

Thyroid Cancer

ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up

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Staging and risk assessment

Summary of recommendations

For all TCs, pathological diagnoses should be made according to the 2017 WHO classification

Staging: according to the UICC TNM classification (8th edition). All prognostically relevant morphological parameters should be reviewed and described in the final pathology report

The initial estimate of the risk of persistent/recurrent disease should be revised during follow-up to reflect the evolution of the disease and responses to treatments

WHO classification for differentiated follicular-derived thyroid carcinomas

Morphological parameters and molecular markers

Tumour type	Morphology	Molecular markers
NIFTP	Encapsulated, clear nuclei, no papillae	<i>RAS</i> , <i>BRAF K601E</i>
Classical papillary carcinoma	Papillae and clear nuclei	<i>BRAF V600E</i> , <i>RET/PTC fus</i> , <i>NTRK fus</i> , <i>ALK fus</i> , 1q amp
Follicular papillary carcinoma	Follicles and clear nuclei	<i>BRAF K601E</i> , <i>RAS</i> , <i>PAX8/PPARα</i> , <i>EIF1AX</i> , <i>THADA fus</i> , 22q del
Tall, columnar, solid, hobnail papillary carcinoma	Special structural and cell features	<i>BRAF V600E</i> , 1q amp, <i>TERT</i> promoter, <i>TP53</i> , <i>PIK3CA</i> , <i>CTNNB1</i>
Follicular carcinoma	Capsular invasion (MI), vascular invasion > 4 blood vessels (angioinvasive), extrathyroidal invasion (WI)	<i>RAS</i> , <i>PAX8/PPARα</i> , <i>PTEN</i> , <i>PIK3CA</i> , <i>TSHR</i> , <i>TERT</i> promoter, <i>CNA</i>
Hürthle cell carcinoma	Capsular invasion (MI), vascular invasion > 4 blood vessels (WI)	<i>RAS</i> , <i>EIF1AX</i> , <i>PTEN</i> , <i>TP53</i> , <i>CNA</i> , <i>mtDNA</i>
Poorly differentiated carcinoma	Invasion, mitoses > 3, necrosis, convoluted nuclei	<i>RAS</i> , <i>TERT</i> promoter, <i>TP53</i> , <i>PIK3CA</i> , <i>PTEN</i> , <i>CTNNB1</i> , <i>AKT1</i> , <i>EIF1AX</i> , <i>ALK fus</i> , histone methyltransferases, SWI/SNF chromatin remodelling complex

Differentiated / poorly differentiated TC

Diagnosis and pathology, molecular biology, staging and risk assessment

Diagnosis and pathology / molecular biology

Preoperative assessment of FNA for DTC nodules > 1 cm is recommended

All TCs except FTCs and NIFTPs can be identified cytologically

NIFTP diagnosis relies on a pathological examination of the follicular pattern and they are characterised by *RAS* mutations

PTCs can have *BRAF*-predominant or *RAS*-predominant signatures

The molecular profiles of FTCs and Hürthle cell carcinomas are less well defined

Staging and risk assessment

Risk assessed using the ATA system: low (ERR ≤ 5%), intermediate (ERR 6–20%) and high (ERR > 20%)

Risk stratification system

Prediction of persistent or recurrent disease in DTC patients* – Low level of risk ($\leq 5\%$)

* Based on the 2015 ATA stratification staging system

† All tumour sizes refer to largest diameter

‡ Aggressive histologies: Tall cell, hobnail variant, columnar cell carcinoma, squamous differentiation, diffuse sclerosing variant, solid/trabecular variant

§ If the tumour is > 4 cm, the ERR increases to 8–10%, but the tumour is nevertheless classified as low risk

¶ Formerly considered a type of FTC, Hürthle cell carcinoma has distinct clinical, biological and genetic features that justify its recognition as a distinct type of DTC by the WHO. Some authors consider it a more aggressive form of DTC. When associated with extensive vascular and/or capsular invasion, the recurrence risk should be classified as high. For minimally invasive Hürthle cell carcinoma, robust data are lacking on the true risk of recurrence

Low level of risk ($\leq 5\%$)		
Histology	Definition	ERR
NIFTP	Non-invasive follicular thyroid neoplasm with papillary-like nuclear features, formerly referred to as 'non-invasive encapsulated follicular-variant PTC'	$< 1\%$
PTC	With all of the following: <ul style="list-style-type: none"> • No macroscopic tumour-tissue remnants after resection • No locoregional invasion or local metastases • Clinical N0 or pathological N1 disease (< 5 micrometastases, each measuring < 0.2 cm[†]) • No distant metastases • No RAI-avid metastatic foci outside the thyroid bed on first post-treatment whole-body RAI scan (if ¹³¹I is given) • No vascular invasion • Non-aggressive histology[‡] BRAF V600E-mutant PTCs can be assigned to the low-risk category only if the tumour is < 1 cm	1–6% [§]
FTC [¶]	Intrathyroidal, well-differentiated FTC with capsular invasion and minimal (< 4 foci) or no vascular invasion	2–3%

Risk stratification system

Prediction of persistent or recurrent disease in DTC patients* – Intermediate level of risk (6–20%)

* Based on the 2015 ATA stratification staging system

‡ Aggressive histologies: Tall cell, hobnail variant, columnar cell carcinoma, squamous differentiation, diffuse sclerosing variant, solid/trabecular variant

¶ Formerly considered a type of FTC, Hürthle cell carcinoma has distinct clinical, biological and genetic features that justify its recognition as a distinct type of DTC by the WHO. Some authors consider it a more aggressive form of DTC. When associated with extensive vascular and/or capsular invasion, the recurrence risk should be classified as high. For minimally invasive Hürthle cell carcinoma, robust data are lacking on the true risk of recurrence

Intermediate level of risk (6–20%)		
Histology	Definition	ERR
PTC	With at least one of the following:	
	Microscopic invasion of perithyroidal soft tissues	3–8%
	Tumour-related symptoms	9%
	Intrathyroidal tumour measuring < 4 cm, BRAF V600E-mutated (if known)	10%
	Aggressive histology‡	≈15%
	Vascular invasion	15–30%
	Multifocal papillary microcarcinoma with ETE and known BRAF V600E mutation	20%
	Clinical N1 or pathological N1 disease (> 5 involved lymph nodes, each measuring < 3 cm)	20%
	RAI-avid metastatic foci in the neck on the first post-treatment whole-body RAI scan	-
FTC¶	With at least one of the following:	
	Clinical N1 or pathological N1 disease (> 5 involved lymph nodes, each measuring < 3 cm)	20%
	RAI-avid metastatic foci in the neck on the first post-treatment whole-body RAI scan	-

Risk stratification system

Prediction of persistent or recurrent disease in DTC patients* – High level of risk (> 20%)

* Based on the 2015 ATA stratification staging system

¶ The BRAF V600E mutation is associated with aggressive histological features, lymph node metastases and ETE, but its relative contribution to the risk of recurrence is not well-defined. Co-existing BRAF V600E and TERT mutations act synergistically to increase the risk of recurrence

|| Formerly considered a type of FTC, Hürthle cell carcinoma has distinct clinical, biological and genetic features that justify its recognition as a distinct type of DTC by the WHO. Some authors consider it a more aggressive form of DTC. When associated with extensive vascular and/or capsular invasion, the recurrence risk should be classified as high. For minimally invasive Hürthle cell carcinoma, robust data are lacking on the true risk of recurrence

High level of risk (> 20%)		
Histology	Definition	ERR
PTC	With at least one of the following:	
	Gross ETE (macroscopic invasion of perithyroidal soft tissues)	30–40%
	Pathological N1 disease: one or more nodal metastases measuring > 3 cm	30%
	Extranodal extension	40%
	Concomitant BRAF V600E and TERT mutations¶	> 40%
	Postoperative serum Tg suggestive of distant metastases	Virtually 100%
	Incomplete tumour resection	100%
	Distant metastases	100%
FTC	With at least one of the following:	
	Widely invasive or extensive vascular invasion (> 4 foci)	30–55%
	Postoperative serum Tg suggestive of distant metastases	Virtually 100%
	Incomplete tumour resection	100%
	Distant metastases	100%

Differentiated / poorly differentiated TC

Primary tumour management

Surgery

Active US surveillance of the thyroid and neck lymph nodes every 6–12 months can be proposed for unifocal papillary microcarcinomas (≤ 10 mm) with no evidence of extracapsular extension of lymph node metastases

TT is recommended for other TCs, with lobectomy as a possible alternative for selected low-risk tumours

Prophylactic CND allows complete staging of neck nodes and, for T3–T4 tumours, may improve regional control

RAI therapy

Treatment with RAI ≥ 100 mCi (3.7 GBq) is recommended for patients with a high risk of recurrence

RAI therapy should not be used for low-risk patients with intrathyroidal DTC ≤ 1 cm and no locoregional metastases. It may be recommended for other low-risk cases on an individual basis

