Eviti Imaging: Thyroid Cancer

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Thyroid Cancer Imaging

Discussion

This imaging guideline provides a standardized framework for the use of diagnostic and surveillance imaging in the management of common adult malignancies, specifically thyroid cancer. The goal is to ensure timely, evidence-based imaging that supports accurate staging, treatment planning, response assessment, and post-treatment surveillance.

Guiding Principles

- Follow evidence-based practices from major guidelines (e.g., NCCN, ESMO, ACR Appropriateness Criteria)
- Ensure imaging aligns with the clinical context and stage of disease
- Minimization of unnecessary radiation exposure
- Promote timely and cost-effective imaging utilization
- Incorporate multidisciplinary collaboration in imaging decisions

Imaging Guidelines

This guideline applies to the following patients:

1. At least 18 years of age with confirmed or suspected diagnoses of thyroid cancer; AND
2. All phases of oncologic care, including one of the following:
   a) Initial staging
   b) Treatment response evaluation
   c) Post-treatment surveillance
   d) Detection of recurrence or progression; AND
3. All imaging modalities used in oncology care, including but not limited to the following:
   a) Computed tomography (CT) (neck, chest, abdomen, pelvis, neck, or site-specific)
   b) Magnetic resonance imaging (MRI) (including site-specific protocols such as pelvis MRI, brain MRI, liver MRI)
   c) Fluorodeoxyglucose positron emission tomography/CT (FDG-PET/CT)
   d) PET/MRI
   e) Somatostatin receptor PET/CT (SSTR-PET/CT)
   f) Nuclear medicine (e.g., bone scan, PSMA PET)
   g) Single photon emission computed tomography/CT (SPECT/CT) (e.g., octreotide SPECT/CT for neuroendocrine tumors)

Notes:

1. The concurrent utilization of multiple advanced imaging modalities—such as PET/CT and MRI—is not routinely warranted and should be considered only when each modality is expected to provide distinct and clinically relevant information that will directly impact patient management. The selection of the most appropriate imaging study should be individualized, taking into account tumor type, clinical presentation, prior imaging, and other patient-specific factors. Imaging requests will be evaluated on a case-by-case basis to ensure clinical necessity, appropriateness, and the potential to influence therapeutic decision-making.

2. When PET imaging is clinically indicated, the appropriate radiotracer should be selected based on tumor type and clinical scenario.

Thyroid Cancer Imaging

Imaging in thyroid cancer - including differentiated thyroid carcinoma (papillary, follicular, Hürthle cell), medullary thyroid carcinoma, and anaplastic thyroid carcinoma - is essential for diagnosis, staging, treatment planning, and surveillance.

The primary objectives of imaging are to define the extent of the primary tumor, evaluate cervical lymph node involvement, assess locoregional invasion, identify distant metastatic disease, and guide postoperative risk stratification and treatment decisions.

High-resolution neck ultrasound is the cornerstone of initial evaluation and surveillance. Contrast-enhanced CT and MRI are used selectively for locally advanced disease and staging. Radioiodine imaging and FDG PET/CT are reserved for specific clinical scenarios, particularly in patients with biochemical evidence of disease or radioiodine-refractory cancer.

Thyroid Cancer Recommendations			
Clinical Scenario	**Recommended Modality**	**Frequency/Timing**	**Purpose/Notes**
Differentiated Thyroid Cancer (Papillary, Follicular)			
Initial Staging - Local	Thyroid and neck ultrasound (including central and lateral cervical nodal compartments ultrasound)	Once at diagnosis	Evaluates primary tumor, extrathyroidal extension, and cervical lymph nodes
	CT neck ± chest with contrast	As clinically indicated	Appropriate for bulky nodal disease, retrosternal extension, invasive disease, vocal cord paralysis, limited ultrasound evaluation
Treatment Monitoring - Post-Thyroidectomy (Gross Residual Disease)	CT or MRI neck	As clinically indicated	Assesses thyroid bed and cervical nodes; frequency based on ATA/NCCN risk category
	CT or MRI imaging of metastatic foci	As clinically indicated	
	I-123 or I131	6–12 months post-operatively	Determine RAI

Surveillance **Post Lobectomy**	Neck ultrasound	6–12 months post-operatively	
Surveillance - Post Total Thyroidectomy without RAI	Neck ultrasound	6–12 months post-operatively	
Surveillance - Post Total Thyroidectomy with RAI	Neck ultrasound	6–12 months post-operatively and annually x 5 years	
Surveillance - (Active Surveillance - Papillary Carcinoma)	Neck ultrasound with inclusion of thyroid and lymph node regions	Every 6 months x 1-2 years, then annually	Active surveillance
Suspected Recurrence - (Rising Thyroglobulin or Abnormal Imaging)	CT neck/chest with contrast	As clinically indicated	Evaluates for structural disease not seen on ultrasound
	PET	As clinically indicated	
	Radioiodine whole-body scan (I-123 or low-dose I-131)	As clinically indicated	Appropriate in iodine-avid disease
	FDG PET/CT	As clinically indicated	Considered when thyroglobulin is elevated and radioiodine imaging is negative, particularly in higher-risk disease
	MRI brain	As clinically indicated	
Medullary Thyroid Cancer (MTC)			
Initial Staging	Thyroid and neck ultrasound (including central and lateral cervical nodal compartments ultrasound)	Once at diagnosis	Assesses cervical nodal disease
	CT of neck/chest and liver MRI or 3-phase CT of liver	Once at diagnosis	Evaluates for early distant metastases (lung, liver, bone). Consider for calcitonin >300pg/mL or concerning features

