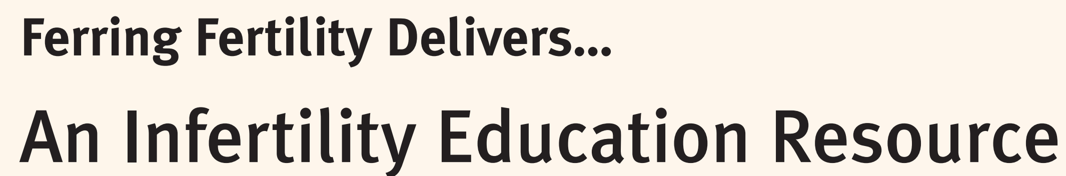

Medical Evaluation and Testing for Infertility

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Medical Evaluation and Testing for Infertility

Here you will find information about the evaluation and testing that a health care provider may perform to determine the cause of infertility. Infertility testing requires a significant investment of time, money, and emotional and physical energy. However, a full evaluation can usually uncover one or more factors that may be reducing fertility. These may be male factors, female factors, or both.

After uncovering the cause of infertility, a course of treatment can be recommended. The decision to pursue treatment—and the extent of that treatment—is a personal one. Patients are encouraged to talk with their health care provider if they have any questions or concerns during their evaluation and testing. By learning all they can, patients will be better able to make the important decisions that lie ahead.

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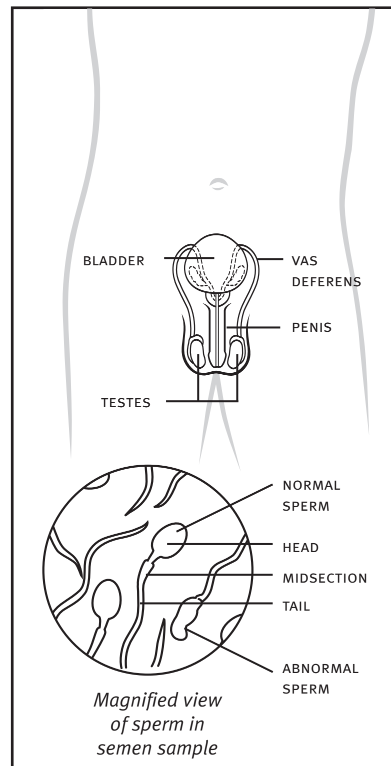
Semen Analysis

A semen analysis is a test that tells your doctor the number of sperm in your semen, whether they are normal, and how well they move.

There are many reasons why couples have trouble achieving pregnancy. A semen analysis is one of the tests your doctor will use to evaluate your problem. Your test results will tell your doctor the number of sperm in your semen (your sperm count), whether they are normal (morphology), and how well they swim (motility). A low sperm count may be caused by certain medications or a medical problem such as a blocked duct, low testosterone level, or a condition in which sperm back up into the bladder. Fever can also reduce sperm count. Some men may have enough sperm, but their sperm may not swim well enough to reach the egg. Also, sperm that are not normal in shape may not be able to penetrate and fertilize the egg. Your doctor can treat many of these problems.

Semen collection

Your doctor will want you to provide a semen sample. The sample is collected by masturbation at your doctor's office in a private, comfortable room. You will be asked to collect your semen in a sterile specimen cup. Another option is to collect your semen at home (during intercourse) in a special condom that you can get from your doctor. You must deliver your sample to the doctor's office within 45 to 60 minutes after collecting it. Speak with your doctor about instructions for transporting the sample to the office. If the results are not normal or the sample is not complete because you missed the container for sperm collection, this test may need to be repeated. Test results often vary, so you may need to do this procedure more than once.



Magnified view of sperm in semen sample

Questions & Answers

Q: What does low sperm count mean?

A: A low sperm count is fewer than 20 million sperm per milliliter ejaculated. The normal range is between 40 million and 300 million sperm per milliliter of ejaculation.

Q: What does low motility mean?

