Management of Maternal Thyroid Disorders During Pregnancy

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Target Audience:

People who need to know about this document in detail	All Obstetric, Midwifery and medical staff that care for pregnant women with thyroid disorder in pregnancy
People who need to have a broad understanding of this document	As above
People who need to know that this document exists	As above

Integrated Impact Assessment:

Equality Impact Assessment Date & Outcome	**Date: October 2025** **Outcome: no negative impact**
Welsh Language Standard	Choose an item.
Date of approval by Equality Team:	(00/00/0000)
Aligns to the following Wellbeing of Future Generation Act Objective	Choose an item.

Disclaimer:

If the review date of this document has passed please ensure that the version you are using is the most up to date version either by contacting the author or CTM_Corporate_Governance@wales.nhs.uk

CHANGE HISTORY

Version	Date	Author Job Title	Reasoning
2	**April 2025**	**Mrs Liza Mukhopadhyay** **Consultant Obstetrician** **Dr Ewaen Ikhatua** **ST5 Obstetrics and Gynaecology**	

Table of Contents

BACKGROUND

Guideline Definition

Clinical guidelines are systemically developed statements that assist clinicians and patients in making decisions about appropriate treatments for specific conditions.

They allow deviation from a prescribed pathway according to the individual circumstances and where reasons can be clearly demonstrated and documented.

Purpose

To assist medical and nursing staff in the management of maternal thyroid disorders in pregnancy.

Many complaints come from poor communication and contradictory advice. The guideline aims to

minimise this by standardising the information, advice and treatment that we provide to pregnant

women and people with thyroid disorders during pregnancy.

Scope

For all staff, medical, nursing and clerical, to provide uniformity in the management of pregnant

women and people with thyroid disorders during pregnancy.

Roles and Responsibilities

In seeking further advice on any uncertainties contained in this document, or if you feel that there is new or more updated advice, it is your responsibility to contact the guideline author or Approval Group manager so that any amendments can be made.

The guideline Approval Group is responsible for disseminating this guideline to all appropriate staff.

The guideline author or a named alternative is responsible for updating the guideline with any amendments that they become aware of or are highlighted to them.

All health professionals are responsible for ensuring that the guideline is utilised effectively, and to ensure that they are competent in the implementation of it.

Training Requirements

There is no mandatory training associated with this guideline.

Monitoring of Compliance

- By audit and review of complaints relating to management of thyroid disorders in pregnancy.
- The Governance Department will collect any complaints and distribute to the relevant individuals for comments, and share any learning points.
- The Service Lead will oversee any governance issues, make relevant recommendations to the directorate, and advise the Clinical Director or the directorate of any matters that require implementation.
- The Health Board reserves the right, without notice, to amend any monitoring requirements to meet any statutory obligations or the needs of the organisation.

Complaints

All complaints should try to be resolved with the patient during any contact to avoid escalation. Their concerns should be listened to and documented. If it is not possible to address any concerns at the time, or if the complaint is of a serious nature, the patient's complaint should be discussed with the consultant in charge for the day, or the patient should be given details of how to raise a formal complaint via the local governance department.

Related Guidelines

- **RCOG Green-top Guideline (April 2025) No 76 Management of Thyroid Disorders in Pregnancy**
- Wales Neonatal Network Guideline. Management of Neonates Born to Mothers with Thyroid Disease (June 2018)

Definition and Background

Thyroid disease is common, affecting 1% to 2% of pregnant women. Pregnancy may modify the course of thyroid disease, and pregnancy outcomes can depend on optimal management of thyroid disorders. Consequently, obstetric providers must be familiar with thyroid physiology and management of thyroid diseases in pregnancy. Recommendations for screening and treatment of hypo- and hyperthyroidism are summarized.

Early diagnosis and good management of maternal thyroid dysfunction is essential to ensure minimal adverse effects on fetal development. This requires close liaison between the GP, Community Midwife, Endocrinologist and Obstetrician. Maternal thyroid hormones are essential for the maintenance of pregnancy and may influence placental development [9]. Transplacental passage of maternal T4 is essential for normal fetal development, especially neurodevelopment during the first half of gestation. The fetus is completely dependent upon maternal T4 prior to commencing production of its own thyroid hormone but remains reliant on maternal supply of iodine and continues to receive maternal T4 until birth. Treatment needs to be adequate, and ideally optimised pre-conception, with appropriate advice given before pregnancy to prevent hypothyroidism in early pregnancy. Pre-pregnancy counselling is recommended in women with hyperthyroidism to minimise maternal and fetal adverse outcomes.

