

HEALTH SERVICES POLICY & PROCEDURE MANUAL

North Carolina Department Of Correction
Division Of Prisons

SECTION: Clinical Practice Guidelines

POLICY # CP-30

SUBJECT: THYROID DISEASE

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EFFECTIVE DATE: June 2011

SUPERCEDES DATE: None

PURPOSE

To assure that DOP inmates with thyroid diseases are receiving high quality Primary Care for their condition in the most cost effective manner.

POLICY

All DOP Primary Care Providers are expected to follow this guideline and/or will document in the medical record any deviations from this guideline and the reasoning behind the need for deviation.

PROCEDURE

MANAGEMENT OF THYROID NODULES

- 1) Approximately **3 to 7% of the US population has solitary thyroid nodules (7.6 to 18.2 million people)**
- 2) However there are **only 23,500 new cases** of thyroid cancer diagnosed each year
- 3) The **vast majority of all thyroid nodules are benign,**
 - a) Only 0.09% of clinically recognized nodules are diagnosed as malignant
 - b) Only 0.01% will result in a death
- 4) The overall **survival rate of thyroid cancer** in middle-aged adults is **80 to 95%**
- 5) **Higher risk factors for malignancy:**
 - a) Positive family history
 - b) Unusually rapid growth
 - c) Unusually firm nodules
 - d) Fixation to adjacent structures
 - e) Vocal cord paralysis
 - f) Regional adenopathy
 - g) Evidence of metastatic disease
- 6) **Intermediate risk factors for malignancy:**
 - a) Age < 20 or > 60 years
 - b) History of neck irradiation
 - c) Males with a solitary nodule
 - d) Diameter > 1 cm
- 7) **There is no role for thyroid suppression (L-Thyroxine therapy) in the management of thyroid nodules.** Multiple studies have clearly shown that this is ineffective.
- 8) **Spontaneous regression will occur in approximately 50% of nodules**
- 9) **Nodules less than 1 cm** in greatest diameter have a very low incidence of cancer and unless high risk factors are present can be followed clinically without further evaluation.
- 10) **TSH levels can effectively screen for "hot" nodules,**
 - a) Only patients with **depressed** TSH need routine thyroid scans.
 - b) If TSH levels are normal or elevated thyroid scans are not needed.
 - c) If a thyroid scan confirms the presence of a hot nodule no further evaluation for malignancy is needed

