**2016**
**NCCN GUIDELINES REVIEW**
**THYROID CANCER CASE REVIEW 2015**

**STUDY TOPIC: Adherence to National Comprehensive Cancer Network (NCCN) and National Cancer Data Base (NCDB) Guidelines for thyroid carcinoma. This study will evaluate whether all appropriate patients with thyroid cancer under postoperative radio-iodine (RAI) therapy when indicated.**

**OBJECTIVE:** To ensure all appropriate patients with thyroid carcinoma underwent postoperative RAI treatment in compliance with NCCN guidelines.

**MEASUREMENT:** 2015 cases

**METHOD:** Retrospective chart and abstract review. A total of 7 analytical cases were reviewed.

**RESULTS:**

| Case | Histopathology | Pathologic Stage | RAI Therapy | Met NCCN Guideline | Radiation Dose/Comments |
|---|---|---|---|---|---|
| 1 | Micro-papillary carcinoma | Stage 1 | No | Yes | |
| 2 | Papillary carcinoma, follicular variant | Stage 1 | Yes.<br>Higher risk histology, age at diagnosis. | Yes | I-131 ablation, 31.9 mCi |
| 3 | Micro-papillary carcinoma | Stage 1 | No | Yes | |
| 4 | Papillary thyroid carcinoma | Stage 1 | Ordered due to primary tumor >4 cm, cervical lymph node metastases, multi-focality. | Yes | At time of Nuclear Medicine ablation appointment, patient lived with a small child and was not able to accommodate appropriate post-therapy restrictions. The patient was re-appointed but did not return for follow-up |

| | | | | | |
|---|---|---|---|---|---|
| 5 | Papillary thyroid carcinoma | Stage 1 | Yes. Gross extra-thyroidal extension (Pathology report: "extending into peri-thyroidal soft tissue." Cervical lymph node metastases. | Yes | I -131 ablation, 157.0 mCi |
| 6 | Follicular thyroid carcinoma (well-differentiated) | Stage 1 | No | Yes | |
| 7 | Papillary thyroid micro-carcinoma | Stage 1 | No | Yes | |

**CONCLUSIONS:** All 7 cases were adherent to the NCCN guideline for postoperative RAI therapy. In one case were RAI ablation was appropriately ordered, it was not administered due to the patient's living situation and patient did not follow-up as scheduled. We also noted a variance in the ablative dose of radio-iodine-131 in the 2 patients treated with RAI therapy.

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# Thyroid Carcinoma – Papillary Carcinoma

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**CLINICOPATHOLOGIC FACTORS**

**RAI not typically recommended (if all present):**
- Classic papillary thyroid carcinoma (PTC)
- Primary tumor <1 cm
- Intrathyroidal
- Unifocal or multifocal
- No detectable anti-Tg antibodies
- Postoperative unstimulated Tg <1 ng/mL[h]

→ RAI not typically indicated, See (PAP-5)

**RAI selectively recommended (if any present):**
- Primary tumor 1–4 cm
- High-risk histology[i]
- Lymphovascular invasion
- Cervical lymph node metastases
- Macroscopic multifocality (one focus >1 cm)
- Persistence of anti-Tg antibodies[j]
- Postoperative unstimulated Tg <5–10 ng/mL[h]

→ RAI ablation is not required in patients with classic PTC that have T1b/T2 (1–4 cm) cN0 disease or small-volume N1a disease (fewer than 3–5 metastatic lymph nodes with 2–5 mm of focus of cancer in node), particularly if the postoperative Tg is <1 ng/mL in the absence of interfering anti-Tg antibodies. → RAI not typically indicated, See (PAP-5)

→ RAI ablation is recommended when the combination of individual clinical factors (such as the size of the primary tumor, histology, degree of lymphovascular invasion, lymph node metastases, postoperative thyroglobulin, and age at diagnosis) predicts a significant risk of recurrence, distant metastases, or disease-specific mortality. → RAI being considered, See (PAP-6)

**RAI typically recommended (if any present):**
- Gross extrathyroidal extension
- Primary tumor >4 cm
- Postoperative unstimulated Tg >5–10 ng/mL[h,k]

→ RAI being considered, See (PAP-6)

**Known or suspected distant metastases at presentation** → Amenable to RAI See (PAP-7)

**Gross residual disease not amenable to RAI therapy** → See (PAP-10)

[h]Tg values obtained 6–12 weeks after total thyroidectomy.
[i]ie, poorly differentiated thyroid carcinoma.
[j]Note that the rate of decrease of TG antibodies may be prolonged; thus, in low-risk situations and decreasing Tg antibodies, RAI can sometimes be delayed until nadir is reached or they become absent.
[k]Additional cross sectional imaging should be considered to rule out the presence of significant normal thyroid remnant or gross residual disease and to detect clinically significant distant metastases.

