

INFERTILITY

Understanding IVF

S. Samuel Kim, MD

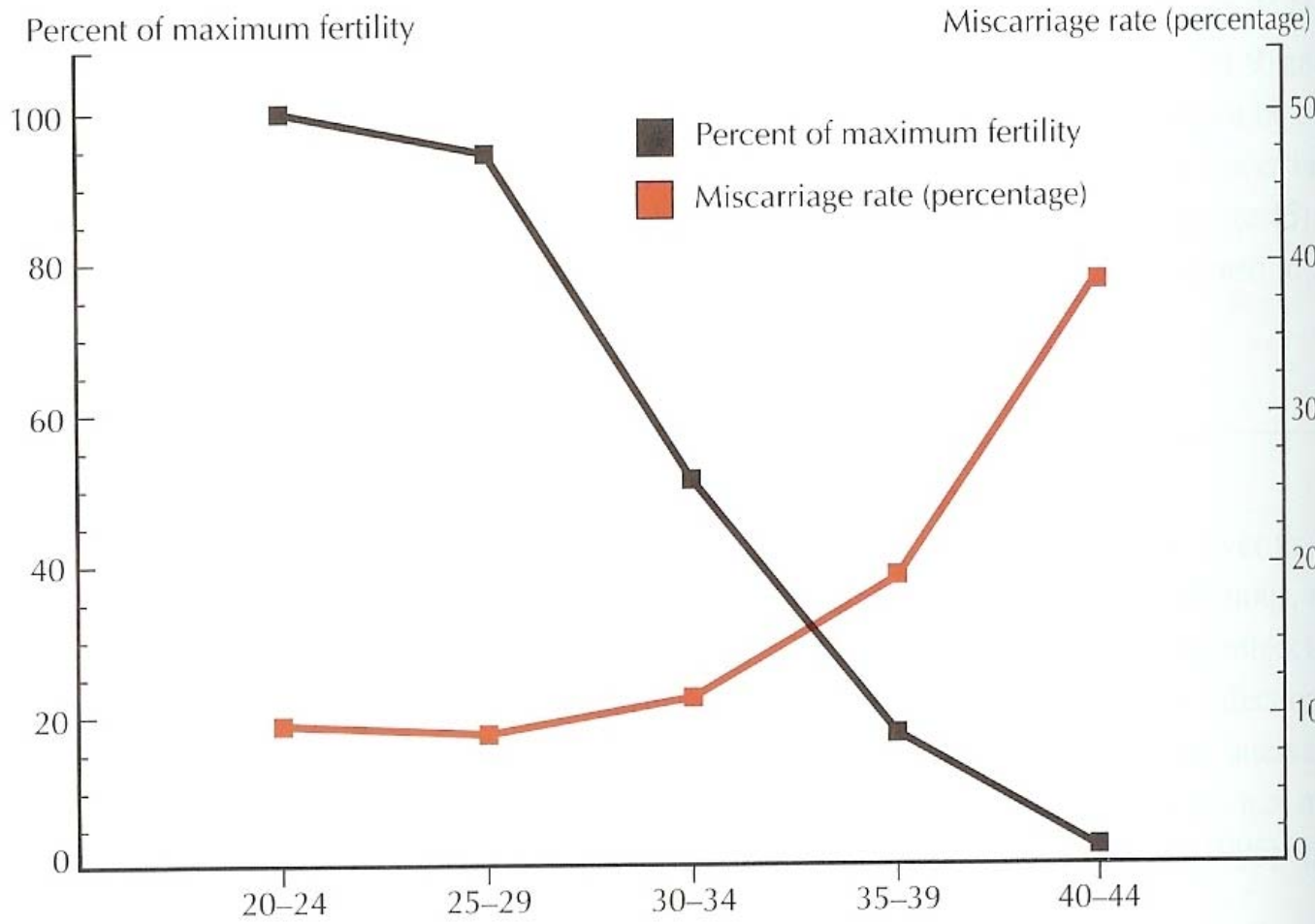
**Director, Fertility Preservation Program
Center for Advanced Reproductive Medicine**

**Associate Professor & Division Director
Reproductive Endocrinology and Infertility
University of Kansas School of Medicine**

Infertility is the inability
to become pregnant after **one year** of
unprotected intercourse.