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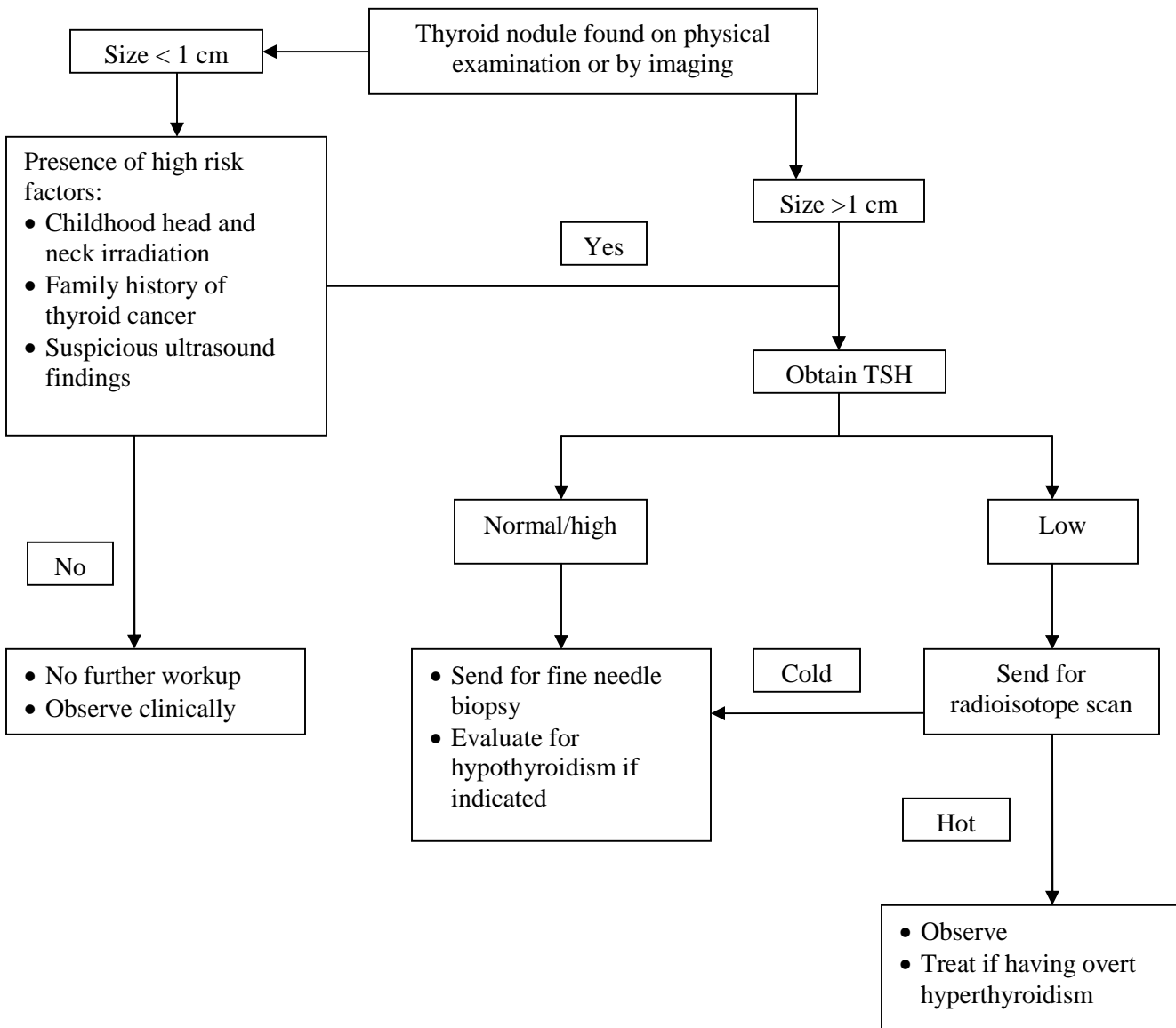
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Algorithm for the Management of Thyroid Nodules



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EVALUATION OF THYROID FUNCTION

1) Diagnosis

a) Symptoms of hyperthyroidism:

- i) **Overt hyperthyroidism:** Usually have multiple of the following: anxiety, emotional lability, weakness, tremor, palpitations, heat intolerance, increase perspiration, and weight loss
- ii) **Mild hyperthyroidism/elderly patients:** Often have symptoms referable to one or only a few organ systems. Cardiopulmonary symptoms i.e. tachycardia/arterial fibrillation, DOE, edema may predominate.

b) Symptoms/signs of hypothyroidism:

- i) Fatigue, weakness, cold intolerance
- ii) DOE, weight gain, cognitive dysfunction
- iii) Constipation, dry skin, hoarseness, edema
- iv) Hearing loss, myalgia, arthralgia, paraesthesia
- v) Depression, menorrhagia
- vi) Slow movement and speech
- vii) Delayed relaxation of tendon reflexes
- viii) Bradycardia, coarse skin, facial edema, loss of eyebrows
- ix) Enlargement of tongue
- x) Diastolic hypertension
- xi) Ascites, pleural and pericardial effusions
- xii) Galactorrhea

2) TSH: Should be the initial screening/evaluation test

a) If abnormal recheck to confirm

b) If **sub normal** or if normal and high index of suspicion for hyperthyroidism check **free T4 and free T3**

