

**American College of Radiology
ACR Appropriateness Criteria®**

Thyroid Disease

Variant 1: Palpable thyroid nodule. Not goiter. Euthyroid. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
US thyroid	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	1	0	0	0	0	0	0	0	0	16
		References	Study Quality													
		16 (26462967)	4													
		8 (28372962)	4													
CT neck with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	4	4	4	0	3	3	5	1	0	0	0	
		References	Study Quality													
		7 (25456025)	4													
CT neck without IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	4	4	4	2	2	7	1	0	0	0	0	
		References	Study Quality													
		7 (25456025)	4													
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	7	1	2	3	2	1	1	0	0	
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	4	1	7	2	2	0	0	0	0	
I-123 uptake scan neck	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv		2	2	7	5	3	0	2	0	0	0	0	

I-131 uptake scan and Tc-99m pertechnetate scan neck	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv		2	2	6	6	4	0	1	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	11	1	2	1	1	0	1	0	0
		References		Study Quality											
		7 (25456025)		4											
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	13	3	0	0	0	0	1	0	0

Variant 2: Suspected goiter. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
US thyroid	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	1	0	0	0	0	0	0	0	0	16
		References		Study Quality												
		16 (26462967)		4												
		8 (28372962)		4												
CT neck without IV contrast	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	7	7	1	0	0	1	3	2	6	1	3	
		References		Study Quality												
		17 (24295043)		4												
CT neck with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	5	5	0	1	0	2	8	2	1	2	0	
		References		Study Quality												
		17 (24295043)		4												
I-123 uptake scan neck	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv		5	5	2	2	1	3	8	0	0	0	0	
		References		Study Quality												

			16 (26462967)		4												
			18 (4685532)		2												
MRI neck without IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	4	4	1	1	3	6	4	1	0	0	0		
MRI neck without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	4	4	1	3	1	8	3	0	0	0	0		
I-131 uptake scan and Tc-99m pertechnetate scan neck	May be appropriate	Limited	⊗⊗⊗⊗ 10-30 mSv		4	4	5	0	3	4	3	2	0	0	0		
		References			Study Quality												
			16 (26462967)		4												
			18 (4685532)		2												
CT neck without and with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	12	1	2	0	1	0	0	1	0		
		References			Study Quality												
			17 (24295043)		4												
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	2	0	0	0	0	0	1	0		

Variant 3: Thyrotoxicosis. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations										
							1	2	3	4	5	6	7	8	9		
US thyroid	Usually appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	9	9	0	1	0	0	0	1	2	1	12		
		References			Study Quality												
			24 (22440986)		4												
			21 (17381355)		4												
			22 (17437515)		4												
			19 (27521067)		4												

			23 (16356088)		2													
I-123 uptake scan neck	Usually appropriate	Limited	☹☹☹ 1-10 mSv		8	8	1	0	0	0	2	0	1	6	7			
			References		Study Quality													
			16 (26462967)		4													
			25 (26926973)		4													
			26 (21825836)		4													
			19 (27521067)		4													
I-131 uptake scan and Tc-99m pertechnetate scan neck	Usually appropriate	Limited	☹☹☹☹ 10-30 mSv		7	7	0	1	0	0	2	2	6	3	3			
			References		Study Quality													
			16 (26462967)		4													
			25 (26926973)		4													
			26 (21825836)		4													
			19 (27521067)		4													
CT neck with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	8	8	0	0	0	0	0	0	0			
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	7	2	0	3	3	1	1	0	0			
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	8	1	3	3	1	0	0	0	1			
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	8	2	2	1	3	0	0	0	1			
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	11	2	1	1	1	0	0	0	1			
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	15	1	0	0	0	0	0	0	1			

Variant 4: Primary hypothyroidism. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT neck with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	0	1	0	0	0	2	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	13	1	0	1	1	0	0	1	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	1	1	0	0	0	1
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	1	0	0	0	0	0	1
MRI neck without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	2	0	0	0	0	0	1
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	16	0	0	0	0	0	0	0	1
I-123 uptake scan neck	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	16	0	0	0	1	0	0	0	0
I-131 uptake scan and Tc-99m pertechnetate scan neck	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv		1	1	16	0	0	0	1	0	0	0	0
US thyroid	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	0	2	0	0	1	0	0	1

Variant 5: Preoperative evaluation of differentiated thyroid cancer.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US thyroid	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	9	9	0	1	0	0	0	0	2	3	11

References	Study Quality
31 (27007092)	2
29 (19696304)	2
30 (18358074)	2
28 (14668727)	2
32 (22863305)	2
33 (23554058)	2

CT neck with IV contrast	Usually appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	8	8	0	0	0	1	0	0	2	6	8
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References	Study Quality
16 (26462967)	4
34 (25188202)	4
30 (18358074)	2
32 (22863305)	2
33 (23554058)	2
12 (22827435)	3
11 (24295076)	4

