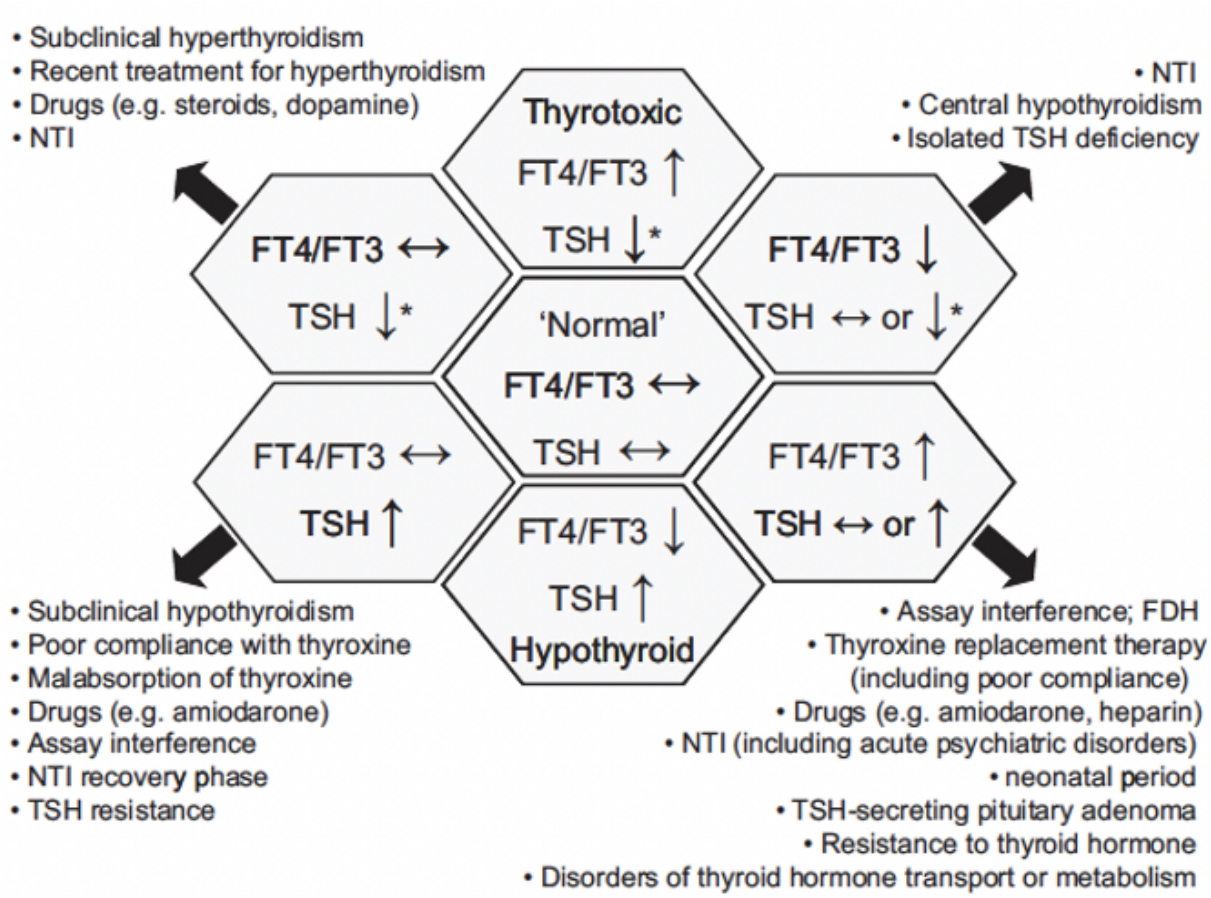
Ep 25 Thyroid Disorders – Dr Ashna Nastar

