American College of Radiology ACR Appropriateness Criteria®

Thyroid Disease

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

	Appropri	iateness	207		_						F	inal '	Гаbu	latio	ns		
Procedure	Categ	gory	SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US thyroid	Usua approp		Limited	O 0 mSv	,	O 0 mSv [ped]	9	9	1	0	0	0	0	0	0	0	16
			References		•	Study	Quality		•	•	•			•			
			16 (26462967)				4										
			8 (28372962)				4										
CT neck with IV contrast	May approp		Limited	��� 1-10 mSv	0	��� 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 approp		Limited	��� 1-10 mSv	0	��� 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	Usuall approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	3	3	7	1	2	3	2	1	1	0	0
MRI neck without and with IV contrast	Usuall approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	3	3	4	1	7	2	2	0	0	0	0
I-123 uptake scan neck	Usuall approp		Expert Consensus	��� 1-10 mSv	0		2	2	7	5	3	0	2	0	0	0	0

I-131 uptake scan and Tc-99m pertechnetate scan neck	Usually approp	Expert Consensus	≎≎≎≎ 10-3 mSv	0	2	2	6	6	4	0	1	0	0	0	0
CT neck without and with IV contrast	Usually approp	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	11	1	2	1	1	0	1	0	0
		References		Stud	y Quality										
		7 (25456025)			4										
FDG-PET/CT whole body	Usually approp	Expert Consensus	≎≎≎≎ 10-3 mSv	0	1	1	13	3	0	0	0	0	1	0	0

Variant 2: Suspected goiter. Initial imaging.

D 1	Appropri	ateness	COF	A L L DDI	D I DDI	D 41	24.11			F	inal	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US thyroid	Usua approp		Limited	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	0	0	0	0	16
			References		Study	Quality										
			16 (26462967)			4										
			8 (28372962)			4										
CT neck without IV contrast	Usua approp		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 approp	be riate	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 approp		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 approp		Expert Consensus	O 0 mSv	O 0 mS ⁻	4	4	1	1	3	6	4	1	0	0	0
MRI neck without and with IV contrast	May approp		Expert Consensus	O 0 mSv	O 0 mS [ped]	4	4	1	3	1	8	3	0	0	0	0
I-131 uptake scan and Tc-99m pertechnetate scan neck	May approp	be oriate	Limited	���� 10- mSv	30	4	4	5	0	3	4	3	2	0	0	0
			References		St	udy Quality	•									
			16 (26462967)			4										
			18 (4685532)			2								_	_	
CT neck without and with IV contrast	Usuall approp		Limited	��� 1-1 mSv	0		1	12	1	2	0	1	0	0	1	0
			References		St	udy Quality										
			17 (24295043)			4										
FDG-PET/CT whole body	Usuall approp		Expert Consensus	���� 10- mSv	30 \$\$\$\$ 3 10 mSv [ped]		1	14	2	0	0	0	0	0	1	0

Variant 3: Thyrotoxicosis. Initial imaging.

Duran James	Appropri	ateness	COE	A J.,.14., D.D.	\T	D. J. DDI	D - 43	M - 1!			F	inal '	Гаbu	latio	ns		
Procedure	Categ		SOE	Adults RR	(L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US thyroid	Usua approp	.*	Moderate	O 0 mSv	/	O 0 mSv [ped]	9	9	0	1	0	0	0	1	2	1	12
			References			Study	Quality										
			24 (22440986)				4										

4

4

4

21 (17381355)

22 (17437515)

19 (27521067)

		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)	ı		4										
		25 (26926973)	ı		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	O 0 mSv	O 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	O 0 mSv	O 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.

	Appropriateness	COF		B 1 BB1	- ·	35.11			F	inal '	Гabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	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	O 0 mSv	O 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	O 0 mSv	O 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	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	0	0	1	0	0	1

Variant 5: Preoperative evaluation of differentiated thyroid cancer.

