

IMPROVING YOUR CHANCES

Maximizing Male Fertility



Roughly one out of eight U.S. couples will have difficulty conceiving. Infertility it is due to male factors about 1/3 of the time, and female factors 1/3 of the time. The remaining 1/3 may be due to issues with both partners, or the cause is unknown.¹

Infertility is defined as the failure to conceive after a full year of unprotected intercourse. After a year, couples should seek professional assistance from their healthcare provider. The support of a fertility doctor is very important; however, there are steps you can take on your own to help improve the chances of conception.

What Are the Causes of Male Infertility?

Varicocele

Varicocele [**var**-i-koh-seel] is a condition in which the veins surrounding the testicles become swollen and dilated. It is common, affecting 15 to 20% of men.² Men with a varicocele often have an abnormal sperm count. Varicoceles can usually be corrected with minor surgery, to improve fertility chances.

Infection

Infections of the prostate or epididymis (a duct behind the testicle) are diagnosed by finding numerous white blood cells in the semen. If infection is suspected, the urologist may request a semen culture and recommend an antibiotic.

Hormonal Problems

Sperm production is under the control of specific hormones that come from the pituitary gland (FSH, LH) and the testicle (testosterone). If the blood levels of these hormones are abnormal, sperm production may be very low or completely absent. This type of problem is diagnosed with simple blood and saliva tests and may be correctable with medication.

Genetic Abnormalities

Many cases of male infertility are caused by genetic abnormalities. These include cases in which whole chromosomes are broken or misshapen, where either a whole chromosome is missing or an extra one is present, or where individual genes on the Y chromosome are damaged.

Another type of genetic problem is sperm DNA fragmentation. In this condition, the DNA strands, which contain the genetic information in the sperm head, are filled with many breaks and nicks. This is believed to be due to oxidative stress.

Oxidative Stress

Oxidative stress is caused by the presence of reactive oxygen species in the semen. These molecules, also known as oxidants, can damage sperm. Oxidants are normally kept under control by the presence of antioxidants in the semen.

When the amount of oxidants in the semen is greater than the amount of antioxidants, oxidative stress is present. It is thought that 30 to 80% of male infertility cases are due to the damaging effects of oxidative stress on sperm.³

Blockage of Sperm Flow

Sperm are produced in the testicles and then move into the epididymis, a small duct behind the testicle, where they become fully mature. After several days in the epididymis, the sperm swim up a tube called the vas deferens toward the ejaculatory duct. Sometimes there can be a blockage of the sperm path from testicle to ejaculatory duct. A blockage could cause sperm count to be very low or zero. Sometimes a blockage can be repaired. If a blockage cannot be repaired, a pregnancy may be still achievable through IVF.

Medication and Treatment Side Effects

Both radiation and chemotherapy treatments for cancer can effect sperm production and testicular

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function. Some drugs, such as testosterone replacement therapy, temporarily stop sperm production, but this should reverse a few months after the medication is stopped.

When giving a medical history, tell the urologist about all current and past medications and illnesses.

IMPROVING MALE FERTILITY THROUGH DIET AND LIFESTYLE CHANGES

Research shows that diet and lifestyle can have a major impact on a man's fertility.

Smoking

If you smoke, stop. Cigarette smoking has been linked to lower sperm count and quality.⁴ Smoking also increases levels of oxidative stress in semen⁵ and can lead to sperm DNA damage and genetically abnormal sperm.⁶ If you have tried to quit without success, seek help from your family doctor.

Alcohol

Drinking too much alcohol has been shown to decrease sperm count and quality.⁷ Experts agree it is best to drink no more than one alcoholic beverage per day.

Sexual Activity

The likelihood of a woman becoming pregnant is much higher when you have intercourse in the three days immediately leading up to and including ovulation. These three days are called the fertile window. You can determine when the woman ovulates either by using basal temperature charts or with an over-the-counter ovulation predictor kit.

Do not use any artificial lubricants such as K-Y® jelly or Replens®, which can kill sperm.

Keep Cool

Testicles should be cooler than the rest of the body for best sperm production. The harmful effect of a varicocele on sperm production is believed to result from the extra warming of the area caused by the dilated veins. It is important to avoid sources of heat exposure to the testicles such as hot tubs, laptop computers, high-temperature work areas, or prolonged baths.

Proper Diet

Eating a healthful diet rich in fruits, vegetables, and whole grains is beneficial for sperm function and male fertility. Drinking enough water to stay well-hydrated is also important.

Exercise

Moderate exercise may be beneficial. Aim for at least 30 minutes of physical activity every day.

Environmental Hazards

If your work or hobby brings you into contact with environmental dangers such as pesticides, solvents, organic fumes, or radiation exposure, you may be unknowingly affecting your fertility by impairing sperm production.