A: Motility describes the movement of the sperm. Low motility may reduce the chances of the sperm reaching and fertilizing the egg, especially if your sperm count is also low. In a normal semen sample, approximately half of the sperm have appropriate movement.

Q: What does abnormal morphology mean?

A: A normal sperm has an oval head, slender midsection, and a tail that moves in a wave-like motion. Sperm that do not have this normal shape may not be able to swim effectively or penetrate the egg.

Q: How long must I abstain from sex before the analysis?

A: You should abstain from sex for at least 2 days before the analysis, but not longer than 1 week. Check with your doctor to see if there are any other recommendations specific to you.

Q: How long does it take to get the results?

A: The test results are generally available within a few days.

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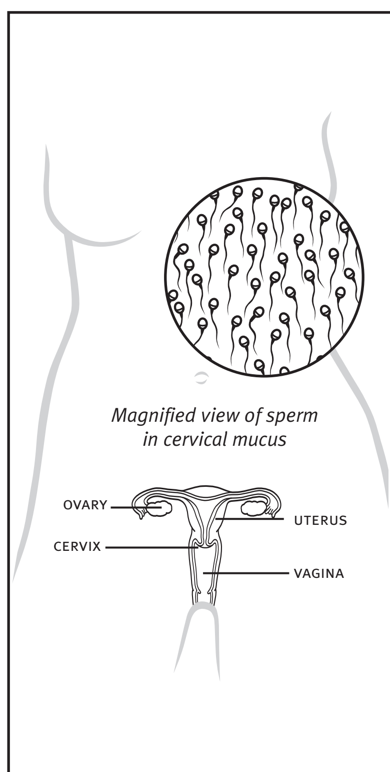
The Postcoital Test

The postcoital test (PCT) evaluates the interaction between the sperm and your cervical mucus at a time near ovulation.

About halfway through your menstrual cycle, you may notice a clear vaginal discharge. This is "fertile" mucus, produced by your cervix near the time you ovulate (release an egg from your ovary). The sperm must penetrate and swim through this mucus, then travel through the reproductive tract to reach the egg. Sometimes there is an incompatibility between the sperm and the cervical mucus, and the sperm become immobile or die. The reason this happens is not clear — the quality of the mucus may not enable the sperm to move well, or infections or antibodies in the mucus may kill the sperm. There may also be a problem with the sperm. Your doctor will examine the quality of your mucus and the interaction of the sperm with your mucus to determine if an incompatibility exists.

How this test is performed

The postcoital test (PCT) must be performed near the time you ovulate, so you and your doctor will need to estimate when your ovulation will take place. This is often difficult to do, especially if your cycle is irregular. The best way to know when ovulation will occur is to use an ovulation prediction kit that you can buy at the drugstore. The ovulation prediction kit measures the LH (luteinizing hormone) in your urine. A rise in your LH (also called an LH surge) means that you will probably ovulate within the next 24 to 36 hours. When you have an LH surge, you will need to schedule an appointment with your doctor for the next day. Plan to have sexual intercourse any time that day, *before* your appointment. The PCT is painless and takes only a few minutes — the procedure is similar to a Pap smear. Your doctor will collect a sample of your cervical mucus and examine it under a microscope to see the quality of the mucus and if the sperm are active or still.



Magnified view of sperm in cervical mucus

Questions & Answers

Q: How soon before the test should we have sexual relations?

A: You may have intercourse any time *after* your LH surge. And, it is best to have intercourse within 12 hours before the test. Your doctor or nurse may give you more specific instructions.

Q: Is it okay to bathe or shower before having the test?

A: You may shower, but do not take a tub bath. Also, do not douche or put anything in your vagina.

Q: When will I get the results of the test?

A: Your cervical mucus will be examined immediately after it is collected, so your results should be available right away.

Q: Will I have to do this test more than once?

