Thyroid disorders in primary care

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Plan

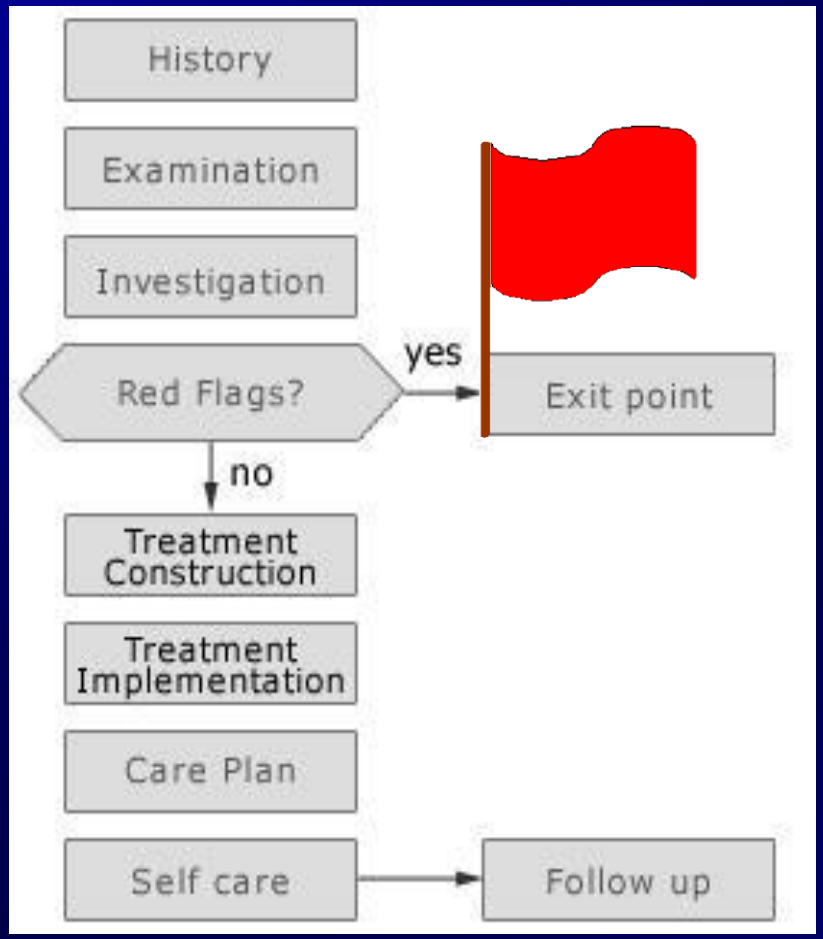
- Hypothyroidism – overt, subclinical
- Hyperthyroidism- overt, subclinical
- Thyroid nodules

Dear Doctor

Please see this patient with…..

