



## Technically Speaking

C.S. Guidess, Editor

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& Laboratory Medicine

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### Urinalysis Reflex Testing

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Urinalysis reflex testing is a strategy used to reduce unnecessary urine microscopic examinations and urine cultures. A study of 122 positive adult urine cultures ( $\geq 100,000$  CFU/mL) from Danbury Hospital inpatients between 2/17/10 – 5/15/10 showed that urinalysis reflex testing using the criteria below would have detected 121 of 122 UTIs (99.2%).

#### For patients greater than 2 years old:

When a “urinalysis with reflex to microscopic and culture” test is ordered, a macroscopic exam (dipstick) is performed. If any of the following criteria are met, a microscopic exam of the sediment and a urine culture are performed:

- Nitrite positive
- Leukocyte esterase positive (including trace)
- Protein positive (including trace)
- Blood 1+ or more

#### For patients 2 months to 24 months old:

When a “urinalysis with reflex to microscopic and culture” is ordered a macroscopic exam (dipstick) and microscopic exam of the sediment are performed. If any of the following criteria are met, a urine culture is performed, *but only if the specimen is a catheterized urine or a suprapubic aspiration urine.*

- Nitrite positive
- Leukocyte esterase positive (including trace)
- Microscopy positive for white blood cells
- Microscopy positive for bacteria

Per the American Academy of Pediatrics, the diagnosis of urinary tract infection in febrile infants and children 2 to 24 months old requires pyuria and/or bacteriuria *and* the presence of at least 50,000 colony-forming units (CFUs) per mL of a uropathogen cultured from a urine specimen obtained through catheterization or suprapubic aspiration. An algorithm from the American Academy of Pediatrics Clinical Practice Guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months is attached<sup>1</sup>.

**For patients less than 2 months old:**

When a “urinalysis with reflex to microscopic and culture” is ordered,

- a. If the specimen is catheterized urine or suprapubic aspiration urine, urinalysis (macroscopic and microscopic exam) and culture is performed.
- b. If the specimen is not a catheterized urine or suprapubic aspiration, only urinalysis (macroscopic and microscopic exam) is performed unless a culture has been ordered.

**For patients of all ages:**

When a “urinalysis with reflex to microscopic only” test is ordered, a macroscopic exam (dipstick) is performed. If any of the following criteria are met, a microscopic exam of the sediment is performed, without a culture.

Nitrite positive

Leukocyte esterase positive (including trace)

Protein positive (including trace)

