

UCSF Center for Reproductive Health

Introduction to Fertility Care





Welcome

Welcome to the UCSF Center for Reproductive Health! We are so happy you have chosen us for your care and are looking forward to working with you.

Our mission at CRH is to combine the best elements of an academic practice – leadership within the field of reproductive medicine and cutting-edge research programs – with personalized and compassionate care of our patients.

Included in this booklet is introductory information about the structure of our practice, details about individual members of your Care Team, and an overview of diagnostic testing and fertility treatment basics.

Thank you for letting us be a part of your fertility journey.

Your CRH Team



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Starting Your Fertility Care at UCSF Center for Reproductive Health

Your Team



Fertility treatment is complex, so each doctor at CRH works closely with a dedicated team that helps coordinate different aspects of your care. Each team member's role is outlined below:

Patient Coordinator (PC): Your primary point person to help schedule labs and ultrasounds, book appointments, answer logistical questions, and make sure that your checklist is complete before you start treatment.

Nurse Coordinator: Your nurse works closely with you and your doctor to help guide you through the treatment process itself. This involves creating a treatment cycle schedule, ordering medications, discussing your protocol and, along with your doctor, answering questions and concerns that may arise during treatment.

Financial Navigator (FN): Your dedicated point of contact for all matters related to financial aspects of fertility treatment. Your Navigator can assist you in understanding your insurance coverage, estimating any out-of-pocket cost, and providing costs of fees for services. Please direct all financial or insurance-related questions to your Financial Navigator rather than other members of your team.

Biller: Works closely with your Financial Navigator to perform insurance verifications, submit authorization requests, and communicate insurance-related matters directly to your Financial Navigator.

Surgery Schedulers: Assist with scheduling specific imaging tests such as hysterosalpingogram (HSG), CT scans and MRIs. Schedule and determine insurance coverage for any required surgical procedures, such as hysteroscopy and laparoscopy.

Genetic Counselor (GC): Provide risk assessment, education and support to patients at risk for inherited conditions, those considering genetic testing of embryos in an IVF cycle, and those with known genetic disorders. GCs also assist in interpreting genetic testing results.

Reproductive Psychologist: Provide supportive counseling, assistance with treatment decision-making, introduce effective skills for managing distress, and provide referrals in the community for ongoing mental health care. Additionally provide psychoeducational counseling for people considering family building with the help of egg donation, sperm donation, or surrogacy.

Medical Assistants (MAs): Our MAs work directly with the providers and guide you through your visit which includes, rooming, taking your vital signs, drawing your blood if needed and assisting the provider with any procedures/ultrasounds.

Your Path

We recognize that each patient is at a different point in their journey when they first see us. Highlighted below are potential steps as you move forward:

1. New Patient Visit



2. Completing Your Checklist



- Basic Fertility Evaluation
 - Semen analysis
 - HSG and/or saline sonogram
 - Preconception testing
 - Ovarian reserve testing: AMH, AFC, FSH
 - Genetic carrier screening
- Financial Consultation
- Additional consultations if indicated

3. Deciding on a Treatment Plan



- Your primary doctor will create a treatment plan based on your specific history and fertility workup.
- The most common types of fertility treatments are intrauterine insemination (IUI) and in vitro fertilization (IVF).

4. Starting Treatment



- Creating a treatment schedule
- Ordering medications
- Scheduling appointments
- Managing your treatment cycle
- Making decisions about further treatment, if necessary

5. Early Pregnancy



- Ultrasound and blood test to confirm viability of pregnancy
- At 8-9 weeks of pregnancy you “graduate” to your OB who will care for you until your delivery

Lifestyle Recommendations While Undergoing Fertility Treatment

Acupuncture

- Acupuncture is fine throughout treatment.
- Recommend stopping herbal preparations as these are not regulated and may contain hormones or other agents that can interfere with treatment medications.

Alcohol

- Alcohol use leading up to fertility treatment does not affect treatment outcomes.
- Women*:
 - 1 glass of wine/beer a day is fine until ovulation or day of retrieval.
 - Minimize alcohol intake after ovulation or after embryo transfer
 - It is recommended to stop alcohol use after a positive pregnancy test
- Men*: 1-2 glasses of wine/beer a day is fine.

Body Weight

- Goal BMI <25 for all patients.
- BMI >25 can negatively impact sperm and oocyte quality.
- In women BMI >25 can decrease pregnancy rates, and increase risk for miscarriage and pregnancy complications (hypertension, diabetes).

Caffeine

- No adverse effects of moderate caffeine use leading up to or during fertility treatments.
- Recommend limiting caffeine consumption to 1-2 cups of coffee per day (~200mg) during fertility treatment and pregnancy.

Diet

- Decrease foods with a high glycemic index (processed foods, sugars, simple carbohydrates).
- Increase intake of whole grains.
- No evidence that dairy or animal protein negatively impacts fertility, though these typically contain higher levels of environmental contaminants.
- No evidence that gluten negatively impacts fertility (except in individuals with celiac disease).
- Some evidence that a Mediterranean diet is associated with higher sperm quality.

* Please note that the CRH believes gender to be expansive, however, for ease of explanations in this document we may occasionally refer to patients assigned female at birth as "Women" and patients assigned male at birth as "Men."

Exercise

- Exercise is encouraged as part of an overall healthy lifestyle.
- For intrauterine insemination (IUI) cycles: no restrictions on exercise before or after the IUI.
- For IVF cycles: moderate exercise is fine (walking, hiking, biking, light weights). Avoid running, yoga, pilates from start of stimulation until next period/pregnancy.
- For frozen embryo transfer cycles: No restrictions on exercise prior to embryo transfer.
- Moderate intensity exercise in pregnancy is fine.