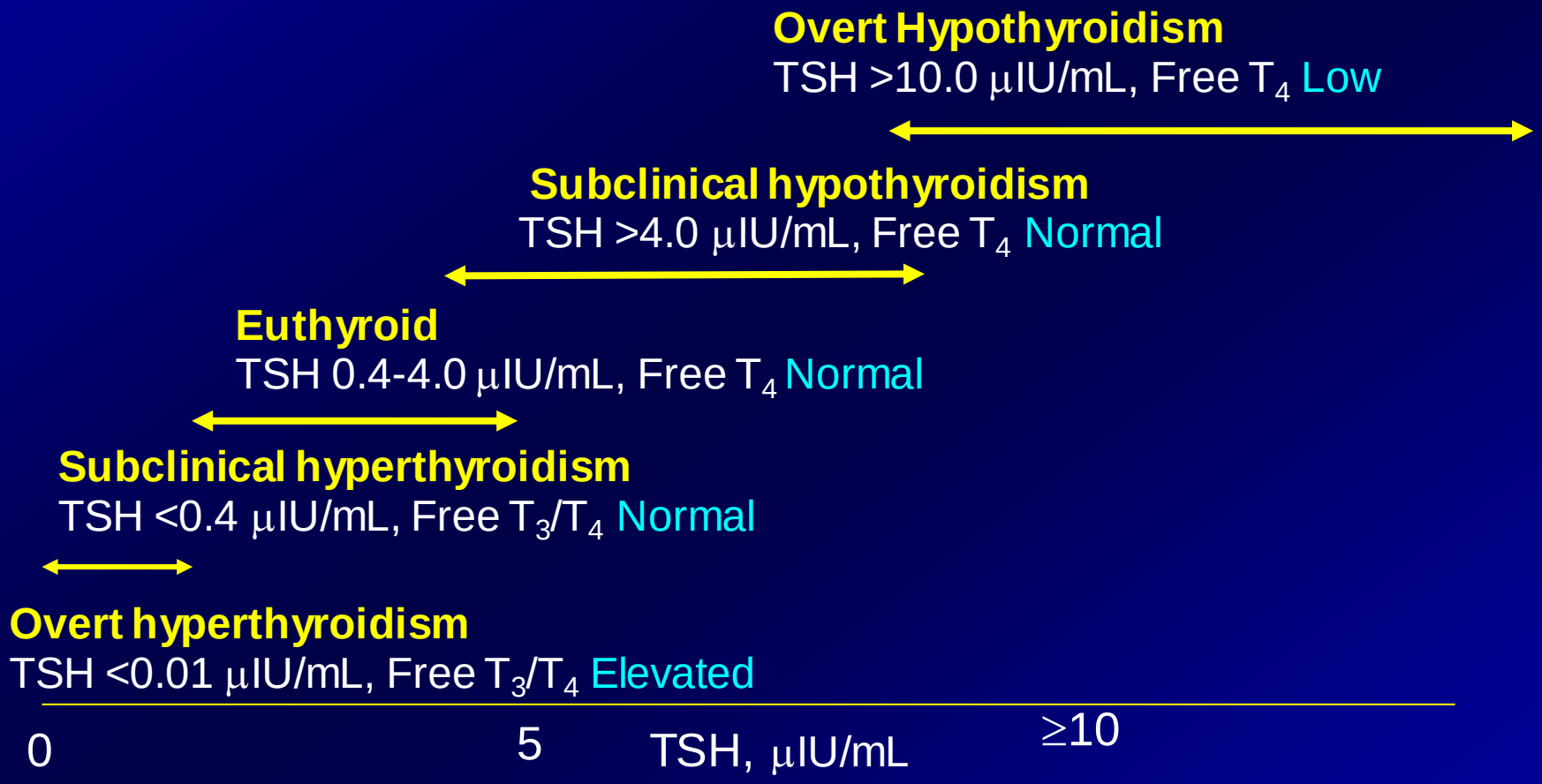
Scenarios A-N

The Endocrine Approach

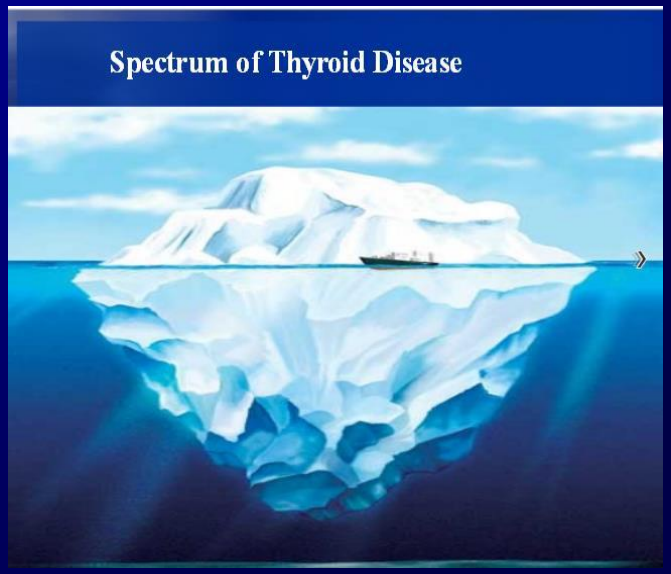


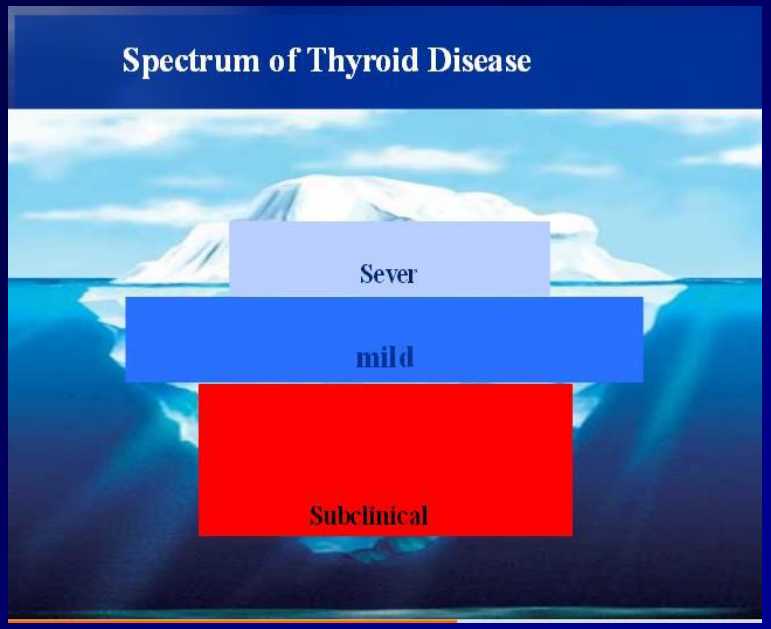
- **History** including drugs
- **Examination** including fluid status, blood pressure
- **Screening tests**
- **Confirmatory** tests

Thyroid Disease Spectrum



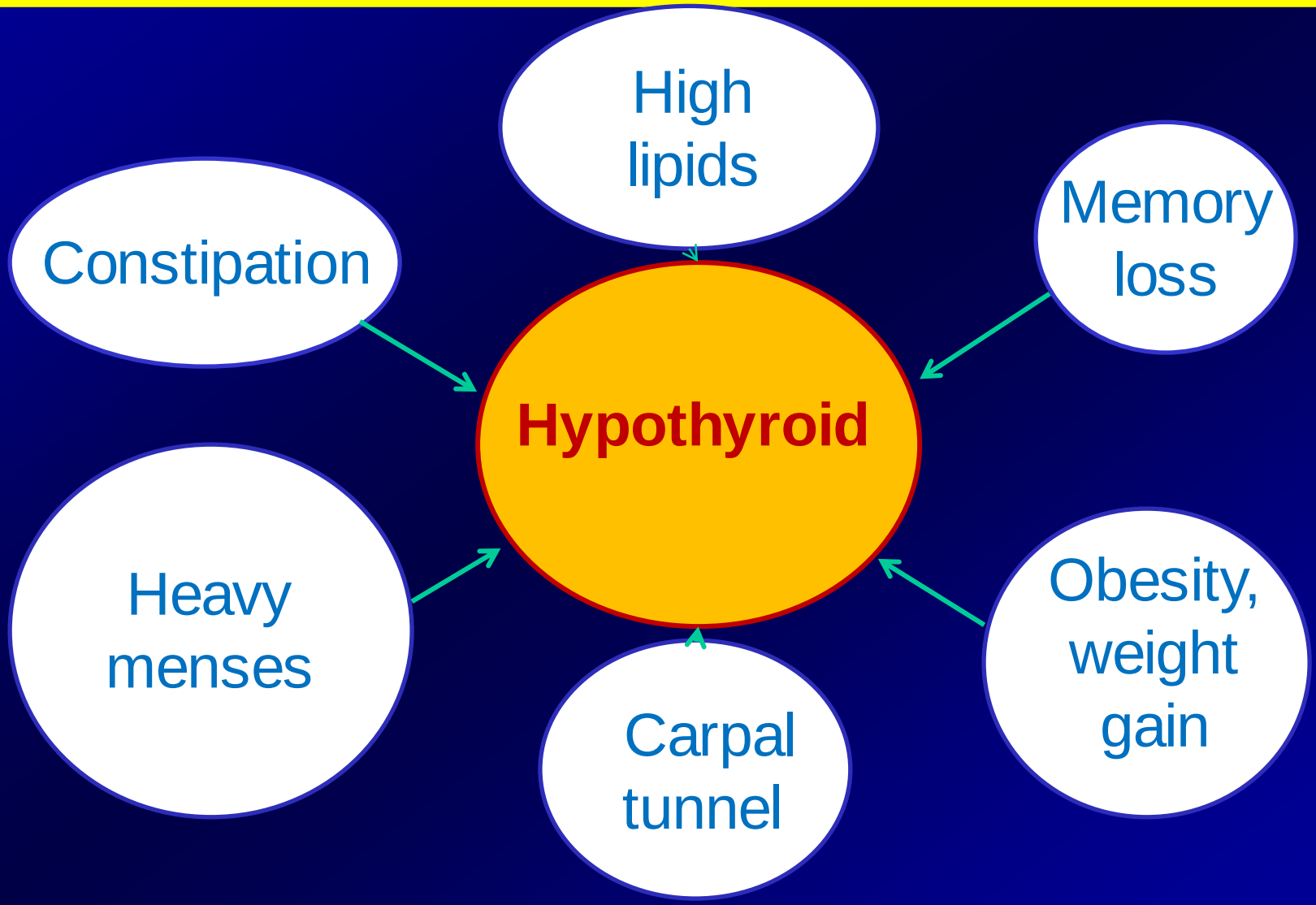
Spectrum of thyroid disease





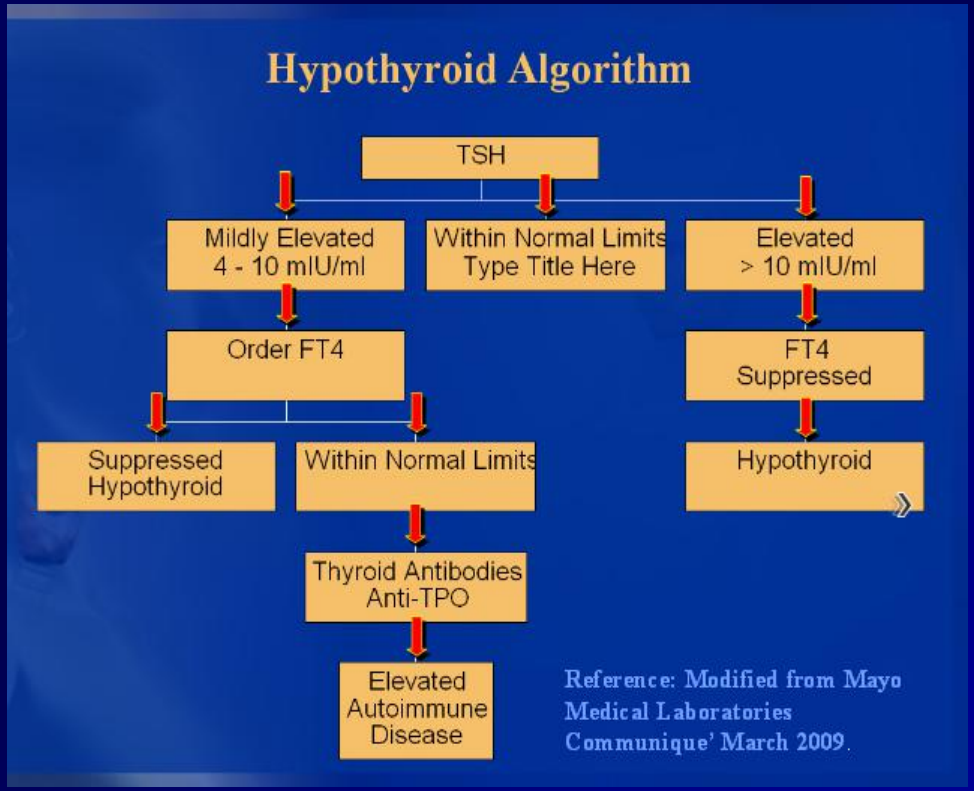
Hypothyroidism

Presentations hypothyroid



“Routine testing” of thyroid function

- Previous RAI
- On amiodarone
- Type 1 diabetes
- Dyslipidaemia
- Unexplained hyponatraemia
- Macrocytic anaemia