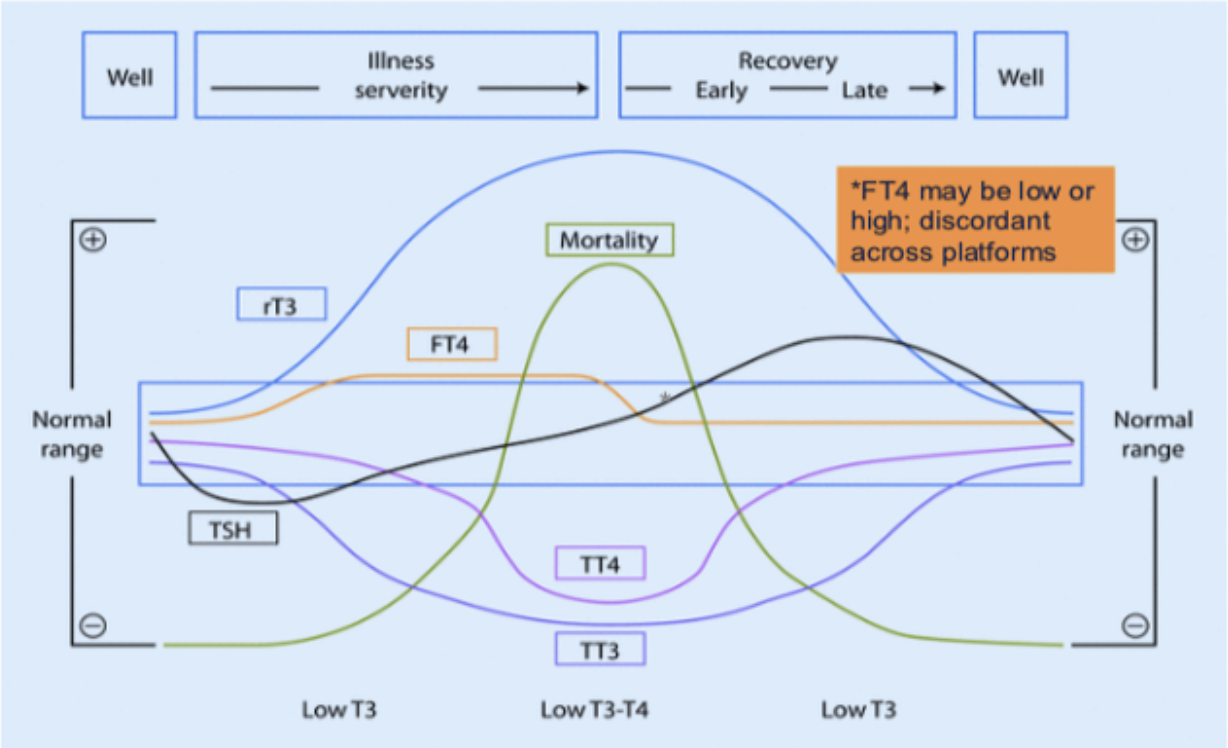
'Weird' TFTs

- TFTs can be difficult to reliably interpret in acutely unwell pateints
- If not clear cut thyrotoxic or hypothyroid, caution with interpretation and acting upon – ideally repeat when out of acute illness (6-8 weeks later)
- When TFTs are discordant, consider the following
    - Evaluate history and thyroid status
    - Trend previous TFTs if available
    - Exclude confounders
        - § Pregnancy: TSH low in first trimester
        - § Age: Age related increase in TFT
        - § Thyroxine therapy
        - § Medications: Amiodarone, lithium (can cause hypothyroidism), biotin (interferes with thyroid assay causing falsely high T3/4)
    - Assay interference
- Schema (Koulouri O et al. Pitfalls in the measurement and interpretation of thyroid function tests. *Best Pract Res Clin Endocrinol Metab*. 2013;27(6):745-762)



Non-Thyroidal Illness (NTI)

- NTI is TFT derangement that occurs in the absence of an intrinsic abnormality of hypothalamic-pit-thyroid function, considered to a secondary adaptive change
- Low T3 is commonest finding – can send either free or total T3; Assays for estimating free T_3 are less widely validated and less robust than those for free T_4
- Hormonal profile changes in NTI