- i) Free T4 and T3 are high and TSH is normal or high order a pituitary MRI
- ii) Free T4 and T3 are normal and TSH is low may have **subclinical hyperthyroidism**
- iii) Free T4 is normal, T3 is high, and TSH is low most likely has Graves' disease
 - (1) **24-hour thyroid radioiodine uptake and scan:** Differentiate between Graves' disease and other causes
- iv) Free T4 is high, T3 is normal, and TSH is low suggest hyperthyroidism with concurrent non-thyroidal disease

c) If **elevated** check **free T4**

- i) High TSH, low T-4 = Primary hypothyroidism
- ii) High TSH, normal T-4 = Subclinical hypothyroidism
- iii) Low or normal TSH, low T-4 = Secondary/tertiary hypothyroidism
 - (1) Do MRI of sella and suprasellar region
 - (2) Evaluate for hypopituitarism

3) Disorders that affect TSH and/or thyroid function

a) *Drugs that may cause hypothyroidism*

- i) *Inhibition of thyroid hormone synthesis and/or release:* Lithium, perchlorate, aminoglutethimide, thalidomide, iodine and iodine containing drugs, amiodarone, radiographic agents, expectorants, kelp tablets, potassium iodide solutions, betadine douches, topical anesthetics
- ii) *Decreased absorption of T4:* cholestyramine, colestipol, aluminum hydroxide, calcium carbonate, sucralfate, iron sulfate, raloxifene, omeprazole and possibly other acid suppressing medications, malabsorption syndromes
- iii) *Immune dysregulation:* interferon-alfa, interleukin-2

b) *Drugs causing hyperthyroidism*

- i) *Stimulation of thyroid hormone synthesis and/or release:* iodine, amiodarone

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- ii) *Immunesdysregulation*: interferon-alfa, interleukin-2
- c) **Drugs causing abnormal thyroid function tests without thyroid dysfunction**
 - i) *Low serum TBG*: androgens, danazol, glucocorticoids, slow-release niacin, l-asparaginase
 - ii) *High serum TBG*: estrogens, tamoxifen, raloxifene, methadone, five-fluorouracil, close vibrate, heroine, mitotane
 - iii) *Decrease T4 binding to TBG*: salicylates, salsalate, furosemide, heparin, certain NSAIDs
 - iv) *Increased T4 clearance*: phenytoin, carbamazepine, rifampin, Phenobarbital
 - v) *Suppression of TSH secretion*: dopamine, dobutamine, glucocorticoids, octreotide, bexarotene
 - vi) *Impaired conversion of T4 to T3*: amiodarone, glucocorticoids, contrast agents for oral Cholecystogram, propylthiouracil, propranolol, nadol

MANAGEMENT OF HYPERTHYROIDISM

1) Treatment of the Graves' disease

a) Beta-Blockers

- i) Rapidly ameliorate the symptoms of increased beta-adrenergic tone and should be started immediately in most patients who are symptomatic unless there is a contraindication
- ii) The usual starting doses:
 - (1) Atenolol 25 – 50 mg qAM
 - (2) Metoprolol 25 – 50 mg bid
 - (3) Propranolol 20 – 40 mg bid

b) Thionamides

- i) Methimazole is the preferred drug
- ii) Goal of therapy is to be euthyroid in three to eight weeks
- iii) Patients with mild disease in small goiters can be started on 10 mg daily
- iv) Patients with large goiters or severe disease can be started on 30 mg daily

c) Radioiodine ablation

- i) Widely used as treatment for Graves'
- ii) Can be used as primary treatment in mild, well tolerated hyperthyroidism
- iii) In poorly tolerated hyperthyroidism, in the elderly, and in patient's underlying cardiac disease should usually be pretreated with thioamides
- iv) This treatment can be ordered directly by sending the patient to radiology and does not require any consultation with endocrinology

d) Surgery

- i) This is usually only indicated if there is a concern for malignancy or the patient can not tolerate the other treatments

2) Treatment of Subclinical hyperthyroidism

a) High risk patients: (elderly, post menopausal woman not on estrogen, cardiac patients)

- i) TSH < 0.1 μ U/ml: evaluate and treat for hyperthyroidism
- ii) TSH – 0.1 to 0.5 μ U/ml: Consider treatment if:
 - (1) thyroid radionuclide scan shows an area of high uptake
 - (2) bone density is low

b) Low risk patients:

