



# Fertility and Reproductive Medicine

Let Our Family Help Grow Your Family



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# Welcome

We are so happy you have chosen our practice to support your reproductive goals.

At Northwestern Medicine Fertility and Reproductive Medicine, our mission is to advance the reproductive health of individuals and couples by delivering exceptional and compassionate patient care, pioneering leading-edge research, and training future physicians.

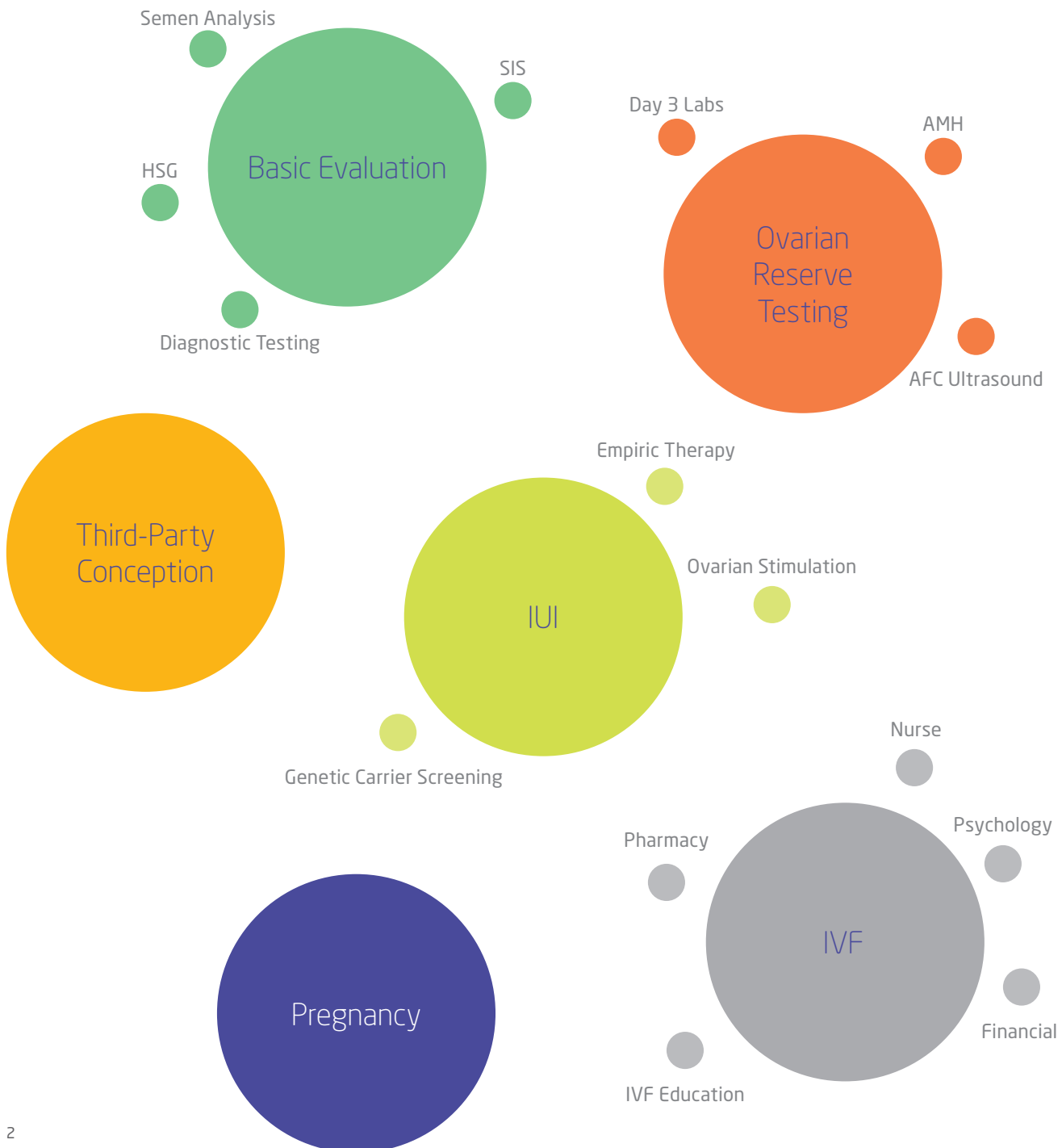
Included you will find introductory information on the wide array of treatment options we offer, as well as fertility and reproductive basics. We acknowledge every patient is unique, and we tailor our evaluation and treatment plans to individual patient needs.

