TITLE: Antenatal Testing and Management of Thyroid Disease			Health Northern Sydney Local Health District
Document Type:	Guideline	Approved by:	RNSH and Ryde Drugs and Therapeutic Committee
Department:	Maternity, Neonatal & Women's Health	Section:	Maternity
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Location Relevance:	NSLHD	Previous Document Number:	Nil

Contents

Statement of Intent

NSLHD continues to improve the health and social and emotional well-being of Aboriginal and Torres Strait Islander people by providing a culturally safe, respectful and a holistic approach to their health needs. The Director of Aboriginal Health advises that the health needs of Aboriginal and Torres Strait Islander people have been considered and applied in this guideline.

NSLHD supports diversity and inclusion and have considered these principles in the development of this guideline.

1. Guideline Statement

The purpose of this guideline is to facilitate consistent practice amongst health care providers within the Northern Sydney Local Health District (NSLHD) with respect to the screening, diagnosis and management of thyroid disease in pregnancy. In addition, this guideline intends to provide clear guidance regarding service pathways for women with thyroid-related conditions within the NSLHD.

2. Preamble

Thyroid disease in pregnancy is a common clinical problem and includes both underactive and overactive thyroid conditions. The purpose of this guideline is to facilitate consistent practice amongst health care providers within the Northern Sydney Local Health District (NSLHD) with respect to the screening, diagnosis and management of thyroid disease in pregnancy. In addition, this guideline intends to provide clear guidance regarding service pathways for women with thyroid-related conditions within the NSLHD.

Clinical recommendations regarding the management of thyroid disease within this guideline are formulated with consideration of the guidelines set forth by the Endocrine Society of Australia (ESA), American Thyroid Association (ATA) and the Royal Australian and New Zealand Obstetrics and Gynaecology Association (RANZCOG), together with consensus opinion from endocrinologists, obstetricians and midwives within the Women's Health Network and Diabetes Network of the NSLHD.

Thyroid function in pregnancy
The physiological demands for thyroid hormone are increased in the pregnant state, requiring 30-50% increased production from the thyroid gland. Foetal growth and neurological development in the first trimester rely on adequate supply of maternal thyroid hormone. The rising level of human chorionic gonadotrophin (hCG) hormone in early pregnancy normally stimulates the thyroid gland, enabling increased thyroid hormone production (1). Consequently, the normal TSH range in pregnancy is lower compared to the non-pregnant reference range.

Screening for thyroid dysfunction in pregnancy should begin with thyroid stimulating hormone (TSH) measurement. If the TSH value is outside the normal range for pregnancy (either above or below), then further assessment of free T4 and free T3 should proceed.

Hypothyroidism
Overt maternal hypothyroidism is associated with adverse pregnancy-related outcomes including increased risk of premature birth, low birth weight, pregnancy loss and neurocognitive impairment in the offspring (2,3).

Hyperthyroidism
Overt hyperthyroidism, otherwise known as thyrotoxicosis is associated with early foetal loss, reduced foetal growth, preterm delivery and foetal and neonatal hyperthyroidism (in the setting of Graves' disease). The clinical presentation varies, and includes palpitations, shortness of breath, anxiety, tremor and weight loss. Its presence can exacerbate symptoms of early pregnancy, such as nausea and vomiting, and can contribute to hyperemesis gravidum.

Thyroid nodules
The prevalence of thyroid nodules in pregnancy is estimated between 3-21%, with existing nodules potentially increasing in size and volume transiently during the pregnancy(1). Ultrasound evaluation is appropriate at any stage of pregnancy, for detecting thyroid nodules, determining their sonographic features and pattern, monitoring growth, and evaluating cervical lymph nodes. Further evaluation with fine needle biopsy can also be considered at any stage of the pregnancy. Should differentiated thyroid malignancy be detected, further treatment can, in most cases, be safely deferred till the post partum period. Surgery in the second trimester can be considered in urgent circumstances. Individual evaluation is required and referral to an endocrinologist should be considered for nodules detected in pregnancy.

Iodine deficiency

Iodine deficiency is associated with pregnancy loss and increased perinatal mortality, intellectual deficits in children and cretinism. The recommended iodine intake during pregnancy and lactation is 250 mcg daily compared with 150 mcg daily for nonpregnant adults. The NHMRC recommends a supplement containing 150 mcg iodine to be taken daily during pregnancy.

