Clinical Policy: Thyroid Hormones and Insulin Testing in Pediatrics

Reference Number: CP.MP.154 Coding Implications
Last Review Date: 12/17 Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description
Numerous essential metabolic functions are mitigated by hormones produced by, and affecting the thyroid, *e.g.*, thyroid stimulating hormone [TSH] and thryoxine [T4], as well as by insulin. This policy discusses the medical necessity requirements for the testing of these hormones.

Policy/Criteria

I. It is the policy of health plans affiliated with Centene Corporation® that thyroid hormone testing in healthy, including obese but otherwise healthy, children (age ≥ 1 and ≤ 18) is **not medically necessary** because these tests have not been demonstrated to have a clear clinical benefit.

II. It is the policy of health plans affiliated with Centene Corporation that insulin testing in healthy, including obese but otherwise healthy, children (age ≥ 1 and ≤ 18) is **not medically necessary** because these tests have not been demonstrated to have a clear clinical benefit.

Background
The thyroid is an endocrine gland that regulates numerous metabolic processes through hormone secretion. Thyroid homeostasis is controlled through a complex feedback loop through the hypothalamus-pituitary-thyroid axis. Thyroxine (otherwise known as T4 due to the presence of four iodine molecules) is the major secretory hormone of the thyroid, and is converted into triiodothyronine (T3). Secretion of thyroxine by the thyroid is regulated by the concentration of thyroid stimulating hormone (TSH). TSH is generated by the pituitary gland and secreted in the bloodstream to generate a feedback loop with T4. Loss of the regulatory feedback cycle of the thyroid hormones could lead to hyperthyroidism and primary or secondary hypothyroidism.

Assessment of thyroid function can be achieved through the quantification of thyroid hormone levels. However, the appropriate clinical utilization of these tests has been a subject of concern in the recent literature.[1,2] For example in pediatrics, TSH and total T4 can be elevated in children who are overweight or obese, but it is not clear if this is a result or cause of obesity.[3,4,5] Therefore general screening may not provide actionable clinical information.[3-7]

The Endocrine Society Clinical Practice Guideline on pediatric obesity recommends against routine laboratory evaluations for endocrine etiologies of pediatric obesity unless the patient's stature and/or height velocity are attenuated (assessed in relationship to genetic/familial potential and pubertal stage. They also recommend against measuring insulin concentrations when evaluating children or adolescents for obesity. They note that although obesity is associated with insulin resistance/hyperinsulinemia, attempts to diagnose insulin resistance by measuring plasma insulin concentration or any other surrogate in the clinical setting has no merit because it has no diagnostic value. Fasting insulin concentrations show considerable overlap between insulin-resistant and insulin-sensitive youths. Therefore, there is no well-defined cut point differentiating

normal from abnormal and no universally accepted, clinically useful, numeric expression that defines insulin resistance, unlike for glucose or lipids. Moreover, measuring insulin is hampered by the lack of standardized insulin assays, and poor reproducibility of even the same assay. Further limitations include race/ethnicity-related differences in insulin concentrations due to differences in the metabolic clearance rate of insulin and the cross reactivity between insulin and proinsulin. In youths with Type 2 diabetes mellitus, despite severe deficiency in insulin secretion, fasting insulin concentrations are higher than in youths without diabetes. Importantly, fasting insulin concentrations are similar in youths who are obese with normal glucose tolerance vs impaired glucose tolerance, allowing for the possible danger of missing a diagnosis of impaired glucose tolerance if one uses fasting insulin concentrations as a screening tool. Because of these limitations, measuring plasma insulin concentrations remains a research tool with no clinical value for evaluation of obesity.[7]

Coding Implications

This clinical policy references Current Procedural Terminology (CPT®). CPT® is a registered trademark of the American Medical Association. All CPT codes and descriptions are copyrighted 2017, American Medical Association. All rights reserved. CPT codes and CPT descriptions are from the current manuals and those included herein are not intended to be all-inclusive and are included for informational purposes only. Codes referenced in this clinical policy are for informational purposes only. Inclusion or exclusion of any codes does not guarantee coverage. Providers should reference the most up-to-date sources of professional coding guidance prior to the submission of claims for reimbursement of covered services.

Table 1: CPT codes not medically necessary when billed with a corresponding ICD-10CM in Table 2

CPT® Codes	Description
83525	Insulin; total
83527	Insulin; free
84436	Thyroxine; total
84439	Thyroxine; free
84443	Thyroid stimulating hormone (TSH)
84479	Thyroid hormone (T3 or T4) uptake or thyroid hormone binding ratio (THBR)
84480	Triiodothyronine T3; total (TT-3)
84481	Triiodothyronine T3; free
84482	Triiodothyronine T3; reverse

Table 2: ICD-10-CM diagnosis codes not medically necessary when billed with a corresponding CPT code in Table 1.

