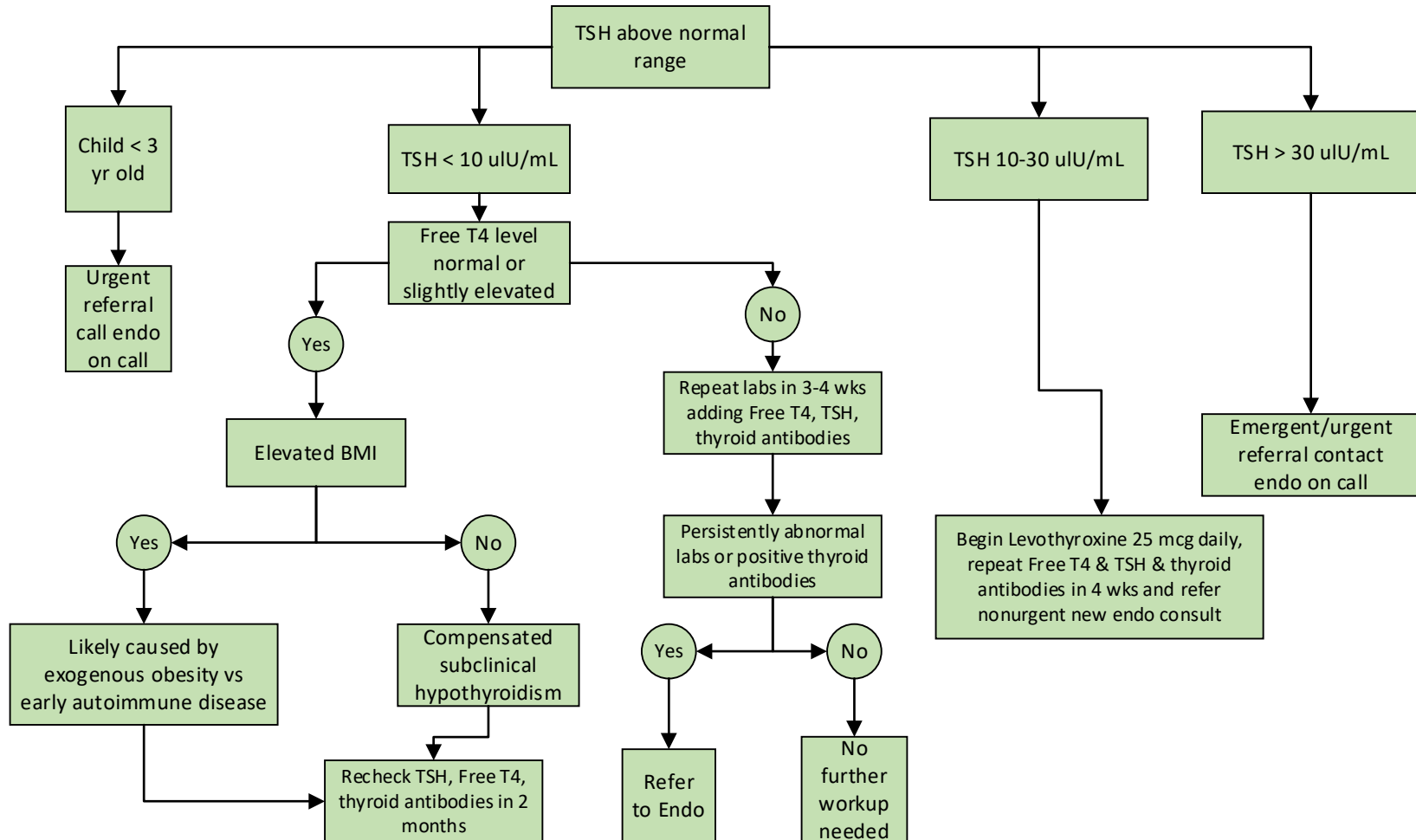


CHILD WITH ELEVATED TSH



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Child with Suspected Acquired Hypothyroidism

Initial laboratory and/or radiologic work-up can include:

Blood tests:

Thyroid function tests:

- TSH
- Free T4 (FT4)

Other tests to consider:

Anti-thyroid antibodies *

- Thyroid peroxidase Ab
- Thyroglobulin Ab

* These are not necessary for a diagnosis

Differential diagnosis for Acquired Hypothyroidism

- Autoimmune thyroiditis / Hashimoto's thyroiditis / Chronic lymphocytic thyroiditis
- Euthyroid Sick Syndrome / Non-thyroidal Illness
- Subacute thyroiditis / Other thyroiditis
- Drug induced hypothyroidism; thioamides, amiodarone, excessive iodine exposure, antiepileptics
- Iodine deficiency
- Infiltrative or storage disorders of thyroid gland
- Iatrogenic hypothyroidism: post-irradiation; post-thyroidectomy

Additional Information

- In Primary Hypothyroidism (thyroid failure), FT4 is low or normal; TSH is elevated.
- In Central Hypothyroidism (pituitary/hypothalamic cause), FT4 is low but TSH may be normal or low (rare).
- Thyroid auto-antibodies (thyroid peroxidase antibody and thyroglobulin antibodies) may be helpful in determining underlying etiology of hypothyroidism.
- Total and Free T3 are generally not necessary for screening and monitoring. repeated over time. A good portion of

- Mildly abnormal TSH levels (<10 uIU/ml) with normal FT4 are not likely to cause symptoms and can be followed and children with this subclinical hypothyroidism revert back to normal thyroid function over time. Hyperlipidemia may be seen secondary to hypothyroidism. Consider screening with TSH, FT4 in dyslipidemia.
- Consider screening for hypothyroidism in depression especially in setting of poor linear growth.
- Thyroid ultrasonography is not generally required unless thyroid gland is significantly enlarged and/or asymmetric, or there is suspicion of thyroid nodule.
- Common obesity is generally exogenous and unlikely to be secondary to hypothyroidism. Screening for thyroid dysfunction is not recommended in absence of symptoms, poor linear growth or other risk factors.

Treatment

Treatment of hypothyroidism includes thyroid hormone replacement (Levothyroxine; LT4). Brand-name thyroid hormone (i.e., Synthroid, Levoxyl) is an equivalent option for therapy as generic LT4. Switching of levothyroxine from brand name to generic preparations, or between generic preparations can lead to perturbations in serum TSH, and is not recommended unless under supervision of endocrinologist. In addition, other forms of thyroid hormone replacement, such as desiccated porcine thyroid hormone (Armour Thyroid, Nature-Thyroid), are not well studied for long-term use in hypothyroidism in children, and are not currently recommended.

Dosing of LT4 is in micrograms, and pill strengths are commonly color-coded for ease of use and safety. Administration along with some foods and supplements, such as soy and high fiber, should be avoided as it can impair LT4 absorption. Titration of dose is by serial thyroid function testing (TSH +/- Free T4, often TSH only is required for ongoing monitoring), generally done about 4-8 weeks after a dose change. Follow up visits are recommended at regular intervals to monitor adherence, blood levels, and growth and development.

Suggested References

- [Alejandro Diaz, Elizabeth G. Lipman Diaz; Hypothyroidism. Pediatr Rev August 2014; 35 \(8\): 336-349.](#)

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- [Jonklaas J et al. Guidelines for the Treatment of Hypothyroidism: Prepared by the American Thyroid Association Task Force on Thyroid Hormone Replacement. Thyroid. December 2014, 24\(12\): 1670-1751.](#)