



<b>Body System: Nephrologic</b>		
<b>Session Topic: Hematuria</b>		
<b>Educational Format</b>		<b>Faculty Expertise Required</b>
<b>REQUIRED</b>	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
<b>OPTIONAL</b>	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
<b>Professional Practice Gap</b>	<b>Learning Objective(s) that will close the gap and meet the need</b>	<b>Outcome Being Measured</b>
<ul style="list-style-type: none"> <li>Physicians have significant knowledge gaps with regard to managing hematuria, particularly in the appropriate use of diagnostic imaging.</li> <li>Physicians have knowledge gaps with regard to evaluating hematuria &amp; recognizing associated cancer risks.</li> <li>Physicians frequently do not adhere to published clinical guidelines for evaluating and managing hematuria.</li> <li>New hematuria guidelines from the AUA have been published, &amp; need to be integrated into standards of care.</li> </ul>	<ol style="list-style-type: none"> <li>Assess underlying conditions (including infections, kidney diseases and prostate enlargement in men) in patients with hematuria by taking a complete history and physical examination.</li> <li>Perform appropriate urinalysis, using urine dipstick test or urinalysis microscopic exam, to determine the degree of severity of hematuria.</li> <li>Interpret urinalysis results and establish a coordinated care plan for referral and follow-up to an urologist.</li> <li>Counsel patients on modifying preventable factors for hematuria.</li> </ol>	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.
<b>ACGME Core Competencies Addressed (select all that apply)</b>		
X	Medical Knowledge	Patient Care
X	Interpersonal and Communication Skills	Practice-Based Learning and Improvement
	Professionalism	Systems-Based Practice
<b>Faculty Instructional Goals</b>		
Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong		



learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.

- Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy & reference citations
- Facilitate learner engagement during the session
- Address related practice barriers to foster optimal patient management
- Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the References section below are a good place to start
  - Visit <http://www.aafp.org/journals> for additional resources
  - Visit <http://familydoctor.org> for patient education and resources
- Provide recommendations for assessing underlying conditions (including infections, kidney diseases and prostate enlargement in men) in patients with hematuria by taking a complete history and physical examination.
- Provide recommendations for evaluating hematuria, including performing appropriate urinalysis, using urine dipstick test or urinalysis microscopic exam, and ordering appropriate diagnostic imaging, to determine the degree of severity of hematuria.
- Provide recommendations for interpreting urinalysis results and determine the need for referral to a urologist, & establishing standards for a coordinated referral and care plan.
- Provide strategies and resources for counseling patients on modifying preventable factors for hematuria.

### Needs Assessment

It is estimated that hematuria occurs in 2-25% of the population, and studies show that 9-18% of otherwise healthy individuals have some degree of hematuria.<sup>1</sup> Primary care physicians commonly are the first to recognize hematuria, particularly asymptomatic microscopic hematuria, incidentally during routine health screenings.<sup>2</sup>

Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicate that family physicians have a knowledge gap with regard to providing optimal management of hematuria, particularly in the appropriate use of diagnostic imaging.<sup>3</sup> More specifically, CME outcomes data from 2012, 2013, and 2015 AAFP FMX (formerly Assembly): *Hematuria* sessions suggest that physicians have knowledge and practice gaps with regard to evaluation of gross hematuria; selection of appropriate imaging tests; timely referral; a systematic approach to evaluating hematuria; identifying recurrent hematuria; considering cancer risks for those with gross hematuria; appropriate screening; and utilizing follow-up protocols with asymptomatic hematuria.<sup>4-6</sup>

Physicians are often unaware of the association between hematuria and cancer, and while both the AAFP and US Preventive Services Task Force (USPSTF) *conclude that the current evidence is insufficient to assess the balance of benefits and harms of screening for bladder cancer in asymptomatic adults, visible hematuria can serve as a marker for infection, stone disease, or cancer.*<sup>2,7</sup> In fact, more than 20% of adults with gross hematuria may have urological cancer.<sup>8</sup> There is substantial variability in evaluating asymptomatic hematuria by type, particularly when



microscopic which fails to reveal a cause in 8% to 61% of patients; as such, most physicians do not adhere to published guidelines when evaluating asymptomatic hematuria.<sup>9</sup>