2. Scope of Practice

Maternity Clinicians
Endocrinologists
General Practitioners

3. Role and Responsibilities

Thyroid Disease Risk Factor Identification

- Maternity Clinicians
- Endocrinologists
- General Practitioners

Management of Thyroid Disease

- O&G Medical Officers
- Endocrinologists
- General Practitioners

4. Guideline

4.1 Standard Requirements

When undertaking any clinical interaction with a patient/consumer, staff are expected to;

- Perform standard precautions (inclusive of hand hygiene and select appropriate PPE) relevant to the guideline. Refer to the CEC IPAC Handbook
- Introduce themselves to the patient/consumer and carer/ family if in attendance
- Check patient/consumer identification. Refer to the Patient Identification Procedure - NSLHD.
- Obtain consent as per the Consent to Medical and Healthcare Treatment Manual.
- Keep the patient / consumer, and where relevant carer, informed and involve them in decision making.
- Ensure the patient / consumer, and where relevant carer, is aware of how their information will be used and who will have access to it. Further information is available in the n the Privacy Manual for Health Information leaflet for patients.
- Document interaction in the electronic medical record or health record using black pen; including date, time, signature and designation
- This is a level 1 procedure. Requirements of level 1 are to be followed per Clinical Procedure Safety_PD2017_032.

4.2 Asymptomatic, no previous history of thyroid disease (see Appendix A)

All patients seeking pregnancy, undertaking assisted reproduction, or who are newly pregnant, should have serum TSH measured at the first opportunity if any of the following risk factors are identified:

1. A history of hypothyroidism or hyperthyroidism
2. Current symptoms or signs of thyroid dysfunction

3. Known thyroid antibody positivity or presence of a goitre
4. History of head or neck radiation or prior thyroid surgery
5. Age >30 years
6. Type 1 diabetes or other autoimmune disorders
7. History of pregnancy loss, preterm delivery, or infertility
8. Multiple prior pregnancies (>1)
9. Family history of autoimmune thyroid disease or thyroid dysfunction
10. Obesity class III (body mass index (BMI) > 40 kg/m2)
11. Use of amiodarone or lithium, or recent administration of iodinated radiologic contrast
12. Residing in an area of known moderate to severe iodine insufficiency

If TSH is within the normal pregnant range no further action is required.
If TSH is above the normal pregnant range, then the steps set out in **Appendix A-I** should be followed.
Treatment with thyroxine is recommended if TSH > 4mU/L. If TSH is between 2.5-4mU/L, then treatment should be determined based on thyroid antibody positivity, history of miscarriage or IVF pregnancy or if clinical concern.
Conversely, in the context of reduced TSH below the normal pregnant range, then management as per the guideline let out in **Appendix A-II** should be applied.

4.3 Current thyroxine therapy

Women who plan to become pregnant whilst taking thyroxine should be advised to increase the dosage of thyroxine by 25% once pregnancy is confirmed. During pregnancy, TSH should be performed at the same pathology collection laboratory when possible (given variability within TSH assays) until a stable dose of thyroxine is reached within the normal pregnant range (0.4-2.5mIU/L at NSW Health Pathology-North, or <2.5mU/L if no normal range available). TSH measurement should occur each 4-6 weeks or as determined by the clinician. If TSH is stable and in the target range at 30 weeks' gestation, further TFTs are not required for the rest of the pregnancy. Thyroxine should be reduced to the pre-pregnant dosage immediately postpartum.
Pregnant women on thyroxine with normal thyroid function can be managed by their usual antenatal care provider and do not require routine referral to an endocrinologist. However, should there be any concerns by the care provider or the thyroid function is persistently abnormal, then consideration should be given to referral to endocrinologist. (Appendix A-III)

4.4 History of hyperthyroid state

Women with a prior history of Grave's disease treated with thyroidectomy, I-131 or ongoing anti-thyroidal medication should have serum TSH and TRAb measured at the earliest opportunity once pregnancy has been established. Women with normal TSH and TRAb can be managed by their usual antenatal care provider. If either TSH or TRAb result is outside the normal range in early pregnancy, referral to specialised endocrinology services should be made. If TRAb is positive (above 3xULN) consideration should be made for antenatal thyroid evaluation by ultrasound and post-partum paediatric review with formal thyroid function tests.