Approximately 15% of married couples in the
reproductive age group have infertility (7.5
million couples annually in the US)

Aging and Reproduction



Lifestyle and Infertility

Factors affecting fertility:

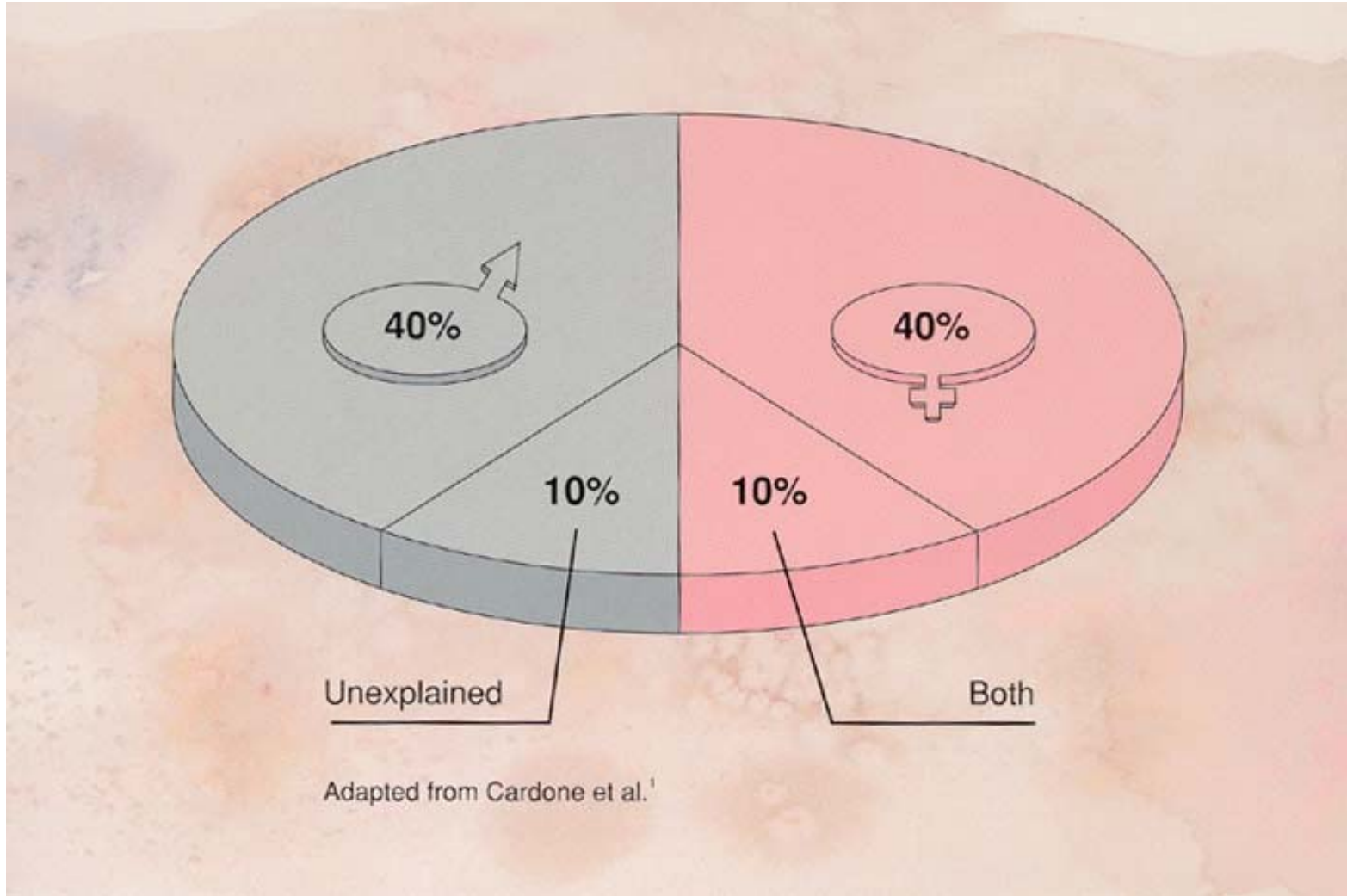
- Sexual Activity
- Weight
- Smoking
- Drug Use
- Alcohol Consumption
- Caffeine Consumption
- Exercise
- Environmental



Improving fertility:

- Body Mass Index (BMI) 20-25
- Less than 4 alcoholic drinks per week
- Caffeine intake under 250 mg/day
- Smoking cessation
- Regular Intercourse

Causes of Infertility



Evaluation of the Infertile Couples

- History and physical
- Pelvic ultrasound
- Hysterosalpingogram (HSG)
 - X-ray test of the uterus and fallopian tubes
- Hormonal profiles (e.g., FSH, E2, TSH)
- Determination of ovulation
- Antibody testing
- Semen analysis
- Postcoital testing
- Laparoscopy and hysteroscopy

In Vitro Fertilization



What is IVF?