Hot Tubs/Jacuzzis

- Women: preconception use is fine. Avoid after ovulation or embryo transfer and in pregnancy.
- Men: limit use as prolonged exposure to heat can negatively impact sperm quantity and motility.

Medications

- Medications to avoid or limit after cycle day 5 (IUI and IVF cycles):
 - NSAIDs (ibuprofen (Advil[®], Motrin[®]), naproxen (Aleve[®]))
 - Aspirin (in IVF cycles only, unless otherwise instructed by your doctor)
 - Anti-histamines (Benadryl[®], Claritin[®], Zyrtec[®], Allegra[®], etc)
- Medications considered SAFE during treatment and can help manage side effects:
 - Pain: Tylenol
 - Gas/Bloating: Simethicone (Mylanta[®] gas, Gas-X[®]), Tums[®]
 - Constipation: Docusate sodium (Colace[®]), senna, Miralax[®]
 - Nausea: Ginger, acupuncture
 - Yeast infection: Monistat cream[®], fluconazole (Diflucan[®])
 - Allergies/colds: Saline rinses (Neti-pot), nasal steroids (fluticasone (Flonase[®]), Nasonex[®]), Sudafed[®], Mucinex[®], Robitussin[®]
 - Cough: Guaifenesin
 - Headache: Tylenol[®], caffeine

Skin and Hair Care Products

- Botox: no data on safety of Botox in pregnancy. Recommend patients who are pregnant or trying to become pregnant avoid Botox.
- Acne treatments: avoid Retin-A and retinoids
- Very little (5% or less) of the active medication applied to the skin is absorbed into the body, so it is not thought that these products pose an increased risk of birth defects. However, as studies are lacking, we recommend using these judiciously.

Travel

- If possible, remain local from a positive pregnancy test until the first ultrasound that confirms an intrauterine pregnancy.
- It is okay to travel from the time of an IUI or embryo transfer until the time of the pregnancy test.
- Airline travel is safe in patients with uncomplicated pregnancies until 36 weeks.

Vaccinations

- Ensuring immunity against measles, mumps and rubella (MMR) and chickenpox (varicella) is important as these immunizations cannot be given during pregnancy, and infection in non-immune pregnant patients can adversely affect the fetus.
- Recommend vaccination for non-immune patients prior to attempting pregnancy. Patients need to wait 1 month prior to pregnancy after getting the MMR vaccine and 2 months prior to pregnancy after getting the varicelle vaccine.
- Vaccines recommended for all pregnant patients include: influenza and tDAP (tetanus, diphtheria, pertussis). Flu vaccine is recommended for patients undergoing fertility treatment during flu season.

Vitamins/Supplements

- For women:
 - o Folic acid (400-800mcg per day; included in prenatal vitamins)
 - o Omega-3 fatty acids (DHA, EPA)
 - o May be beneficial but not necessary (studies are limited):
 - DHEA 50-75mg per day
 - Coenzyme Q10/ubiquinol 200-600mg per day
 - Melatonin 2-4mg per day (at bedtime)
 - o Very high dose of vitamin A (>5000 IU per day) should be avoided as this has been associated with birth defects
- For men:
 - o Folic acid (5mg per day)
 - o Zinc
 - o Antioxidants may improve sperm quantity and quality.
 - o Antioxidants can be found in dietary sources as well as supplements.
 - Dietary sources:
 - Vitamin C: papaya, bell peppers, strawberries, broccoli, pineapple, kiwi, oranges, cantaloupe, kale, cauliflower
 - Vitamin E: spinach, swiss chard, sunflower seeds, almonds, asparagus, bell pepper, papaya, kale, tree nuts (almonds, walnuts, brazil nuts, hazelnuts)
 - Zinc: spinach, mushrooms, organic lamb, organic beef, scallops, sesame seeds, pumpkin seeds, oats
 - Selenium: halibut, tuna, cod, shrimp, sardines, salmon, turkey, barley
 - Supplements: Arginine, Carnitines, Coenzyme Q10/Ubiquinol, Folic acid, Glutathione, Lycopene, N-acetylcysteine, Selenium, Vitamin A, Vitamin E, Zinc

Insurance Coverage for Fertility FAQs

Insurance coverage for fertility care ranges from non-existent to comprehensive, and understanding your options can make a difference when navigating treatment options with your doctor. This guide is intended to help you start the process of understanding your fertility benefits.

Insurance terms are confusing. What do they mean?

- PPO plans (Preferred Provider Organization) typically do not require any referral but it is important to call the plan prior to any initial consultation/treatment to check with them regarding this issue.
- HMO plans (Health Maintenance Organization) ALWAYS require a pre-authorization from your Primary Care Physician (PCP) for a specialist visit.
- EPO plans can be either Managed Care or not. Please check with your plan to make sure any registration or pre-authorization/certification issues have been resolved prior to your initial consultation.
- FSA (Flexible Spending Account) is also known as a health saving account. It essentially moves the full burden of costs to you, the patient. If you do not spend any money on health care, you get to save the money in a special tax-free account. If you do utilize any health care services, you pay for the cost yourself.
- Co-payment is the amount due for an office visit (i.e. consult, follow-up visit, etc.). This fee is due at the time of service and is a pre-determined amount set by your health plan.
- Co-insurance is the percent of patient financial responsibility pre-specified by your health plan.
- Deductible is the pre-determined amount (or percentage) of expenses that must be paid.

Does insurance cover infertility treatments?

- The answer to this question is not a simple yes or no
- You will need to contact your insurance directly to find out whether your employer has purchased infertility benefits and the extent of the infertility coverage

“Common” services that may be considered fertility-related and thus may not be covered:

- Diagnostic testing
- Saline sonogram
- Surgery
- Artificial Insemination (AI/IUI)
- In Vitro Fertilization (IVF)
- Egg cryopreservation

Whom should I speak to regarding insurance coverage?

