

American College of Radiology ACR Appropriateness Criteria®

Hydronephrosis on Prior Imaging-Unknown Cause

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

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|--|-----------------------------------|------------------|----------------|-----------------------|--------|--------|-------------------|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| CTU without and with IV contrast | Usually appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv | ⊕⊕⊕⊕⊕ 10-30 mSv [ped] | 7 | 7 | 0 | 1 | 0 | 4 | 1 | 0 | 7 | 1 | 1 |
| MRU without and with IV contrast | Usually appropriate | Strong | ○ 0 mSv | ○ 0 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 3 | 8 | 1 | 2 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 13 (31237781) | | 2 | | | | | | | | | | | |
| | | 14 (25102294) | | 2 | | | | | | | | | | | |
| MAG3 renal scan | Usually appropriate | Limited | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕ 0.3-3 mSv [ped] | 7 | 7 | 0 | 0 | 1 | 0 | 1 | 1 | 7 | 2 | 3 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 12 (8917195) | | 4 | | | | | | | | | | | |
| | | 11 (24591488) | | 4 | | | | | | | | | | | |
| | | 10 (25444983) | | 2 | | | | | | | | | | | |
| CT abdomen and pelvis with IV contrast | May be appropriate (Disagreement) | Expert Opinion | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 5 | 5 | 1 | 0 | 5 | 3 | 3 | 0 | 3 | 0 | 0 |
| MRU without IV contrast | May be appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 1 | 0 | 6 | 5 | 2 | 1 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |

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

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| | | | 10 (25444983) | | 2 | | | | | | | | | | | | |
| | | | 2 (29287975) | | 4 | | | | | | | | | | | | |
| CT abdomen and pelvis with IV contrast | May be appropriate (Disagreement) | Expert Opinion | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 5 | 5 | 0 | 0 | 6 | 3 | 2 | 2 | 2 | 0 | 0 | | |
| CT abdomen and pelvis without IV contrast | May be appropriate | Expert Consensus | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 5 | 5 | 0 | 1 | 1 | 2 | 5 | 6 | 0 | 0 | 0 | | |
| CTU without and with IV contrast | May be appropriate (Disagreement) | Expert Opinion | ☼☼☼☼ 10-30 mSv | ☼☼☼☼☼ 10-30 mSv [ped] | 5 | 5 | 1 | 1 | 2 | 2 | 0 | 1 | 4 | 4 | 0 | | |
| MRU without IV contrast | May be appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 1 | 0 | 3 | 6 | 5 | 0 | 0 | 0 | | |
| | | | References | | Study Quality | | | | | | | | | | | | |
| | | | 15 (20729416) | | 4 | | | | | | | | | | | | |
| DTPA renal scan | May be appropriate (Disagreement) | Expert Opinion | ☼☼☼ 1-10 mSv | ☼☼☼ 0.3-3 mSv [ped] | 5 | 5 | 0 | 1 | 2 | 1 | 6 | 3 | 2 | 0 | 0 | | |
| | | | References | | Study Quality | | | | | | | | | | | | |
| | | | 13 (31237781) | | 2 | | | | | | | | | | | | |
| | | | 12 (8917195) | | 4 | | | | | | | | | | | | |
| | | | 11 (24591488) | | 4 | | | | | | | | | | | | |
| | | | 10 (25444983) | | 2 | | | | | | | | | | | | |
| MRI abdomen without IV contrast | Usually not appropriate | Expert Consensus | ○ 0 mSv | ○ 0 mSv [ped] | 3 | 3 | 3 | 4 | 4 | 2 | 1 | 1 | 0 | 0 | 0 | | |
| MRI abdomen and pelvis without IV contrast | Usually not appropriate | Expert Consensus | ○ 0 mSv | ○ 0 mSv [ped] | 3 | 3 | 4 | 2 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | | |
| MRI abdomen and pelvis without and with IV contrast | Usually not appropriate | Expert Consensus | ○ 0 mSv | ○ 0 mSv [ped] | 3 | 3 | 1 | 0 | 7 | 1 | 3 | 2 | 1 | 0 | 0 | | |
| US abdomen | Usually not appropriate | Expert Consensus | ○ 0 mSv | ○ 0 mSv [ped] | 3 | 3 | 2 | 3 | 5 | 3 | 2 | 0 | 0 | 0 | 0 | | |

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|--|-------------------------|------------------|----------------|-----------------------|---|---|---|---|---|---|---|---|---|---|---|
| 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 | ○ 0 mSv | ○ 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 | ☼☼☼ 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 | ☼☼☼☼☼ 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 | ☼☼☼☼☼ 10-30 mSv [ped] | 2 | 2 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Radiography intravenous urography | Usually not appropriate | Expert Consensus | ☼☼☼ 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 | ○ 0 mSv | ○ 0 mSv [ped] | 2 | 2 | 3 | 6 | 2 | 1 | 2 | 0 | 1 | 0 | 0 |
| Radiography abdomen and pelvis (KUB) | Usually not appropriate | Expert Consensus | ☼☼ 0.1-1mSv | ☼☼ 0.03-0.3 mSv [ped] | 2 | 2 | 7 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |

