

# JUVENILE HYPOTHYROIDISM

Juvenile: (adjective, noun)

✚ Meaning: referring to a young person who is not old enough to be considered as an adults

Deficiency or low circulating level of thyroid hormones results in hypothyroidism.

It can be congenital which is known as cretinism and can be acquired as juvenile hypothyroidism.

## Causes of hypothyroidism in children/ congenital hypothyroidism:

1. Primary hypothyroidism:
  - i. **Thyroid digenesis:**
    - **Aplasia (no thyroid tissue)**
    - **Hypoplasia (small thyroid tissue)**
    - **Ectopic (lost thyroid tissue)**
  - ii. Inborn errors of thyroid hormone synthesis, secretion or utilization
    - Endemic iodine deficiency
    - Autoimmune thyroiditis
  - iii. Iatrogenic:
    - Anti-thyroid drugs and goitrogens
    - Irradiation
    - Post-thyroidectomy
2. Secondary/tertiary hypothyroidism(pituitary/hypothalamic):
  - i. Congenital
    - Isolated or panhypopituitarism
  - ii. Acquired:
    - Trauma
    - Infection
    - Neoplastic/postsurgical
    - Irradiation

## Screening:

Ideal time to do screening is 3<sup>rd</sup> day/ 72 hours of life

## **Clinical features of congenital hypothyroidism:**

### **Most common:**

- 1. Dry hairs**
- 2. Scaly skin**
- 3. Narrow palpable fissure**
- 4. Broad nose**
- 5. Macroglossia**
- 6. Prolonged jaundice**
- 7. Constipation**
- 8. Umbilical hernia**
- 9. Abnormal DTR**
- 10. Protruding abdomen**
- 11. Effect on skull bones:**
  - + Marked open posterior fontanelle
  - + Wide sutures
- 12. X-ray findings:**
  - + Retardation of bone development
  - + Absence of distal epiphysis
  - + Epiphyseal dysgenesis
  - + Deformity of 12 thoracic vertebrae or lumber 1 or 2 vertebrae
- 13. PBF findings:**
  - + **Normal RBC**
  - + **Mycrocytic anaemia**

### **OR**

- 1. During neonatal period:**
  - i. Unusually large and heavy at birth
  - ii. Marked open posterior fontanelle
  - iii. Wide sutures
  - iv. The earliest clinical manifestation –
    - Lethargy
    - Sluggishness
    - Hoarse cry
    - Feeding difficulties
    - oversleeping
  - v. other features-
    - persistent constipation
    - prolonged physiological jaundice
    - abdominal distension

- cold, dry, rough thick skin
- umbilical hernia and anaemia are common

## 2. During 8-12 weeks:

- i. Coarse face
- ii. Large protruding tongue from large open mouth with thick lips
- iii. Puffy eyelids
- iv. Depressed nasal bridge
- v. Seemingly wide apart eyes (pseudohypertelorism)
- vi. Voice is hoarse
- vii. Dentition delayed
- viii. Hypotonia
- ix. Sluggish behavior
- x. Mental retardation

### Sample collection:

- ✚ Heal pad prick
- ✚ What to check in this?
  - TSH (universal screening test)
  - But if risk factor is present then we do TFT (TFT test is basically thyroid function test)

### Treatment of juvenile hypothyroidism

1. **Levothyroxine** (20-25% patient may outgrow the need for thyroxin by 2 years age)
  - **Starting dose:** 10 µg/kg/day and increased as the child grows
2. **Rehabilitation of mentally retarded child-**
  - Physiotherapy
  - Speech therapy
  - Should be educated at special school
  - employment
3. **Follow up-**
  - 2-3 monthly up to 2 years

### Complication:

1. **Cretinism:**
  - ✚ **mental retardation**
  - ✚ **90% of brain growth is attained by 2 years of age**
  - ✚ **Very important to screen and treat early**

## Treatment

Treatment is aimed at replacing the thyroid hormone that you are lacking.

Levothyroxine is the most commonly used medicine:

- You will be prescribed the lowest dose possible that relieves your symptoms and brings your blood hormone levels back to normal.
- If you have heart disease or you are older, your doctor may start you on a very small dose.
- Most people with an underactive thyroid will need to take this medicine for life.

When starting your medicine, your doctor may check your hormone levels every 2 to 3 months. After that, your thyroid hormone levels should be monitored at least once every year.

When you are taking thyroid medicine, be aware of the following:

- Do not stop taking the medicine when you feel better. Continue taking it exactly as your doctor prescribed.
- If you change brands of thyroid medicine, let your doctor know. Your levels may need to be checked.
- What you eat can change the way your body absorbs thyroid medicine. Talk with your doctor if you are eating a lot of soy products or are on a high-fiber diet.
- Thyroid medicine works best on an empty stomach and when taken 1 hour before any other medications. Ask your doctor if you should take your medicine at bedtime. Studies have found that taking it at bedtime may allow your body to absorb the medicine better than taking it in the daytime.
- Wait at least 4 hours after taking thyroid hormone before you take fiber supplements, calcium, iron, multivitamins, aluminum hydroxide antacids, colestipol, or medicines that bind bile acids.

While you are taking thyroid replacement therapy, tell your doctor if you have any symptoms that suggest your dose is too high, such as:

- [Palpitations](#)
- Rapid weight loss

- Restlessness or shakiness
- Sweating

## Outlook (Prognosis)

In most cases, thyroid hormone levels return to normal with proper treatment. You will likely take a thyroid hormone medicine for the rest of your life.

## Possible Complications

Myxedema coma, the most severe form of hypothyroidism, is rare. It occurs when thyroid hormone levels get very low. It can be caused by an infection, illness, exposure to cold, or certain medicines in people with untreated hypothyroidism.

Myxedema coma is a medical emergency that must be treated in the hospital. Some patients may need oxygen, breathing assistance (ventilator), fluid replacement and intensive-care nursing.

Symptoms and signs of myxedema coma include:

- Below normal temperature
- Decreased breathing
- [Low blood pressure](#)
- [Low blood sugar](#)
- Unresponsiveness
- Inappropriate or uncharacteristic moods

People with untreated hypothyroidism are at increased risk of:

- Infection [Infertility](#), [miscarriage](#), giving birth to a baby with birth defects
- Heart disease because of higher levels of LDL ("bad") cholesterol
- Heart failure

## When to Contact a Medical Professional

Call your health care provider if you have symptoms of hypothyroidism (or myxedema).

If you are being treated for hypothyroidism, call your doctor if:

- You develop [chest pain](#) or rapid heartbeat
- You have an infection
- Your symptoms get worse or do not improve with treatment
- You develop new symptoms

## Alternative Names

Myxedema; Adult hypothyroidism