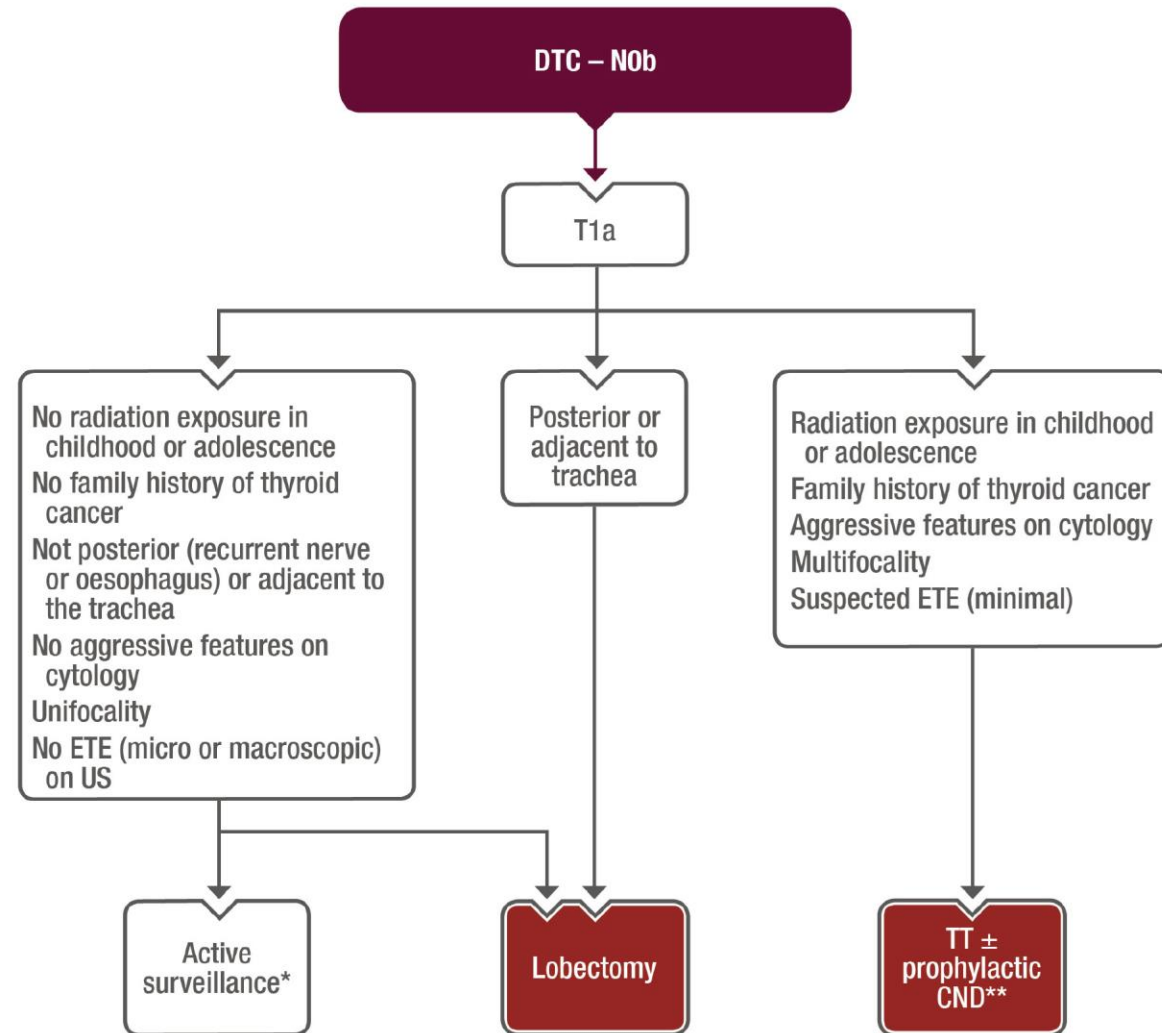
RAI adjuvant therapy can be considered for intermediate-risk patients and decisions on RAI dosage and TSH stimulation modalities are based on case features

Differentiated / poorly differentiated TC

Recommendations for surgical management of DTC patients – T1a

*Active surveillance may be the preferred option in older patients, at high surgical risk. Informed consent must be obtained for all subjects opting for an active surveillance programme

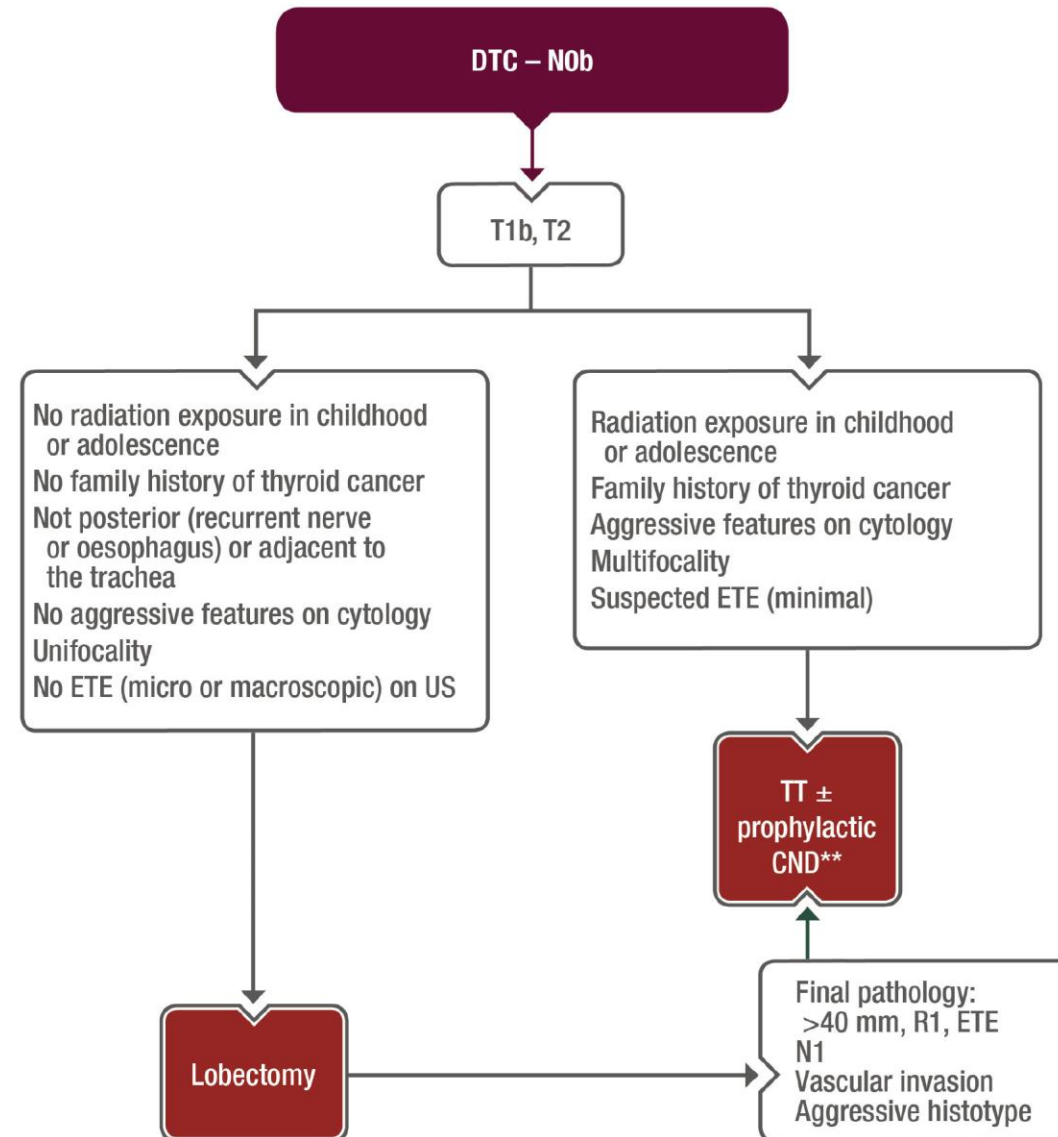
**Patients requiring neck dissection should be referred to high-volume specialised surgeons