- Your first call should be to your health plan's member services department
- You can also call your employee benefits office within the HR department
- Your HR representative should be able to walk you through your options

What information do I need before contacting my insurance or employer?

- Name of the insured person
- Employee/Patient ID number or SSN
- Employer name
- Insurance plan name
- Group number
- Patient's name and DOB

Questions for your insurance provider:

- What are the specific infertility benefits in my plan?
- Will I have to meet a deductible before coverage begins? If so, how much?
- What is my level or percentage of coverage once my deductible has been satisfied?
- Is there a maximum payment or cycle cap on infertility treatment or on specific procedures?
- Are my infertility medications covered? If so, is the medication benefit separate from my infertility dollar or cycle maximum?
 - o Please note that we do not dispense or bill for medications. Once you have a finalized medication protocol, please contact the outside specialty pharmacy of your choice to request a financial quote.
- Are there any exclusions or restrictions on my policy?
 - o "Is there an age limit?"
- Are there any criteria that must be met before you can access your benefits?
 - o "Am I required to have been trying to conceive prior to being able to access my infertility benefit?"
 - o "Is there an IUI requirement prior to proceeding with IVF?"
 - o "Are there any required lab tests that I must complete prior to accessing my infertility benefit such as FSH or E2 (estradiol)? If so, how often must I complete these labs?"
- Which blood draw labs/pharmacies are contracted with my insurance carrier?

Questions for your employer:

- Does my current health plan cover infertility treatments?
- If my current plan does not cover infertility treatment, is there another plan available that provides benefits? If so, what is the cost difference between the two plans? How and when can I change plans?
- Is there any required waiting period before I can start infertility treatment for pre-existing conditions?

What if I'm not covered?

- We offer a self-pay discount for patients that do not have insurance coverage or may have a limited benefit. Kindly note that you may not submit receipts or claims to insurance for reimbursement for self-paid services. The codes used to reflect this discounted rate are not recognized by insurance payers.
- Additionally, due to the nature of our self-pay packages, you are not able to self-pay for certain portions of an IUI or IVF cycle while billing insurance for others. The decision to self-pay or bill insurance must be made prior to the start of each treatment cycle.
- Additional resources for financing fertility treatment can be found through RESOLVE (www.resolve.org) and through ARC (www.arcfertility.com).

Glossary of Common Fertility Terms

Ovarian reserve testing: Tests that are performed to evaluate a patient's total egg count. This information is used to estimate the number of eggs that can develop at one time utilizing fertility drugs. Common ovarian reserve tests performed at CRH include antral follicle count (AFC) and anti-Mullerian hormone (AMH).

Antral follicle count (AFC): Antral follicles contain eggs in their latest stages of development, and are visible on transvaginal ultrasound. The AFC is the total number of antral follicles present in both ovaries.

Anti-Mullerian hormone (AMH): A blood test for a hormone that is produced by antral follicles.

Egg quality: Refers to the likelihood that an individual egg can result in a viable pregnancy. Increasing age results in lower egg quality. This is why the age of the egg is such an important factor in estimating the chances of getting pregnant naturally or with fertility treatment.

Semen analysis (SA): An evaluation to determine the number of moving sperm present in a semen sample.

Hysterosalpingogram (HSG): An X-ray done by fertility doctors or radiologists used to determine if the fallopian tubes are open. At UCSF, this test is done by our Radiology Department.

Saline sonogram (SIS or SAS) and FemVue: A specialized ultrasound to evaluate the shape of the uterine cavity. This test is done by injecting water through the cervix and into the uterus during a transvaginal ultrasound. A FemVue is performed similarly to a saline sonogram, but includes an evaluation of the fallopian tubes as well, to determine if they are open. At UCSF, this test is done in the office by a fertility doctor.

Genetic carrier screening: This is a blood or saliva test used to screen for genetic diseases before pregnancy. This test can assess your risk for having a child with one of several hundred genetic disorders, such as cystic fibrosis or Tay-Sachs. A person can be a "carrier" of a gene for one of these diseases without knowing it. In most cases, the child is only at risk if both the person contributing the egg and the person contributing the sperm are "carriers" for the same disease.

Intrauterine insemination (IUI): Fertility treatment that involves placing a sample of sperm through the cervix and into the uterus using a thin catheter. In some cases, medications are added to enable one or more eggs to be ovulated. IUI can be used to treat unexplained infertility, infertility due to low sperm count, or for patients using donor sperm.

In vitro fertilization (IVF): Fertility treatment that involves using medications to get multiple eggs to develop at once, followed by a surgical procedure to retrieve the eggs and fertilization of the eggs by sperm in the embryology lab to create embryos. Embryos are then frozen and/or transferred back to the uterus.

Third-party reproduction: Using donor egg, donor sperm or a gestational carrier (surrogate) in order to achieve pregnancy.





Fertility Workup

Normal Menstrual Cycle

The Menstrual Cycle

The menstrual cycle is a rhythmic sequence of events reflecting communication between the brain, ovary and uterus. This is called the hypothalamic-pituitary-ovarian (HPO) axis. Hormones produced in the hypothalamus and pituitary gland (brain) and follicles (ovary) coordinate the cycle events.

Understanding the menstrual cycle unlocks a better understanding of why your doctor gives you certain medications to promote fertility. Disorders of the menstrual cycle can also contribute to infertility.

