Complete Summary

GUIDELINE TITLE

Guidelines for detection of thyroid dysfunction.

BIBLIOGRAPHIC SOURCE(S)

American Thyroid Association. Guidelines for detection of thyroid dysfunction. Arch Intern Med 2000 Jun 12;160(11):1573-5. [23 references]

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Thyroid dysfunction:

- Hypothyroidism
- Hyperthyroidism, including Graves disease, toxic adenoma and nodular goiter, subacute and lymphocytic (silent, postpartum) thyroiditis, iodine-induced hyperthyroidism, and exogenous thyroid hormone excess.

GUIDELINE CATEGORY

Diagnosis
Management
Treatment

CLINICAL SPECIALTY

Endocrinology
Family Practice
Internal Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To define the optimal approach to identify patients with thyroid dysfunction.

TARGET POPULATION

Adults aged 35 years and older

INTERVENTIONS AND PRACTICES CONSIDERED

Screening

- Serum thyrotropin [thyroid-stimulating hormone (TSH)] measurement

Case finding

- Assessment of signs and symptoms
- Evaluation of personal and family medical histories
- Laboratory studies, especially serum cholesterol

Other thyroid laboratory studies

- Serum free thyroxine (FT_4)
- Serum free triiodothyronine T_3 (FT_3)

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Relevant published studies were identified through MEDLINE and the association membership's personal resources.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review
Review of Published Meta-Analyses

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Consensus was reached at group meetings. The first draft was prepared by a single author after group discussion. Suggested revisions were incorporated after consideration by the committee.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A decision and cost-effectiveness analysis of screening for mild thyroid failure by measurement of serum thyroid stimulating hormone (TSH) concentration is detailed in a separate paper. (Danese MD, Powe NR, Sawin CT, Ladenson PW. Screening for mild thyroid failure at the periodic health examination: a decision and cost-effectiveness analysis. JAMA 1996 Jul 24-31;276(4):285-92.)

A state-transition computer decision model that accounted for case finding, medical consequences of mild thyroid failure, and costs of care during 40 years of simulated follow-up was constructed for a cost-utility analysis. Discounted quality-adjusted life years (QALYs) and direct medical costs from a societal perspective were the main outcome measures. The cost-effectiveness of screening 35-year-old patients with a serum TSH assay every 5 years was $9223 per QALY for women and $22 595 per QALY for men. The cost-effectiveness became more favorable when age at first screening was increased for both sexes and was always more favorable for women than men. Reduced progression to overt

hypothyroidism and relief of symptoms increased QALYs, but did not substantially reduce direct medical costs. Finding hypercholesterolemia induced by mild thyroid failure reduced direct medical costs, but did not substantially increase QALYs. The cost of a TSH assay and the importance to patients of symptoms associated with thyroid failure were the most influential factors in sensitivity analysis.

The cost-effectiveness of screening for mild thyroid failure compares favorably with other generally accepted preventive medical practices. Physicians should consider measuring serum TSH concentration in patients aged 35 years and older undergoing routine periodic health examinations. The cost-effectiveness of screening is most favorable in elderly women.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The 8-member Standards of Care Committee of the American Thyroid Association prepared a draft, which was reviewed by the association's 780 members, 50 of whom responded with suggested revisions.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Screening for Thyroid Dysfunction:

- The American Thyroid Association recommends that adults be screened for thyroid dysfunction by measurement of the serum thyroid stimulating hormone (TSH) concentration, beginning at age 35 years and every 5 years thereafter. The indication for screening is particularly compelling in women, but it may also be justified in men as a relatively cost-effective measure in the context of the periodic health examination.
- Individuals with clinical manifestations potentially attributable to thyroid dysfunction and those with risk factors for its development may require more frequent serum TSH testing.

Case Finding for Thyroid Dysfunction

- A number of symptoms and signs are well established manifestations of thyroid dysfunction.

Common Symptoms and Signs of Thyroid Dysfunction	
Hypothyroidism	Hyperthyroidism
Fatigue	Fatigue

Weight gain	Weight loss
Cold intolerance	Heat intolerance
Skin dryness	Hyperhydrosis
Hair dryness	
Depression	Nervousness
Dementia	Insomnia
	Tremor
Muscle cramps and myalgias	Muscle weakness
Edema	Dyspnea
Bradycardia	Palpitations
	Tachycardia and atrial tachyarrhythmias
Constipation	Hyperdefecation
Menstrual irregularity (especially menorrhagia)	Menstrual irregularity (especially hypermenorrhea)
Infertility	

