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Department of Health Research
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INDIAN COUNCIL OF MEDICAL RESEARCH
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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 **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	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

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
Haorseness	1	Cold skin	1
Weight increase	1	Add 1 point for women younger than 55 years Total score:12	
Dry skin	1		

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

INITIATING THERAPY

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
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	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	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

HOW SHOULD THE PATIENT BE FOLLOWED UP?

Primary hypothyroidism	Congenital hypothyroidism	Central (Secondary) hypothyroidism
Titrate based on TSH levels • Target TSH ‣ Young patient's 1–2.5 mU/L ‣ Middle-aged patients 1.5–3 ‣ Elderly patients ◦ < 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	**Titrate based on FT4 or T4 levels and TSH** • 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	**Titrate based on FT4 or T4 levels** • 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
CAD: Coronary Artery Disease
TPO: Thyroid peroxidase
TSH: Thyroid-stimulating hormone
USG: Ultrasound sonography

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