For general principles related to radioactive iodine therapy, See (Discussion)

Note: All recommendations are category 2A unless otherwise indicated.
Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.

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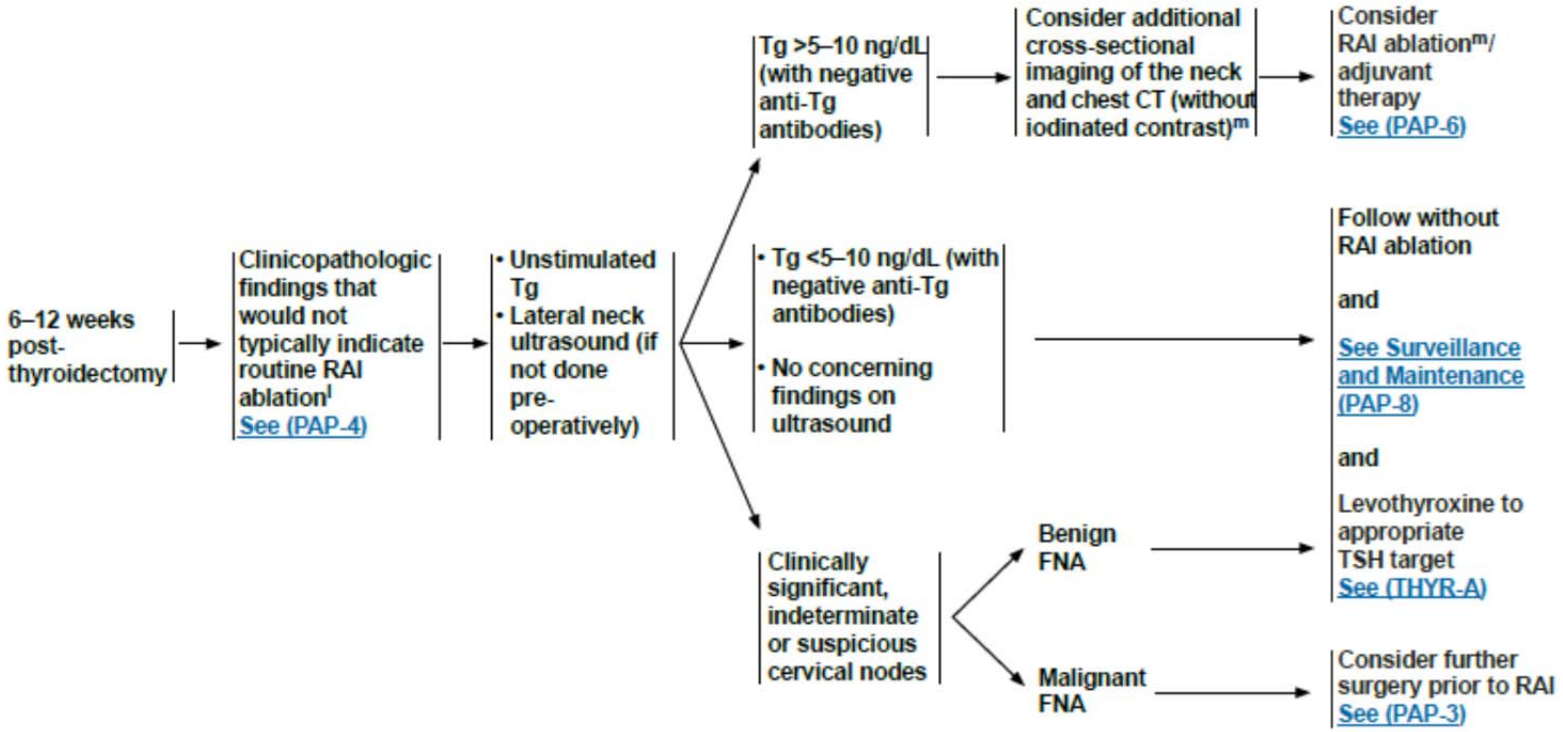
## RAI NOT TYPICALLY INDICATED BASED ON CLINICOPATHOLOGIC FEATURES




[l]For example, RAI ablation is not required in patients with classic PTC that have T1b/T2 (1–4 cm) cN0 disease or small-volume N1a disease (fewer than 3 metastatic lymph nodes <1 cm in diameter), particularly if the postoperative Tg is <1 ng/mL in the absence of interfering anti-Tg antibodies.
[m]If structural disease is identified, additional evaluation and/or treatment may be clinically indicated.