	Ga-68 DOTATATE PET/CT	Once at diagnosis	This reflects the neuroendocrine nature of medullary thyroid carcinoma
	Bone scan and/or whole-body MRI	As clinically indicated	When PET scan not available
Treatment Monitoring - Patients with Detectable Basal Calcium and/or Abnormal CEA 2-3 Months Post-Op	CT of neck/chest and liver MRI or 3-phase CT of liver	Once	When Calcitonin >150 pg/mL
	Whole body MRI	Once	For very elevated calcitonin levels
	Ga-68 DOTATATE PET/CT	Once	If initial imaging is negative and if there is a rise in calcitonin/CEA
	MRI of neck/chest and abdomen	Once	If initial imaging is negative and if there is a rise in calcitonin/CEA
Surveillance - Patients with Undetectable Basal Calcium and Normal CEA	Ultrasound neck	Annually	Rising markers warrant imaging even in absence of symptoms
Surveillance - Symptomatic or Rapid Marker Rise	FDG PET/CT or targeted imaging	As clinically indicated	Used selectively to localize disease
Anaplastic Thyroid Cancer			
Initial Staging	Neck ultrasound, CT chest, head, neck, abdomen and pelvis	Once at diagnosis	Rapid assessment of local invasion and distant disease
	FDG PET/CT or MRI	Once at diagnosis	Defines systemic disease burden and treatment feasibility. MRI may be helpful if unable to have a CT or PET
Treatment Monitoring	CT or PET/CT	3-6 months	NCCN recommends imaging 3-6 months after initial treatment but does specify interval
Surveillance	CT or PET/CT	As clinically indicated	NCCN only recommends continued disease

			monitoring in NED but does not specify interval
Suspected Recurrence	CT or MRI neck, Chest, abdomen, and pelvis FDG PET/CT	As clinically indicated	
	CT scan of the CAP	As clinically Indicated	Refer to initial diagnosis of specific cancer subtype
	MRI brain with contrast	As clinically Indicated	Neurologic symptoms/evaluates for CNS metastases
	MRI or CT of symptomatic site	As clinically indicated	Bone pain/fracture risk; targeted evaluation preferred
Suspected Recurrence - RAI-Refractory or Aggressive Disease	FDG PET/CT	As clinically indicated	Appropriate when thyroglobulin is rising and radioiodine imaging is negative, or disease demonstrates aggressive clinical behavior OR anaplastic thyroid cancer
Oncocytic (Hürthle Cell) Carcinoma			
Initial Stagings – Neck	Thyroid and Neck ultrasound (including central and lateral cervical nodal compartments ultrasound)	Once at diagnosis	Baseline cervical assessment
Initial Staging- Baseline Lower Threshold than Other DTC Subtypes	CT neck	Once at diagnosis as indicated	Oncocytic cancers are frequently less iodine-avid; cross-sectional staging is commonly appropriate
Surveillance - Post-op Baseline	Neck ultrasound	As clinically indicated	Local surveillance similar anchor interval

	CT or MRI neck +/- chest FDG PET Radioiodine whole-body scan (I-123 or low-dose I-131)	As clinically indicated	
Treatment Monitoring - Rising Thyroglobulin or Abnormal Imaging	CT or MRI of known disease	As clinically indicated	Evaluates for structural disease not seen on ultrasound
Surveillance - Post Lobectomy/Total Thyroidectomy +/- RAI	Neck ultrasound	6–12 months post-operatively	
Suspected Recurrence - Metastatic Disease	CT neck/chest ± abdomen/pelvis with contrast MRI brain	As clinically indicated	Often preferred over reliance on RAI imaging alone due to reduced iodine avidity For CNS symptoms
Suspected Recurrence - Biochemical/Clinical Concern with Negative Conventional Imaging	FDG PET/CT	As clinically indicated	FDG PET/CT has demonstrated utility in Hürthle cell carcinoma and is a reasonable non-RAI strategy when warranted

Notes:

1. Imaging should be guided by histologic subtype, risk stratification, biochemical markers, and clinical context.
2. Neck ultrasound remains the primary modality for evaluation and surveillance in differentiated thyroid cancer.
3. Radioiodine-related contrast considerations apply to differentiated thyroid cancer when RAI is planned and do not apply to anaplastic thyroid cancer.
4. Oncocytic (Hürthle cell) carcinoma often demonstrates reduced iodine avidity and may warrant earlier cross-sectional or FDG PET/CT imaging.
5. Rising or discordant biochemical markers (e.g., thyroglobulin, calcitonin, CEA) may justify escalation of imaging.
6. FDG PET/CT is not routine in low-risk disease and should be used selectively.
7. MRI may be substituted for CT when CT is contraindicated and diagnostic objectives can be met.
8. Symptom-driven imaging is appropriate regardless of subtype.

9. Additional imaging may be considered following physician-level or multidisciplinary review when disease behavior is atypical. Although classified as differentiated thyroid cancer, Hürthle cell carcinoma often behaves differently biologically and may warrant earlier use of cross-sectional or metabolic imaging compared with papillary or follicular thyroid carcinoma.[1]

Revision and Review History

No.	Description	Date
1	Original Effective Date:	1/1/2026
2	Policy Annual Review Dates:	
3	Department Owner:	Medical Affairs
4	NH Advisory Committee Approval Dates:	
5	Revision Changes:	

References

[1] National Comprehensive Cancer Network Guidelines: Thyroid Carcinoma https://www.nccn.org/professionals/physician_gls/pdf/thyroid.pdf. Accessed January 7, 2026.