What is the recommended workup for a man with a first UTI?

Dennis P. Breen, MD
University of Wisconsin School of Medicine and Public Health, Madison; Eau Claire Family Medicine Clinic, Eau Claire, Wisconsin

Gerri R. Wanserski, MLS
Ebling Library, University of Wisconsin School of Medicine and Public Health, Madison

Evidence-based answer

Obtain a urine culture in all men with suspected urinary tract infection (UTI), to reliably diagnose an infection (strength of recommendation [SOR]: **C**).

For further evaluation, ultrasonography with abdominal radiography appears at least as accurate as an intravenous pyelogram (IVP) for detecting urinary tract abnormalities such as hydronephrosis, stones, or outlet obstruction (SOR: **C**; single small poor-quality cohort study).

Imaging of the urinary tract is not supported by the literature, for low-risk males <45 years of age after their first UTI (SOR: **C**; expert opinion, very small cohort study). Unfortunately, there is scant literature, mostly of poor quality, to guide decisions on work-up of men with a suspected UTI.

Clinical commentary

Imaging not likely to enlighten

The vast majority of men with a first UTI in my practice have a preexisting, well-defined risk factor, such as a chronic indwelling catheter, immune compromise, or known prostatic hypertrophy. In otherwise healthy men with symptoms suggestive of UTI, the first order of business is to make the correct diagnosis: Is it cystitis? Pyelonephritis? Urethritis? Prostatitis?

Some of you may be surprised by the recommendation to forgo further evaluation in the majority of males with a simple first UTI. However, the underlying cause is readily apparent in the majority, and imaging adds little to a careful history and physical exam.

The proportion of men with UTI who actually meet the low-risk criteria (younger than 50, not prostatitis or urethritis, no symptoms suggesting outflow obstruction, no hematuria, etc) is vanishingly small. Only that small minority of men over 50 without an obvious cause for their infection will need more evaluation. This review conforms well to current primary care practice.

Peter C. Smith, MD
University of Colorado Health Sciences Center

FAST TRACK

Only a small minority of men over age 50 and without an obvious cause of UTI will need imaging studies

Evidence summary

Limiting further evaluation of men with a first UTI to those at increased risk (**TABLE**) may reduce unnecessary radiological, endoscopic, or urodynamic investigation.

Approximately 20% of all UTIs occur in men,[1–3] and the lifetime prevalence is about 14%.[3] The incidence in elderly men is high, often attributable to a bladder outflow obstruction.[4] (For this review, the definition of UTI is limited to bacterial infections of the kidney, ureter,

TABLE

Conditions that increase risk of urinary tract infection in men[3,7,9,10]

Immunocompromised
Uncircumcised
Engaging in anal intercourse
Age >65 years
Institutional care
Bladder outlet obstruction
Anatomic functional abnormalities of the urinary tract with incomplete bladder emptying (e.g., neurogenic bladder, vesicoureteric reflux)
Previous urinary tract surgery
Recent procedures: cystoscopy, catheterization, or transrectal prostate biopsy

FAST TRACK

Consider a workup for men who have no response to antibiotic therapy or who have persistent hematuria

or bladder, and does not include urethritis, epididymitis, prostatitis, or orchitis.)

Get a urine culture

A urine culture is recommended to reliably diagnose an infection and guide treatment.[5]

• A cohort of 66 men (mean age, 66 ± 13 years) presenting to a VA urology clinic for procedures, dysuria, or bacteriuria had urine samples taken while voiding, as well as directly from the bladder, either via suprapubic aspiration or urethral catheterization. Using bladder cultures as a gold standard, midstream urine culture had a specificity and sensitivity of >97% at a threshold of 1000 CFU/mL.[6]

The usual organisms are colonic bacteria: *Escherichia coli* (75%), enterococci (20%), and, less commonly, *Klebsiella* and *Proteus*.[4]

No need for routine imaging

Consider a workup for men who have no response to antibiotic therapy or have persistent hematuria.