Clinical Scenarios

Dear Doctor

Please see well person with TSH slightly raised (5.5)

A

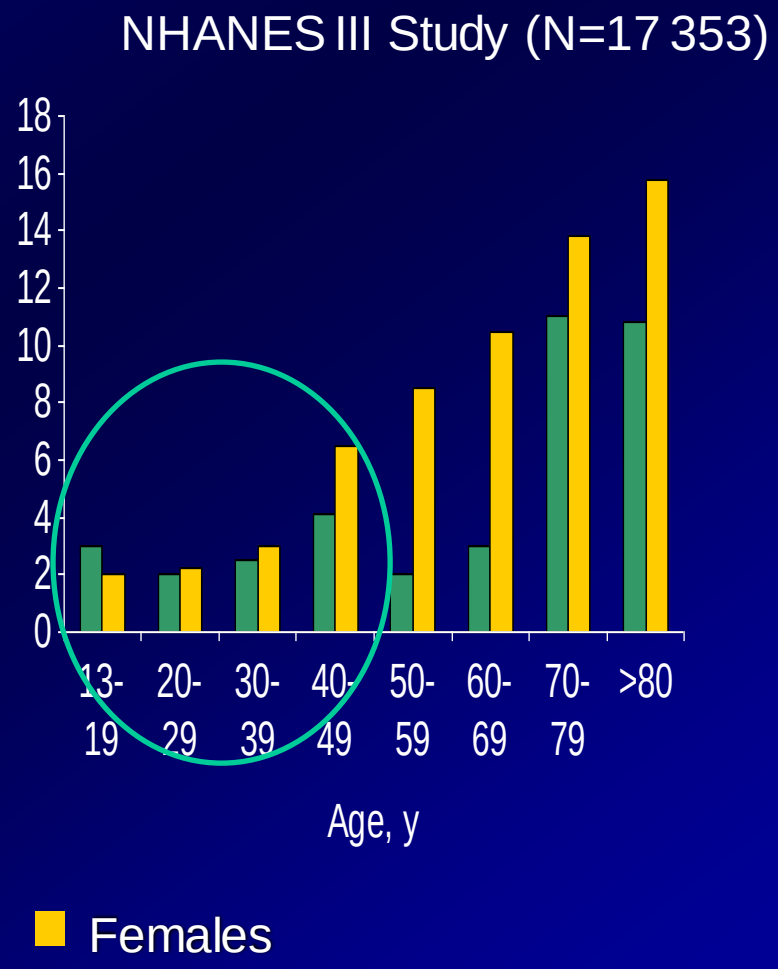
Dear Doctor

Please see polysymptomatic person with TSH slightly raised (5.5)

B

Clinical Scenario A- asymptomatic subclinical hypothyroidism

- Common esp older females
- Iodine/ kelp/ contrast/ amiodarone
- Check TPO antibodies



Hollowell JG, et al. *J Clin Endocrinol Metab*. 2002;87:489-499.

Clinical Scenario A- treatment with L-thyroxine?

- TSH may spontaneously normalise
- CV risk factor benefit (lipids) but limited evidence of CV events reduced
- No benefit for cognitive function, QoL, depression if TSH<10

BTA/ ETA/ ATA recommend treat with LT4 if TSH>10 especially in presence of TPO antibodies

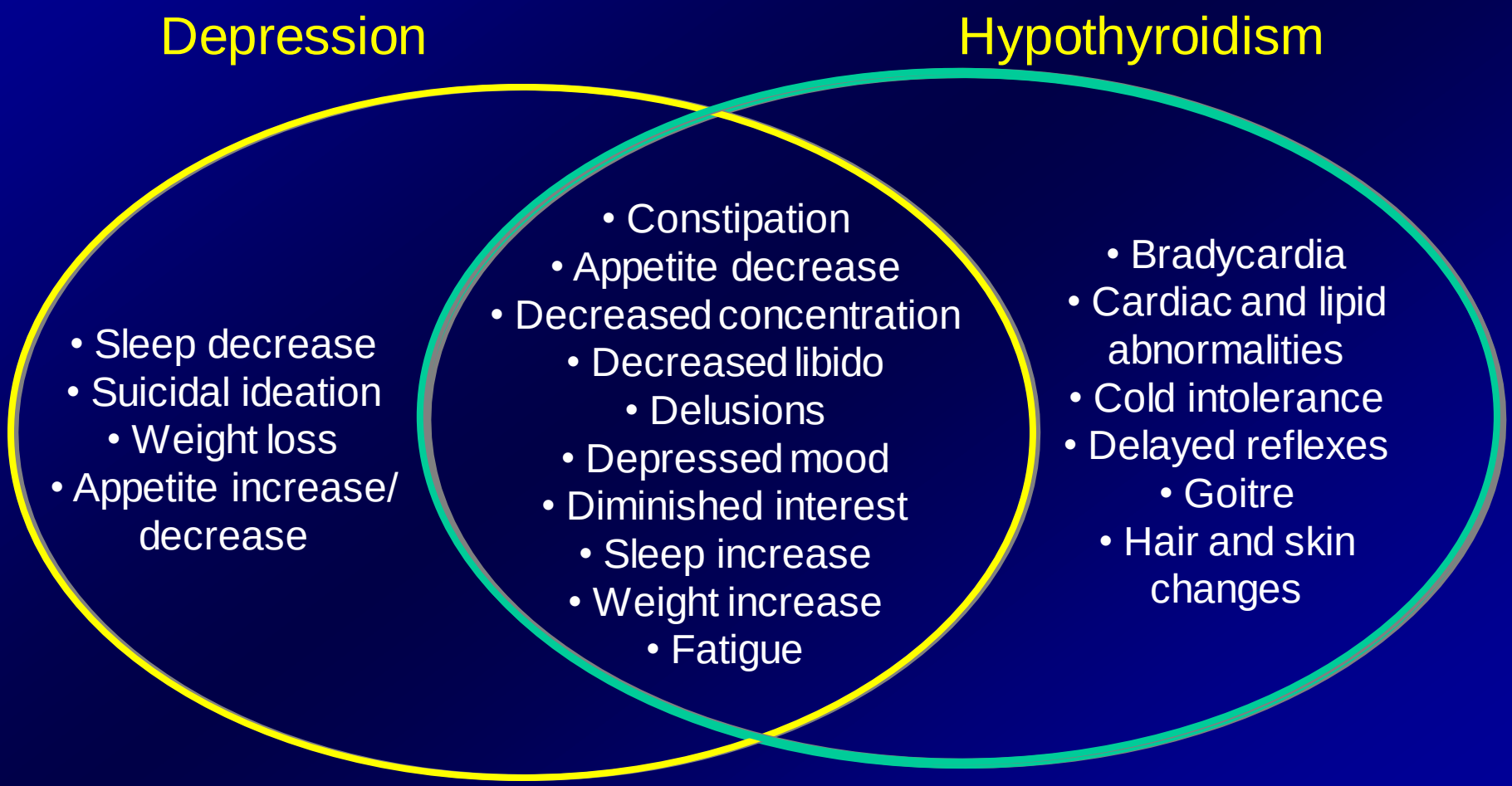
- Caution >70 yrs olds
- Monitor if TSH 4-10
- Consider LT4 at lower TSH in woman trying to conceive

Clinical Scenario B- symptomatic subclinical hypothyroidism

- No evidence of clinical benefit for LT4 (cognitive function, depression, quality of life) if TSH<10
- No evidence for thyroid extract
- No evidence for giving T3 +T4

BTA/ ETA/ ATA recommend treat with L-T4 if TSH>10 especially in presence of TPO antibodies

Hypothyroidism and Depression Have Many Common Features



Nemeroff CB, *J Clin Psychiatry*. 1989;50(suppl):13-20.