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

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|----------------------------------|--------------------------|---------|------------|----------|--------|--------|-------------------|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| CTU without and with IV contrast | Usually | Limited | ☼☼☼☼ 10-30 | ☼☼☼☼☼ | 7 | 7 | 0 | 0 | 0 | 1 | 4 | 2 | 4 | 3 | 1 |

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|---------------|---|
| 35 (33051735) | 3 |
| 33 (25254610) | 3 |
| 25 (28611874) | 1 |
| 22 (29663580) | 2 |
| 17 (30853305) | 4 |
| 16 (34304393) | 3 |

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|---|--------------------|--------|--------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
|---------------|---------------|
| 27 (27533351) | 3 |
| 26 (31958894) | 3 |
| 25 (28611874) | 1 |
| 24 (31535518) | 4 |
| 23 (26747219) | 3 |
| 22 (29663580) | 2 |
| 21 (24440589) | 3 |
| 19 (27369294) | 2 |
| 18 (34773812) | 2 |
| 17 (30853305) | 4 |
| 16 (34304393) | 3 |

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|--|--------------------|--------|--------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
|---------------|---------------|
| 22 (29663580) | 2 |
| 21 (24440589) | 3 |
| 20 (29675722) | 3 |
| 19 (27369294) | 2 |
| 18 (34773812) | 2 |
| 17 (30853305) | 4 |
| 16 (34304393) | 3 |

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| 23 (26747219) | 3 |
| 22 (29663580) | 2 |
| 21 (24440589) | 3 |
| 20 (29675722) | 3 |
| 19 (27369294) | 2 |
| 18 (34773812) | 2 |
| 17 (30853305) | 4 |
| 16 (34304393) | 3 |

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|---|-------------------------|------------------|----------------|-----------------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI abdomen without IV contrast | Usually not appropriate | Expert Consensus | 0 0 mSv | 0 0 mSv [ped] | 3 | 3 | 4 | 3 | 4 | 1 | 1 | 2 | 0 | 0 | 0 |
| CT abdomen without and with IV contrast | Usually not appropriate | Expert Consensus | ⊕⊕⊕⊕ 10-30 mSv | ⊕⊕⊕⊕⊕ 10-30 mSv [ped] | 2 | 2 | 7 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Radiography intravenous urography | Usually not appropriate | Limited | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕ 0.3-3 mSv [ped] | 2 | 2 | 7 | 2 | 1 | 1 | 2 | 1 | 1 | 0 | 0 |

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| References | Study Quality |
| 6 (28461996) | 4 |

| | | | | | | | | | | | | | | | |
|--|-------------------------|------------------|-------------|-----------------------|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0 0 mSv | 0 0 mSv [ped] | 2 | 2 | 6 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Radiography abdomen and pelvis (KUB) | Usually not appropriate | Limited | ⊕⊕ 0.1-1mSv | ⊕⊕ 0.03-0.3 mSv [ped] | 2 | 2 | 6 | 4 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |

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| References | Study Quality |
| 35 (33051735) | 3 |
| 34 (22685250) | 4 |
| 33 (25254610) | 3 |
| 32 (34492590) | 3 |

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|-----------------------------------|-------------------------|------------------|--------------|--|---|---|---|---|---|---|---|---|---|---|---|
| Fluoroscopy antegrade pyelography | Usually not appropriate | 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.

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

| References | Study Quality |
|---------------|---------------|
| 5 (33754607) | 4 |
| 17 (30853305) | 4 |
| 4 (23455540) | 3 |
| 43 (33328069) | 4 |

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|--|-----------------------------------|------------------|---------|---------------|---|---|---|---|---|---|----|---|---|---|---|
| US abdomen | May be appropriate | Expert Consensus | ○ 0 mSv | ○ 0 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 1 | 3 | 7 | 4 | 0 | 0 |
| MRI abdomen and pelvis without IV contrast | May be appropriate (Disagreement) | Expert Opinion | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 1 | 0 | 3 | 4 | 5 | 0 | 2 | 0 | 0 |
| MRU without IV contrast | May be appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 1 | 0 | 1 | 10 | 1 | 2 | 0 | 0 |

| References | Study Quality |
|---------------|---------------|
| 15 (20729416) | 4 |

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|---------------------------------|-------------------------|------------------|--------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI abdomen without IV contrast | Usually not appropriate | Expert Consensus | ○ 0 mSv | ○ 0 mSv [ped] | 2 | 2 | 6 | 7 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| DTPA renal scan | Usually not appropriate | Strong | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕ 0.3-3 mSv [ped] | 2 | 2 | 6 | 2 | 2 | 3 | 1 | 1 | 0 | 0 | 0 |

| References | Study Quality |
|---------------|---------------|
| 13 (31237781) | 2 |
| 12 (8917195) | 4 |