Differentiated / poorly differentiated TC

Recommendations for surgical management of DTC patients – T1b, T2

**Patients requiring neck dissection should be referred to high-volume specialised surgeons

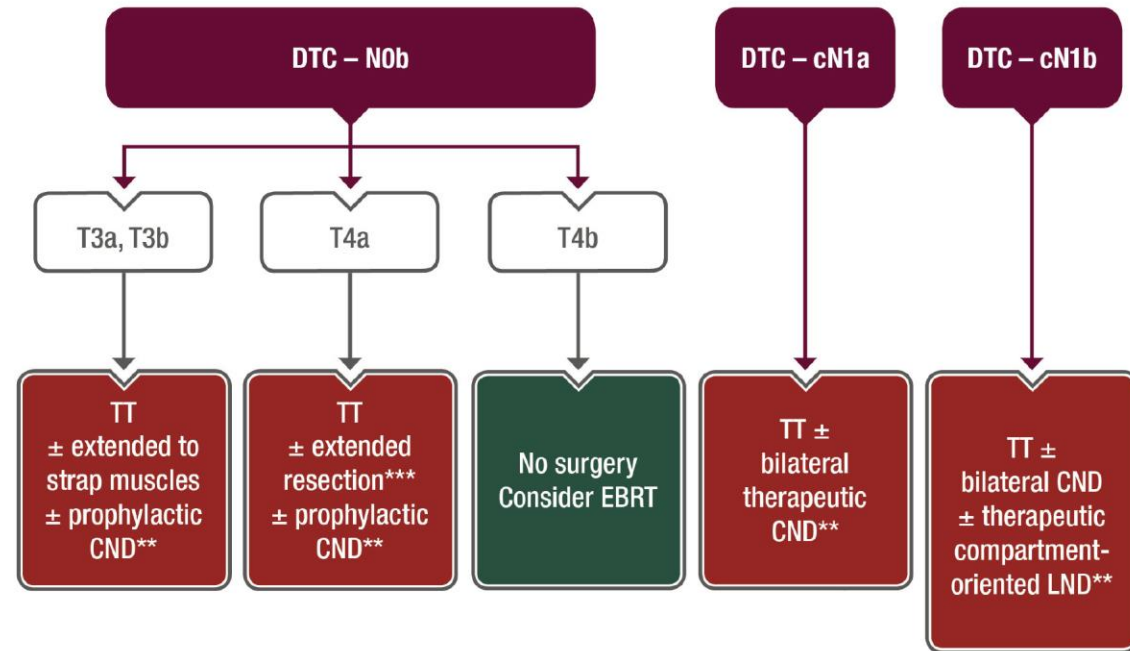


Differentiated / poorly differentiated TC

Recommendations for surgical management of DTC patients – T3a, T3b, T4a, T4b

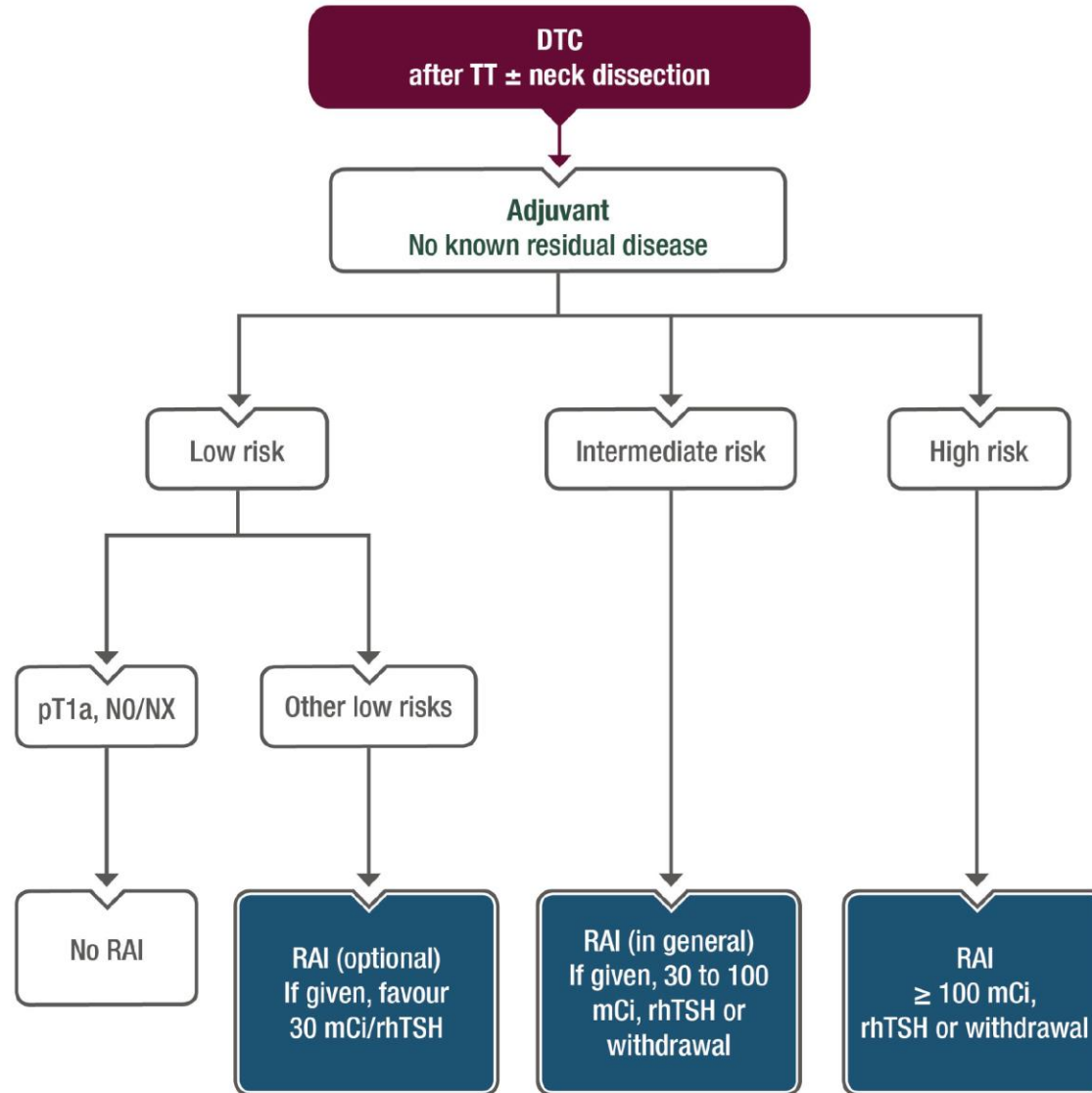
**Patients requiring neck dissection should be referred to high-volume specialised surgeons

***As determined by preoperative contrast-enhanced CT or MRI and/or endoscopy, R0/R1 resection is preferable with preservation of function



Differentiated / poorly differentiated TC

Recommendations for RAI administration in DTC patients



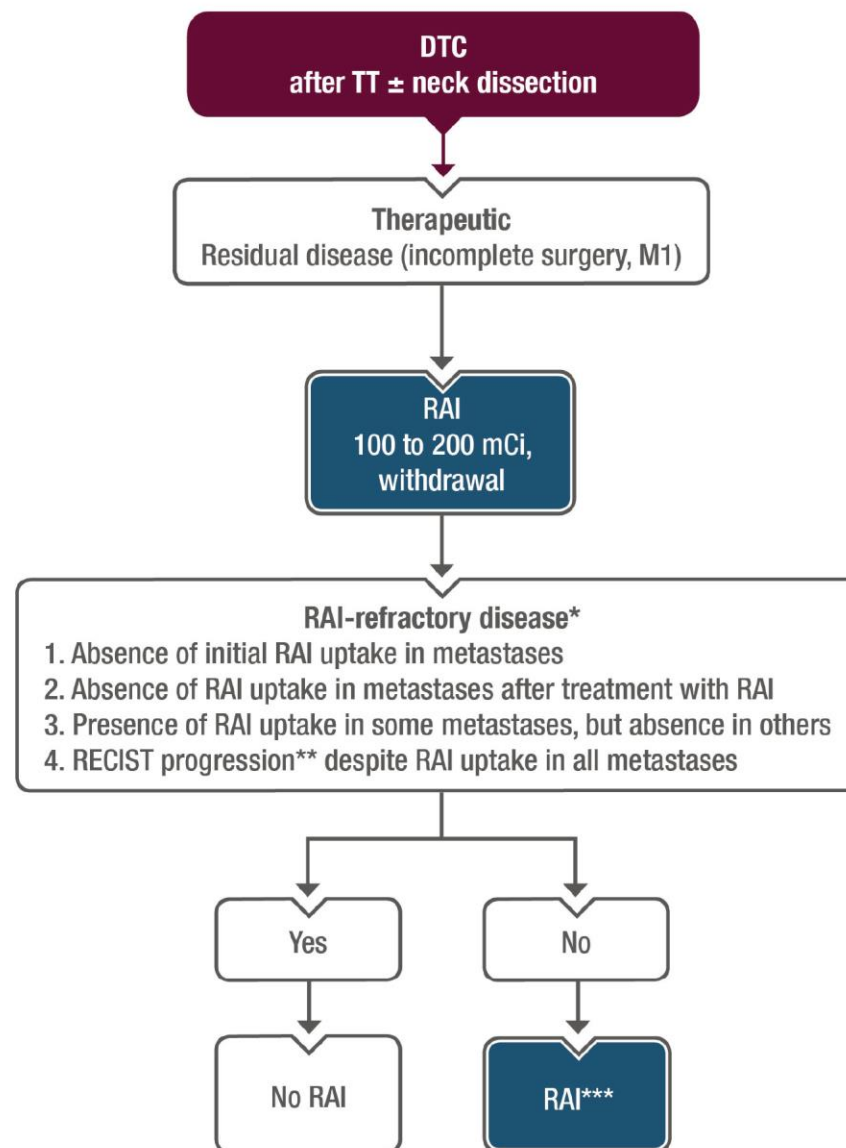
Differentiated / poorly differentiated TC