Grave's Disease

- Diagnosis can usually be made based on a suggestive history and positive TRAb
  - At NUH, TRAb run every Thursday
  - Specificity of 99% and sensitivity of 97% for Graves'
- Thyroid US usually not required unless TRAb negative or if palpable nodules found
- Medications
  - Beta-blockade: Usually propranolol 20mg TDS
    - § Can consider non-dihydropyridine CCBs if asthmatic
  - Anti-thyroidal agents
    - § First line usually carbimazole (Usually 5-30mg OM)
      - fT4 1-1.5x UL: ~10mg OM
      - fT4 1.5-2x UL: ~20mg OM
      - fT4 2-3x UL: ~30mg OM
    - § Side Effects
      - Teratogenicity
      - Agranulocytosis:
        - 0.1-0.5% risk

- All patients should be instructed to discontinue ATD and contact a physician immediately if fever or sore throat develops
- Mostly occurs within 90 days of rx, but can occur later

- Hepatic damage
  - Higher risk + severity with PTU
  - Carbimazole usually causes cholestasis, PTU a/w fulminant hepatic necrosis
- Vasculitis: PTU > Carbimazole

§ Monitoring
- Baseline labs: FBC, LFT
- TFT monitoring Initially 4-6 weeks until euthyroid; Then can extend to 2-3 months > 4-6 months

§ Initiation and Duration
- Usually 12-18 months depending on response
- Average remission rate is 50%
- Aim to reduce dose gradually

- Remission
  - Biochemical euthyroidism for at least 1 year after stopping antithyroid drugs
  - Factors predictive of remission – smaller goitre, less thyrotoxic, TRAb min elevated / normalise on therapy (hence can check TRAb at end of course of ATD)

Thyroiditis

- Inflammation of thyroid tissue with release of preformed hormone into the circulation
- Types
  - Painless: Drugs (including TKIs), amiodarone, post-partum
  - Painful: Subacute thyroiditis
- Subacute Thyroiditis
  - Precipitated by a viral infection
  - Presents with fever, neck pain and swelling
  - NSAIDs / course of prednisolone if persistent
  - Monitor 2-4 weekly
  - May develop hypothyroidism transiently before normalising

Hypothyroidism

- Initial assessment
  - Assess clinical status
  - Send anti-TPO ab
  - Check weight
  - Check for IHD
- Treatment
  - Dosing

§ Young patients w/o cardiac disease: Start thyroxine at 1.6 mcg/kg/day

§ Older patients/cardiac disease: Start at low doses of thyroxine 25 – 50 mcg/day
- Can check in 8 weeks and uptitrate in 12.5-25mcg increments

  - Administration

        - *Take **early** morning, on an **empty** stomach with plain **water***
        - *No food, drinks, other meds for **at least 45 mins** after taking*
        - No iron or calcium tablets for 4 hrs
    - Targets:
        - Primary hypothyroidism
            - Older (>70yo): Higher serum TSH between 1 – 5 mU/L
            - Younger/Middle Aged: TSH target 0.4 – 2.5 mU/L
        - Central hypothyroidism: Aim upper half of normal fT4 range
        - Hx of thyroid cancer: **TSH targets maybe lower**

Subclinical Hyperthyroidism

- Concentrations of TSH are low or undetectable but T4/T3 normal
- Clinical significance: Associated with increased total and CHD mortality, AF, heart failure, fractures
- Treatment indications: Base on degree of TSH suppression and presence of risk factor
    - If TSH <0.1miU/L + presence of the following risk factors, treat
        - Age > 65yo
        - CVS disease or irsk factors
        - Osteoporosis or risk factors
        - Hyperthyroid symptoms
    - If TSH <0.1miU/L OR presence of risk factors, can consider treating
    - If TSH >0.1 miU/L without risk factors, usually don't need to treat
- Treatment goal: Normalisation of TSH

Subclinical Hypothyroidism

- Concentrations of TSH are raised but T4/T3 are normal
- Prevalence of 4 – 15%
- Clinical significance: Progression to over hypothyroidism (2-5% annual risk, higher risk if anti-TPO +), cardiovascular risk, possibility of stroke/cognitive impairment
- Treatment indications
    - TSH > 10 mIU/L
    - TSH 4.5-10 mIU/L – consider treatment if ≤ 70yo, hypothyroid symptoms, anti-TPO +
- Treatment targets
    - Older patients (>70yo): Aim TSH between 1-5 mIUI/L
    - Younger patients: Aim TSH between 0.4-2.5mIU/L