Thank you for letting our family help grow your family.

Your FRM Team

# Your fertility journey

We recognize that everyone's fertility journey is unique. Highlighted below are some of the potential stops along the path to pregnancy.



# Glossary of terms

## **Semen analysis**

This is an evaluation of sperm for normal shape and sperm count.

## **Day 3 labs**

Estradiol (E2), follicle-stimulating hormone (FSH), and luteinizing hormone (LH) are hormone levels that are checked at the start of your cycle and predict how well you will stimulate with fertility drugs.

## **Anti-Mullerian hormone (AMH)**

This blood test also predicts how many eggs are developing and can be done anytime in your cycle.

## **Antral follicle count (AFC) ultrasound**

AFC is the number of resting follicles in the ovary. This test is done with a transvaginal ultrasound. It can help predict how many eggs are developing in a single month.

## **Saline infusion ultrasound (SIS)**

This test evaluates the uterus and the shape of the uterine cavity by injecting water into the uterus during ultrasound. This is done in the office by an MD or a nurse practitioner.

## **Hysterosalpingogram (HSG)**

This is an X-ray done by our physicians or advanced practice providers that visualizes the uterus and confirms the fallopian tubes are open.

## **Empiric therapy**

This is the use of pills or injectable medication to enable multiple eggs to be ovulated.

## **Third-party conception**

This type of pregnancy uses a surrogate (a gestational carrier), or an egg or sperm donor.

## **Genetic carrier screening**

This is the screening for genetic diseases before pregnancy.

## **Intrauterine insemination (IUI)**

This treatment involves the washing and injection of sperm directly into the uterus, and is often the first step in fertility treatment.

## **In vitro fertilization (IVF)**

This treatment involves follicle growth followed by egg retrieval and in-lab fertilization. Embryos are then transferred back into the uterus of the patient.

## **IVF education**

Education includes a series of appointments within our clinic, including a visit with one of our psychologists, financial counselors, our pharmacist and a nurse.

# The menstrual cycle

Hormone levels rise and fall throughout the menstrual cycle, coordinating the events that take place.

For a woman to have the possibility to become pregnant, hormones released from the ovaries and the brain must work together during her cycle. This allows for egg maturation and fertilization, and prepares the uterus for embryo implantation.

## The follicular phase

The menstrual cycle begins with the **follicular phase**. The main purpose of the follicular phase is to grow mature **follicles** in the ovaries and promote **ovulation**. Under normal circumstances, an egg resides in the follicle.

Two hormones, **follicle stimulating hormone (FSH)** and **luteinizing hormone (LH)**, are released from the brain and help stimulate growth of follicles. The follicles will continue to mature until there is a surge in the level of LH, which triggers ovulation. While many follicles form during a normal cycle, only one of the largest is selected for ovulation; this is called the **“dominant follicle.”** During ovulation, the mature egg in the dominant follicle is released from the ovaries and is ready for fertilization.

A woman is most fertile during ovulation.

