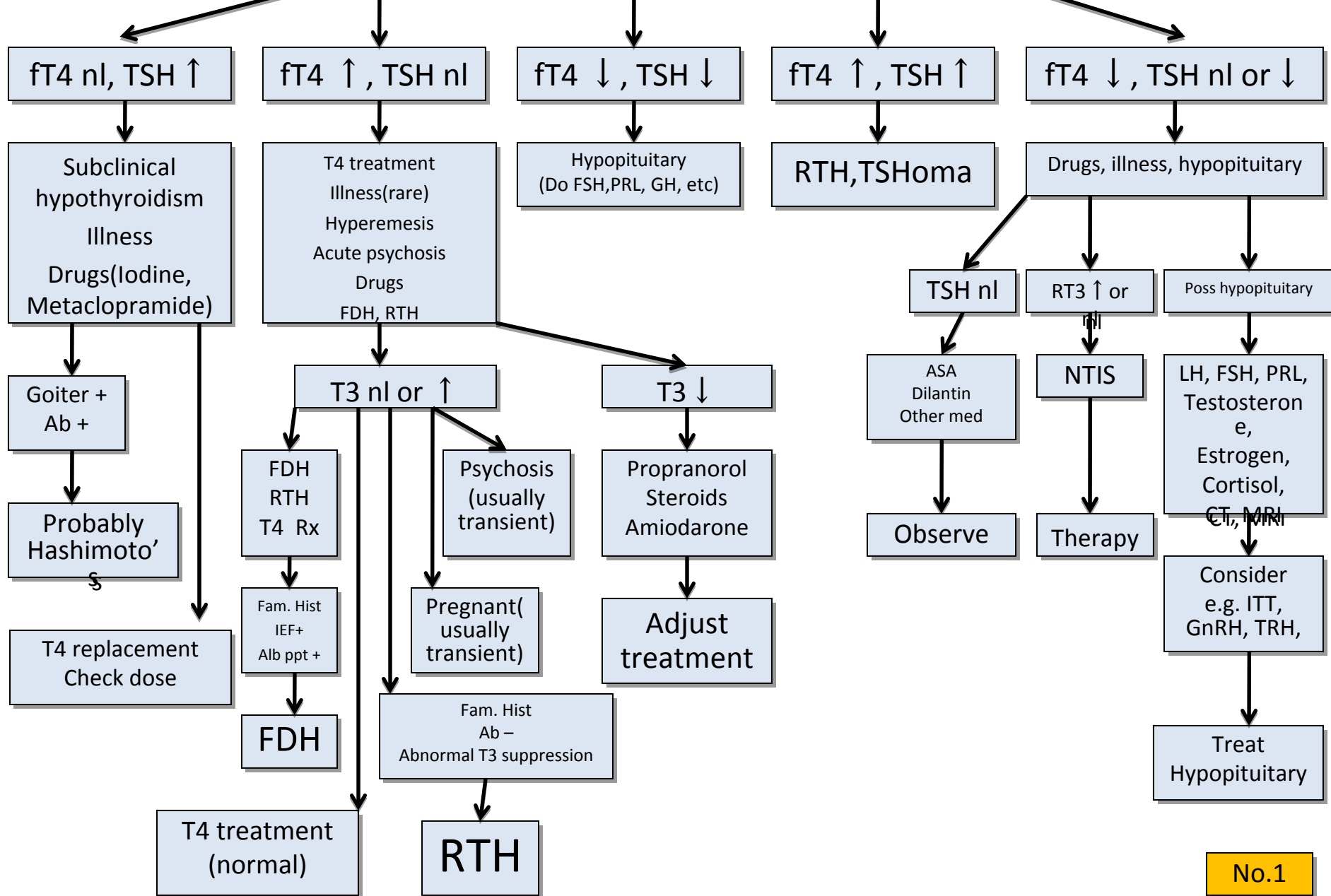
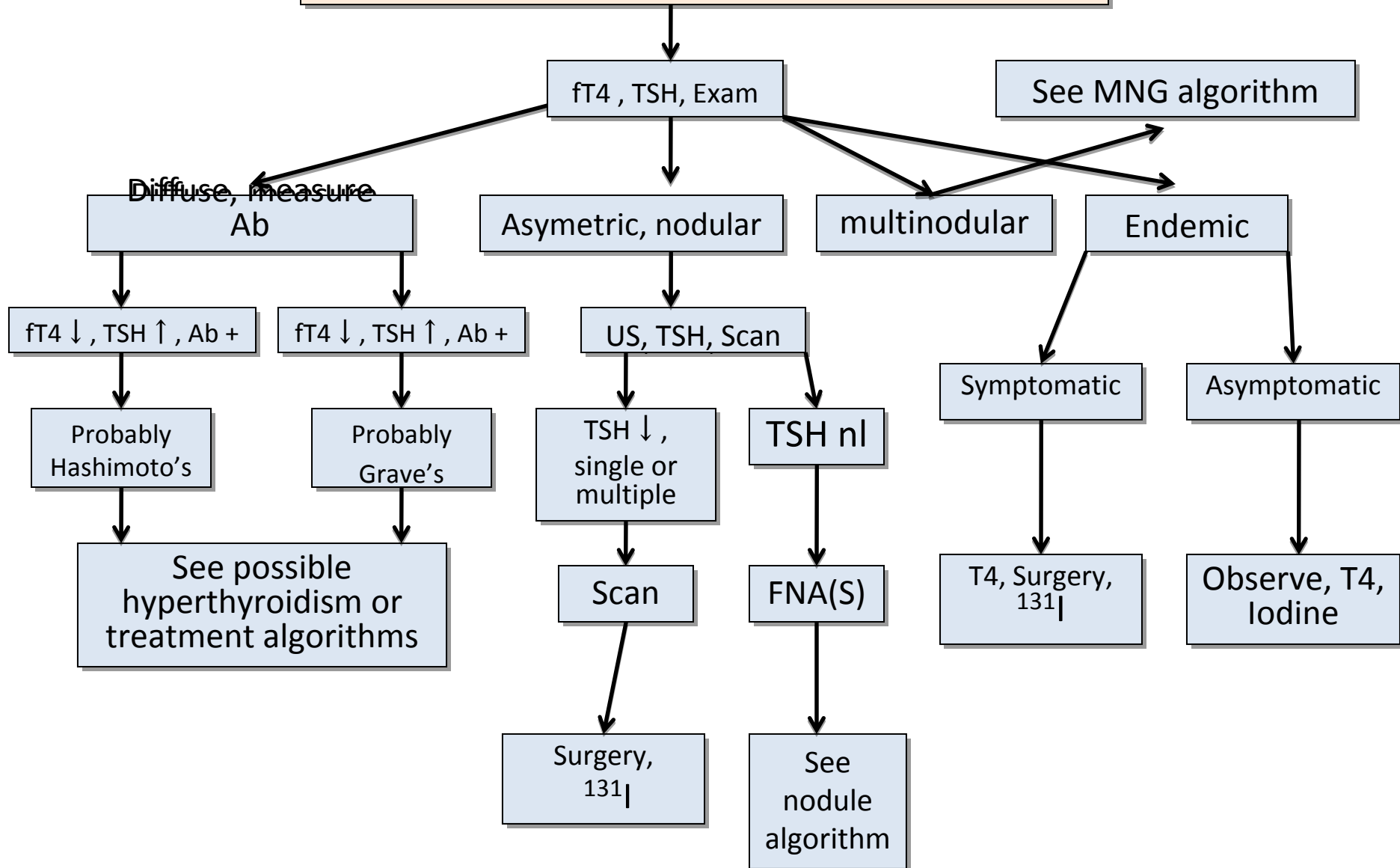