On average, a menstrual cycle is 28 days long, but can range from 25-35 days. The cycle length is measured from the first day of bleeding in one cycle (CD1, cycle day 1) to the first day of bleeding in a subsequent cycle. There are two main phases of the menstrual cycle, the follicular phase and the luteal phase. Ovulation occurs approximately 14 days before the onset of the next menstrual period. For example, in a 28 day cycle, ovulation typically occurs around day 14; in a 26 day cycle it occurs around day 12, and in a 30 day cycle it occurs around day 16. Ovulation demarcates the transition from the follicular phase to the luteal phase.

The Follicular Phase

The follicular phase begins with the first day of bleeding (CD1). It is called the follicular phase because this is when the ovarian follicles, fluid filled structures containing one egg each, grow. Follicular growth is driven by the appropriately named follicle stimulating hormone (FSH) which is produced by the pituitary gland.

In a typical menstrual cycle, communication between the brain and ovary leads to the development of a single “dominant follicle”, which will ultimately release its egg at ovulation. As the dominant follicle grows under the influence of FSH, it starts to produce increasing levels of estrogen.

Estrogen has two basic functions in the menstrual cycle. One is to develop the uterine lining, which increases in thickness during the follicular phase. The second is to trigger the surge of another hormone, luteinizing hormone (LH), which is released from the pituitary gland when estrogen levels are at their highest, prior to ovulation. This LH “surge” leads to ovulation of the egg (oocyte) from the dominant follicle. LH is also the hormone that is picked up by home ovulation predictor kits.

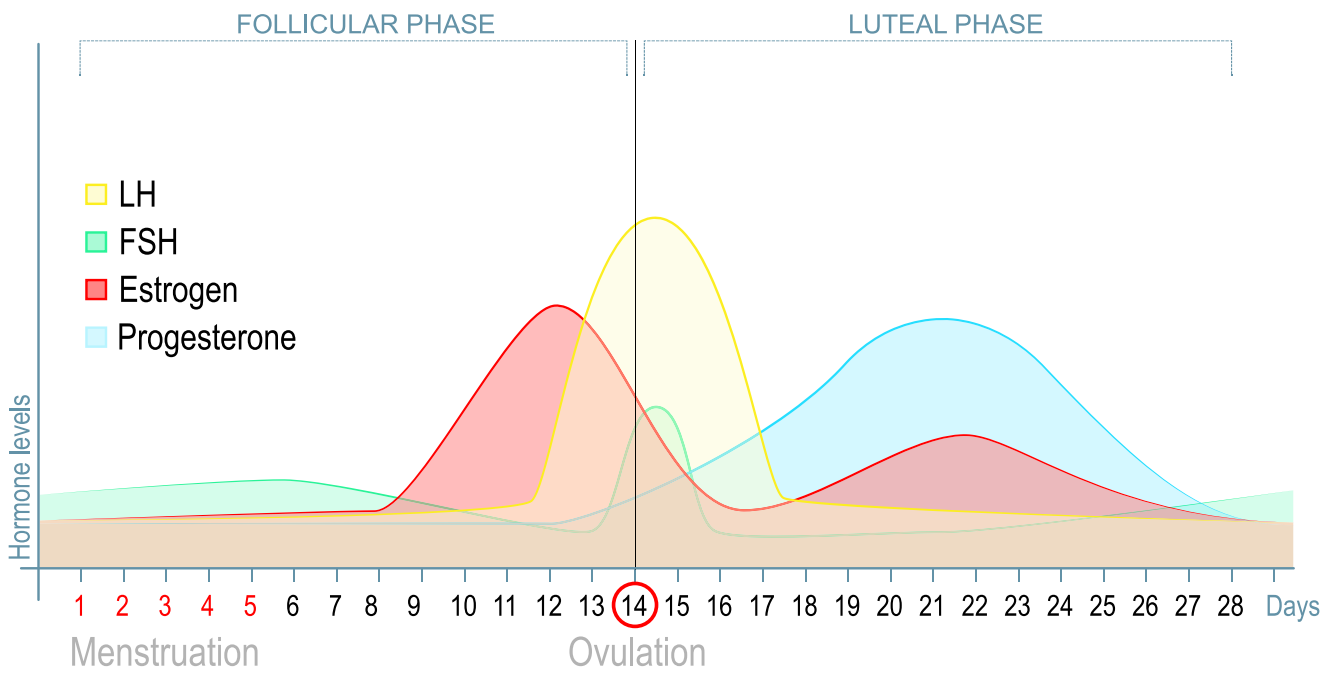
The most fertile period is from the three days leading up to ovulation through the day of ovulation. This is also called the “fertile window.”

The Luteal Phase

After ovulation, the luteal phase begins. It is called the luteal phase because the ruptured follicle that released the egg turns into a new endocrine organ called the corpus luteum. The corpus luteum produces the hormone progesterone. Progesterone causes the uterine lining to mature and become supportive for implantation of an embryo, and is also necessary to sustain an early pregnancy once implantation has occurred.

If pregnancy occurs, the uterine lining is maintained and progesterone levels stay elevated as the embryo develops.

If pregnancy does not occur, there is a drop in progesterone levels, which results in shedding of the endometrial lining and transitioning into the next menstrual cycle.



Genetic Counseling at CRH

What is a genetic counselor?

Genetic counselors are healthcare professionals with specialized graduate degrees and experience in the areas of both medical genetics and counseling. Genetic counselors work as members of a healthcare team, providing risk assessment, education and support to individuals and families as they navigate genetic testing options or their risk for inherited conditions. Genetic counselors also interpret genetic test results, provide supportive counseling, and serve as patient advocates.

When should I speak with a genetic counselor?

Patients often speak with one of our genetic counselors for one of the following indications:

- All patients: to discuss questions about risk for genetic disorders based on personal and/or family medical history
- Patients undergoing in vitro fertilization (IVF): to review the option of preimplantation genetic testing in an IVF cycle
- Patients using donor eggs or sperm: to review the donor's family history and genetic screening results

You may speak with a genetic counselor once or over time based on indication and treatment plan.