Clinical Scenarios

Dear Doctor
Please see this patient who is on 250 mcg of L-thyroxine and despite this her TSH is 100!

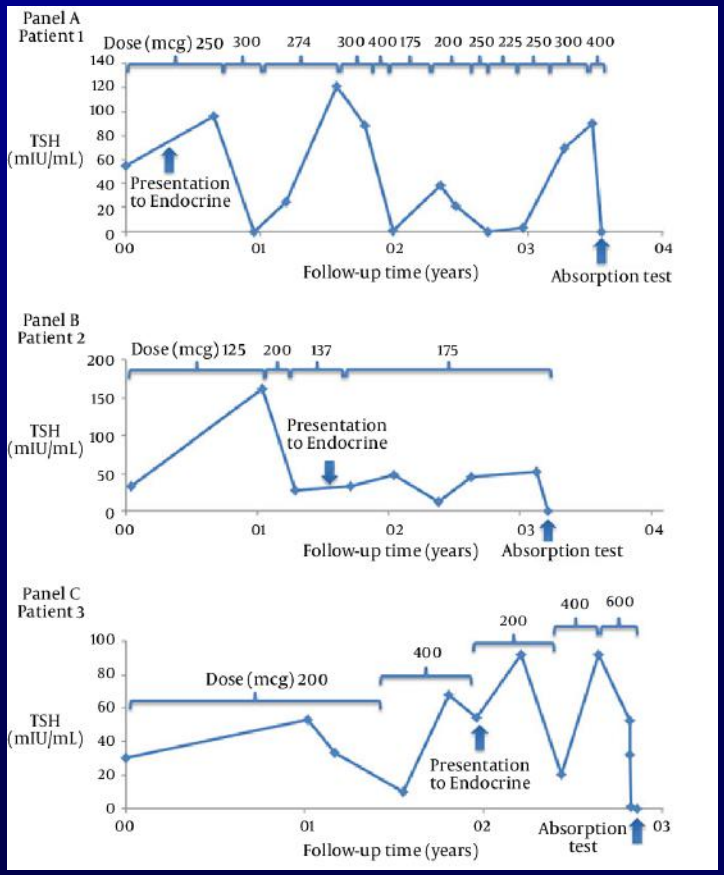
C

Dear Doctor
Please see this woman who is 8 weeks pregnant on L-thyroxine. Her TSH is 4.0