Strange thyroid tests—fT4 and TSH



Management of a thyroid enlargement



Painful or Tender Thyroid Grand Evaluation

Painful or Tender Thyroid exam and US if possible

Diffuse goiter

MNG or Single Tender Nodule

Swelling and Lymphadenopathy

RAIU, ft4, TSH, Ab, WBC, CRP, Tg

Possible Necrosis, Observe

?Acute Thyroiditis, Lymphoma, Cancer

TSH, ft4, Ab, WBC, FNA, US, CT

CRP ↑,
WBC ↑ or nl
RAIU < 3%
ft4 ↑, TSH ↓,
Tg ↑

RAIU nl
ft4 nl or ↓,
TSH nl or ↑

RAIU ↑
ft4 ↑,
TSH ↓

Resolves

Does not resolve
TSH, ft4, Ab, FNA, US, CT

Acute thyroiditis

Anaplastic Ca

Other Dx

S.A.T.

Hashimoto's

Probably Grave's

Follow

Cancer

Antibiotics
Drainage

?Ope
Chemo
X-ray

Pain Persists,
Consider FNA

benign

Operate

Chemo
X-ray

Hashimoto's ?
T4 treatment

Lymphoma

Follow
?T4 Rx

Cyst

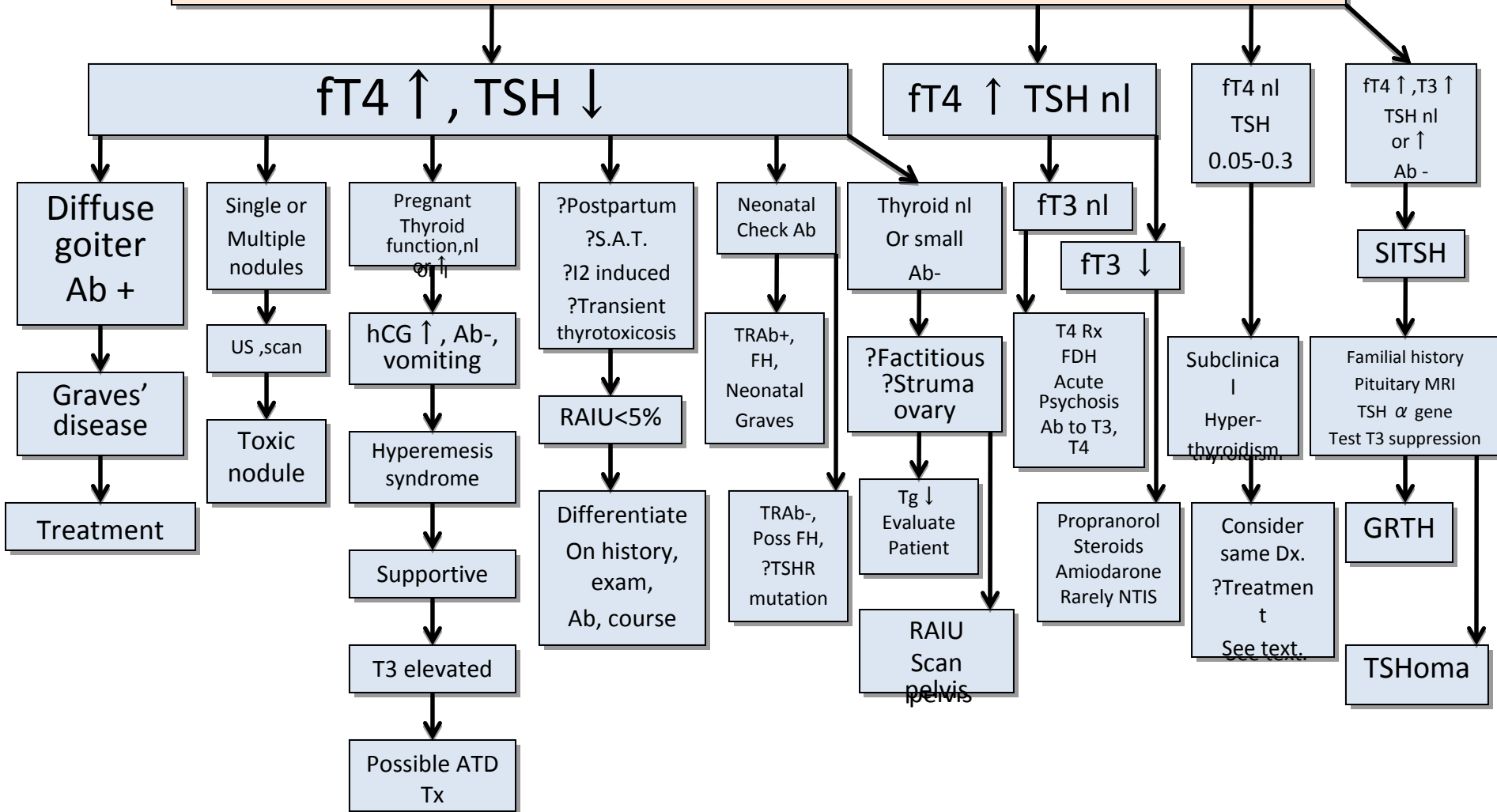
Other algorithm

Observe
?Steroids
?Resect for pain

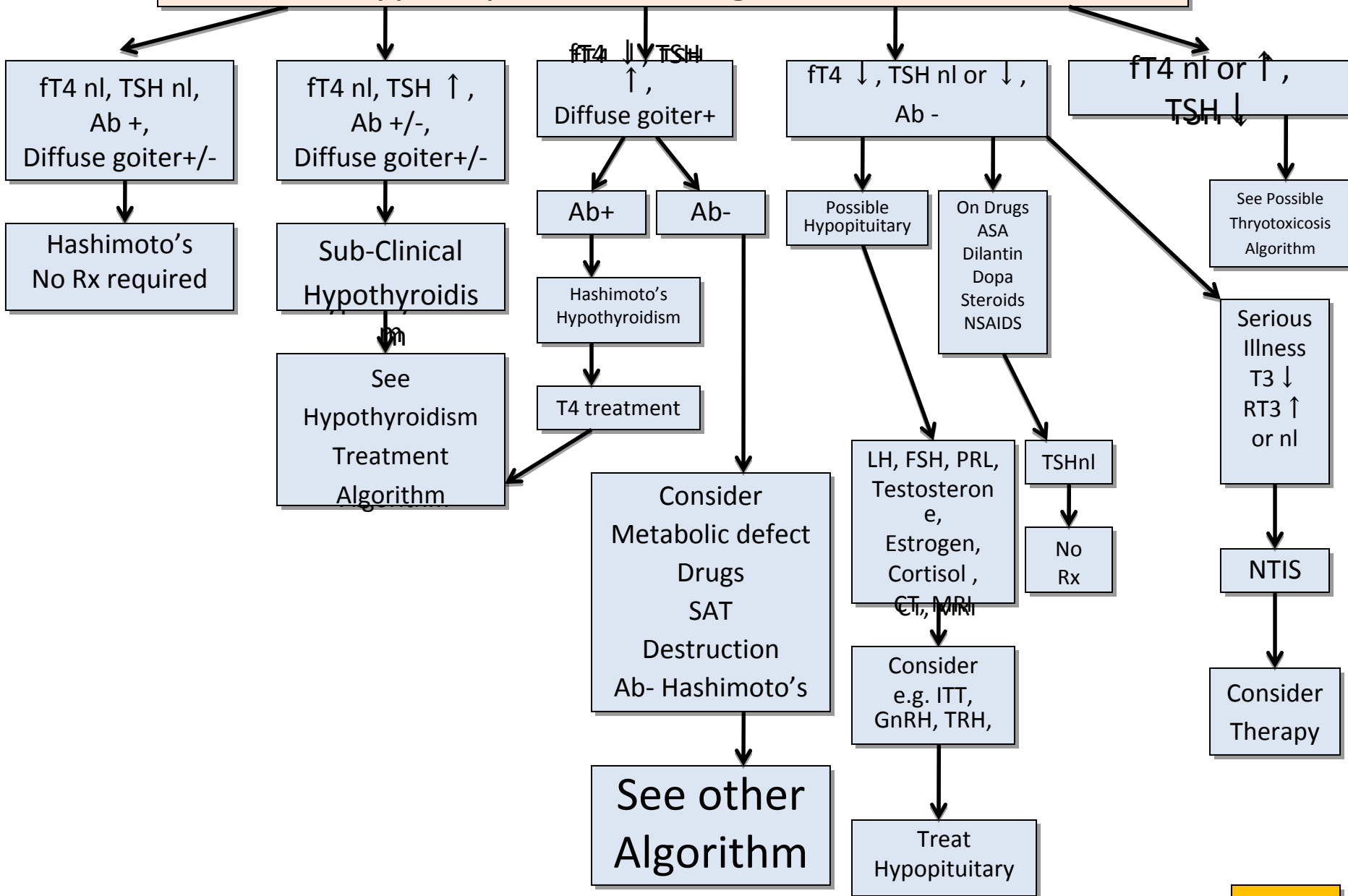
Appropriate

Rx

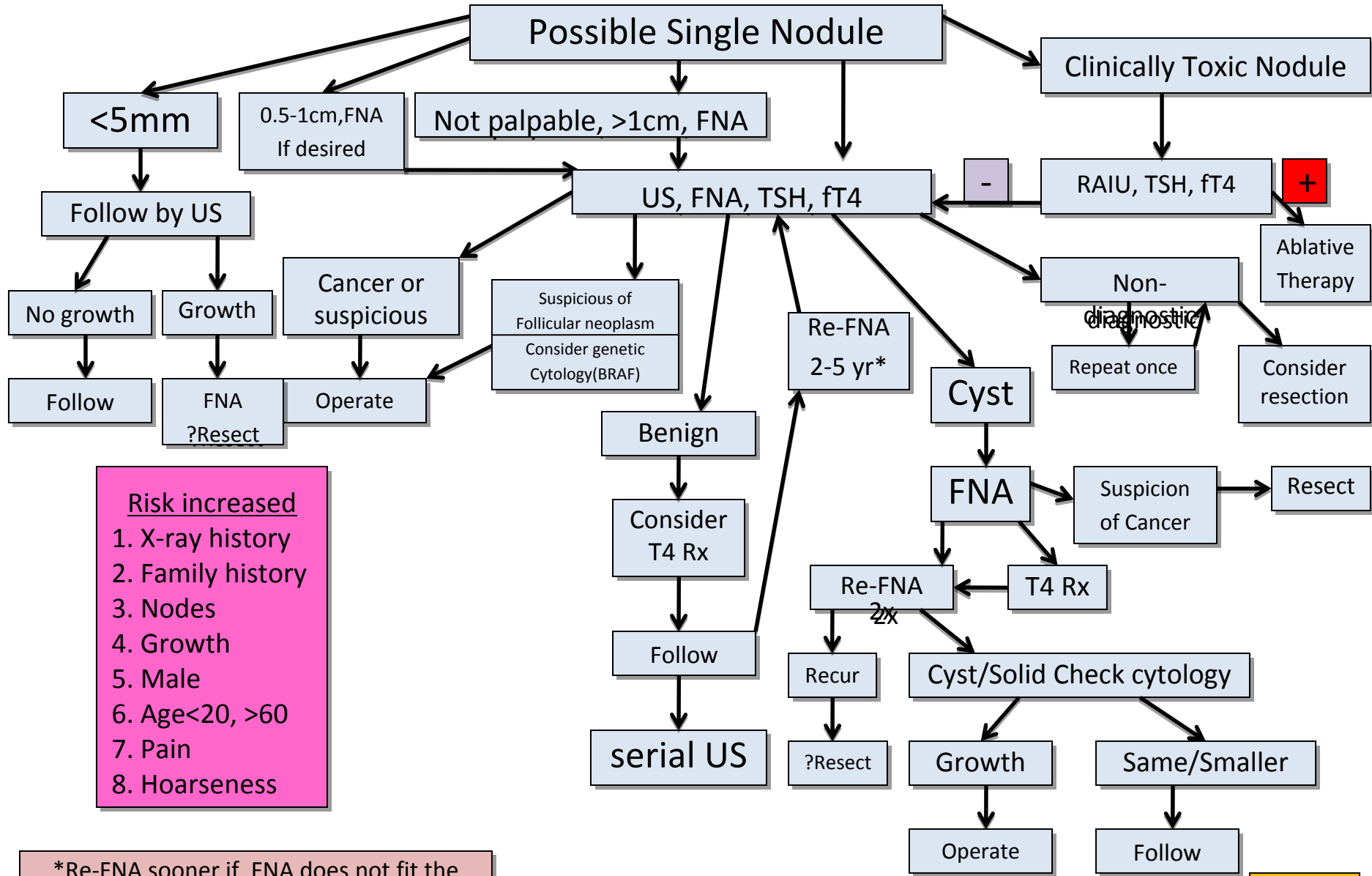
Possible Hyperthyroidism: Diagnosis: fT4, TSH, (and T3)



