

# Specialists In Reproductive Medicine & Surgery, P.A.

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*Excellence, Experience & Ethics*



## Patient Information Summary Assisted Reproductive Technologies

### Historical Perspective:

The British team of Dr. Steptoe and Dr. Edwards, using an unstimulated cycle, were able to accomplish fertilization in a “test tube” (actually, a culture dish), replace the embryo back into the uterus and have implantation occur. This first ‘test-tube baby’, Louise Brown, was born in the United Kingdom on July 25, 1978.

The Assisted Reproductive Technologies (**ART**) were originally designed for women with tubal disease. With growing success, patients with such difficulties as endometriosis, male factor and unexplained infertility became candidates for the new procedures. ART currently treats essentially all types of infertility. Thousands of children have now been conceived using ART.

## Summary Of The ART Process

### General Evaluation:

Numerous criteria need to be met before a couple is accepted into the program. Some of the criteria may seem strict, but the highest of standards are required in maintaining a successful ART program. All final determinations are made by the ART team, which consists of medical, nursing and laboratory staff.

#### Phase 1: Review Of The Medical Records

All pertinent medical record, X-ray studies and laboratory results will be reviewed and summarized for each partner. Alternatives to ART will be discussed so that the couple seeking ART will be able to make an informed decision.

The ART team may occasionally request that the couple undergo psychological counseling. This is not another ‘hurdle’ the infertile couple must jump through, but rather, may be requested for the overall health of the individuals. Refusal to undergo counseling upon request will be grounds for exclusion from the ART program.

#### Phase 2: The Updating Of Laboratory Studies

Previously performed labs will be retested if over two years have transpired since the original studies. Once these tests are completed, the ART team will review them and the

## Patient Information Summary Assisted Reproductive Technologies (*cont.*)

couple is asked to enter into the final stages of evaluation prior to acceptance into the program.

### **Phase 3: Final Evaluation**

Once all screening studies are completed, the ART team will review the couple and determine if they are accepted into the ART program and decide upon the specific ART protocol to be used in the ART cycle. Such variables including the age of the woman, accessibility of the ovaries, presence of the Fallopian tubes, history of previous fertilizations, semen evaluations and patient wishes will be used to deciding which ART protocol will be initiated.

Once the protocol is decided upon, legal contracts and financial arrangements must be completed in a rapid manner. The IVF Nurse Coordinator will guide you through these steps.

### **Financial Arrangements:**

ART is a complex and relatively expensive process. The costs of maintaining the advanced laboratory equipment and the employment and continued education of the highly trained staff are high. Because of the high costs involved in maintaining a successful ART program, we will ask that all procedures be paid for in full prior to initiating the ovarian stimulation process.

SRMS has been quite careful in accurately estimating the costs for the ART process. These estimates can be reviewed in the enclosed Price List. The front office staff will be available to answer additional financial and insurance questions upon request.

### **Medications:**

Depending on results of a semen culture done in the one to two months prior to the ART cycle, antibiotics may be administered orally to the male partner during the month of the female partner's egg retrieval.

### **Trial Transfer:**

Depending upon the protocol, a hysteroscope or uterine sound may be placed into the uterus during the months prior to the ART cycle to make certain the uterine cavity is normal and to document the precise depth in which the embryos will be placed into the uterus.

### **Semen Evaluations:**

At least two and often three semen specimens will be requested and evaluated for quality, ongoing infection and antibodies. If there is any possibility that the male partner will be unavailable or unable to produce a semen specimen on the day of egg retrieval, a semen specimen will be obtained in advance of the procedure and cryopreserved for possible use. The cryopreservation process is a type of "insurance policy" and is offered to all couples that feel it would be of benefit.

### **Lodging and Out-Of Town Guests:**

Many of our patients travel great distances to seek care here at SRMS. We have connections with various hotels to provide you with the best rates. Vacation packages can also be arranged to make your visit to Southwest Florida as enjoyable as possible. Please discuss these arrangements with the front office staff well ahead of your visit here. Our web site at [www.DreamABaby.com](http://www.DreamABaby.com) also has a number of valuable links regarding Southwest Florida.

### **Ovulation Induction:**

The precise method of ovarian stimulation will be decided upon by the ART team. Injectable medications with or without additional oral medications, which mimic the body's natural hormones, will be given to stimulate the ovaries increasing the number of eggs available for use.