Recommendations for RAI administration in DTC patients

*Other criteria, but controversial: high FDG uptake, aggressive histology, persistence of disease after several RAI treatment courses

**An increase of 20% in the sum of target lesions or the appearance of new lesions

***Repeat RAI administrations every 6–12 months as long as RAI uptake is present. Carry out cross-sectional imaging between RAI administrations to insure RAI efficacy. Repeating RAI administrations after a cumulative activity of 600 mCi should be given on a per-patient basis



Response to treatment categories in DTC patients*

* Based on the 2015 ATA stratification staging system

Responses to treatment	Treatments		
	TT + RRA	TT alone	Lobectomy
Excellent	Negative imaging and undetectable TgAb and Tg < 0.2 ng/mL or stimTg < 1 ng/mL	Negative imaging and undetectable TgAb and Tg < 0.2 ng/mL	Negative imaging and undetectable TgAb and stable Tg levels
Biochemical incomplete	Negative imaging and Tg ≥ 1 ng/mL or stimTg ≥ 10 ng/mL or rising TgAb levels	Negative imaging and Tg > 5 ng/mL or rising Tg values with similar TSH levels or rising TgAb levels	Negative imaging and rising Tg values with similar TSH levels or rising TgAb levels
Structural incomplete	Imaging evidence of disease (regardless of Tg or TgAb levels)		
Indeterminate	Nonspecific imaging findings or Faint uptake in thyroid bed on RAI scanning or Tg 0.2–1 ng/mL or stimTg 1–10 ng/mL or TgAb stable or declining in patient with no imaging evidence of disease	Nonspecific imaging findings or Tg 0.2–5 ng/mL or TgAb levels stable or declining in the absence of structural or functional disease	Nonspecific imaging findings

Differentiated / poorly differentiated TC

Follow-up, long-term implications
and survivorship

Serum Tg

Following TT plus RAI remnant ablation, stimulated serum Tg levels < 1 ng/mL are highly predictive of an excellent response to therapy

Negative image findings + detectable Tg levels: indeterminate/biochemical incomplete treatment response

In patients treated with TT without RAI administration, basal serum Tg levels < 0.2 ng/mL predict absence of disease

Neck US

Neck US combined with FNA cytology and serum Tg assays has high accuracy for structural neck disease detection

In FTC, neck US can exclude residual/recurrent disease in the thyroid bed

Other imaging studies

WBSs, SPECT, CT and FDG-PET should be ordered if locoregional and/or distant metastases are known to be present or are suspected

Cross-sectional imaging modalities should be chosen on the basis of the anatomic region to be explored

Classification of Neck US findings

Adapted from Leenhardt L et al. Eur Thyroid J 2013;2:147–59

Thyroid bed	Neck lymph nodes
Normal findings	
Triangular area that is uniformly hyperechoic versus surrounding muscle tissue	Elongated shape Hilum visible on gray-scale examination Absent or hilar vascularisation on colour Doppler
Indeterminate findings	
Lesions displaying hypoechogenicity alone	Absence of hilum Rounded shape
Suspicious findings	
Increased vascularization	Microcalcifications
Microcalcifications	Cysts
Cystic changes	Peripheral vascularisation on colour Doppler
Irregular margins Taller-than-wide in transverse plane	Solid thyroid-tissue-like appearance

Differentiated / poorly differentiated TC

Recommendations for postoperative management of DTC patients

*Isolated measurements of serum Tg cannot be reliably interpreted in the presence of normal thyroid tissue. The trend over time of basal Tg should be used in patients with residual thyroid tissue and might also be used in case of lobectomy. Rising Tg is highly suspicious for persistent/recurrent disease, and the same may be true for rising TgAb levels

**Highly sensitive (<0.2 ng/ml) assays of basal Tg can be used in lieu of TSH-stimulated Tg to verify the absence of disease

***In patients with serum TSH level of 0.5–2 mIU/ml after lobectomy, levothyroxine replacement therapy is not mandatory

†In patients with excellent response to therapy, repeat neck US may be avoided

‡Short serum Tg doubling time (<1 year) is associated with poor outcome in DTC patients and should prompt imaging staging

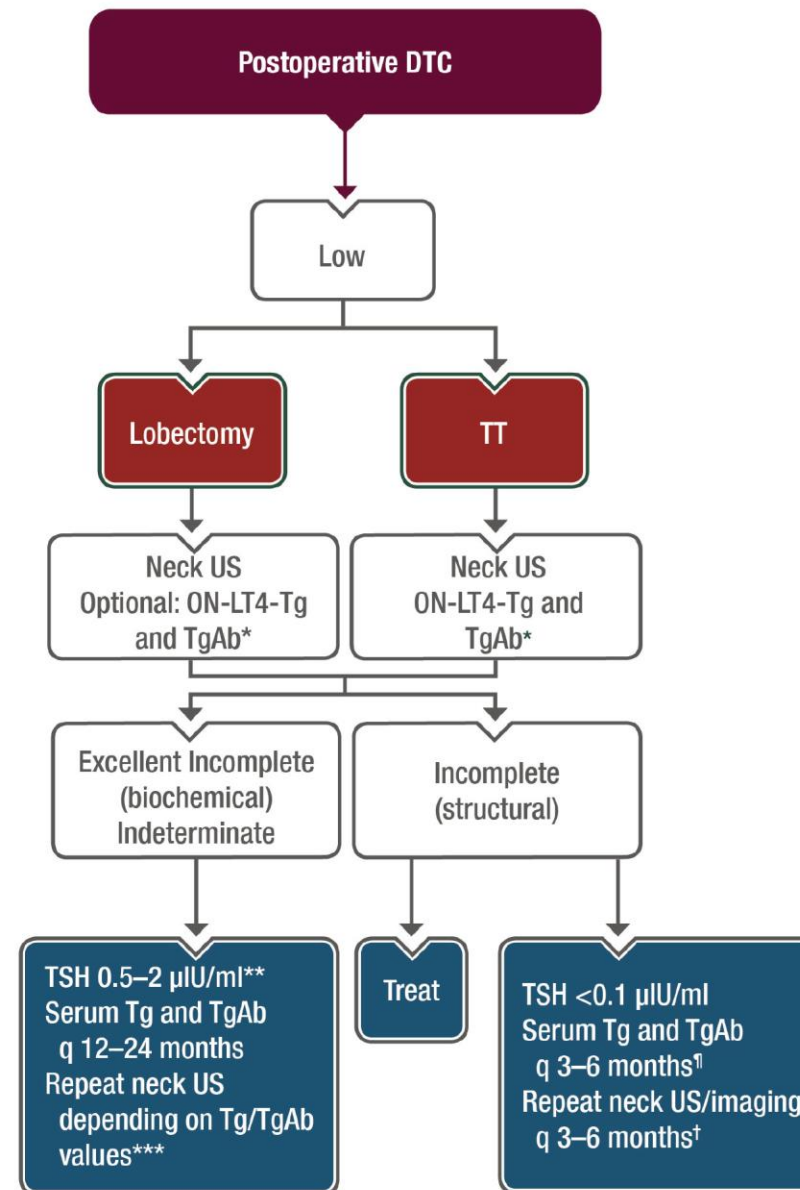
Estimate risk of recurrence

Treat

Assess treatment response (after 6-18 months)

Classify treatment response

Plan management



Differentiated / poorly differentiated TC

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[‡]Short tumour growth doubling time (<1 year) may guide the choice of starting a treatment

[§]If FDG is normal, WBS can be carried out after the administration of a therapeutic activity

