

ACEP 53

Title: Emergency Medicine: Appropriate Use of Imaging for Recurrent Renal Colic

Description: Percentage of emergency department (ED) visits for patients aged 18-50 years presenting with flank pain with a history of kidney stones during which no imaging is ordered, OR appropriate imaging (i.e., plain film radiography or ultrasound) is ordered.

Measurement Period: January 1, 2024, through December 31, 2024

Measure Steward: American College of Emergency Physicians (ACEP)

Measure Developer: American College of Emergency Physicians (ACEP)

Measure Scoring: Proportion

Measure Type: Process

Initial Population	All emergency department visits for patients aged 18 - 50 years presenting with flank pain with any history of kidney stones
Denominator	All emergency department visits for patients aged 18 - 50 years presenting with flank pain with any history of kidney stones
Denominator Exclusions	<ul style="list-style-type: none"> - Infection (fever, elevated white blood cell count, laboratory confirmation of urinary tract infection) - Cancer - Known acute or chronic renal disease (ie, transplant, creatinine >1.5 mg/dL, renal insufficiency, polycystic kidney disease, acute kidney failure) - Patient on anticoagulants - Stone episode duration >= 72 hours - Pregnancy - Trauma - Persistent pain that cannot be controlled during the ED visit - Urologic procedure performed in the past 48 hours - BMI>35
Numerator	Emergency department visits during which no imaging is ordered OR appropriate imaging (i.e., plain film radiography or ultrasound) is ordered
Numerator Exclusions	Not Applicable
Denominator Exceptions	None

Stratification: None

Risk Adjustment: None

Improvement Notation: Higher score indicates better quality

Rationale

Abdominal computed tomography (CT) is commonly used in patients with a history of kidney stones who experience recurrent symptoms. The use of CT exposes patients to ionizing radiation with its associated increased long-term cancer risk. Additionally, use of CT is also associated with increased incidental findings, which can set of a cascade of unnecessary follow-up visits and tests, resulting in

increased costs. Despite the high sensitivity of CT for the detection of kidney stones, there is no evidence that its use is associated with improved outcomes for patients with recurrent symptoms. Often, the results of the CT do not influence the course of treatment for the patient.

Clinical Recommendation Statement

A 2014 trial including 2,759 patients with suspected nephrolithiasis found that use of ultrasonography compared to initial CT was associated with lower 6-month cumulative radiation exposure without a significant difference in complications, adverse events, pain scores, return ED visits, or hospitalizations. 2012 AUA Technology Assessment for Imaging in the Management of Ureteral Calculous Disease "Alternative imaging modalities are considered for specific patient groups. Renal ultrasonography (sono) and KUB are a viable option for a known stone former who has previously had radio-opaque stones."

Definition

None

Guidance

This measure is intended to be reported by the eligible professional (EP) who evaluates and/or treats patients presenting to the ED with symptoms of recurrent renal colic (i.e., flank pain and a history of kidney stones). When imaging is ordered for these patients, it should be attributable to the ordering EP. The 'Glomerular Filtration Rate' is expected to have a result of < 60 mL per min per 1.73 m² (or equivalent) in order for a patient to be excluded from the measure. However, due to technical limitations, the units are not able to be expressed in this specification and the result will be captured as < 60.

Numerator is intended to capture 'no imaging ordered.' or 'appropriate imaging ordered'

One of the exclusions for this measure is intended to capture a symptom duration lasting ≥ 72 hours; these patients are intended to be excluded from the denominator. We have specified the exclusion to look for flank pain ≥ 72 hours, recognizing this approach may pull in a symptom from a prior episode of flank pain not related to the ED encounter being evaluated in the Initial Population. We recommend that implementers manually program their system to meet the intent of this exclusion.

References

1. Samim M, Goss S, Luty S, Weinreb J, Moore C. Incidental findings on CT for suspected renal colic in emergency department patients: prevalence and types in 5,383 consecutive examinations. *J Am Coll Radiol.* 2015;12(1):63-9. Doi:10.1016/j.jacr.2014.07.026
2. Moore CL, Bomann S, Daniels B, et al. Derivation and validation of a clinical prediction rule for uncomplicated ureteral stone- the STONE score: retrospective and prospective observational cohort studies. *BMJ.* 2014;348:g2191. doi:10.1136/bmj.g2191
3. Smith-Bindman R, Aubin C, Bailitz J, et al. Ultrasonography versus computed tomography for suspected nephrolithiasis. *N Engl J Med.* 2014;371:1100-10.
4. Fulgham PF, Assimos DG, Pearle MS, Preminger GM. Clinical effectiveness protocols for imaging in the management of ureteral calculous disease: AUA technology assessment. <https://www.auanet.org/common/pdf/education/clinical-guidance/Imaging-Assessment.pdf>. American Urological Association (AUA) Guideline. Published May 2012. Accessed April 27, 2015.
5. Stein EG, Haramati LB, Bellin E, et al. Radiation exposure from medical imaging in patients with chronic and recurrent conditions. *J Am Coll Radiol.* 2010;7(5):351-359.
6. Goldstone A, Bushnell A. Does diagnosis change as a result of repeat renal colic computed tomography scan in patients with a history of kidney stones? *Am J Emerg Med.* 2010;28(3):291-295.

7. Fwu CW, Eggers PW, Kimmel PL, Kusek JW, Kirkali Z. Emergency department visits, use of imaging and drugs for urolithiasis have increased in the United States. *Kidney Int.* 2013;83(3):479-86.
8. Broder J, Bowen J, Lohr J, Babcock A, Yoon J. Cumulative CT exposures in emergency department patients evaluated for suspected renal colic. *J Emerg Med.* 2007;33(2):161-168.

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