## American College of Radiology ACR Appropriateness Criteria®

## **Hydronephrosis on Prior Imaging-Unknown Cause**

Variant 1: Adult. Asymptomatic unilateral hydronephrosis with unknown cause. Initial imaging.

D 1	Appropria	ateness	COF	4.1.4. DD		D I DDI	D (1	3.6.11			F	inal	Tabu	latio	ns		
Procedure	Catego	ory	SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTU without and with IV contrast	Usual appropi		Expert Consensus	<b>���</b> � 10- mSv	30	����� 10-30 mSv [ped]	7	7	0	1	0	4	1	0	7	1	1
MRU without and with IV contrast	Usual appropi		Strong	O 0 mSv	′	O 0 mSv [ped]	7	7	0	0	0	0	1	3	8	1	2
			References			Study	Quality										
			14 (25102294)				2										
			13 (31237781)				2					_					
MAG3 renal scan	Usual appropi		Limited		0	��� 0.3- 3 mSv [ped]	7	7	0	0	1	0	1	1	7	2	3
			References			Study	Quality										
			11 (24591488)				4										
			10 (25444983)				2										
			12 (8917195)				4										
CT abdomen and pelvis with IV contrast	May appropri (Disagree	riate	Expert Opinion	��� 1-1 mSv	0	���� 3- 10 mSv [ped]	5	5	1	0	5	3	3	0	3	0	0
MRU without IV contrast	May appropi		Limited	O 0 mSv	′	O 0 mSv [ped]	5	5	0	1	0	6	5	2	1	0	0
		References			Study	Quality											

15 (20729416) 4 DTPA renal scan May be **₩₩** 0.3-**२० २०** 1-10 **Expert Opinion** appropriate 3 mSv 5 5 1 0 9 0 3 0 0 1 mSv (Disagreement) [bed] Study Quality References 11 (24591488) 4 2 13 (31237781) 10 (25444983) 2 12 (8917195) 4 CT abdomen and pelvis without **₩₩₩** 3-**२० २०** 1-10 May be Expert 10 mSv 0 8 5 0 0 0 0 IV contrast 4 1 4 appropriate Consensus mSv [ped] US color Doppler kidneys and May be O 0 mSv Expert O 0 mSv 4 0 0 7 3 4 0 0 0 4 1 bladder retroperitoneal [ped] appropriate Consensus CT abdomen and pelvis without  $\odot$ and with IV contrast Usually not **⊕⊕⊕⊕** 10-30 10-30 Expert 3 3 7 0 7 0 0 0 mSv mSv appropriate Consensus [ped] MRI abdomen without IV contrast Usually not O 0 mSv Expert O 0 mSv 3 5 2 0 2 3 5 1 0 0 0 [ped] appropriate Consensus MRI abdomen and pelvis without O 0 mSv Usually not Expert O 0 mSv 3 3 3 2 7 3 0 0 0 0 0 IV contrast Consensus [ped] appropriate MRI abdomen and pelvis without Usually not O 0 mSv Expert O 0 mSv 3 3 2 3 0 1 1 7 0 0 and with IV contrast appropriate [ped] Consensus US abdomen Usually not O 0 mSv Expert O 0 mSv 3 3 2 2 5 3 0 0 appropriate Consensus [ped] **₩₩₩** 3-CT abdomen with IV contrast Usually not **Expert २० २०** 1-10 10 mSv 2 2 7 3 2 0 0 0 appropriate mSv Consensus [ped] **∞∞∞∞** 3-CT abdomen without IV contrast Usually not **⊕⊕⊕** 1-10 Expert 2 2 6 3 2 1 0 0 10 mSv appropriate Consensus mSv [ped]

Radiography intravenous urography	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	6	4	2	1	1	0	1	0	0
MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	4	3	1	0	0	2	0	0
Fluoroscopy antegrade pyelography	Usually not appropriate	Expert Consensus	��� 1-10 mSv		2	2	7	4	2	1	1	0	0	0	0
CT abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	ଡେଡଡ 10-30 mSv	\$\$\$\$\$ 10-30 mSv [ped]	1	1	8	2	2	0	1	1	1	0	0
Fluoroscopy voiding cystourethrography	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	1	1	8	4	2	0	1	0	0	0	0
Radiography abdomen and pelvis	Usually not appropriate		<b>≎≎≎</b> 1-10 mSv	��� 0.3- 3 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

Variant 2: Adult. Asymptomatic bilateral hydronephrosis or asymptomatic hydronephrosis in a solitary kidney with unknown cause. Initial imaging.