If you and your doctor think a genetic counseling consult is appropriate for you, it will be scheduled by your Care Team.

What does a genetic counseling consult entail?

The genetic counselor will collect your family health history and discuss a risk assessment based on the information you share. During the consult, the genetic counselor will complete a thorough review of the genetic testing option(s) that are applicable for you.

What if I have other questions?

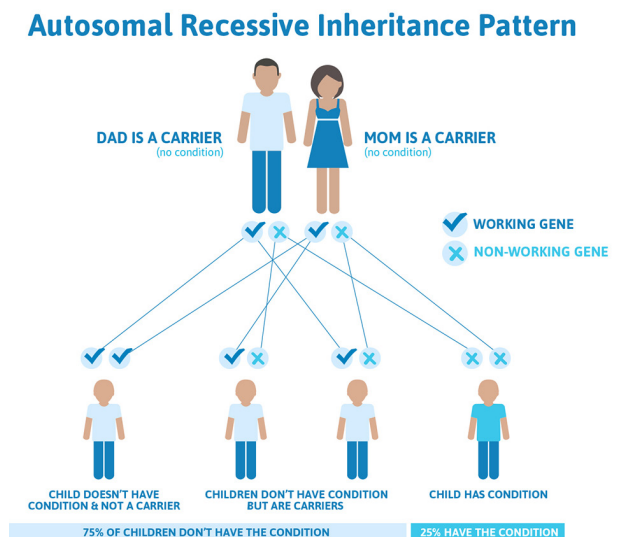
If you would like more information about whether a genetic counseling consult may be appropriate or of benefit to you, please discuss this with your primary doctor. If you have a specific question for our genetic counselors, you may contact them by sending a message to the "Genetics" team in the CRH patient portal.

What is carrier screening?

Carrier screening is a type of genetic test that can determine if a person or couple carry genetic variation that could lead to increased risk for a genetic condition in a child. Most genetic conditions included in screening are inherited in an "autosomal recessive" manner. This means that there is a 1 in 4, or 25%, chance for a child to have a genetic condition when both parents are carriers of it. Carrier screening also includes X-linked conditions. These conditions are most often passed from a carrier mother to a son who has the condition, but both sexes may show signs and symptoms of the condition. Carrier screening involves a blood draw or collection of a saliva sample.

What do carrier screening results mean?

- **POSITIVE:** A positive result means that the screening detected a genetic variation in your DNA that is associated with being a carrier for one or more of the conditions included on the screening panel. As most of the screened conditions are “recessive”, knowing the carrier status of your reproductive partner or donor is important to estimate the chance of having a child with the condition.
- **NEGATIVE:** A negative result means that the screening did not detect a genetic variation that is associated with being a carrier for one of the conditions on the list. This reduces, but does not eliminate, the chance that you are a carrier of one of the conditions included on the screening panel.



What if the results show that there is an increased risk?

If you and/or your reproductive partner or donor have carrier screening results that show increased risk, your Care Team will provide you information on how to schedule a phone consult with a Myriad genetic counselor. Based on this consult, it may be recommended for you to follow up with your physician and/or a genetic counselor at CRH to discuss what options may be available to you, including preimplantation genetic testing of embryos for the condition in question. Apart from preconception testing, other options could include prenatal testing—with an invasive procedure (chorionic villus sampling or amniocentesis)—or testing after birth.

Should I complete carrier screening now, or is it fine to wait until pregnancy?

When carrier screening is performed prior to pregnancy, it can allow for different options if there is an increased risk based on the results. Results from carrier screening may change the fertility treatment plan. For example, preimplantation genetic testing of embryos for the condition—performed as part of an IVF cycle—is possible in many cases.

I have no family history of a genetic condition. Does that mean I do not need to complete carrier screening?

Recessive conditions do not present in a family until two people who carry the same condition have a child together. This means that most children with inherited conditions are born to parents with no known family history.

What is the cost of carrier screening?

Myriad, the default carrier screening laboratory for CRH, can complete a billing investigation to determine potential coverage for testing if you elect for CRH to submit your insurance information with your sample. Myriad follows up with a personalized cost estimate, by email and text message. If you do not have insurance coverage for carrier screening, or if there is a high associated cost based on your plan, Myriad offers a self-pay cost of \$349. For additional information, please contact Myriad by calling (888) 268-6795.

Where can I go for more information about carrier screening?

If you would like general information about the carrier screening panel offered at CRH, please navigate to the following website: <https://myriadwomenshealth.com/patient/foresight-carrier-screen/>. If you have specific questions or would like to discuss carrier screening in more detail, please contact the genetic counseling team at CRH by writing to the “Genetics” team in the CRH patient portal.

How do I schedule an appointment to complete carrier screening?

If you would like to complete carrier screening, please contact your Care Team. You may either schedule a blood draw at CRH or receive a saliva sample collection kit shipped to your home address.

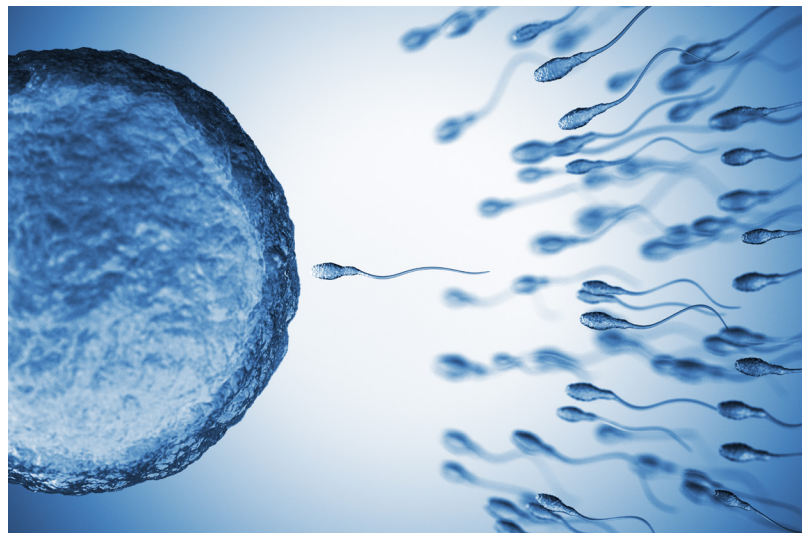
What if I will be creating embryos with contribution from a sperm or egg donor?

