

Which one is best imaging study for a child with FIRST UTI ?

- Radiography
- Renal US
- Voiding cystourethrography
- Nuclear cystography
- Nuclear cortical scan
- CT scan

US

- First-line renal ultrasound of febrile children with a first urinary tract infection (UTI) could provide data to obviate invasive voiding cystourethrography (VCUG)

VCUG

- Is useful for visualizing the urethral and bladder anatomy and for detecting VUR.
- Following a second UTI, VCUG may be performed after 3-4 days of therapy to ensure that bladder irritability has resolved and that the urine is sterilized

NUCLEAR CYSTOGRAPHY

- Does not permit good evaluation of the urethra and is therefore not used for the initial evaluation of the urologic anatomy

NUCLEAR CORTICAL SCANNING

Depicts tubular damage and scarring. It provides information regarding the general size of kidneys. It does not provide detailed information regarding the collecting system.

DMSA has a sensitivity of more than 90% in detecting changes that are suggestive of acute pyelonephritis
Radiation exposure is low

CT SCAN

- May be useful in distinguishing acute pyelonephritis from other causes of fever. However increased radiation makes CT scanning less favorable

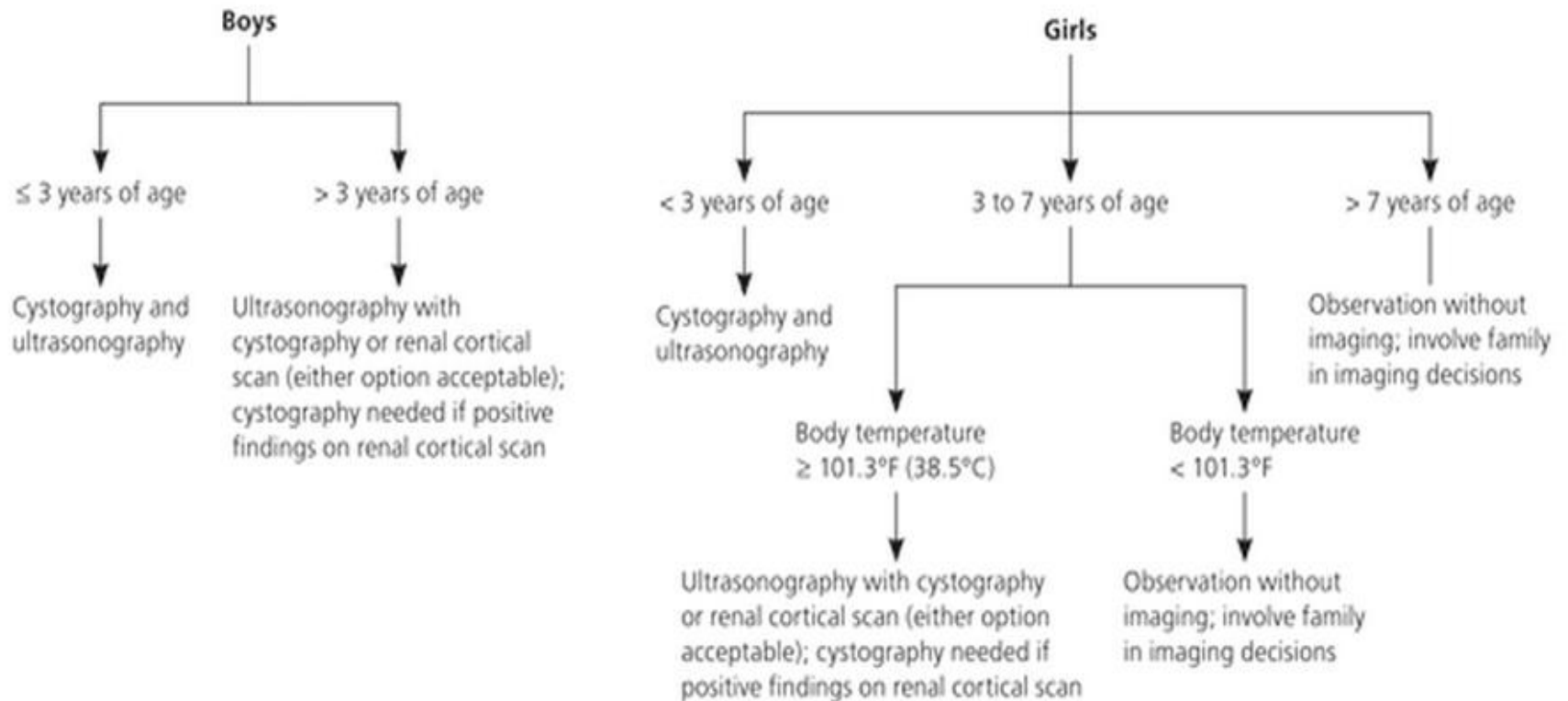
Most sensitive test on a urine dipstick?