Safety Net Advice and Urgent Referral

- Refer any woman with overt signs of thyroid disease immediately to an endocrinologist or obstetrician for urgent review.

GENERAL MANAGEMENT

Responsible Clinician

Women with thyroid disease should be referred to one of the following specialist person(s) for ongoing care in pregnancy:

- a joint endocrine/antenatal clinic (preferred)

  …POW **(Mrs Liza Mukhopadhyay/Dr Cozma)**

  …PCH **(Dr Helen Marx/Prof Okosieme)**

  …RGH **(Mr Pembridge/Dr Lane)**
- an obstetrician with an interest in maternal medicine (preferred)
- an obstetrician skilled in the management of thyroid disease

Women at Risk of Thyroid Disease

Healthy women of reproductive age do not need to be screened for subclinical thyroid disease.

The following women should be screened for thyroid disease using TSH and FT4, preferably prior to conception, or at the earliest opportunity in the pregnancy:

- Type 1 and Type 2 diabetes or past gestational diabetes
- Any history of autoimmune disorders e.g. coeliac disease, SLE, APS, Anti-Ro/Anti-La positivity
- Previous, current history, or family history (1st degree relative) of thyroid disease
- Goitre or other clinical features of thyroid disease
- Previous overt or subclinical thyroid dysfunction
- Previous thyroiditis (autoimmune or infectious or postpartum)
- Known TPOAb positivity
- Previous radioiodine ablation
- Previous head/neck irradiation
- Use of lithium, amiodarone or recent treatment of overactive thyroid
- Previous thyroid surgery
- Molar pregnancy
- Previous stillbirth or second trimester miscarriage *testing recommended if not previously tested at the time of pregnancy loss or post-adverse event

Iodine Supplementation

The recommended iodine intake during pregnancy and lactation is 200 - 250 mcg daily (150mcg non-pregnant). The common pregnancy supplements (e.g. Pregaday, Seven Seas, etc.) provide approximately 150mcg of iodine daily. This may be further supplemented by over-the-counter supplements such as in Sea Kelp, to achieve the recommended daily dose. If deemed appropriate,supplementation should ideally be started 3months in advance of pregnancy or as soon as possible in pregnancy

HYPOTHYROIDISM

Diagnosis

- Overt Hypothyroidism (OH) Elevated TSH with low FT4 **or** severe Sub-clinical hypothyroidism (SCH) TSH≥10 with low/normal FT4
- Sub-clinical disease can exist with mildly elevated TSH and normal thyroxine levels.
- Isolated hypothyroxinaemia (IH) is defined as free T4 concentration below the 2.5th percentile, with a TSH within the reference range

Obstetric Risks

If hypothyroidism is well controlled pregnancy complications are unlikely. In pregnancy there is an increased requirement for thyroxine.

Subclinical Hypothyroidism (SCH)

SCH been associated with subfertility and poor pregnancy outcomes including increased risk of **miscarriage, preterm delivery, pregnancy induced hypertension, gestational diabetes, growth restriction and premature rupture of membranes**. Women who are TPOAb positive (marker of auto-immune thyroid disease) have increased rates of miscarriage and preterm delivery independent of thyroid function.

If hypothyroidism is sub-optimally treated, there is an increased risk of preterm labour, pregnancy induced hypertension, placental abruption, anaemia, postpartum haemorrhage, and impaired fetal intellectual development due to low FT3/FT4 levels as early as 5 weeks' gestation. Thus, it is very important to ensure adequate thyroxine replacement as early as possible in pregnancy, ideally prenatally.

There is an increase in serum free thyroxine (FT4) levels in women early in normal pregnancy. However, in women with hypothyroidism this increase does not occur.

The fetus relies on maternal thyroxine until 12 weeks' gestation when its own thyroid gland develops.

Obstetric Care

All women with hypothyroidism in pregnancy should be seen by a Consultant Endocrinologist and a Consultant Obstetrician from early in pregnancy.

If the thyroid function testing remains stable, ongoing care can be managed by the community midwife and GP.