Carrier screening for sperm donors

Sperm banks use different carrier screening panels from different testing labs. It is important that you review any genetic carrier screening results for your donor in his profile. If you or your chosen donor is identified to be a carrier of a genetic condition, please notify your Care Team. The CRH genetic counselors can help review the results and coordinate for you to complete the same carrier screening panel as your chosen donor, if needed, to clarify any reproductive risk based on carrier status.

Carrier screening for egg donors

Whether you are planning to proceed with an egg donor through CRH or an agency, you will review any prior carrier screening completed for your donor in a “match consult” appointment with a CRH genetic counselor. At this time, the genetic counselor will share a risk assessment with you based on results. If your donor carries a genetic condition that the male contributor has not been screened for, the genetic counselor can coordinate carrier screening at that time.



Semen Analysis

A semen analysis is an important part of a basic infertility work-up, and evaluates the potential of the sperm to reach and fertilize the egg. The results of this test help you and your doctor determine the optimal course of treatment.

Before the Semen Analysis

At CRH, we perform semen analyses on-site in our andrology lab. Semen analysis appointments can be made Monday through Friday, and will be scheduled by your Care Team. Prior to your appointment, please abstain from ejaculation for 2-4 days. Please let your doctor know if you are a frequent hot tub or sauna user, have had a fever of $> 100^{\circ}\text{F}$ or illness in the past 2-3 months, smoke cigarettes or marijuana, or are taking any medication regularly.

What to Expect

Your appointment will take place at the CRH office. You will check in at the front desk with a photo ID and will be taken to a private room for the semen collection. You will be provided with a specimen cup and label and shown where to leave the cup when collection is complete.

You also have the option to collect the specimen at home and bring it in to the CRH. If you choose to do this, we will still need to schedule you for a specific time to drop off the sample so that we can process it. You must also be able to bring the specimen to our clinic from your home within 1 hour. Please contact your Care Team for further instructions if you prefer this option.

The Semen Analysis Report

The semen analysis report includes the following:

Volume: Normal range > 1.5 mL

A semen sample is composed of seminal fluid, which is produced by several different glands in the male reproductive tract, and sperm, which is produced in the testicles. A low volume can be caused by several different factors, including retrograde ejaculation (semen going into the bladder instead of out of the body) or a blockage in one of the ducts of the reproductive tract.

Concentration: Normal range > 15 million/mL

This measures the total number of sperm in the sample. Low sperm counts can be caused by decreased production of sperm in the testicles, or by blockage in the reproductive tract that prevents the sperm from being released out of the body.

Motility: Normal range $> 40\%$

This measures the percentage of sperm that are moving in the sample. Motility is important in allowing the sperm to travel through the cervix, uterus and fallopian tubes to reach the egg, and in penetrating through the egg to fertilize it. Part of the evaluation of motility includes an assessment of progression, which can range from 0 (non-motile) to 4 (moving in a fast, forward direction).

Morphology: Normal range $> 4\%$

This measures what percentage of sperm have a normal shape. Morphology is most important in determining what method to use to fertilize eggs in an IVF cycle. Morphology is not predictive of chances of natural conception or pregnancy in an IUI cycle.

If any of the above parameters are abnormal, your doctor may ask you to repeat the semen analysis and may order additional bloodwork. If appropriate, we will refer you to a reproductive urologist for evaluation.

Hysterosalpingogram (HSG)

A hysterosalpingogram is a low-dose X-ray used to visualize the fallopian tubes and uterus, and is part of a standard fertility workup prior to IUI treatment. At UCSF, HSGs are performed by our Radiology Department. During the procedure, a small amount of contrast “dye” is instilled into the uterus and images are taken as the dye flows through the uterus and fallopian tubes. Your doctor will use this information to determine if the fallopian tubes are open.

How To Prepare For the HSG:

HSGs are performed between days 7-10 of your menstrual cycle.

Please abstain from intercourse from Cycle Day 1 until your HSG exam. You will be asked to provide a urine sample for a pregnancy test when you arrive to the Radiology Department, prior to the HSG procedure.

If you are allergic to contrast dye, please call the Radiology Department to inform them. The UCSF Radiology Department can be reached at 415-353-4030.

What to Expect During the HSG:

An HSG starts like a typical gynecologic exam, with placement of a speculum to visualize the cervix. A thin catheter is placed through the cervix and is used to instill the contrast dye into the uterus. This typically causes the most cramping but only takes several minutes. The radiology staff performing the HSG will take X-ray pictures of your pelvis as the dye is injected. Once the procedure is complete, they will remove the catheter and speculum.

If you are having your HSG done at UCSF, the result and images will be available to your doctor to review. If there are any abnormalities, your doctor will contact you to discuss these further.

What to Expect After the HSG:

You may have cramping, bloating and spotting or light bleeding after the HSG procedure, which can last for up to 24 hours. You can resume your normal activities without limitations. Please contact your Care Team right away if you experience severe abdominal pain, fever $>100^{\circ}$ F, or heavy vaginal bleeding after the HSG procedure.