Possible Hypothyroidism: Diagnosis: fT4, TSH and Ab



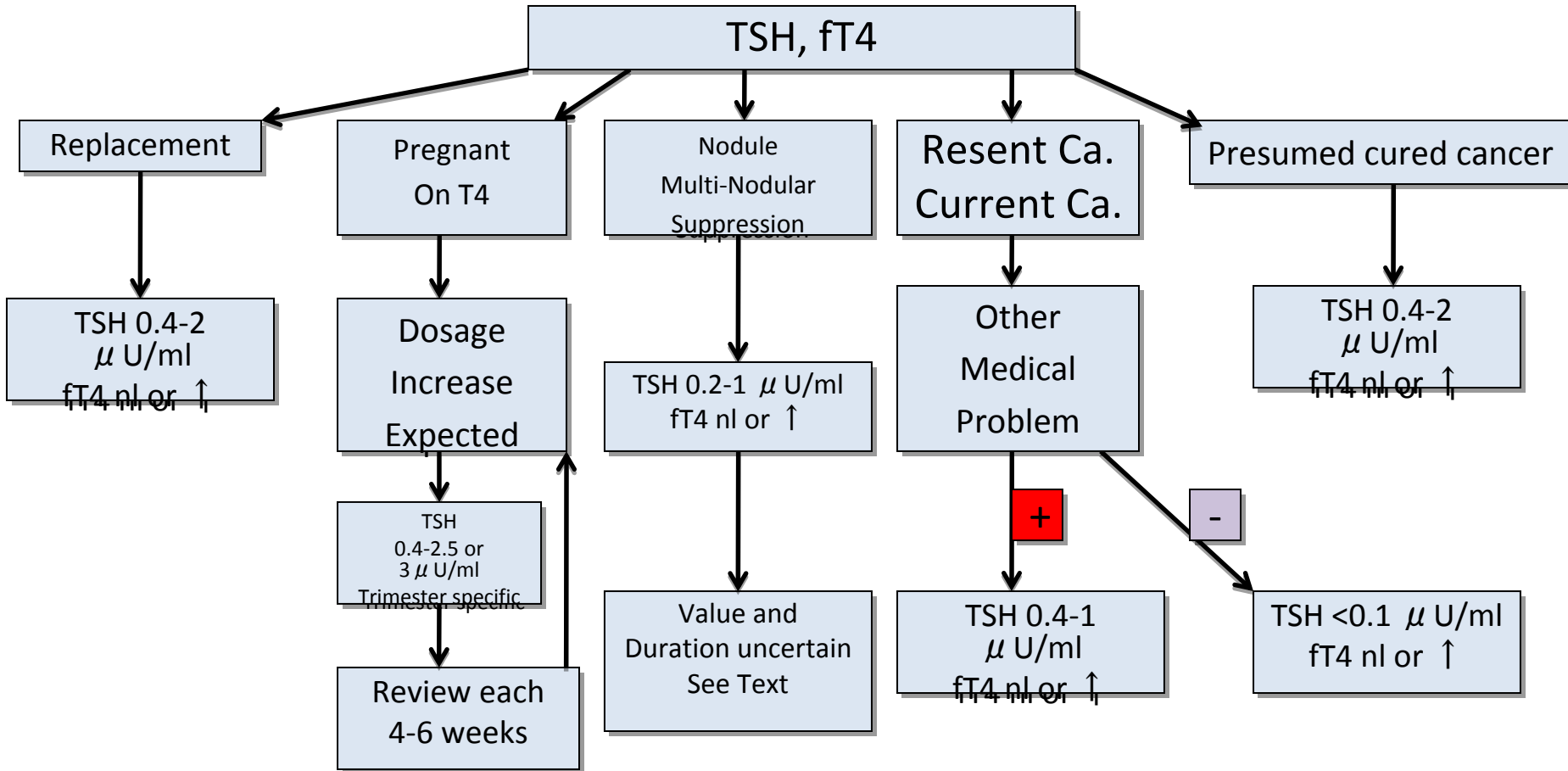
Single Thyroid Nodule Management



- Risk increased**
1. X-ray history
 2. Family history
 3. Nodes
 4. Growth
 5. Male
 6. Age <20, >60
 7. Pain
 8. Hoarseness

*Re-FNA sooner if FNA does not fit the clinical diagnosis or the specimen is scanty.

What is the Correct Thyroxine Dosage



Possible Thyroid Eye Disease

Exophthalmos

Clearly Graves'

Dx Uncertain

Treat hyperthyroidism
Consider oral or IV Steroids + ¹³¹I
Consider Thyroidectomy

MRI, CT, TSH, fT4, TRAB

Other diagnosis
No Disease

Graves'

