



Hyperthyroidism

Thyrotoxicosis



Hyperthyroidism

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With Hyperthyroidism ↔ **Without Hyperthyroidism**

Thyrotoxicosis

Hyperthyroidism	Without Hyperthyroidism
<ul style="list-style-type: none">- Graves' disease- Toxic adenoma- Toxic MNG- HCG-mediated hyperthyroidism- Iodine induced hyperthyroidism- TSH- producing pituitary tumor	<ul style="list-style-type: none">- Thyroiditis- LT4 ingestion

Thyrotoxicosis

	Hyperthyroidism	Without Hyperthyroidism
Duration	> 3 months	< 3 months
Sign	Specific sign	No
T3:T4, FT3:FT4	>20, >2.5	<20, <2.5

Onycholysis



Pretibial myxedema



Graves' disease



Specific sign

- Thyroid bruit
- Thyroid orbitopathy
- Pretibial myxedema
- Thyroid acropachy

Treatment

- Antithyroid drug
- I131 ablation
- Surgery

Antithyroid drug

- MMI vs PTU
- Starting dose mmi 10-30 mg/day
- Beta-blocker

- FT4 1-1.5 เท่าของค่า upper normal เริ่ม MMI 5-10 mg

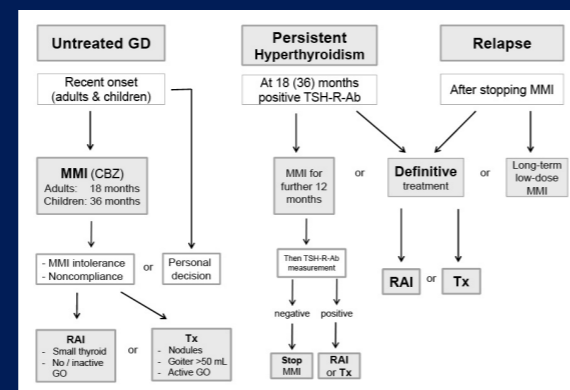
- FT4 1.5-2 เท่าของค่า upper normal เริ่ม MMI 10-20 mg

- FT4 2-3 เท่าของค่า upper normal เริ่ม MMI 30-40 mg

Treatment

	MMI	PTU
Absorption	rapid	rapid
Bioavailability	~100%	~100%
Peak serum level	60-120 min	60 min
Serum half-life	6-8 h	90 min
Thyroid concentration	5×10^5 mol/L	unknown
Thyroid turnover	slow	moderate
Duration of action	>24 h	8-12 h
Serum protein binding	nil	>75%
Crosses placenta	++	+
Levels in breast milk	++	+
Volume of distribution	40 L	20 L
Excretion	renal	renal
Metabolism during illness		
Renal	nil	nil
Liver	prolonged	nil
Potency	10x	1x
Normalization T3/T4	6 weeks	12 weeks
Adverse events	15%	20%
Agranulocytosis	0.6%	1-1.5%
Cross-reaction of adverse events	13.8%	15.2%
Compliance	high	fair
Costs	low	moderate

MMI, methimazole; PTU, propylthiouracil.



2018 European Thyroid Association Guideline for the Management of Graves' Hyperthyroidism



Hyperthyroidism