

Table 1. Organizational Recommendations for the Initial Evaluation of Average-Risk Patients With Asymptomatic Microscopic Hematuria

Recommendation	Year	Reference	Case Definition				Components of Evaluation	
			Dipstick	Microscopic Urinalysis Results, erythrocytes/HPF	Positive/Total Test Results, n/N	Age Threshold, y	Cystoscopy	Preferred Imaging Method
American Urological Association guideline	2012	12	Inadequate	≥3	1	≥35	All patients	CT urography
American Urological Association best practice policy	2001	16	Inadequate	≥3	2/3	≥40	All patients	CT urography or IVP/ultrasonography
Canadian Urological Association guideline	2008	30	Inadequate	≥2	2	≥40	All patients	Renal ultrasonography
British Association of Urological Surgeons guideline	2008	32	≥1 heme	Not required	2/3	≥40	Not specified	Not specified
Dutch Guideline on Hematuria	2010	31	Inadequate	≥3	2/3	≥50	All patients	Renal ultrasonography

CT = computed tomography; HPF = high-powered field; IVP = intravenous pyelography.

of hematuria as a marker of occult urinary tract cancer and other relevant studies from the peer-reviewed literature. This article was prepared with the intent to increase awareness and provide practical advice based on the best available evidence but was not based on a formal systematic review.

This article was reviewed and approved by the American College of Physicians' High Value Care Task Force, whose members are physicians trained in internal medicine and its subspecialties and which includes experts in evidence synthesis. The Task Force developed the high-value care advice statements based on the narrative review of the literature. At each conference call, all members of the High Value Care Task Force declared all financial and nonfinancial interests. The target audience for this article is all internists, family physicians, and other clinicians, and the target patient population is adults with hematuria. The purpose of this article is to describe indications for the evaluation of hematuria as a marker of occult urinary tract cancer and to help clinicians make high-value decisions about referral of patients for urologic assessment.

WHAT ARE THE CURRENT EVIDENCE-BASED GUIDELINES FOR THE APPROPRIATE EVALUATION OF PATIENTS WITH HEMATURIA?

Screening healthy, asymptomatic patients with urinalysis for the purpose of cancer detection is not currently recommended by any major health organization. This topic has been evaluated by the U.S. Preventive Services Task Force, which issued an “I” recommendation because of insufficient evidence on the benefits and harms (3). Neither the American Urological Association (AUA) nor the Canadian Task Force on the Periodic Health Examination recommends this practice (4, 12). A large case-control study of healthy adults receiving urinalysis as part of a health screening illustrates the limitations of population-based urinalysis screening, with no significant difference in incidence of cancer between those with and without dipstick-positive hematu-

ria (screening had a sensitivity of 2.9% and a positive predictive value of 0.2% to 0.5% for cancer) (28).

Although little controversy surrounds the indication for urologic evaluation for patients with gross hematuria, the evaluation of patients with the more common finding of AMH is complicated by a lack of clarity about indications for referral and optimal components of the evaluation (Table 1). Many organizations have promulgated recommendations and algorithms relevant to the evaluation of patients with AMH. In contrast to the AUA (29), the Canadian Urological Association (CUA) (30), and the Dutch guidelines (31), the British Association of Urological Surgeons (BAUS) specifically recommends evaluation based on a result of at least 1+ heme on a chemical dipstick test and recommends against proceeding to confirmatory microscopy as an intermediate step (32). A microscopic examination of the urinary sediment from a freshly voided, clean-catch, midstream urine specimen is recommended to determine the presence of AMH. The threshold of at least 3 erythrocytes per high-powered field (HPF) is consistent across most of the guidelines, and the requirement for microscopic confirmation in this context was selected by the AUA as a Choosing Wisely statement in 2015 (33). In a departure from the CUA and Dutch guidelines (30, 31) and the prior AUA best practice policy (16), which recommended microscopic confirmation on at least 2 of 3 specimens, the current AUA guideline suggests proceeding with evaluation on the basis of a single positive result on a microscopic analysis (12). This change was based on the literature that underscores the potential intermittent nature of hematuria from cancer (14, 15, 17, 18, 34, 35). Although limited, the literature that specifically examined different numerical thresholds for the number of erythrocytes per HPF found limited discrimination between incremental cut points, other than a threshold of at least 50 erythrocytes per HPF being associated with a significantly higher risk for cancer than a threshold of less than 50 erythrocytes per HPF (8, 9). Whereas the AUA guidelines recommend evaluation for patients with AMH who are older than 35 years and