

Identifying opportunities to improve evaluation for hematuria in a large health system

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Introduction

Hematuria is a common problem in primary care but data on referral patterns and management are limited. The objective of this study was to examine opportunities to improve hematuria management for the early diagnosis of serious hematuria-associated conditions such as glomerulonephritis and urologic cancer.

Methods

This cohort included adults ≥ 18 years of age with hematuria (defined as 1+ or greater blood on dipstick) who received care from Geisinger, a large regional health system in Central, Northeast, and West Pennsylvania, from January 1, 2022 to September 30, 2022. The proportion of patients with hematuria who had a referral to or appointment with urology or nephrology within 6 months was evaluated. The characteristics of referred patients vs those who were not referred were compared using descriptive statistics. Follow-up testing by repeat urinalysis and urine microscopy were also examined.

Results

Of 507,423 patients with ≥ 1 outpatient visit within the study period, 63,895 underwent urinalysis, and 8970 patients had 1+ or greater hematuria. After excluding patients with prior urology or nephrology appointments, 5475 patients were included in this analysis. Only 774 patients (14.1%) had a referral/appointment with urology or nephrology within 6 months. Referral/appointment to urology or nephrology within 6 months was higher in patients with greater hematuria (1+: 11.7% vs 2+: 18.0%; $p < 0.001$) and concomitant proteinuria (no proteinuria: 11.9%, trace: 15.6%, 1+: 15.8%, 2+: 14.9%, 3+: 17.5%; $p = 0.001$). Urine microscopy data were available at the time of initial urinalysis for 4187 patients, and 2940 (70.2%) had ≥ 3 red blood cells/high power field. Repeat urinalysis blood testing was performed in 1557 of 5475 patients (28.4%). Of the 4686 repeat urinalysis tests performed, 2710 (57.8%) had 1+ or greater hematuria. Of the 2375 patients with concomitant 1+ or greater hematuria and 1+ or greater proteinuria, 348 (14.1%) had quantitative albumin/creatinine ratio (ACR) and/or protein/creatinine ratio testing performed. Mean (\pm standard deviation) ACR levels by dipstick protein category were 133.5 mg/g (± 275.2), 385.0 mg/g (± 533.8), and 1741.1 mg/g (± 2275.1) in the 1+, 2+, and 3+ groups, respectively.

Conclusion

In a regional health system, urology and nephrology referral rates were low after hematuria diagnosis, even in patients with concomitant proteinuria. Follow-up hematuria and proteinuria testing rates were also suboptimal. Further studies are required to determine strategies to improve follow-up and management of hematuria. Increased referral rates would likely improve early diagnosis of kidney-related diseases.

Theme

Better Kidney Health: Preventative and Environmental Science, Population Health Science (Global Kidney Health), Policy/Advocacy

Topic

Epidemiology, Outcomes and Health Service Research Related to CKD or its Complications

Key words (5 maximum)

chronic kidney disease, proteinuria, hematuria, health system, glomerulonephritis

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