



## After Receiving Positive Newborn Screening (NBS) Results

- **Within 24 hours** of receiving a positive NBS result for CH (TSH  $\geq 29$   $\mu\text{IU/mL}$ ), test serum TSH and free T4 (or total T4) for confirmatory diagnosis
- **If newborn screening TSH result is:**

> 40 $\mu\text{IU/mL}$	29 – 40 $\mu\text{IU/mL}$
<b>Initiate treatment</b> as soon as a serum sample is collected and refer to a pediatric endocrinologist	<b>May wait</b> for the results of confirmatory serum test to initiate treatment

### If confirmatory serum TSH result is:

- **> 40  $\mu\text{IU/mL}$**   
Initiate levo-thyroxine treatment immediately
- **10 – 40  $\mu\text{IU/mL}$**   
Repeat the free T4 (or total T4) and TSH tests but do not start levo-thyroxine treatment yet
- **< 10  $\mu\text{IU/mL}$**   
Considered normal, no treatment needed

You are strongly encouraged to work closely with a pediatric endocrinologist to perform diagnostic evaluation, initiate treatment, and coordinate for ongoing care.

Treatment must begin within 2 weeks of age for confirmed cases.

## Levo-thyroxine Treatment Dosing

- **Start at 10 – 15  $\mu\text{g/kg}$  per day**  
(Use 15  $\mu\text{g/kg}$  if free T4 < 0.5 ng/dL or total T4 < 5  $\mu\text{g/dL}$ )
- **Either brand name or generic**, but stay with the same formulation, if possible. **USE TABLETS, DO NOT USE LIQUID FORM** (there are no FDA-approved liquid forms)
- Maintain TSH concentration in the age-specific reference range
- Maintain free T4 (or total T4) concentration in the upper half of the lab-provided reference range

### Approximate daily dose by weight:

Weight (grams)	Daily Dose
2000 – 2499	25 $\mu\text{g}$
2500 – 3999	37.5 $\mu\text{g}$
4000 or more	50 $\mu\text{g}$

## Follow-up Frequency\*

- **2 weeks after treatment initiation:**  
The first clinical follow-up examination and lab tests should take place
- **Then every 2 weeks:**  
Evaluate clinical symptoms and thyroid function until **complete normalization of TSH** is reached

### Recommended follow-up schedule by age, once TSH is normalized:

Age	Frequency
< 6 months	Every 1–2 months
6 months to 3 years	Every 2–4 months
After 3 years	Every 6–12 months

\*Reference: American Academy of Pediatrics, Rose SR, et al. **Update of newborn screening and therapy for congenital hypothyroidism.** Pediatrics. 2006;117:2290-2303.

- also:**
- **More frequent testing** when compliance is questionable and/or
  - **One month after** any dosage or formulation change



## Special Considerations in Patient Case-Management

### Transient Congenital Hypothyroidism

- **CH is estimated to be transient, not permanent, in 5% to 15% of cases diagnosed through newborn screening**
- **Causes**
  - Maternal anti-thyroid medications
  - Maternal anti-TSH-receptor antibodies
  - Excessive/deficient maternal iodine intake
  - Post-natal iodine exposure (povidone-iodine)

### If you suspect Transient CH

**When in doubt, start treatment** to ensure adequate thyroid hormone for brain development

**Consider trial off in patients** who have not needed increases in levo-thyroxine dosage after age 1 year

**After 3 years of age, safe to do a trial** off levo-thyroxine for 4–6 weeks, and then retest free T4 (or total T4) and TSH

### Reasons TSH May Remain Elevated During Treatment

- Non-compliance
- Improper delivery – suspension
- Malabsorption – lactose intolerance, milk allergy
- Other medications – iron, calcium, antacids
- Soy formulas and acidic juices
- Delayed maturation of hypothalamic-pituitary-thyroid axis

**Regular (non-soy) formula should be given at least 30 minutes before or after medication**

### Important Information to Convey to Parents and Caregivers

**Let them know that congenital hypothyroidism is usually permanent**

**Teach the correct technique of medication administration**

**Stress that adherence to treatment is key to normal development for all ages**

**Describe the follow-up lab testing schedule**

**This reference guide, the CDPH Parent Education Brochure (English/Spanish) for Congenital Hypothyroidism as well as other resources can be found at <http://www.cdph.ca.gov/nbs>.**

*This guide is considered a resource, but does not define the standard of care in California. Readers are advised to adapt the guidelines and resources based on their local facility's level of care and patient population serviced and are also advised to not rely solely on the guidelines presented here.*