IVF or In Vitro Fertilization is a method of assisted reproduction to increase the possibility of pregnancy.

As the term "*in vitro*" implies, the procedure fertilizes the egg with sperm outside of the body.

Who needs IVF?

There are many different reasons why IVF is recommended for patients. Some of these reasons include:

- blocked or damaged fallopian tubes
- abnormal sperm
- endometriosis or immunologic problems
- failed attempts of artificial insemination or other infertility treatment
- advanced maternal age.

Indications for IVF

- **Tubal factor infertility**
 - e.g. tubal damage, obstruction
- **Male factor infertility**
 - e.g. low sperm count, poor sperm quality
- **Pelvic factor infertility**
 - endometriosis
- **Unexplained infertility**
- **Failed conservative management**

Procedures for IVF & Embryo Transfer

1. **Controlled Superovulation (COH) utilizing medication (e.g., clomiphene, hMG, uFSH, rFSH)**
2. **Monitoring → ultrasound, hormone testing, etc.**
3. **Egg retrieval & IVF**
4. **Embryo culture → 3 to 5 days**
5. **Embryo Transfer (ET)**
6. **Luteal phase support with progesterone**
 - The luteal phase is the 2nd half of the menstrual cycle following ovulation
7. **Pregnancy test**

1. Controlled Ovarian Hyperstimulation with Exogenous Gonadotropins

New **Follistim[®] AQ Cartridge**
(follicle stimulating hormone injection)
For use only with
Follistim[®] Pen[™]