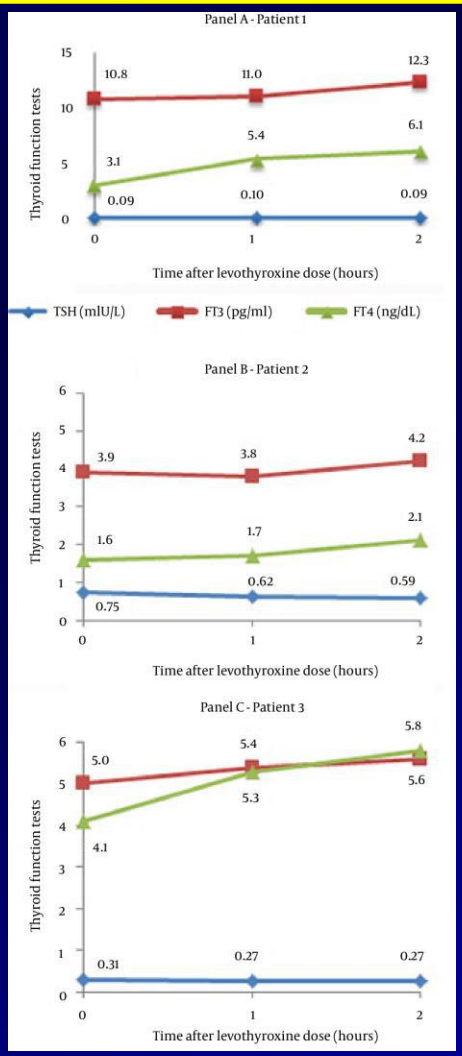
D

Scenario C: High TSH despite high dose L-T4

Thyroxine absorption test

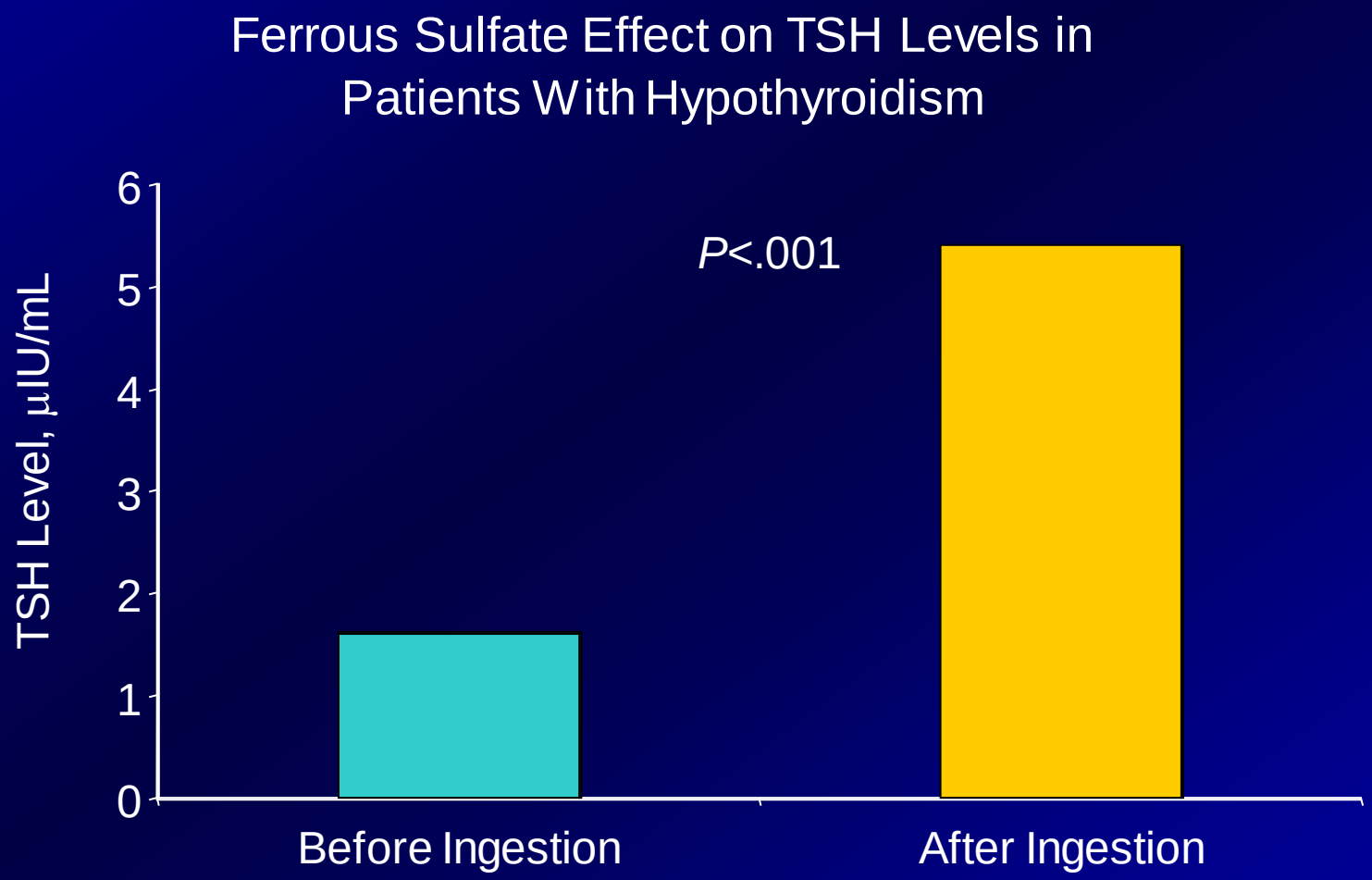


Patient with very high TSH



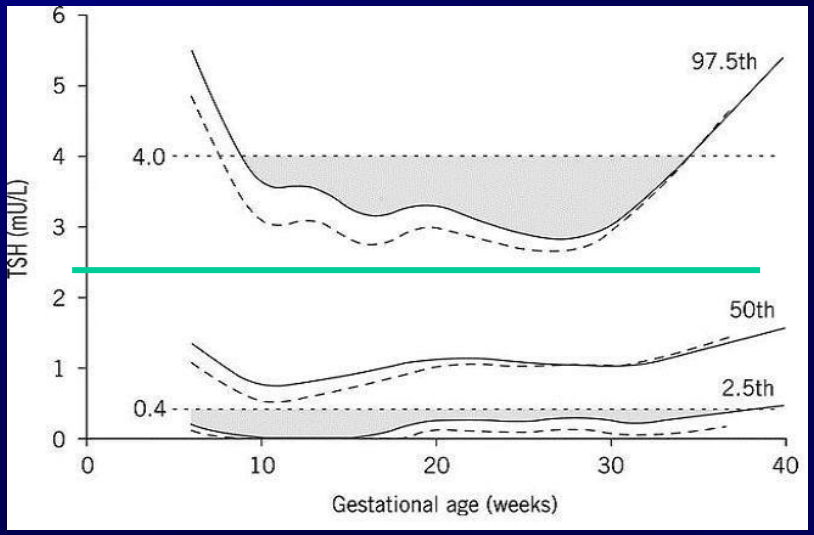
Normal test

Iron Ingestion and Levothyroxine Therapy



Campbell NR, et al. *Ann Intern Med*. 1992;117:1010-1013.

Scenario D- Early pregnancy



- TSH must be <2.5 in first trimester because of risk of miscarriage, low BW baby, low IQ later in offspring
- Increase LT4 by 20%

Clinical Scenarios

Dear Doctor
Please see this patient with normal thyroid function. The TPO antibody is high

E

Dear Doctor
Please see this woman with normal thyroid function. The TPO antibody was high (66) and is now 150.

F

Scenarios E,F: Positive TPO antibodies

- +ve TPO antibodies are common
- Presence of TPO antibody identifies person more likely to become hypothyroid over next 10-20 years
- Peroxidase is selenium dependent; selenium supplements reduce TPO titre

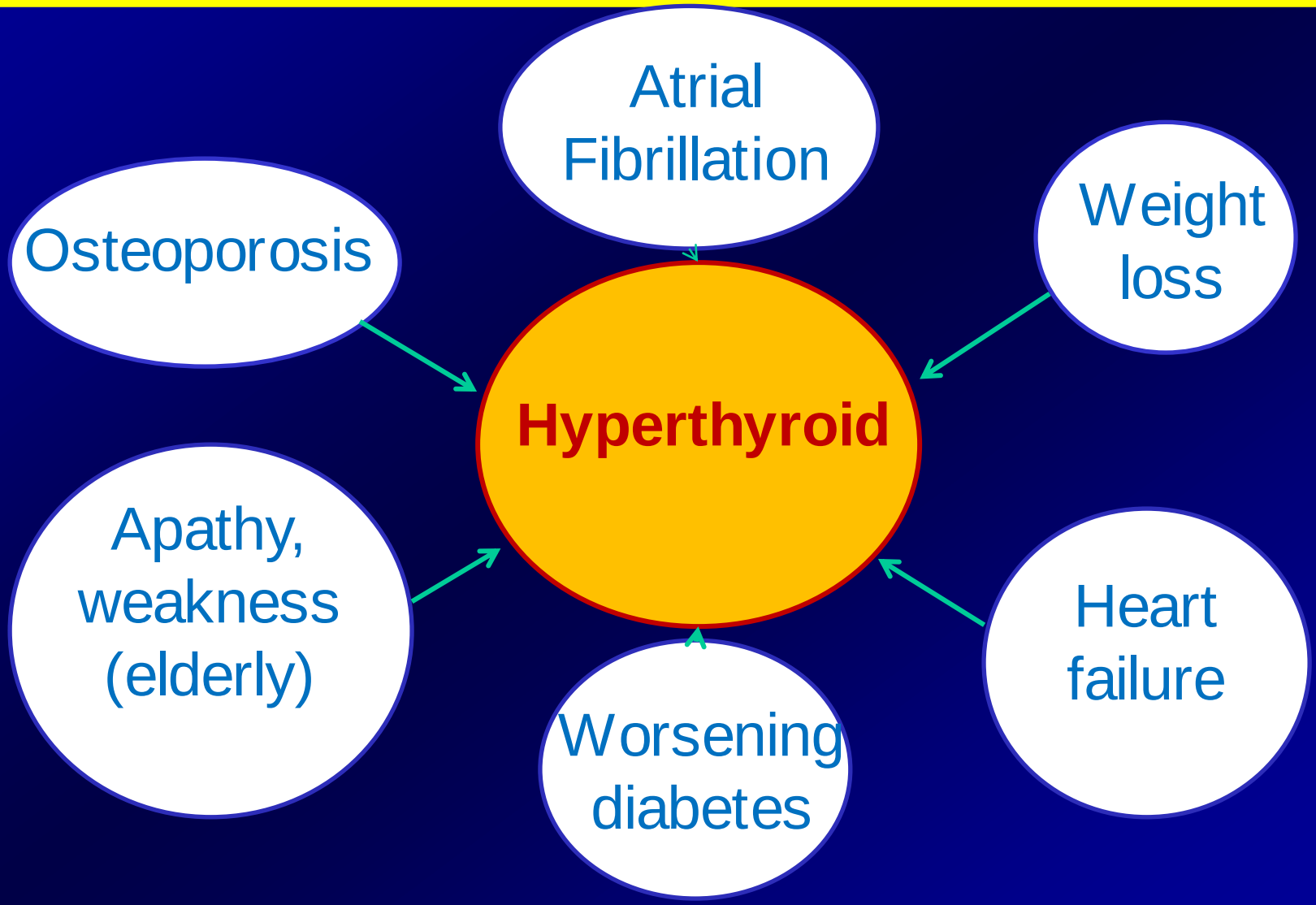
- No evidence of benefit to start LT4 if euthyroid
- Long term follow-up with yearly TSH; start LT4 treatment if TSH>10
- No need to keep repeating TPO titre
- Consider selenium supplements

Hyperthyroidism

Thyrotoxicosis vs Hyperthyroidism

- **Thyrotoxicosis**
  - *The clinical syndrome* of hypermetabolism that results when the serum concentrations of free T_4, T_3, or both are increased
- **Hyperthyroidism**
  - Sustained increases in thyroid hormone biosynthesis and secretion by the thyroid gland

Presentations hyperthyroid



Clinical Scenarios

Dear Doctor
Please see this patient who was found to have FT4 very high; FT3 very high; TSH normal (1.8). He is surprising well.

G

Scenario G: Beware the “normal” TSH

- Thyroid hormone resistance
- Mutation of thyroid hormone receptor (β)
- Usually asymptomatic
- May have mild goitre or tachycardia
- Often attention deficit disorder

- Avoid antithyroid drugs, thyroid surgery, RAI
- May require β-blocker

Clinical Scenarios

Dear Doctor
Please see this patient who recently delivered and is now hyperthyroid

