### American College of Radiology ACR Appropriateness Criteria<sup>®</sup>

#### **Radiologic Management of Urinary Tract Obstruction**

### Variant 1: Urinary diversion after remote history of cystectomy for cancer. No fever, normal white blood cell (WBC) count and urine output. Loopogram shows no reflux into distal ureters. CT shows new moderate bilateral hydronephrosis.

Procedure	Appropri Categ	ateness	SOE	Adults RR	RL	Peds RRL	Rating	Median	1	2	1	inal	Tabu	latio		8	9
Medical management without decompression	Usually	y not	Expert Consensus	N/A		N/A	3	3	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	May approp	be priate	Limited	N/A		N/A	4	4	0	0	0	0	0	0	0	0	0
			References			Study	v Quality										
			14 (20472267)				4										
			12 (10795614)				4										
			13 (16979745)				3										
PCN (includes PCNU)	Usua approp		Strong	N/A		N/A	7	n/a	0	0	0	0	0	0	0	0	0
			References			Study	v Quality										
			23 (19853233)				4										
			18 (8136591)				3										
			27 (9542016)				4										
			20 (14514833)				4										
			30 (9440851)				4										
			28 (6718717)				4										
			17 (8186603)				4										
			16 (9314366)				3										
			25 (10091780)			2											

		21 (8539411)			3										
		22 (8086252)			4										
		19 (21353753)			4										
		15 (18625353)			4										
		29 (2713773)			4										
		24 (3218915)			4										
		26 (6332488)			4			_							
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	May be appropriate	Limited	N/A	N/A	6	6	0	0	0	0	0	0	0	0	0
		References		Stuc	ly Quality										
	_	31 (18941097)			4										
PCN (includes PCNU) followed by delayed surgery	Usually appropriate	Limited	N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0
		References		Stuc	ly Quality										
		14 (20472267)			4										
		32 (14501730)		2											

# Variant 2: Seven-day history of right flank pain, fever, and leukocytosis. Urinalysis positive for blood and infection. CT scan shows a 10 mm calculus in the mid right ureter without hydronephrosis.

	Appropri	ateness			-		<b>D</b> (1	14.11			F	'inal '	Fabu	latio	ns		
Procedure	Categ	ory	SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Medical management without decompression	Usually approp		Expert Consensus	N/A		N/A	2	2	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	Usua approp		Strong	N/A		N/A	8	8	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			33 (26662171)				1										
			40 (24698195)				1										
			41 (23795789)				2										

			38 (12376218)			4										
			37 (2667249)			4										
			35 (10468719)			2										
			36 (8573816)			2										
			39 (20063999)			4										
			34 (23017519)			3			-							
PCN (includes PCNU)	May be appropria		Strong	N/A	N/A	5	n/a	0	0	0	0	0	0	0	0	0
			References		Study	y Quality										
			44 (28128911)			1										
			43 (6836120)			4										
			16 (9314366)			3										
			42 (11257644)			1										
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually appropria		Expert Consensus	N/A	N/A	2	2	0	0	0	0	0	0	0	0	0
PCN (includes PCNU) followed by delayed surgery	May be appropria	e ate	Limited	N/A	N/A	5	n/a	0	0	0	0	0	0	0	0	0
			References		Study	y Quality										
			27 (9542016)			4										
			28 (6718717)			4										
			43 (6836120)			4										

# Variant 3: Pregnant patient (20 weeks) with 3-day history of left flank pain, fever, and leukocytosis. Urinalysis positive for infection. Ultrasound shows new, moderate left hydronephrosis.

	Appropriater	ness			D.C				F	'inal '	Tabu	latio	ns		
Procedure	Category		Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Medical management without decompression	Usually not appropriate	Linnea	N/A	N/A	2	2	0	0	0	0	0	0	0	0	0
		References		Study	/ Quality										

		46 (11972503)			4										
Retrograde ureteral stenting	Usually appropriate	Limited	N/A	N/A	8	8	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		46 (11972503)			4										
PCN	Usually appropriate	Limited	N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		48 (1490447)			4										
		50 (1727366)			4										
		51 (1507334)			4										
		49 (2036578)			4										
		47 (1971239)			4										
		52 (15590807)			4			_	-						
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually not appropriate	Expert Consensus	N/A	N/A	2	2	0	0	0	0	0	0	0	0	0
PCN followed by delayed surgery	Usually not appropriate	Expert Consensus	N/A	N/A	1	n/a	0	0	0	0	0	0	0	0	0

# Variant 4: Advanced cervical carcinoma with decreased estimated glomerular filtration rate <15. Normal WBC, positive pelvic pressure, no flank pain. CT scan reveals new bilateral hydronephrosis and hydroureter that is due to local invasion by a pelvic mass.

