American College of Radiology ACR Appropriateness Criteria®

Staging and Follow-up of Esophageal Cancer

Variant 1: Newly diagnosed esophageal cancer. Pretreatment clinical staging. Initial imaging.

	Appropria	ateness	SOE Adults RRL Peds RRL Rating Median								F	inal	Tabu	latio	ns		
Procedure	Catego	ory	SOE	Adults RR	aL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
FDG-PET/CT skull base to mid-thigh	Usual appropr		Strong	���� 10- mSv	30	���� 3- 10 mSv [ped]	8	8	0	1	0	0	2	0	4	5	6
			References			Study	Quality										
			2 (29179897)				4										
		13 (20379789) 10 (29153370)					2										
			10 (29153370)			2											
			8 (28363659)				2										
		17 (24389439)					2										
			16 (21964582)				2										
			14 (19379906)				2										
			18 (19184245)				2										
			11 (15181133)				2										
			15 (15365078)			Inac	lequate										
CT chest and abdomen with IV contrast	Usual appropr		Strong	���� 10- mSv	30		7	7	1	0	1	0	3	4	2	5	2
			References			Study	Quality										
		References 10 (29153370)					2										
		10 (29153370) 8 (28363659)				·	2										
			12 (26008856)			·	2										
			7 (20033712)				2										

		4 (6849089)			2										
		5 (1898802)			2										
		6 (18330935)		G	lood										
		9 (-3194704)			4										
		11 (15181133)			2										
CT chest abdomen pelvis with IV contrast	May be appropriate (Disagreement)	Expert Opinion	���� 10-3 mSv	0	5	5	1	0	1	4	7	3	2	0	0
		References		Study	Quality										
		12 (26008856)			2										
		11 (15181133)			2										
MRI chest and abdomen without and with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	4	4	0	0	1	13	4	0	0	0	0
		References		Study	Quality		•	•							
		21 (28799124)		2											
		20 (27767330)		2											
		22 (26315570)			2										
FDG-PET/MRI skull base to midthigh	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	4	4	0	0	1	9	7	0	1	0	0
		References		Study	Quality		-								
		19 (24868109)			2										
MRI chest and abdomen without IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	6	3	5	1	1	2	0	0	0
		References		Study	Quality										
		21 (28799124)			2										
		20 (27767330)			2										
		20 (27767330) 22 (26315570)			2										
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Strong	���⊕ 10-3 mSv	0	2	2	8	5	3	0	1	0	1	0	0
		References	Study	Quality											
		12 (26008856)		2											

			11 (15181133)				2										
CT chest abdomen pelvis without and with IV contrast	Usually approp		Strong	���� 10-3 mSv	&	.30 Sv	2	2	9	5	2	1	0	1	0	0	0
			References			Study	Quality										
			12 (26008856)				2										
			11 (15181133)				2										
CT chest and abdomen without IV contrast	Usually approp	y not riate	Strong	���� 10-3 mSv	30		2	2	6	5	1	2	2	0	1	1	0
			References			Study	Quality										
			10 (29153370)				2										
			8 (28363659)				2										
			12 (26008856)				2										
			7 (20033712)				2										
			4 (6849089)		2												
	-		5 (1898802)				2										
	_		6 (18330935)			C	Good										
	-		9 (-3194704)				4										
			11 (15181133)				2	T			ı				ı	1	
CT chest and abdomen without and with IV contrast	Usually approp		Strong	���� 10-3 mSv	30		2	2	8	3	2	3	0	1	0	1	0
			References			Study	Quality										
			10 (29153370)				2										
			8 (28363659)				2										
			12 (26008856)				2										
			7 (20033712)				2										
			4 (6849089)				2										
			5 (1898802)				2										
			6 (18330935)			(Good										
	_		9 (-3194704)				4										
			11 (15181133)				2										

Fluoroscopy upper GI series	Usually not appropriate	Expert Consensus	୫୫୫ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	2	1	0	1	0	1	0	0
Radiography chest	Usually not appropriate	Expert Consensus	⊕ <0.1 mSv		1	1	15	2	0	1	0	0	0	0	0

Variant 2: Esophageal cancer. Imaging during treatment.

