



Five Things Physicians and Patients Should Question

1

Avoid ordering LH and FSH and either estradiol or testosterone for children with pubic hair and/or body odor but no other signs of puberty.

Premature adrenarche is usually the diagnosis and does not involve activation of the pituitary- gonadal axis but is due to an early increase in adrenal androgens. DHEA-S levels are elevated for age but do not alter the management of this common and generally benign condition.

2

Avoid ordering screening tests looking for chronic illness or an endocrine cause, including CBC, CMP, IGF-1, thyroid tests, and celiac antibodies, in healthy children who are growing at or above the 3rd percentile for height with a normal growth rate (i.e., not crossing percentiles) and with appropriate weight gain.

Even in children who are below the 3rd percentile for height with a normal history and physical exam, the incidence of newly diagnosed pathology was found to be only about 1%. In patients who have significant short stature (e.g. ≤ -2.5 SD) or who are well below their genetic potential based on parental heights, tiered or sequential screening may be considered.

3

Avoid ordering Vitamin D concentrations routinely in otherwise healthy children, including children who are overweight or obese.

Although a 25-hydroxyvitamin D concentration, reflecting both vitamin D synthesis and intake, is the correct screening lab to monitor for vitamin D deficiency, current evidence is not sufficient to suggest that screening in otherwise healthy including children who are overweight or obese is necessary or safe.

Global consensus recommendations caution against population-based screening for vitamin D deficiency (1). The US Preventive Services Task Force also has noted that variability of current assays and unclear cutoffs for deficiency may lead to “misclassification” of persons as having vitamin D deficiency, and that this misclassification “could outweigh any benefits if there are harms” (2). The American Academy of Pediatrics report on Optimizing Bone Health in Children and Adolescents advises screening for vitamin D deficiency only in patients with disorders associated with low bone mass such as rickets and/or a history of recurrent, low-trauma fractures (3).

It has been shown that children who are overweight or obese have a greater likelihood of having low vitamin D levels (4). If the history suggests an obese child has insufficient dietary intake of vitamin D (e.g., little milk intake), a vitamin D supplement should be recommended, which is more cost-effective than 25-hydroxyvitamin D measurements for both screening and monitoring therapy.

4

Avoid routinely measuring thyroid function and/or insulin levels in children with obesity.

TSH levels can be slightly elevated in obesity but this is more likely a consequence of obesity and rarely true hypothyroidism [1, 2]. Free T4 levels are usually normal and if so there is no proven benefit to treatment when TSH is minimally elevated. Testing thyroid function in otherwise healthy children should be considered only if stature and/or height velocity is decreased in relation to the stage of puberty [3, 4].

There are significant limitations in the use of insulin levels as a marker of insulin resistance; furthermore, it is not necessary to order this test to establish a weight control management plan [3, 5]. (This item submitted jointly with the AAP Section on Obesity)

5

Avoid routinely ordering thyroid ultrasounds in children who have simple goiters or autoimmune thyroiditis.

Limit this study to children who have asymmetric thyroid enlargement, palpable nodules, or concerning cervical lymphadenopathy. Ultrasound can detect nodules that elude palpation, and one prospective series found that 31.5% of patients with Hashimoto's thyroiditis will have thyroid nodules [2]. The majority of these lesions, however, are not harmful. Overuse of ultrasonography results in needless health care costs and time expenditures for families. More importantly, insignificant findings can create anxiety within patients and parents who are fearful of thyroid cancer. In some cases, the abnormal findings will lead to additional radiographic studies, fine needle aspiration, or aggressive treatment of "pseudo-disease" that will not improve the health of patients.

There is a known association of thyroid cancer with Hashimoto's thyroiditis, and a pathologic diagnosis of papillary carcinoma was made in 3% of patients in the study cited above [2]. However, there is insufficient evidence to conclude that detecting nodules before they are palpable leads to better outcomes [1]. It seems prudent, therefore, to perform a careful annual physical exam of the thyroid, as recommended for all children who are at increased risk of thyroid cancer [2]. If that exam reveals asymmetry, palpable nodules or significant cervical adenopathy then ultrasonography is indicated [2].

