

# South Australian Perinatal Practice Guidelines

# Thyroid disorders in pregnancy

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## Thyroid function during pregnancy

- > In pregnancy, the values influenced by the serum thyroid binding hormone level (total thyroxine, total triiodothyronine, and resin triiodothyronine uptake) change significantly
- > Plasma iodide levels decrease as a result of fetal iodide use and increased maternal renal clearance. In about 15 % of pregnant women, these lower iodide levels are associated with a noticeable increase in thyroid gland size (Schroeder 2002)

## Hyperthyroidism

- > Hyperthyroidism is the second most common endocrine problem developing in pregnancy (occurs in 0.2 % of pregnancies) (Major, Nageotte 1999)
- > Graves' disease is responsible for 95 % of hyperthyroidism cases in pregnancy
- > Many of the signs mimic those of normal pregnancy e.g. palpitations, hyperactivity, sweating, increasing frequency of bowel movements (Major, Nageotte 1999).
- > More specific signs include tachycardia at rest, goitre and exophthalmos

## Diagnosis

- > Diagnosis depends on the measurement of thyrotropin (TSH) which is suppressed in active disease. In addition, both free and total thyroid hormone concentrations are increased
- > Other investigations in hyperthyroidism and thyrotoxicosis include:
  - > Measurement of Technetium uptake. This is contraindicated in pregnancy, because of the risk of fetal uptake of the isotope and damage to the fetal thyroid
  - > Ultrasound may show diffuse enlargement, characteristic of autoimmune disease, or multinodularity, suggestive of autonomous multinodular goitre
  - > Serological tests may show positive thyroid antibodies, higher titres reflecting an increased risk of post partum recurrence
  - > High titres of thyroid stimulating immunoglobulin (TSIg) carry an increased risk of neonatal Graves' disease (also in women who have had thyroidectomy for Graves' disease)

## Management

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- > Drug treatment is based on thioamide agents: carbimazole (CBZ) and propylthiouracil (PTU). Of the two agents propylthiouracil is the drug of choice during pregnancy and breastfeeding:
  - > Initial treatment is 50-100 mg three times a day, reducing to 50 mg once or twice daily when the hyperthyroid state is controlled
  - > Because of the risk of fetal hypothyroidism with all thioamide treatment, the lowest possible maintenance dose should be used to maintain TSH in the normal range. Six-weekly checks of the free thyroid hormone and TSH concentrations are recommended, but note that TSH levels may take longer to return to normal
  - > Failure of control may indicate the need for partial thyroidectomy
  - > Autoimmune hyperthyroidism often improves during pregnancy so that the dose of drug may be reduced, but a flare up post partum is common, requiring an increase in dosage

## Other drug treatments:

- > Beta-blockers (e.g. propranolol 40 mg every 8 hours, oxprenolol 80 mg every 8 hours, or atenolol 100 mg daily) may be useful to control symptoms until antithyroid medication can take effect or to control symptoms before surgery
- > Potassium iodide, often used in preparation for thyroid surgery, is well recognised to induce fetal goitre even with small daily doses
- > Radio-iodine (<sup>131</sup>I) in therapeutic doses is liable to destroy fetal thyroid function

## Complications

- > Untreated hyperthyroidism carries a high risk of preterm birth and perinatal mortality
- > Fetal and neonatal thyrotoxicosis may result from placental transfer of thyroid-stimulating antibodies. Fetal tachycardia can be used as an indicator of this. Thioamide treatment has been used successfully to control the fetal thyrotoxicosis, monitoring the fetal heart rate as a guide to dosage
- > In women with unrecognised hyperthyroidism the stress of an infection, labour or operative delivery may lead to the rare thyroid storm. This is a medical emergency with a high risk of morbidity and mortality to mother and fetus
- > Calcium channel blockers (nifedipine) are first line management for preterm labour

## Hypothyroidism

- > Hypothyroidism is usually diagnosed and treated before pregnancy, as the hypothyroid state is often associated with infertility
- > Untreated, it is associated with poor pregnancy outcome, including miscarriage, stillbirth, preterm labour and poor neurological development in the newborn (Nader 2004)
- > The most common aetiology is thyroid damage due to surgery or radiotherapy. Other causes include autoimmune disease (Hashimoto's thyroiditis and myxoedema) and iodine deficiency

## Diagnosis

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- > Clinical features include dry skin, alopecia, loss of energy, fatigue, muscle cramps constipation, cold intolerance, mental disturbance, bradycardia and myotonic (slow relaxing) reflexes
- > The diagnosis is based on high thyroid stimulating hormone (TSH) concentrations with low free thyroid hormone values
- > The presence of thyroid microsomal antibodies also increases the risk of thyroid dysfunction post partum

### Treatment

- > Thyroid replacement is with L-thyroxine 100-200 microgram per day as a single dose, monitoring response by the decline in the serum TSH concentration
- > In pregnancy, about 30 % of hypothyroid women on replacement treatment will require a higher dose than before pregnancy. The important point is to monitor and treat on the basis of thyroid function tests rather than by clinical judgement
- > Assessment of thyroid function tests once in each trimester is usually sufficient
- > In the puerperium, any increase in thyroxine dose will need reduction again at about six weeks post partum
- > Breastfeeding is recommended

### Reference

1. Schroeder BM. ACOG Practice Bulletin on Thyroid disease in pregnancy. American Family Physician 2002; 65: 2161 - 2.
2. Major CA, Nageotte MP. Thyroid disease. In: James DK, Steer PJ, Weiner CP, Gonik B editors. High risk pregnancy: management options. 2nd ed. London: Harcourt; 1999. p. 709 - 15.
3. Nader S. Thyroid disease and other endocrine disorders in pregnancy. Obstet Gynecol Clinics 2004; 31: 257 - 85.

### Version control and change history

**PDS reference:** OCE use only

Version	Date from	Date to	Amendment
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