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COVER SHEET

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Royal Hospital for Women (RHW)
BUSINESS RULE

Health
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Thyroid Disease in Pregnancy — RHW CLIN177

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Thyroid Disease in Pregnancy RHW CLIN177

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Within this document we will use the term woman, this is not to exclude those who give birth and do not identify as female. It is crucial to use the preferred language and terminology as described and guided by each individual person when providing care.

1 BACKGROUND

The aim of this CBR is to guide midwifery and medical staff:

- who requires screening for thyroid dysfunction
- how to manage low risk patients
- when to refer for Obstetric medicine review.

2 RESPONSIBILITIES

2.1 Medical (General Practitioners, obstetric, obstetric medicine)

Assess woman, arrange investigations as appropriate, manage medical therapy and monitor progress.

2.2 Midwifery

Assess woman, arrange investigations as appropriate and refer for medical review to obstetric antenatal clinic of woman's model of care as indicated by recommendations/flowchart below

3 PROCEDURE

3.1 Clinical Practice points

Iodine intake in pregnancy

- Recommend pregnant and breastfeeding woman has a total of 250mcg/day of iodine. This should include an iodine supplement of 150microg/day[1]
- Do not measure urinary iodine levels as this only reflects recent iodine intake

Screening for thyroid disorders in pregnancy

- Do NOT screen for thyroid disorders/disease routinely
- Recommend thyroid screening prior to conception or as early in pregnancy as possible if the woman has any of the following risk factors:
    - History of thyroid disease
    - Known thyroid antibody positivity
    - Age > 30 years
    - BMI > 40
    - Personal or family history of autoimmune disease eg: Type 1 diabetes mellitus, coeliac disease
    - Presence of goitre
    - Residing in an area of known iodine insufficiency
    - Use of medications that can affect thyroid function eg lithium, amiodarone
    - History of infertility, pregnancy loss or neck irradiation

- Order Thyroid Stimulating Hormone (TSH) and free T4 levels if screening indicated. If either of these test results are abnormal, further testing including free T3, TPO antibody, TSH receptor Ab or TSI should be performed

Interpreting thyroid function test results

- Use trimester and laboratory specific reference ranges when assessing thyroid function in pregnancy
- Use non-pregnancy reference ranges if a woman is screened in early first trimester (within seven weeks of amenorrhea)
- Use an upper limit of 4.0mIU/l if there is no laboratory specific reference range for TSH
- Refer to appendix 1 for management of abnormal thyroid function tests

Antenatal Referral

- Be aware of the required referral pathways:
- GPs/obstetric medical team may refer directly to Obstetric Medicine
- Midwives may book appointment for woman in antenatal clinic (ANC) of her usual model of care for review, but cannot make direct referrals to Obstetric Medicine

Thyroid hormone replacement therapy

- Treat with thyroxine (T4) rather than liothyronine (T3) or desiccated thyroid extract preparations in pregnancy
- Change liothyronine to levothyroxine therapy prior to, or as soon as identified in pregnancy, as liothyronine does not cross the placenta and does not provide fetus with adequate thyroid hormone therapy

Subclinical hypothyroidism – TSH > 4.0mU/L with normal fT4 and fT3 with or without positive thyroid peroxidase antibody (TPOAb) and thyroglobulin antibody (TgAb)

- Commence levothyroxine 50microg/day and refer to obstetric medicine clinic if **TSH is mildly/moderately elevated from 4.0 - 9.9mU/L**
- Commence levothyroxine 100microg/day and refer to obstetric medicine clinic i**f TSH significantly elevated at >10mU/L**

Hypothyroidism – TSH elevated with low fT4 and/or fT3

- Commence levothyroxine 100microg/day and refer woman to obstetric medicine clinic
- Collect TPO and TgAb as part of work up of cause of hypothyroidism
- Monitor TSH and fT4 every 4-6 weeks from commencement of therapy or change in treatment dose
- Cease testing if thyroid function tests are normal at 28-30 weeks
- Target TSH levels by trimester and laboratory specific reference ranges

Pre-existing hypothyroidism

- Increase pre-pregnancy levothyroxine dose by 30% at conception and aim TSH <2.5mIU/L
- Refer to obstetric medicine

Subclinical Hyperthyroidism - TSH reduced with normal fT4 AND fT3

- Collect TPO Ab and TSH receptor antibody (TRAb) to help establish cause of subclinical hyperthyroidism. Treatment may not be required if woman is asymptomatic especially if

diagnosis felt to be gestational hyperthyroidism which is usually noted in the first trimester and resolves as pregnancy progresses
- Refer woman to obstetric medicine clinic