Local or Specific
treatment

Follow

Minimal

Moderate

Serious Progressive

Protection
Lubricants
Diuretics
Tarsorrhaphy
Cosmetic Surgery

Consider
X-ray
Therapy

Steroids, X-ray

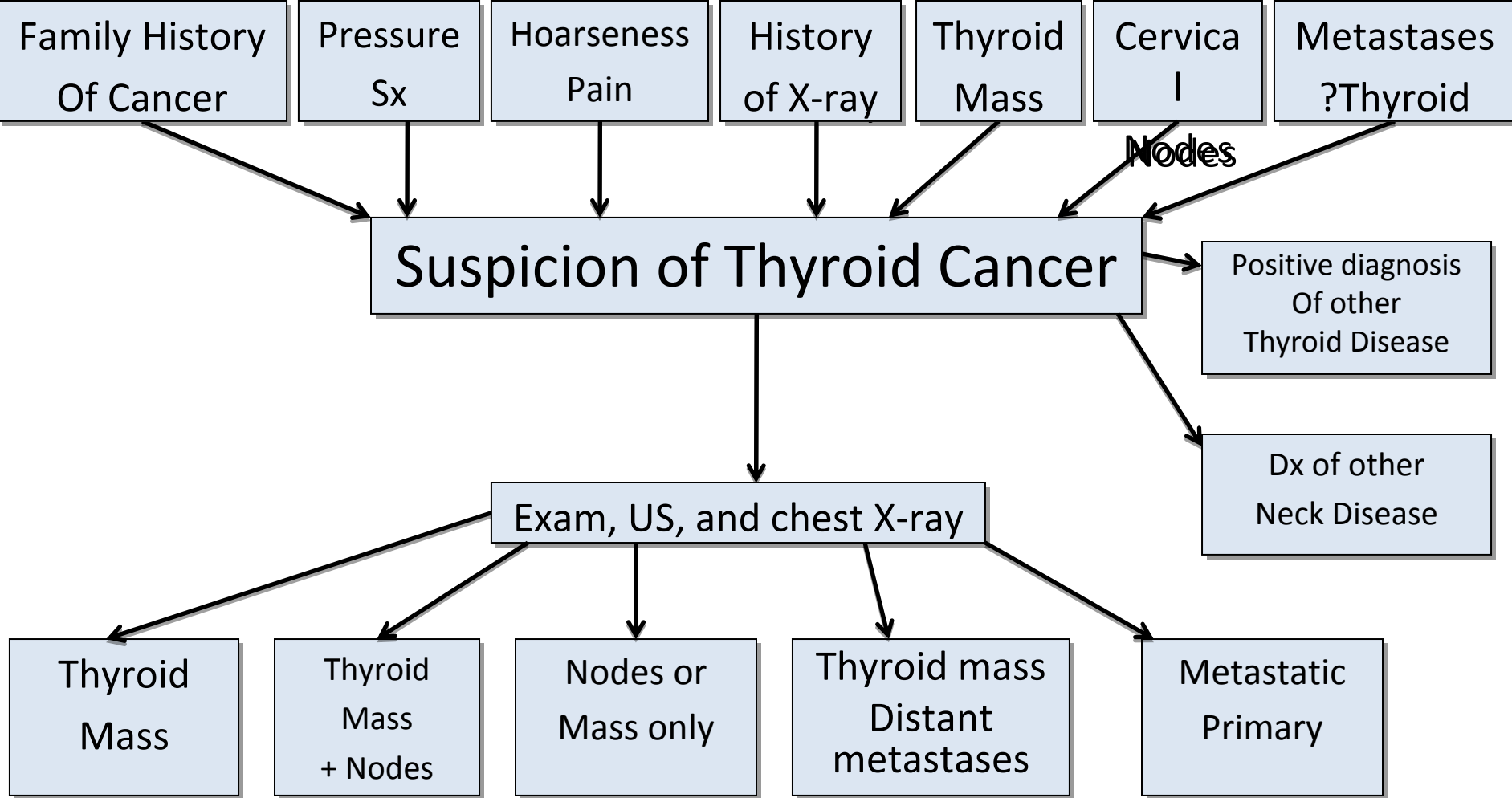
Decompression

Corrective
Surgery
Eye-muscle
Surgery

Consider thyroid
ablation
¹³¹I + Steroids
or Surgery + ¹³¹I

Consider
Rituximab
Immunosuppression
Plasmapheresis

Thyroid Cancer Patient Triage



See Thyroid Cancer Operations or Metastatic Disease Algorithms

RAI ablation and Therapy Cycle

Total Thyroidectomy or Near Total Thyroidectomy +/- removal of tumor and mets

First Post Op treatment
TSH > 30
T3 3 weeks, off 3 weeks
½ dose protocol
rhTSH

Follow-up Scan

2-4 mCi ¹³¹I Whole Body Scan
T3 3 weeks, off 3 weeks
½ dose protocol
rhTSH

Post Rx Scan+, tumor N1 or M1

T4 Rx 6-9mo.

Thyroid ablation