Timing of TRAb measurement: TRAb should be measured at the earliest opportunity if pregnancy.
If the TRAb level at the earliest opportunity in pregnancy is elevated (>3 x ULN), it should be repeated at 18-22 weeks, and if again elevated then at 30-34 weeks, to determine the need for referral to Maternal Foetal Medicine for close monitoring of foetal and neonatal thyroid status.

4.5 History of thyroid cancer or thyroidectomy for any cause

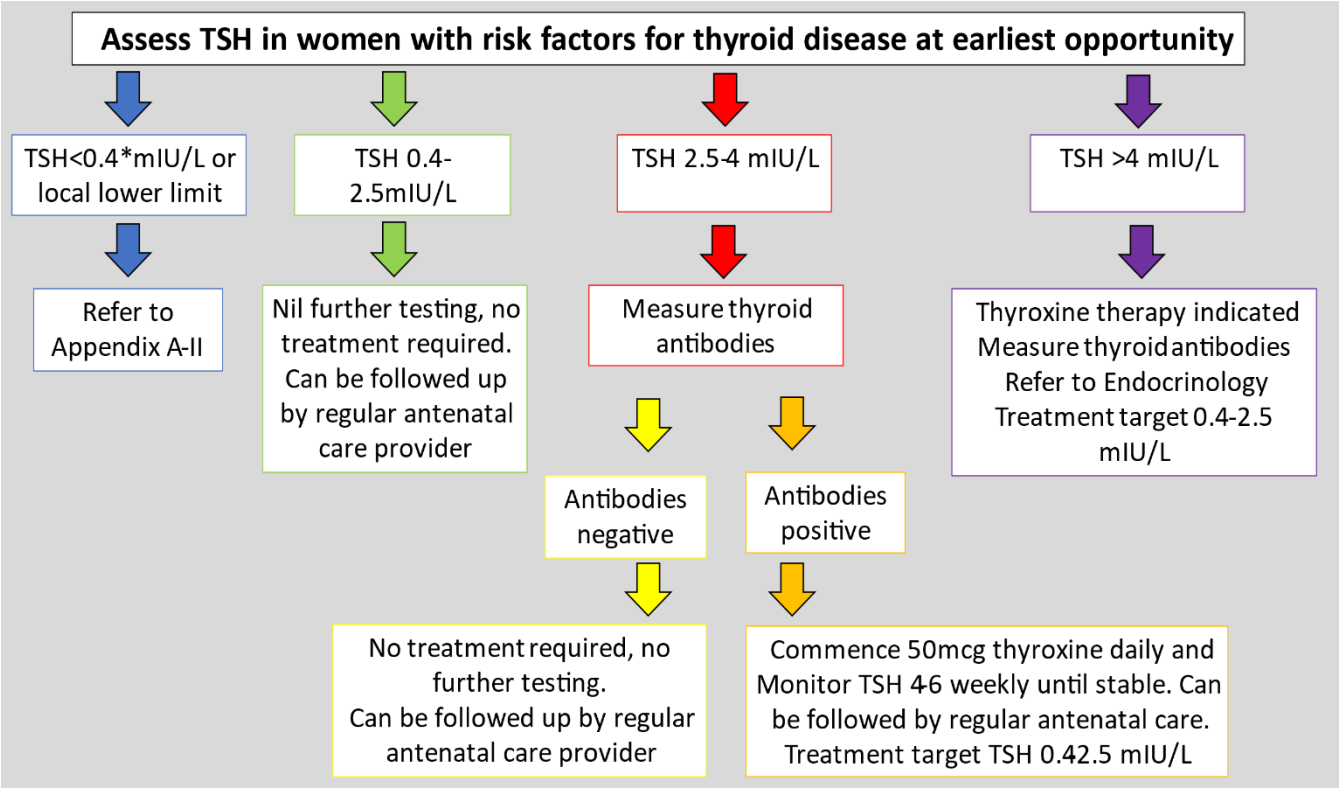
Any patient with a history of thyroid cancer and/or thyroidectomy should be referral to specialist endocrinology services. The pregnant woman should be advised to bring all

documentation of their previous thyroid history to the appointment with the endocrinologist. Management of thyroid cancer in the context of pregnancy is often individualised and is beyond the scope of this guideline.