Ideally women with hypothyroidism should be seen pre-pregnancy to ensure titration of levothyroxine to achieve a preconception TSH ≤ 2.5 mU/L . They should also be encouraged to present as soon as they become pregnant in order that:

- Thyroxine dose may be:
    - commenced at 1.6 mcg/kg/day for (max 100mcg) for overt hypothyroidism/severe SCH (TSH>10) with repeat TFTs in 4 weeks.
    - commenced at 1.0 to 1.2 mcg/kg/day for subclinical hypothyroidism (max 50-75mcg). Otherwise perform TFTs at 4–6 week intervals up to 20 weeks' gestation and at 28 weeks' gestation.
    - increased by 25% to 30% (or minimum of 25mcg) for pre-existing. This may be achieved by either doubling the dose of levothyroxine on two days of each week OR implementing a dose increment of 25 mcg/day for women taking ≤ 100 mcg levothyroxine daily and 50 mcg/day for women taking > 100 mcg levothyroxine daily.
- TSH and fT4 concentrations should be checked every 4–6 weeks until 20 weeks of gestation then once again at 28 weeks of gestation.

Postpartum -

Following birth,for those whowere already adequately replaced on levothyroxine preconception, revert to the

preconception dose of levothyroxine 2 weeks postpartum

In women not taking levothyroxine preconception,stop levothyroxine following birth,and check thyroid function 6 weeks postpartum.

Monitoring

If the woman's serial thyroid testing remains stable, ongoing thyroid function testing can be managed by the GP and supported by the community midwife.

Fetal Monitoring

There is no indication for serial growth scans in well controlled hypothyroidism.

Babies born to mothers with Hashimoto thyroiditis are at low risk of developing transient hypothyroidism and hyperthyroidism is extremely rare. Neonates with transient congenital hypothyroidism will have a raised TSH which will be picked up by the routine neonatal blood spot screening. Therefore, these babies will not require further investigations or observation after delivery.

Subclinical Hypothyroidism (SCH)

In women with SCH (TSH between the upper limit of the reference range and 10 mU/L), newly diagnosed at any time in pregnancy, levothyroxine should be considered, at a suggested dose of 1.0–1.2 micrograms per kg per day. Otherwise perform thyroid function tests at 4–6-week intervals up to 20 weeks' gestation and at 28 weeks' gestation.

KEY MESSAGE:

- **Subclinical hypothyroidism is a milder, more common form of hypothyroidism and is defined as an elevated TSH level (4.0-10) with a normal free T4 level.**

Blood Testing During Pregnancy

For patients with suspected, past or established hypothyroidism arrange thyroid function testing as follows:

- TSH and fT4 concentrations should be checked every 4–6 weeks until 20 weeks of gestation then once again at 28 weeks of gestation.
- Repeat TFT 4 weeks after adjusting the dose of levothyroxine.
- Routine testing for thyroid peroxidase antibody (TPOAb) in euthyroid women is not recommended in pregnancy.
- In those already known to be positive for TPOAb but euthyroid, they should be offered TFTs in the first trimester (preferably at first contact with a healthcare professional, including primary care booking) and at 20 weeks of pregnancy to detect development of hypothyroidism
- Levothyroxine treatment is not recommended for women with TPOAb in the absence of thyroid dysfunction during pregnancy.
- Following birth, for those who were already adequately replaced on levothyroxine preconception, revert to the preconception dose of levothyroxine two weeks postpartum.
- In women not taking levothyroxine preconception, stop levothyroxine following birth, and check thyroid function six weeks postpartum.
- If TFTs unstable refer to a consultant endocrinologist or obstetrician as early as possible.

KEY MESSAGE:

Aim to keep TSH below 2.5 mU/L while keeping the fT4 within the normal trimester-specific reference range.

Drug Therapy

Levothyroxine (T4) dosing depends on TFT's. An increase in levothyroxine dose is likely by an average of 25-50 mcg as pregnancy progresses.

Expect T4 requirements to increase by up to 50% by 20 weeks and then plateau.

- **Patients on levothyroxine therapy**:
  - Daily levothyroxine dose should be **increased by 25–30%** in the event of a positive pregnancy test. This may be achieved by either: – doubling the dose of levothyroxine on two days of each week or
    – implementing a dose increment of: • **25 mcg/day for women taking ≤ 100 mcg levothyroxine daily • 50 mcg/day for women taking > 100 mcg levothyroxine daily.**
- **In women with overt hypothyroidism and severe SCH (TSH >10 mU/L), newly diagnosed at any time in pregnancy:**
  - Levothyroxine treatment commenced immediately at a **suggested dose of 1.6mcg/kg/day**
  - Repeat thyroid function tests in 4 weeks.
- **In women with SCH (TSH between the upper limit of the reference range and 10 mU/L):**
  - Levothyroxine should be considered, at a **suggested dose of 1.0–1.2 mcg/Kg/day.**
  - Otherwise perform TFTs at 4–6 week intervals up to 20 weeks' gestation and at 28 weeks' gestation.
- **In women with IH (fT4 concentration below the 2.5th percentile, with normal TSH):**.
  - Routine levothyroxine therapy is not recommended
  - TFTs should be rechecked 4-6 weeks later to ensure it remains stable

HYPERTHYROIDISM

Pre-pregnancy counselling is recommended in women with hyperthyroidism to minimize maternal and fetal adverse outcomes.