A: You may have to repeat this test if your results are abnormal or inconclusive. Timing is very important for this test — if it is done too early before ovulation, or too late afterward, your results may be inconclusive.

Q: A couple that I know told me they found this test stressful. Is that true for most couples?

A: Most couples feel this way about infertility testing in general, but the postcoital test places a lot of pressure on couples to have sexual relations at a specific time. The added stress often makes it difficult for men to perform and it's not uncommon for couples to wait and try again during this cycle or the next one.

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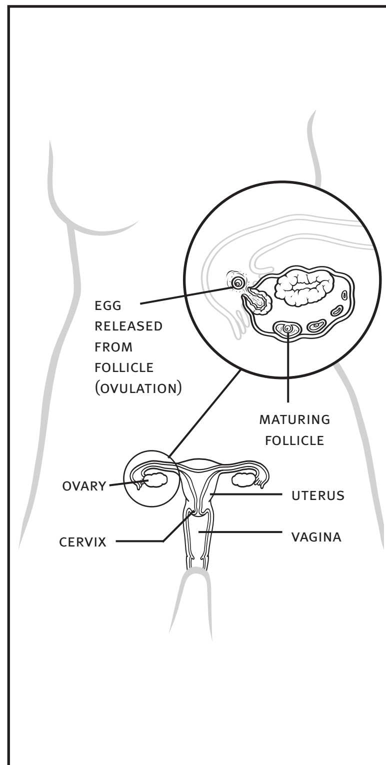
Hormonal Evaluation

Hormonal evaluation studies help identify hormonal imbalances that may impair your fertility.

Hormones control every step in achieving pregnancy — from stimulating the development of an egg to ovulation and implantation of a fertilized egg in the uterus. Each hormone that plays a role in conception must be produced in a specific amount at a precise time in your menstrual cycle. Hormonal studies measure the levels of certain hormones produced by your body during your cycle. You are likely to have a series of simple blood tests at various points in your cycle. The tests your doctor orders may help determine your diagnosis as well as identify the best treatment options.

Hormones that control ovulation and implantation of the egg

- **Estradiol** — stimulates the growth of the follicles and the production of fertile mucus from the cervix, and prepares the uterine lining for implantation of a fertilized egg
- **Follicle-stimulating hormone (FSH)** — stimulates the development of the egg
- **Luteinizing hormone (LH)** — stimulates the release of the egg from the follicle (ovulation)
- **Progesterone** — stabilizes the uterine lining for implantation of a fertilized egg and supports early pregnancy



Other hormones that can interfere with ovulation

- **Androgens** —normally, small amounts of androgens — testosterone and DHEAS (dehydroepiandrosterone sulfate) — are produced in women; excess production may interfere with development of the follicles, ovulation, and cervical mucus production
- **Prolactin —** stimulates milk production; blood levels may be higher than normal in certain disorders or if you are taking certain medications
- **Thyroid** — an underactive thyroid (hypothyroidism) can result in high prolactin levels

Questions & Answers

Q: Do I need to fast before I have my blood test?

A: Food does not usually affect your blood tests for hormonal studies, so it's okay to eat. However, you may be told to fast before having a prolactin blood test. Speak with your doctor if you are unsure about eating before this test.

Q: Do these blood tests have to be done on certain days of my menstrual cycle?

A: Yes. Your hormone levels change throughout your cycle and have to be measured at specific times to diagnose an imbalance. Your doctor or nurse will tell you exactly when to have each test done.

Q: What is a normal level for each hormone?

A: The "normal" levels vary by laboratory, so you'll have to discuss these values and your results with your doctor or nurse.

Q: When will I get the results of the blood test?

A: Some test results are available the same day; others may take up to 1 week.

