

TABLE 20.1 Reproductive Hormones

Hormone	Action	Too Much Causes....	Too Little Causes...
Prolactin	Stimulates milk production in the mammary gland	Overproduction of breast milk in women Milk production in non-nursing patient a possible sign of a pituitary tumor Parlodel used to suppress lactation in women who choose not to breastfeed, but side effect is increased fertility	Underproduction of milk in women; baby has difficulty nursing
Follicle-stimulating hormone (FSH)	Stimulates sperm production in men and egg production in women	Increased fertility	Men: sterility Women: irregular or absent menses
Luteinizing hormone (LH)	Stimulates release of a ripened egg in women (ovulation); also helps in the production of female hormones (estrogens and progestins)	Multiple gestations (e.g., twins, triplets)	Infertility (woman cannot ovulate, so cannot conceive)
Interstitial cell-stimulating hormone (ICSH)	Stimulates production of androgens (male hormone testosterone)	Aggressiveness, excessive hair	Feminine attributes in men (e.g., high voice, small muscles)

Sometimes patients experience symptoms of pregnancy while taking contraceptive pills or tablets because normal reproductive functioning shuts down, so the body behaves as though it is pregnant (e.g., weight gain, mood swings, and breast tenderness).

If contraception fails or fails to be used properly, a woman can use postcoital high-dose estrogen to prevent pregnancy. The medications prescribed for this postcoital contraception are levonorgestrel emergency contraceptive (Plan B) and ethinyl estradiol and levonorgestrel (Preven EC).

Contraceptive hormones are also commonly delivered via vaginal ring ethinyl estradiol and etonogestrel (NuvaRing), implants, intrauterine devices (IUDs), and transdermal patches. NuvaRing is a flexible ring containing estrogen and progestin that is inserted into the vagina every month. This prevents ovulation, fertilization, and implantation. This ring is removed after 3 weeks, to allow normal menstruation to occur. A new ring is placed 7 days after removal of the previous ring.

The only available implant currently is etonogestrel (Implanon, Nexplanon), which contains a hormone that prevents ovulation, makes it more difficult for sperm to reach the uterus, and prevents implantation of a fertilized egg. The implant is a small plastic rod containing the medication and is placed in the upper arm. This method provides contraception for up to 3 years.

The levonorgestrel intrauterine system Mirena contains the hormone progestin and is placed in the uterus by a physician. This device makes the uterus a very unwelcoming place for sperm, and the lining of the uterus becomes a difficult place in which to implant a fertilized egg. The hormone-based IUD may be left in place for 5 years. Another type of IUD that does not contain hormones is the copper IUD. Copper is naturally toxic to sperm, and the fluids produced in response by the uterus and fallopian tubes are also deadly to sperm. These copper IUDs may be left in place for 10 years.

Transdermal patches such as the Ortho Evra patch contain ethinyl estradiol and norelgestromin, which are forms of estrogen and progestin, to prevent ovulation. A new patch is applied weekly for 3 weeks, and no patch is used for the fourth week, to allow a normal menstrual period to occur.

All of these hormone-based contraceptive medications must be taken with care. They have a risk for serious side effects, such as the formation of blood clots, especially in women older than 35 years of age. Smoking increases the risk for blood clots. Women with a history of blood clots or diseases involving the vascular system should not be prescribed these medications.