Harmful Nutritional Supplements

Nutritional supplements that provide hormone-like substances such as DHEA or "andro" can impair fertility by stopping sperm production. Stop taking any of these supplements or any products intended to build muscle mass.

BENEFICIAL NUTRITIONAL SUPPLEMENTS

Research has shown that certain nutritional supplements may improve male fertility. A recent Cochrane Review found that antioxidants increased pregnancy and birth rates, and improved sperm motility.³

Vitamin C and Vitamin E

Vitamins C and E are antioxidants that work together to protect the body's cells from damage from oxidative stress. Vitamin C is one of the most abundant antioxidants in the semen of fertile men, and it contributes to the maintenance of healthy sperm by protecting the sperm's DNA from free radical damage.

Vitamin C helps to regenerate vitamin E and has been shown to increase sperm count, motility, and to protect the sperm's form and structure.⁸

Vitamin E is a fat-soluble vitamin that helps protect the sperm's cell membrane from damage. Men with low fertilization rates who took vitamin E supplements for three months showed a significant improvement in fertilization rate.⁹ Vitamin E supplementation in infertile men resulted in increased pregnancy rates.¹⁰

Vitamin D

Vitamin D is a fat-soluble vitamin that has several important roles in the body, including male reproduction and androgen (testosterone) status.¹¹ Research indicates that men with normal vitamin D levels have better sperm motility than men who were vitamin D deficient.¹²



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Selenium

Selenium is a trace mineral that functions as an antioxidant. Selenium is important for sperm motility. Combining selenium with vitamin E has been shown to decrease damage from free radicals and improve sperm motility in infertile men.¹³

Lycopene

Lycopene is a potent antioxidant and carotenoid (plant pigment) that is found in tomatoes. This antioxidant is also found in high levels in the testes, and research has shown that lycopene supplementation improves sperm in infertile men.¹⁴

L-Carnitine

L-Carnitine is made from an amino acid. It is produced by the body and functions to transport fat so it can be broken down for energy. L-carnitine is thought to act like an antioxidant. Its main benefit is to provide energy for sperm and increase sperm motility.¹⁵

Zinc

Zinc is an essential trace mineral that plays a role in sperm formation, testosterone metabolism, and cell motility. Zinc supplementation has been shown to increase testosterone levels, sperm count, and sperm motility.¹⁶

Folic Acid

Folic Acid is a B-vitamin that is necessary for DNA synthesis. Low levels of folic acid have been linked with a low sperm count.¹⁷ In a study, the combination of zinc and folic acid

resulted in a 74% increase in total normal sperm count.¹⁸

Coenzyme Q₁₀ (CoQ₁₀)

CoQ₁₀ is an antioxidant that is essential for cellular energy production. It is produced by the body and found in small amounts in some foods. CoQ₁₀ levels are highest during the first 20 years of life, and decline with age. CoQ₁₀ has been linked to better sperm motility. Studies have shown that three to six months of CoQ₁₀ supplementation improves sperm motility.^{19,20} In a recent study, CoQ₁₀ increased sperm density, motility, and morphology.²¹

CHOOSING A NUTRITIONAL SUPPLEMENT

Choose a supplement that has been independently certified for content accuracy and purity (by NSF International® or USP®). There are several combination-type products available for sale that claim to promote male fertility. However, the lack of government oversight makes it very important to choose products that have been independently certified.

Evaluating Male Fertility: The Semen Analysis

Couples having trouble conceiving often seek the advice of their family physician or the woman's gynecologist. Usually, as part of the initial evaluation, that physician will suggest that the man undergo a semen analysis.

How many specimens are needed?

Considerable variation in semen quality can occur from day to day or week to week. For this reason, it is usually best to give two separate specimens at least two weeks apart.

How should the specimen be collected?

Semen specimens should be obtained by masturbation. It is very important that the specimen be collected properly. First, abstain from ejaculation for at least three days before each specimen. Second, use a sterile collection container provided by your doctor's office or lab. Finally, it is best to produce the specimen at the lab so it can be tested immediately. If you must produce the specimen at home, be sure to get it to the lab within 30 minutes, and protect it from extreme heat or cold.

What do they test for?

They test for sperm count, motility, and morphology. Sperm count is the number of sperm present. Sperm motility is the percentage of sperm that are actively moving. Sperm morphology is the percentage of sperm that are shaped normally. Individual labs have slightly different standards of what is normal for each of these measurements.

What if the results are abnormal?

If the semen analyses are abnormal, the man should be evaluated by a physician, usually a urologist, who specializes in male infertility. This evaluation should start with a comprehensive history and physical examination and then may go on to include blood work, ultrasound testing, genetic testing, or specialized tests on the semen.

What if the results are normal?

A normal result on two semen analyses usually means that the man has normal fertility potential. However, there are certain situations in which a man's fertility may be low despite a normal semen analysis.