- Nitrate
- Bacteria on microscopy
- Leukocytes on microscopy
- Leukocyte esterase
- Blood
- Protein

- Nitrite: 53 percent sensitivity, 98 percent specificity, 75 percent probability of UTI
- Bacteria on microscopy: 81 percent sensitivity, 83 percent specificity, 35 percent probability of UTI
- Leukocytes on microscopy: 73 percent sensitivity, 81 percent specificity, 30 percent probability of UTI
- Leukocyte esterase: 83 percent sensitivity, 78 percent specificity, 30 percent probability of UTI
- Leukocyte esterase or nitrite: 93 percent sensitivity, 72 percent specificity, 27 percent probability of UTI
- Blood: 47 percent sensitivity, 78 percent specificity, 19 percent probability of UTI
- Protein: 50 percent sensitivity, 76 percent specificity, 19 percent probability of UTI

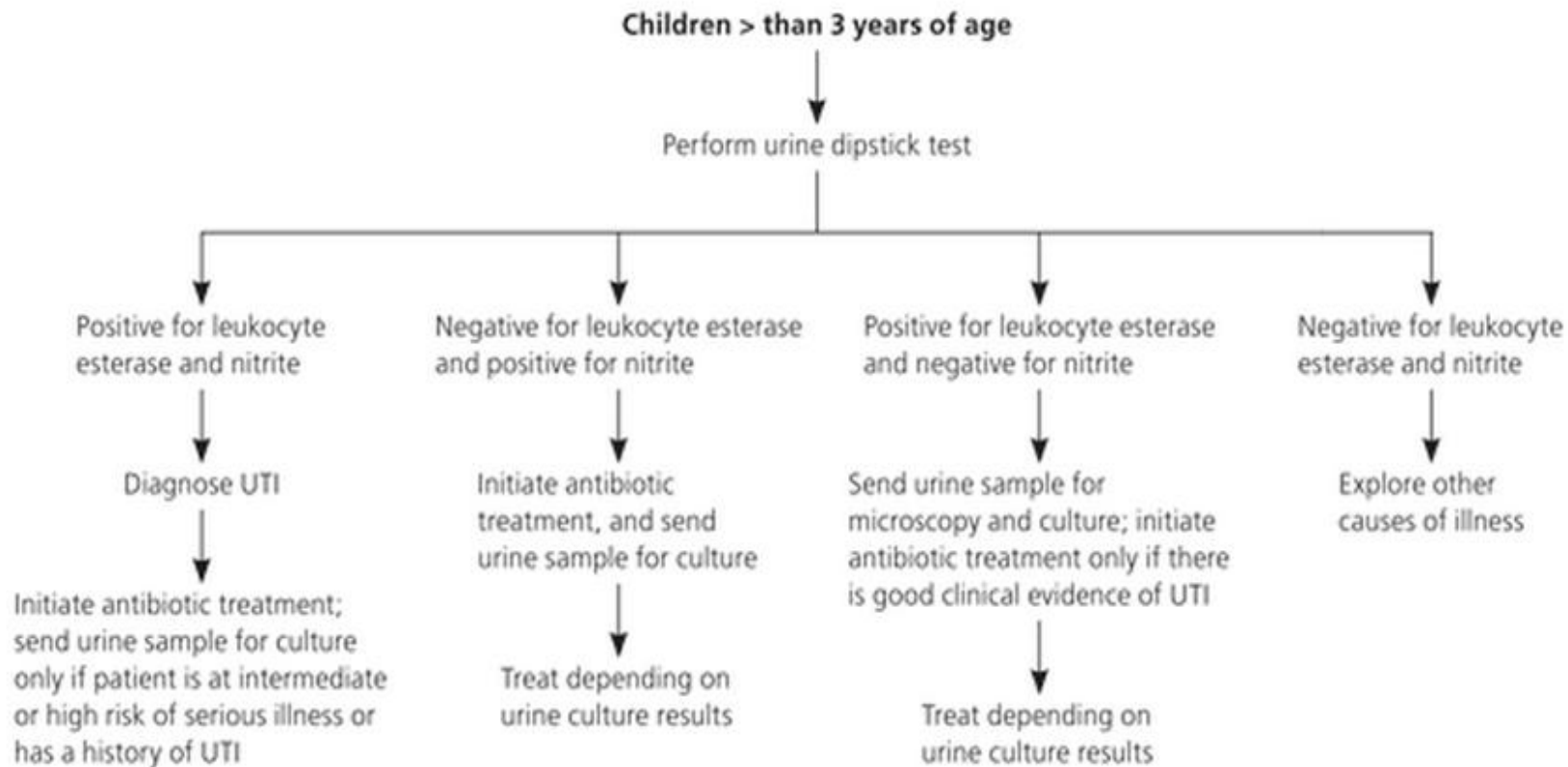
Predictive value of urinalysis components.

Tests	Sensitivity % (range)	Specificity % (range)
Nitrites	50 (16-72)	98 (95-100)
Leukocyte esterase	83 (64-89)	84 (71-95)
>5 WBC/HPF	67 (55-87)	79 (77-84)
Any organism on Gram stain	93 (80-98)	95 (87-100)



UTI Guideline Team, Cincinnati Children's Hospital Medical Center. Evidence-based care guideline for medical management of first urinary tract infection in children 12 years of age or less.

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