The most accurate tests of bacterial content are **suprapubic aspiration** (for children younger than 2 years old) and properly performed **bladder catheterization** (as long as the first few milliliters are excluded from collection). The specimen must be fresh (<1 hour with storage at room temperature or <4 hours with refrigeration) to ensure sensitivity and specificity of the urinalysis and to prevent growth of organisms (American Academy of Pediatrics Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, and Roberts, 2011). Clean catch and specimens collected by urine bags are prone to contamination, given the difficulty of obtaining a true mid-stream specimen with wiping of the meatus and retraction of the labia or foreskin or cleaning the perineum. In these instances, a negative specimen excludes infection and a positive culture is not necessarily diagnostic.

Predictive tests are utilized to direct therapy when UTI is suspected. Urine dipsticks indicate the presence of leukocyte esterase and nitrites and are quick and inexpensive. Leukocyte esterase is a surrogate marker for pyuria, and nitrite is converted from dietary nitrates in the presence of most gram-negative enteric bacteria in the urine. Because the conversion takes 4 hours in the bladder, it is not a sensitive marker for infants or children who empty their bladder frequently. Also, not all urinary pathogens reduce nitrate to nitrite (American Academy of Pediatrics Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, and Roberts, 2011).

Further radiographic evaluation, such as ultrasonography, voiding cystourethrogram (VCUG), and renal scans such as a dimercaptosuccinic acid (DMSA) scan, may be performed after the infection subsides to identify anatomic abnormalities contributing to the development of infection and existing kidney changes from recurrent infection.

Therapeutic Management

The objectives of treatment of children with UTI are to (1) eliminate current infection, (2) identify contributing factors to reduce the risk of recurrence, (3) prevent systemic spread of the infection, and (4)