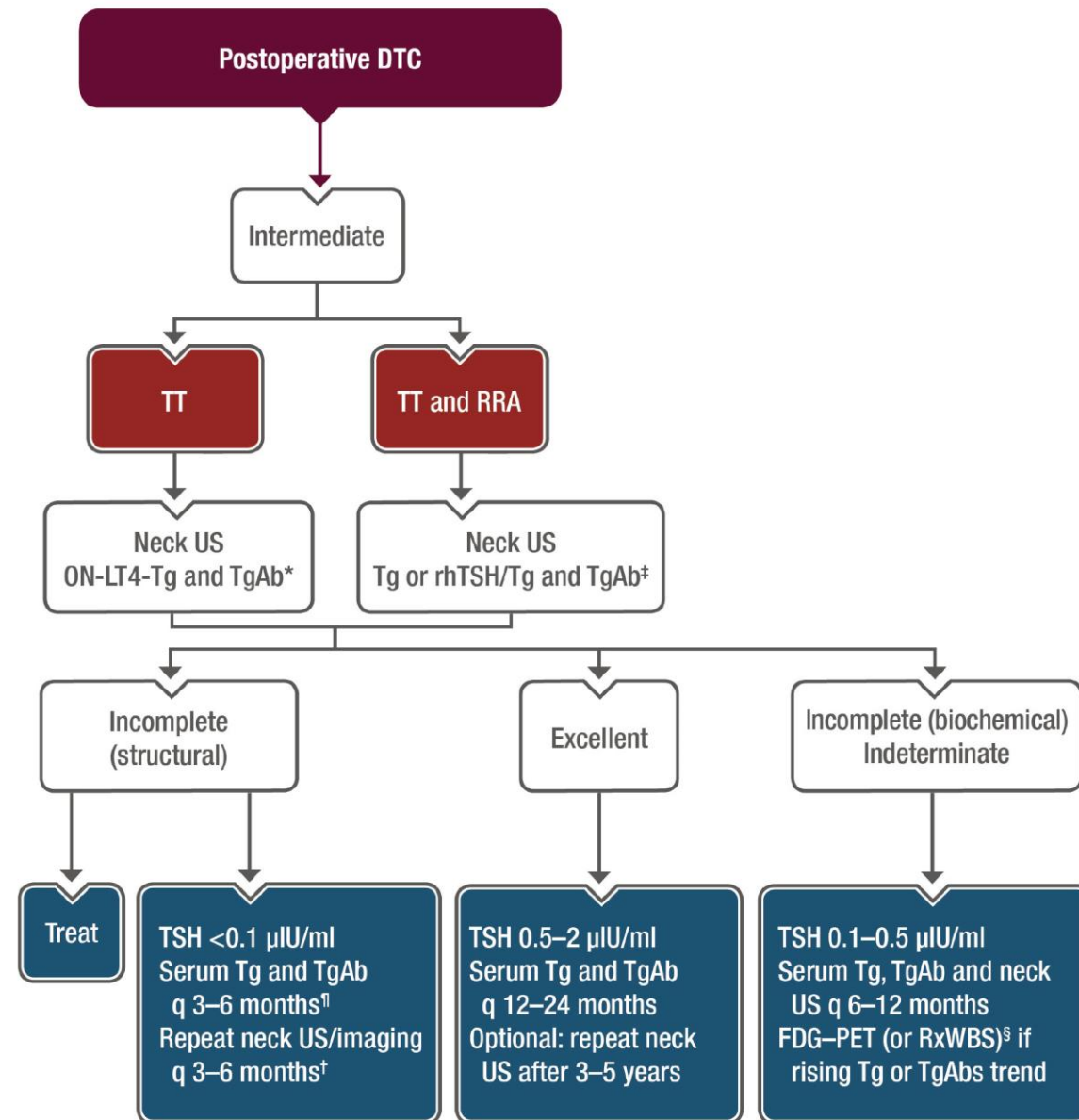
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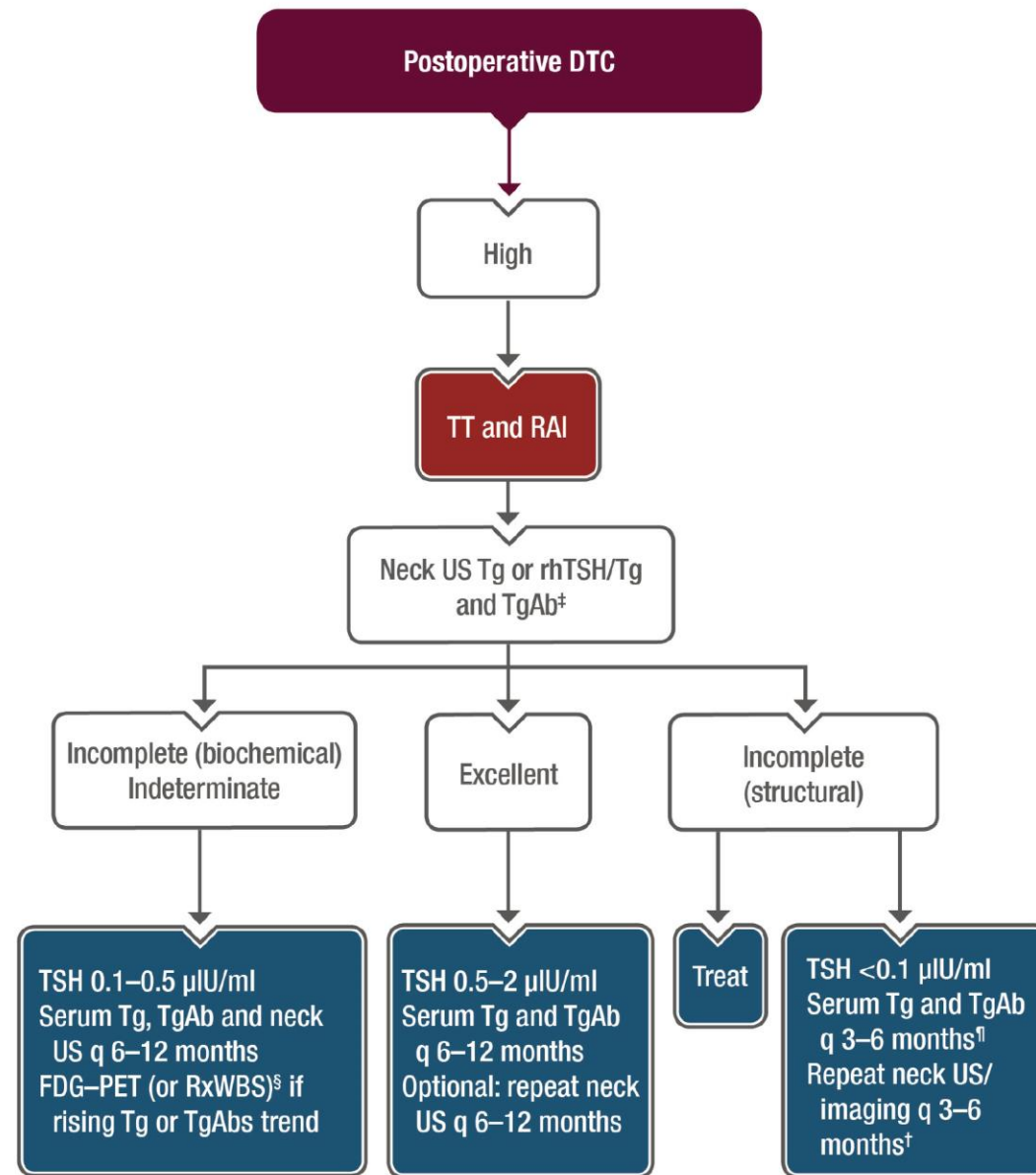
Estimate risk of recurrence

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Assess treatment response (after 6-18 months)

Classify treatment response

Plan management



Differentiated / poorly differentiated TC

Follow-up strategies

*With neck US being conducted as required

**With cross-sectional and functional imaging studies being conducted as required

First follow-up visit	
For DTC, neck US, serum Tg and TgAb:	assessments 6–18 months after surgery ± RAI therapy
Subsequent follow-up visits	
12–24-month serum Tg and TgAb assessments* are appropriate for:	<ul style="list-style-type: none"> low or intermediate-risk PTC with no evidence of structural disease at the first follow-up visit minimally invasive FTCs, although supporting evidence is insufficient
6–12-month serum Tg and TgAb assessments with neck US are recommended for:	<ul style="list-style-type: none"> low- or intermediate-risk PTC or high-risk PTCs, poorly differentiated TCs widely invasive FTCs with a biochemical incomplete or indeterminate response to treatment
6–12-month serum Tg and TgAb assessments** are recommended for:	<ul style="list-style-type: none"> high-risk PTCs poorly differentiated TCs widely invasive FTCs and excellent or biochemical indeterminate/incomplete responses to therapy
Serum TSH levels should be maintained:	<ul style="list-style-type: none"> in the low-normal range (0.5–2 μIU/mL) in all patients at low risk of recurrence or with an excellent response to treatment mildly suppressed (0.1–0.5 μIU/mL) or suppressed (< 0.1 μIU/mL) in patients with biochemical incomplete or indeterminate responses to treatment and in patients with structural incomplete responses, respectively

Differentiated / poorly differentiated TC

Management of advanced/metastatic disease

RAI therapy

Patients with distant metastases should receive 100 to 200 mCi (3.7–7.4 GBq) of ^{131}I after TSH stimulation, every 6 months for RAI-avid distant metastases, with levothyroxine between treatments to maintain serum TSH below 0.1 $\mu\text{IU/mL}$

For lesions persisting after a cumulative dose of 600 mCi ^{131}I , RAI treatment continuation should be based on tumour burden, RAI-uptake intensity and response to previous RAI

Non-RAI-avid lesions and those that lose their ability to concentrate RAI or progress despite RAI avidity should be considered RAI-refractory

Locoregional therapy

Single lesions that are symptomatic or progressive may be eligible for locoregional treatments (e.g. palliative surgery, EBRT, percutaneous therapies)