4.6 History of thyroid nodule

Pregnancy can be an opportune time to ensure appropriate medical follow-up of medical conditions is in place. If there is a history of thyroid nodules, the pregnant woman should be referred to endocrinology services, unless adequate follow-up from a medical practitioner can be confirmed.

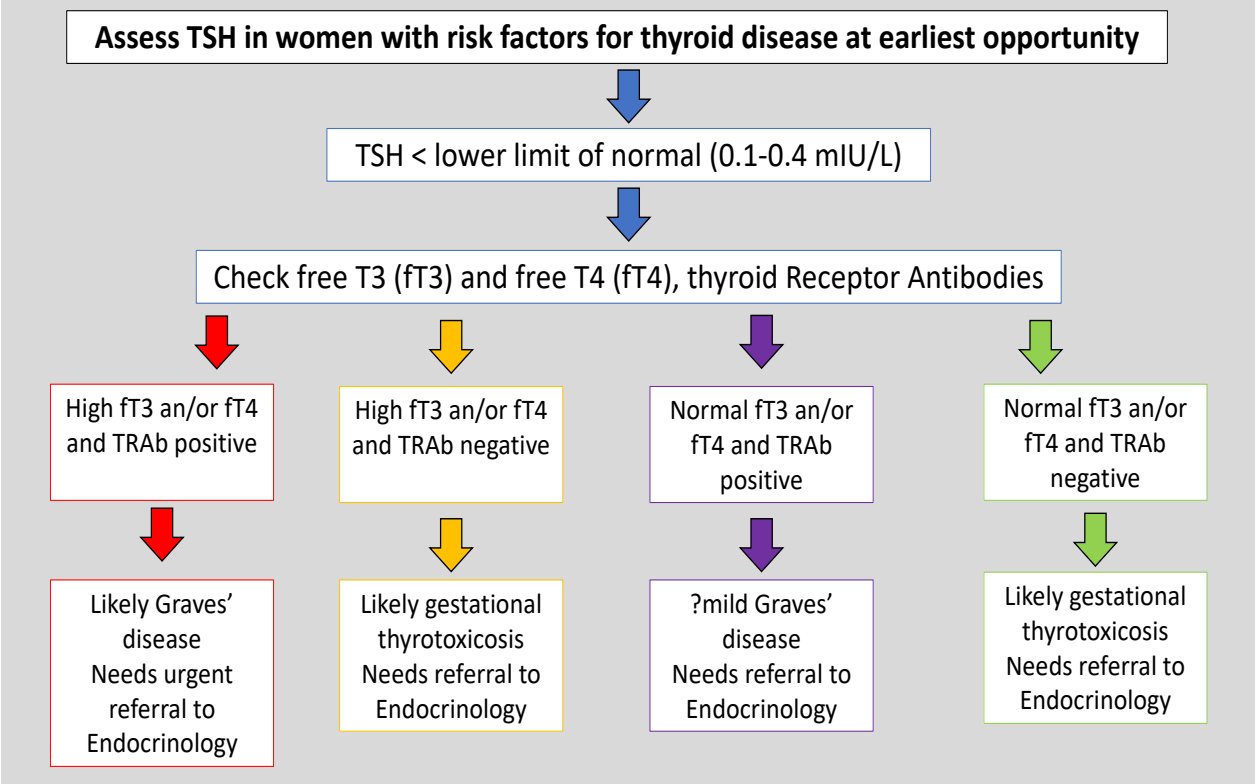
A-I: Assessment of Thyroid Function in Pregnant Women