How This List Was Created

The American Academy of Pediatrics' Section on Endocrinology (SOEn) consists of pediatric endocrinologists, pediatricians, and allied health care professionals who are actively involved in some aspect of the study of endocrinological disease in infants, children and adolescents. SOEn strives to inform pediatricians, parents, communities and policy makers on endocrinological disease in children. Thus, the Executive Committee of SOEn was queried to develop a list of on diagnostic and management decisions that have resulted in patient harm either from a misdiagnosis or inappropriate therapy. The list was shared with membership of the Section on Endocrinology for feedback and then finalized by the SOEn Executive Committee. These five clinical issues are the result. Consensus on the items was received from 20 AAP expert groups. The list was critically reviewed and approved by the AAP Executive Committee.

The guidance in this list does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

Sources

- 1 Kaplowitz P, Bloch C, the SECTION ON ENDOCRINOLOGY. Evaluation and Referral of Children with Signs of Early Puberty. *Pediatrics*. 2016;137(1):e20153732
- 2 Sisley S, Trujillo MV, Khoury J, Backeljauw P. Low incidence of pathology detection and high cost of screening in the evaluation of asymptomatic short children. *J Pediatr*. 2013 Oct;163(4):1045-51.
- 3 Munns CF, Shaw N, Kiely M, Specker BL, Thacher TD, et al. Global Consensus Recommendation on Prevention and Management of Nutritional Rickets. *J Clin Endocrinol Metab*. 2016 Feb;101(2):394-415. Co-Published in *Horm Res Paediatr*. 2016;85(2):83-106.
LeBlanc E, Chou R, Zakher B, et al. Screening for Vitamin D Deficiency: Systematic Review for the U.S. Preventive Services Task Force Recommendation [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2014 Nov. (*Evidence Syntheses*, No. 119.)
Optimizing Bone Health in Children and Adolescents Golden N, Abrams S, COMMITTEE ON NUTRITION *Pediatrics* Sep 2014, 2014-2173.
Turer CB, Lin H, Flores G. Prevalence of vitamin D deficiency among overweight and obese US children. *Pediatrics* December 2012;doi:10.1542/peds2012-1711
- 4 Gertig, A.M., E. Niechcial, and B. Skowronska. Thyroid axis alterations in childhood obesity. *Pediatr Endocrinol Diabetes Metab*, 2012. 18(3): p. 116-9.
Grandone, A., et al., Thyroid function derangement and childhood obesity: an Italian experience. *BMC Endocr Disord*, 2010. 10: p. 8.
August, G.P., et al., Prevention and treatment of pediatric obesity: an endocrine society clinical practice guideline based on expert opinion. *J Clin Endocrinol Metab*, 2008. 93(12): p. 4576-99.
Reinehr, T., et al., Definable somatic disorders in overweight children and adolescents. *J Pediatr*, 2007. 150(6): p. 618-22, 622 e1-5.
Levy-Marchal, C., et al., Insulin resistance in children: consensus, perspective, and future directions. *J Clin Endocrinol Metab*, 2010. 95(12): p. 5189-98.
- 5 Corrias A, Cassio A, Weber G, et al. Study Group for Thyroid Diseases of the Italian Society for Pediatric Endocrinology and Diabetology: Thyroid Nodules and Cancer in Children and Adolescents Affected by Autoimmune Thyroiditis. *Arch Pediatr Adolesc Med*. 2008;162(6):526-531.
Francis G, Waguespack S, Bauer A, et al. Management Guidelines for Children with Thyroid Nodules and Differentiated Thyroid Cancer: *Thyroid*. 2015 Jul 1; 25(7): 716–759.

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About the American Academy of Pediatrics Section on Endocrinology

The American Academy of Pediatrics is an organization of 66,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults.

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