In general, there are two protocols used to stimulate the ovaries. The protocols involve either the use of Gonadotropin Releasing Hormone Analogs (GnRH-a) or Gonadotropin Releasing Hormone Antagonists (GnRH-Ant), hormones that inhibit the pituitary gland from releasing the eggs too early in the stimulation cycle. The "*Meldrum*" or "*Down-Regulation*" protocol uses the GnRH-a and starts this medication in the later half of the cycle prior to the actual ovarian stimulation cycle. The "*Letrozole Protocol*", however, uses a GnRH-Ant which is not started until ovarian follicles have reached 14mm in size. Each basic protocol has its advantages and disadvantages and will be chosen by the ART Team. Please rest assured that they will choose the protocol that is best for you.

Regardless of the protocol, all patients will be placed on oral contraceptive pills (OCPs) in a continuous fashion for at least three weeks prior to the initiation of stimulation hormones. This is done to control your menstrual cycle and allows us to control the initiation of the ART cycle. Three days after the OCPs are stopped, a **baseline** transvaginal ultrasound will be performed and the ovarian stimulation will be initiated if there are no significant ovarian cysts, which may otherwise confuse the later ultrasounds. A "*Negative-Baseline US*" is desired which means the ovarian stimulation may be initiated. It is **not** necessary to drink extra fluids to fill the bladder with a vaginal ultrasound. In fact, your bladder needs to be empty to perform the US procedure

The overall length of ovarian stimulation varies but usually ranges from 7-10 days. Two and occasionally three injections each day will be needed to accomplish the stimulation. You and your partner will learn how to give these injections.

Once again, all financial matters must be completed before ovarian stimulation is initiated.

### **Follicular Monitoring:**

Periodic ultrasound measurements and blood tests should be expected during the stimulation process. As a follicle grows, it releases estrogen, specifically estradiol (E2). The E2 levels will be monitored along with the ultrasound evaluations. We are well aware of the distances many of our patients travel and will make every attempt to minimize your travel to our facility.

We will watch the follicles grow and then administer an injectable medicine, human chorionic gonadotropin (HCG), to initiate the final phase of growth. The eggs will then be retrieved approximately 34-36 hours later.

Approximately 8% of the couples will be canceled due to inadequate ovarian stimulation. Cancellation of a cycle is disappointing to everyone; however, it is preferable to restart the stimulation in future cycle or consider other options such as egg donation, embryo donation or adoption.

### **Retrieval:**

The male will be asked to produce a fresh semen specimen the day of the retrieval. This specimen will then be specially prepared for the ART process.

If the woman has a complicated medical history or would like to meet the anesthetist, a meeting may be scheduled in advance of the procedure upon request. It is important that the woman not have anything by mouth (except for a few sips of water) after midnight on the night prior to the procedure. As with any outpatient procedure, the patient meets the Certified Nurse Anesthetist (CRNA) or Anesthesiologist prior to the procedure and consents are reviewed and signed. Under intravenous (IV) sedation (the patient is asleep and breathing on her own), the eggs are retrieved through a slender needle placed through the walls of the vagina and into the ovaries under ultrasound guidance. The complications of the egg retrieval process here at SRMS are less than 1%.

The entire egg retrieval process usually takes about 30-45 minutes. The partner is encouraged to attend the retrieval. Recovery will last here at SRMS for about 30-60 minutes after the procedure. It will be necessary that someone drive the patient home after the procedure.

After the eggs have been retrieved, one or more of the following options will be performed:

### **In Vitro Fertilization (IVF):**

IVF occurs when the retrieved eggs are fertilized in a culture dish with either the husband or donor's sperm. The actual fertilization process usually occurs within the first six hours after the egg retrieval. Conventional IVF insemination techniques involve the placement of the specially prepared sperm in a microdroplet of media with the specially prepared egg. The total number of eggs removed will vary with regards to the individual patient. In general, the older the female patient, the fewer the number of eggs retrieved. On average, we retrieve about 10 eggs per procedure with as few as three and as many as 25 oocytes occasionally obtained. Depending upon the fertilization process, anywhere from 60-85% of the eggs will fertilize.

### **Microsurgical Assisted Fertilization:**

Fertilization may not occur or may be significantly reduced with significant male-factor infertility. In order to improve on the fertilization rates, micromanipulation of the sperm and eggs may be performed. In this procedure, the egg, the largest cell in the body, is gently held in place while a single sperm, the smallest cell in the body, is directly injected into the waiting egg in a process called IntraCytoplasmic Sperm Injection (ICSI).