Physicians may improve their care of patients with hematuria by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:<sup>2,10-12</sup>

- There is insufficient evidence to recommend screening urinalysis for the detection of bladder cancer in the absence of clinical indicators.
- Further evaluation is recommended for individuals with three or more red blood cells per high-power field in a properly collected urine specimen in the absence of infection.
- Referral to urology is recommended for all patients with gross hematuria or high-grade hematuria (>50 RBC/HPF) on a single urinalysis (UA).
- Concurrent nephrologic and urologic referral is indicated in the presence of hypertension, elevated creatinine level, and dysmorphic red blood cells, cellular casts, or proteinuria on urinalysis.
- Hematuria on a UA should be reported out as 0 to 3 RBC/HPF, 4 to 10 RBC/HPF, 11 to 25 RBC/HPF, 26 to 50 RBC/HPF, >50 RBC/HPF, or gross hematuria.
- Computed tomography urography is the preferred method for radiologic imaging in the evaluation of microscopic hematuria.
- A modified computed tomography (CT) urogram or IVP with concurrent renal ultrasound is recommended for patients with significant hematuria (as already defined).
- Urine cytology and other bladder tumor markers are not recommended for the initial evaluation of microscopic hematuria.
- Asymptomatic microhematuria (AMH) is defined as three or greater red blood cells per high powered field (RBC/HPF) on a properly collected urinary specimen in the absence of an obvious benign cause. A positive dipstick does not define AMH, and evaluation should be based solely on findings from microscopic examination of urinary sediment and not on a dipstick reading. A positive dipstick reading merits microscopic examination to confirm or refute the diagnosis of AMH. Expert Opinion
- The assessment of the asymptomatic microhematuria patient should include a careful history, physical examination, and laboratory examination to rule out causes of AMH such as infection, menstruation, vigorous exercise, medical renal disease, viral illness, trauma, or recent urological procedures. Clinical Principle
- Once benign causes have been ruled out, the presence of asymptomatic microhematuria should prompt urologic evaluation. Recommendation (Evidence strength – Grade C; Benefits outweigh risks/burdens)
- At the initial evaluation, an estimate of renal function should be obtained (may include calculated estimated glomerular filtration rate [eGFR], creatinine, and blood urea nitrogen [BUN]) because intrinsic renal disease may have implications for renal related risk during the evaluation and management of patients with AMH. Clinical Principle
- The presence of dysmorphic red blood cells, proteinuria, cellular casts, and/or renal insufficiency or any other clinical indicator suspicious for renal parenchymal disease warrants concurrent nephrologic workup but does not preclude the need for urologic evaluation. Recommendation (Evidence strength – Grade C; Benefits outweigh risks/burdens)