D 1	Appropriateness	COE	A L L DDI	D I DDI	D 4	3.6.11			F	inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US thyroid	Usually appropriate	Strong	O 0 mSv	O 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
		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	O 0 mSv	O 0 mSv [ped]	6	6	1	0	0	0	5	5	2	4	0
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
		References		Study	Quality										
		34 (25188202)			4										
		30 (18358074)			2										
		32 (22863305)			2										
		33 (23554058)			2										
		12 (22827435)			3										
		11 (24295076)			4					1					
MRI neck without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	1	0	1	12	2	0	0	0	0

FDG-PET/CT whole body	Usually approp	Strong	≎≎≎≎ 10- mSv	-30	���� 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 approp	Strong		0	���� 3- 10 mSv [ped]	2	2	8	2	3	0	2	1	0	0	1
		References			Study	Quality										
		34 (25188202)				4										
		34 (25188202) 30 (18358074)				2										
		32 (22863305)				2										
,		33 (23554058)				2										
I-123 scan whole body	Usually approp	Expert Consensus				1	1	14	1	0	0	1	0	1	0	0
I-131 scan whole body	Usually approp	Expert Consensus	���� 10- mSv	-30		1	1	14	1	0	0	0	1	1	0	0
Octreotide scan whole body	Usually approp	Expert Consensus	���� 10- mSv	-30		1	1	14	2	0	0	0	0	1	0	0

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

	Appropriateness	70D	A L L DDI	D I DDY	D (1	3.6.31			F	inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US thyroid	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	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 approp (Disagre	oriate	Expert Opinion	��� 1-10 mSv		5	5	1	2	3	2	1	5	2	0	0
I-131 scan whole body	May approp (Disagre	oriate	Expert Opinion	���� 10-3 mSv	30	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 approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	3	1	3	2	7	0	0	0	0
CT neck without IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv	9	3	3	3	4	3	6	0	0	0	0	0
MRI neck without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	6	1	2	7	0	0	0	0	0
FDG-PET/CT whole body	Usuall approp		Expert Consensus	���� 10-3 mSv	30	2	2	6	3	1	1	5	0	0	0	0
CT neck without and with IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv	●●●● 3- 10 mSv [ped]	1	1	14	1	1	0	0	0	0	0	0
Octreotide scan whole body	Usuall approp		Limited	���� 10-3 mSv	30	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.

D 1	Appropriateness	COF	A L L DDI	D 1 DD1		3.6.31			F	inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT neck with IV contrast	Usually	Strong	२० २० 1-10	��� 0.3-	9	9	0	0	0	1	1	0	1	5	9

Procedure	Appropriateness	SOE	Adults RRL	Peds RRL	Median					Fabu					
	Category				Rating		1	2	3	4	5	6	7	8	9
	appropriate		mSv	3 mSv [ped]											
		References		Study	y Quality										
		29 (19696304)			2										
		33 (23554058)	ı		2										
		12 (22827435)	ı		3										
		11 (24295076)	ı		4										
		48 (18408961)			2										
US thyroid	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	1	0	0	0	1	0	15
		References		Study	y Quality		•								
		28 (14668727)			2										
I-123 scan whole body	Usually appropriate	Limited	��� 1-10 mSv		8	8	0	0	0	0	2	2	2	10	0
		References		Study	y Quality			•		•					
		16 (26462967)			4										
		40 (22310247)			2										
		41 (11139058)			4										
MRI neck without and with IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	1	4	2	8	1	0
CT chest with IV contrast	May be appropriate	Limited	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	6	6	0	0	0	3	2	8	3	0	0
		References		Study	y Quality										
		16 (26462967)			4										
CT chest without IV contrast	May be appropriate	Limited	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	6	6	0	0	0	3	3	7	3	0	0
		References		Study	y Quality										
		16 (26462967)			4										

FDG-PET/CT whole body	May be appropriate			30	6	6	0	0	1	1	3	7	4	0	1
		References		Stud	y Quality					•					
		36 (19158200)			1										
		50 (22985118)			2										
		6 (21118976)			2										
		49 (21220972)			4										
I-131 scan whole body	May be appropriate	Limited	���� 10-3 mSv	30	6	6	0	0	0	1	3	8	4	0	0
		References		Stud	y Quality										
		16 (26462967)			4										
		40 (22310247)													
		41 (11139058)			4										
CT neck without IV contrast	May be appropriate	Strong	��� 1-10 mSv	0	5	5	1	0	2	2	7	3	1	0	0
		References		Stud	y Quality										
		29 (19696304)			2										
		33 (23554058)			2										
		48 (18408961)			2										
MRI neck without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	5	9	0	1	0	0
CT chest without and with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	0	1	1	13	1	0	0	2	0	0	0	0
		References		Stud	y Quality										
		16 (26462967)			4										
CT neck without and with IV contrast	Usually not appropriate	Strong	��� 1-10 mSv	0	1	1	14	2	0	0	0	0	0	0	0
		References		Stud	y Quality										
		29 (19696304)			2										

		33 (23554058)		2										
		48 (18408961)		2										
Octreotide scan whole body	Usually appropri	Expert Consensus	���� 10-30 mSv	1	1	14	2	0	0	0	0	1	0	0

Variant 8: Suspected recurrence of medullary thyroid cancers.