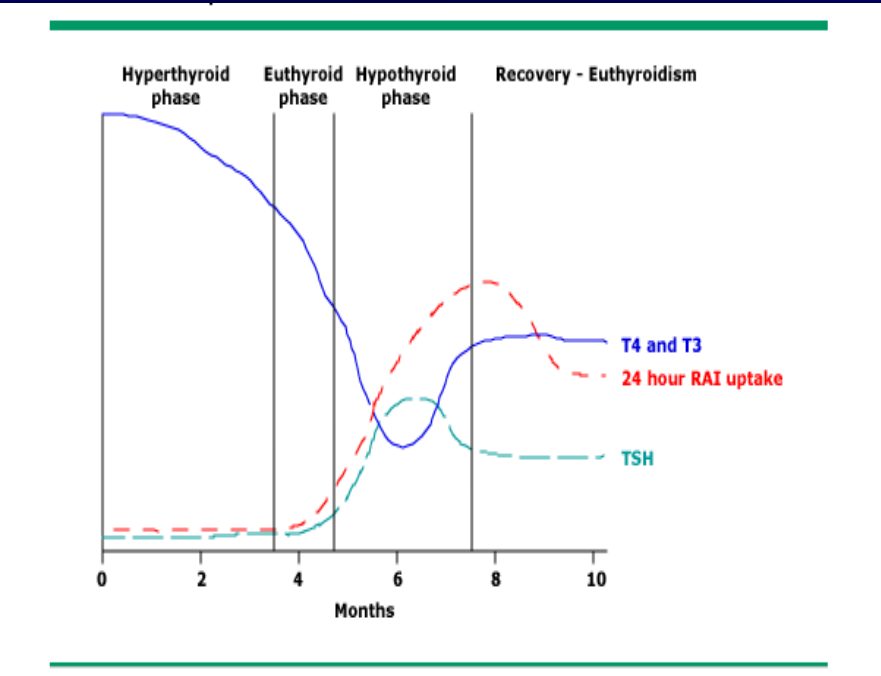
H

Dear Doctor
Please see this woman who recently delivered and is now hypothyroid

I

Post-partum thyroiditis (H,I)

- May occur up to 1 year after delivery
- Typically hyperthyroid 1-4m after delivery
- Then becomes hypothyroid up to 6m
- Then recovers (occ permanent)



Management of post-partum thyroiditis

- TSH-Receptor antibody is negative (unlike Graves')
- TPO often +ve
- Painless
- Likely to recur in future pregnancies

- Avoid carbimazole in hyperthyroid phase
- May require LT4 in hypothyroid phase
- Withdrawal LT4 after 6m to check if recovered

Clinical Scenarios

Dear Doctor
Please see this patient with hyperthyroidism.
CT scan normal

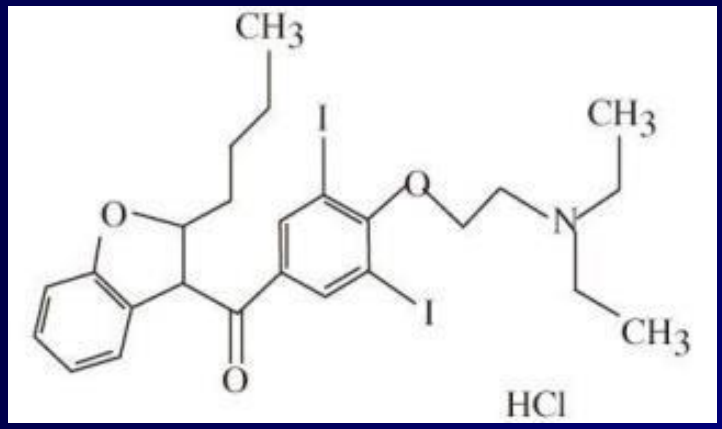
J

Dear Doctor
Please see this patient on amiodarone who is hyperthyroid

K

Iodine-induced hyperthyroidism J,K

- Iodine in X-ray contrast media or in amiodarone
- Hypothyroid and suppression of normal gland
- Hyperthyroid if underlying nodular thyroid

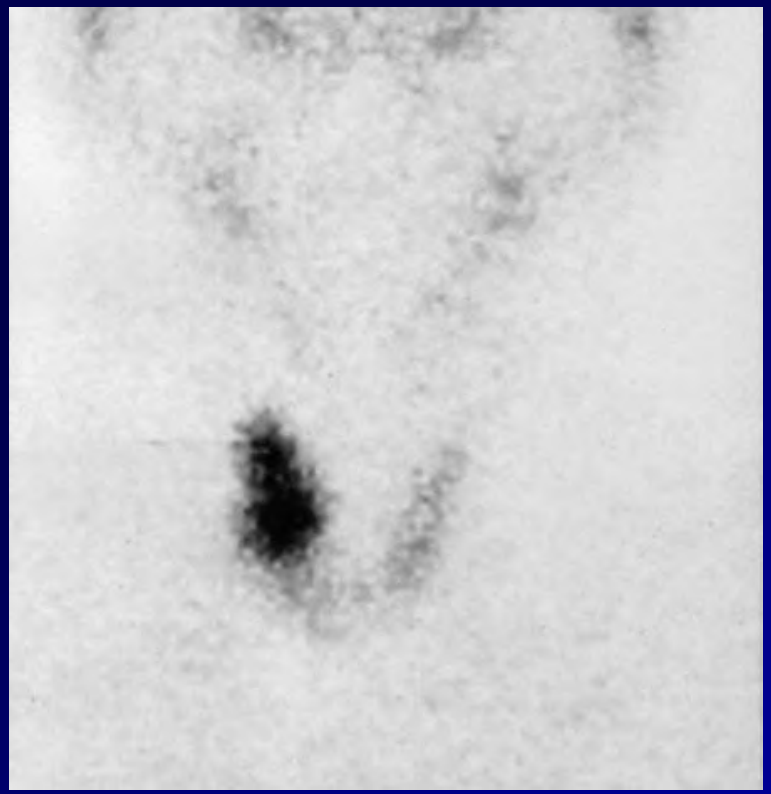


Amiodarone:
Each 200mg tablet contains 75mg iodine

Iodine-induced hyperthyroidism J,K

Temporary hyperthyroidism

- Contrast: 4 weeks
- Amiodarone: Up to 18m
- Management is to withdraw iodine exposure if possible (eg stop amiodarone)
- β-blockers



Autonomous nodule

Clinical Scenarios

Dear Doctor
This patient with Graves' is very worried about her hair

L

Dear Doctor
This patient with Graves' is very worried about his eyes

M

Dear Doctor

..her weight

N

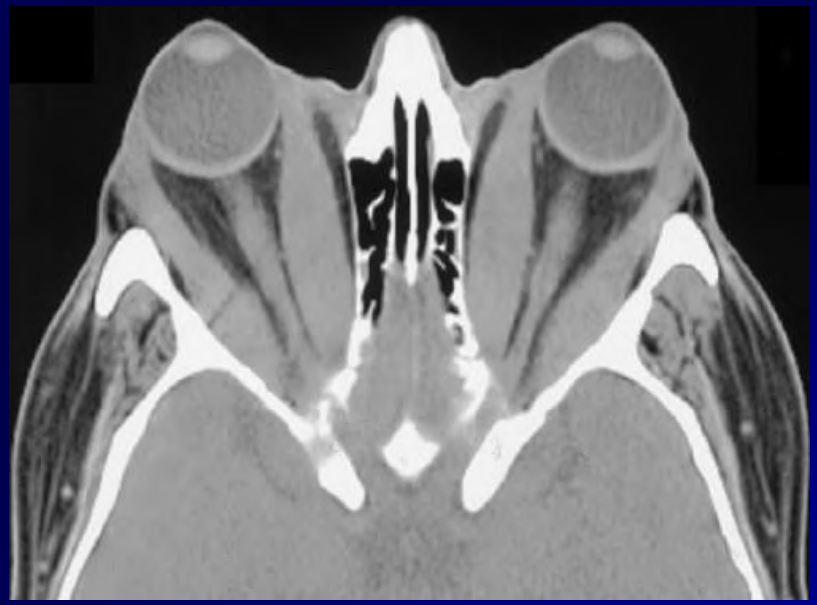
Hair Loss (L)

- Diffuse hair loss (telogen) with hyper/ hypo thyroid
- Patchy is alopecia areata
- Comes on months after onset of thyroid
- Usually resolves over months

- Don’t blame medication or RAI
- Avoid iodine containing preparations to restore hair
- Reassurance