Blood 1+ or more

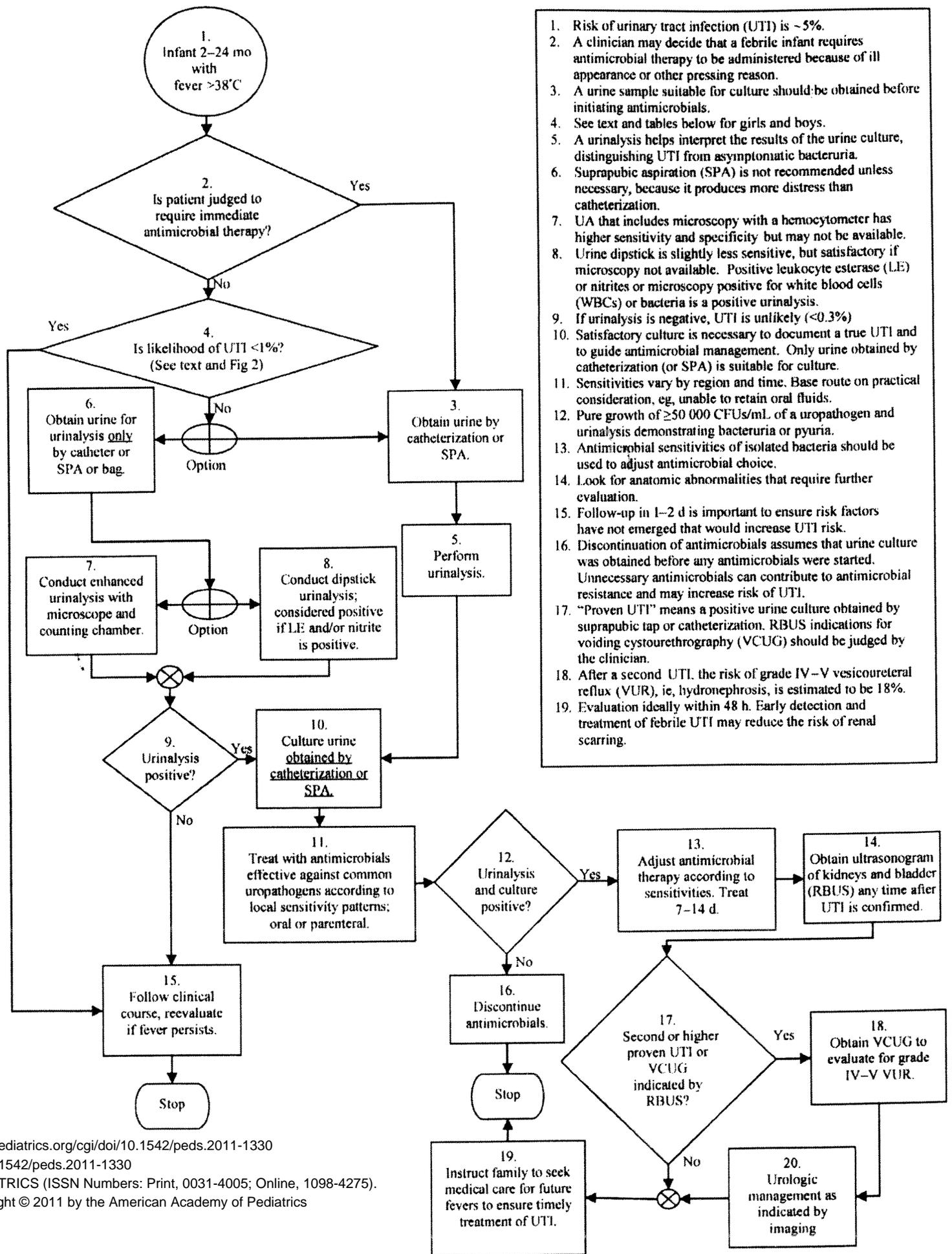
**Specimen collection:**

The preferred specimen for patients greater than 2 years old is a first morning, clean-voided urine because it is the most concentrated. Specimens should be collected and sent to the laboratory in a sterile urine cup with the lid securely in place. Urine specimens must reach the laboratory within 2 hours of collection unless refrigeration is possible. If refrigerated, urine must reach the lab within 8 hours of collection. If refrigeration is not available and a delay of more of 2 hours is anticipated, the Boritex collection container must be used. Standard labeling requirements must be adhered to (patient’s first and last name, medical record number and/or date of birth, initials of person handling the specimen and date and time of collection).

Questions regarding urinalysis reflex testing may be directed to the Microbiology Laboratory at 203-739-7685 or to Dr. Jessica Dodge at 203-739-7034.

**Reference:**

1. American Academy of Pediatrics. Urinary Tract Infection: Clinical Practice Guideline for the Diagnosis and Management of the Initial UTI in Febrile Infants and Children 2 to 24 Months Pediatrics. 2011;128(3):595-610.



1. Risk of urinary tract infection (UTI) is ~5%.
2. A clinician may decide that a febrile infant requires antimicrobial therapy to be administered because of ill appearance or other pressing reason.
3. A urine sample suitable for culture should be obtained before initiating antimicrobials.
4. See text and tables below for girls and boys.
5. A urinalysis helps interpret the results of the urine culture, distinguishing UTI from asymptomatic bacteriuria.
6. Suprapubic aspiration (SPA) is not recommended unless necessary, because it produces more distress than catheterization.
7. UA that includes microscopy with a hemocytometer has higher sensitivity and specificity but may not be available.
8. Urine dipstick is slightly less sensitive, but satisfactory if microscopy not available. Positive leukocyte esterase (LE) or nitrites or microscopy positive for white blood cells (WBCs) or bacteria is a positive urinalysis.
9. If urinalysis is negative, UTI is unlikely (<0.3%)
10. Satisfactory culture is necessary to document a true UTI and to guide antimicrobial management. Only urine obtained by catheterization (or SPA) is suitable for culture.
11. Sensitivities vary by region and time. Base route on practical consideration, eg, unable to retain oral fluids.
12. Pure growth of  $\geq 50,000$  CFUs/mL of a uropathogen and urinalysis demonstrating bacteriuria or pyuria.
13. Antimicrobial sensitivities of isolated bacteria should be used to adjust antimicrobial choice.
14. Look for anatomic abnormalities that require further evaluation.
15. Follow-up in 1-2 d is important to ensure risk factors have not emerged that would increase UTI risk.
16. Discontinuation of antimicrobials assumes that urine culture was obtained before any antimicrobials were started. Unnecessary antimicrobials can contribute to antimicrobial resistance and may increase risk of UTI.
17. "Proven UTI" means a positive urine culture obtained by suprapubic tap or catheterization. RBUS indications for voiding cystourethrography (VCUG) should be judged by the clinician.
18. After a second UTI, the risk of grade IV-V vesicoureteral reflux (VUR), ie, hydronephrosis, is estimated to be 18%.
19. Evaluation ideally within 48 h. Early detection and treatment of febrile UTI may reduce the risk of renal scarring.

## **Detection of *Streptococcus pyogenes* (Group A beta-hemolytic streptococci) in the Throat**

Laura Ross, Technical Specialist, Microbiology Laboratory

Options for testing to detect *Streptococcus pyogenes* (Group A beta-hemolytic strep) in the throat include a rapid strep screen, a strep only culture, or a throat culture.

If a rapid strep screen is requested, the red capped Remel double swab (liquid Stuarts media) should be submitted. If the rapid strep screen is negative, it will reflex to a strep only culture.

If a strep only culture is requested, the blue capped Remel single swab (Amies gel media) should be submitted. The gel swab CANNOT be used for a rapid strep screen due to possible interference by the gel with the test cartridge.

If a throat culture is requested, the blue capped Remel single swab (Amies gel media) should be submitted. In addition to reporting the presence or absence of Group A beta-hemolytic strep, *Neisseria meningitidis* and/or *Candida* are reported if present. However, this does result in a higher charge and may not be the correct order if the physician only wants to detect Group A beta-hemolytic strep.

Please refer any questions to the Microbiology Lab at 203-739-7685.

## **New D-Dimer test used at New Milford Hospital improves sensitivity**

The INNOVANCE® D-dimer assay for the quantitative determination of cross-linked fibrin degradation products in human plasma is now utilized at the New Milford Hospital Laboratory. Providing improved sensitivity, this test has validated diagnostic sensitivity for the exclusion of deep vein thrombosis (DVT) and pulmonary embolism (PE) of greater than 98.9%. The reference range is  $\leq 500$  ng/mL FEU and exhibits low susceptibility to interference from common drugs and endogenous substances.

Introduction of this test provides standardization of test methodologies at both the New Milford and Danbury sites.

Specimen requirement: 1 full blue stoppered tube (citrate plasma). Deliver to laboratory within 2-3 hours of collection.

Questions may be directed to Margaret Jenkins at 860-210-5418.

Customer service representative, Sandra Smith, may be reached at (203)-739-7800