D 1	Appropri	Appropriateness SOE Adults RRL Peds RRL Rating	3.6 11			I	inal	Tabu	latio	ns							
Procedure	Categ	gory	SOE	Adults KR	KL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRU without and with IV contrast	Usua approp		Strong	O 0 mSv	/	O 0 mSv [ped]	7	7	0	0	0	2	0	2	7	3	1
			References 14 (25102294)			Study	Quality										
			14 (25102294)				2										
			13 (31237781)				2										
MAG3 renal scan	Usua approp		Limited ⊕⊕⊕ 1-		0	��� 0.3- 3 mSv [ped]	7	7	0	0	1	0	0	0	9	2	3
			References			Study	Quality										
			11 (24591488)				4										
			2 (29287975)				4										

			10 (25444983)	·													
			12 (8917195)				4										
CT abdomen and pelvis with IV contrast	May approp (Disagre	riate	Expert Opinion	��� 1-1 mSv	0	���� 3- 10 mSv [ped]	5	5	0	0	6	3	2	2	2	0	0
CT abdomen and pelvis without IV contrast	May approp		Expert Consensus	��� 1-1 mSv	0	���� 3- 10 mSv [ped]	5	5	0	1	1	2	5	6	0	0	0
CTU without and with IV contrast	May approp (Disagre	riate	Expert Opinion	<b>≎≎≎≎</b> 10- mSv	-30	����� 10-30 mSv [ped]	5	5	1	1	2	2	0	1	4	4	0
MRU without IV contrast	May approp		Limited	O 0 mSv	,	O 0 mSv [ped]	5	5	0	1	0	3	6	5	0	0	0
			References			Study	Quality										
			15 (20729416)				4										
DTPA renal scan	May approp (Disagre	riate	Expert Opinion	��� 1-1 mSv	0	��� 0.3- 3 mSv [ped]	5	5	0	1	2	1	6	3	2	0	0
			References			Study	Quality										
			11 (24591488)				4										
			13 (31237781)				2										
			10 (25444983)				2										
			12 (8917195)				4			,							
MRI abdomen without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	3	3	3	4	4	2	1	1	0	0	0
MRI abdomen and pelvis without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	3	3	4	2	8	0	1	0	0	0	0
MRI abdomen and pelvis without and with IV contrast	Usuall approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	3	3	1	0	7	1	3	2	1	0	0
US abdomen	Usuall approp		Expert Consensus	O 0 mSv	/	O 0 mSv [ped]	3	3	2	3	5	3	2	0	0	0	0

Fluoroscopy antegrade pyelography	Usually not appropriate	Expert Consensus	��� 1-10 mSv		3	3	4	3	4	2	1	0	1	0	0
US color Doppler kidneys and bladder retroperitoneal	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	0	0	8	2	5	0	0	0	0
CT abdomen with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	6	4	2	0	2	1	0	0	0
CT abdomen without IV contrast	Usually not appropriate	Expert Consensus	<b>≎≎≎</b> 1-10 mSv	���� 3- 10 mSv [ped]	2	2	5	4	2	2	1	1	0	0	0
CT abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	<b>≎≎≎≎≎</b> 10-30 mSv [ped]	2	2	7	3	2	0	1	2	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	<b>99999</b> 10-30 mSv [ped]	2	2	5	5	5	0	0	0	0	0	0
Radiography intravenous urography	Usually not appropriate	Expert Consensus	<del>ଡିଡିଡି</del> 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	7	3	1	1	2	0	1	0	0
Fluoroscopy voiding cystourethrography	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	2	2	7	2	3	1	1	0	1	0	0
MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	3	6	2	1	2	0	1	0	0
Radiography abdomen and pelvis	Usually not appropriate		<b>≎≎≎</b> 1-10 mSv	��� 0.3- 3 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0

Variant 3: Adult. Symptomatic hydronephrosis with unknown cause. Initial imaging.