The option of definitive treatment with radioactive iodine or thyroidectomy should be discussed,especially in women with more severe disease.Following definitive treatment, women should wait at least 6 months before attempting to conceive. They should also have had serum fT4 within the reference range on two measurements 3 months apart

A persistently increased TSH-receptor antibody (TRAb)level (usually taken as greater than 3 times the threshold for positivity) assessed around 6 months post-treatment is associated with increased risk of fetal Graves' disease and consideration maybe given to further delay conception

Hyperthyroidism requiring treatment with antithyroid drugs while trying to conceive should use propylthiouracil (PTU) in preference to carbimazole (CMZ), at the lowest effective dose to maintain fT4 concentrations in the upper half of the reference range

Diagnosis

- Elevated FT4
- Elevated FT3
- Suppressed TSH to less than 0.02
- TSH Receptor Antibodies (TRAbs): specific for autoimmune hyperthyroidism
- The lowest effective dose of antithyroid drugs should be used targeting serum fT4 at the upper half of the

reference range. Titration should not be primarily based on TSH concentrations (which may be low), and there is no role for fT3 or total T3 measurements.

Auto-antibodies

Graves' disease (autoimmune thyroid disease) is the most common cause of thyrotoxicosis in women of childbearing age. Approximately 1% of pregnant women have been treated before or are being treated during pregnancy for Graves' hyperthyroidism. Treatment will often render women euthyroid or hypothyroid.

Percentage of cases associated with positive autoantibodies for various conditions:			
	TSH receptor antibodies (TRAbs)	**Thyroid peroxidase antibodies (TPOAb)**	**Thyroglobulin antibodies (TgAb)**
Grave's Disease	90%	70%	50-70%
Hashimoto's Thyroiditis	10-15%	>90%	>80%
Thyroid Cancer	No association	Sporadic	25%
Other Conditions	15% multinodular goitre	>60% post-partum thyroiditis	40% in other autoimmune diseases (e.g. T1DM)
General Population	Negative	5%	5%

- Most TRAbs are stimulating (TSAbs) but can also be blocking (TBAbs), or neutral (N-TRAbs) depending on their effect on the TSH-receptor.
- Changes of functional properties from stimulating to blocking the TSH-receptor may occur during pregnancy.
- The typical clinical features of Graves' disease (goitre, hyperthyroidism, ophthalmopathy, dermopathy) occur when TSAbs (stimulating antibodies) predominate.
- As more thyroid hormone is produced, TgAb levels increase.

TRAbs easily cross the placenta from the first weeks of gestation. In most cases, pregnancy-related immunosuppression reduces the levels of TRAbs during pregnancy. However, in women with active disease as well as in women who received definitive therapy (radioiodine or surgery) before pregnancy, they tend to persist.

KEY MESSAGE:

- **Women with a history of Graves' Disease, even if euthyroid or hypothyroid through radioiodine treatment or surgery, must have a TSH-receptor antibodies (TRAbs) measured early in pregnancy irrespective of the thyroid function test profile.**

Obstetric Risks

- If hyperthyroidism is well controlled, pregnancy complications are unlikely. There is an increased risk of miscarriage, low birthweight, preterm birth, pre-eclampsia and stillbirth in women with untreated or suboptimal treated thyroid disease.
- Placental permeability is low early in pregnancy and increases progressively. The fetal thyroid becomes responsive to TSH, and to TRAbs at around week 20 of gestation.
- Fetal hyperthyroidism, which is the more common and expected dysfunction, develops usually at around 26 weeks, or as early as 18 weeks in severe cases.
- Transient neonatal hyperthyroidism occurs in less than 2% cases due to trans-placental passage of TSH receptor antibody (TRAb) which stimulates the fetal thyroid gland.

