



Medicines Management in Thyroid Disease

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What is the thyroid and why is it important?

- Small butterfly shaped gland in neck, wrapped around windpipe
- Produces several hormones – most important are liothyronine T3 and levothyroxine T4
- These hormones help oxygen get into the cells and so affect metabolism by helping cells convert oxygen and calories into energy
- Concentrations of T3 and T4 are regulated by thyroid stimulating hormone (TSH)
- When thyroid hormone levels increase, TSH production decreases and vice versa
- Euthyroid = normal TSH, T3 and T4 levels
- Hypothyroid = low levels of T3 and T4 and high TSH
- Hyperthyroidism = high levels of T3 and T4 and undetectable levels of TSH

Aims of treatment

- To achieve a normal thyroid-stimulating hormone (TSH) level
- To reduce complications
- To improve quality of life

Hypothyroidism

- Treatment of choice – levothyroxine (T4)
- Life long treatment
- Levothyroxine and liothyronine (T3) in combination or dried thyroid extracts are probably no better than levothyroxine alone
- Liothyronine – shorter acting; may be helpful in severe hypothyroid states
- Starting dose of levothyroxine is 50 to 100 micrograms once a day; may be increased to 200 micrograms once a day.
- Lower doses eg 25mcg may be used in the elderly and patients with heart disease
- Side-effects when dose is too high – weight loss, intolerance to heat, tremor, tachycardia (racing pulse)

Levothyroxine or levothyroxine or both?

- Conflicting evidence from trials
- UK and international guidelines found no consistent strong evidence for superiority of alternate preparations over monotherapy with levothyroxine
- Some clinicians may decide that patients remaining symptomatic may benefit from a trial of T4/T3 but others may not. This is understandable given the current evidence.
- BTA does not support routine prescribing. Should be undertaken by a specialist, not GP.

What is Armour Thyroid?

- A natural preparation derived from porcine thyroid gland
- Provides 38mcg levothyroxine and 9mcg liothyronine
- Available in USA as replacement or supplemental therapy
- Not licensed in UK
- Amount can vary from batch to batch so consistency of effect is not guaranteed

Drugs that may impair thyroid function

- Lithium
- Amiodarone

Drugs and other substances that reduce absorption of levothyroxine

- Iron, multivitamins
- Proton pump inhibitors
- Calcium carbonate
- Cholestyramine
- Aluminium hydroxide gel
- Dietary soy and fibre

Drugs that increase levothyroxine clearance

- Phenytoin
- Carbamazepine
- Phenobarbitone
- Rifampicin

- OCP
- HRT
- Warfarin dose may need to be lowered

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Missed a tablet?

Everyone forgets to take their tablets from time to time. Don't worry as the odd forgotten levothyroxine tablet will not make much difference. However, you should try to take levothyroxine regularly for maximum benefit. Symptoms will gradually come back if you do not take the tablets for several days or more.

Are there any side-effects or problems from treatment?

- Usually not. Levothyroxine tablets replace the body's natural hormone, so side-effects are uncommon. However, if you have angina, you may find that your angina pains become worse when you first start thyroxine. Tell a doctor if this happens.
- If you take too much levothyroxine it can lead to symptoms of an over-active thyroid, such as palpitations, diarrhoea, irritability, or flushing. This is why the initial treatment dose is small and gradually built up, and why you need blood tests to check that you are taking the correct dose of levothyroxine.

Monitoring in hypothyroidism

- Symptomatic improvement in 2-3 weeks
- TSH levels may take 6 weeks to return to normal
- TSH levels should be measure 6 weeks after a change in dose then yearly once condition is stable
- Free T4 levels should be measured in women taking HRT or oral contraceptives as these can falsely raise total T4 levels
- May need to increase dose in pregnancy – needs close monitoring

Hypothyroidism and Pregnancy

- Preferable to delay conception until TFTs are within range
- Levothyroxine dose will need to be increased by 30-50% from as early as 4-6 weeks gestation
- Most women will need to decrease dose following delivery
- Regular monitoring to avoid excessive or insufficient maternal thyroid levels
- Safe in breast feeding

Hyperthyroidism

- Treatment includes drugs, radioactive iodine and surgery
- Drugs – carbimazole is usually chosen but propylthiouracil may sometimes be prescribed. Act as preferred substrate for enzyme involved in hormone synthesis so less is produced,
- Beta blockers eg. propranolol help to control symptoms such as tremor, anxiety and palpitations. Should not generally be used in people with asthma. Not needed once patient become euthyroid

How quickly does carbimazole work?