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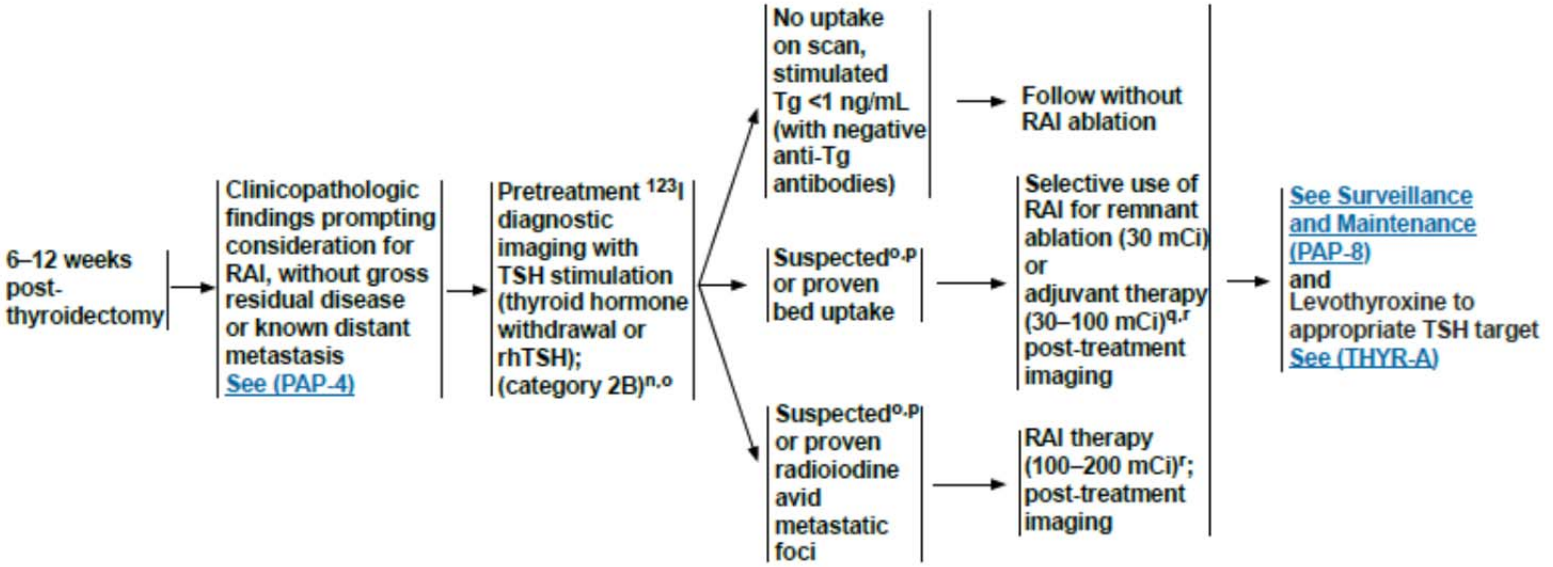
## RAI BEING CONSIDERED BASED ON CLINICOPATHOLOGIC FEATURES




[n]Alternatively, low-dose $^{131}$I (1–3 mCi) may be used.

[o]While pre-ablation diagnostic scans in this setting are commonly done at NCCN Member Institutions, the panel recommends (category 2B) selective use of pre-ablation diagnostic scans based on pathology, postoperative Tg, intraoperative finds, and available imaging studies. Furthermore, dosimetry studies are considered in patients at high risk of having RAI avid distant metastasis.

[p]Clinically significant structural disease should be surgically resected if possible before radioiodine treatment.

[q]The administered activity of RAI therapy should be adjusted for pediatric patients.

[r]If RAI ablation is used in T1b/T2 (1–4 cm), clinical N0 disease, 30 mCi of $^{131}$I is recommended (category 1) following either recombinant human TSH stimulation or thyroid hormone withdrawal. This RAI ablation dose of 30 mCi may also be considered (category 2B) for patients with T1b/T2 (1–4 cm) with small-volume N1a disease (fewer than 3–5 metastatic lymph node metastases <1 cm in diameter) and for patients with primary tumors <4 cm, clinical M0 with minor extrathyroidal extension.

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| CLINICOPATHOLOGIC FACTORS | CONSIDERATION FOR INITIAL POSTOPERATIVE RAI THERAPY | |
|---|---|---|
| **RAI not typically recommended (if all present):**<br>• Primary tumor <2 cm<br>• Intrathyroidal<br>• No vascular invasion<br>• Clinical N0<br>• No detectable anti-Tg antibodies<br>• Postoperative unstimulated Tg <1 ng/mL[e] | → | RAI not typically indicated, See (FOLL- 4) |
| **RAI selectively recommended (if any present):**<br>• Primary tumor 2–4 cm<br>• Minor vascular invasion<br>• Cervical lymph node metastases<br>• Persistence of anti-Tg antibodies[f]<br>• Postoperative unstimulated Tg <5–10 ng/mL[e] | → RAI ablation is recommended when the combination of individual clinical factors (such as the size of the primary tumor, histology, degree of lymphovascular invasion, lymph node metastases, postoperative thyroglobulin, and age at diagnosis) predicts a significant risk of recurrence, distant metastases, or disease-specific mortality. → | RAI being considered, See (FOLL-5) |
| **RAI recommended (if any present):**<br>• Gross extrathyroidal extension<br>• Primary tumor >4 cm<br>• Extensive vascular invasion<br>• Postoperative unstimulated Tg >5–10 ng/L[e,g] | → | |
| **Known or suspected distant metastases at presentation** | → | Amenable to RAI See (FOLL-6) |
| **Gross residual disease not amenable to RAI therapy** | → | See (FOLL-9) |