Saline Infusion Sonogram and FemVue

A saline infusion sonogram (SAS) is a specialized ultrasound used to visualize the cavity of the uterus. This test is used to screen for structural abnormalities that might interfere with implantation or increase risk for miscarriage. Examples of these include uterine polyps, fibroids, scar tissue or a uterine septum. A FemVue is performed the same way as a saline sonogram. It involves an evaluation of the fallopian tubes in addition to the uterine cavity, to make sure the tubes are open. Saline sonograms and FemVues are performed in our office. During the procedure, a small amount of water is instilled into the uterus while a transvaginal ultrasound is performed and images are taken. Your doctor will use this information to determine if any further procedures are needed.

How To Prepare For the SAS/FemVue:

Saline sonograms and FemVues are performed between days 5-10 of your menstrual cycle. Please contact your Care Team on Cycle Day 1 (first day of full menstrual flow) to schedule your SAS/FemVue appointment. If your Cycle Day 1 is on a Saturday or Sunday, please contact your Care Team on Monday.

Most patients experience mild cramping during the procedure. If you have had an HSG procedure before, rest assured that it is typically quicker and less painful than the HSG. To minimize cramping, we recommend that you take 800mg of ibuprofen 30-60 minutes prior to your appointment.

We ask that you take a home pregnancy test the morning of the procedure. If you are unable to do so, you will be asked to provide a urine sample for a pregnancy test when you arrive to the clinic. We understand that this can be a sensitive test to do, but for your safety it is required before performing the procedure.

What to Expect During the SAS/FemVue:

The procedure starts like a typical gynecologic exam, with placement of a speculum to visualize the cervix. If your SAS/FemVue is being performed as part of the workup for an IVF cycle, a test transfer will be done at this time. This is simply a measurement of the curve of the cervix and depth of the uterus using the same type of catheter that we will use to transfer an embryo, so that we have a “roadmap” prior to the actual embryo transfer itself. A second catheter is then placed in the cervix and is used to instill water into the uterus. the speculum is removed, and a transvaginal ultrasound placed to visualize and take images of the uterine cavity.

The physician performing the procedure will discuss the results with you, and your primary doctor will review your ultrasound images as well. If any additional testing or procedures are needed, your doctor will con-tact you to discuss this further.

What to Expect After the SAS/FemVue:

You may have cramping, bloating, spotting and/or watery discharge after the SAS procedure, which can last for up to 24 hours. You can resume your normal activities without limitations. Please contact your Care Team right away if you experience severe abdominal pain, fever >100° F, or heavy vaginal bleeding after the SAS procedure.



Treatment Options

Intrauterine Insemination (IUI)

What is IUI?

Intrauterine insemination (IUI), also referred to as artificial insemination, is the process of washing and injecting sperm into the uterus at the time of ovulation. The goal of IUI is to get a high concentration of motile sperm as close to the opening of the fallopian tubes as possible, at approximately the same time as the egg is being released.

How is an IUI performed?

An IUI procedure is performed by placing a speculum in the vagina and then inserting a thin, flexible catheter through the cervix and into the uterus. Washed sperm is then slowly injected through the catheter. The procedure takes approximately 3-5 minutes. Most patients have only mild discomfort with IUI, typically from placement of the speculum.

Who is a candidate for IUI treatment?

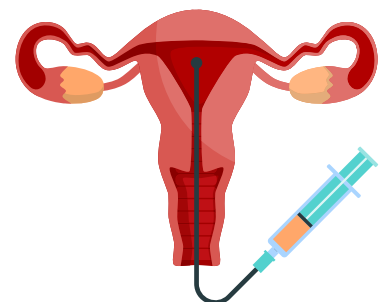
IUI is often used as the first step in fertility treatment for couples with unexplained infertility, mild male factor infertility, and patients using donor sperm. Depending on the circumstances, IUI is used either in a natural menstrual cycle or in combination with fertility medications at various doses to promote the growth of multiple eggs (called superovulation).

What are the success rates?

The chances of success per IUI cycle depend on the age of the patient undergoing IUI, and on the reason for IUI treatment. For patients undergoing IUI for treatment of unexplained infertility, success rates per attempt range from 10-12% for patients under 35 years old to 5-8% in patients 35-40 years old. In patients who are using donor sperm or those with infertility due to low sperm counts, the success rate is higher, averaging 15-20% per attempt.

What are the risks?

IUI is a very low risk procedure. The primary risk of IUI is associated with medications that can be used to increase the number of eggs being produced at once, which can lead to an increased risk for multiple gestation (twins, triplets or more). This risk is highest in younger patients and can occur in ~5% of pregnancies.



In Vitro Fertilization (IVF)

In vitro fertilization, or IVF, is a fertility treatment that involves growing multiple eggs (also known as oocytes) at once, removing them from the ovaries by a procedure known as an egg retrieval, and fertilizing them with sperm in the IVF laboratory. An egg that has been fertilized by a sperm is known as an embryo. Embryos are grown for several days outside of the body, and one or more embryos are then placed back in the uterus in a procedure known as an embryo transfer to achieve pregnancy.

There are a variety of different protocols in IVF. Your doctor will determine which approach is best for you. Regardless of the details of your protocol, there are a few consistent stages of an IVF cycle that we will review here.

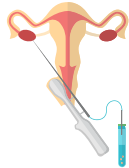


1. Ovarian stimulation hormone therapy

Ovarian Stimulation

The ovarian stimulation phase generally begins with the onset of menses (although there are certain protocols in which this is not the case). The stimulation involves taking 2-3 injections per day of medications known as follicle stimulating hormone (FSH) and luteinizing hormone (LH). These medications cause the ovarian follicles (fluid filled structures containing one egg each) to grow and mature. The ovarian stimulation lasts an average of 9-12 days, during which time you come to clinic for 5-6 ultrasounds and blood tests to monitor the progress of follicular growth. The last step in the stimulation phase is known as the trigger, which gets the eggs inside the follicles ready for retrieval. The next step, the egg retrieval, typically occurs 36 hours after the trigger.