- Carbimazole does not affect the thyroxine which is already made and stored, but reduces further production. Therefore, it may take 4 to 8 weeks of treatment for your thyroxine level to come down to normal. Initial dose is 15 to 40mg daily for 4 to 8 weeks then gradual reduction to 5 to 15mg
- The dose of carbimazole that is needed to keep the thyroxine level normal varies from person to person. Carbimazole is usually taken for 12-18 months at first. After this, in about half of cases, the condition will have settled down and the carbimazole can be stopped. If the condition flares up again some time in the future, a further course may be needed. In about half of cases, carbimazole needs to be continued long-term to control symptoms.

What about propylthiouracil?

- Started at a dose of 200 to 400mg daily
- Reduced to 50 to 150mg daily once patient is euthyroid
- May be used if patient is sensitive to carbimazole but slower acting
- Blocks conversion of T4 to T3

Monitoring - carbimazole and propylthiouracil

- Carbimazole and propylthiouracil can cause blood disorders. Patients should discontinue medication if they develop fever, sore throat or other symptoms of infection.
- Other side effects include rash, fever, gastrointestinal upset, jaundice, headache, rashes, muscle and joint pains in about 5% people
- May be necessary to switch from one to the other

What is block and replace?

- Carbimazole is given to block thyroid function and levothyroxine is given to replace thyroid hormones
- Advantages – less monitoring, fewer clinic visits, smoother biochemical control, shorter duration (6 to 12 months)
- Disadvantages – more complex, more expensive, more relapses
- Best for people with mild disease
- Contra-indicated in pregnancy because levothyroxine crosses placenta less than carbimazole so risk of foetal goitre and hypothyroidism

Where do beta blockers fit?

- Beta blockers such as propranolol can be used in patients with more severe hyperthyroidism
- Help to lessen symptoms such as tremor, tachycardia
- Useful while waiting for antithyroid drugs to start working
- Only needed until patient becomes euthyroid
- Should not be given to patients with asthma

Relapses of hyperthyroidism

- Treated with either radioactive iodine or surgery – repeated courses of drugs not often effective
- Radioactive iodine avoided in women who are pregnant or planning to become pregnant, breastfeeding and those who come into contact with small children
- Patients given enough ^{131}I to achieve euthyroidism within 2 to 3 months. Antithyroid drugs can be given before and shortly after ^{131}I to prevent “thyroid storm”
- Antithyroid drugs and block and replace regimens must be stopped before ^{131}I is given
- Some patients will develop permanent hypothyroidism

Hyperthyroidism - Pregnancy and post-partum

- Women planning pregnancy in next 2 to 3 years – radioactive iodine or surgery
- Antithyroid drugs during pregnancy – little evidence of problems to foetus but propylthiouracil generally preferred to carbimazole
- Monitor thyroid function closely and maintain close control
- Do not use block and replace regimen

- Propylthiouracil preferred in breast feeding

Treatment for eye problems

You may need to see an eye specialist if you develop eye problems. Relatively minor symptoms affect the eyes in about half of people with Graves' disease. Measures such as artificial tears, sunglasses, and eye protectors whilst you sleep may be sufficient to help.

- However, about 1 in 20 people with Graves' disease have severe eye changes. Treatment can then be more difficult and may include surgery, radiation treatment, or steroid tablets.

Some Questions and Answers

Q. When is it best to take levothyroxine?

A. First thing in the morning, on an empty stomach, preferably at least half an hour before food and caffeine-containing beverages. If this is not possible – take at CONSISENT time and circumstance.

Q. Is there a problem with antacids?

A. These may delay or reduce absorption – so try and take at least 2 hours apart from your levothyroxine.

Q. What about OTC Medicines like cough and cold remedies?

A. Most relevant to hyperthyroidism. Some contain stimulants and may place further strain on the heart. Some people with hypothyroidism may find they are sensitive to pseudoephedrine (eg in Sudafed). Try a low dose and see what happens.