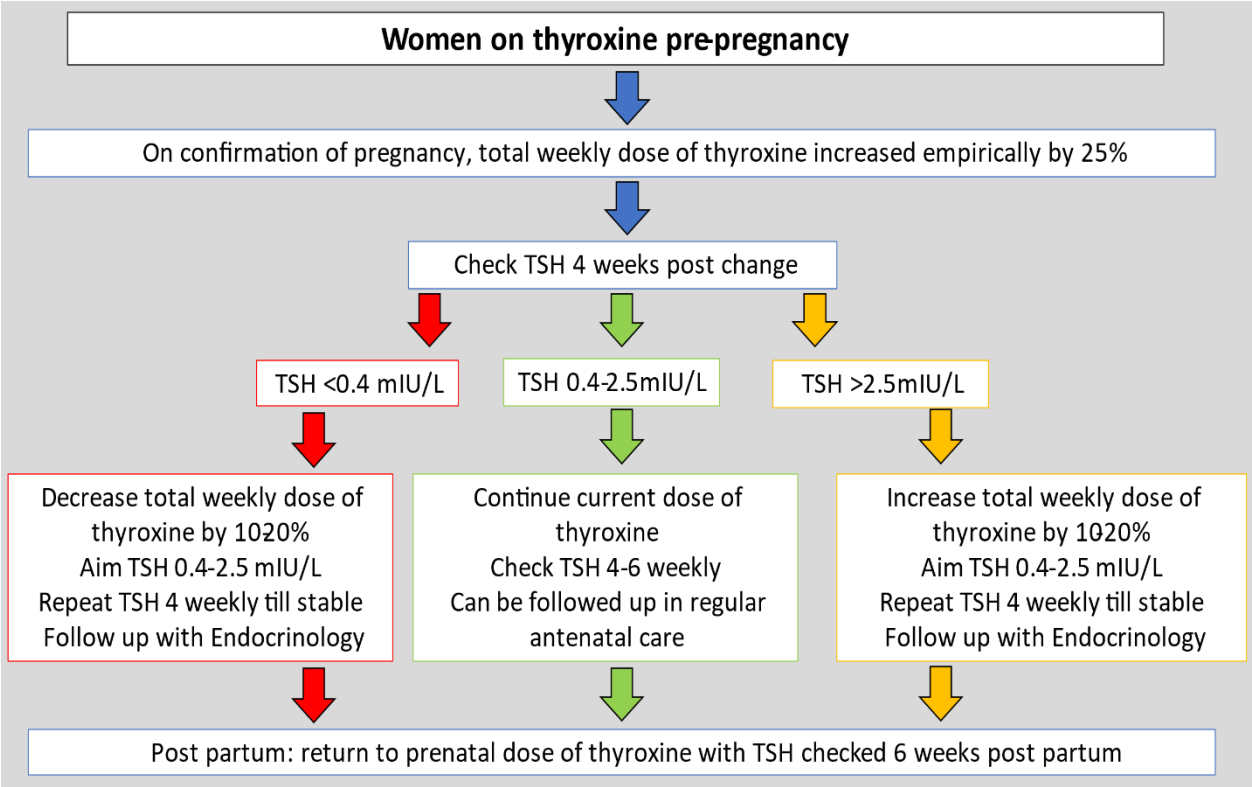
Current reference ranges at RNSH (NSW Health Pathology-North):
First trimester TSH 0.4- 2.5 mIU/L, Second and third trimester reference ranges0.4- 3mIU/L
The treatment target if on thyroxine 0.4-2.5 mIU/L
Some variation may exist in normal reference ranges between different pathology services, with varying lower limits of normal. In general, treatment target is <2.5 mIU/L. The same pathology provider should be utilised throughout pregnancy when possible.

***lower limit of normal "pregnancy specific range" should be as per local pathology service**

A-II: Hyperthyroidism



A-III Pre-existing Hypothyroidism in pregnancy



5. Risk of Non-Compliance

Normal thyroid function is essential for fetal development. A deficiency or an excess of thyroid hormone can occur in pregnancy. Thyroid dysfunction can cause complications for both mother and baby.

6. Related Documents

Nil

7. Related Standard/s

National Safety & Quality Health Service Standard - 2.3, 2.6, 4.3, 4.10, 5.3, 5.5, 5.10, 5.11, 6.11

8. References

1. Alexander, Pearce, *et al.,* 2017 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease during Pregnancy and the Postpartum. *Thyroid*. March 2017, 27(3): 315-389. doi:10.1089/thy.2016.0457
2. M Abalovich, S Gutierrez, G Alcaraz, G Maccallini, A Garcia, O Levalle 2002 Overt and subclinical hypothyroidism complicating pregnancy. *Thyroid* **12:**63–68.
3. AS Leung, LK Millar, PP Koonings, M Montoro, JH Mestman 1993 Perinatal outcome in hypothyroid pregnancies. *Obstet Gynecol* **81:**349–353.