Due codune	Appropriateness	COE	A Julea DDI	Dodg DDI	Madian			F	inal '	Tabu	latio	ns			
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US thyroid	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	1	0	0	1	0	15
		References		Study	Quality										
		53 (17726071)			1										
		52 (25368270)			3										
		51 (12771918)			3										
CT neck with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	8	8	0	0	1	0	1	0	0	8	7
		References		Study	Quality										
		54 (25810047)			4										
		52 (25368270)			3		_								
CT chest with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	7	7	0	0	0	0	3	5	2	5	1
		References		Study	Quality										
		53 (17726071)			1										
MRI neck without and with IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	3	2	9	1	2
CT abdomen with IV contrast	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	6	6	0	1	0	1	6	8	0	0	0
		References		Study	Quality										

			54 (25810047)				4										
CT abdomen without and with IV contrast	May be appropria		Limited	���� 10-3 mSv	0 10 m	-30 Sv ed]	6	6	1	0	0	0	3	11	1	0	0
			References			Study	Quality										
			54 (25810047)				4										
MRI abdomen without and with IV contrast	May be appropria		Limited	O 0 mSv		mSv ed]	6	6	0	0	0	0	5	7	4	0	0
			References			Study	Quality										
			56 (26494385)				4										
			53 (17726071)				1										
			55 (27682648)				4										
MRI complete spine without and with IV contrast	May be appropria	e ate	Limited	O 0 mSv		mSv ed]	6	6	0	0	0	0	2	7	5	3	0
			References			Study	Quality										
			53 (17726071)				1										
			57 (15572422)				4										
Bone scan whole body	May be appropria		Limited	≎≎≎ 1-10 mSv	10 r	∂ ⊕ 3- mSv ed]	6	6	0	0	0	1	4	8	3	1	0
			References			Study	Quality										
			16 (26462967)				4										
CT chest without IV contrast	May be appropria		Limited	≎≎≎ 1-10 mSv	10 ı	€€ 3- mSv ed]	5	5	0	0	1	4	4	5	2	0	0
			References			Study	Quality										
			53 (17726071)				1										
CT neck without IV contrast	May be appropria		Limited	��� 1-10 mSv	3 n	∂ 0.3- nSv ed]	5	5	1	0	2	5	7	1	0	0	0
			References			Study	Quality										
			54 (25810047)				4										
			52 (25368270)				3										

MRI abdomen without IV contrast	May be appropria	e ate	Limited	O 0 mSv	,	O 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 appropria		Limited	O 0 mSv	,	O 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 appropria		Strong	���� 10- mSv	30	���� 3- 10 mSv [ped]	5	5	1	0	0	2	7	4	3	0	0
			References			Study	Quality										
			58 (22527889)			C	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 appropria		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	4	4	1	0	0	9	3	3	0	0	0
CT abdomen without IV contrast	Usually n appropria	not ate	Limited	��� 1-1 mSv	0	���� 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 n appropria		Limited	��� 1-1 mSv	0	���� 3- 10 mSv [ped]	1	1	14	0	2	0	0	0	0	0	0

			Study	Quality										
	53 (17726071)			1										
	Expert Consensus	��� 1-10 mSv	ଡେଡେଡେ 3- 10 mSv [ped]	1	1	14	1	1	0	0	0	0	0	0
	Limited	��� 1-10 mSv		1	1	11	3	2	0	0	0	1	0	0
	References		Study	Quality										
	62 (17892923)			4										
61 (11801705)														
	66 (8683310)			4										
	Limited	���� 10-3 mSv	0	1	1	11	2	3	0	0	0	0	1	0
	References		Study	Quality		•								
	62 (17892923)			4										
	61 (11801705)			3										
	66 (8683310)			4										
	Limited	��� 1-10 mSv		1	1	9	1	6	0	0	0	0	0	0
	References		Study	Quality										
	67 (25369749)			3										
	69 (28429044)			2										
	Limited	���� 10-3 mSv	0	1	1	11	3	1	0	2	0	0	0	0
	References		Study	Quality		_			_					
	62 (17892923)			4										
	61 (11801705)			3										
66 (8683310)				4										
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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.