30-50mCi ¹³¹I

RAIU
Thyroid only

2-4 mCi ¹³¹I Whole Body Scan
(?optional)

Ablate 30-150mCi ¹³¹I
Dependent on tumor stage

Invasive disease
RAIU in tumor
Distant Mets

75-200mCi
¹³¹I Scan after Rx
T4 Rx 3-6mo.

T4 Rx 3-6mo.
with TSH ↑, Tg < 1ng/ml

T4 Rx 3-6mo.
TSH ↑, Tg 2-4ng/ml
Level uncertain

T4 Rx 3-6mo.
TSH ↑, Tg > 4ng/ml

T4 Rx 12-24mo.

No tumor found
or resectable

Whole Body Scan,
US, CT, MRI
?PET, bone Scan
Resect if possible

Repeat Scan 1-2x
Or follow US
TSH ↑, Tg < 1ng/ml

100-200 mCi ¹³¹I

Potentially
treatable lesion

T4 Rx

Post Rx
Scan+

Post Rx
Scan+

Repeat imaging
US, Tg,
¹³¹I, surgery,
or X-ray
For growth

Consider other Rx
Chemotherapy
Thyrosine Kinase
inhibitor
?? Immunotherapy

Consider
Tg, US
only

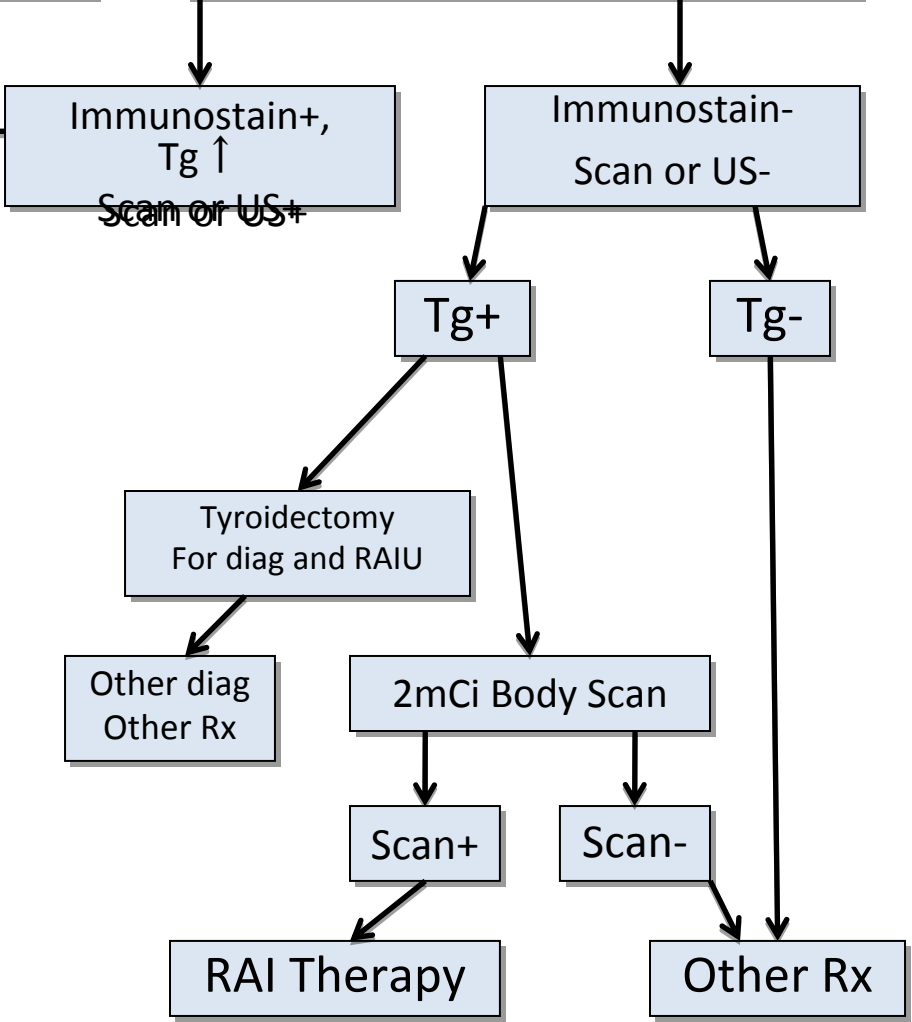
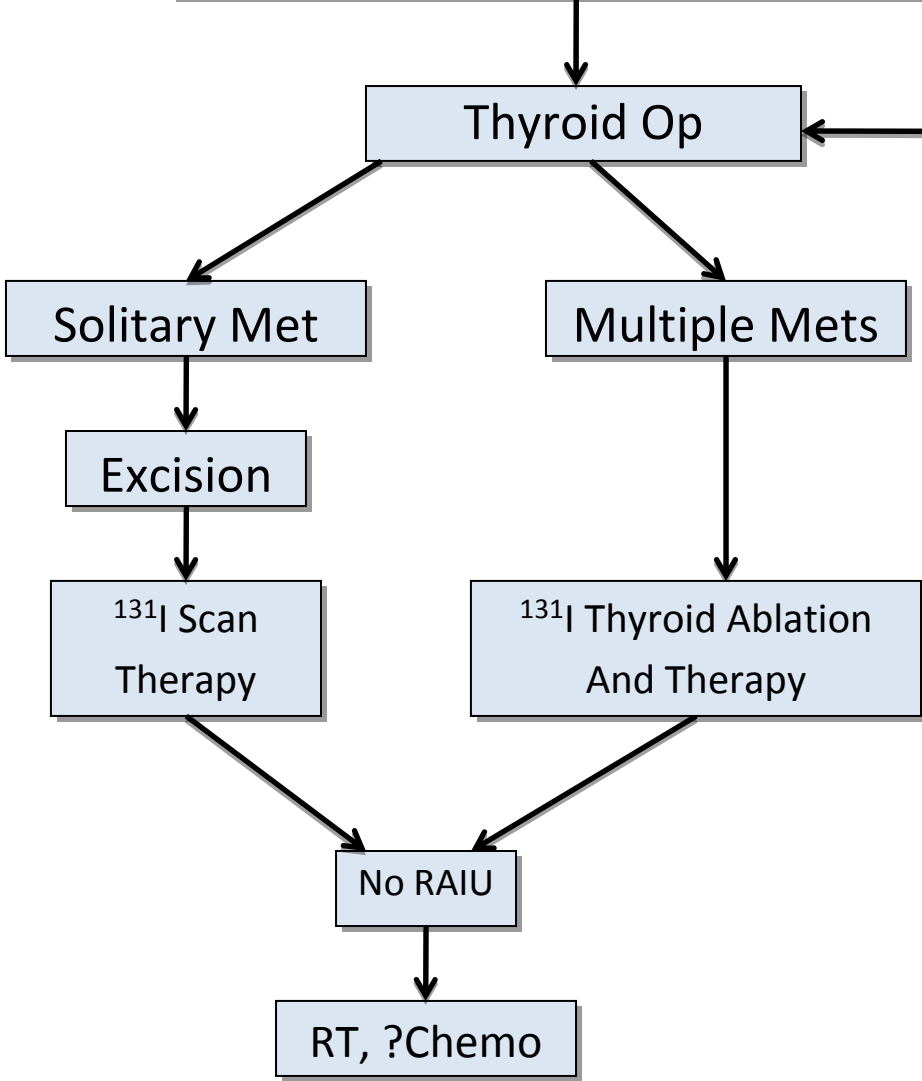
?Other Rx
Follow