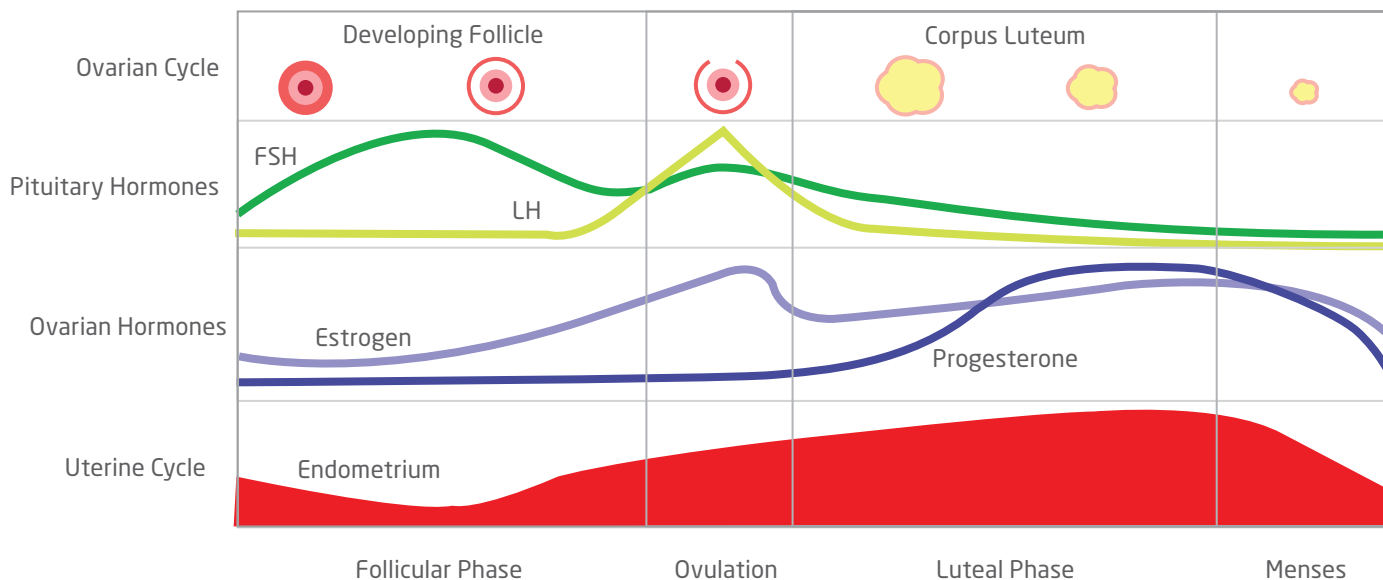
Another hormone, **estrogen (estradiol, or E2)**, is released from the ovaries during the follicular cycle, and helps to regulate ovulation and uterine lining growth.

## The luteal phase

The second phase of the menstrual cycle is the **luteal phase**, which begins with the onset of ovulation. This phase involves the preparation of the uterine lining, called the **“endometrium,”** for potential embryo implantation. A large spike in **progesterone** levels, another hormone produced by the ovaries, stimulates uterine lining growth to create a friendly environment for a developing embryo.

If pregnancy does not occur, progesterone as well as estrogen levels drop, and the lining of the uterus is shed through **menses**. With the onset of menses, the menstrual cycle begins again with the follicular phase.