- Additional findings in patients' personal and family histories indicate increased risk of developing thyroid dysfunction.
    - Risk factors identifiable in personal history include (1) previous thyroid dysfunction (2) goiter (3) surgery or radiotherapy affecting the thyroid gland (4) diabetes mellitus (5) vitiligo (6) pernicious anemia (7) leukotrichia (prematurely gray hair) and (8) medications and other compounds, such as lithium carbonate and iodine-containing compounds (e.g., amiodarone hydrochloride, radiocontrast agents, expectorants containing potassium iodide, and kelp).
    - Risk factors identifiable in the family history include (1) thyroid disease (2) pernicious anemia (3) diabetes mellitus (4) primary adrenal insufficiency.
- Abnormal results in certain commonly obtained laboratory tests may also suggest hypothyroidism or hyperthyroidism.
    - Findings of these tests for hypothyroidism may include (1) hypercholesterolemia (2) hyponatremia (3) anemia (4) creatine phosphokinase and lactate dehydrogenase elevations (5) hyperprolactinemia.
    - Findings of these tests for hyperthyroidism may include (1) hypercalcemia (2) alkaline phosphatase elevation (3) hepatocellular enzyme elevation. Any of these clinical and laboratory findings justify thyroid function testing, particularly if they are sustained for 2 weeks or more, occur in combination, have not been present previously during documented euthyroidism, or occur in individuals with increased risk of thyroid disease.

Laboratory Testing Strategies:

Serum TSH measurement is the single most reliable test to diagnose all common forms of hypothyroidism and hyperthyroidism, particularly in the ambulatory

setting. Measurement of serum free thyroxine (FT_4) and serum free triiodothyronine T_3 (FT_3) may also be indicated in certain clinical circumstances:

- While serum TSH measurement confirms or excludes the diagnosis in all patients with primary hypothyroidism, it will not reliably identify patients with central (secondary) hypothyroidism, in whom serum TSH concentrations may be low, normal, or mildly elevated. When there is suspicion of pituitary or hypothalamic disease, the serum FT_4 concentration should be measured in addition to the serum TSH concentration.
- Virtually all types of hyperthyroidism encountered in clinical practice are accompanied by suppressed serum TSH concentrations, typically less than 0.1 mIU/L. These include Graves disease, toxic adenoma and nodular goiter, subacute and lymphocytic (silent, postpartum) thyroiditis, iodine-induced hyperthyroidism, and exogenous thyroid hormone excess. Serum FT_4 measurement and serum triiodothyronine (T_3) assay in patients with a normal serum FT_4 level are indicated to further assess patients with a serum TSH level less than 0.1 mIU/L.
- To diagnose hyperthyroidism accurately, TSH assay sensitivity, the lowest reliably measured TSH concentration, must be 0.02 mIU/L or less. Some less sensitive TSH assays cannot reliably distinguish patients with hyperthyroidism from those with euthyroidism. When such less sensitive TSH assays are the only ones available, a serum FT_4 assay or estimate and a total or free T_3 (FT_3) assay should be employed in addition to measurement of the serum TSH concentration. There are 2 rare types of TSH-mediated hyperthyroidism, TSH-secreting pituitary adenomas and selective pituitary resistance to thyroid hormone, that will be overlooked by serum TSH measurement alone; serum FT_4 and FT_3 concentrations should also be measured when these conditions are suspected.

Finally it is important to recognize that isolated abnormalities of the serum TSH concentration do not always connote sustained thyroid dysfunction and may be caused by other conditions and medications.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Early detection of thyroid dysfunction is important because once diagnosed, hypothyroidism and hyperthyroidism can be treated before clinical complications ensue.

Subgroups Most Likely to Benefit:

Women and older persons

POTENTIAL HARMS

Serum thyroid stimulating hormone (TSH) concentration measurement in adults every 5 years may not be frequent enough for individuals at higher risk of developing thyroid dysfunction, possibly predisposing those individuals to undetected development of thyroid dysfunction.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Thyroid Association. Guidelines for detection of thyroid dysfunction. Arch Intern Med 2000 Jun 12;160(11):1573-5. [23 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Jun 12

GUIDELINE DEVELOPER(S)

American Thyroid Association - Professional Association

SOURCE(S) OF FUNDING

American Thyroid Association

GUIDELINE COMMITTEE

Standards of Care Committee of the American Thyroid Association

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Members: Paul W. Ladenson, MD; Peter A. Singer, MD; Kenneth B. Ain, MD; Nandalal Bagchi, MD, PhD; Harvey Cohen, MD; S. Thomas Bigos, MD; Elliot G. Levy, MD; Steven A. Smith, MD; Gilbert H. Daniels, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

ENDORSER(S)

American Thyroid Association Executive Council

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Available from the online Archives of Internal Medicine at the American Medical Association (AMA) Web site. A link is also provided at the American Thyroid Association Web site.

Print copies: Available from the American Thyroid Association, 6066 Leesburg Pike, Suite 650, Falls Church, VA 22041; Phone: (703) 998-8890; e-mail: admin@thyroid.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Danese MD, Powe NR, Sawin CT, Ladenson PW. Screening for mild thyroid failure at the periodic health examination. A decision and cost-effectiveness analysis. JAMA 1996 Jul 24-31;276(4):285-92.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on August 15, 2000. The information was verified by the guideline developer as of September 26, 2000.

COPYRIGHT STATEMENT

This summary is based on the original guideline, which is copyrighted by the American Thyroid Association.

© 1998-2004 National Guideline Clearinghouse

Date Modified: 11/15/2004