	Appropr	opriateness SOE Adults RRL Peds RRL Rating Medi					3.5.11			I	inal '	Tabu	latio	ns			
Procedure	Categ	gory	SOE	Adults RR	(L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
FDG-PET/CT skull base to mid-thigh	Usua approp		Strong	≎≎≎≎ 10- mSv	30	���� 3- 10 mSv [ped]	7	7	0	1	0	0	3	5	4	5	0
			References			Study	Quality										
			26 (30111193)				2										
			33 (29917073)				4										
			29 (19953708)				2										
			27 (29533721)			2											
			30 (25351460)			2											
			30 (25351460) 31 (23470576)				2										
			28 (21221582)				2										
			25 (16118165)				4										
	1		32 (21233607)				2										
MRI chest and abdomen without and with IV contrast	May approp	be oriate	Strong	O 0 mSv	/	O 0 mSv [ped]	4	4	0	2	0	10	6	0	0	0	0
			References			Study	Quality										
			References 35 (30091709)				2										
			35 (30091709) 36 (27838148)				2										
			36 (2/838148) 37 (30673335)				2										
			34 (27296409)			2											

FDG-PET/MRI skull base to midthigh	May approp	Expert Consensus	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	4	4	1	5	1	5	5	0	1	0	0
CT chest and abdomen with IV contrast	Usuall approp	Strong	≎≎≎≎ 10- mSv	30		3	3	2	6	4	4	1	1	0	0	0
		References			Study	Quality										
		24 (23645329)				2										
		23 (21944048)				2										
		25 (16118165)				4										
CT chest abdomen pelvis with IV contrast	Usuall approp	Expert Consensus	���� 10- mSv	30	���� 3- 10 mSv [ped]	2	2	3	8	4	3	0	0	0	0	0
CT chest abdomen pelvis without IV contrast	Usuall approp	Expert Consensus	���� 10- mSv	30	���� 3- 10 mSv [ped]	2	2	9	6	1	0	0	1	1	0	0
CT chest abdomen pelvis without and with IV contrast	Usuall approp	Expert Consensus	ଡଡ଼େଡ 10-30 mSv		\$\$\$\$\$ 10-30 mSv [ped]	2	2	9	4	3	1	0	1	0	0	0
CT chest and abdomen without IV contrast	Usuall approp	Strong	���� 10- mSv	30		2	2	5	9	3	0	1	0	0	0	0
		References			Study	Quality										
		24 (23645329)				2										
		23 (21944048)				2										
		25 (16118165)			T	4										
CT chest and abdomen without and with IV contrast	Usuall approp	Strong	���� 10- mSv	30		2	2	8	6	1	1	0	0	2	0	0
		References			Study	Quality										
		24 (23645329)				2										
		23 (21944048)				2										
		25 (16118165)				4		_								
MRI chest and abdomen without IV contrast	Usuall approp	Strong	O 0 mSv	,	O 0 mSv [ped]	2	2	5	5	5	1	0	1	0	0	1

		References		Study	y Quality											
		35 (30091709)			2											
		36 (27838148)			2											
		37 (30673335)			2											
		34 (27296409)			2											
Fluoroscopy upper GI series	Usuall approp	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	2	2	0	0	0	1	0	0	
Radiography chest	Usuall approp	Expert Consensus	� <0.1 mSv	♦ <0.03	1	1	16	2	0	0	0	0	0	0	0	

Variant 3: Esophageal cancer. Posttreatment imaging. No suspected or known recurrence.

Due es June	Appropriateness	ess SOE Adults RRL		T Doda D	Dating	Madian			F	inal '	Tabu	llatio	ns		
Procedure	Category	SUE	Adults RR	L Peds R	RL Rating	Median	1	2	3	4	5	6	7	8	9
FDG-PET/CT skull base to mid-thigh	Usually appropriate	Limited	≎≎≎≎ 10- mSv	30 \$\$\$\$ 10 m\$ [ped	v 7	7	0	0	0	1	2	0	7	6	2
		References			Study Quality										
		41 (29125331)			2										
		42 (25952733)			4										
CT chest and abdomen with IV contrast	Usually appropriate	Strong	���� 10- mSv	30	7	7	1	0	0	0	2	5	3	5	2
		References		ı	Study Quality										
		40 (24649807)			4										
		39 (19023632)			2										
		38 (15286962)			2					_	_				
CT chest abdomen pelvis with IV contrast	May be appropriate	Expert Consensus	���� 10- mSv	30	6 6	6	1	0	0	5	3	1	7	1	0

