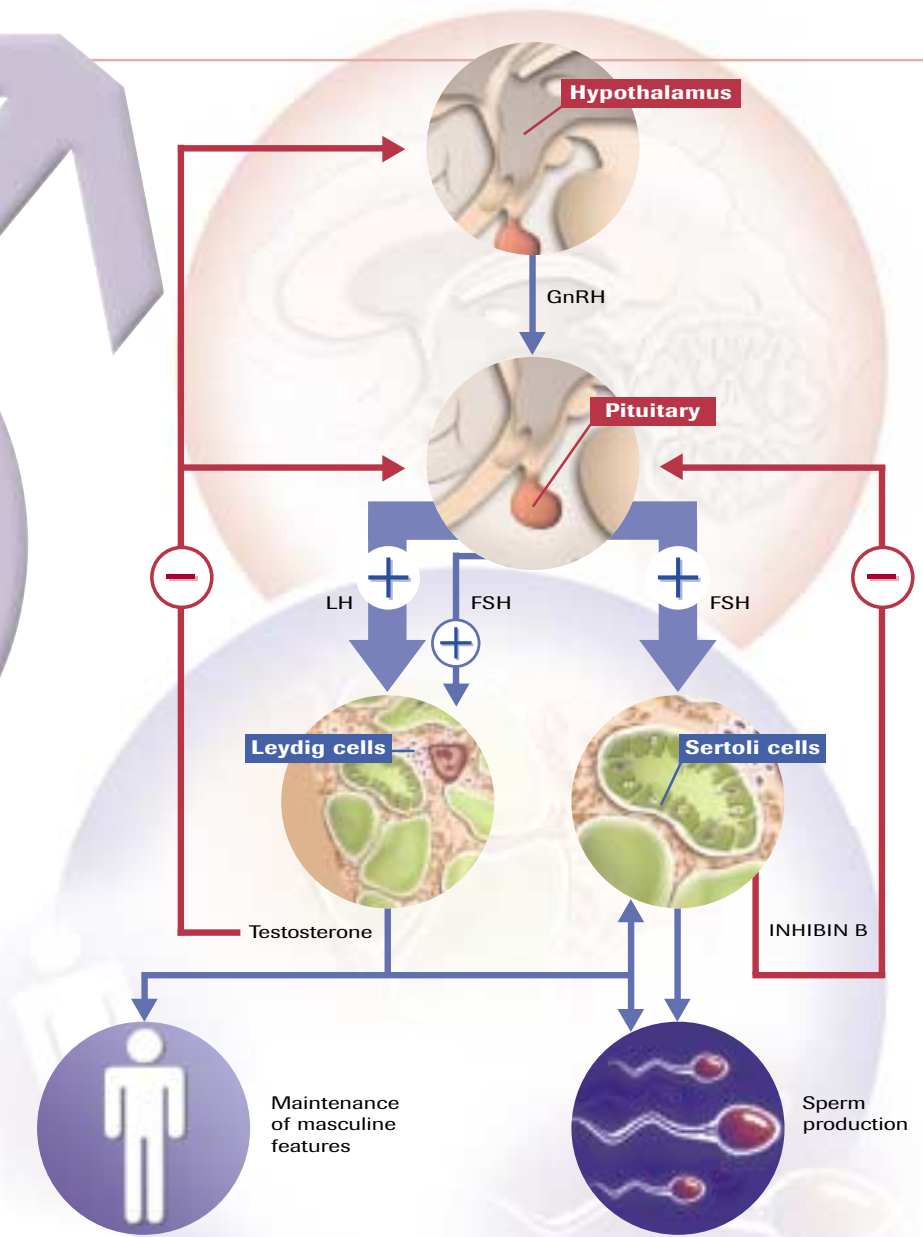


Inhibin & Male Fertility

INFERTILITY MAY BE DEFINED AS FAILURE TO CONCEIVE AFTER ONE YEAR OF UNPROTECTED SEXUAL INTERCOURSE



INFERTILITY *A male problem, a female problem or both?*

Male Infertility – Of the problems facing couples having difficulty conceiving, up to 40% are due to male factor problems, 40% female and 20% are due to combined male-female factors. Correct diagnosis is therefore of utmost importance and both partners should have their fertility status assessed **before** commencing fertility treatments.

Failure to deliver sufficient viable sperm by normal intercourse can be caused by one or more of the following reasons:

- Genital injury
- Reproductive tract infection e.g syphilis, chlamydia
- Cryptorchidism (undescended testes)
- Testicular failure
- Drug use
- Seminal fluid abnormalities
- Hormone (endocrine) abnormalities
- Varicoceles (dilated veins in the scrotum)

Subsequent investigations will include semen analysis for – ejaculate volume, sperm quantity, appearance and motility.

The main function of the testis is to produce sperm or *spermatozoa*. The total absence of sperm in the semen, the ejaculate fluid, is termed *azoospermia*. This occurs in approximately 10% of infertile males. Azoospermia may be *non-obstructive* (“testicular failure”) – where the testes fail to produce adequate amounts of sperm, or *obstructive* where the testes is producing sperm but the sperm are unable to get in to the ejaculate due to vasectomy, blockage or the absence of one or more of the delivery tubes (ie *vas deferens, epididymis, ejaculatory duct*).

For some individuals sperm production is adversely affected by a condition known as varicoceles, varicose or dilated veins in the scrotum. The failure of the blood supply to drain properly from these veins has the effect of raising the temperature of the testis and consequently results in damage to sperm production. Minor outpatient corrective surgery is usually sufficient to restore fertility in such cases. However, because sperm take 3 months to be produced and mature, recovery of fertility status may take some time.

HORMONES *The controllers of sperm production*

Hormones are chemical messengers that are secreted into the blood at one location in order to have their effect at another. They play a crucial role in reproduction and in the control of the production and release of *sperm*. Hormones secreted by the hypothalamus and pituitary gland in the brain regulate testicular activity. The hypothalamus secretes *gonadotrophin-releasing hormone (GnRH)*, which controls the hormones produced by the pituitary gland - *follicle-stimulating hormone (FSH)* and *luteinising hormone (LH)*. LH stimulates the Leydig cells to produce *testosterone*, which diffuses into the *seminiferous tubules* of the testes. Under the influence of FSH the Sertoli cells concentrate this testosterone inducing development of the *spermatocytes* into mature sperm. FSH and testosterone are therefore collectively responsible for driving sperm production.

In order to control the effects of FSH, the Sertoli cells secrete *Inhibin B* into the blood. This acts on the pituitary to limit the production of FSH. The amount of Inhibin B secreted will depend on the activity of the Sertoli cells and therefore a high level in the blood indicates good sperm production. Testosterone also acts on the brain to limit production of FSH.

Men undergoing clinical investigations for fertility problems should therefore expect to have Inhibin B, together with FSH levels, measured in their blood as well as semen analysis.

THE TESTIS

Each *testis* is composed of approximately 800 coiled tube-like structures, *seminiferous tubules*, which merge into a larger tube, the *epididymis*, that leads to the *vas deferens* and out of the testis. Between the seminiferous tubules are found the *Leydig cells*, the cells that produce testosterone, and the blood supply. The cells lining the tubules are called *Sertoli cells*. These support and nourish the *spermatocytes*, the cells that go on to develop into sperm, a process known as *spermatogenesis*. The maturing sperm are released into the tubules and they complete their maturation as they travel through the epididymis and vas deferens. Ejaculation of the mature sperm is in fluid provided by the prostate gland and the nearby seminal vesicles.