MRI neck without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	6	6	1	0	0	0	5	5	2	4	0
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CT neck without IV contrast	May be appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	0	0	0	8	8	0	0	0	0
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References	Study Quality
34 (25188202)	4
30 (18358074)	2
32 (22863305)	2
33 (23554058)	2
12 (22827435)	3
11 (24295076)	4

MRI neck without IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	4	4	1	0	1	12	2	0	0	0	0
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FDG-PET/CT whole body	Usually not appropriate	Strong	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	4	2	7	3	0	0	0	0	0
		References	Study Quality												
		36 (19158200)	1												
		35 (16918964)	1												
CT neck without and with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	2	3	0	2	1	0	0	1
		References	Study Quality												
		34 (25188202)	4												
		30 (18358074)	2												
		32 (22863305)	2												
		33 (23554058)	2												
I-123 scan whole body	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	14	1	0	0	1	0	1	0	0
I-131 scan whole body	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv		1	1	14	1	0	0	0	1	1	0	0
Octreotide scan whole body	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv		1	1	14	2	0	0	0	0	1	0	0

Variant 6: Early imaging after treatment of differentiated thyroid cancer.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
US thyroid	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	9	9	0	0	0	0	0	0	0	0	0	16
		References	Study Quality													
		16 (26462967)	4													
I-123 scan whole body	May be appropriate	Limited	☼☼☼ 1-10 mSv		6	6	1	0	0	0	5	8	0	1	1	

		References		Study Quality											
		16 (26462967)		4											
CT neck with IV contrast	May be appropriate (Disagreement)	Expert Opinion	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	5	5	1	2	3	2	1	5	2	0	0
I-131 scan whole body	May be appropriate (Disagreement)	Expert Opinion	⊕⊕⊕⊕ 10-30 mSv		5	5	1	0	1	1	8	2	2	1	0
		References		Study Quality											
		16 (26462967)		4											
MRI neck without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	4	4	3	1	3	2	7	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	3	3	3	4	3	6	0	0	0	0	0
MRI neck without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	6	1	2	7	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	6	3	1	1	5	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	14	1	1	0	0	0	0	0	0
Octreotide scan whole body	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv		1	1	16	0	0	0	0	0	0	0	0
		References		Study Quality											
		16 (26462967)		4											

Variant 7: Suspected recurrence of differentiated thyroid cancer.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT neck with IV contrast	Usually	Strong	⊕⊕⊕ 1-10	⊕⊕⊕ 0.3-	9	9	0	0	0	1	1	0	1	5	9

MRI abdomen without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	3	1	1	3	7	2	0	0	0
		References	Study Quality												
		56 (26494385)	4												
		53 (17726071)	1												
		55 (27682648)	4												
MRI complete spine without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	3	10	3	0	0	0
		References	Study Quality												
		53 (17726071)	1												
		57 (15572422)	4												
FDG-PET/CT whole body	May be appropriate	Strong	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	1	0	0	2	7	4	3	0	0
		References	Study Quality												
		58 (22527889)	Good												
		59 (18375923)	1												
		62 (17892923)	4												
		61 (11801705)	3												
		60 (17401085)	2												
		63 (19156423)	4												
		64 (22223169)	2												
		65 (23081996)	3												
MRI neck without IV contrast	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	4	4	1	0	0	9	3	3	0	0	0
CT abdomen without IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	2	2	10	1	1	0	0	0	0
		References	Study Quality												
		54 (25810047)	4												
CT chest without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	14	0	2	0	0	0	0	0	0

		References	Study Quality												
		53 (17726071)	1												
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	1	1	0	0	0	0	0	0
I-123 scan whole body	Usually not appropriate	Limited	☼☼☼ 1-10 mSv		1	1	11	3	2	0	0	0	1	0	0
		References	Study Quality												
		62 (17892923)	4												
		61 (11801705)	3												
		66 (8683310)	4												
I-131 scan whole body	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv		1	1	11	2	3	0	0	0	0	1	0
		References	Study Quality												
		62 (17892923)	4												
		61 (11801705)	3												
		66 (8683310)	4												
DOTATATE PET/CT skull base to mid-thigh	Usually not appropriate	Limited	☼☼☼ 1-10 mSv		1	1	9	1	6	0	0	0	0	0	0
		References	Study Quality												
		67 (25369749)	3												
		69 (28429044)	2												
Octreotide scan whole body	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv		1	1	11	3	1	0	2	0	0	0	0
		References	Study Quality												
		62 (17892923)	4												
		61 (11801705)	3												
		66 (8683310)	4												

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality:** The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at www.acr.org/ac.