AMERIVET
VETERINARY PARTNERS

Quick Guide to Lower Urinary Tract Infections

- Most pathogenic bacteria originate from the enteric flora and ascend the distal urinary tract
- Diagnosis:
    - Urine sediment evaluation and urine culture
    - Ideally urine sediment should be evaluated with in 30 minutes of collection
        - Bacteriuria detection is improved with staining of sediment
        - Recommend performing in house to also evaluate for evidence of inflammation by detection of WBC and RBCs
        - Bacteriuria with lack of pyuria (WBCs) generally will indicate contamination
        - Pyuria is indicative of inflammation and consistent with active infection
        - Personal preference for UTI diagnosis is preparation of a dry mount with Quick Dip Stain
    - Aerobic Culture is gold standard for specific infecting organism, colony count, and sensitivity
        - If you do not plate in hospital storage of sample to reduce false negative results is important
        - Store refrigerated at 4 degrees Celsius (normal fridge temperature), ideally plated with in 24 hours
        - Storing urine is a preservative or reducing media vial can extend time that bacteria are viable for up to 72 hours
        - Samples obtained via cystocentesis:
            - Change needle from one utilized to pierce skin
            - Alcohol top of storage vial to remove surface contaminants
- Treatment
    - Uncomplicated
        - Is a bladder infection occurring no more than once every 6 months in a healthy patient with a normal urinary tract anatomy and function
        - First line antibiotics to consider include: Amoxicillin, Cephalexin, Trimethoprim-sulfonamide
        - If sensitivity reveals a resistance to chosen antibiotic then regimen can be changed
        - Recommended duration of therapy is 7 to 14 days

        - Ideally urine culture should be repeated 3-5 days after antibiotic conclusion
    - Complicated
        - Refers to anatomic, functional, or metabolic abnormality or a comorbidity preventing clearance of infection or allowing re-infection
        - Culture and sensitivity is recommended
        - Persistent infection
            - Infection is not cleared, antibacterial therapy fails to sterilize urine
            - Confirm antibiotic administration, dosage, etc
        - Relapse
            - Urine is sterile between infection but re-occurrence of same infection
            - If infection is cleared between then longer course of antibiotics recommended for typically 4 to 6 weeks
        - Re-infection
            - Urine is sterile between infection but colonized with a new bacteria or strain
            - Pending sensitivity if re-infection reasonable to start with first line therapy of amoxicillin, cephalexin, or TMS since these are a different organism
        - Evaluate for predisposing factors
            - Imaging
                - Radiographs, ultrasound, contrast studies
            - Evaluate external genitalia – recessed vulva, persistent dermatitis due to allergies, etc
        - Should re-culture ideally 3-5 days after antimicrobial therapy
    - Preventative Therapies
        - >25% of dogs, the defect allowing re-colonization is not identified or cannot be detected
        - Before instituting preventative therapies confirm true infection vs. Asymptomatic bacteriuria
            - Evidence of pyuria with clinical signs vs. Bacteriuria with no inflammation and no clinical signs
        - Preventative therapies are instituted after confirmation that current infection is clear and urine is sterile via culture and sensitivity
        - No proven long term efficacy of all preventative therapies
        - 1. Anti-adherence: block bacteria's ability to bind to urothelium
            - a. Proanthocyanidins found in cranberries and cranberry extract
            - b. D-Mannose
            - c. Glycosaminoglycans

- 2. Bacterial interference
    - a. Instilling non-pathogenic bacteria into the urinary bladder aims at allowing this bacteria to colonize the bladder preventing pathogenic bacteria from colonizing
    - b. Administration of probiotics – theoretically administration of Lactobacillus lowers pH of lower urinary tract inhibiting growth of uropathogenic bacteria
- 3. Anti-microbial Therapy
    - Controversial and can lead to bacterial resistance
    - Generally provid 1/3 to ½ recommended daily dose at night after last void
    - Antibiotics concentrate in urine overnight preventing colonization
    - Therapy is continued for 6 months
    - Urine is cultured monthly to evaluate for breakthrough infections
    - If after 6 months urine remains stable the therapy is discontinued and then repeated as necessary