

STANDARD TREATMENT WORKFLOW (STW)

Hypothyroidism

Anil Bhansali¹, Eesh Bhatia², B Ganpathi³, Maj Gen Narendra Kotwal⁴, Rajesh Rajput⁵,
Ravinder Goswami⁶, Subhankar Choudhary⁷, V Mohan⁸

¹Postgraduate Institute of Medical Education and Research, Chandigarh; ²Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow; ³St John's Medical College Hospital, Bengaluru; ⁴Army Hospital Research and Referral, New Delhi; ⁵Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak; ⁶All India Institute of Medical Sciences, New Delhi; ⁷Institute of Post-Graduate Medical Education and Research, Kolkata; ⁸Dr. Mohan's Diabetes Specialities Centre, Chennai

CORRESPONDING AUTHOR

Dr. Anil Bhansali, Department of Endocrinology, Postgraduate Institute of Medical Education and Research, Chandigarh

Email: anilbhansali_endocrine@rediffmail.com

CITATION

Bhansali A, Bhatia E, Ganpathi B, Kotwal N, Rajput R, Goswami R, Choudhary S, Mohan V. Hypothyroidism. Journal of the Epidemiology Foundation of India. 2024;2(1Suppl):S115-S116.

DOI: <https://doi.org/10.56450/JEFI.2024.v2i1Suppl.058>

This work is licensed under a Creative Commons Attribution 4.0 International License.

©The Author(s). 2024 Open Access

DISCLAIMER

This article/STW, was originally published by Indian Council of Medical Research (ICMR) under Standard Treatment Workflow. The reprinting of this article in Journal of the Epidemiology Foundation of India (JEFI) is done with the permission of ICMR. The content of this article is presented as it was published, with no modifications or alterations. The views and opinions expressed in the article are those of the authors and do not necessarily reflect the official policy or position of JEFI or its editorial board. This initiative of JEFI to reprint STW is to disseminate these workflows among Health Care Professionals for wider adoption and guiding path for Patient Care.

July / 2024



Standard Treatment Workflow (STW)

HYPOTHYROIDISM

ICD-10-E03.9

WHEN TO SUSPECT HYPOTHYROIDISM ON CLINICAL GROUNDS?

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
Symptoms Fatigue / Weight gain with poor appetite / Dry skin and cold intolerance / Hair loss / Constipation / Hoarseness of voice / Dyspnea / Muscle weakness and cramps / Menorrhagia (later oligomenorrhea or amenorrhea) / Infertility / Difficulty concentration and poor memory / Paraesthesia / Impaired hearing	New born screening (usually asymptomatic)Prolonged icterus / Edema of the eyelids, hands, and feet / Hypotonia / Inactivity / Gestation > 42 wk / Birth weight > 4 kg / Poor feeding / Hypothermia / Abdominal distention / Open posterior fontanelle (> 5 mm)	Mild-moderate symptoms of hypothyroidism / Signs and symptoms of other pituitary deficits / Manifestations of concomitant hypothalamic pituitary disease Clinical manifestation are less pronounced in secondary hypothyroidism as compared to primary hypothyroidism as there may be multiple pituitary hormone deficiencies which can mask the features of hypothyroidism
Signs Dry coarse skin / Cool peripheral extremities / Puffy face, hands and feet (myxoedema) / Diffuse alopecia / Goitre / Bradycardia / Peripheral Oedema / Delayed tendon reflex relaxation / Carpel tunnel syndrome / Serous cavity effusions		

Standard Treatment Workflow (STW)
HYPOTHYROIDISM
ICD-10-E03.9

WHEN TO SUSPECT HYPOTHYROIDISM ON CLINICAL GROUNDS?

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
<p>Symptoms Fatigue / Weight gain with poor appetite / Dry skin and cold intolerance / Hair loss / Constipation / Hoarseness of voice / Dyspnea / Muscle weakness and cramps / Menorrhagia (later oligomenorrhea or amenorrhea) / Infertility / Difficulty concentration and poor memory / Paraesthesia / Impaired hearing</p> <p>Signs Dry coarse skin / Cool peripheral extremities / Puffy face, hands and feet (myxoedema) / Diffuse alopecia / Goitre / Bradycardia / Peripheral Oedema / Delayed tendon reflex relaxation / Carpel tunnel syndrome / Serous cavity effusions</p>	<p>New born screening (usually asymptomatic) Prolonged icterus / Edema of the eyelids, hands, and feet / Hypotonia / Inactivity / Gestation > 42 wk / Birth weight > 4 kg / Poor feeding / Hypothermia / Abdominal distention / Open posterior fontanelle (> 5 mm)</p>	<p>Mild-moderate symptoms of hypothyroidism / Signs and symptoms of other pituitary deficits / Manifestations of concomitant hypothalamic pituitary disease Clinical manifestation are less pronounced in secondary hypothyroidism as compared to primary hypothyroidism as there may be multiple pituitary hormone deficiencies which can mask the features of hypothyroidism</p>