Tg > 4ng/ml
Consider Repeat

Evaluating metastatic cancer, possibly from Thyroid

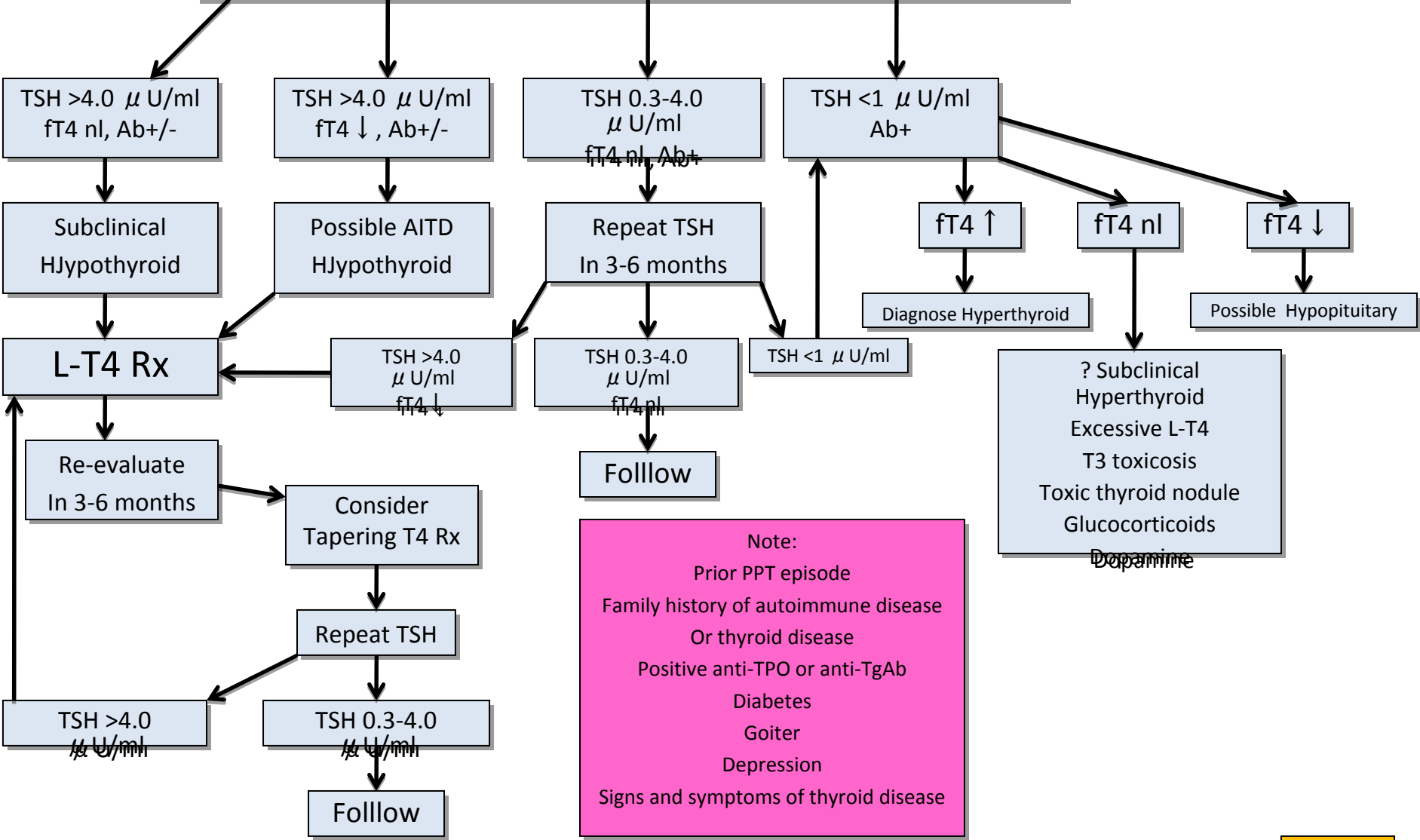
Thyroid mass +, metastases, FNA+

Metastatic disease, ?Thyroid



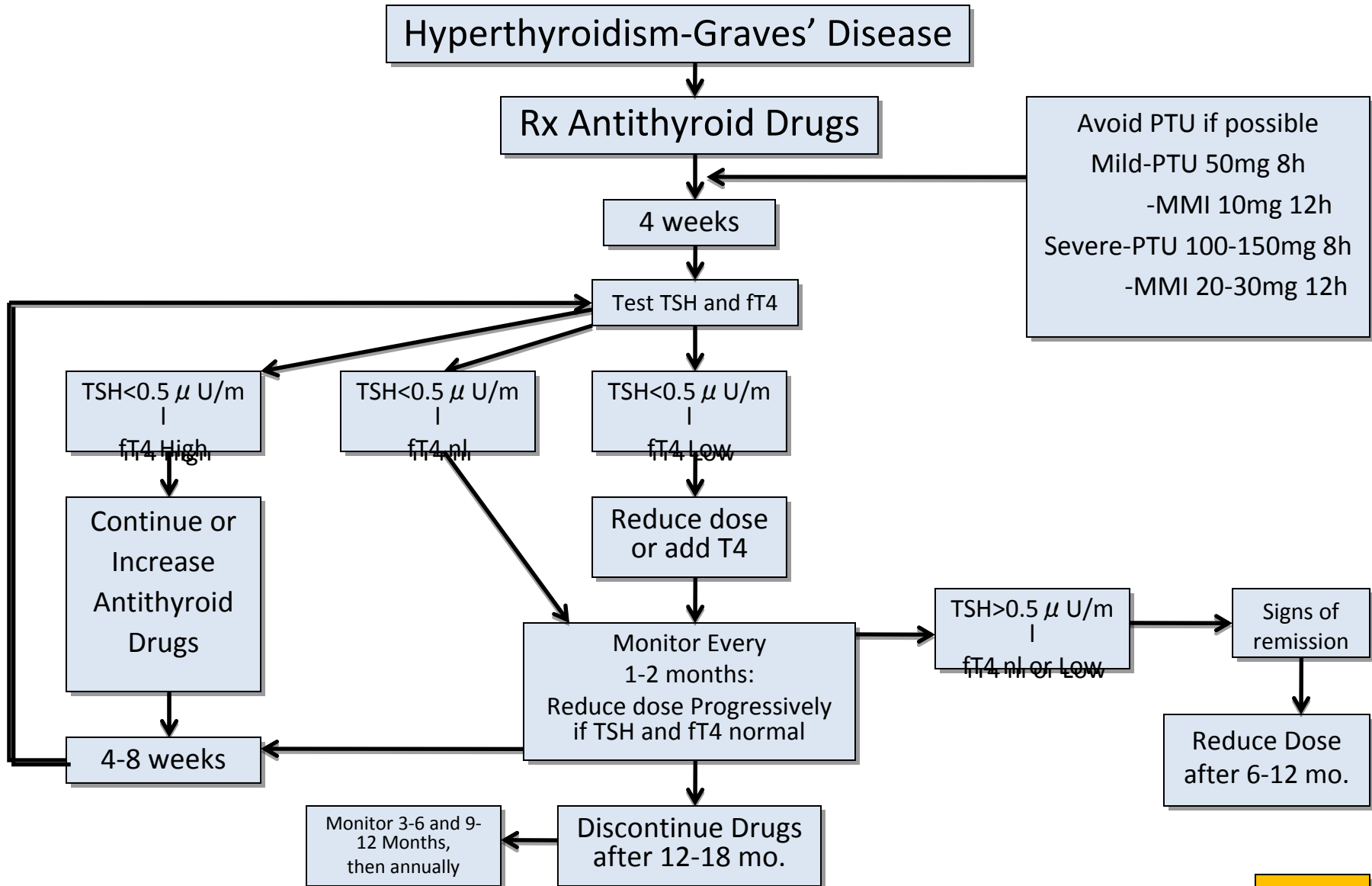
Postpartum Thyroiditis Diagnosis and Management

Suspect PPT, test TSH, fT4 and anti-TPOAb or anti-TgAb

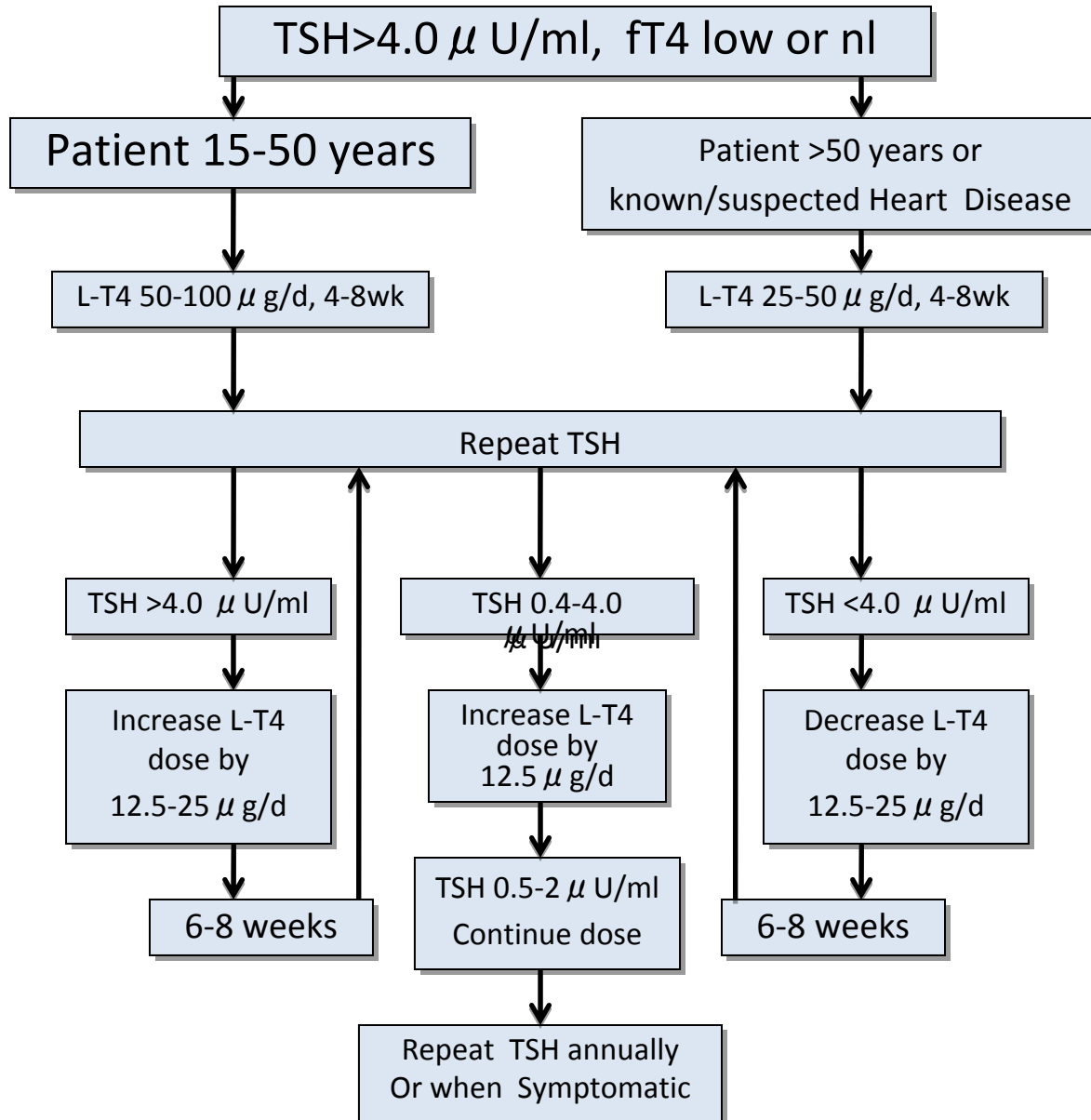


Note:
 Prior PPT episode
 Family history of autoimmune disease
 Or thyroid disease
 Positive anti-TPO or anti-TgAb
 Diabetes
 Goiter
 Depression
 Signs and symptoms of thyroid disease