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|---|-------------------------|------------------|--------------|-----------------------|---|---|----|---|---|---|---|---|---|---|---|
| Fluoroscopy voiding cystourethrography | Usually not appropriate | Expert Consensus | ☼☼ 0.1-1mSv | ☼☼ 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 | ○ 0 mSv | ○ 0 mSv [ped] | 1 | 1 | 10 | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 42 (31429682) | | 4 | | | | | | | | | | | |
| MRI abdomen and pelvis without and with IV contrast | Usually not appropriate | Limited | ○ 0 mSv | ○ 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 | Usually not appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 1 | 1 | 12 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 42 (31429682) | | 4 | | | | | | | | | | | |
| Radiography abdomen and pelvis (KUB) | Usually not appropriate | Expert Consensus | ☼☼ 0.1-1mSv | ☼☼ 0.03-0.3 mSv [ped] | 1 | 1 | 9 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| Fluoroscopy antegrade pyelography | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv | | 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 Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|--|--------------------------|---------------|------------|---------------|--------|--------|-------------------|---|---|---|---|---|---|---|----|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| US color Doppler kidneys and bladder retroperitoneal | Usually appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 9 | 9 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 10 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 49 (32666258) | | 3 | | | | | | | | | | | |
| | | 48 (27231677) | | 4 | | | | | | | | | | | |
| | | 47 (26941870) | | 3 | | | | | | | | | | | |

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| 46 (24496359) | 3 |
| 45 (34515254) | 3 |
| 43 (33328069) | 4 |
| 17 (30853305) | 4 |
| 9 (28516385) | 4 |
| 6 (28461996) | 4 |
| 5 (33754607) | 4 |
| 4 (23455540) | 3 |

| | | | | | | | | | | | | | | | |
|-------------------------|---------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRU without IV contrast | Usually appropriate | Limited | 0 0 mSv | 0 0 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 2 | 2 | 3 | 6 | 2 | 0 |
|-------------------------|---------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---------------|---------------|
| References | Study Quality |
| 6 (28461996) | 4 |
| 15 (20729416) | 4 |
| 17 (30853305) | 4 |
| 29 (25249333) | 4 |
| 30 (23290346) | 2 |
| 44 (14665888) | 4 |

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|------------|--------------------|------------------|---------|---------------|---|---|---|---|---|---|---|----|---|---|---|
| US abdomen | May be appropriate | Expert Consensus | 0 0 mSv | 0 0 mSv [ped] | 6 | 6 | 0 | 0 | 0 | 2 | 2 | 10 | 1 | 0 | 0 |
|------------|--------------------|------------------|---------|---------------|---|---|---|---|---|---|---|----|---|---|---|

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|--|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI abdomen and pelvis without IV contrast | May be appropriate | Limited | 0 0 mSv | 0 0 mSv [ped] | 5 | 5 | 0 | 0 | 1 | 6 | 3 | 1 | 4 | 0 | 0 |
|--|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---------------|---------------|
| References | Study Quality |
| 17 (30853305) | 4 |

| | | | | | | | | | | | | | | | |
|---|--------------------|---------|--------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 6 (28461996) | 4 |
| 17 (30853305) | 4 |

| | | | | | | | | | | | | | | | |
|-----------------|-------------------------|--------|--------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| DTPA renal scan | Usually not appropriate | Strong | ☼☼☼ 1-10 mSv | ☼☼☼ 0.3-3 mSv [ped] | 3 | 3 | 4 | 2 | 2 | 4 | 1 | 1 | 1 | 0 | 0 |
|-----------------|-------------------------|--------|--------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|

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|---|-------------------------|------------------|----------------|-----------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT abdomen with IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 9 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| CT abdomen without IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 9 | 2 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| CT abdomen without and with IV contrast | Usually not appropriate | Expert Consensus | ☼☼☼☼ 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 | Usually not appropriate | Limited | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 8 | 1 | 4 | 1 | 0 | 1 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 6 (28461996) | | 4 | | | | | | | | | | | |
| | | 17 (30853305) | | 4 | | | | | | | | | | | |
| Radiography intravenous urography | Usually not appropriate | Limited | ☼☼☼ 1-10 mSv | ☼☼☼ 0.3-3 mSv [ped] | 1 | 1 | 11 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 6 (28461996) | | 4 | | | | | | | | | | | |
| Fluoroscopy voiding cystourethrography | Usually not appropriate | Expert Consensus | ☼☼ 0.1-1mSv | ☼☼ 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 | ○ 0 mSv | ○ 0 mSv [ped] | 1 | 1 | 11 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 42 (31429682) | | 4 | | | | | | | | | | | |
| MRI abdomen and pelvis without and with IV contrast | Usually not appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 1 | 1 | 10 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 42 (31429682) | | 4 | | | | | | | | | | | |
| Radiography abdomen and pelvis (KUB) | Usually not appropriate | Expert Consensus | ☼☼ 0.1-1mSv | ☼☼ 0.03-0.3 mSv [ped] | 1 | 1 | 8 | 2 | 3 | 0 | 2 | 0 | 0 | 0 | 0 |

| | | | | | | | | | | | | | | | |
|-----------------------------------|-------------------------|------------------|--------------|--|---|---|----|---|---|---|---|---|---|---|---|
| Fluoroscopy antegrade pyelography | Usually not appropriate | Expert Consensus | ☼☼☼ 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.