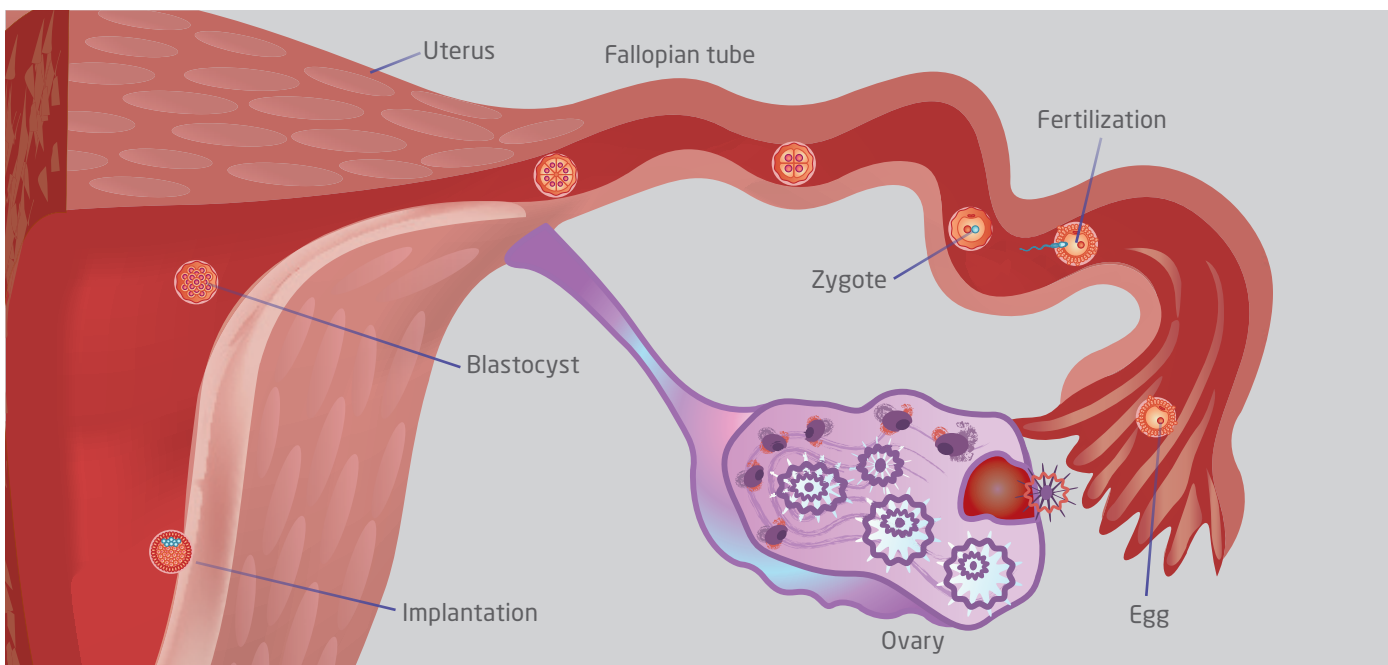
If pregnancy does occur, the menstrual cycle is put on hold for the duration of pregnancy, and the uterine lining is kept to nourish the growing embryo.



# Fertilization and implantation

After ovulation, if sperm is present, an egg is fertilized in the fallopian tubes.

The fallopian tubes serve as the pathway from the ovaries to the uterus. A fertilized egg prior to any development is called a "zygote." The zygote develops for 5 to 7 days within the fallopian tubes, undergoing several cellular divisions, before becoming a "blastocyst." At this stage, the embryo will **implant** into the uterus. Eventually, this embryo develops into the fetus.



# Hysterosalpingogram (HSG)

A hysterosalpingogram (HSG) is an X-ray that visualizes the uterus and fallopian tubes. The test is performed in hospital outpatient radiology. The HSG is usually performed a few days after the end of your menstrual period and prior to ovulation. For most women, the test will occur between Day 5 and Day 11 of your cycle. The information from the test will help your physician determine the condition of your uterus and fallopian tubes.

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## Preparing for the test

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Please call the office on Cycle Day 1 (first day of a full menstrual flow) to make your appointment for the HSG. As a group practice, the physician or nurse practitioner may be different than your primary provider.

Most women experience mild to moderate cramping during the procedure. It is recommended to take 600mg of ibuprofen 1 hour prior to the procedure to ease any discomfort.

Arrive with a full bladder. You will be asked to provide a urine sample.

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## What to expect during the test

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The radiology staff will assist you to the procedure area, where you will be asked to change into a gown and collect a urine sample.

The test begins the same as a routine gynecological exam. A speculum is inserted into the vagina so the cervix can be visualized.

A narrow tube (cannula) is inserted into the opening of the cervix, and contrast solution is injected into the uterus. You will likely feel cramping and discomfort as the solution is injected. Take slow deep breaths to help relax.

As the solution is injected, the radiologist takes a series of X-ray pictures. When the procedure is complete, the cannula is removed.

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## After the test

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It is normal to experience cramping and discomfort after the procedure. These symptoms should decrease over the 12 to 24 hours after the procedure. Lying flat may help.

Slight bleeding or spotting is normal for a few days following the HSG. Please notify your physician if you experience heavy vaginal bleeding, bleeding that continues longer than one week, severe cramping, or a temperature greater than 100.5 degrees F.

You may resume most normal activities.