Hyperthyroidism - TSH reduced with elevated fT4 AND/OR fT3
- Collect TPO Ab and TRAb/TSI
- Refer woman to obstetric medicine clinic
- Refer women who have a **history** of hyperthyroidism (even if they are now euthyroid or hypothyroid) for review in the obstetric medicine clinic (or usual private endocrinologist if familiar with thyroid disease in pregnancy) to ascertain if treatment with antithyroid drugs may be required. Propylthiouracil is the preferred agent in the first trimester, although carbimazole may be substituted after 10-12 weeks gestation
- Titrate to maintain fT4 and fT3 in the trimester specific reference range
- Check thyroid function every 4-8 weeks
- Measure TRAb/TSI every trimester in women with thyrotoxicosis or a history of Graves' disease. If TRAb/TSI positive:
- Check fetal heart rate and document at each visit
- Refer to the Maternal Fetal Medicine Department (MFM) if there is sustained fetal tachycardia (>150bpm)
- Refer for serial fetal ultrasounds at 28, 32 and 36-weeks' gestation in Department of Medical Imaging for assessment of fetal complications such as fetal growth restriction, fetal tachycardia (fetal goitre) and hydrops

Neonatal considerations
- Consult neonatal team if TRAb/TSI elevated at birth or not known due to risk of neonatal thyrotoxicosis. No specific neonatal follow up required If TRAb/TSI negative
- Send cord blood for TRAb/TSI levels if woman is TRAb/TSI positive, or unknown, so that neonate with negative antibodies can be discharged from follow-up. Do not measure cord TSH and fT4
- Perform fT4 and TSH levels at day 3-5, repeat at day 10-14 of life and follow clinically until 2 to 3 months if cord TRAb positive. Arrange paediatric follow up on discharge

Postpartum Management
Hypothyroidism – overt or subclinical
- On levothyroxine prior to pregnancy
  - Reduce levothyroxine dose back to non-pregnant dose immediately after birth
  - Recheck TFTs after 4-6 weeks
- Not on levothyroxine prior to pregnancy
  - Cease levothyroxine if pregnancy dose <100 microg/day
  - Reduce dose of levothyroxine by 50% if pregnancy thyroxine dose >100 microg/day
  - Recheck TFTs in 4-6 weeks
  - Aim to withdraw levothyroxine, especially in women who are TPOAb negative
- TPOAb positive
  - Observe for symptoms of thyroid disease due to risk of post-partum thyroiditis as this occurs in 50-60% of these women and manifests with either transient hyperthyroidism followed by hypothyroidism, or worsening hypothyroidism. This risk increases up to 70% in women with a history of post-partum thyroiditis
- Check TFTs at 4 and 12 weeks postpartum, or if symptoms develop

Hyperthyroidism

- Continue antithyroid medication and anticipate a flare in Graves' disease
- Check TFTs at 4 weeks postpartum

4 Documentation

- Antenatal yellow card
- Electronic Medical record (eMR)
- eMaternity

5 Education Notes

- Thyroid dysfunction is common in pregnancy and can have consequences for both the woman and fetus. During pregnancy, thyroid hormone synthesis is increased to meet the needs of the fetus who is dependent on transplacental transfer of maternal thyroxine (T4). The developing fetal thyroid is unable to produce adequate levels of its own thyroid hormone by 16 weeks [1]. Adequate iodine levels are necessary to allow for synthesis for thyroid hormone

Table 1. Common thyroid function disorders in pregnancy.

Condition	Definition by thyroid function testing	
	TSH	FT4
Subclinical Hypothyroidism	Increased	Normal
Hypothyroidism	Increased	Decreased
Subclinical hyperthyroidism	Decreased	Normal
Hyperthyroidism	Decreased	Increased