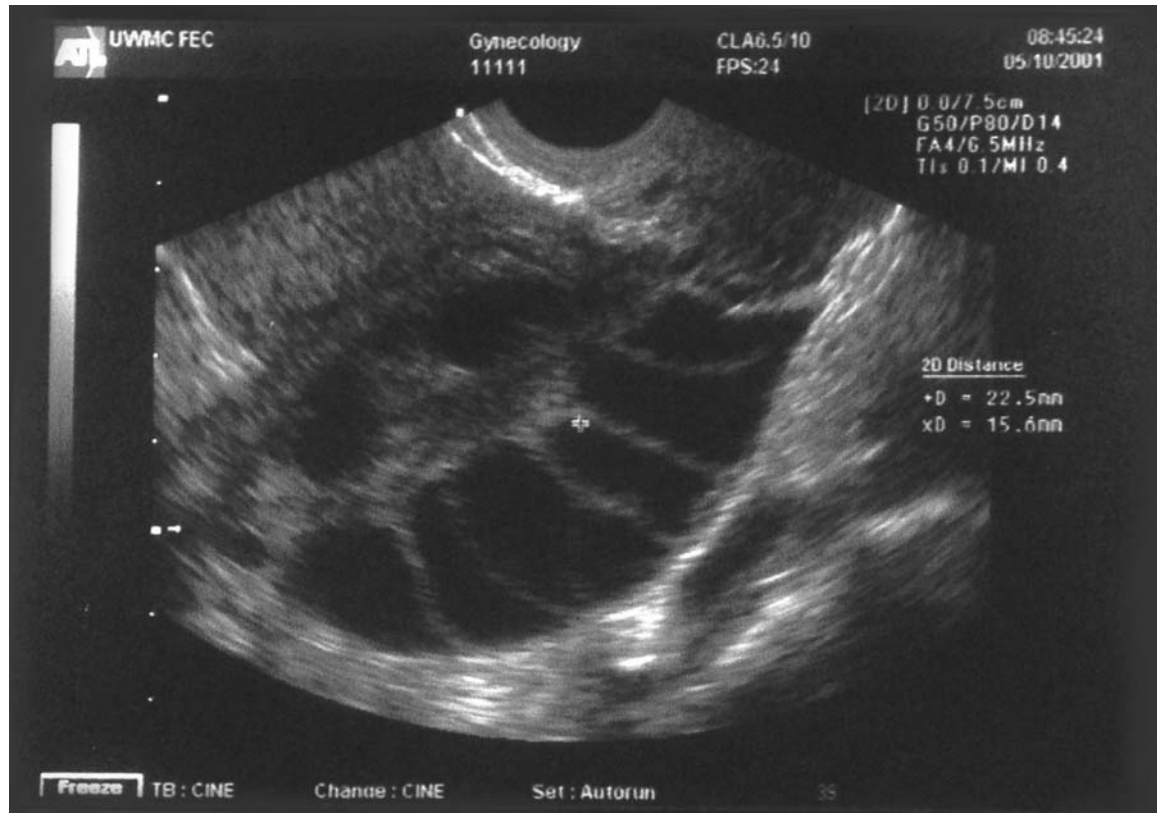


GONAL-[®]
PREGNANT WOMEN
AVOID USE



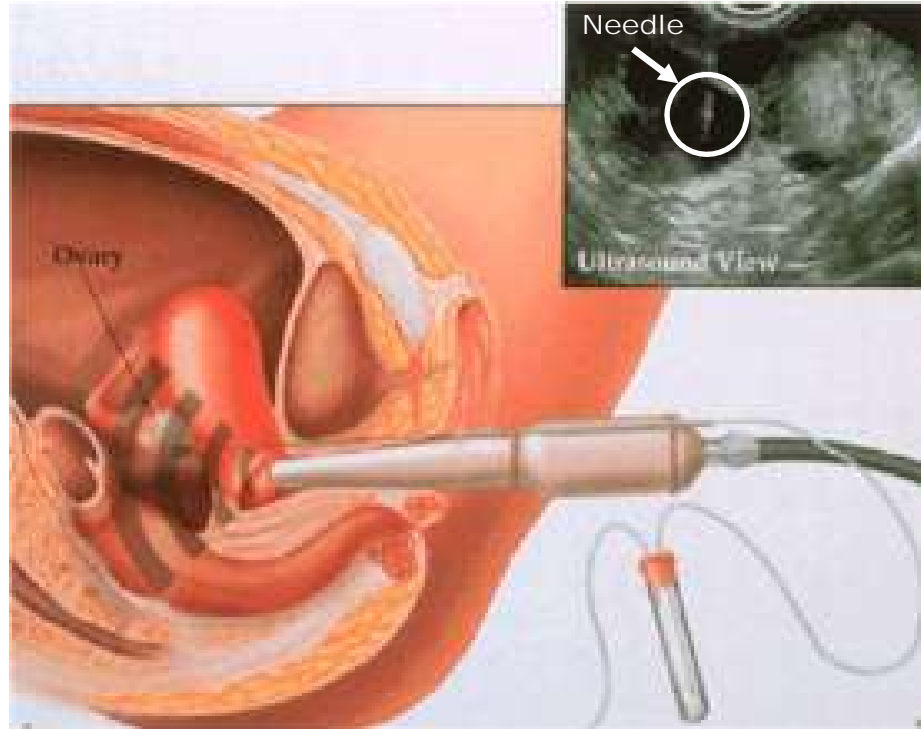
Gonadotropins are hormones involved in follicle stimulation. Patients administer at-home injectable gonadotropins for ovarian stimulation, such as those seen above.

2. Ultrasound monitoring of follicles



A follicle is a cavity within the ovary containing a single egg. In a stimulated ovary, multiple follicles will be present, such as the image above (10 follicles).