ICD-10-CM Code	Description
E66.01	Morbid (severe) obesity due to excess calories
E66.09	Other obesity due to excess calories
E66.1	Drug-induced obesity
E66.3	Overweight
E66.8	Other obesity

ICD-10-CM Code	Description
E66.9	Obesity, unspecified
Z00.00	Encounter for general adult medical examination without abnormal findings
Z00.129	Encounter for routine child health examination without abnormal findings
Z00.8	Encounter for other general examination
Z68.52	Body mass index (BMI) pediatric, 5th percentile to less than 85th percentile for age
Z68.53	BMI pediatric, 85th percentile to less than 95th percentile for age
Z68.54	BMI pediatric, greater than or equal to 95th percentile for age

Reviews, Revisions, and Approvals	Date	Approval Date
Policy developed	12/17	12/17

References

1. Werhun, Alexander, and William Hamilton. "Thyroid function testing in primary care: overused and under-evidenced? A study examining which clinical features correspond to an abnormal thyroid function result." *Family practice* 32.2 (2015): 187-191.
2. Reinehr, T., Hinney, A., De Sousa, G., Austrup, F., Hebebrand, J., & Andler, W. (2007). Definable somatic disorders in overweight children and adolescents. *The Journal of pediatrics*, *150*(6), 618-622.
3. Ghergherehchi, Robabeh, and Nazanin Hazhir. "Thyroid hormonal status among children with obesity."*Therapeutic advances in endocrinology and metabolism* 6.2 (2015): 51-55.
4. Longhi, Silvia, and Giorgio Radetti. "Thyroid function and obesity." *Journal of clinical research in pediatric endocrinology* 5.Suppl 1 (2013): 40.
5. Kaplowitz. "Thryoid testing is becoming more common, but is it necessary?" AAP News. Vol 34. (3) 2013.
6. Kaplowitz, Paul B. "Subclinical hypothyroidism in children: normal variation or sign of a failing thyroid gland?" *International journal of pediatric endocrinology* 2010.1 (2010): 281453.
7. Styne DM, Arslanian SA, Connor EL, et al. Pediatric Obesity-Assessment, Treatment, and Prevention: An Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab, 2017 Mar 1;102(3):709-757. doi: 10.1210/jc.2016-2573. Available at: https://academic.oup.com/jcem/article/102/3/709/2965084. Accessed Dec 20, 2017.

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and

accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. "Health Plan" means a health plan that has adopted this clinical policy and that is operated or administered, in whole or in part, by Centene Management Company, LLC, or any of such health plan's affiliates, as applicable.

The purpose of this clinical policy is to provide a guide to medical necessity, which is a component of the guidelines used to assist in making coverage decisions and administering benefits. It does not constitute a contract or guarantee regarding payment or results. Coverage decisions and the administration of benefits are subject to all terms, conditions, exclusions and limitations of the coverage documents (e.g., evidence of coverage, certificate of coverage, policy, contract of insurance, etc.), as well as to state and federal requirements and applicable Health Plan-level administrative policies and procedures.

This clinical policy is effective as of the date determined by the Health Plan. The date of posting may not be the effective date of this clinical policy. This clinical policy may be subject to applicable legal and regulatory requirements relating to provider notification. If there is a discrepancy between the effective date of this clinical policy and any applicable legal or regulatory requirement, the requirements of law and regulation shall govern. The Health Plan retains the right to change, amend or withdraw this clinical policy, and additional clinical policies may be developed and adopted as needed, at any time.

This clinical policy does not constitute medical advice, medical treatment or medical care. It is not intended to dictate to providers how to practice medicine. Providers are expected to exercise professional medical judgment in providing the most appropriate care, and are solely responsible for the medical advice and treatment of members. This clinical policy is not intended to recommend treatment for members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

Providers referred to in this clinical policy are independent contractors who exercise independent judgment and over whom the Health Plan has no control or right of control. Providers are not agents or employees of the Health Plan.

This clinical policy is the property of the Health Plan. Unauthorized copying, use, and distribution of this clinical policy or any information contained herein are strictly prohibited. Providers, members and their representatives are bound to the terms and conditions expressed herein through the terms of their contracts. Where no such contract exists, providers, members and their representatives agree to be bound by such terms and conditions by providing services to members and/or submitting claims for payment for such services.

Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at http://www.cms.gov for additional information.