

# Hypothyroidism

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# What is Hypothyroidism?

- Hypothyroidism = underactive thyroid gland
- Your thyroid gland doesn't produce enough thyroid hormone

# What causes hypothyroidism?

- Hypothyroidism can be classified by
  - Site
  - Timing
  - Severity

	Primary	Secondary	Tertiary
Congenital	Thyroid Dysgenesis Dyshormongogenesis	Hypopituitarism	TRH deficiency (v. rare)
Acquired	Autoimmune hypothyroidism Thyroid surgery RAI	Trauma Pituitary tumour Chemotherapy Radiotherapy	Hypothalamic tumour Infiltration

# Congenital Hypothyroidism

- 1:4000 births
- Most common endocrine defect seen in children
- 85%: thyroid dysgenesis (thyroid gland not formed properly)
- 10%: thyroid hormone synthesis defect

# Diagnosis of CHT

- Guthrie (heel prick test) at 5-7 days
- Measures TSH level
- If abnormal - either repeated (TSH 10-20) or directed straight to endocrine team (TSH >20)
- Endocrine team will arrange
  - clinical review
  - formal TFTS (TSH and FT4)
  - Imaging (USS thyroid +/- technetium scan)
- TFTs → either start medication or repeat and follow up (depending on result)

# Imaging in CHT

- USS
  - Is the thyroid present and normally placed?
- Technetium Scan
  - Does the thyroid take up radio-isotope?

# Genetics of CHT

- Majority of CHT are sporadic → occur in people with no history of the disorder in their family
- Thyroid dysgenesis – 2-5% of cases inherited
- Dyshormonogenesis – most inherited cases have additional features (e.g. deafness, significant goitre)



# Autoimmune Hypothyroidism

- Most common cause of acquired hypothyroidism in Europe
  - Girls>Boys
  - Adolescence
  - FH
- Associations
  - Down's Syndrome
  - Turner's Syndrome
  - Other autoimmune conditions

# How do we diagnose hypothyroidism?

- TFTs
  - Low FT4 and
  - High TSH = Primary Hypothyroidism

OR

- Low TSH (inappropriately)= Secondary /Tertiary Hypothyroidism

# How do we treat hypothyroidism?

- Levothyroxine (LT4)
  - Daily tablet (swallowed whole or crushed)
  - Taken on empty stomach (if possible)
  - Infants who need very small doses - solution
- What about T3?
  - Rarely used in children

# How do we monitor treatment?

FT4	TSH	Outcome
High	Low	Reduce thyroxine
Low	High	Increase thyroxine

- Aim is to keep TSH and T4 in normal reference range

# Will I be able to stop my thyroid treatment?

- Please don't stop your thyroid treatment without discussing with your doctor
- Congenital Hypothyroidism
- Autoimmune Hypothyroidism

# What happens when I am a teenager?

- Transition and puberty

# Subclinical Hypothyroidism

- Also known as compensated hypothyroidism
  - High TSH and normal T4 and T3 (persistent)
  - Need to check antibody status
- Can be temporary
  - Need to be re-checked after 2-3 months

# Can I do anything to help my thyroid gland produce more thyroid hormone?

- In the UK, iodine deficiency is a very uncommon cause of hypothyroidism unless children are on very restricted diets due to allergies
- Iodine supplementation is not recommended generally unless you are vegan with no intake of other sources of iodine (e.g. seafood/eggs) as alternative (dairy free) milks are low in iodine compared to cows milk