CT chest abdomen pelvis without IV contrast	Usuall approp	Expert Consensus	���� 10-3 mSv	0	2	2	9	6	1	0	0	1	1	0	0
CT chest and abdomen without IV contrast	Usuall approp	Strong	���� 10-3 mSv	0	2	2	4	11	2	1	0	0	0	0	0
		References		Study	Quality										
		40 (24649807)			4										
		39 (19023632)			2										
		38 (15286962)			2										
CT chest and abdomen without and with IV contrast	Usuall approp	Strong	���� 10-3 mSv	0	2	2	6	9	1	1	1	0	0	0	0
		References		Study	Quality										
		40 (24649807)			4										
		39 (19023632)			2										
		38 (15286962)			2										
FDG-PET/MRI skull base to mid-thigh	Usuall approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	9	5	2	0	1	1	0	0	0
CT chest abdomen pelvis without and with IV contrast	Usuall approp	Expert Consensus	���� 10-3 mSv	***	1	1	11	4	1	1	0	1	0	0	0
Fluoroscopy upper GI series	Usuall approp	Expert Consensus	��� 1-10 mSv		1	1	13	2	2	0	0	1	0	0	0
Radiography chest	Usuall approp	Expert Consensus	⊕ <0.1 mSv		1	1	16	2	0	0	0	0	0	0	0
MRI chest and abdomen without IV contrast	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	4	3	0	0	0	0	0	1
MRI chest and abdomen without and with IV contrast	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	4	1	2	1	0	0	0	0

Variant 4: Esophageal cancer. Posttreatment imaging. Suspected or known recurrence.

	Appropriate	eness	G0=								F	inal	Tabu	latio	ns		
Procedure	Categor		SOE	Adults RR	RL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
FDG-PET/CT skull base to mid-thigh	Usually appropria		Limited	���� 10- mSv	-30	���� 3- 10 mSv [ped]	8	8	0	0	1	0	0	1	4	8	4
			References			Study	Quality										
			42 (25952733)				4										
			43 (24435775)				2										
CT chest and abdomen with IV contrast	Usually appropria		Limited	���� 10- mSv	-30		7	7	1	0	1	0	2	0	7	6	1
			References		Study Quality 2				•	•		•	•	•		•	
			43 (24435775)				2										
CT chest abdomen pelvis with IV contrast	May be appropria (Disagreem	ate	Expert Opinion	���� 10- mSv	-30	���� 3- 10 mSv [ped]	5	5	1	0	1	2	6	2	3	3	0
MRI head without and with IV contrast	Usually n appropria		Expert Consensus	O 0 mS\	/	O 0 mSv [ped]	3	3	8	1	1	2	4	1	0	1	0
CT chest abdomen pelvis without IV contrast	Usually n appropria		Expert Consensus	≎≎≎≎ 10- mSv	-30	���� 3- 10 mSv [ped]	2	2	8	5	3	0	0	1	1	0	0
MRI head without IV contrast	Usually n appropria		Expert Consensus	O 0 mS\	/	O 0 mSv [ped]	2	2	9	3	3	1	1	0	0	0	1
CT chest and abdomen without IV contrast	Usually n appropria		Limited	���� 10- mSv	-30		2	2	4	9	3	1	0	1	0	0	0
			References			Study	Quality		•	•	•	•	•	•	•	•	
			43 (24435775)		Study Quanty 2												
CT chest and abdomen without and with IV contrast	Usually n appropria		Limited	���� 10- mSv	-30		2	2	9	3	3	1	0	0	1	1	0
			References		Study Quality				_								
			43 (24435775)		2												

MRI chest and abdomen without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	3	4	2	0	0	0	0	0
MRI chest and abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	3	3	2	1	0	0	0	1
FDG-PET/MRI skull base to mid-thigh	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	4	6	3	3	1	1	0	0	0
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	≎≎≎≎≎ 10-30 mSv [ped]	1	1	10	5	1	1	0	1	0	0	0
Fluoroscopy upper GI series	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	3	1	0	0	1	0	0	0
Radiography chest	Usually not appropriate	Expert Consensus	⊕ <0.1 mSv		1	1	16	2	0	0	0	0	0	0	0

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.