

Reproductive Health in Females and Males

Reproductive health refers to the condition of female and male reproductive systems during all life stages. These systems are made of reproductive organs, including the ovaries in females and the testicles in males. These organs produce and release hormones, as do other hormone-producing glands in the body such as the pituitary gland in the brain.

Female disorders include:

- Early or delayed puberty.
- Menstrual problems.
- Infertility or reduced fertility.
- Problems during pregnancy.
- Polycystic ovary syndrome (ovaries produce more male hormones than normal).
- Uterine fibroids.
- Endometriosis.

Male disorders include:

- Impotence or erectile dysfunction.
- Low sperm count.

Research Findings From NIEHS

NIEHS conducts and funds research to understand how our environment may affect both female and male reproductive health.

- **Chemical exposure may hinder reproductive assistance in women and men.** Exposure to high levels of flame retardants¹ and plasticizers² may hinder in vitro fertilization (IVF), a medical procedure used to help women get pregnant. Women with higher levels of these chemicals in their urine had fewer ovary cells, and less successful pregnancies and live births.

Flame retardant chemicals, used in some electronic, fabric, and foam products, may enter your body by breathing dust or drinking water that is contaminated with them.

Men with higher levels of flame retardants³ in their urine had less successful fertilization during IVF. In addition, urinary levels of phthalates⁴ in males, but not females, were associated with lower-quality embryos.



- **Air pollution and pregnancy hypertension.** Traffic-related air pollution increases a pregnant woman's risk for blood pressure, or hypertensive, disorders.⁵
- **Heavy lifting or shift work and decreased fertility.** Two occupational factors for women — lifting heavy loads or working non-daytime schedules — are associated with fewer eggs, which could indicate decreased fertility.⁶
- **Chemical exposure and fetal growth.** Exposure during pregnancy to phthalates⁷ and phenols,⁸ chemicals commonly found in plastics, as well as arsenic, a naturally occurring chemical found in food, soil, and water, could lead to low birth weight,⁹ and the early onset of puberty.¹⁰
- **Phthalates, parabens, and phenols associated with early puberty.** The daughters of pregnant women whose bodies had high levels of these chemicals, which are common in personal care products, started puberty earlier than normal.¹¹
- **Soy formula and menstrual pain.** Girls fed soy formula as infants are more likely to develop heavy menstrual bleeding,¹² severe menstrual pain,¹³ endometriosis,¹⁴ and larger fibroids¹⁵ later in life.
- **Vitamin D and uterine fibroids.** Women with adequate levels of vitamin D are less likely to develop uterine fibroids than those with inadequate levels.¹⁶

Ongoing NIEHS Research

The Body Weight & Puberty Study, conducted at NIEHS, seeks to discover the effect of obesity on breast tissue development in girls.

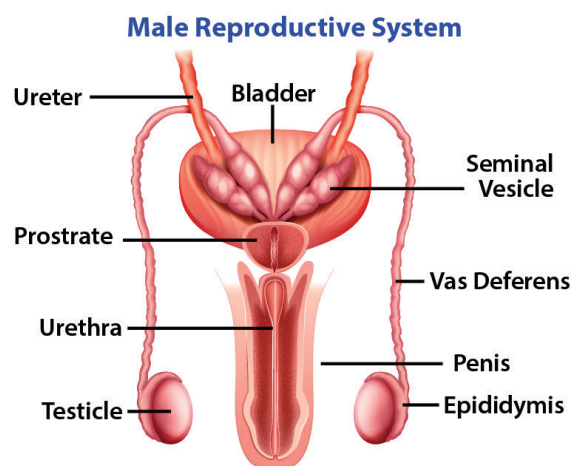
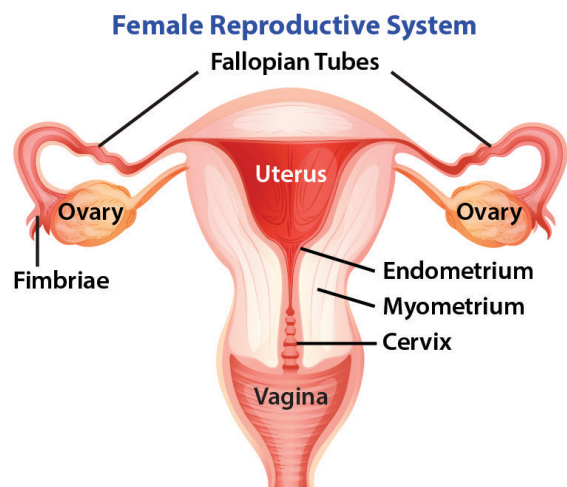
The Calorie Restriction, Environment, and Fitness: Reproductive Effects Evaluation (CaREFREE) study, conducted at NIEHS, analyzes how nutrition, fitness, and the environment affect women's menstrual cycles.

The Demystifying a Girl's First Period study, conducted at NIEHS, will help us understand why puberty is experienced differently among girls.

The Environment and Reproductive Health (EARTH) study, conducted by grant recipients in Massachusetts, analyzes the effects of environmental contaminants on male and female fertility and pregnancy outcomes.

Pregnancy and Childhood Epigenetics (PACE), a consortium of researchers at NIEHS and around the world, studies how environmental exposures in early life affect pregnancy outcomes and child health.

The Study of Environment, Lifestyle, and Fibroids (SELF), conducted at NIEHS, uses ultrasound screening to identify risk factors for uterine fibroid development in African American women.



For more information on the National Institute of Environmental Health Sciences, go to www.niehs.nih.gov.

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