INTRODUCTION
Thyroid nodular disease consists of a number of disorders including a solitary nodule, a multinodular goiter, nodular goiter observed in autoimmune thyroid disease, i.e. chronic lymphocytic thyroiditis (Hashimoto thyroiditis) or Graves’ disease. These nodules may be palpable or non-palpable.

Prevalence of thyroid nodules in prepubertal children is estimated at up to 1.8%. Evidence suggests malignancy rates in children are higher than in adults, with a mean malignancy rate of 26% in children. Most (97%) benign nodules remain benign.

Most patients with thyroid nodules have few or no symptoms and nodules are often discovered incidentally on physical examination or through imaging studies performed for unrelated reasons.

Factors suggesting increased risk for malignancy include:

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<th>HISTORY</th>
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<td>• History of head and neck irradiation. <em>Childhood cancer survivors who were treated for their primary malignancy with radiation therapy.</em></td>
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<td>• Family history of papillary thyroid cancer, medullary thyroid cancer, and multiple endocrine neoplasia type 2</td>
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<td>• Age 15 years or older</td>
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<td>• Female sex</td>
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<td>• History of rapid growth of nodule</td>
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<td>• Obstructive symptoms: persistent dysphonia, dysphagia or dyspnea</td>
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<th>PHYSICAL</th>
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<td>• Firm or hard consistency</td>
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<td>• Cervical adenopathy</td>
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<td>• Fixed nodule</td>
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INITIAL EVALUATION AND MANAGEMENT

INITIAL EVALUATION:
- Targeted history (see risk factors above):
- Targeted physical Exam (method of examination/palpation)
  - Place first two digits of both hands just below cricoid cartilage so that left and right fingers meet on the patient’s midline. Place thumbs posterior to patient’s neck and flatten all fingers against the neck. Use finger pads, not tips, to palpate and identify the isthmus.
  - Then gently draw fingers laterally 1-2cm and palpate lateral lobes
  - Now ask patient to swallow and assess for asymmetrical elevation of lobes (suggests nodularity)
  - Palpate neck for palpable nodules and cervical nodes
  - Assess for signs of hyperthyroidism or hypothyroidism on exam (i.e. pulse rate, skin findings)
- Initial diagnostic testing
  - TSH and free T4
  - Thyroid ultrasound (US): Request US be performed at Connecticut Children’s Medical Center or a Jefferson Radiology imaging center

INITIAL MANAGEMENT:
- Reassurance

WHEN TO REFER
See Appendix: Initial Evaluation & When to Refer to determine the following three options:
Delay Referral, Referral to Thyroid Center, Referral to Endocrinology

HOW TO REFER
Referral to The Thyroid Center in Endocrinology via CT Children’s One Call Access Center
Phone: 833.733.7669  Fax: 833.226.2329

Information to be included with the referral:
- Notes from visit(s) with the PCP
- Growth chart
- Thyroid test results and thyroid US
WHAT TO EXPECT

What to expect from CT Children’s Visit:
- History, physical exam
- Additional labs if appropriate
- Nuclear imaging studies if appropriate
- Ultrasound guided FNAC (fine needle aspiration cytology) if appropriate
- Consideration of future surgery or Radioactive iodine ablation therapy
- Comprehensive patient education

APPENDIX: Initial Evaluation & When to Refer

*Suspicious findings on history and physical include: history of head and neck irradiation, family history of medullary thyroid carcinoma, multiple endocrine neoplasia type 2, or papillary thyroid carcinoma, history of rapid growth, firm or hard consistency, cervical adenopathy, fixed nodule, persistent dysphonia, dysphagia, or dyspnea. Less/somewhat suspicious findings: age < 14 years and male sex.
*Suspicious findings on ultrasound include: marked hypoechogenicity with solid nodule, irregular or microlobulated margins, microcalcifications, abnormal cervical lymph nodes, shape that is taller than side, increased vascularity.