

Pediatric Urinary Tract Infection (UTI): Incidence, Causes and Treatment

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DESCRIPTION

The most prevalent bacterial illness in children is a Urinary Tract Infection (UTI). The infection may affect either the lower urinary tract or the upper urinary tract (pyelonephritis, also referred to as cystitis). However, especially in infants and young children, it may be difficult, if not impossible, to distinguish pyelonephritis from cystitis simply on the basis of clinical symptoms and indications. Practically speaking, these two illnesses are discussed collectively under the heading of UTI. The doctor has many difficulties because of the high incidence, propensity to recur, related morbidity, and issues with the collection of an uncontaminated urine specimen. Children, parents, and healthcare professionals all have serious concerns about UTI. To lower the morbidity associated with this illness, prompt diagnosis and adequate treatment are crucial.

The incidence of UTI is 2.7% in uncircumcised boys and 0.7% in girls during the first year of life. The incidence of UTI in febrile children in the first two months of life is roughly 5% in girls and 20% in boys who have not undergone circumcision. Uncircumcised males have a ten to twelve fold increased risk of UTI during the first six months. Premature babies are more likely to have an UTI during the newborn period than term babies. Girls are considerably more prone than boys to have an UTI after the age of one. UTI has a bimodal age of onset, with one peak occurring in the first year of life and another peak occurring between the ages of 2 and 4 years, which is the age at which children learn to use the toilet. By the age of 7, it is predicted that 1.7% of boys and 7.8% of girls will have experienced a UTI. 11.3% of girls and 3.6% of boys will have experienced a UTI by the age of 16. Compared to black children, Hispanic and white children had a two to four times higher rate of UTI. Recurrence rates often range from 30 to 50%. UTI recurrence is particularly typical in females. UTI has recurred in at least 75% of Caucasian and 50% of African American school-aged females in the United States.

Escherichia coli is the most frequent type of intestinal flora-derived pathogenic bacterium, accounting for 80–90% of pediatric UTIs. Other microorganisms include *Serratia* spp., *Enterococcus* spp., *Klebsiella pneumoniae*, *Proteus mirabilis*,

Citrobacter, and *Pseudomonas aeruginosa*. Boys are more likely than girls to contract *Proteus mirabilis*. In newborns, *Streptococcus agalactiae* is comparatively more prevalent. Around 15% of UTIs in sexually active female teenagers are caused by *Staphylococcus saprophyticus*. *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Streptococcus viridians*, and *Streptococcus agalactiae* may be to blame in infants with abnormalities of the urinary tract (anatomic, neurologic, or functional). *Staphylococcus aureus*, *Streptococcus agalactiae*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, and nontyphoidal *Salmonella* can all induce hematogenous dissemination of infection, a rare cause of UTI. *Streptococcus pneumoniae* and *Mycobacterium tuberculosis* are uncommon bacterial causes of UTI.

UTI can be brought on by viruses like adenoviruses, enteroviruses, echoviruses, and coxsackieviruses. Usually, the lower urinary tract is the only site of the associated infection. Adenoviruses are known to produce hemorrhagic cystitis in this aspect. Rare causes of UTI include fungi (such as *Candida* species, *Cryptococcus neoformans*, and *Aspergillus* species), which are more common in kids with urinary tract abnormalities; indwelling catheters; weakened immune systems; and long-term use of broad-spectrum antibiotics.

Children should be taught to urinate roughly every 1.5 to 2 hours and never to wait until the very last second. Children should be encouraged to void while standing up straight and taking their time to thoroughly empty themselves. It is important to promote proper fluid intake and meticulous genital hygiene. Dysfunctional voiding should be treated along with any underlying problems, such as constipation.

Because the symptoms of young children can be vague and nonspecific, managing UTI in children can be difficult. It is crucial to have a high index of suspicion. Any child under the age of two who has a fever should be evaluated for a UTI. On the one hand, over diagnosis could result in pointless and potentially intrusive testing, needless care, and the establishment of bacterial antibiotic resistance. The risk of recurrence and renal scarring, which can cause hypertension and chronic renal failure, is increased by under diagnosis and delayed treatment. Therefore, prompt and correct diagnosis as well as proper therapy is crucial.

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