- Microhematuria that occurs in patients who are taking anti-coagulants requires urologic evaluation and nephrologic evaluation regardless of the type or level of anti-coagulation therapy. Recommendation Discussion. (Evidence strength – Grade C; Benefits outweigh risks/burdens)
- For the urologic evaluation of asymptomatic microhematuria, cystoscopy should be performed on all patients aged 35 years and older. Recommendation Discussion. (Evidence strength – Grade C; Benefits outweigh risks/burdens)
- In patients younger than age 35 years, cystoscopy may be performed at the physician's discretion. Option (Evidence strength – Grade C; Balance between benefits and risks/burdens unclear)
- Cystoscopy should be performed on all AMH patients who present with risk factors for urinary tract malignancies (e.g., history of irritative voiding symptoms, current or past tobacco use, chemical exposures) regardless of age. Clinical Principle
- The initial evaluation for AMH should include a radiologic evaluation. Multi-phasic computed tomography (CT) urography (without and with intravenous [IV] contrast), including sufficient phases to evaluate the renal parenchyma to rule out a renal mass and an excretory phase to evaluate the urothelium of the upper tracts, is the imaging procedure of choice because it has the highest sensitivity and specificity for imaging the upper tracts. Recommendation (Evidence strength – Grade C; Benefits outweigh risks/burdens)
- For patients with relative or absolute contraindications that preclude use of multiphasic CT (such as renal insufficiency, iodinated contrast allergy, pregnancy), magnetic resonance urography (MRU) (without/with intravenous contrast) is an acceptable alternative imaging approach. Option (Evidence strength – Grade C; Balance between benefits and risks/burdens unclear)
- For patients with relative or absolute contraindications that preclude use of multiphasic CT (such as renal insufficiency, iodinated contrast allergy, pregnancy) where collecting system detail is deemed necessary, combining magnetic resonance imaging (MRI) with retrograde pyelograms (RPGs) provides alternative evaluation of the entire upper tracts. Expert Opinion
- For patients with relative or absolute contraindications that preclude use of multiphasic CT (such as renal insufficiency, iodinated contrast allergy) and MRI (such as presence of metal in the body) where collecting system detail is deemed necessary, combining non-contrast CT or renal ultrasound with RPGs provides alternative evaluation of the entire upper tracts. Expert Opinion
- The use of urine cytology and urine markers (Nuclear Matrix Protein 22 [NMP22], bladder tumor antigen [BTA]-stat, and UroVysion fluorescence in situ hybridization assay [FISH]) is NOT recommended as a part of the routine evaluation of the asymptomatic microhematuria patient. Recommendation (Evidence strength – Grade C; Risks/burdens outweigh benefits)
- In patients with microhematuria present following a negative work up or those with other risk factors for carcinoma in situ (e.g., irritative voiding symptoms, current or past tobacco use, chemical exposures), cytology may be useful. Option (Evidence strength – Grade C; Balance between benefits and risks/burdens uncertain)



- . Blue light cystoscopy should not be used in the evaluation of patients with asymptomatic microhematuria. Recommendation (Evidence strength – Grade C; Risks/burdens outweigh benefits)
- If a patient with a history of persistent asymptomatic microhematuria has two consecutive negative annual urinalyses (one per year for two years from the time of initial evaluation or beyond), then no further urinalyses for the purpose of evaluation of AMH are necessary. Expert Opinion
- . For persistent asymptomatic microhematuria after negative urologic workup, yearly urinalyses should be conducted. Recommendation (Evidence strength – Grade C; Benefits outweigh risks/burdens)
- For persistent or recurrent asymptomatic microhematuria after initial negative urologic work-up, repeat evaluation within three to five years should be considered.( Expert Opinion)

Physicians can improve patient satisfaction with the referral process by using readily available strategies and tools such as, improving internal office communication, engaging patients in scheduling, facilitating the appointment, tracking referral results, analyzing data for improvement opportunities, and gathering patient feedback.<sup>13,14</sup>

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Assessment of asymptomatic microscopic hematuria in adults<sup>2</sup>
- Diagnosis, evaluation and follow-up of asymptomatic microhematuria (AMH) in adults: AUA guideline<sup>12</sup>
- ACR Appropriateness Criteria: Topics: hematuria, hematuria-child, suspected Lower Urinary Tract Trauma<sup>15</sup>
- The benefits of using care coordinators in primary care: a case study<sup>16</sup>
- Engaging Patients in Collaborative Care Plans<sup>17</sup>
- Health Coaching: Teaching Patients to Fish<sup>18</sup>
- Medication adherence: we didn't ask and they didn't tell<sup>19</sup>
- Encouraging patients to change unhealthy behaviors with motivational interviewing<sup>20</sup>
- Integrating a behavioral health specialist into your practice<sup>21</sup>
- Simple tools to increase patient satisfaction with the referral process<sup>13</sup>
- FamilyDoctor.org. Microscopic Hematuria | Overview<sup>22</sup>

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.



References

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