Obstetric Care

Antenatal Care

- All women with hyperthyroidism in pregnancy should be seen by a Consultant Endocrinologist and a Consultant Obstetrician from early in pregnancy.
- When pregnant, where a woman with a history of hyperthyroidism has been euthyroid (preconception TSH in the non-pregnant reference range) for 6 months or more on a low dose of an antithyroid drug(CMZ < 10 mg or PTU < 200 mgdaily), consider discontinuing antithyroid drugs with close thyroid function monitoring
- If the thyroid function testing remains stable, ongoing care can be shared with the community midwife and GP.
- Home delivery is not appropriate for women with hyperthyroidism.
- Complete a neonatal referral.

Monitoring

- Women on antithyroid drugs should have thyroid function monitored every 2–4 weeks with measurement of serum TSH and fT4. Consider fortnightly testing in the first half of pregnancy following the stopping of antithyroid drug treatment, when switching between antithyroid drugs and following dose adjustments.

After 20 weeks of pregnancy 4–8 weekly testing is appropriate

- Titration of antithyroid drugs should target fT4 concentrations in the upper half of the trimester-specific reference range.

Fetal Surveillance

Serial ultrasound scans to assess fetal biometry with umbilical artery Doppler at monthly intervals from 26 to 28 weeks is recommended in those who at any time during pregnancy had uncontrolled Graves' disease,required antithyroid drug treatment or had a TRAb level three times above the threshold for positivity

The fetus is particularly at risk of fetal Graves' disease or in utero hyperthyroidism and growth restriction if TRAb levels are significantly raised (more than 3 times the threshold of positivity), if maternal hyperthyroidism is uncontrolled and if pre-eclampsia or uteroplacental insufficiency is present.

Increased fetal surveillance should include:

- 2-4 weekly auscultation of FHR for fetal tachycardia (> 170 bpm persistent for > 10 minutes).
- With a significantly raised TRAb level, consider starting monthly USS earlier from 20 weeks gestation onwards.

When fetal Graves' disease is detected or suspected, care should be undertaken by MDT, including Fetal Medicine specialists.

Timing and mode of birth is mostly dictated by obstetric indications.

TRAb/TSI positive women need to be identified and the neonatal unit informed prior to delivery.

Blood Testing During Pregnancy

TFTs, TRAbs and TPOAbs testing should be considered in women with suspected, past or established hyperthyroidism:

	When to Take Test	Plan
TFTs	Routine test for past or suspected thyroid disease and ongoing follow up	• Those on antithyroid drugs should have TFTs every 2–4 weeks with measurement of serum TSH and fT4. • Consider fortnightly testing in the first half of pregnancy following the stopping of antithyroid drug treatment, when switching between antithyroid drugs and following dose adjustments • Those who have discontinued antithyroid drugs in pregnancy and maintained normal fT4 concentrations on two consecutive occasions 2–4 weeks apart following cessation of treatment may have less frequent TFTs. This can be done at 4–8-week intervals for the remainder of pregnancy • Aim to keep FT4 at the upper limit of normal. • Repeat TFTs 4-8 weeks after delivery and adjust levothyroxine dose accordingly (usually to pre-pregnancy levels).
TRAbs	Suspected or known past Graves' disease	• TRAb measurement in the first trimester is recommended in all women with a history of Graves' disease, even following definitive treatment. • Women in remission from Graves' hyperthyroidism who entered pregnancy whilst not taking antithyroid drugs and who have a low or undetectable TRAb level preconception or at pregnancy booking should have four weekly TFTs until mid-trimester. If euthyroidism is maintained, then TFTs at 4–8 week intervals for the remainder of pregnancy is acceptable. • TRAbs POSITIVE OR if on antithyroid drugs, further measurement at 20- and 28-weeks' gestation is recommended. o repeat at 20 weeks' gestation. As TRAb can cross the placenta and cause fetal hyperthyroidism and neonatal Graves' disease o **women with active Graves' disease or positive TRAb at 20 weeks' gestation should have monitoring for fetal hyperthyroidism by a maternal-fetal medicine specialist.**
TPOAbs	Suspected, known or past Graves' disease or elevated TSH	• If Graves' disease is suspected but not been previously diagnosed, TPOAb levels should be checked and would be expected to be elevated.