The physician will discuss the results of the test with you at the completion of the test. Do not hesitate to ask questions at any time during the procedure should you have any concerns, need help or require further explanation.

At your next appointment, your physician will discuss the implications of the test results on your treatment plan.

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# Saline infusion sonohysterogram (SIS)

A saline infusion sonohysterogram (SIS) is an ultrasound that visualizes the uterus and fallopian tubes. The test is performed in the office by a physician or nurse practitioner. The SIS is usually performed a few days after the end of your menstrual period and prior to ovulation. For most women, the test will occur between Day 5 and Day 11 of your cycle. The information from your test will help your physician determine the condition of your uterus and fallopian tubes.

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## Preparing for the test

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Please call the office on Cycle Day 1 (first day of a full menstrual flow) to make your appointment for the SIS. If Cycle Day 1 is a Saturday or Sunday, please call on Monday morning.

Most women experience mild to moderate cramping during the procedure. It is recommended to take 600mg of ibuprofen 1 hour prior to the procedure to ease any discomfort.

Arrive with a full bladder, as you will be asked to provide a urine sample.

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## What to expect during the test

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After you collect a urine sample in our restroom, you will be asked to change from the waist down in our exam room.

At the start of the test, a speculum is inserted into the vagina so the cervix can be visualized.

A narrow tube (cannula) is inserted into the opening of the cervix. The speculum is removed and the ultrasound probe is inserted into the uterus. As saline solution is injected into the uterus, you may feel cramping and discomfort. Take slow deep breaths to help relax.

As the solution is injected, the practitioner takes a series of sonographic pictures. When the procedure is complete, the cannula is removed.

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## After the test

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It is normal to experience cramping or discomfort after the procedure. These symptoms should decrease over the 12 to 24 hours after the procedure. Lying flat may help.

Bleeding or spotting is normal for a few days following the SIS. Please notify your physician if you experience heavy vaginal bleeding, bleeding that continues longer than 1 week, severe cramping, or a temperature greater than 100.5 degrees F.

You may resume most normal activities immediately following the SIS.

Your physician or nurse practitioner will discuss the results of the test with you. Do not hesitate to ask questions at any time during the procedure should you have any concerns, need help or require further explanation.

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# Genetic carrier screening

Northwestern Medicine Fertility and Reproductive Medicine offers screening to determine whether you are a carrier for genetic mutations.

## **What it means to be a carrier**

A gene is a piece of DNA that is responsible for an inherited trait. Each of us inherits two genes for each trait, one from our mother and one from our father. All of the genetic diseases in this screening program are inherited the same way.

If you inherit only one gene with a change or mutation for the disease, you are merely a “carrier,” meaning that you have the gene with the mutation and can pass it on to your children, but it does not affect your health. If you inherit one gene from each parent for the same disease (two copies of the gene with a mutation for the disease), you do not have a normal functioning copy of the gene; this means you have the disease.

Since carriers are healthy, the only way to detect a carrier is through screening. Carriers usually do not have a family history (since it needs to come from both sides of the family). When we discuss the chances of carrying the gene for a particular disease, we assume you do not have a family history.

If you do have a family history, you actually have a higher chance of carrying the gene than the general population. It is important to discuss your family history with your physician.

## **How screening is done**

The screening is done through a simple blood test. There are no special preparations needed. If you elect screening, you will be asked to complete a requisition and consent form. A blood sample will then be drawn. Results are generally available within 2 weeks and will be given to you by telephone. Ideally, it is recommended that you have a carrier screening prior to pregnancy.

## **Understanding your results**

For the diseases that use DNA screening, the laboratory looks for the most common mutations, or changes, in the gene. No further testing would be recommended if your results are negative.

Since carrier screening does not cover all mutations causing disease, this does not mean you are not a carrier. It does, however, mean your chance of being a carrier has been significantly reduced.

If you are found to have a mutation, this means you are a carrier of the disease. If the person contributing sperm has not already been screened, this would be recommended as soon as possible. If you and the person contributing sperm are found to be a carrier for the same mutations, your physician will refer you to a genetic counselor to further discuss potential risks for future pregnancies/children.