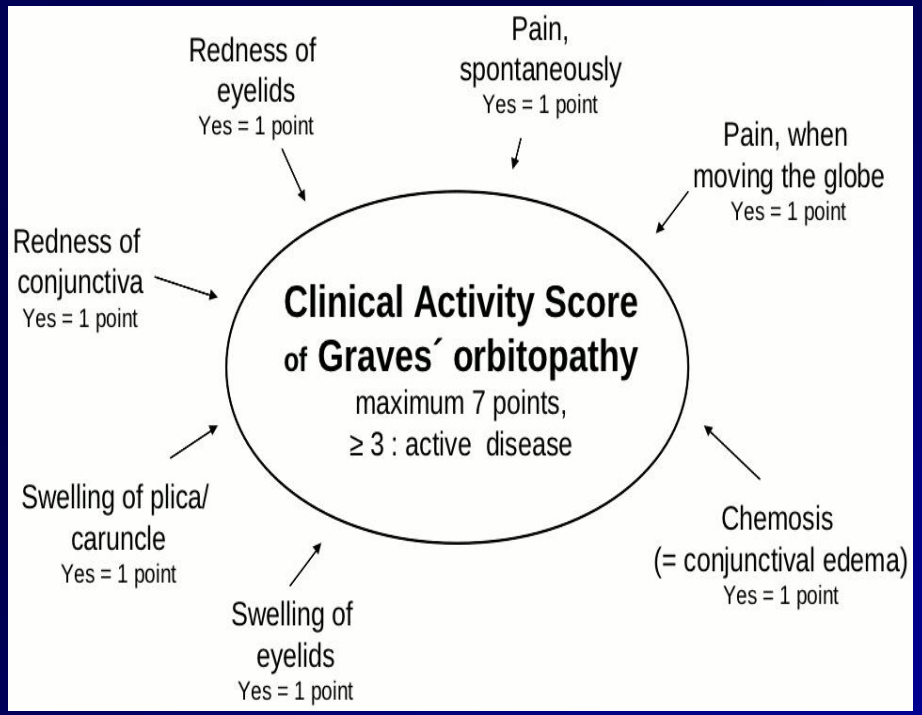
Eyes (M)

- Lid retraction is not thyroid eye disease
- Congestive (proptosis, chemosis) and motor (ophthalmoplegia) signs
- Clinical Activity Score
- Ophthalmologist for IOP
- MR Orbits esp unilateral



Thyroid eye disease

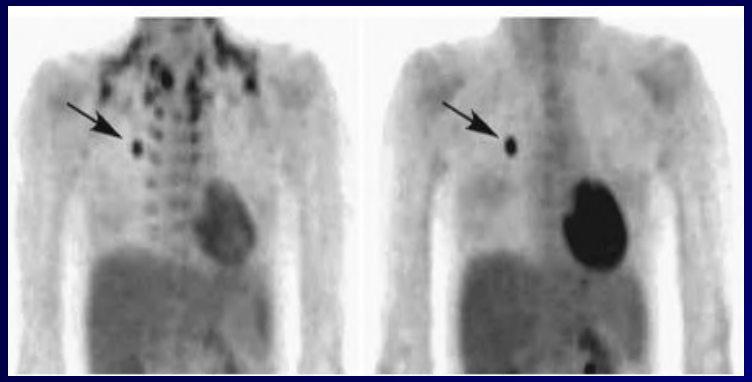
- STOP smoking
- Avoid hypothyroidism
- Selenium 100mcg bd if mild
- Prednisolone or pulsed methyl - prednisolone
- Orbital radiotherapy
- Orbital decompression
- (Rituximab)



Scenario N- weight gain

Weight gain after treatment of Graves'

- Mean weight gain at 2yrs, 5.4kg
- Mean BMI rise 8%
- Most weight gain if became hypothyroid at any time (8.1kg)
- Subnormal energy expenditure after treatment (muscle)

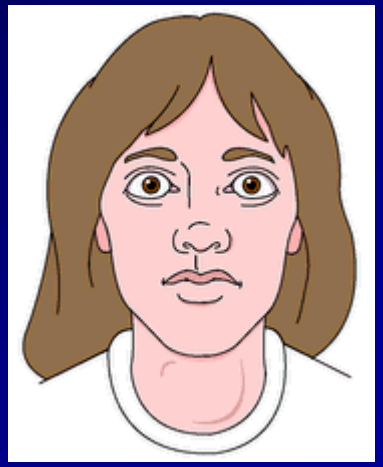


Cold/ hyperthyroidism activate brown fat

Diet/ reassure
Adequate LT4 replacement

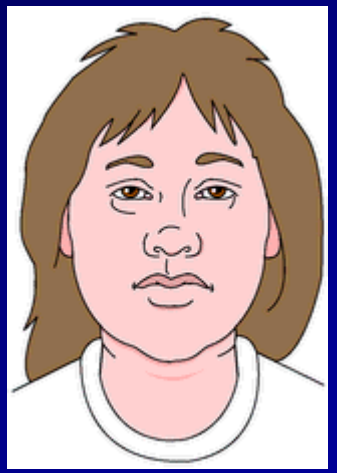
Over-Replacement Risks

- TSH <0.5 μIU/mL
  - Iatrogenic thyrotoxic state
  - Tachycardia, palpitation
  - Increased risk of angina and arrhythmia
  - Reduced bone density/ osteoporosis
  - Anxiety, sleep disturbance, irritability, and fatigue

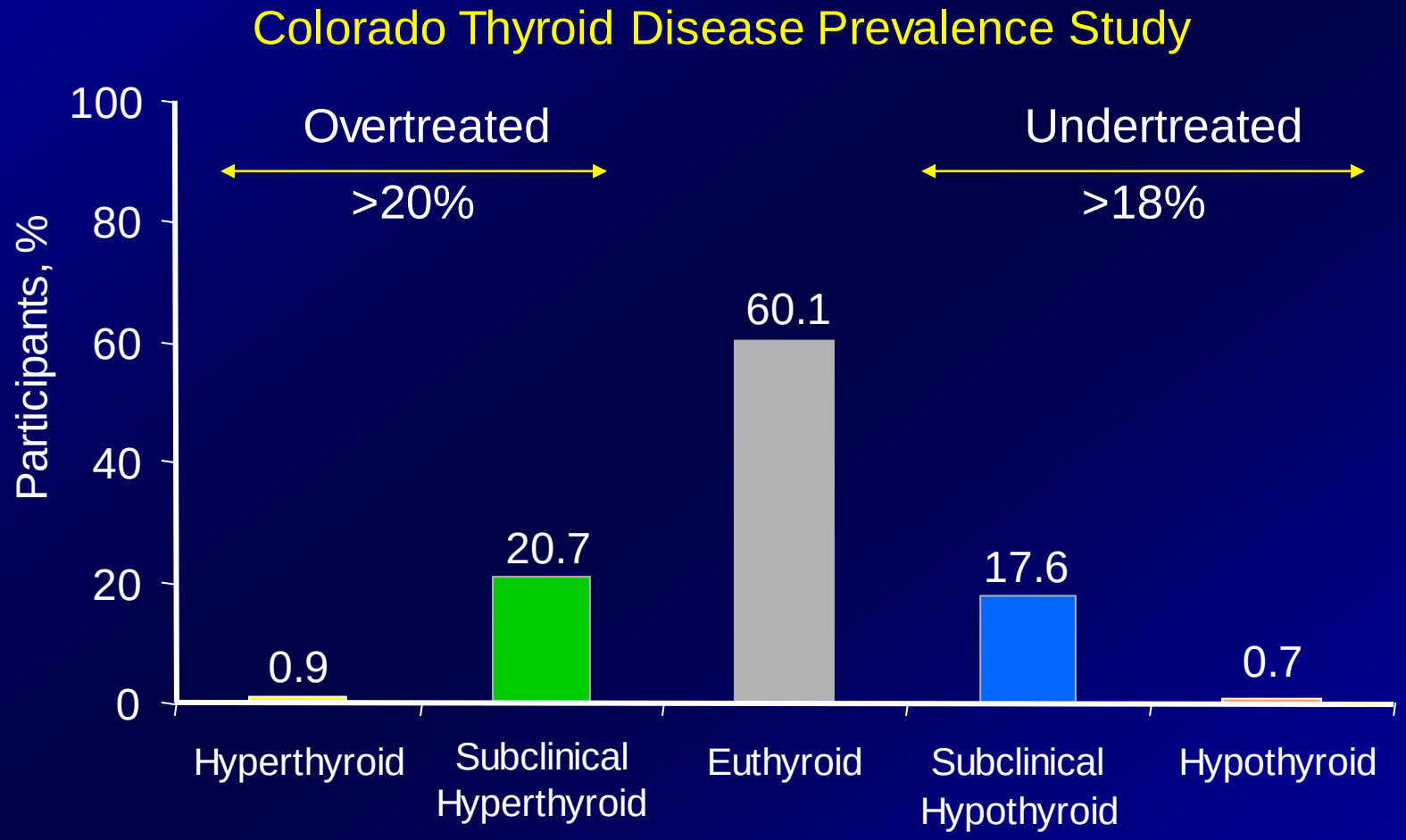


Under-Replacement Risks

- *TSH >5.0 μIU/mL*
  - Continued hypothyroid state
  - Hyperlipidemia
  - Decreased heart rate and ventricular contractility
  - Increased diastolic pressure
  - Memory loss, fatigue, weight gain
  - Depression



Thyroid Status of Treated Patients



Canaris GJ, et al. *Arch Intern Med*. 2000;160:526-534.