Drug Therapy

- Drug therapy is the treatment of choice for hyperthyroidism during pregnancy because antithyroid drugs also cross the placenta and therefore decrease both the maternal and the fetal thyroid hormone production.
- There is no evidence that treating subclinical hyperthyroidism (normal FT4 and FT3 but TSH <0.02) improves pregnancy outcome. Treatment can potentially harm the fetus.
- Anti-thyroid therapy is ideally managed in conjunction with endocrinologists.
- If antithyroid drug treatmentis required, PTU is the recommended drug during early pregnancy. If a woman conceives on CMZ a switch to PTU should be made as soon as possible before 10 weeks'gestation, with an advised dose ratio of 1:20 (CMZ:PTU). There is no benefit of switching to PTU if a woman presents after10 weeks' gestation
-

- Potential teratogenic effects have been mainly linked to CMZ/MMI, and to a lesser extent, PTU. CMZ/MMI may induce an embryopathy, including dysmorphic features, aplasia cutis, cho-anal and oesophageal atresia, abdominal wall defects, urinary and eye abnormalities, and ventricular septal defects. In addition to the background risks, teratogenic effects may be present in 2%–4% of pregnancies if exposure occurs during 6–10 weeksof gestation.
- PTU has been linked to less severe and potentially resolvable birth defects, including face and neck cysts and urinary tract abnormalities, which may occur in 2%–3% of children exposed to the drug during early pregnancy
-
- If treatment with antithyroid drugs is still required beyond 20 weeks of pregnancy, a switch to CBZ should be considered in view of risk of PTU-associated hepatotoxicity. A recommended conversion dose ratio is 20:1 (200mg PTU = 10mg CBZ).
- Use the minimal dose of PTU or Carbimazole to maintain euthyroid status.
- Adjust dose of PTU only after consultation with the endocrinologists.
- For those with good control of thyrotoxicosis on doses of <10mg/day CBZ or <200mg/day PTU, the maternal and fetal outcome is usually good and unaffected by thyrotoxicosis.

KEY MESSAGE:

- **Use PTU if LESS THAN 10 weeks**

  (Dose equivalent - Carbimazole 10mg = Propylthiouracil 200mg)

Intrapartum and Postpartum Care

- Inform the paediatricians at the time of admission to labour ward, and at the time of delivery.
- Many women will have stopped CBZ/PTU prior to delivery but if not take TSH/FT4/Total T3 on cord blood at delivery.
- The baby should have a resting heart rate checked and remain in hospital for at least 24 hours. Other congenital related problems are unlikely at doses of CBZ<10mg or PTU<200mg daily.
- Neonates of women with known Graves' disease, of those receiving antithyroid medication during pregnancy and those with increased TRAb levels should have their thyroid function monitored soon after birth and at 1–2 weeks post-birth.
- TFT is recommended 6–8 weeks after birth in women with a history of pre-existing hyperthyroidism.
- Ensure an endocrine clinic appointment is made for 6-8 weeks after delivery as there can be an exacerbation of thyrotoxicosis postnatally.
- Many women will not require to return to their CBZ/PTU post-natal, but all should be seen in the Endocrine Clinic 8-12 weeks post-partum or sooner if they have symptoms.
- CBZ and PTU are safe in low dose for breast feeding (give in divided doses immediately after the feeds):
    - CBZ is safe up to a daily dose of 20mg
    - PTU is safe up to a daily dose of 450mg

Hyperemesis Gravidarum (HG) and Gestational Transient Thyrotoxicosis (GTT)

GTT is caused by high concentrations of hCG stimulating the TSH receptors of the thyroid gland giving rise to low serum TSH and high fT4 concentrations. It usually presents in the first and early second trimesters of pregnancy, is transient, self-limiting and is not associated with adverse pregnancy outcomes. Thyrotoxicosis that is hCG-induced is more

common in women who also experience hyperemesis gravidarum, but nausea and vomiting are not symptoms of hyperthyroidism, and each may occur independently.

Severe nausea and vomiting alone in pregnancy should not prompt thyroid function testing in the absence of specific symptoms and signs of thyrotoxicosis or a personal history of thyroid dysfunction.

It is essential to exclude Graves' disease in such pregnancies, and as such FT3 must be checked (normal in HG/GTT; raised in Graves' disease), along with TSH-receptor antibodies (TRAbs) (absent in HG/GTT; increased in Graves' disease).

Where there is doubt, repeating TFTs two weeks later, demonstrating a declining fT4 concentration without antithyroid treatment, would be supportive of GTT. TSH concentrations will take longer to recover, often remaining suppressed, and are less helpful.