- i) TSH < 0.1 μ U/ml: consider treatment, especially if a thyroid radionuclide scan shows an area of high uptake, or if bone density is low
- ii) TSH – 0.1 to 0.5 μ U/ml: follow-up alone is appropriate

MANAGEMENT OF HYPOTHYROIDISM

- 1) Levothyroxine (synthetic thyroxine [T-4]) is the preferred formulation

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- 2) Should be taken on empty stomach
- 3) Generics are acceptable but it is probably best if the patient does not change brands (pharmacy will notify providers if there is a change in supplier for levothyroxine)
- 4) Starting dose
 - a) 1.6 mcg/kg/day
 - b) Correlates better with lean then total body weight
 - c) Elderly and patients with CAD better to start with lower dose
 - i) Older patients = 50 mcg
 - ii) CAD = 25 mcg
- 5) Titration
 - a) Symptoms often improve within 2 weeks
 - b) Measure Free T-4 and TSH q 6 weeks (sooner in patients who are still symptomatic) until controlled then refer to section on maintenance
 - c) T-4 changes more quickly then TSH and should be used if titration is done more frequent then q6 weeks
 - d) It takes about 6 weeks to reach a steady state after initial dose or subsequent dose changes
- 6) Maintenance
 - a) Monitor TSH yearly, if new drugs that may affect therapy are started, or if symptoms recur
 - b) It is reasonable to aim for lower portion of the normal reference range (0.4 – 1.5) however, there are no studies to date that prove that this is preferable
 - c) If TSH is slightly out of range
 - i) If asymptomatic no change is necessary
 - ii) Repeat TSH before making dose changes

References

Alexander, E. K., et al. Natural history of benign solid and cystic thyroid nodules, Ann Intern Med 2003; 138:315-8

Baskin, HJ, et al. American Association of Clinical Endocrinologists Medical Guidelines for the Clinical Practice For the Evaluation and Treatment of Hyperthyroidism and Hypothyroidism, AACE Thyroid Task Force, Endocrine Practice 11-12/02; 8:6

Cooper, DS, et al. Management Guidelines for Patients with Thyroid Nodules and Differentiated Thyroid Cancer, the American Thyroid Association Guidelines Task Force, Thyroid 2006; 16: 2

Kopes-Kerr, CP, The Management of Thyroid Nodules—A Common Sense Approach, Action Advisor for Primary Care, 4:11, 11/2002.

Ross, DS, Diagnosis of and screening for hypothyroidism, UpToDate: 14.2:02/08/06

Ross, DS, Treatment of hypothyroidism, UpToDate: 14.2:05/08/06

Ross, DS, Treatment of Graves' hyperthyroidism, UpToDate: 14.2:08/21/01

Ross, DS, Overview of the clinical manifestations of hyperthyroidism and adults, UpToDate: 14.2:01/05/06

Ross, DS, Radioiodine in the treatment of hyperthyroidism, UpToDate: 14.2: 01/05/06

Ross, DS, Diagnostic approach to and treatment of thyroid nodules, UpToDate: 14.2: 01/05/06

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Ross, DS, Beta blockers in the treatment of hyperthyroidism, UpToDate: 14.2: 04/18/06

Ross, DS, Diagnosis of hyperthyroidism, UpToDate: 14.2:01/13/04

Ross, DS, Subclinical hyperthyroidism, UpToDate: 14.2:03/13/06

Ross, DS, Treatment of Graves' hyperthyroidism, UpToDate: 14.2:08/29/01

Ross, DS, Radioiodine in the treatment of hyperthyroidism, UpToDate: 14.2:01/5/06

Surks, MI, Clinical manifestations of hypothyroidism, UpToDate: 14.2:01/05/06

Tan GH, Gharib H. Thyroid incidentalomas: Management approaches to nonpalpable nodules discovered incidentally on thyroid imaging. Ann Intern Med 1997; 126: 226-31



5/26/11

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Date

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