Name of the test
Testosterone

What is this test used for?
This test measures the amount of testosterone in the blood. Testosterone is the main sex hormone in men and it is also present in women.

In men, testosterone is produced by Leydig cells in testicles and to a lesser extent in adrenal glands. In women, small amount of testosterone is produced in adrenal glands and ovaries.
Testosterone is responsible for development of male secondary sex characteristics and maintaining muscle mass. In males, testosterone level is high during puberty. The amount of testosterone slowly becomes decreased with age.

Production of testosterone is stimulated and controlled by LH (luteinising hormone), which is produced by the pituitary gland. When testosterone level is low, LH is released and testosterone production becomes increased. When testosterone level is high, production of LH is decreased, so testosterone production is decreased as well.

Most of the testosterone in the blood is bound to SHBG (sex hormone binding globulin), about 1/3 of testosterone is bound to albumins, only a small amount of testosterone is unbound and it is called free testosterone. When testosterone test is performed, usually level of total testosterone is measured, however sometimes testing for free testosterone is needed.

Testosterone levels are usually high in the morning and low in the evening.

When is the test ordered?
Testosterone test is performed to:

- diagnose the cause of erectile dysfunction or infertility in men
- diagnose the cause of infertility or masculine physical features (deep voice, hirsutism) in women
- diagnose polycystic ovary syndrome (PCOS)
- determine the cause of early or delayed puberty in children

Testosterone test may be ordered when a woman has irregular or absent menstrual periods. It can be also ordered to evaluate testicular tumors in men, or when the patient has a hypothalamus or a pituitary disorder.

Testosterone test is often performed along with other tests, such as estrogens, DHEAS, LH, 17-hydroxyprogesterone, prolactin, etc.

How is this test performed?
A blood sample is taken from a vein.

How to prepare for the test
No preparation is needed.

Interpretation of results
In men, increased testosterone levels may be due to testicular or adrenal tumors. In women, increased testosterone levels may be due to: ovarian or adrenal tumors; PCOS. Congenital adrenal hyperplasia may also increase the amount of testosterone in the blood.

Low levels of testosterone may be due to:

- Genetic disease, such as Klinefelter's syndrome.
- Damaged testes, which can be caused by viral infection or physical injury;
- Hypothalamus or pituitary gland disorders
- Chronic disease, for example diabetes

Testosterone levels may be affected by some medications as well.