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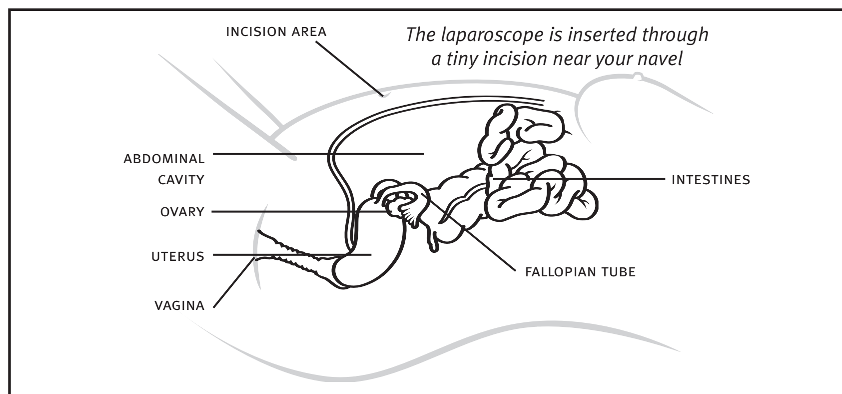
Laparoscopy

Laparoscopy (LAP-ah-ROS-ko-pee) is a surgical procedure your doctor uses to look at your uterus, ovaries, and fallopian tubes. If any problems are diagnosed, your doctor can sometimes correct them during this procedure.

Laparoscopy can help your doctor diagnose fibroids, scar tissue (adhesions), endometriosis, and blocked fallopian tubes — all of which can cause infertility. Using a narrow, fiberoptic telescope (called a laparoscope) inserted through a tiny incision near your navel, your doctor can examine your ovaries, fallopian tubes, and the outside of your uterus.



The laparoscope is inserted through a tiny incision near your navel

How this procedure is performed

Laparoscopy is a short surgical procedure performed under general anesthesia, so it is usually done in a hospital or surgery center. Once you are under anesthesia, your doctor will insert a needle and inject a harmless gas into your abdomen. The gas raises the abdominal wall so that your doctor will be able to see your reproductive organs more clearly. The needle is removed and the laparoscope is inserted through a tiny incision. Another small incision is made in your lower abdomen so that your doctor can insert a probe. The probe is used to move or lift the organs to see hidden areas. Also, a dye may be injected through your cervix into your uterus and fallopian tubes to see if they are open or blocked. If your doctor sees a problem, it may often be treated at this time with a surgical instrument that is inserted through another small incision made in your lower abdomen.

Questions & Answers

Q: How soon can I go home after the procedure?

A: You will probably stay in the recovery room for about 3 or 4 hours after the procedure. When you recover from the anesthesia, you will be able to go home. You should plan to have someone take you home after the procedure and stay with you during the first 24 hours. In some cases, an overnight hospital stay may be required.

Q: How will I feel for the next few days after the procedure?

A: Expect to feel sore and tired. You may feel pains in your shoulders and under your diaphragm. The pains are caused by gas bubbles from the procedure and should disappear in a day or two. Taking pain medication and walking or moving around should help relieve this pain. You should plan to take a few days off from work.

Q: How many scars will I have and how large will they be?

A: Most patients will have 2 or 3 scars — the one near your navel will be about 1/2 inch long. The other scars in your lower abdomen will be about 1/4 inch long.

Q: What are the risks of a laparoscopy?

A: Infection is the most common risk. Call your doctor if you:

- have a fever.
- see swelling or redness around your incisions or stitches.
- feel burning when you urinate or need to urinate frequently.
- have a discharge from the incision.

Other risks, which are rare, include complications from anesthesia and bleeding or injury to the bowel or bladder — which may be corrected during the laparoscopy.