Day on Laws	Appropriateness	SOE	Adults RRL Peds RRL Rating	M - 32			F	inal T	Гаbu	latio	ns				
Procedure	Category	SOE	Adults RRL	Peas RRL	Kating	Median	1	2	3	4	5	6	7	8	9
CTU without and with IV contrast	Usually	Limited	<b>⊕⊕⊕⊕</b> 10-30	***	7	7	0	0	0	1	4	2	4	3	1

ъ .	Appropriateness	COL	A L L DDY	D I DDI	<b>.</b>	3.6.11			I	inal '	Tabu	latio	ıs		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
	appropriate		mSv	10-30 mSv [ped]											
		References		Study	y Quality										
		28 (29399012)			3										
MRU without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	3	3	5	2	1
		References		Study	y Quality										
		14 (25102294)			2										
		17 (30853305)			4										
		28 (29399012)			3										
		13 (31237781)			2										
		29 (25249333)			4										
MAG3 renal scan	Usually appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	7	7	0	0	1	0	1	2	5	4	2
		References		Study	y Quality										
		11 (24591488)			4										
		2 (29287975)			4										
		10 (25444983)			2										
		12 (8917195)			4										
US color Doppler kidneys and bladder retroperitoneal	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	1	0	1	0	0	4	5	1	3
		References		Study	y Quality										
		33 (25254610)			3										
		41 (23503878)			3										
		25 (28611874)			1										
		36 (29427476)		(	Good										
	38 (26177650)				3										
		40 (27154825)			3										

							1								
		17 (30853305)			4										
		35 (33051735)			3										
		22 (29663580)			2										
		37 (24578772)			3										
		39 (25219987)			3										
		16 (34304393)			3										
CT abdomen and pelvis without IV contrast	May be appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	6	6	0	0	0	1	3	4	5	1	1
		References		Study	Quality										
		19 (27369294)			2										
		24 (31535518)			4										
		23 (26747219)			3										
		27 (27533351)			3										
		25 (28611874)			1										
		17 (30853305)			4										
		21 (24440589)			3										
		22 (29663580)			2										
		18 (34773812)			2										
		26 (31958894)			3										
		16 (34304393)			3										
CT abdomen and pelvis with IV contrast	May be appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	0	1	9	2	3	0	0
		References		Study	Quality										
		19 (27369294)			2										
		20 (29675722)			3										
		17 (30853305)			4										
		21 (24440589)			3										
		22 (29663580)			2										
		18 (34773812)		2											
		16 (34304393)			3										

MRU without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	5	3	5	2	0	0
		References		Study	y Quality										
		31 (23532422)			3										
		30 (23290346)			2										
		17 (30853305)			4										
		15 (20729416)			4										
		29 (25249333)			4										
DTPA renal scan	May be appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	5	5	0	1	2	1	9	2	0	0	0
		References		Study	y Quality		•				•	•			
		11 (24591488)			4										
		13 (31237781)			2										
		10 (25444983)			2										
		12 (8917195)		4											
US abdomen	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	3	5	1	1	2	2	1	0	0
MRI abdomen and pelvis without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	1	2	4	3	4	0	1	0	0
MRI abdomen and pelvis without and with IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	0	1	4	3	3	3	1	0	0
CT abdomen with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	5	2	2	2	2	2	0	0	0
CT abdomen without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	5	2	2	3	1	2	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Strong	ଡେଡେଡ 10-30 mSv	\$\$\$\$\$\$ 10-30 mSv [ped]	3	3	0	2	8	1	0	3	1	0	0
	References				y Quality		•								

	1															
		19 (27369294)				2										
		20 (29675722)				3										
		23 (26747219)				3										
		17 (30853305)				4										
		21 (24440589)				3										
		22 (29663580)				2										
	ĺ	18 (34773812)				2										
	Ì	16 (34304393)				3										
MRI abdomen without IV contrast	Usually approp	Expert Consensus	O 0 mSv		O 0 mSv [ped]	3	3	4	3	4	1	1	2	0	0	0
CT abdomen without and with IV contrast	Usually approp	Expert Consensus	���� 10-3 mSv	30	\$\$\$\$\$ 10-30 mSv [ped]	2	2	7	5	3	0	0	0	0	0	0
Radiography intravenous urography	Usually approp	Limited	BBB 1 10			2	2	7	2	1	1	2	1	1	0	0
		References			Study	Quality										
		6 (28461996)				4										
Fluoroscopy voiding cystourethrography	Usually approp	Expert Consensus	�� 0.1-1m	Sv	�� 0.03- 0.3 mSv [ped]	2	2	7	2	3	1	1	0	1	0	0
MRI abdomen without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv		O 0 mSv [ped]	2	2	6	3	6	0	0	0	0	0	0
Radiography abdomen and pelvis	Usually approp		��� 1-10 mSv	)	��� 0.3- 3 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
Fluoroscopy antegrade pyelography	Usually approp	Expert Consensus	��� 1-10 mSv	)		2	2	6	3	2	1	2	0	1	0	0

Variant 4: Adult. Asymptomatic hydronephrosis in a pregnant patient with unknown cause. Initial imaging.