Billewicz scoring for diagnosis of Hypothyroidism

Symptoms	Score if present	Physical signs	Score if present
Hearing impairment	1	Slow movement	1
Diminished sweating	1	Periorbital puffiness	1
Constipation	1	Delayed ankle reflex	1
Paraesthesia	1	Coarse skin	1
Hoarseness	1	Cold skin	1
Weight increase	1	Add 1 point for women younger than 55 years	
Dry skin	1	Total score:12	

Hypothyroid ≥ 6 points **Intermediate 3-5 points** **Euthyroid ≤ 2 points**

HOW DOES ONE CONFIRM CLINICAL SUSPICION OF HYPOTHYROIDISM?

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
<p>Tests to be ordered TSH FT4 or Total T4 TPO antibodies (if available)</p> <p>Interpretation Overt hypothyroidism - TSH elevated with low FT4 or T4 levels Subclinical hypothyroidism - TSH elevated with normal FT4 or T4 levels</p>	<p>Tests to be ordered after 72 hours TSH FT4 or T4 USG neck, nuclear imaging (Not a must, Do not delay treatment)</p> <p>Interpretation Screening - TSH > 30 mU/L; T4 < 10th centile Confirmatory - TSH > 9 mU/L; FT4 < 0.6 ng/ml</p>	<p>Tests to be ordered FT4 or T4 TSH Other pituitary profile Imaging of sella</p> <p>Interpretation TSH levels normal or low with low FT4 or T4 levels</p>

INITIATING THERAPY

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
<p>Levothyroxine 1.6 to 1.8 mcg per kg per day Single dose, fasting status, no calorie intake for 1 hour thereafter Titrate based on TSH levels Elderly and CAD patients: Start with 12.5-25 mcg/d with 12.5 - 25mcg/d incremental dose every 3-4 wk Consider treating subclinical hypothyroidism in presence of - Large goitre / Positive TPO antibody / ASCVD / Heart failure / Dyslipidemia / Infertility / Depression / refractory anaemia / personal or family history of autoimmune disease</p>	<p>Levothyroxine therapy 10 to 15 mcg per kg per day Single daily dosing Given with breast milk in powdered form Titrate based on FT4 levels and TSH initially, later based on TSH levels</p>	<p>Levothyroxine 1.3 mcg per kg per day Treatment to be initiated only after treating co existing adrenal insufficiency with Hydrocortisone replacement as there is risk of precipitating adrenal crisis, Titrate based on FT4 or T4 levels</p>

HOW SHOULD THE PATIENT BE FOLLOWED UP?

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
<p>Titrate based on TSH levels</p> <ul style="list-style-type: none"> Target TSH Young patient's 1-2.5 mU/L Middle-aged patients 1.5-3 Elderly patients <ul style="list-style-type: none"> < 60 y: > 4.5 mU/L 60-70 y: > 6.0 mU/L 70-80 y: > 7.0 to 8.0 mU/L Once in 3 to 6 months initially, once stable dose is achieved, annual follow up 	<p>Titrate based on FT4 or T4 levels and TSH</p> <ul style="list-style-type: none"> Titrate based on FT4 or T4 levels and TSH Target T4: 10 to 16 mcg/dl Target FT4: 1.4 to 2.3 ng/dl Target TSH: 0.5 to 2 mU/L Initial follow up at 2 and 4 weeks Every 1 to 2 months in first 6 months Every 3 to 4 months from 6 months to 3 years of age Every 6 to 12 months till growth is complete 	<p>Titrate based on FT4 or T4 levels</p> <ul style="list-style-type: none"> Target T4 or FT4 Young people - upper half of normal range Elderly - mid normal range Once in 3 to 6 months initially, once stable dose is achieved, annual follow up

ABBREVIATIONS

ASCVD: Atherosclerotic cardiovascular disease	TPO: Thyroid peroxidase	USG: Ultrasound sonography
CAD: Coronary Artery Disease	TSH: Thyroid-stimulating hormone	

REFERENCES

1. Billewicz WZ, Chapman RS, Crooks J, Day ME, Gossage J, Wayne E, et al. Stastical Methods applied to the diagnosis of hypothyroidism. Q J Med. 1969;38:255-66

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit the website of DHR for more information: stw.icmr.org.in for more information. ©Department of Health Research, Ministry of Health & Family Welfare, Government of India.