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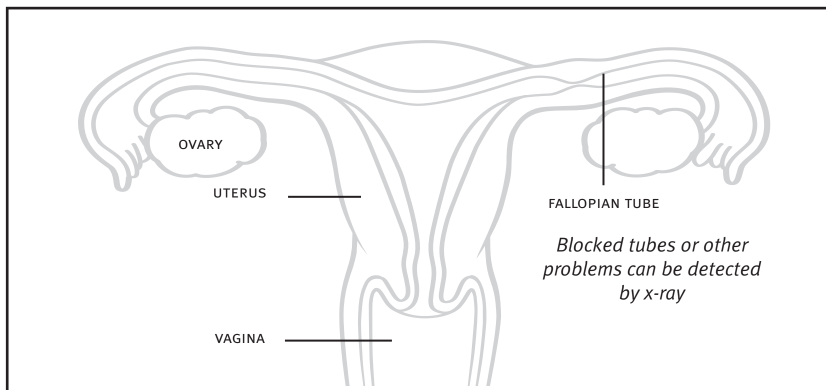
Hysterosalpingogram

A hysterosalpingogram (HIS-teh-roh-sal-PING-oh-gram) (HSG) is a test that lets your doctor examine the inside walls of your uterus and fallopian tubes.

Having a blocked fallopian tube or a growth in your uterus can reduce your chances for pregnancy. If your fallopian tubes are blocked, the sperm can't reach the egg. A hysterosalpingogram (HSG) is a test that uses x-rays and a special dye to detect scar tissue, polyps, fibroids, and other growths that may be blocking your tubes or preventing a fertilized egg from implanting properly in your uterus. Another test, called a sonohysterogram (SAHN-oh-HIS-teh-roh-gram), uses ultrasound and a special solution to detect abnormalities inside the uterus. However, the sonohysterogram cannot be used to detect blocked fallopian tubes.



Blocked tubes or other problems can be detected by x-ray

What to expect during the HSG

The HSG is usually done in a radiology lab and takes between 10 and 30 minutes. Your doctor will insert a speculum into your vagina (like when you have a Pap smear), and then place a thin plastic tube inside your cervix that will lead to your uterus and fallopian tubes. A special dye will be injected through the plastic tube. The dye should fill your uterus and fallopian tubes and spill out of each fallopian tube. Next, x-rays will be taken, and your doctor can evaluate your uterus and fallopian tubes.

Questions & Answers

Q: A friend of mine had an HSG and she said it was painful. Is that true?

A: Many women feel some cramping, especially when the dye is injected. Women who have a blocked fallopian tube may feel intense pain. Over-the-counter pain medicines such as ibuprofen can help relieve this pain or discomfort. Speak to your doctor about taking a pain medicine 30 to 60 minutes *before* the procedure to prevent or reduce pain during the test.

Q: Is it OK to drive home by myself after the test?

A: Many women have no pain after the HSG, but you may feel crampy or achy after the procedure, so it's a good idea to have someone else drive you home.

Q: What are the risks of a hysterosalpingogram?

A: The risks of the HSG include pain or discomfort, infection, and vaginal spotting or bleeding. Contact your doctor if you develop a fever or continue to feel pain for more than a few days.

Q: When is the best time during my cycle to schedule the HSG?

A: The test should be scheduled after your period ends, but *before* you expect to ovulate, usually between day 6 and 10 of your menstrual cycle. To figure out the days of your cycle, count day 1 as the day your period begins.

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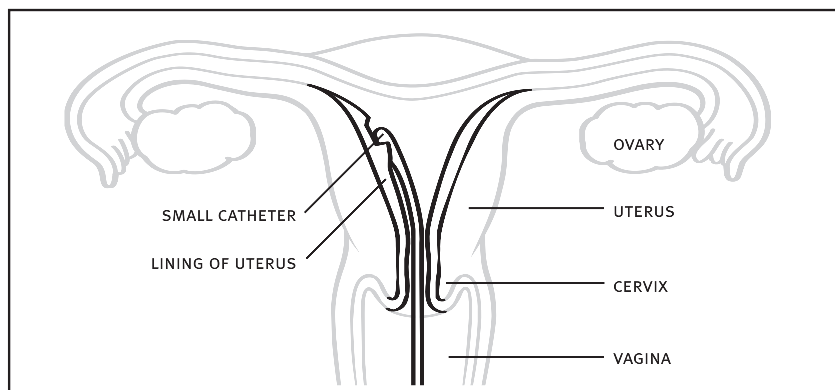
Endometrial Biopsy

An endometrial biopsy (EN-doh-MEE-tree-al BY-op-see) is a test that evaluates the endometrial tissue that lines the inside walls of your uterus.