Management, if symptomatic, is largely supportive with:

- Antiemetics
- Maintenance of hydration and correction of electrolyte imbalances if the woman has HG
- Transient treatment with beta blockers may be used to control symptoms of thyrotoxicosis and tachycardia
- There is no evidence that treatment with antithyroid drugs improves obstetric and fetal outcomes in women with GTT

Feature	**Gestational transient thyrotoxicosis**	G**raves' hyperthyroid disease**
Symptoms of thyrotoxicosis BEFORE pregnancy	No	Often
Symptoms of hyperemesis gravidarum (nausea/vomiting)	Yes (~ 60% of gestational transient thyrotoxicosis cases)	Often not present
Personal or family history of thyroid disease	Often absent	Present in about 50%
Presence of goitre	No	Diffuse goitre in 90%
Signs of thyroid eye disease	No	In around 20%
fT3 concentration	Normal in 85%	Increased
TRAB measurement	Normal	Increased

OTHER CONSIDERATIONS

Other Thyroid Problems in Pregnancy

Thyroid Nodules and Thyroid cancer in Pregnancy

Thyroid nodules found during examination can be further assessed by ultrasound. Referral to an endocrinologist is needed for women with nodules detected during pregnancy.

Women with an enlarged thyroid in pregnancy should be reviewed by an obstetric anaesthetist.

Management of toxic nodular hyperthyroidism with antithyroid drug therapy in pregnant women is similar to Graves' hyperthyroidism except that it is associated with an even higher risk of fetal hypothyroidism since the fetal thyroid is not stimulated by TRAb. Thus, the dose of antithyroid drugs must be kept to the minimum with frequent thyroid function monitoring targeting the upper half of the reference range.

If differentiated thyroid cancer (papillary or follicular thyroid cancer) is detected during pregnancy, surgery can be delayed until the postpartum period (unless there is substantial growth, significant airway compression, or rapidly progressive disease) as such a delay is unlikely to affect the long-term prognosis. If thyroid surgery is required this should ideally be performed between 14–22 weeks of gestation, to reduce the risk of miscarriage and preterm labour.

Beta-adrenergic blocking agents such as propranolol, may be used temporarily for control of hyperthyroid symptoms as long as benefits outweigh risks. The lowest possible dose should be used for the shortest possible duration, to minimise potential risks of infants being small-for-gestational age at birth.

Post-Partum Thyroiditis (PPT)

Postpartum thyroiditis affects 5 to 10% of women in the postpartum period and is the most common cause of postpartum thyroid dysfunction. Women with a positive TPOAb level have up to a 50% risk of developing postpartum thyroiditis, and those with a history of postpartum thyroiditis have up to a 70% risk. Postpartum thyroiditis is typically associated with transient hyperthyroidism followed by transient hypothyroidism with eventual return to euthyroidism. Referral to endocrinology is indicated.

In women with riskfactors for PPT who experience symptoms of thyrotoxicosis, thyroid function tests should be performed