There is little evidence to support routine imaging in low-risk men with a first UTI, whether with or without fever:

• A very small prospective study of 29 heterosexual, circumcised men 16 to 45 years old (those who were sexually active had a steady partner) who were hospitalized with a first febrile UTI failed to find any significant structural or functional urinary tract abnormalities.[4]

• Another small prospective study of 85 men, 18 to 86 years of age, with febrile UTI, concluded that routine imaging of the upper urinary tract was unnecessary, and that, if indicated, further workup should focus on the lower urinary tract.[7] Abnormalities in this group were suggested by a history of voiding problems, hematuria, or recurrent infection. One limitation of this study was the incomplete urodynamic and endoscopic evaluation of the lower urinary tract.

• Another study enrolled 114 men, 18 to 85 years of age, with proven UTIs, who underwent ultrasonography and plain radiography, as well as an IVP.[8] (Only 100 had complete data at enrollment.) All men had urinary flow rates measured. The combination of a plain abdominal film and ultrasonography detected more abnormalities than an IVP. (The primary role of the plain film was in detecting urinary calculi.)

Final "clinical" diagnoses were reported, but the study did not report a comparison of clinical and radiological findings. Almost half of the abnormalities were lower tract obstructions (bladder outlet obstruction, underactive detrusor, and chronic retention). There was no comment on the importance or treatment of any abnormalities found.

Recommendations from others

PRODIGY (from the British National Health Service) recommends:

• **Men under 45 years** with a first UTI who respond well to antibiotic treatment are not likely to have a urologic abnormality.[9]

• **Older men** who do not respond well to antibiotics or who have recurrent UTIs are likely to have abnormalities and may benefit from further investigation.[9]

Neither the American Academy of Urology, the US Preventive Services Task Force, nor the Agency for Healthcare

Research and Quality has published guidelines for evaluation of adult men with a first UTI. ■

References

1. Foxman B. Epidemiology of urinary tract infections: Incidence, morbidity, and economic costs. *Am J Med* 2002; 113(Suppl 1A):5S–13S
2. Lipsky BA. Urinary tract infections in men. Epidemiology, pathophysiology, diagnosis, and treatment. *Ann Intern Med* 1989; 110:138–150.
3. Griebling TL. Urologic diseases in America project: Trends in resource use for urinary tract infections in men. *J Urol* 2005; 173:1288–1294.
4. Abarbanel J, Engelstein D, Lask D, Livne PM. Urinary tract infection in men younger than 45 years of age: Is there a need for urologic investigation? *Urology* 2003; 62:27–29.
5. Hummers-Pradier E, Ohse AM, Koch M, Heizmann WR, Kochen MM. Urinary tract infection in men. *Int J Clin Pharmacol Ther* 2004; 42:360–366.
6. Lipsky BA, Ireton RC, Fihn SD, Hackett R, Berger RE. Diagnosis of bacturia in Men: Specimen Collection and Culture interpretation. *J Infect Dis* 1987; 155:847–853.
7. Ulleryd P, Zackrisson B, Aus G, Bergdahl S, Hugosson J, Sandberg T. Selective urological evaluation in men with febrile urinary tract infection. *BJU Int* 2001; 88:15–20.
8. Andrews SJ, Brooks PT, Hanbury DC, King CM, Prendergast CM, Boustead GB, et al. Ultrasonography and abdominal radiography versus intravenous urography in investigation of urinary tract infection in men: Prospective incident cohort study. *BMJ* 2002; 324:454–456.
9. PRODIGY Knowledge (2006). Urinary tract infection (lower) – men. Sowerby Centre for Health Informatics at Newcastle, Ltd (SCHIN). Available at: www.prodigy.nhs.uk/urinary_tract_infection_lower_men. Accessed on July 18, 2007.
10. Lipsky BA. Managing urinary tract infections in men. *Hosp Pract (Minneap)* 2000; 35:53–59.