D 1	Appropri	iateness	COF	4 1 14 DD		D I DDI	D. (*	3.7.11			F	inal	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR	IL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US color Doppler kidneys and bladder retroperitoneal	Usua approp		Limited	O 0 mSv	′	O 0 mSv [ped]	9	9	0	0	0	0	0	0	3	4	8
			References			Study	Quality										
			17 (30853305)				4										
			4 (23455540)				3										
			43 (33328069)				4										
			5 (33754607)				4										
US abdomen	May approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	6	6	0	0	0	1	3	7	4	0	0
MRI abdomen and pelvis without IV contrast	May approp (Disagre	oriate	ate Expert Opinion nent)		,	O 0 mSv [ped]	5	5	1	0	3	4	5	0	2	0	0
MRU without IV contrast	May approp		Limited	O 0 mSv	,	O 0 mSv [ped]	5	5	0	1	0	1	10	1	2	0	0
			References			Study	Quality										
			15 (20729416)				4		_								
MRI abdomen without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	,	O 0 mSv [ped]	2	2	6	7	1	0	0	0	1	0	0
DTPA renal scan	Usuall approp		Strong	��� 1-10 mSv	0	��� 0.3- 3 mSv [ped]	2	2	6	2	2	3	1	1	0	0	0
			References			Study	Quality										
			11 (24591488)				4										
			13 (31237781)				2										
			10 (25444983)				2										
			12 (8917195)				4										
MAG3 renal scan	Usuall approp		Limited	��� 1-10 mSv	0	��� 0.3- 3 mSv [ped]	2	2	5	3	2	3	1	1	0	0	0
		References				Study	Quality										

11 (24591488)	4
10 (25444983)	2

		10 (25444983)			2										
CT abdomen with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	0	4	0	0	1	0	0	0
CT abdomen without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	10	1	3	0	0	1	0	0	0
CT abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	1	1	10	1	3	0	0	1	0	0	0
CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	9	1	2	2	0	1	0	0	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	9	0	3	2	0	1	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv		1	1	9	1	2	2	0	1	0	0	0
CTU without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	1	1	9	1	2	1	1	1	0	0	0
Radiography intravenous urography	Usually not appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	1	2	1	1	0	0	0	0
		References		Study	y Quality										
		6 (28461996)			4										
Fluoroscopy voiding cystourethrography	Usually not appropriate	Expert Consensus	�� 0.1-1mS	v 0.03- 0.3 mSv [ped]	1	1	11	1	2	0	0	1	0	0	0
MRI abdomen without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	2	0	1	0	1	1	0	0
		References	References		y Quality										

			42 (31429682)				4										
MRI abdomen and pelvis without and with IV contrast	Usuall approp	y not oriate	Limited	O 0 mSv	,	O 0 mSv [ped]	1	1	9	2	1	1	0	0	2	0	0
			References			Study Quality											
			42 (31429682)				4										
MRU without and with IV contrast	Usuall approp		Limited	O 0 mSv	,	O 0 mSv [ped]	1	1	12	3	0	0	0	0	0	0	0
			References			Study	/ Quality										
			42 (31429682)				4										
Radiography abdomen and pelvis	Usuall approp			<b>≎≎≎</b> 1-10 mSv	0	��� 0.3- 3 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
Fluoroscopy antegrade pyelography	Usuall approp		Expert Consensus	��� 1-10 mSv	0		1	1	11	1	2	0	0	1	0	0	0

Variant 5: Adult. Symptomatic hydronephrosis in a pregnant patient with unknown cause. Initial imaging.