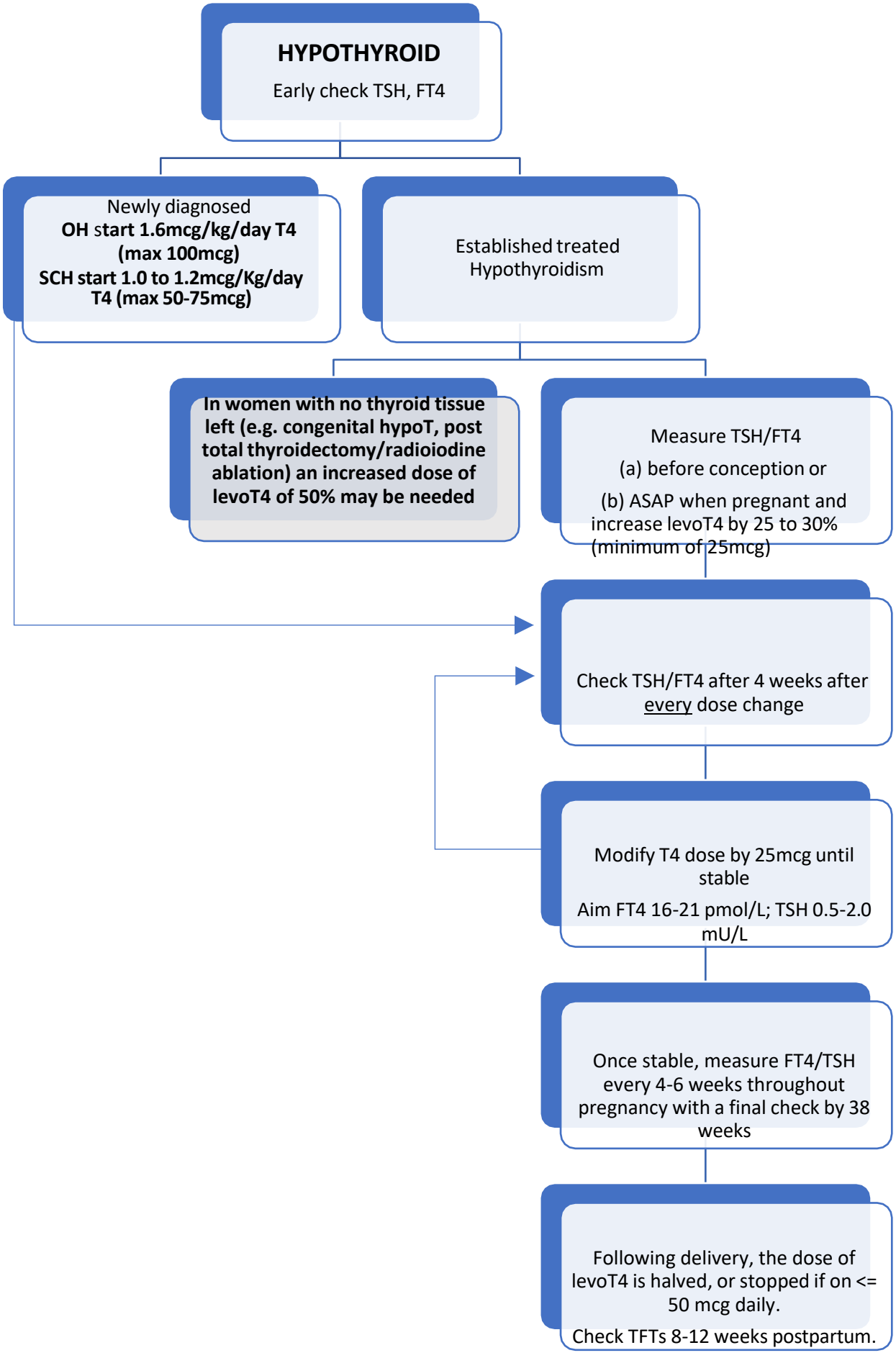
To confirm the diagnosis of PPT in the presence of an abnormal thyroid function test, perform serial thyroid function testing every 6 weeks with symptom assessment,and exclude other etiologies. At any point,if thyroid function tests show thyrotoxicosis measure TRAb and consider isotope scans to distinguish between Graves' disease and PPT

References

1. Wiles K. Management for women with subclinical hypothyroidism in pregnancy. *Drug and Therapeutics Bulletin* 2019;57:22-26.
2. Thillainadesan, S. Gargya, A. Thyroid disorders in pregnancy and postpartum. Endocrinology Today. 2019; 8(1): 8-12
3. Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. Thyroid. 2017.
4. Alexander EK, Marqusee E, Lawrence J et al. Timing and magnitude of increases in levothyroxine requirements during pregnancy in women with hypothyroidism. NEJM 2004; 351:241-9.
5. Demer LM, Spencer CA. Laboratory medicine practice guidelines: laboratory support for the diagnosis and monitoring of thyroid disease. Clin Endocrinol 2003; 58:138-40.
6. Toft A. Increased levothyroxine requirements in pregnancy. Why, when and how much? NEJM 2014 ;351(3): 292-3.
7. Alexander EK, Pearce EN, Brent GA, *et al*. 2017 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and the Postpartum. *Thyroid* 2017;27:315–89.
8. De Groot L, Abalovich M, Alexander EK, *et al*. Management of thyroid dysfunction during pregnancy and postpartum: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2012;97:2543–65.
9. Lazarus J, Brown RS, Daumerie C, *et al*. 2014 European thyroid association guidelines for the management of subclinical hypothyroidism in pregnancy and in children. *Eur Thyroid J* 2014;3:76–94.
10. Bucci I, Giuliani C, Napolitano G. Thyroid-Stimulating Hormone Receptor Antibodies in Pregnancy: Clinical Relevance.
11. World Health Organisation. Iodine supplementation in pregnant and lactating women. *e-Library of Evidence for Nutrition Actions (eLENA)*. 2020. URL: https://www.who.int/elena/titles/iodine_pregnancy/en/.
12. The Lancet “Effect of inadequate iodine status in UK pregnant women on cognitive outcomes in their children: results from the Avon Longitudinal Study of Parents and Children (ALSPAC)”. Vol. 382, Issue 9889, P331-337, July 27, 2013.

APPENDICES AND FLOWCHARTS

Flowchart on Management of Hypothyroidism in Pregnancy



Flowchart on Screening for Thyroid Disease in Pregnancy