Differentiated / poorly differentiated TC

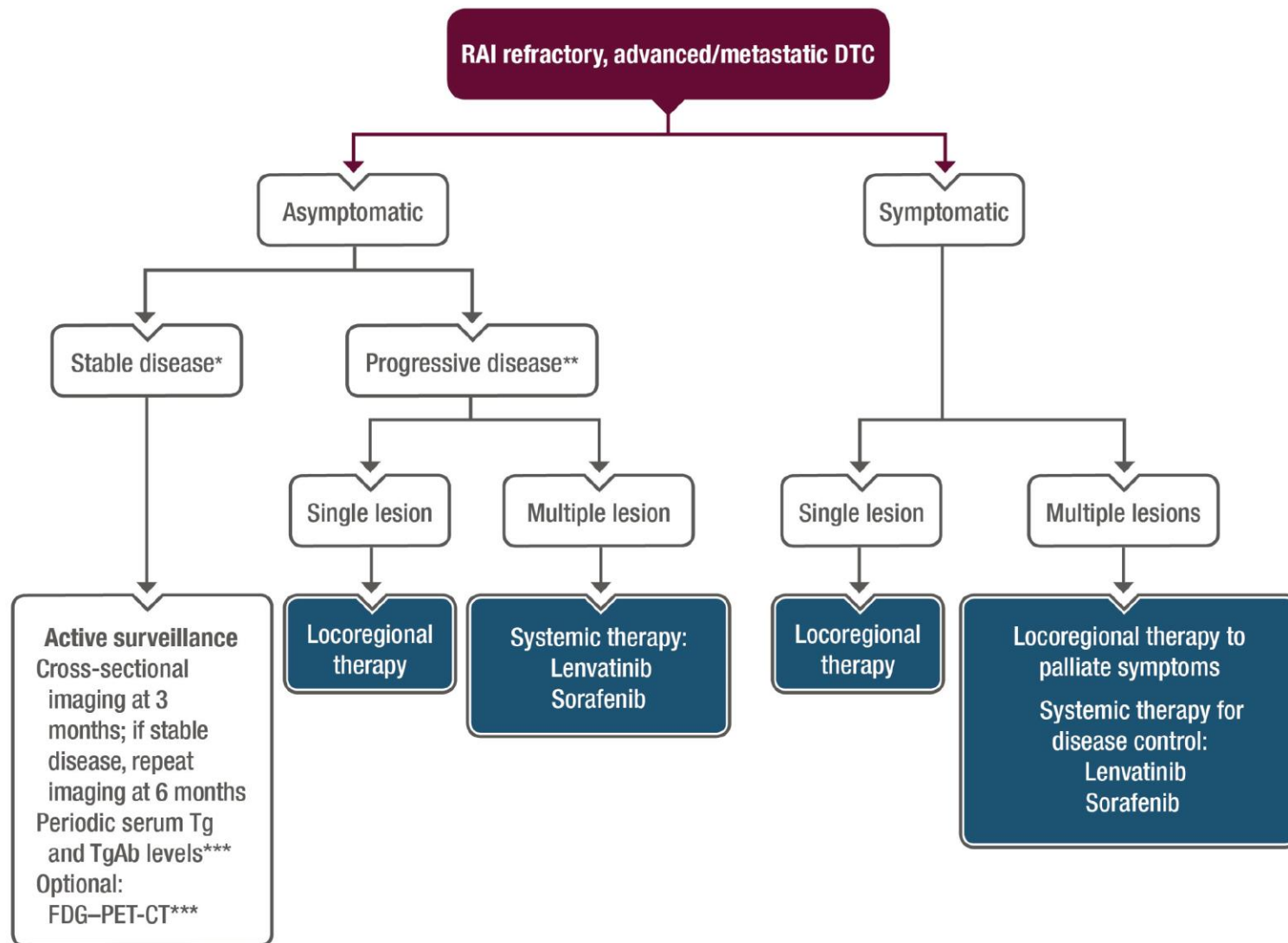
Management of advanced/metastatic disease

Recommendations for management of RAI-refractory, advanced/metastatic DTC patients

*A large tumour burden may warrant either a locoregional or systemic therapy

**As assessed by the RECIST v1.1

***The trend overtime of serum Tg or TgAb levels and the uptake at FDG—PET may predict disease progression and outcome



Differentiated / poorly differentiated TC

Management of advanced/metastatic
disease: Locoregional treatments

Recommendations are given here for DTC and MTC

*4-weekly or 3-monthly

**4-weekly

†20 Gy in 5 fractions; 30 Gy in 10 fractions; or 8 Gy in 1 fraction

Bone metastases

Inhibition of bone resorption with bisphosphonates* or denosumab** for at least 2 years should be considered

Surgery followed by EBRT should be considered

Symptomatic bone lesions should be treated with EBRT†, including cementoplasty and thermal ablation

Palliative EBRT should be used to alleviate pain and neurological complications

Lung metastases

Metastasectomy can be considered:

- For oligometastases in patients with good PS
- With RFA for solitary lesions
- For lesions causing symptoms due to volume and location
- For lesions < 2–3 cm in patients not suitable for surgery

Liver metastases

In MTC patients with a dominant, rapidly growing lesion, local ablation may be useful for controlling symptoms

If surgery and RFA are contraindicated, hepatic intra-arterial embolisation with drug-eluting beads is an option

Invasion of upper aerodigestive tract

Should be excluded in patients with TC and locoregional disease, with local treatment for selected cases

Differentiated / poorly differentiated TC

Management of advanced/metastatic disease:
Systemic therapy and personalised medicine

Summary of recommendations

TSH suppression (serum level < 0.1 µIU/mL) recommended for all TC patients with persistent structural disease

Cross-sectional imaging for disease extent, according to RECIST (v1.1), is mandatory for treatment decisions, repeated every 3–12 weeks during treatment

Lenvatinib and sorafenib are first-line systemic therapies for RAI-refractory DTC

Locoregional treatment can be used without discontinuing MKIs

MKI-associated TSH increases should be monitored and managed

Prevention of MKI AEs is recommended

Phase II trials with antiangiogenic agents in RAI-refractory DTC

*Second-line therapies

Cohen EE et al. J Clin Oncol 2008;26:4708–13; Locati LD et al. Cancer 2014;120:2694–703; Cabanillas ME et al. J Clin Oncol 2017;35:3315–21; Brose MS et al. Int J Radiat Oncol Biol Phys 2018;100:1311; Sherman SI et al. N Engl J Med 2008;359:31–42; Schlumberger M et al. J Clin Oncol 2018;36(Suppl):abstr 6021; Bible KC et al. Lancet Oncol 2010;11:962–72; Carr LL et al. Clin Cancer Res 2010;16:5260–68; Leboulleux S et al. Lancet Oncol 2012;13:897–905

Name of the drug	Author	Patients (N)	Response rate (%)	Median PFS (months)
Axitinib	Cohen EE et al.	45	30	18
Axitinib	Locati LD et al.	52	35	16
Cabozantinib*	Cabanillas ME et al.	25	40	12,7
Cabozantinib	Brose MS et al.	35	54	Not reached yet
Motesanib	Sherman SI et al.	93	14	9
Nintedanib*	Schlumberger M et al.	70	0	3,71
Patopanib	Bible KC et al.	37	49	12
Sunitinib	Carr LL et al.	28	31	13
Vandetanib	Leboulleux S et al.	145	<5	11

Anaplastic Thyroid Cancer

Diagnosis and pathology / molecular biology /
staging and risk assessment

Diagnosis and pathology / molecular biology

Preoperative biopsy assessment includes diagnostic immunomarkers that differentiate ATC from large cell lymphoma or pleomorphic sarcoma

The ATC molecular profile includes:

- *TERT* promotor mutations (associated with *BRAF* or *RAS* mutations)
- *TP53* mutations
- *NTRK* and *ALK* rearrangements

Staging and risk assessment

FDG–PET-CT scan should be used to assess disease extent and repeated throughout treatment

Anaplastic Thyroid Cancer

Management of local/locoregional disease and
Palliative EBRT

Surgery

ATC is rarely amenable to complete resection. Incomplete palliative resection or 'debulking' does not affect prognosis and is not recommended

TT with bilateral CND may be carried out for localised M0 ATC

Tracheostomy may be needed to alleviate symptoms

RT

- R0 and R1 resection followed by high-dose EBRT, with/without concomitant ChT should be discussed
- There is no benefit from additional therapies for stage IVA disease

Adding RT to radical ATC resection improves survival in disease stage IVA and IVB, but not IVC

PORT must be delivered as soon as possible after surgery. IMRT (40–50 Gy) is the recommended approach

Palliative EBRT

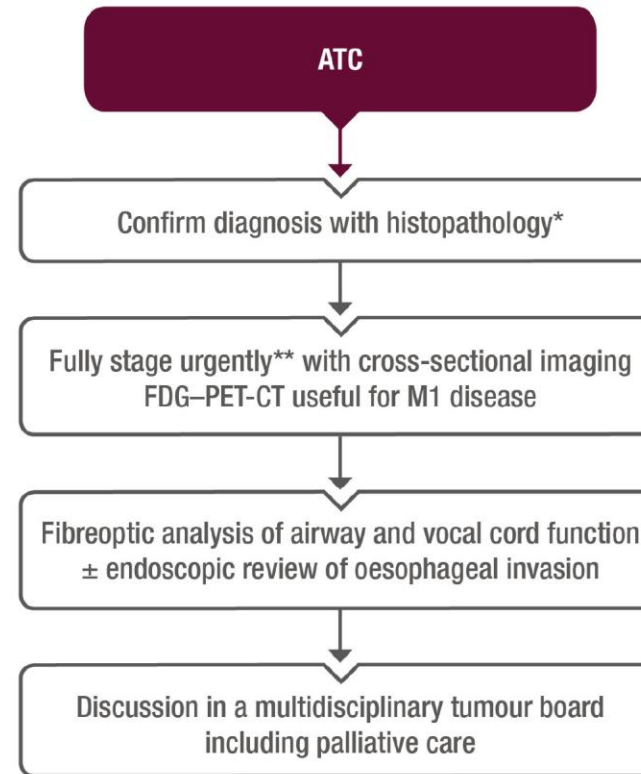
EBRT (20 Gy in 5 fractions to 30 Gy in 10 fractions) can be used for symptom control in unresectable disease