# Intrauterine insemination (IUI) and in vitro fertilization (IVF)

Two of the fertility treatments utilized by FRM include intrauterine insemination (IUI) and in vitro fertilization (IVF). Your treatment path will likely include one, or both, of these procedures.

## Intrauterine insemination

Intrauterine insemination, or IUI, involves the washing and injection of sperm directly into the uterus. This treatment is often the first step in fertility treatment for many couples, and is sometimes required by insurance prior to in vitro fertilization (IVF) treatments.

IUI treatment is often paired with “empiric therapy,” the use of pills or injectable medication to enable multiple eggs to be ovulated. For patients with unexplained infertility, combining empiric therapy with IUI is optimal to performing solely IUI or empiric therapy on its own. IUI provides a less expensive and more conservative alternative to IVF. By placing washed and concentrated sperm directly into the uterus, a higher concentration of sperm is likely to reach the fallopian tubes, thus increasing chances of conception.

IUI is performed 7 days a week at our Chicago office, with the exception of certain holidays throughout the year. IUI is performed at our suburban locations Monday through Friday.

## In vitro fertilization

IVF involves egg retrieval from the female patient followed by in-lab fertilization of the eggs from collected sperm. Developing embryos are monitored in our lab and eventually transferred back to the uterus. Your specific treatment protocol and stimulation will be decided upon and individualized by your physician. Several major steps are involved in IVF treatment.

## Steps involved in IVF

- 1 Pretreatment.** This prepares your follicles to all grow at the same time. It can involve your natural cycle, birth control pills or estrogen therapy. You will have an ultrasound and blood tests to ensure your ovaries are ready for the next phase. Not all patients will have a pretreatment step.
- 2 Stimulation drugs and trigger shot.** Stimulation drugs are hormones that promote follicle growth and egg maturation. They are also called gonadotropins and are injected every day during the stimulation phase. After approximately 8 to 14 days of stimulation medications, you will be instructed to administer your **trigger shot**. This hormone is injected at the end of stimulation. It triggers your eggs to mature. Eggs are then retrieved 36 to 38 hours after the injection but before ovulation. If ovulation occurs, the eggs are naturally released and cannot be retrieved. We will let you know exactly when to take the trigger shot. This is determined by follicle size and estrogen levels. Timing of the trigger shot is extremely important.
- 3 Egg retrieval.** Egg retrieval uses ultrasound guidance to remove follicles. You will be under mild IV sedation, and you will be informed of the amount of eggs retrieved on this day.
- 4 Embryo transfer.** You will return to our office to have your embryos transferred back to your uterus. The timing of the transfer is determined by several factors, including the number of embryos and the embryo growth rate. Embryos may be frozen and then transferred back at a later time. A pregnancy test will be taken accordingly 8 to 10 days after the transfer.

