

STANDARD OPERATING PROCEDURE (SOP)

Diagnosis and Management of Thyrotoxicosis

**Special Region (1)
Union of Myanmar**

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Approved by: Internal Medicine Unit

1. PURPOSE

To provide a cause-based, evidence-integrated, and resource-appropriate protocol for diagnosing and managing thyrotoxicosis in SR-1 hospitals.

2. SCOPE

Applicable to:

- OPD
- Emergency Department
- Internal Medicine Unit

3. ETIOLOGICAL CLASSIFICATION

Category	Mechanism	Examples
Increased hormone synthesis	True hyperthyroidism	Graves', Toxic adenoma, Toxic MNG
Hormone leakage (destructive)	Thyroiditis	Subacute, Painless lymphocytic
Exogenous	Factitious	Thyroxine ingestion

4. CLINICAL DIFFERENTIATION

Diagnosis relies on:

- Clinical pattern
- Antibody testing (if available)
- Inflammatory markers (ESR/CRP)
- Ultrasound features
- Disease course

5. KEY DIFFERENTIAL FEATURES

5.1 Graves' Disease

- Diffuse goitre
- Thyroid bruit
- Ophthalmopathy
- Pretibial myxedema
- Younger patients
- TRAb positive (if available)

5.2 Toxic Adenoma

- Single palpable nodule
- No eye signs
- Persistent hyperthyroidism

5.3 Toxic Multinodular Goitre (MNG)

- Irregular nodular gland
- Elderly
- Atrial fibrillation common

5.4 Subacute Thyroiditis

- Severe neck pain
- Tender thyroid
- Fever
- High ESR/CRP
- Triphasic course

NOTE: Antithyroid drugs are ineffective.

5.5 Painless Lymphocytic Thyroiditis

- No pain

- Postpartum common

- Triphasic pattern:

- Phase 1 – thyrotoxicosis phase, duration of 2-8 weeks
- Phase 2 – hypothyroid phase, duration of 2-12 months, and
- Phase 3 – euthyroid phase, duration of 6-12 months.

6. DIAGNOSTIC ALGORITHM

Step 1: Confirm thyrotoxicosis (TSH suppressed, FT4/FT3 elevated).

Biochemical Diagnosis of Overt Thyrotoxicosis in Pregnancy

Diagnosis requires:

Suppressed TSH **AND**

Elevated Free T4 (above pregnancy-specific upper limit) OR Elevated Total T4 ($>1.5 \times$ nonpregnant ULN)

Trimester	TSH Reference Range
1st	0.1–2.5 mIU/L
2nd	0.2–3.0 mIU/L
3rd	0.3–3.0 mIU/L

Trimester	Approximate FT4 Range (ng/dL)*
1st	0.8 – 1.7
2nd	0.6 – 1.5
3rd	0.5 – 1.4

Step 2: Check ESR/CRP (High suggests subacute thyroiditis).

Step 3: Use clinical pattern recognition.

Step 4: Ultrasound differentiation.

7. MANAGEMENT

7.1 Symptom Control

Start if HR > 90 /min.

Propranolol 20–40 mg every 6–8 hours OR Atenolol 25–50 mg daily.

7.2 True Hyperthyroidism

First-line: carbimazole 10–40 mg/day depending on severity.

Monitor every 4–6 weeks.

	Level of T4	Carbimazole dose	PTU dose
Mild	FT4 $\leq 1.5 \times$ ULN	10-15mg OD	100 mg tds
Moderate	FT4 $1.5-2 \times$ ULN	20-30 mg OD	150 mg tds
Severe	FT4 $> 2 \times$ ULN	30-40 mg /D - 2 divided dose	200 mg tds

Graves' disease is the only one which can get remission (40-60%) with medical treatment alone. Surgery (total thyroidectomy) has the 100 % cure rate for toxic multinodular goitre, toxic adenoma, and failed medical therapy from Graves' disease. Radio iodine treatment also has 80- 90 % cure rate in all three conditions like total thyroidectomy.

In Graves' disease, TR Ab should be rechecked after 18 months of ATD. If TR Ab is negative, it is time to stop ATD at this stage and then monitor every 3 months for first year and every 6 months for further 2 years. For those who can stop ATD, remission rate is increased to 70-80%. After 3 years onwards, relapse rate is very rare.

How to titrate ATD

FT4 Result (Follow-up)	Action on ATD Dose	Example
Still above ULN	Continue same dose	30 mg → 30 mg
Falling but still high	Continue same dose	30 mg → 30 mg
Upper normal range	Reduce 25 %	30 mg → 20mg
Low normal	Reduce 50%	30 mg → 15 mg

FT4 Result (Follow-up)	Action on ATD Dose	Example
Below normal	Hold or reduce drastically	Stop 1–2 weeks or 5 mg

7.3 Subacute Thyroiditis

Suspected in preceding viral illness, neck pain, ESR often raised >50, suppressed TSH and raised free T4

USG (thyroid)- Pathy hypoechoic areas and reduced doppler

Treatment

- NSAIDs for mild cases.
- Prednisolone 20–40 mg/day for moderate to severe cases, taper over 4–6 weeks.

7.4 Painless Thyroiditis

Most cases - Asymptomatic, accidental findings of TFT, often in puerperium period

Treatment

No antithyroid drugs. Beta-blocker only if symptomatic.

8. THYROID STORM

8.1 Diagnosis

Generally, Burch–Wartofsky Point Scale (BWPS) is used to diagnose thyroid storm.

Parameter	Clinical Feature	Points
1. Temperature (°C)	37.2–37.7	5
	37.8–38.3	10
	38.4–38.8	15
	38.9–39.4	20
	39.5–39.9	25
	≥40.0	30

Parameter	Clinical Feature	Points
2. CNS Effects	Agitation	10
	Delirium / Psychosis / Extreme lethargy	20
	Seizure / Coma	30
3. GI / Hepatic Dysfunction	Nausea / Vomiting / Diarrhea / Abdominal pain	10
	Jaundice / Severe hepatic dysfunction	20
4. Tachycardia (bpm)	99-109	5
	110-119	10
	120-129	15
	130-139	20
	≥140	25
5. Atrial Fibrillation	Present	10
	Absent	0
6. Heart Failure	Mild (pedal oedema)	5
	Moderate (bibasal crepitations)	10
	Severe (pulmonary oedema)	15
7. Precipitating Event	Present (infection, surgery, trauma, MI, DKA, etc.)	10
	Absent	0

Interpretation

Total Score	Interpretation
<25	Unlikely thyroid storm
25–44	Impending storm
≥45	Thyroid storm highly likely

8.2 Treatment

1. PTU loading 600–1000 mg, then:200–250 mg every 4–6 hours. If PTU is not available, use carbimazole but it can less block from T4 to T3 conversion.

2. Iodine (if available)

3. Propranolol 60–80 mg orally every 4–6 hours

4. Hydrocortisone 100 mg IV every 8 hours

5. Cooling and supportive care

After stabilization (3–7 days):

- Switch from PTU to carbimazole
- Taper steroids
- Plan definitive therapy

9. SURGERY INDICATIONS

- Toxic adenoma
- Toxic MNG
- Large goitre or compression
- Relapse Graves

10. MONITORING PROTOCOL

Condition	Follow-up for initial stabilization phase	Once euthyroid
Graves	Every 4–6 weeks	Every 2-3 month
Nodular disease	Every 4–6 weeks	Every 2-3 months until definitive treatment
Subacute thyroiditis	Every 4 weeks until recovery	-
Postpartum thyroiditis	Every 6–8 weeks	-

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