- Demand for maternal thyroid hormone production increases by up to 50% during pregnancy[1]
- There is conflicting data regarding effects of maternal subclinical hypothyroidism on pregnancy loss or miscarriage, prematurity rates, or respiratory distress in the newborn. This may be due to variability in timing of TSH measurements and cut off values and variability in TPO antibody status[2]
- Limited data from randomized control trials suggest levothyroxine use in pregnant women with subclinical hypothyroidism and TSH >4mIU/L may reduce preterm delivery and pregnancy loss[3]. Overt hypothyroidism is associated with adverse obstetric and fetal outcomes. Hypothyroidism increases the risk of preeclampsia, placenta abruption, anaemia, postpartum haemorrhage, and prematurity. As thyroid hormone is essential for fetal neuronal development, hypothyroidism can lead to impaired neurodevelopmental development. There is clear benefit in treating overt hypothyroidism[2]
- Thyroid antibody positivity i.e. thyroid peroxidase (TPO) or thyroglobulin (TG) antibodies can occur in the presence or absence of thyroid dysfunction. The prevalence of antibodies in pregnant women is estimated to be 3-20%[4]. Antibody positivity has been associated with an increased risk of thyroid dysfunction in the future and women may be at increased risk of subfertility and miscarriage. However, treatment with thyroxine has not been shown to

reduce the risk of miscarriage. Similarly, in women undergoing fertility treatment, thyroxine does not improve pregnancy rates[2]

- Isolated maternal hypothyroxinemia is diagnosed when only the fT4 is low with a normal TSH. Whilst it has been associated with a wide range of adverse pregnancy outcomes, intervention studies showed no beneficial effects with levothyroxine treatment[5]
- Maternal hyperthyroidism has been associated with fetal tachycardia, small for gestational age babies, prematurity, stillbirths and congenital malformation[1]
- Graves' disease is an autoimmune disorder caused by the production of TRAb/TSI that stimulate the thyroid gland. These antibodies do cross the placenta and can interact with the fetal thyroid. Although uncommon, high or increasing levels of maternal TRAbs/TSI have been known to cause fetal or neonatal hyperthyroidism and growth restriction[1]
- General consensus opinion is that TRAb/TSI levels more than 2-3x the upper limit of laboratory specific normal is significant for the fetus[1]
- Postpartum thyroiditis most commonly presents with isolated hypothyroidism, but a biphasic presentation, and isolated hyperthyroidism can occur. A high index of suspicion is warranted for diagnosis[1]

6 Related Policies/procedures

7 References

1. Chan, Shiao-Yng, et al. "Management of Thyroid Disorders in Pregnancy: Green-top Guideline No. 76." BJOG: An International Journal of Obstetrics & Gynaecology 132.8 (2025): e130-e161.
2. De Leo, Simone, and Elizabeth N. Pearce. "Autoimmune thyroid disease during pregnancy." The lancet Diabetes & endocrinology 6.7 (2018): 575-586
3. Han, Yutong, et al. "A systematic review and meta-analysis examining the risk of adverse pregnancy and neonatal outcomes in women with isolated hypothyroxinemia in pregnancy." Thyroid 33.5 (2023): 603-614.
4. Lee, Sun Y., and Elizabeth N. Pearce. "Assessment and treatment of thyroid disorders in pregnancy and the postpartum period." Nature Reviews Endocrinology 18.3 (2022): 158-171.
5. Nazarpour, Sima, et al. "Effects of levothyroxine on pregnant women with subclinical hypothyroidism, negative for thyroid peroxidase antibodies." The Journal of Clinical Endocrinology & Metabolism 103.3 (2018): 926-935.

8 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

- Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation.
- When clinical risks are identified for an Aboriginal and/or Torres Strait Islander woman or family, they may require additional supports. This may include Aboriginal health professionals such as Aboriginal Liaison Officers, health workers or other culturally specific services

9 CULTURAL SUPPORT

- For a Culturally and Linguistically Diverse CALD woman, notify the nominated cross-cultural health worker during Monday to Friday business hours
- If the woman is from a non-English speaking background, call the interpreter service: NSW Ministry of Health Policy Directive PD2017_044-Interpreters Standard Procedures for Working with Health Care Interpreters.