	Appropriateness SOE Adults RRL Peds RRL Rating Median										F	inal '	Fabu	atio	ıs		
Procedure	Categ		SOE	Adults KK	L	Peas RRL	Kating	Median	1	2	3	4	5	6	7	8	9
Medical therapy without decompression	Usually approp		Limited	N/A		N/A	1	1	0	0	0	0	0	0	0	0	0
			References			Study	v Quality										
			53 (18554655)			-	2			_							
Retrograde ureteral stenting	Usua approp		Strong	N/A		N/A	8	8	0	0	0	0	0	0	0	0	0

		References		Study	Quality										
		54 (22315095)		 Study	2										
		55 (19278608)			4										
		56 (15533473)			2										
		57 (15851050)			3										
PCN (includes PCNU)	Usually appropriate	Strong	N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
		References		Study	Quality	•	-								
		68 (23666587)			2										
		69 (23164390)			2										
		64 (2261404)			4										
		66 (2025771)			4										
		65 (1916512)			1										
		25 (10091780)			2										
		4 (1407920)			2										
		58 (3721300)			4										
		6 (2442872)			4										
		59 (20728326)			4										
		60 (20419970)			2										
		61 (21481096)			1										
		62 (21319508)			2										
		63 (18042018)			2										
		67 (8428414)			2										
		70 (19338533)			2										
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually appropriate	Limited	N/A	N/A	8	8	0	0	0	0	0	0	0	0	0
		References		Study	Quality										
		71 (19945660)		 	4										
PCN (includes PCNU) followed by delayed surgery	May be appropriate	Limited	N/A	N/A	4	n/a	0	0	0	0	0	0	0	0	0
		References		 Study	Quality										

55 (19278608)	4
56 (15533473)	2

## Variant 5: Prolonged history of right flank pain, fever, and leukocytosis. Urinalysis positive for blood and infection. Patient appears septic and is hypotensive. CT scan shows dilated right ureter and renal pelvis with perinephric stranding. No etiology for ureteral obstruction identified with current imaging.

	Appropri	ateness	005							I	Final	Tabu	latio	ns		
Procedure	Categ	gory	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Medical therapy without decompression	Usuall approp	y not oriate	Limited	N/A	N/A	1	1	0	0	0	0	0	0	0	0	0
			References		Study	y Quality		-								-
			72 (25661913)			4									_	
Retrograde ureteral stenting	May approp	be priate	Limited	N/A	N/A	6	6	0	0	0	0	0	0	0	0	0
	L		References		Study	y Quality			•						•	•
			72 (25661913)			4										
PCN (includes PCNU)	Usua approp	lly riate	Strong	N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
			References		Study	y Quality							1			
			77 (26321323)			1										
			79 (24033464)			2										
			18 (8136591)			3										
			75 (1414717)			4										
			27 (9542016)			4										
			38 (12376218)			4										
			76 (10443717)			4										
			73 (11774760)			4										
			17 (8186603)			4										
			37 (2667249)			4										
			43 (6836120)			4										
			78 (3398131)			4										

			74 (20206981)				3			-		-					
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually approp	y not riate	Limited	N/A		N/A	2	2	0	0	0	0	0	0	0	0	0
			References			Study	v Quality										
			References   79 (24033464)				2										
PCN (includes PCNU) followed by delayed surgery	May approp		Limited	N/A		N/A	5	n/a	0	0	0	0	0	0	0	0	0
			References			Study	Quality		-								
			80 (9886587)				2										

# Variant 6: Urinary ascites after recent abdominal surgery. Elevated blood urea nitrogen or creatinine, moderate abdominal pain, and no peritoneal signs. CT urogram reveals contrast leak from left pelvic ureteral injury. Current therapy consists of Foley catheter in the bladder.

	Appropriateness	COF			D.C	N. 11			F	'inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Medical therapy without decompression	Usually not appropriate	Expert Consensus	N/A	N/A	1	1	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	Usually appropriate	Expert Consensus	N/A	N/A	7	7	0	0	0	0	0	0	0	0	0
PCN (includes PCNU)	Usually appropriate	Limited	N/A	N/A	9	n/a	0	0	0	0	0	0	0	0	0
		References		Study	/ Quality										
		27 (9542016)			4										
		43 (6836120)			4										
		82 (9211774)			4										
		81 (7563324)			4										
		83 (9232583)			2										
		84 (7021877)			4										
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually appropriate	Limited	N/A	N/A	8	8	0	0	0	0	0	0	0	0	0

	References			Study Quality													
	85 (18682673)			4													
	27 (9542016)			4													
	43 (6836120)			4													
	82 (9211774)			4													
			81 (7563324)		4												
PCN (includes PCNU) followed by delayed surgery	Usua approp	ally priate	Limited	N/A		N/A	7	n/a	0	0	0	0	0	0	0	0	0
		References			Study Quality					-							
		86 (8911355)			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.