Procedure	Appropriateness	SOE	Adults RRL	D I DDI	Rating	ting Median	Final Tabulations											
	Category			Peds RRL			1	2	3	4	5	6	7	8	9			
US color Doppler kidneys and bladder retroperitoneal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	1	1	1	2	10			
					- ··													

References	Study Quality
17 (30853305)	4
6 (28461996)	4
9 (28516385)	4
4 (23455540)	3
46 (24496359)	3
47 (26941870)	3
48 (27231677)	4
49 (32666258)	3
43 (33328069)	4

		5 (33754607)			4										
		45 (34515254)			3										
MRU without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	2	2	3	6	2	0
		References		Study		•		•	•						
		30 (23290346)			2										
		44 (14665888)													
		17 (30853305)													
		6 (28461996)													
		15 (20729416)													
		29 (25249333)				1	ı								
US abdomen	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	2	2	10	1	0	0
MRI abdomen and pelvis without IV contrast	May be appropriate	be Limited C		O 0 mSv [ped]	5	5	0	0	1	6	3	1	4	0	0
		References		Study		•									
		17 (30853305)													
CT abdomen and pelvis without IV contrast	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	4	4	1	1	5	4	4	0	0	0	0
		References		Study	Quality										
		17 (30853305)			4										
		6 (28461996)			4				_						
DTPA renal scan	Usually not appropriate		��� 1-10 mSv	��� 0.3- 3 mSv [ped]	3	3	4	2	2	4	1	1	1	0	0
		References		Study	Quality										
		11 (24591488)													
		13 (31237781)		2											
		10 (25444983)		2											
		12 (8917195)			4										

CT abdomen and pelvis without and with IV contrast	Usually approp	Limited	���� 10- mSv	-30	����� 10-30 mSv [ped]	2	2	7	3	3	0	0	1	1	0	0
		References		Study Quality												
		17 (30853305)				4										
		6 (28461996)				4										
CTU without and with IV contrast	Usually approp	Limited	<b>����</b> 10- mSv	30	����� 10-30 mSv [ped]	2	2	5	4	3	1	0	1	1	0	0
		References			Study	y Quality										
		17 (30853305)				4										
		6 (28461996)				4										
MRI abdomen without IV contrast	Usually approp	Limited	O 0 mSv	/	O 0 mSv [ped]	2	2	4	6	4	0	0	0	1	0	0
		References			Study	y Quality				•	•	•	•			
		17 (30853305)				4										
MRU without and with IV contrast	Usually approp	Limited	O 0 mSv	/	O 0 mSv [ped]	2	2	7	4	1	1	0	0	2	0	0
		References			Study	y Quality										
		42 (31429682)				4										
MAG3 renal scan	Usually approp	Limited	��� 1-1 mSv	0	��� 0.3- 3 mSv [ped]	2	2	5	3	6	1	0	0	0	0	0
		References			Study	y Quality										
		11 (24591488)				4										
		10 (25444983)				2										
CT abdomen with IV contrast	Usually approp	Expert Consensus	��� 1-1 mSv	0	���� 3- 10 mSv [ped]	1	1	9	2	3	0	0	1	0	0	0
CT abdomen without IV contrast	Usually approp	Expert Consensus	��� 1-1 mSv	0	���� 3- 10 mSv [ped]	1	1	9	2	3	0	0	1	0	0	0

CT abdomen without and with IV contrast	Usuall: approp	Expert Consensus	୫୫୫୫ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	1	1	9	2	3	0	0	1	0	0	0
CT abdomen and pelvis with IV contrast	Usuall approp	ate Limited		���� 3- 10 mSv [ped]	1	1	8	1	4	1	0	1	0	0	0
		References		Study											
		17 (30853305)													
		6 (28461996)			4										
Radiography intravenous urography	Usuall approp	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	11	1	1	1	1	0	0	0	0
		References		Study											
		6 (28461996)													
Fluoroscopy voiding cystourethrography	Usuall approp	Expert Consensus	�� 0.1-1mS	v 0.03- 0.3 mSv [ped]	1	1	11	1	2	0	0	1	0	0	0
MRI abdomen without and with IV contrast	Usuall approp	Limited	O 0 mSv	O 0 mSv [ped]	1	1	11	3	1	0	0	0	0	0	0
		References		Study	y Quality										
		42 (31429682)			4										
MRI abdomen and pelvis without and with IV contrast	Usuall approp	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	3	2	0	0	0	0	0	0
		References		Study	y Quality										
		42 (31429682)		4											
Radiography abdomen and pelvis	Usuall approp		��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
Fluoroscopy antegrade pyelography	Usuall approp	Expert Consensus	<b>≎≎≎</b> 1-10 mSv		1	1	10	1	3	0	0	1	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.