Around the time you ovulate (release an egg from your ovary), your endometrium (inside lining of your uterus) grows thick with blood vessels, glands, and stored nutrients to allow a fertilized egg to implant and grow. If fertilization does not occur, the endometrial tissue sheds as menstrual flow to mark the beginning of your next cycle. Progesterone and estrogen control the growth and stabilization of the endometrial tissue. If your body doesn't produce enough of these hormones, your uterus may not be able to maintain a pregnancy. An endometrial biopsy is taken by your doctor and then sent to a pathologist who will examine the sample of your endometrial tissue under a microscope. Your doctor can tell if your body is producing enough of these hormones by its thickness and pattern. If your body is not producing enough hormones, medications may be prescribed to regulate them.



How this test is performed

Your doctor will place a speculum inside your vagina, insert a small catheter through your cervix into your uterus, and remove a small sample of the endometrial lining. It usually takes just a few seconds. You may feel a pinch or some cramping.

Questions & Answers

Q: What can I expect after the procedure?

A: You may have mild cramps an hour or so after the procedure and you may also have vaginal spotting. Light bleeding and spotting can last until you have your period.

Q: When will I receive the results of this test?

A: It may take as long as 7 to 10 days to prepare and interpret the biopsy.

Q: Does this test have to be done on a specific day of my cycle?

A: Yes. This test is usually done 1 to 3 days before you expect your period. Your endometrium should be very thick at this time in your menstrual cycle. You will need to let your doctor know when your period actually begins. Your doctor will compare the date your period actually started with the date it should have started, based on the thickness and pattern of the tissue sample. If there is a big difference between these dates, it may mean that your endometrium is not sufficient to support a pregnancy.

Q: What are the risks of this procedure?

A: There is a slight chance that the biopsy may disrupt an early pregnancy if you happen to be pregnant when the test is performed. To avoid this potential problem, your doctor may want you to avoid pregnancy during the month you are taking this test. You may also have to take a pregnancy test before you have the biopsy to make sure you're not pregnant.

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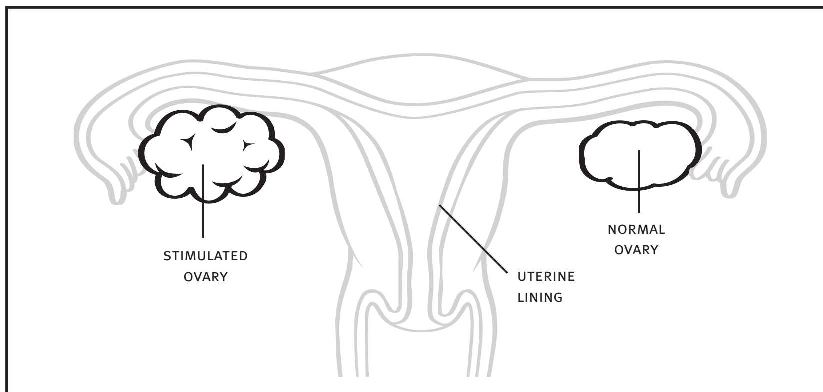
Ultrasound Testing

Ultrasound uses high-frequency sound waves to create images of your internal organs on a monitor.

Ultrasound can help your doctor monitor your ovulation and diagnose conditions such as pelvic masses and early pregnancy. Your doctor can also examine the thickness and pattern of your uterine lining. Ultrasound is also used to monitor cycles during which you are taking drugs to stimulate the follicles in your ovaries to produce multiple eggs. It is also used during in vitro fertilization (IVF) to help your doctor guide a needle into the follicles to retrieve eggs.