[e]Tg values obtained 6–12 weeks after total thyroidectomy.
[f]Note that the rate of drop of TG antibodies may be prolonged; thus, in low-risk situations and dropping Tg antibodies, RAI can sometimes be delayed until nadir is reached or they become absent.
[g]Additional cross sectional imaging should be considered to rule out the presence of significant normal thyroid remnant or gross residual disease and to detect clinically significant distant metastases.

For general principles related to RAI therapy, See (Discussion)

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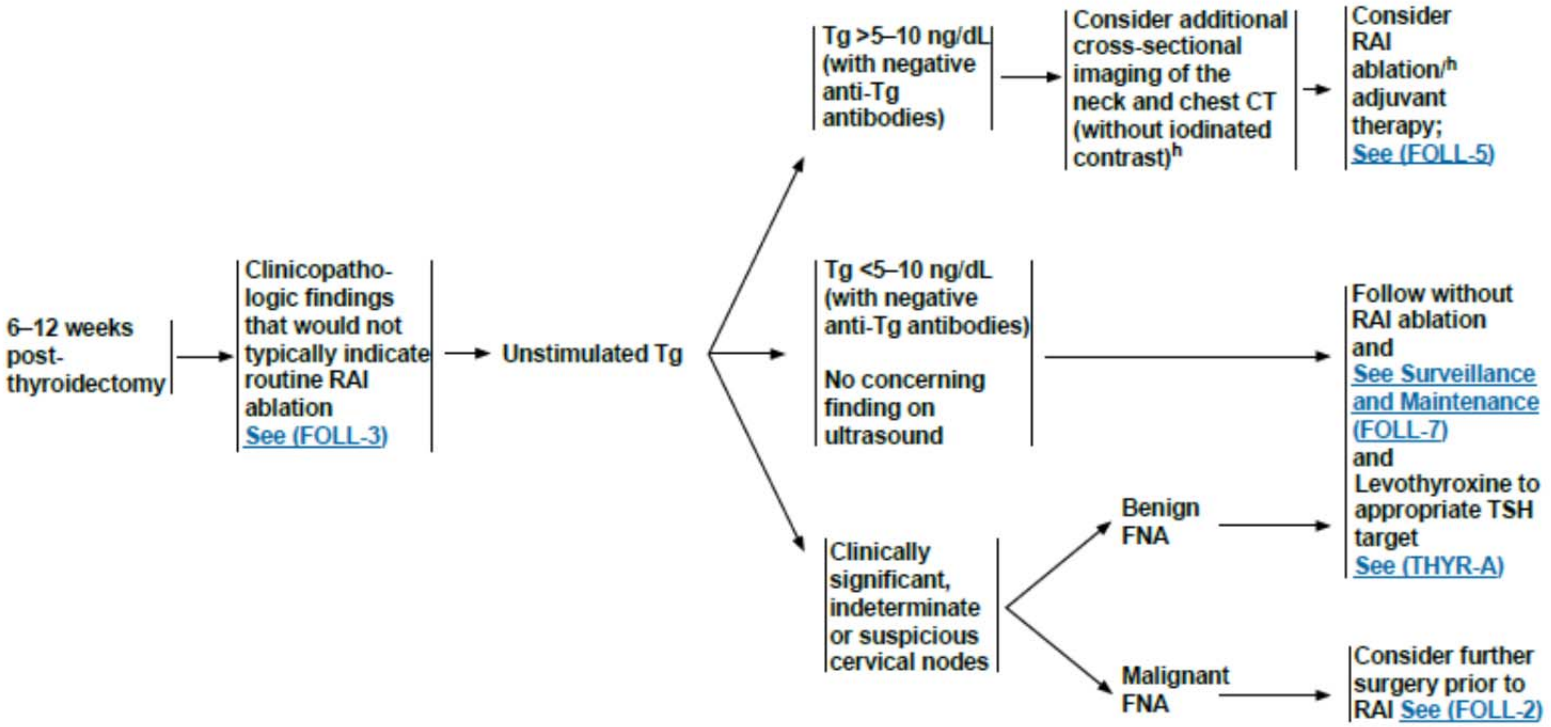


[h]If structural disease is identified, additional evaluation and/or treatment may be clinically indicated.

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