



**Laboratory and Other Studies for Amenorrhea**

Test	Notes
β-HCG	Use to confirm or exclude pregnancy.
FSH	Hypergonadotropism (ovarian failure, menopause) is present when levels are >20 IU/mL. Use to rule out ovarian failure. Perform karyotyping in all patients <30 years with elevated FSH levels.
Prolactin	Because prolactin levels can be elevated by stress, breast exam, and food intake, repeat analysis on a fasting morning sample before performing cranial imaging. Hypothyroidism can also cause elevations in serum prolactin level. Phenothiazine, tricyclic antidepressants, metoclopramide, reserpine and methyldopa, can cause hyperprolactinemia. Values >100 ng/mL suggest pituitary tumor.
TSH	Hypothyroidism and, less commonly, hyperthyroidism is associated with menstrual cycle abnormalities and infertility.
Testosterone, DHEAS	Serum androgens may be helpful in the setting of hirsutism and acne; total testosterone >200 µg/dL and DHEAS >3× upper limit of normal may suggest tumor (although no tumor will be found on most occasions).
17-hydroxyprogesterone	Beneficial in screening for congenital adrenal hyperplasia.
Estradiol	Decreased in hypothalamic and pituitary amenorrhea, and in ovarian failure; should always be assessed with FSH. Very limited use in clinical practice unless evaluating primary amenorrhea.
Luteinizing hormone	Normal levels are 5-20 IU/mL, with midcycle peak three times the base level. In hypogonadotropic states (hypothalamic or pituitary dysfunction), the level is <5 IU/mL. In hypergonadotropic states (postmenopausal or ovarian failure), the level is >20-40 IU/mL. Not needed to diagnose PCOS.
Bone density test (DEXA)	May be required in a patient with amenorrhea who is estrogen deficient.
Brain MRI	Necessary to rule out a hypothalamic or pituitary mass, infection, or infiltration; critical to consider in the setting of primary amenorrhea with hypogonadotropic hypogonadism.

β-HCG = β human chorionic gonadotropin; DEXA = dual-energy X-ray absorptiometry; DHEAS = dehydroepiandrosterone sulfate; FSH = follicle-stimulating hormone; IU = international units; LH = luteinizing hormone; MRI = magnetic resonance imaging; PCOS = polycystic ovarian syndrome; TSH = thyroid-stimulating hormone.

Table from *Physicians Information and Education Resource (PIER)*, Amenorrhea module.