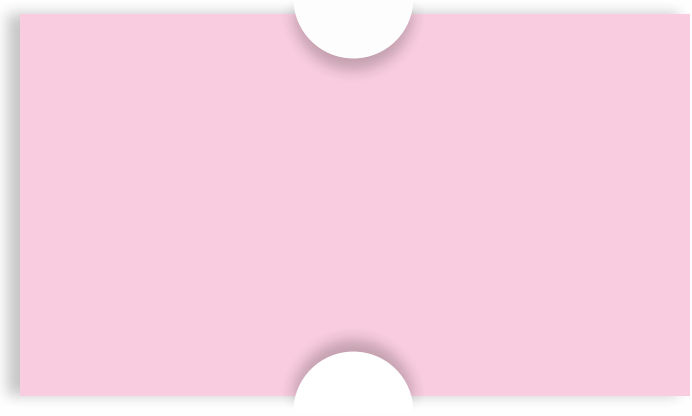
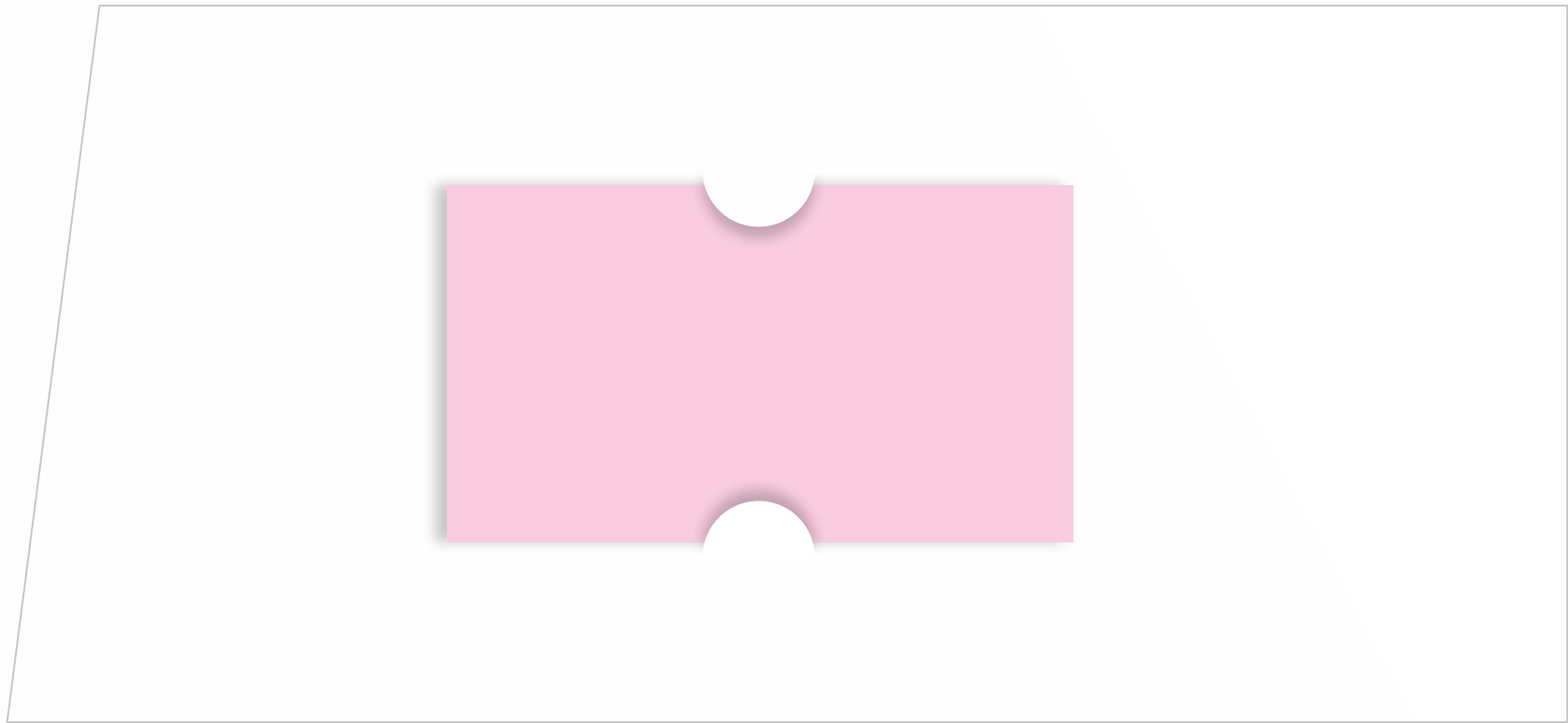
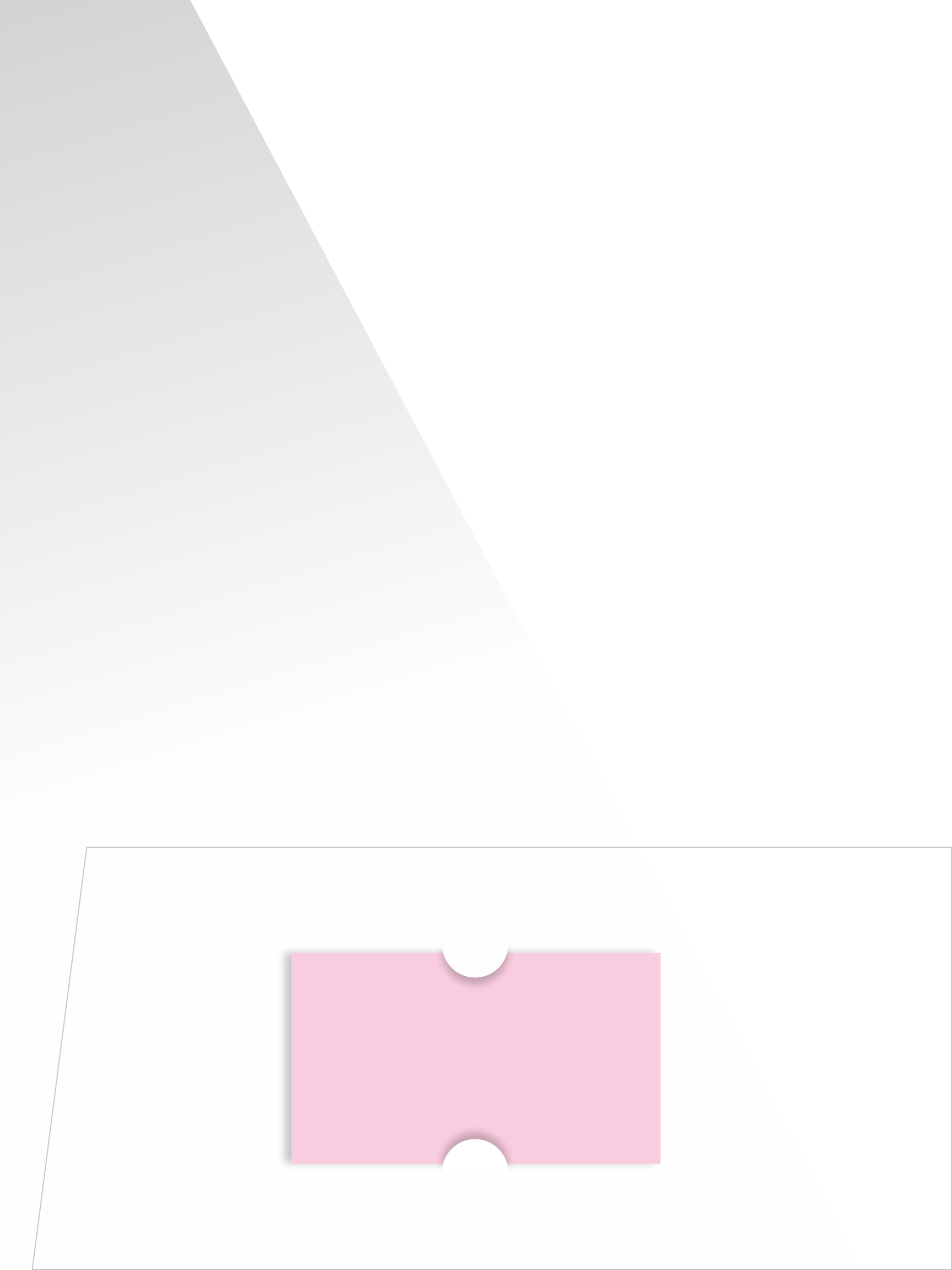


It is important to note that not all eggs will be mature and not all mature eggs will fertilize. On average, about 75 percent of the eggs we retrieve are mature; about 70 percent of all mature eggs fertilize; and 25 to 50 percent of fertilized eggs form embryos that are suitable for transfer.

Retrievals happen 7 days/week, and we do not try to schedule them for a particular day or particular physician. We are ready for your retrieval when your ovaries are ready. This can be on a weekday, weekend or holiday. We do not manipulate your cycle to best fit our schedule. This is about you and giving you the best chance at a successful cycle.

Should IVF be a treatment pursued, more information will be provided to you at the appropriate time.







Fertility and Reproductive Medicine  
[fertility.nm.org](http://fertility.nm.org)