Thyroid Function Tests

Disclaimer

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Thyroid Function Tests

1. If asymptomatic without risk factors, do not routinely screen for thyroid dysfunction.
2. If there is a clinical suspicion of thyroid function disorder, or if symptoms or risk factors are present, perform tests.
3. Consider:
   - thyroid dysfunction risk factors

Thyroid dysfunction risk factors

- Disease history:
  - Personal or family history of thyroid disease
  - Autoimmune disease – type 1 diabetes, Addison’s disease, pernicious anaemia, coeliac disease
  - Down’s syndrome or Turner syndrome

- Head and neck trauma:
  - Pituitary or hypothalamic abnormality including severe head injury
  - History of head and neck irradiation, radical neck surgery, previous thyroid surgery

- Drug therapies: Lithium and amiodarone, cytotoxic medication, tyrosine kinase inhibitors, iodine excess (e.g., radiocontrast, kelp supplements), interferon, T-cell immunomodulatory antibodies (e.g., for treatment of multiple sclerosis and cancer immunotherapy)

- Women:
  - Aged > 55 years
  - Post-partum (6 weeks to 6 months) with suggestive symptoms
  - Seeking fertility treatment

- Other: Positive thyroid peroxidase (TPO) antibodies

  - Signs and symptoms of thyroid dysfunction

  - Agitation and anxiety
  - Confusion, depression, nervousness, or tremor
  - Constipation or diarrhoea
  - Dry skin
  - Goitre
  - Hair loss
  - Heart rate abnormalities
  - Heat or cold intolerance
  - Hypertension
  - Lethargy, fatigue
  - Menstrual irregularities
➢ Weight gain or loss
➢ Widened pulse pressure

• Abnormal results

Abnormal results
➢ Overt biochemical hypothyroidism – prevalence up to 2% of population, 10 times more common in women.
➢ Subclinical hypothyroidism elevated TSH (thyroid-stimulating hormone) and a normal FT4 level – prevalence up to 17%, in older women.
➢ Hyperthyroidism – prevalence 1%, 10 times more common in women in iodine replete areas.
➢ Subclinical hyperthyroidism (low TSH and normal FT4 and FT3) – prevalence around:
  o 1% in men aged < 60 years, and
  o 1.5% in women aged < 60 years, and higher in older people.

Available tests
• Thyroid-stimulating hormone (TSH):
  o When clinical findings suggest thyroid disease or if increased risk of thyroid disease (screens are Medicare-funded).
  o It is a sensitive marker of thyroid function in patients on replacement therapy.
• Free thyroxine (FT4) if:
  o TSH is elevated (sub-clinical hypothyroidism).
  o TSH < 0.3 to 0.5 mIU/L (hyperthyroidism).
• Free triiodothyronine FT3 is rarely required:
  o Potential thyrotoxicosis with suppressed TSH and normal FT4
  o Early recurrence of thyrotoxicosis
  o During antithyroid therapy
  o Patient has amiodarone-induced thyrotoxicosis
• Thyroid antibodies (Ab) and markers of autoimmune thyroid disease, including Hashimoto’s and Grave’s disease:
  o Also known as thyroid microsomal or thyroid peroxidase and thyroglobulin antibodies.
  o Use in:
    ▪ investigation of abnormal thyroid function to detect autoimmune thyroid disease.
    ▪ investigation of post-partum or sub-acute thyroiditis.
    ▪ investigation of unexplained ophthalmopathy or myopathy.

Note that they occur in low titre in up to 20% of the normal elderly population. ¹
Note: If an abnormal thyroid result, particularly with small variations from normal, it is important to **reconsider the clinical picture**.

### Reconsider the clinical picture

- Some results may show variation due to a resolving non-thyroid illness, or biological, and analytical variation.
- Acutely ill patients may have an altered TSH.
- Consider retesting in 4 to 6 months.
- Beware of patients using high dose biotin e.g., multiple sclerosis, as this may interfere with some assay platforms. Cease biotin and recheck thyroid function tests (TFTs) after 3 to 4 days.

See also bpacnz – [Investigating Thyroid Function](#).
Information

For health professionals

Education


Further information

➢ Australian Prescriber – Thyroid Function Tests
➢ bpacnz:
  • Investigating Thyroid Function
  • Management of Thyroid Dysfunction in Adults

Sources

References

1. Royal College of Pathologists of Australasia Manual. [place unknown]: Royal College of Pathologists of Australasia Manual; Thyroid Ab. [date unknown].

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