## Appendix 1: Presenting symptoms of hypothyroidism[2]

Primary overt hypothyroidism

- Fatigue/lethargy, cold intolerance, weight gain, constipation
- Non-specific weakness, arthralgia, myalgia
- Menstrual irregularities – infertility or subfertility
- Depression, impaired concentration and memory
- Dry skin and hair loss (e.g. loss of eyebrows)
- Coarse, dry hair and skin, hair loss
- Oedema, including swelling of the eyelids
- Hoarseness or deepening of the voice
- Bradycardia and diastolic hypertension; pericardial effusion
- Delayed relaxation of deep tendon reflexes
- Paraesthesia (due to carpal tunnel syndrome) or peripheral neuropathy
- Autoimmune disease diagnosis

Secondary hypothyroidism

- Clinical features of primary hypothyroidism in combination with clinical features of possible hypothalamic-pituitary disease:
    - Recurrent headache
    - Diplopia and/or visual field defects
    - Skin depigmentation
    - Atrophic breasts
    - Galactorrhoea
    - Amenorrhoea
    - Erectile dysfunction
    - Loss of body hair
    - Cushing's syndrome
    - Acromegaly

Subclinical hypothyroidism

- Clinical features are usually absent but, if present, may be related to degree of TSH elevation

Postpartum thyroiditis

- Hypothyroid phase usually occurs 3-8 months postpartum and typically lasts 4-6 months

## Appendix 2: Drug interactions with levothyroxine

- **Amiodarone** — serum concentrations of thyroid hormones can be affected by amiodarone, and close monitoring by a specialist is recommended. Amiodarone has a long half-life and drug interactions may occur several weeks (or even months) after it is stopped.
- **Lipid-regulating drugs** — colestyramine and colestipol can reduce absorption of levothyroxine when taken together. Advise that levothyroxine should be taken one hour before or 4–6 hours after taking colestyramine or colestipol.
- **Antacids** — calcium carbonate or antacids containing aluminium and magnesium may reduce the absorption of levothyroxine. Advise that separation of doses by at least four hours may minimize the risk of interaction.
- **Antibacterials** — rifampicin enhances thyroid hormone metabolism and may increase levothyroxine requirements. Monitor thyroid function tests and adjust the dosage of levothyroxine accordingly.
- **Anticancer drugs** — plasma concentration of levothyroxine may be reduced by imatinib.
- **Oral anticoagulants** — levothyroxine may enhance the effects of anticoagulants such as coumarins (for example warfarin) or phenindione; concomitant administration may require a reduction in oral anticoagulant dose. Changes in clinical condition, particularly any associated with liver disease, intercurrent illness, or drug administration, requires more frequent testing of international normalized ratio (INR). Major changes in diet (especially involving salads and vegetables) and in alcohol consumption may also affect anticoagulant control. Adjust the warfarin dose accordingly.
- **Antidepressants** — the effects of levothyroxine may be decreased by concomitant treatment with sertraline. Antidepressant response to tricyclics can be accelerated, concomitant administration may precipitate cardiac arrhythmias.
- **Antidiabetic drugs** — treatment with levothyroxine may increase blood glucose levels; therefore the requirements for insulin or oral antidiabetic drugs may be increased.
- **Antiepileptic drugs** — carbamazepine, barbiturates (including phenobarbital), phenytoin, and primidone can accelerate levothyroxine metabolism and increase LT4 requirements.
- **Beta-blockers** — may decrease peripheral conversion of levothyroxine to triiodothyronine. Levothyroxine accelerates metabolism of propranolol.
- **Cardiac glycosides** — people with hypothyroidism may be initially sensitive to digitalis, but may need a gradually increasing dose of cardiac glycosides as treatment with levothyroxine progresses.
- **Iron salts** — ferrous sulphate reduces absorption of levothyroxine. Advise that the drugs should be taken at least two hours apart to reduce the risk of this interaction.
- **Sex hormones** — oestrogens increase and androgens decrease serum thyroxine-binding globulin; thyroid hormone requirements may be increased

during oestrogen therapy and reduced during androgen therapy. Thyroid function should be monitored regularly. Oestrogens in oral contraceptives may increase LT4 requirements.

- **Sympathomimetics (such as midodrine)** — effects may be enhanced by levothyroxine.
- **Gastrointestinal ulcer-healing drugs** — sucralfate or cimetidine and proton pump inhibitors may reduce the absorption of levothyroxine.
- **Orlistat** may decrease levothyroxine absorption which may result in hypothyroidism. Monitor for changes in thyroid function.
- **Ritonavir** — the manufacturers summary of product characteristics explains a potential interaction between ritonavir and levothyroxine, leading to reduced thyroxine levels. The recommendation is that thyroid- stimulating hormone (TSH) should be monitored in people treated with levothyroxine at least the first month after starting and/or ending ritonavir treatment.

# Resources

Thyroid UK gives advice on reference ranges for TFTs and provides useful information for patients to help interpret their results and manage their medicines etc. Thyroid UK TFTs

The British Thyroid Foundation has a range of useful patient information leaflets www.btf-thyroid.org They also have information leaflets in Arabic, Polish and Urdu.

Patient info has a range of useful information on thyroid disease, tests and treatments Patient Info Thyroid disorders

NHS inform is a useful source of information for patients https://www.nhsinform.scot

Patient information leaflets from the British Thyroid Foundation (BTF)
Patient Information Leaflets British Thyroid Foundation

Patient information about pregnancy and hypothyroidism from the Brighton and Sussex University Hospital Brighton and Sussex University Hospital

Pregnancy and fertility for patients with a thyroid disorder (BTF)
BTF Pregnancy and Fertility

Guidance for patients