on the evening of the egg retrieval procedure. Progesterone is usually taken by injection. Administration of this medication after egg collection has been shown to create a more favorable uterine environment for the embryos, which therefore increases pregnancy rates.

Transferring Embryos to the Uterus

Embryos are transferred to the uterus through a small tube (catheter). This procedure is much like a pap smear and does not require any anesthesia and is usually painless. The embryos are placed in a small amount of fluid inside the catheter, which is passed through the cervix at the time of a speculum examination. The embryos are placed in a manner so they reach the top part of the uterus. The number of embryos transferred depends on individual circumstances of the couple, and this decision will be made collectively by you, your physicians and the embryologist. Two to four embryos may be transferred in one treatment cycle.

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Embryo transfer can cause mild cramping. After transfer, the woman may get dressed and leave after a brief recovery period. A pregnancy test will be done twelve to fourteen days after the transfer, regardless of the occurrence of any uterine bleeding.

The transfer of several embryos increases the probability of success. A multiple embryo transfer also increases the risk of a multiple pregnancy. Couples going through therapy must choose and formalize their choice for handling of any remaining embryos by indicating one of the following options:

1. Freezing (cryopreservation) of remaining embryos for use by the couple in future treatment cycles
2. Anonymously donating the embryos for use by another infertile couple(s), if the donating couple and the donated embryos meet the screening criteria (You would not receive any money for this donation, nor would they be sold.)
3. Allowing the embryos to develop in the laboratory until they perish, at which time they would be disposed of in a manner consistent with professional ethical standards and applicable legal requirements (This usually occurs within six to eight days after egg collection) .

Other Issues:

Any assisted reproduction process or technique can be psychologically stressful. Significant anxiety and disappointment may occur. We encourage you to consider short-term supportive counseling during this time and we are happy to provide you with the name of a counselor before you cycle to review your feelings and help you through what may be a difficult time emotionally for you and your partner.

A substantial time commitment is required by both partners to complete an entire course of IVF therapy. It will be necessary for couples to adjust their schedules to undergo the required testing and therapies associated with IVF-ET. It is the responsibility of the woman to report to our office as scheduled for repeated ultrasound examinations and blood tests over several days or weeks before and after the expected time of egg collection. It is the responsibility of the man to be available at the time identified by the physician to provide sperm and for the embryo transfer.

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Theoretical Concerns & Potential for Success:

Unfortunately, neither conception nor a successful outcome of pregnancy is guaranteed by the IVF-ET procedure. There are many reasons why pregnancy may not occur with the IVF-ET procedure. In fact, there are complex and largely unknown factors that limit pregnancy rates following assisted reproductive techniques. Some of the known reasons for failure include:

1. There may be a failure to recover an egg because:
 - follicles that contain mature eggs may not develop in the treatment cycle
 - ovulation has occurred before time of egg recovery
 - one or more eggs cannot be recovered from the follicles seen
 - pre-existing pelvic scarring and/or technical difficulties prevent safe egg recovery
2. The eggs that are recovered may not be normal
3. There may not be enough semen to attempt fertilization of the recovered eggs because the man is unable to produce a semen specimen, because the specimen contains an insufficient number of sperm to attempt fertilization, because the laboratory is unable to adequately process the specimen provided, or because the option to use a donor sperm as a "backup" was declined;
4. Fertilization of the eggs to form embryos may fail even when the egg(s) and sperm are normal;
5. The embryos may not develop normally or may not develop at all. Embryos that display any abnormal development will not be transferred;
6. Embryo transfer into the uterus may be difficult/impossible, or implantation(s) may not occur after transfer, or the embryo(s) may not grow or develop normally after implantation;
7. Any step in the IVF-ET process may be complicated by unforeseen events, such as hazardous or catastrophic weather, equipment failure, laboratory conditions, infection, human error and other unforeseen events.

When pregnancy occurs following IVF, it will typically be a normal pregnancy. However, there is always a risk of abnormal pregnancy such as, miscarriage,



blighted ovum, ectopic pregnancy or premature delivery. This is because the process of IVF-ET does not protect against such occurrences. Congenital

abnormalities, genetic abnormalities, mental retardation or other birth defects which occur in approximately 3-4% of spontaneously conceived pregnancies may still occur in children born following assisted reproductive techniques. Women with multiple pregnancies have a much higher risk of complicated pregnancies, which may include the following: toxemia (pre-eclampsia), miscarriage, premature labor and delivery, stillbirth, birth defects, and other complications.

Alternatives to IVF-ET:

Depending upon the individual and unique cause(s) of infertility for each couple, the chance of conception through alternative means, including intrauterine insemination (IUI) and medicinal therapy, other than IVF-ET may or may not exist. Possible success rates of these alternatives may vary depending upon the type and severity of the cause of the infertility. For some couples, it may even be possible to conceive spontaneously without a physician's help. You should discuss these alternative treatment methods with your physician before you proceed to treatment.

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