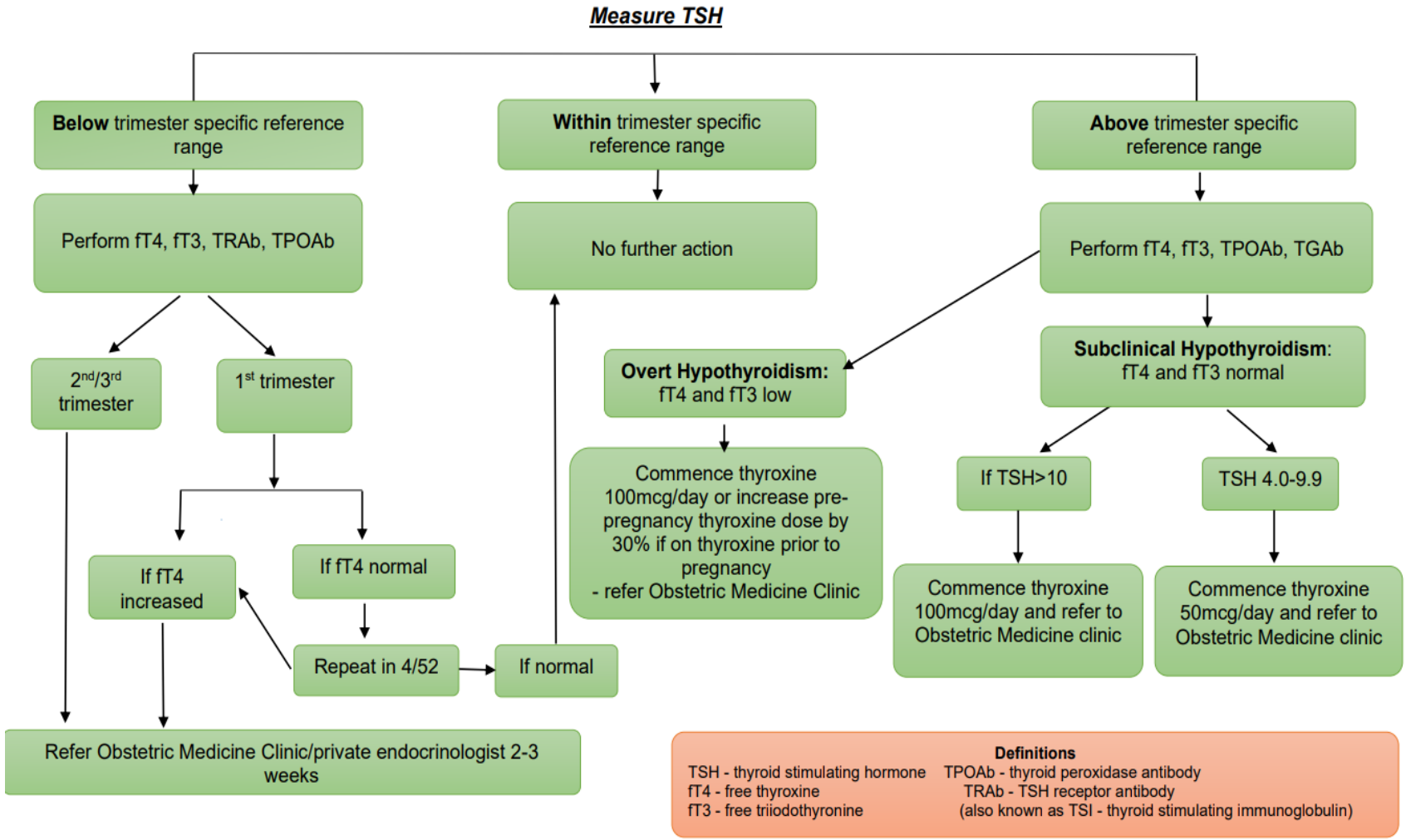
10 NATIONAL STANDARDS

- Standard 1- Clinical Governance
- Standard 2 – Partnering with Consumers
- Standard 4- Medication Safety
- Standard 5 – Comprehensive Care

11 REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
Jun 2025	V1	Dr Ruby Chang final draft
July 2025		UAT
July 2025		For endorsement
Aug 2025		Pharmacy review attended
Oct 2025		RHW BRGC

Appendix 1


Measure TSH
Below trimester specific reference range
Within trimester specific reference range
Above trimester specific reference range
Perform fT4, fT3, TRAb, TPOAb
No further action
Perform fT4, fT3, TPOAb, TGAb
2nd/3rd trimester
1st trimester
Overt Hypothyroidism: fT4 and fT3 low
Subclinical Hypothyroidism: fT4 and fT3 normal
Commence thyroxine 100mcg/day or increase pre-pregnancy thyroxine dose by 30% if on thyroxine prior to pregnancy - refer Obstetric Medicine Clinic
If TSH>10
TSH 4.0-9.9
If fT4 increased
If fT4 normal
Commence thyroxine 100mcg/day and refer to Obstetric Medicine clinic
Commence thyroxine 50mcg/day and refer to Obstetric Medicine clinic
Repeat in 4/52
If normal
Refer Obstetric Medicine Clinic/private endocrinologist 2-3 weeks
Definitions
TSH - thyroid stimulating hormone
fT4 - free thyroxine
fT3 - free triiodothyronine
TPOAb - thyroid peroxidase antibody
TRAb - TSH receptor antibody
(also known as TSI - thyroid stimulating immunoglobulin)