How an ultrasound is performed

Ultrasound uses high-frequency sound waves to create images of your reproductive organs on a monitor. Transvaginal ultrasound is performed with a scanning probe inserted into your vagina. The probe is covered and a lubricant is used before it is inserted. The transvaginal ultrasound is inserted a short distance from your reproductive organs and produces very sharp, clear images on the monitoring screen. Even the smallest fibroids and certain other abnormalities can be detected. Ultrasound examinations are relatively painless and take only a few minutes to perform.

Questions & Answers

Q: What does a transvaginal ultrasound feel like?

A: The scanning probe feels much like a tampon as it is inserted into your vagina. Once it's completely inserted you may feel some slight pressure. (If you are allergic to latex, be sure to tell your doctor, nurse, or technician before the test.)

Q: Does my bladder have to be full or empty during the test?

A: For a transvaginal ultrasound, you will empty your bladder just before the procedure.

Q: When will I get the results of the test?

A: The results are ready as soon as the test is over. However, if a nurse or ultrasound technician performs the ultrasound, you may have to make an appointment with your doctor to discuss the test results and the next steps in your treatment.

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Cycle Calendar for Tests & Procedures

Day of cycle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Date of month																																			
Intercourse																																			
Menstruation																																			
Ultrasound																																			
Blood work																																			
Estradiol																																			
FSH																																			
LH																																			
Progesterone																																			
Other tests																																			
OPK*																																			
Basal body temperature (°F) if indicated: 99.0°																																			
.8																																			
.6																																			
.4																																			
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98.0°																																			
.8																																			
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.4																																			
.2																																			
97.0°																																			

*Ovulation Prediction Kit

NOTES:

Cycle Calendar for Tests & Procedures

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Pathways Through Diagnosis & Treatment of Infertility

EVALUATION

INITIAL SCREENING—FEMALE
Family history
Full physical exam
Personal history

MALE WORKUP
Semen analysis

RESULTS
Normal
⇢ PROCEED TO FEMALE WORKUP

Abnormal
⇢ REFER TO UROLOGIST or ASSISTED REPRODUCTION: IUI or IVF

FEMALE WORKUP
Complete physical
Menstrual and contraceptive history
⇢ PROCEED TO HORMONAL TESTING

TESTING

HORMONAL TESTING
Blood tests
Monitored cycle
Endometrial biopsy
Cervical mucus test

RESULTS
Mucus poor quality
⇢ PROCEED TO IUI

Mucus normal, sperm dead/immobilized
⇢ PROCEED TO IUI

Mucus normal, ovulation normal, postcoital normal
⇢ PROCEED TO HSG or NATURAL CYCLE

HYSTEROSALPINGOGRAM (HSG)

RESULTS
Tubes blocked
⇢ PROCEED TO SURGERY, IVF IF INDICATED

Structural problem
⇢ PROCEED TO SURGERY, IVF IF INDICATED

LAPAROSCOPY

TREATMENT

DIAGNOSES
Polycystic ovarian syndrome
Premature ovarian failure
Hypothalamic hypogonadism
Ovulatory dysfunction/luteal phase defects
Hyperprolactinemia
Endometriosis
Fibroids
Structural abnormalities

OVULATION INDUCTION

OVULATION INDUCTION AGENTS
Clomiphene citrate (CC)
Human menopausal gonadotropin (hMG)
Gonadotropin-releasing hormone (GnRH) analog
Injectable gonadotropin
Human chorionic gonadotropin (hCG)

OTHER DRUGS
Progesterone

ASSISTED REPRODUCTION

PROCEDURES
In vitro fertilization (IVF)
Gamete intrafallopian transfer (GIFT)
Zygote intrafallopian transfer (ZIFT)
Tubal embryo transfer (TET)
Artificial insemination
Micromanipulation:
Intracytoplasmic sperm injection (ICSI)
Assisted hatching

NOTES

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