### **Embryonic Growth:**

Once fertilized, the embryos continue to grow over the next five to six days. In general, about 80% of the eggs retrieved will fertilize although the fertilization success rate may be significantly lower for women of advanced age or those couples with severe male-factor problems. The wait from the retrieval

to transfer may be very stressful. Please be patient. The staff of SRMS will try to keep you informed regarding the fertilization and growth process. The first call usually occurs within 48 hours of the retrieval and a second call is usually placed the day prior to the proposed embryo transfer.

Regardless of the laboratory methods used, fertilization and embryonic growth can be unpredictable. Not all eggs will fertilize and not all fertilized eggs will mature and grow. Some of the embryos will undergo “*cell block*” where cellular division stops and the embryos start to degrade. These embryos are not healthy and will not yield healthy gestations. These embryos will not be transferred or cryopreserved.

In general, about 70-80% of the oocytes that are fertilized will grow with a few very advanced embryos available for transfer on the fifth or sixth day following the egg retrieval procedure.

### **Microsurgical Assisted Hatching (AH)**

Human embryos actually have to “hatch” from the zona pellucida before implanting into the endometrial lining. The outside covering called the zona pellucida may become slightly rigid making it more difficult for the embryos to escape from the outer covering and implant. AH involves the careful opening of a small segment of the zona making it easier for the embryo to escape and implant.

### **Embryo Transfer (ET):**

Depending upon the quality of the embryos, the maternal age and the acceptability of fetal reduction with an unexpected multi-fetal pregnancy, anywhere from two to four fertilized embryos will usually be loaded into a very thin catheter and placed directly into the uterus through the cervical canal approximately five or six days after retrieval. This is a relatively painless procedure and will be done without premedication. The patient will then be asked to rest for about one hour. The patient is encouraged to bring something to read, music to listen to or a videotape to watch.

### **Embryo Cryopreservation and Frozen Embryo Transfer:**

If there are viable excess embryos, the embryos will be cryopreserved in liquid nitrogen for future use. The embryos can be thawed at a later date should the couple desire additional children or if the initial fresh embryo transfer failed to result in a viable pregnancy.

The process of freezing, the length of time in which the embryos are left frozen and the thawing process itself may apply a great deal of physiologic stress on the embryos such that some may not survive. In general, about 25% of the embryos will not survive the freeze/thaw process. Embryos that degenerate from the thawing process were probably genetically abnormal and were not going to result in viable pregnancies. The Consent for Cryopreservation of Embryos has additional information and is included with this packet.

### **Embryo Reduction:**

Twins, triplets or more may occur when ART is used to achieve a pregnancy. The generally accepted risk is up to 50% of all successful ART pregnancies result in a multiple gestation. All multiple gestation pregnancies should be considered high-risk pregnancies. Complications such as premature

birth, a surgical delivery and the need for bed rest or hospitalization during the pregnancy may occur. Options such as fetal reduction, usually reducing the number of gestations down to twins, will improve the chances that some of the gestations will survive and that the pregnancy will have fewer complications. The couple may choose to travel to find the individuals skilled in this procedure.

### **ART Success Rates:**

Expect to be somewhat confused in comparing various statistical results between different therapies and programs. One of the most important factors to remember is that different patients may have different procedures and that different programs often have different admission criteria. One must always remember that the chance of becoming pregnant using natural techniques in the normal fertile population is about 20% each month. All of the ART statistics should be compared to this natural fecundity rate.

The best place to get specific information regarding the SRMS success rates is via the web site at [www.DreamABaby.com](http://www.DreamABaby.com). Your IVF Coordinator or physician will also be happy to review these statistics in greater detail.

## **Frequent Questions**

### **What general restrictions are necessary during the month of stimulation?**

We ask that you check before taking **any** additional medications other than regular or extra strength Tylenol. Prenatal vitamins will be prescribed. Smoking, herbal medications, over-the counter medications, recreational drug use and alcohol must be eliminated. If another physician prescribes you a medication, please have the physician contact us and we will clear the use of the desired medication or provide alternative treatments. These restrictions are in place for both the male and female patient.

### **May I exercise during the month of stimulation?**

Strenuous activity is to be avoided and new activities should not be initiated. We ask our patients to use good common sense. When deciding what is strenuous and what is not, please discuss the “grey” areas with the IVF coordinator. Once again, please use good common sense.