Hyperthyroidism Management with Antithyroid Drugs



Managing Primary Hypothyroidism



Conditions Requiring Special Attention:

1. Cardiac compromised
2. Stupor; coma
3. Amiodarone treatment
4. Pre-op patient
5. ICU/CCU patient
6. Age < 15 years
7. Sodium < 130 mEq/l
8. Pregnancy
9. Postpartum thyrotoxicosis
10. TSH persistently high or nonresponsive to T4
11. Symptoms of pituitary disease
12. Non-suppressible function in Hashimoto's or Graves'
13. Remember GRTH and PPTH

See also:
Correct Thyroxine
Dosage Algorithm

Scanning after Ablation

>6 mo. Post-op and post-ablation

Low Risk and Tg on T4 $\leq 1\text{ng/ml}$

High Risk or Tg on T4 $>2\text{ng/ml}$

Whole body Scan and Tg

One Year

Scan negative
Tg $\leq 1\text{ng/ml}$
No clinical disease

$\frac{1}{2}$ dose T4

T3 3wk, off 2-3wk

rhTSH

Then ^{131}I Scan

One Year

Scan Neg.
Tg $\leq 1\text{ng/ml}$

Scan +
Tg $>1\text{ng/ml}$
(Or other arbitrary level)

Scan + or
Tg $>2\text{ng/ml}$
(Or other arbitrary level)

Scan and Tg neg.
1-2 X

Probable ^{131}I treatment
After withdrawal scan
(Individualize for RAIU in Thyroid
Bed only)

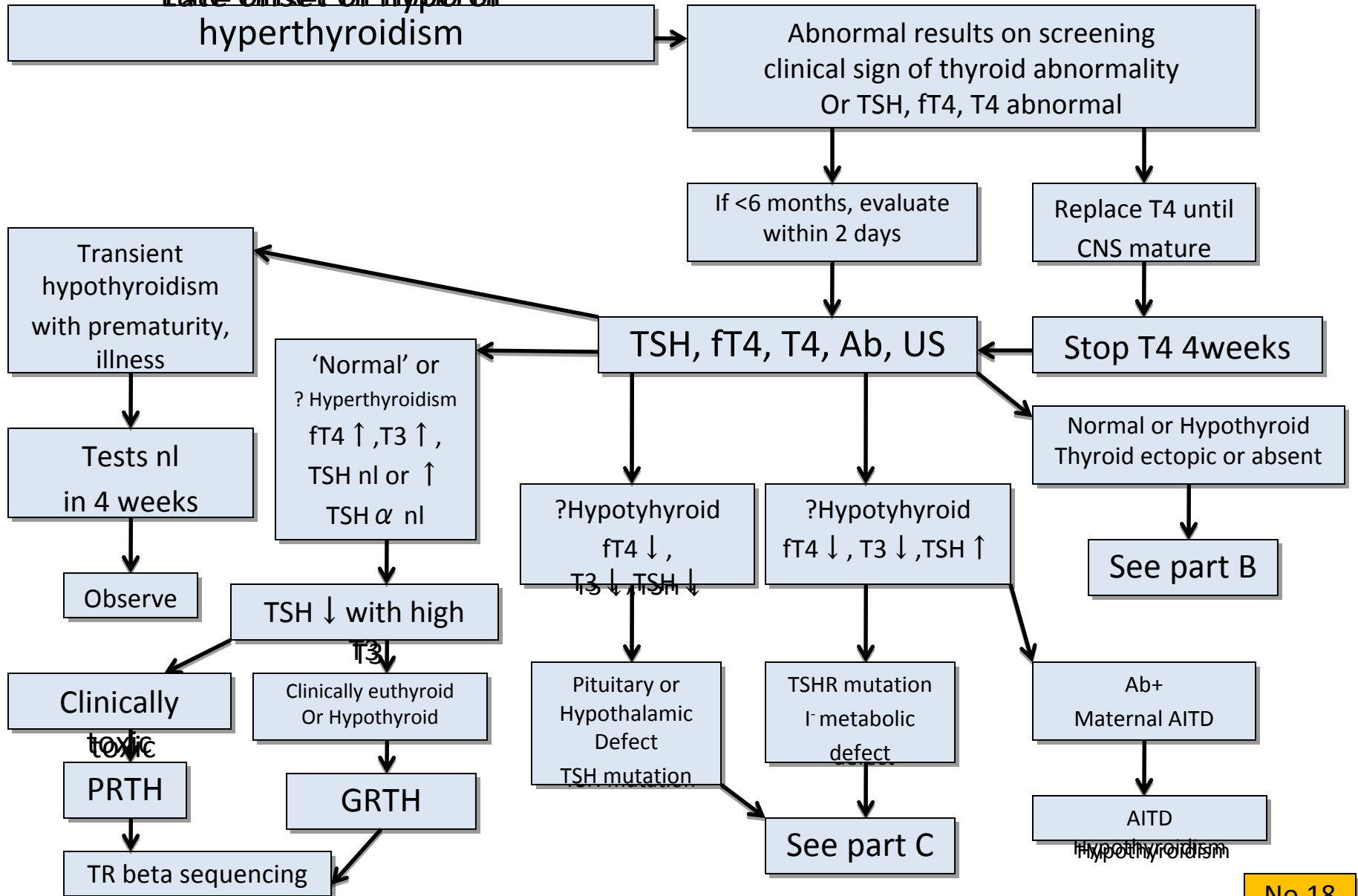
Annual exam
Periodic
Neck US, Tg testing

Review Exam
CXR, US, MRI, chest CT
Bone scan as needed,
Consider ^{131}I , Surgery
See Cancer algorithm

Persistent RAIU or elevated Tg

Neonatal Thyroid Dysfunction (Part A- See also Part B and Part C)

Late onset of hypo or hyperthyroidism



Neonatal Thyroid Dysfunction (Part B)

Late onset of hypo or hyperthyroidism

Abnormal results on screening
clinical sign of thyroid abnormality
Or TSH, fT4, T4 abnormal

If <6 months, evaluate
within 2 days

Replace T4 until
CNS mature

Stop T4 4weeks

TSH, fT4, T4, Ab, US

Exam nl
T4 ↓ , fT4 nl , TSH

Presumed TBG ↓

Exclude ASA,
Dilantin
Ab to T3 or T4

Exam nl
T4 ↑ , fT4 nl , TSH nl

Presumed TBG ↑

Consider TBG,
FDH, antibodies,
estrogen,
Abnormal TTR or
albumin

?Hypertythyroid
fT4 ↑ , T3 ↑ , TSH ↓

Ab-
Familial history +/-
Mild onset

TSH-R
activating mutation

Ab+
Maternal AITD

Graves' disease

?Congenital Hypothyroidism (Part C)