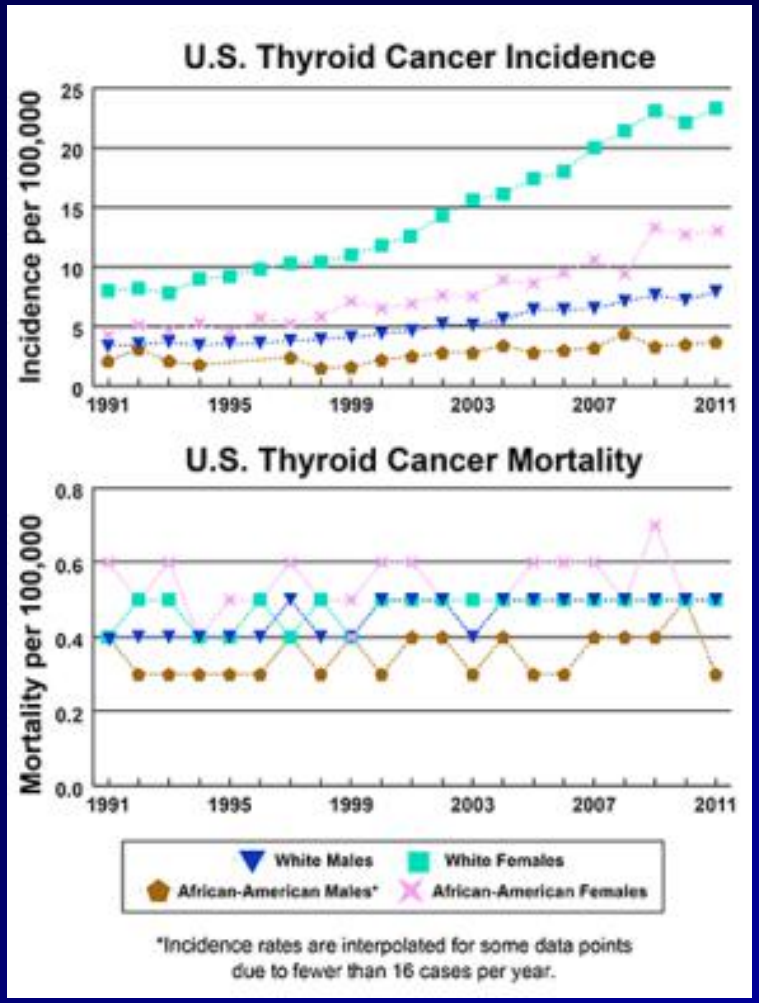
Clinical Scenario

Dear Doctor
Please advise on this patient from the Royal Marsden with history of thyroid cancer. FT4 always slight elevated and TSH unrecordable.

P

Thyroid cancer scenario (P)

- High risk thyroid cancers need to be on TSH suppressive doses of LT4
- Low risk papillary thyroid cancers have TSH targets defined
- Seek advice from RMH before changing



Thyroid nodules

Clinical scenario: thyroid nodules

Dear Doctor
This patient with TIA had carotid Dopplers which reveal multiple nodules in thyroid. Largest is 0.5mm. Please see and advise

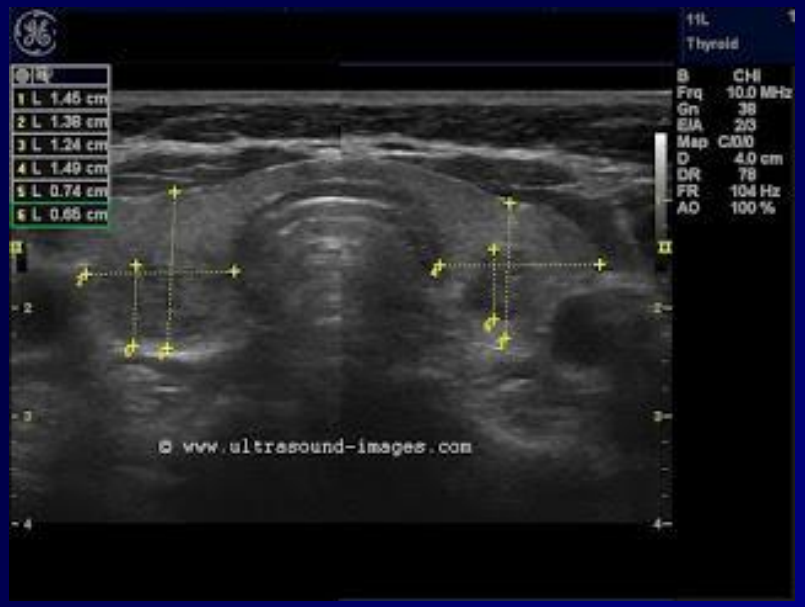
Q

Dear Doctor
Please see urgently this young lady with an incidental 0.2mm nodule in right lobe of the thyroid.

R

Thyroid nodules

- Ultrasound is very sensitive
- US grading now used
- U1-2 are considered benign and don't need FNAC (BTA guidelines)
- U3-5 are suspicious and require FNAC



Referring nodules

- High risk- older, M>F, exposure to Chernobyl, FH
- Solid
- Vascular
- >1cm
- Associated LN
- TSH elevated

Nodule sonographic or clinical features	Recommended nodule threshold size for FNA
High-risk radiographic features or history	>1 cm
Abnormal cervical lymph nodes	All
Solid nodule and iso- or hyperechoic	≥1 cm
Mixed cystic-solid nodule without suspicious ultrasound features	≥2 cm
Spongiform nodule	≥2 cm
Purely cystic nodule	FNA not indicated

Results of FNAC

- **Thy 1-5**
- **Thy1**: Inadequate-repeat
- **Thy2**: Benign; reassure. Repeat only if associated with U3-5
- **Thy3-5**: Refer for MDT surgery

Bethesda diagnostic category		British Thyroid Association		American Thyroid Association
I	Non-diagnostic or unsatisfactory	Thy1	Non-diagnostic	Non-diagnostic/unsatisfactory
II	Benign	Thy2	Non-neoplastic	Benign
III	Atypia of undetermined significance or follicular lesion of undetermined significance	Thy3a	Atypical features present	Indeterminate or suspicious for malignancy
IV	Follicular neoplasm or suspicious for a follicular neoplasm	Thy3f	Follicular neoplasm suspected	Indeterminate or suspicious for malignancy
V	Suspicious for malignancy	Thy4	Suspicious of malignancy	Indeterminate or suspicious for malignancy
VI	Malignant	Thy5	Diagnostic of malignancy	Malignant

Summary

- There are many causes of hyperthyroidism with different management strategies
- Interpreting thyroid tests needs to be done in the context of the clinical picture
- Many myths surrounding the treatment of thyroid disease including LT4, LT3 , Armour, RAI
- Specialist advice may be needed (thyroid absorption tests, thyroid uptake scans, FNAC)

Enough already!