Anaplastic Thyroid Cancer

Recommendations for management of ATC
patients - Pre-treatment assessment

*With at least a core biopsy. Cytology is not
sufficient to exclude differential diagnoses such as
lymphoma, medullary or poorly differentiated TC

**Staging must not delay definitive treatment



Anaplastic Thyroid Cancer

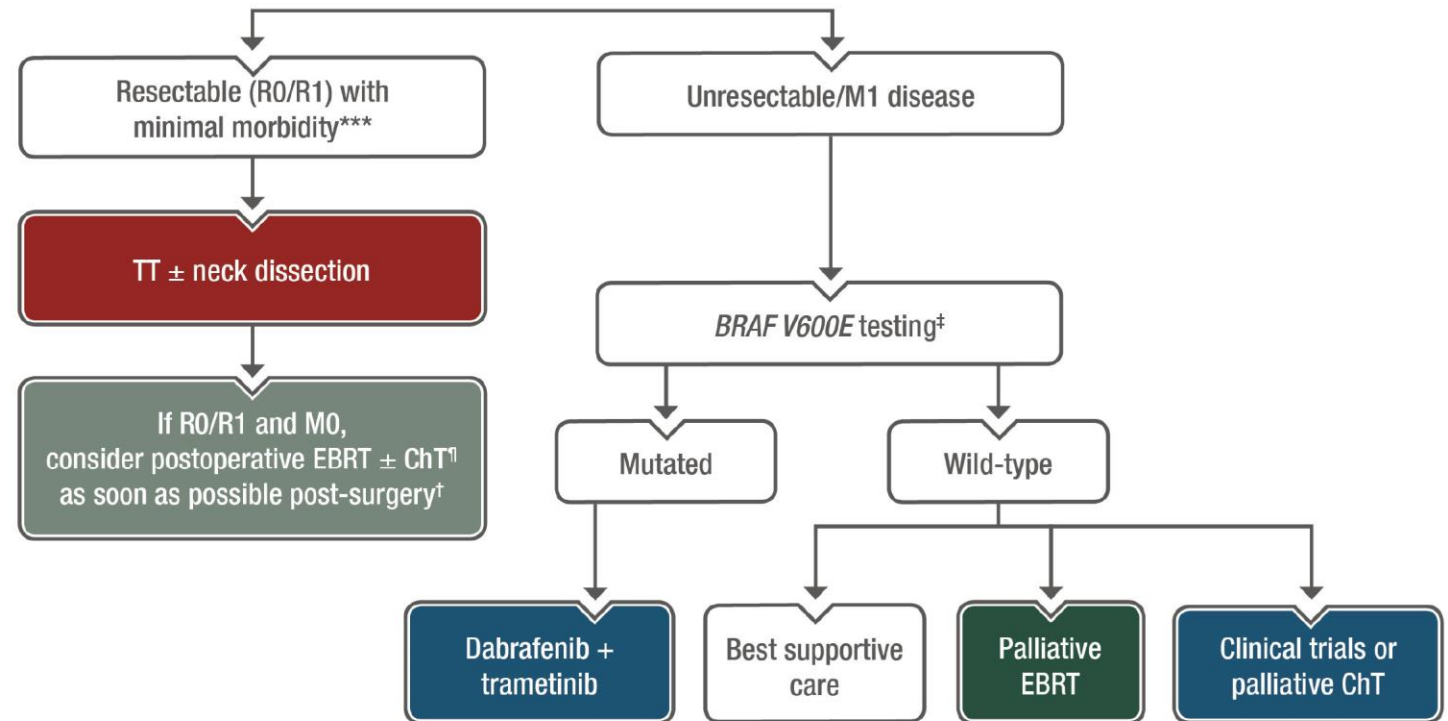
Recommendations for management of ATC patients - Treatment

***Laryngectomy not appropriate. Elective tracheostomy should be avoided

†† Concomitant ChT should be offered in patients who have good PS

† Preferably within 3 weeks of surgery. IMRT is the recommended approach

*A next-generation sequencing analysis targeting cancer-associated genes is the preferred approach if available



Anaplastic Thyroid Cancer

Management of advanced/metastatic disease:
Systemic therapy and personalised medicine

Summary of recommendations

Clinical trial enrollment should be encouraged for patients with good clinical PS

Weekly paclitaxel or doxorubicin, alone or in combined regimens, every 3–4 weeks, is recommended, but there are no established second-line regimens

Chemoradiotherapy can be considered for unresectable stage IVB disease

First-line therapy for advanced *BRAF V600E* ATC: dabrafenib (150mg twice daily) + trametinib (2mg once daily)

Patients with wild-type *BRAF V600E* ATC could be preferably addressed to a clinical trial. Alternative options are palliative EBRT, chemotherapy or best supportive care

Medullary Thyroid Cancer

Diagnosis and pathology / molecular biology /
staging and risk assessment

Diagnosis and pathology / molecular biology

Demonstration of Ctn expression is mandatory for diagnosis

Patients should be offered genetic counselling and should be screened for germline *RET* mutations

Screening for somatic *RET* mutations is only recommended if *RET* inhibitor therapy is planned

Staging and risk assessment

Serum Ctn should be measured 60–90 days after thyroidectomy: levels < 10 pg/mL indicate biochemical cure

Serum Ctn levels > 500 pg/mL are suggestive of metastatic disease

Serum CEA can be used to monitor progression of clinically evident MTCs

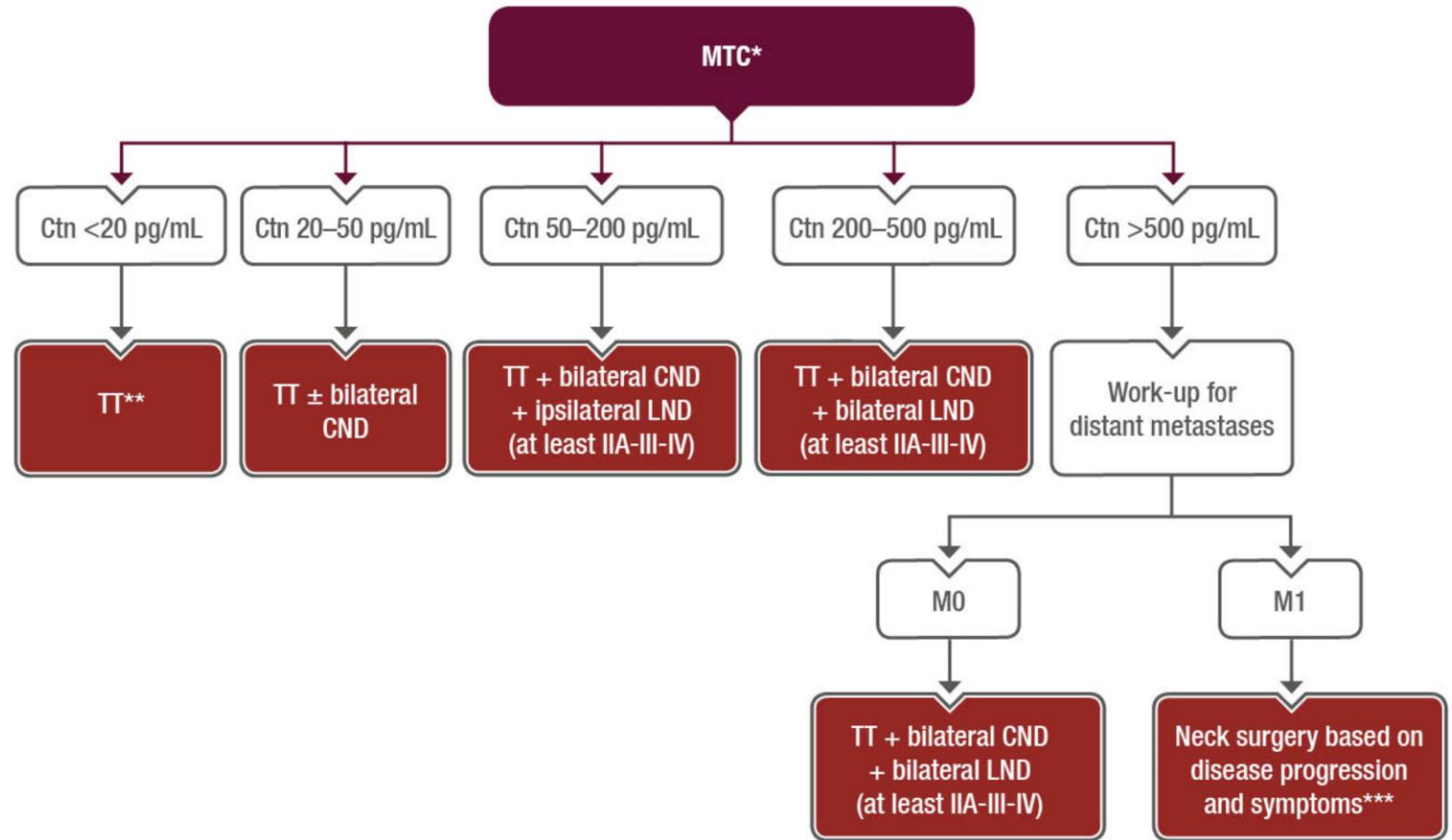
Medullary Thyroid Cancer

Recommendations for surgical management of MTC patients

*Preoperative neck US is recommended for all patients: (i) US-negative patients: elective neck dissection based on Ctn levels; (ii) US-positive patients: bilateral CND plus therapeutic neck dissection of involved levels plus contralateral LND if serum Ctn >200 pg/mL

