



AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE

Formerly The American Fertility Society

1209 Montgomery Highway • Birmingham, Alabama 35216-2809 • TEL (205) 978-5000 • FAX (205) 978-5005 • E-MAIL asmr@asmr.org • URL www.asrm.org

PATIENT'S FACT SHEET

Diagnostic Testing for Male Factor Infertility

Infertility may be due to problems in either the male or female partner. Male problems may be contributory in 30% to 40% of infertile couples. The initial screening evaluation of the male partner includes a history and two properly performed semen analyses. If abnormalities are revealed by either the history or analyses, the male partner should be evaluated by a specialist in male reproduction (urologist or andrologist). The semen analyses and additional laboratory tests which may be performed in the male's evaluation are discussed below.

Semen Analysis: At least two semen samples collected by masturbation on separate days are recommended. Each sample should be collected after abstaining from ejaculation for at least 48 hours, but not longer than five days. The complete ejaculate should be collected in a sterile container provided by the clinic or laboratory and should be examined within one hour of collection. Components of the semen examination and normal values are detailed below:

Liquefaction (conversion into a liquid): complete within 60 minutes	Concentration: 20 million per milliliter
Appearance: homogeneous, gray-opalescent ejaculate	Total count: 40 million sperm per ejaculate
Volume (amount): 2 milliliter	Motility (movement): 50% at one hour
Consistency: Not viscous (not thick)	pH (acidity): 7.2
Morphology (structure): 30% have normal shape* > 14% have normal shape**	White blood cells: \leq 1 million per milliliter

*Normal morphology values according to World Health Organization criteria. **Normal morphology values according to Kruger Criteria. It should also be noted if there is agglutination (clumping or sticking together) of sperm.

Endocrine (Hormone) Evaluation: Normal sperm production and sexual function are dependent on a normal hormonal environment. An endocrine evaluation should be performed if: 1) a low sperm concentration is detected, 2) there is impaired sexual function, or 3) there are other signs of endocrine disease. Endocrine evaluation includes measurement of follicle stimulating hormone (FSH) and testosterone. Luteinizing hormone (LH) and prolactin are also commonly measured.

Additional Semen Tests: These optional tests may provide more information about the semen or sperm and can help define specific abnormalities or diseases of the male reproductive system. These tests include:

- Vital staining – determines numbers of living and dead sperm.
- Antisperm antibodies – tests for antibodies that bind to sperm and may reduce fertility.
- Semen fructose – the absence of fructose, a sugar-like substance in the semen, means either the vas deferens are obstructed or that the seminal vesicles are absent.
- Peroxidase staining – differentiates white blood cells from immature sperm to assess for possible infection.
- Semen culture – checks for bacteria that may cause genital infection.
- Biochemical analysis of semen – measures various chemicals in semen such as fructose.

Specialized Tests: These tests may be useful in a small number of patients for identifying a potential male factor in a couple with otherwise unexplained infertility. The value of these tests in selecting therapy is controversial.

- Hypo-osmotic swelling test – assesses the sperm membrane for structural integrity.
- Sperm penetration assay (Hamster egg penetration test) – measures sperm-egg membrane fusion, using hamster eggs and the man's sperm to test the capability of the sperm to penetrate the egg during in vitro fertilization (IVF).
- Human zona pellucida binding test – measures the ability of sperm to bind to the zona pellucida (outer covering) of the egg. This test is also called the hemizona assay.
- Computer-assisted semen analysis (CASA) – measures precise characteristics of sperm motion.

Genetic Evaluation: The importance of genetic evaluation in infertile males with severe oligospermia (sperm counts of less than 5 to 10 million per ejaculate) or nonobstructive azoospermia (absence of sperm in semen, not due to blockage) has recently been established. These patients may have abnormalities in the number of chromosomes (karyotype) or abnormalities in the structure of the male chromosome (microdeletion of the Y-chromosome). Patients with azoospermia as a result of being born without two vas deferens frequently have a mutation of a gene responsible for the disease cystic fibrosis but do not have the disease itself.

No semen test can fully predict fertility. Not all of the tests discussed above are appropriate for every couple. The tests performed will depend upon the findings during your evaluation.

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