LOW LEVEL OF LH

Lh Deficiency, Decreased Lh

A serum luteinizing hormone (LH) levels under normal serum concentration for gender and age.

⚠️ Risk factor ♂ Male & Female

About Low level of LH

Low level of luteinizing hormone (LH) refers to levels under normal serum concentration. An isolated LH deficiency is not a common condition. As LH is secreted as pulses, it is necessary to follow its concentration over a sufficient period of time to get proper information about its blood levels. During the reproductive years, typical levels are between 1–20 IU/L. In males over 18 years of age, reference ranges have been estimated to be 1.8–8.6 IU/L (Pic. 1). LH levels are normally low during childhood and in postmenopausal women.

LH deficiency almost always occurs in conjunction with follicle-stimulating hormone (FSH) deficiency because LH and FSH are secreted by the same pituitary gonadotrope cells. The underlying cause of the failure in production of LH and FSH is the impairment of the hypothalamus to release the hormone gonadotropin-releasing hormone (GnRH) which in normal circumstances induces the production of LH and FSH. Without the correct release of GnRH the pituitary gland is unable to release LH and FSH which in turn prevents the ovaries and testes from functioning correctly. This failure in GnRH production can either be due to the absence of the GnRH releasing neurons inside the hypothalamus or the inability of the hypothalamus to release GnRH in the correct pulsatile manner to ensure LH and FSH release from the pituitary.

The treatment of LH deficiency depends on underlying cause.

Symptoms

- decreased libido
- loss of sexual function
- increased risk of osteoporosis (bone fragility)
- delayed puberty

Women:

- oligomenorrhea (light or infrequent menstrual periods)
- amenorrhea (the absence of a menstrual period)
- infertility

Men:

- lose facial, scrotal and trunk hair
- decreased muscle mass
- anemia (a decrease in the total amount of red blood cells)

Associated diseases

- Kalimann syndrome
- hypopituitarism (deficiency in pituitary hormone production)
- hypogonadism (diminished functional activity of the testes or ovaries)
- thyroid disorders
- Pasqualini syndrome (fertile eunuch syndrome)

Complications
LH and FSH have a direct action on the ovaries in women and testes in men. The absence of LH and FSH means that initially puberty will not commence at the correct time as well as the production of sex hormones is affected.

**Risk factors**

- stress
- high level of prolactin
- gonadal suppression therapy – therapy used to arrest ovarian/testicular function
- over-exercise
- eating disorders

**Prevention**

Possible prevention could be to avoid physical as well as metabolic stress (an imbalance in the body) in the term of prolonged strenuous physical exercise and extreme weight loss.

**How it can affect fertility**

In females, LH plays a crucial role in signaling ovulation, as well as stimulating the production of other hormones that will prepare the body for pregnancy. In males, LH stimulates the Leydig cells within the testes to produce testosterone, which encourages sperm production and leads to secondary sexual characteristics (features that appear during puberty). Thus, if there is decreased production of LH, the ovaries and testes do not perform their normal fertility function with the maturation and release of eggs in women and the production of sperm in men alongside their role in producing the sex hormones.

**Prognosis**

Increasing the levels of LH can help in treating the symptoms to a certain extent. Either GnRH or any GnRH agonist (i.e. Lupron) may be used. GnRH stimulates the release of LH and FSH from the anterior pituitary in the body. Clomiphene (trademarked as Clomid) is used as an ovarian stimulator by inhibiting the negative feedback of estrogen (the estrogen-induced change inhibits other hormone secretion) at the hypothalamus. As the negative feedback of estrogen is inhibited, the hypothalamus secretes GnRH which in turn stimulates the anterior pituitary to secrete LH and FSH which help in ovulation.

If left untreated, low levels of LH can prevent ovulation and thus pregnancy in women or lead to diminished sperm production in men, respectively.

**Find more about related issues**

**Diagnoses**

**Hyperprolactinemia**
The presence of abnormally high levels of prolactin in the blood.
Learn more at: [www.fertilitypedia.org/therapy/diag/hyperprolactinemia](http://www.fertilitypedia.org/therapy/diag/hyperprolactinemia)

**Hypogonadism**
A medical term which describes a diminished functional activity of the gonads – the testes and ovaries.
Learn more at: [www.fertilitypedia.org/therapy/diag/hypogonadism](http://www.fertilitypedia.org/therapy/diag/hypogonadism)

**Hypopituitarism**
Partial or complete loss of production of one or more of the pituitary gland hormones.
Learn more at: [www.fertilitypedia.org/therapy/diag/hypopituitarism](http://www.fertilitypedia.org/therapy/diag/hypopituitarism)
Kallmann syndrome
A genetic condition where the primary symptom is a failure to start puberty or a failure to fully complete puberty. Learn more at: www.fertilitypedia.org/therapy/diag/kallmann-syndrome

Thyroid disorders
A medical condition impairing the function of the thyroid. Learn more at: www.fertilitypedia.org/therapy/diag/thyroid-disorders

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Pic. 1: Reference ranges of Luteinizing hormone (LH)
Women in reproductive years = premenopausal women.

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<thead>
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<th>Luteinizing hormone</th>
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<tbody>
<tr>
<td>Female</td>
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<tr>
<td>reproductive years</td>
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<tr>
<td>Male</td>
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