2. Egg pick up



Egg Retrieval

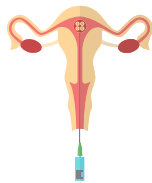
The egg retrieval is a minimally invasive procedure done at CRH clinic. The procedure is done using IV sedation administered by anesthesiologist, so you are asleep but breathing on your own. An REI physician performs the procedure, which involves using a transvaginal ultrasound to guide a thin needle into each follicle to retrieve the egg inside. The procedure takes about 30 minutes, and you should be on your way home about 1-2 hours afterwards. Please plan to take the rest of the day off as you may be quite sleepy from the anesthesia.



4. Egg fertilization

Fertilization and Embryo Culture

Retrieved eggs are combined with sperm to create embryos. Our state-of-the-art embryology lab is located on-site at our clinic and staffed by a team of highly trained embryologists. Embryos are grown in the lab for 3-6 days, at which point one or more embryo(s) can be transferred back into your uterus, and the remaining embryos are frozen. Alternatively, all embryos can be frozen for transfer at a later date.



5. Embryo transfer

Embryo Transfer

During the embryo transfer, a speculum is placed and a small catheter is used to place the embryo(s) at the top of the uterine cavity under ultrasound guidance. At the CRH, our transfer rooms are equipped with monitors so that you are able to visualize the embryo(s) and watch as they are transferred into the uterus. A blood test is done 10-14 days after the transfer to determine if you are pregnant.



Research Opportunities

Research Opportunities at CRH

IVF

APPOSE Study

- Assessment and Prevention of Pain During Ovarian Stimulation in Patients with Endometriosis
- Who: Patients with Endometriosis diagnosis, planning to undergo IVF
- Compensation: Up to \$120 over three visits

CLeAR Study

- Cytokines, Lipids, and Reproduction
- Who: Couples undergoing IVF with PCOS, endometriosis, and general infertility

FEMDiff Study

- Female Estrogen Metabolism (FEM) Differences Study
- Who: Patients undergoing IVF with all diagnoses

INVOCeLL Study

- Who: Couples seeking IVF who are open to either traditional IVF with lab culture or Intra vaginal culture device
- Compensation: Novel treatment, lower cost treatment

PACE Study

- Physical Activity in Fertility Care Study
- Who: Female, 18-43 years of age, and undergoing your first ovarian stimulation for elective oocyte cryopreservation OR in vitro fertilization

PRP Study

- Platelet Rich Plasma for Regeneration and Repair
- Who: Patients with a history of Asherman's Syndrome or thin lining willing to undergo intrauterine instillation of PRP

PCOS

PCOS Tissue Bank and Longitudinal Study

- Who: Patients with PCOS diagnosis
- Why: Explore the relationship between genetic and environmental factors that help explain PCOS

PCOS HIIT Exercise Study

- Who: Patients with PCOS diagnosis with a presence of insulin resistance
- Compensation: FITBIT Fitness Tracker for the duration of the study

PCOS and Elagolix Study

- Who: Patients with PCOS diagnosis
- Why: Investigate the effects of various doses of FDA-approved drug Elagolix as a treatment option for women diagnosed with PCOS
- Compensation: Eligible to receive compensation for their time and travel

PCOS and EndoPAT (PEP) Study

- Who: Patients with PCOS diagnosis
- Why: Investigate the relationship between PCOS and possible risk factors with developing cardiovascular disease
- Compensation: \$50

Paleo Diet Study

- Who: Patients with PCOS diagnosis
- Why: Evaluate the effects of specific diets on symptoms in PCOS patients
- Compensation: Up to \$70 for completion of all study visits

PCOS CCOUP Study

- Continuous versus Cyclical OCP use in PCOS
- Who: Patients with PCOS diagnosis and clinical or biochemical signs of high androgens
- Why: Explore the relationship between length of OCP use and its effects on androgens, quality of life, and mood symptoms

Oncofertility

MDM Study

- Medical Decision Making
- Who: Patients diagnosed with cancer presenting for their initial consultation

BRIOR Study

- The Impact of Local Radiotherapy to the Breast On Ovarian Reserve In Premenopausal Women With Early-Stage Breast Cancer
- Who: Must be Stage 1, not received chemotherapy
- Compensation: Up to \$50 in gift cards depending on number of visits

TALES Study

- Fertility Preservation using Tamoxifen and Letrozole in Estrogen Sensitive Tumors Trials
- Who: Cancer patients seeking egg cryopreservation

Pregnancy

ASPIRE Study

- Assessing the Safety of Pregnancy In the Coronavirus Pandemic: a nationwide prospective cohort
- Why: Understand how COVID-19 infection affects the health and wellbeing of pregnant mothers and their babies
- Who: Women over the age of 18 that are 4-10 weeks pregnant (gestation)

DESCRT Study

- Developmental Epidemiological Study of Children born through Reproductive Technology
- Who: Past CRH patients who have previously conceived children and current CRH patients who get pregnant
- Compensation: \$100 for the retrospective patients, up to \$75 for the prospective patients

Ovarian Health

OVA.CV

- Longitudinal cohort study to examine ovarian aging and possible effects on disease/quality of life
- Compensation: \$100 Gift Card at each of the two visits

Uterine Health

PRP Study

- Platelet Rich Plasma for Regeneration and Repair
- Who: Patients with a history of Asherman's Syndrome or thin lining willing to undergo intrauterine instillation of PRP



UCSF Center for
Reproductive Health