

# Levothyroxine - for appropriate starting dose and precise dose titration in one simple solution

## Drug Review

### Hypothyroidism

Hypothyroidism is the common clinical condition of thyroid hormone deficiency and if left untreated, can lead to serious adverse health effects on multiple organ systems, with the cardiovascular system as the most robustly studied target.<sup>1</sup>

### Epidemiology of hypothyroidism

- Globally around 200 million people suffer from thyroid disorder where 80% have hypothyroidism.<sup>1</sup>
- Women are 10 times more at risk of thyroid hormone problem than men.<sup>1</sup>
- 1 in 8 women will develop a thyroid disorder during her lifetime.<sup>1</sup> 3-5% of pregnant women experience hypothyroidism.<sup>2</sup>

*LT4 is recommended as the preparation of choice for the treatment of hypothyroidism due to its efficacy in resolving the symptoms of hypothyroidism, long-term experience of its benefits, favorable side effect profile, ease of administration, good intestinal absorption, long serum half-life, and low cost.<sup>3</sup>*

### Mechanism action of levothyroxine<sup>4</sup>

Thyroid hormones exert their physiologic actions through control of DNA transcription and protein synthesis

T3 and T4 enter the cell nucleus and bind to thyroid receptor proteins on DNA

The physiological effects are mainly produced by T3, mostly derived from T4 in peripheral tissues

This hormone-receptor complex activates gene transcription & synthesis of mRNA, cytoplasmic proteins

### Importance of appropriate dosing in LT4 therapy<sup>5</sup>

LT4 requires precise dosing and careful monitoring. The goal is to achieve steady TSH levels within the appropriate therapeutic range. Dosing must be individualized based on the patient's age, weight, cardiovascular status, concomitant medical conditions (including pregnancy), concomitant medications, co-administered food, and the specific etiology of the condition being treated.

### Consequences of suboptimal dosing of LT4 & out of range TSH<sup>5</sup>

 Recurrent Pregnancy Loss	 Poor Fetal Growth	 Low Cardiac Output
 Preeclampsia	 Very Low IQ	 Dyslipidemia
 Preterm Birth	 Depression	 Cardiovascular Disease
 Irregular Menstrual Periods	 Low Hemoglobin	 Hypertension
 Infertility	 Elevated Liver Enzymes	 Reduced Lung Function
 Dry Skin	 Obesity	 Constipation



## Treatment of hypothyroidism<sup>4</sup>

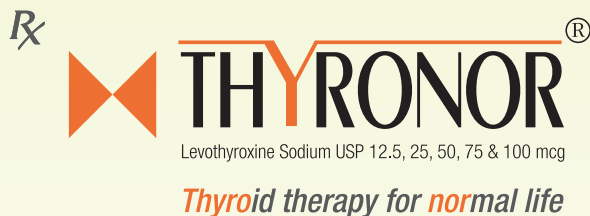
✈️ Levothyroxine sodium is the treatment of choice for the routine management of hypothyroidism

Patient Status	T4 Requirement (µg/kg body weight)
Neonate	10-15
Children 8-12 months	8-10
Children 2-10 years	4-5
Adolescents	2-3
Adults	1.5
Elderly persons	1.0-1.2
Pregnant women	1.8-2.0

✈️ Clinical and biochemical evaluations at 6-to-8-week intervals until the serum TSH concentration is normalized

## One Simple Solution

Without breaking the tablet



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Ref: 1. Nat Rev Dis Primers. 2022 May 19;8(1):30; 2. Int J Womens Health. 2023 Oct 3;15:1481-1490. 3. Guidelines for the treatment of hypothyroidism: prepared by the american thyroid association task force on thyroid hormone replacement. Thyroid. 2014 Dec;24(12):1670-751. 4. [https://www.accessdata.fda.gov/drugsatfda\\_docs/label/2022/021402s036lbl.pdf](https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/021402s036lbl.pdf) 5. Consequences of undertreatment of hypothyroidism. Endocrine. 2024 May;84(2):301-308.