

Urinary Tract Infections

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Bacterial infections of the urinary tract (UTI) are quite common in dogs. They represent around 10% of the caseload in canine clinical practices, in contrast to cats, in which the prevalence of UTI is only 1% (18).

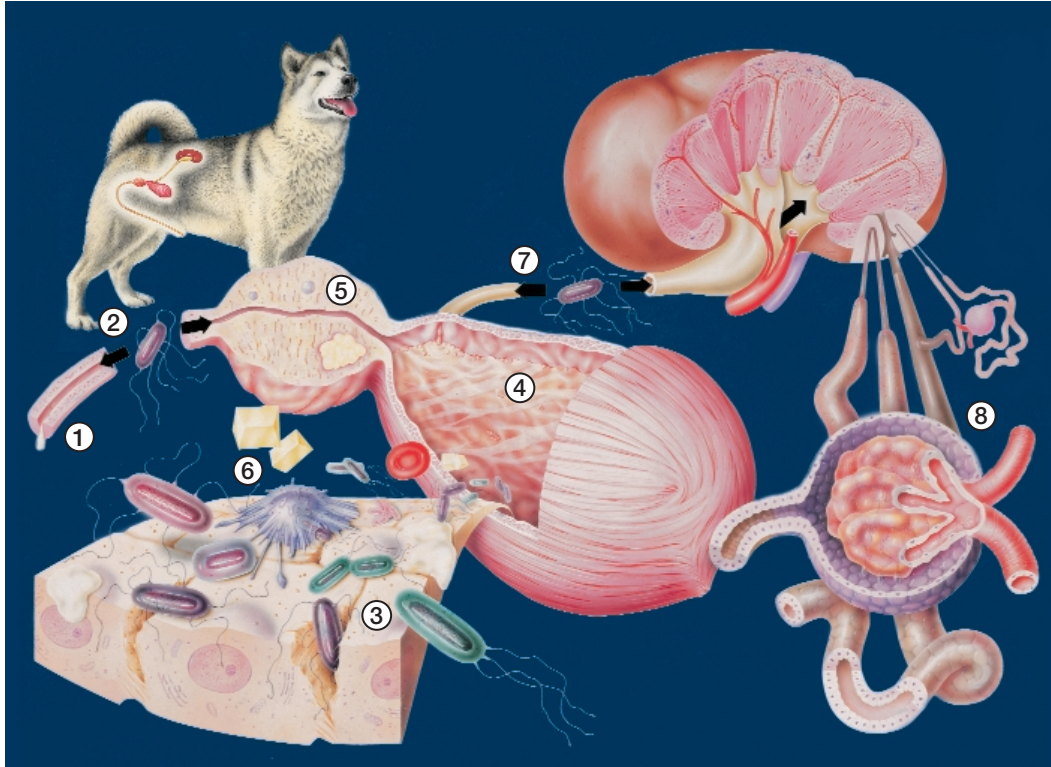
Infections of the distal urinary tract, such as urethritis, cystitis, and prostatitis, are much more common than upper urinary tract infections, suggesting that the majority of bacteria gain entrance into the organism via the urethra (18).

References:

- (18) Grauer GF: Urinary Tract Infections, in Allen DG (ed): Small Animal Medicine, Lippincott, Philadelphia: 625-655, 1991.

**Urinary Tract Infections /
Host Defense Mechanisms and Pathogenesis of UTI**

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- (1) In general pathogens colonize the urinary tract by ascension from the urethra. A resident apathogenic flora in the distal urethra occupies the epithelium and produces bacteriocins to prevent invasion of pathogens.
- (2) Voiding is the most effective defense mechanism, eliminating around 95% of bacteria having succeeded to ascend to the bladder. Peristalsis and a high pressure zone in the midth of the urethra also contribute to host defense.
- (3) Antibacterial secretions of mucosa and prostate, as well as a protective glycosaminoglycan layer over the inner surface of the bladder prevent adhesion of urinary pathogens.
- (4) Low pH and high urea concentrations make urine a hostile environment for pathogens. Production of ammonia by urease bacteria increases urine pH and makes the milieu more suitable for growth of pathogens.
- (5) Intact male dogs frequently suffer from bacterial prostatitis with inflammatory reactions and forming of huge abscesses.
- (6) Urolithiasis, frequently seen in neutered tomcats, but also in dogs, further complicates the pathologic condition.
- (7) In immunocompromised animals ascending infection via the ureters to the kidneys is possible, whereas hematogeneous infection of the urinary tract is quite rare.
- (8) Glomerular basement membrane and endothel of kidney tubules are very susceptible to damage. Here bacterial toxins quickly lead to impairment of proper kidney function and irreversible damage.