Distinguishing UTI Relapse from New Infection

Older cats with signs of lower urinary tract disease are frequently infected with *Escherichia coli*. Declining renal function predisposes these cats to urinary tract infections (UTIs). Cats may have recurring UTIs because of incomplete eradication of the initial infection (relapsing or persistent infection) or because of reinfection with a different strain of bacteria. This study evaluated whether antibiotic sensitivity patterns were a reliable indicator of whether a repeat infection was a relapse or a reinfection. Samples from 5 cats were evaluated, and 17 antibiograms were determined by Kirby-Bauer discs and Etests. Clonality was later determined using pulsed-field gel electrophoresis. Both antibiotic susceptibility tests differentiated between relapsing and persistent infections and reinfections only 58% of the time.

**COMMENTARY:** Reinfection is clear when a patient develops UTI from another species of bacteria—for example, when a *Proteus mirabilis* infection is treated and *Klebsiella pneumoniae* infection subsequently develops. However, when an *Escherichia coli* infection is followed by a second *E coli* infection, it is hard to determine if the UTI is a relapse of the original infection or if it is an infection with an entirely different clone. Using a method of genetic differentiation as the gold standard, this article demonstrates that even antibiograms are unreliable in distinguishing among clones of *E coli*. The paper cites recently understood methods by which strains of uropathogenic *E coli* might persist in the urinary tract despite appropriate antimicrobial treatment; such methods include persistence of the strain in another household member (human or animal) and intracellular persistence within a biofilm in the bladder. Equally important, the authors raise the issue of whether animals with asymptomatic bacteriuria should be treated with antimicrobials. Many cats with chronic renal failure develop asymptomatic bacteriuria, and the low morbidity and mortality of such infections must be weighed against the potential for development of antimicrobial resistance. —David F. Senior, BVSc, Diplomate ACVIM & ECVIM-CA