Is it time to change how I diagnose, treat, and manage young children with urinary tract infections?

You are asked by the emergency department of your community hospital to admit a 3-month-old girl with fever to 39°C with no apparent source. You know that urinary tract infection is high on the differential diagnosis. You have notes from your residency mentor’s urinary tract infection lecture on the subject.

Is there any new evidence on diagnosis of urinary tract infection (UTI)? How about on management and follow-up? Is it time to throw away your notes on the subject from your residency?

Yes. Yes. And, probably yes. UTI is a common diagnosis in pediatrics, one with a rich history of protocolized management, much of it without a basis in evidence. In 1999, the American Academy of Pediatrics (AAP) published a practice parameter summarizing the state-of-the-art in diagnosis and management of UTIs in 2- to 24-month-old children. Since then, there has been a steady stream of studies, large and small, adding to the body of evidence, some challenging previous and often long-held beliefs and practices about the diagnosis. In September 2011, the AAP Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, released an updated practice guideline on diagnosis and management of UTIs in 2- to 24-month-old children with fever ≥38°C. The guideline, approved by 5 outside organizations along with 17 committees, councils, and sections of the AAP, offers 7 recommendations (3 regarding diagnosis, 4 regarding management and follow-up). It incorporates evidence published to-date as well as newly analyzed data from 6 previous studies on UTI prophylaxis restricted to the ages considered in the guideline.

What’s new in the diagnosis of UTI?

1. The committee recommends that, if you have enough clinical concern about a 2- to 24-month-old child with fever without a source that you intend to start antibiotics, a urine culture should be collected by using catheterization or suprapubic aspiration before initiation of treatment. The very high false-positive rate of urine cultures obtained by using a bag specimen makes them unreliable in this setting.

2. If treatment can wait and likelihood of UTI is low (based on race, height, duration of fever, age >12 months, presence of another source for fever, and circumcision in boys), watchful waiting is an acceptable approach. If UTI likelihood is judged to be “not low” in this setting, the recommendation is for either a catheterized or suprapubic aspiration urinalysis and culture or a
bag urinalysis, which, if positive, is followed by a catheterized or suprapubic aspiration culture.

3. The authors have modified the definition of UTI to require both an abnormal urinalysis (bacteria and/or white blood cells) and ≥50,000 colony-forming units per milliliter of a urinary pathogen. Urinary nitrites are considered helpful if positive, but their absence is an unreliable screen to rule out UTI. Leukocyte esterase is frequently present in the absence of UTI, whereas UTI is unlikely in the absence of leukocyte esterase.

What’s new in treatment and management?

4. Unless a child with a UTI is toxic appearing, vomiting, or in some other way at risk, oral therapy is equivalent to intravenous treatment. Initial antibiotic choice can be made based on likely resistance patterns in your community, with modification based on sensitivities when they become available. Antibiotic therapy for UTI should continue for 7 to 14 days. Evidence for a shorter course of therapy is poor.

5. For evaluation of patients after diagnosis of UTI, the guideline recommends routine bladder and renal ultrasound for identification of renal anomalies and possible high-grade urinary reflux. The study is recommended early for patients who are severely ill or fail to improve quickly but can be delayed for those who respond as expected.

6. And now the big news; to the delight of parents, patients, and pediatricians, the committee does not recommend routine voiding cystourethrogram for all infants with their first UTI. This study is reserved for those who have ultrasound evidence of obstructive uropathy, hydronephrosis, renal scarring or high-grade urinary reflux, those who have recurrent UTIs, or other complex cases.

7. Finally, caregivers of 2- to 24-month-old children with a first UTI should be advised to seek medical care within the first 48 hours of the child’s subsequent febrile illnesses to allow for evaluation for a possible recurrent infection.

The AAP practice guideline on diagnosis and management of UTIs in 2- to 24-month-old children is a comprehensive, carefully crafted, evidence-based summary of the state-of-the-art in pediatric UTI. It is worth reading in its entirety and worth having at your fingertips, in print or electronic form, when you evaluate your 3-month-old febrile patient in the emergency department and whenever you are caring for young children with fever. Kenneth Roberts, MD, and the AAP Subcommittee on Urinary Tract Infection have done a stellar job taking current literature, running it through a filter of good reason, and bringing it to the bedside for practical, up-to-date, evidence-based care of your patient.

REFERENCES