### **Do we really need to buy or borrow an answering machine?**

It is **imperative** that our patients be available by phone or answering machine to receive instructions regarding medications and appointments for monitoring. The accurate predication of the impending ovulation is crucial. The inability to contact you may result in the cancellation of your cycle.

### **Why is my stimulation so different from others in the group?**

Each person’s response to therapy is individual so your lab values and stimulation protocol may be very different from others in the group. A different protocol simply means the protocol has been tailored to your specific needs.

### **Is it all right to discuss the stimulation with others in the group?**

Please be sensitive to the fact that some of the individuals going through the program have not even discussed the process with any of their family members or close friends. Therefore, please do not be

offended if they are reluctant to discuss the information with relative strangers. At the same time, couples often benefit from mutual support. We simply ask that you be sensitive to the other patient's potential desire for privacy.

### **May we have intercourse just prior to the retrieval?**

We ask that our couples not have intercourse for at least two to three days prior to the retrieval. We want the sperm to be in the best of 'shape' for the procedure and ovarian enlargement may make intercourse uncomfortable. Even so, waiting more than seven days may adversely affect the sperm.

### **Can we determine the sex of the baby?**

A procedure called Preimplantation Genetic Diagnosis (PGD) is extraordinarily accurate in predicting the sex of the baby. PGD is a method of screening embryos prior to transfer into the uterus for specific genetic diseases, chromosomal abnormalities or gender. Screening embryos with PGD not only identifies gender, but also determines the healthiest embryos for transfer thus increasing IVF success.

PGD is performed by removing a single cell from the embryo on the third day of growth (Day 3). This single cell is sent to a specialized laboratory for genetic analysis. The results of the analysis are known on Day 5 before the embryo transfer.

PGD is generally not yet covered by insurance. Please contact our office for our most current prices. For more information on PGD, please contact our office or see our website [www.DreamABaby.com](http://www.DreamABaby.com).

### **Will my children be normal if conceived through ART?**

The medications used in the ovarian stimulation process and during egg retrieval are used universally around the country and the world. There is no human data that indicates that the medications are harmful.

There have been some studies which indicate the average Art pregnancy will deliver somewhat earlier with a smaller-for-gestational-age baby compared to those conceived through natural means. This is probably due to the fact that the patients are simply at higher risk for problems due to the issues that made them subfertile in the first place.

Additional data has been published that indicates some male-factor problems may be passed on to the children. This seems to occur at a very low rate, but can occur. The overall outcome is usually similar to that of the father (i.e., reproductive issues). Fertility and other medical issues may occur to the male child or the female offspring may carry a genetic problem that could eventually affect her children. Once again, the medical outcomes are usually no different than the male partner who originally provided the sperm.

ART conceptions are **not** more prone to significant abnormalities. We offer no guarantee that the child will be normal, but tens of thousands of children have been created by the IVF process and the children are generally as healthy as those conceived in the more natural settings.

### **What is my activity level after a embryo transfer?**

We ask that with any embryo transfer that the woman continues bedrest for the day of and the day following transfer. This involves lying in bed and lying on the couch. It is allowed that she shower and go to the bathroom. She is to be pampered!

Light activity should follow for the following five to seven days wherein normal activity may be resumed.

We suggest that you abstain from vaginal intercourse for seven days following the embryo transfer. Pelvic discomfort from ovarian stimulation and the egg retrieval itself are often the practical limiting factors for not having intercourse following embryo transfer. To be honest, it is doubtful that intercourse would “dislodge” an embryo and result in a negative pregnancy test. Even so, guilt regarding early sexual relations following a negative pregnancy test can become somewhat overwhelming. That stated, there is absolutely no data available that states that vaginal intercourse is harmful to the early gestation following implantation. Once again, we suggest that you use good common sense.

### ***How long can my embryos stay frozen?***

We really do not know the limit of the cryo preservation therapy. Animal research has shown that offspring are possible after many years of preservation. That stated, we encourage the transfer of the frozen embryos within three years of cryopreservation.

## **Summary:**

ART is a very exciting field. This area of medicine demands more on the participants over a shorter period of time than most other areas of medicine. The information packet may need to be reviewed on more than one occasion. Feel free to ask any questions of the IVF Coordinator, the Embryologist or the Physician. We welcome you to our practice and look forward to providing you with the very best of medical care.