**If MTC is discovered after lobectomy, consider completion thyroidectomy unless postoperative serum an is undetectable, neck US normal and no germline *RET* mutation is found

***In patients with distant metastases (M1), decision for surgery may be based on tumour burden in the neck as compared with tumour burden outside of the neck



Medullary Thyroid Cancer

Management of advanced / metastatic disease

Locoregional therapy recommendations are the same of
DTCs and non-differentiated TCs

*Choice of agent based on toxicity

Summary of recommendations

Advanced MTCs:

Secretion of a variety of peptides → unpleasant symptoms such as flushing and diarrhoea

The management of these symptoms should be the first goal of treatment

Systemic therapy and personalised medicine

Cabozantinib and vandetanib are the first-line systemic options for progressive, metastatic MTC*

In patients with *RET*M918T or *RAS*-mutant MTCs, cabozantinib offers significant PFS and OS advantages over wild-type MTCs

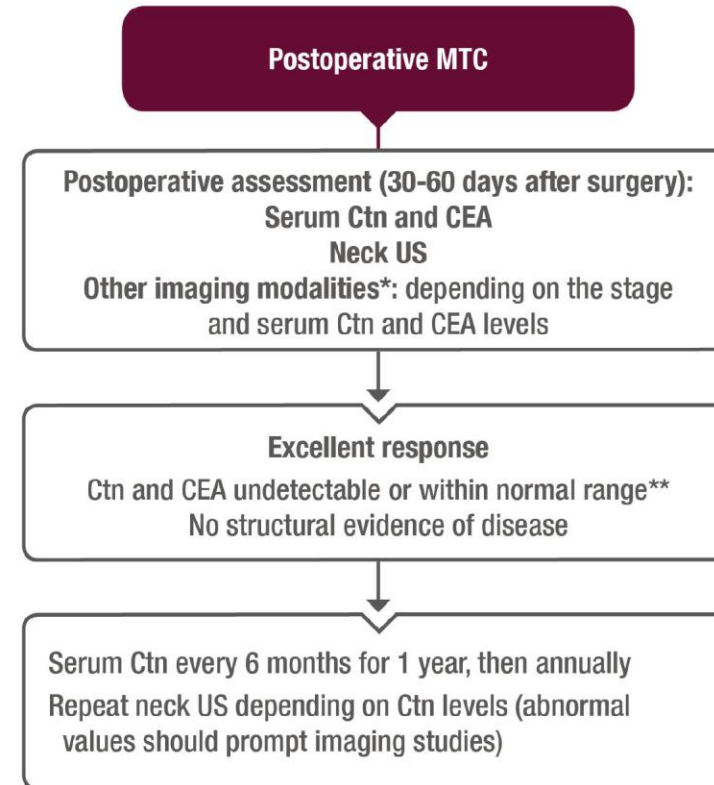
Efforts should be taken to prevent MKI-associated AEs to avoid unnecessary treatment interruption

Medullary Thyroid Cancer

Recommendations for postoperative MTC
– Excellent response

*Multimodality imaging should be used to identify and to follow locoregional and/or distant metastases

**Based on own institution cut-off



Medullary Thyroid Cancer

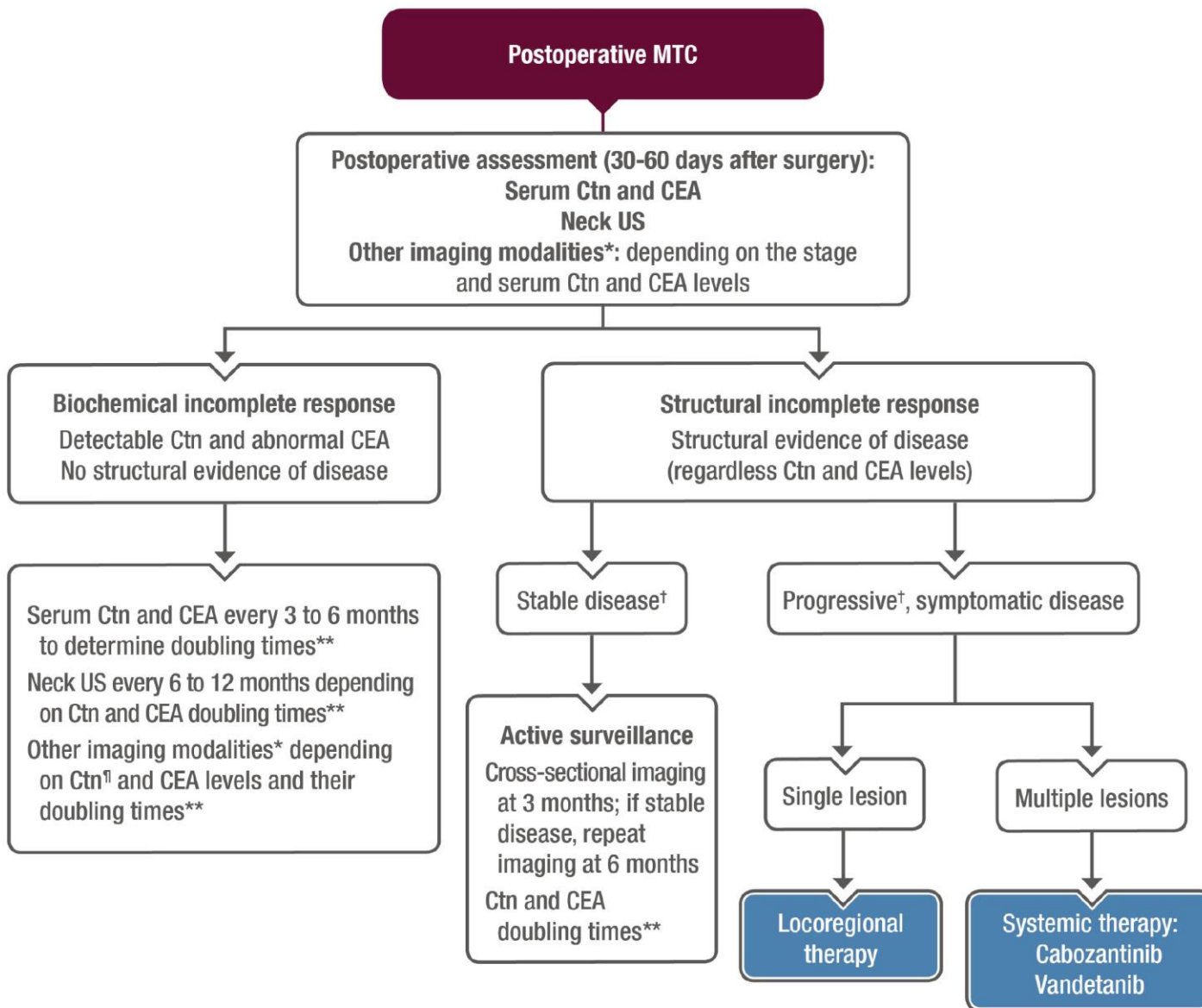
Recommendations for postoperative MTC – incomplete response

*Multimodality imaging should be used to identify and to follow locoregional and/or distant metastases

**Serum Ctn and CEA doubling times are efficient tools for predicting tumour progression. Doubling times shorter than 24 months are associated with progressive disease

† Clinically relevant disease sites are rarely detected in patients with Ctn levels < 150 pg/mL

‡ Stable or progressive disease according to RECIST 1.1. In patients with stable disease, a large tumour burden may warrant either a locoregional or systemic therapy



Disclaimer and how to obtain more information

This slide set provides you with the most important content of the full ESMO Clinical Practice Guidelines (CPGs) on the management of thyroid cancer. Key content includes diagnostic criteria, staging of disease, treatment plans and follow-up.

The ESMO CPGs are intended to provide you with a set of recommendations for the best standards of care, using evidence-based medicine. Implementation of ESMO CPGs facilitates knowledge uptake and helps you to deliver an appropriate quality of focused care to your patients.

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