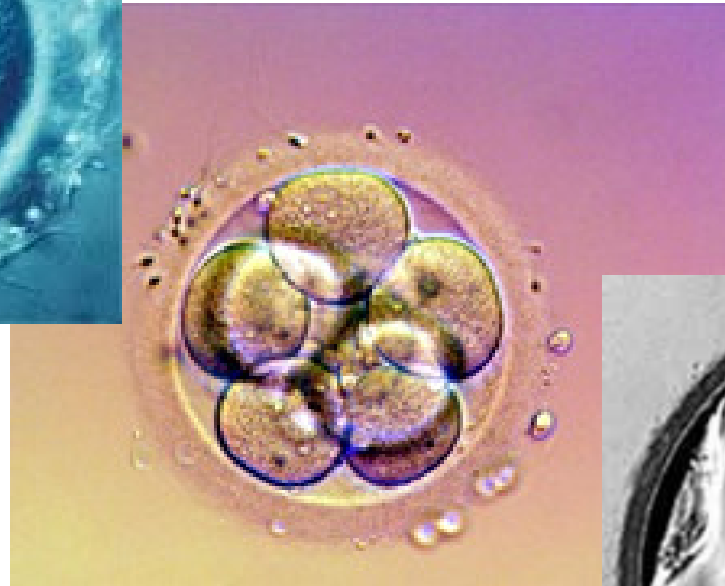
3. Ultrasound Guided Oocyte Retrieval



4. Embryo Culture



Pronucleus
(Day 1)

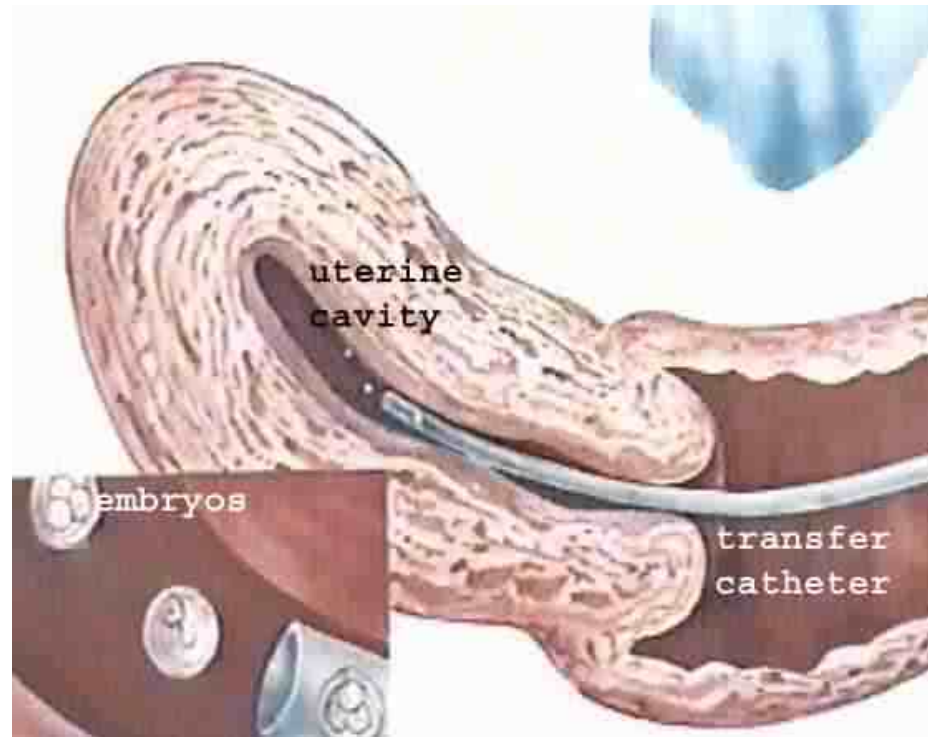


8-cell Embryo
(Day 3)



Blastocyst
(Day 5)

5. Embryo Transfer



Assisted Reproductive Technologies Offered by the Center for Advanced Reproductive Medicine

- **In Vitro Fertilization & Embryo Transfer**
- **Embryo Freezing and Storage**
- **Intracytoplasmic Sperm Injection (ICSI)**
- **Assisted Hatching (AH)**
- **Blastocyst Culture**
- **Preimplantation Genetic Diagnosis (PGD)**
- **Donor Egg IVF**
- **Testicular Sperm Extraction (TESE)**
- **Microsurgical Epididymal Sperm Aspiration (MESA)**

Freezing and Storage of Embryos

Cryopreservation Services at CARM:

- Sperm
- Embryos
- Oocytes
- **Ovarian Tissue**

Ovarian tissue preservation is a new and innovative technique. CARM is one of the few practices in the United States to offer this service. Visit www.kumc.edu/fpp/ for more information.



Intracytoplasmic Sperm Injection (ICSI)

ICSI is a highly technical procedure designed to insert a sperm into the cytoplasm of an egg using a thin glass tube under a microscope using special controls.