Some Questions and Answers

Q. Is it safe to take calcium, vitamins, iron supplements?

A. Take levothyroxine two hours before calcium, vitamins or iron. Do not take with calcium fortified juice. (Iodine and kelp supplements are best avoided)

Q. How about levothyroxine and oestrogen?

A. Oestrogen increases production of a protein that binds levothyroxine and makes it inactive, so may need higher dose. If starting HRT or “pill”, then should have TSH levels checked

Q. Are there any other medicines that might interact?

A. Some of the known interactions include antidepressants, insulin, anticoagulants. Your doctor should adjust for these.



Where to go for help

- Your GP
- Your Practice Nurse
- Your Practice Pharmacist
- Your local Pharmacist

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New ways of obtaining your repeat prescriptions - Repeat Dispensing and EPS

Repeat Dispensing

- Allows the doctor to issue prescriptions for up to a year
- You choose a pharmacy and leave the prescriptions there
- Call and collect at usual frequency – avoids having to go to the surgery

Electronic Prescription Service

Enabled in all MK practices; being used for about 40% prescriptions

Should reduce waiting times at pharmacy and enable pharmacies to have unusual items in stock ready for you

On line ordering – available in many practices

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What are “Managed Repeats”?

- Managed repeats can be defined as a service to patients that has been agreed between the patient and the community pharmacy where the pharmacy is empowered by the patient to order and collect repeat prescriptions on their behalf.
- Many CCGs see this as a source of waste and complaints raised by GP practices relating to inappropriate requests for repeats.
- Recent MKCCG consultation showed the service was valued by many patients
- Need to ensure that the service is delivered to best practice standards to minimise waste

What is a medication review?

A review of the patient's medicine to check that

- The medicines are still working
- The patient is still taking them correctly
- The patient is not experiencing any side-effects
- It may be carried out by your doctor or pharmacist
- It gives you the opportunity to ask questions

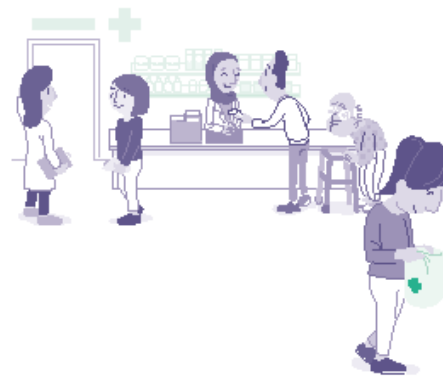
Open up to your GP

- Tell your GP or the GP practice staff if there are medicines that are prescribed for you that you do not use
- They can explain how to get your medicines reviewed
- If there are medicines that don't suit you, your GP may suggest others that could be better



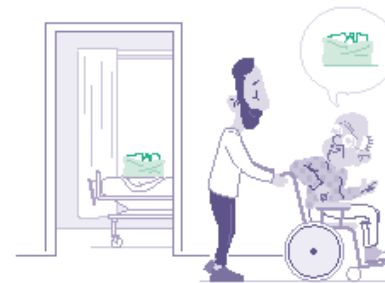
Open up to your pharmacist

- Make it clear to your pharmacy what medicines you need
- Open your medicines bag **before** you leave the pharmacy. Hand back any medicines you don't need
- Medicines can **not** be reused once they've left the pharmacy



Open up while in hospital

- Take all the medicines you are using into hospital with you
- If you change wards while you're in hospital make sure your medicines move with you
- When you leave hospital be sure you know which medicines you need to take





Questions that you may want to ask your doctor, nurse or pharmacist

- What does the medicine do?
- How do I know it is helping?
- What side effects might I get?
- Is it safe? Is there anything that might be safer?
- What if I forget a dose?
- What will happen if I stop taking it?
- How long will I have to take it for?
- Is there anything that will help me remember to take my medicines?

Benefit vs Risk

- Medicines work at many sites in the body
- All medicines have side effects
- Doctor weighs up need to improve symptoms with possible side effects
- How serious is potential side effect for YOU?
- How likely is it that YOU will suffer a side effect?
- Can effect be reduced or tolerated?
- Is it essential you receive the treatment – are there any alternatives?

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Basic Common Sense Rules

- Take regularly as instructed – devise ways of reminding yourself if you sometimes forget
- Don't change anything without medical advice
- Don't share medicines
- Get your medicines dispensed at the same pharmacy
- Always check that you have received the correct tablets
- Ask pharmacist for advice when buying OTCs
- Tell other doctors and dentists what you are taking
- Keep medicines in original containers

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Thank you for listening!

Any Questions?

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