Indications for ICSI:

- Severe male factor infertility
- Poor quality eggs with thickened shell (zona)
- Prior or repeated fertilization failure with standard IVF
- Anti-sperm antibodies
- Use of surgically retrieved sperm directly from the epididymis or testis

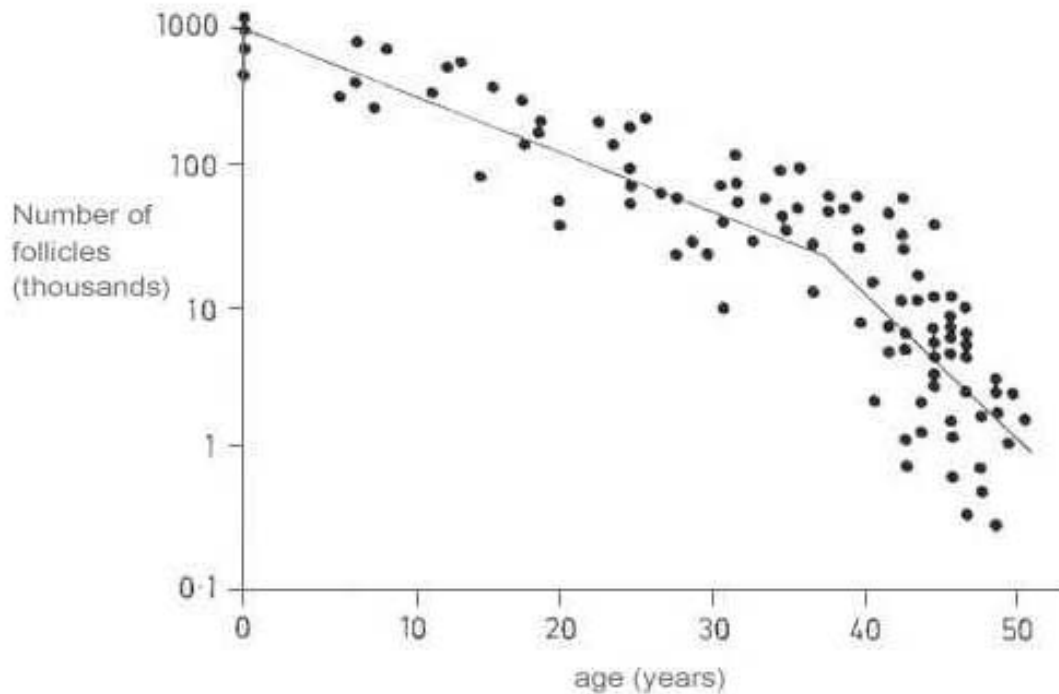
Intracytoplasmic Sperm Injection (ICSI)



Factors Affecting IVF Success

- **FEMALE'S AGE → Most Important**
- Sperm quality
- Causes of infertility
- Responsiveness to ovarian stimulation
- IVF lab quality
- Embryo transfer technique

Age and the Number of Follicles



After the age of 35 to 37, the rate of follicle loss increases dramatically.

Problems with IVF

- Emotional burden
- Financial expense
- Surgical risks
- Multiple pregnancy
- Ovarian hyperstimulation syndrome (OHSS)

IVF carries the risk of causing a multiple gestation pregnancy (twins, triplets, etc.). There is also the risk of OHSS, which can lead to serious health problems.

Fee Schedule for IVF Treatment

IVF Packages – Starting around \$7,000:

- Office Visits
- Blood Tests (hormone testing)
- Ultrasound Exams
- Egg Retrieval, including procedure room fee and surgical supplies
- Anesthesia
- Fertilization & Culture of Embryos
- Blastocyst culture (if necessary)
- Embryo Transfer with Ultrasound Guidance
- Treatment Supplies
- Consultation to review cycle and plan next step
- Does not include medications

Additional services if deemed necessary:
Intracytoplasmic Sperm Injection (ICSI)
Preimplantation Genetic Diagnosis (PGD)
Cryopreservation

Where there is a will, there is a way.

Do not give up.

Do not wait.

Visit the Center for Advanced Reproductive Medicine

Call (913) 588-6276 for an appointment with Dr. Sam Kim or Dr. Linda Nelson.

Center for Advanced Reproductive Medicine
10777 Nall Ave., Suite 200
Overland Park, KS 66211
www.kumc.edu/carm